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THE EDUCATIONAL TIMES,

AND

Journal of the College of Preceptors.

Vol. LVIII.] New Series, No. 525.

JANUARY 2, 1905.

{ Published Monthly, price, to Non-Members, 6d.; by Post, 7d.
Annual Subscription, 7s.

COLLEGE OF PRECEPTORS.—The Half-Yearly General Meeting of the Members of the Corporation will be held at the College, Bloomsbury Square, W.C., on Saturday, the 28th of January, 1905, at 3 p.m.
C. R. HODGSON, B.A., *Secretary.*

COLLEGE OF PRECEPTORS.—EXAMINATIONS, 1905.

- 1. DIPLOMAS.**—The next Examination of Teachers for the Diplomas of the College will commence on the **3rd of January, 1905.**
- 2. PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.**—The next Practical Examination will be held in **February, 1905.**
- 3. CERTIFICATE EXAMINATIONS.**—The Midsummer Examination for Certificates will commence on the 27th of June.
- 4. LOWER FORMS EXAMINATIONS.**—The Midsummer Examination will commence on the 27th of June.
- 5. PROFESSIONAL PRELIMINARY EXAMINATIONS.**—These Examinations are held in March and September. The Spring Examination in 1905 will commence on the 7th of March.
- 6. INSPECTION AND EXAMINATION OF SCHOOLS.**—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

PRIZES.

Diploma Examination.—The following Prizes will be offered for competition:—Theory and Practice of Education, £10; Classics (Greek and Latin), £5; Mathematics, £5; Natural Science, £5. The Doreck Scholarship of £20 will be awarded on the results of the Christmas Examination.

Certificate Examination.—Prizes will be awarded as follows, subject to the conditions stated in the Regulations:—

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C. R. HODGSON, B.A., *Secretary.*

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The Examination will take place in London, and at the following Local Centres:—Birmingham, Bristol, Leeds, Liverpool, Manchester.

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Regulations and Entry Forms may be obtained on application to the Secretary.

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For Syllabus, see p. 37.

*** A Doreck Scholarship, of the value of £20, will be awarded at the Diploma Examination at Christmas next, to the Candidate who, having attended two courses of the Training Class Lectures during the preceding twelve months, and having passed the full Examination for a College Diploma, stands first in the Examination in Theory and Practice of Education.

The Fee for the Course is Half-a-Guinea.

The Lectures will be delivered on Thursday Evenings at 7 o'clock, at the College, Bloomsbury Square, W.C.

Members of the College have Free Admission to this Course.

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UNIVERSITY OF ST. ANDREWS.

REGISTRATION OF TEACHERS.

The Board of Education have made the following addition to Appendix B of the Teachers' Registration Regulations:—"A Certificate of the University of St. Andrews, granted under the conditions regulating the L.L.A. Diploma Examinations, and bearing either that the holder has obtained Honours in at least two of the subjects classed under Departments A, B, C of the L.L.A. Diploma Scheme of Examination; or, that the holder has obtained at least a pass in each of two Languages (other than English) and in Logic or Mathematics."

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NOTICE.—"THE EDUCATIONAL TIMES" for **February** will contain the CLASS LISTS OF CANDIDATES who have passed at the recent CHRISTMAS EXAMINATIONS of the College of Preceptors.

The Volume for 1904 is now ready, price 7s. 6d. Cases for binding the Volume may also be had, price 1s. 6d.; by post, 1s. 8d.

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The University Court will shortly appoint MATRICULATION EXAMINERS as follows:—

Subjects.	Present Examiners.
English Language and the History of England and Wales.....	*Professor A. S. Napier, M.A., Litt.D., Ph.D. The Rev. T. A. Walker, Litt.D., LL.D., M.A.
Mathematics	*G. B. Mathews, M.A., F.R.S. J. H. Grace, M.A.
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Experimental Mechanics and Heat	W. C. D. Whetham, M.A., F.R.S.
Chemistry	*F. D. Chattaway, M.A., D.Sc., Ph.D.
Botany	Professor M. C. Potter, M.A.

The Examiners whose names are marked with an * have served for the full period of five years.

Particulars will be given by the Registrar of the University, University Registry, Cathays Park, Cardiff, to whom applications must be sent on or before January 7th, 1905.

November, 1904.

Registrar of the University.

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The Educational Times.

The Proposals of the Consultative Committee.

THE Board of Education have taken to kite-flying. They have issued a set of Proposals as to examinations drawn up by the Consultative Committee, and have asked various teaching and examining bodies for criticisms upon them. The occasion for this attempt to recast the examination system which has gradually grown up in the country was a letter from the Head Masters' Conference pointing out the inconvenience caused by the multiplicity of examinations and by the varying demands made by professional bodies on aspirants to their ranks.

It is worth while to inquire how far the grievance is a serious one. No doubt there are hard cases, and there always will be, as long as the range and general curricula of schools are not exactly defined, and as boys are not placed *ab initio* in schools laid out for their future careers or compulsorily transferred to them at a later stage. In many large schools the difficulty is met by the formation of sides or departments—a plan which can be successfully adopted only where the numbers are considerable. But, after all, the complaint comes chiefly from classical schools called upon to send forth boys of fifteen or sixteen in a condition to undertake professional studies or to enter a house of business—required, in fact, to turn out a comparatively finished article in the middle of a curriculum only half completed. With this grievance before them on the one hand, and on the other with the knowledge of the German *Abiturientenexamen* and similar tests in Scandinavian countries, the Committee felt bound to work out some authoritative test covering the preliminary training expected of all aspirants to professional study or to a higher industrial or commercial career.

Two obvious courses were open to them—either to accept the existing system of independent examinations on a large scale, to co-ordinate them, and to fix approximately the relative value of their certificates, or to institute a State certificate examination of the same kind which would eventually swallow them up. The latter course would, they saw plainly, add, at any rate at first, to the number of examinations the multiplicity of which was denounced.

Other considerations came in. There exists in many quarters a distrust of examinations, especially of such as seem unduly to control the course of study and to encourage "cram." Further, the re-organization of the London University has introduced special examinations for "internal" students in which their teachers take part. Such examinations have been invented to meet the anomalous condition into which the University had drifted and to form an artificial substitute for the give-and-take of Oxford and Cambridge common-rooms, the members of which are, to adopt Lord Bowen's famous remark to his brother judges, "conscious of each other's imperfections."

Again, the doctrine of *Lehrfreiheit* is making considerable progress. Originality and initiative on the part of the teacher are at a premium. Not only do young lady teachers compile elaborate history lectures of doubtful quality in preference to following a good text-book, but it has been urged by good authorities, as must be familiar to those who have followed recent discussions on geometrical method, that every teacher should construct his own syllabus of geometry. In official quarters, too, the old system of "payment by results" is quite discredited in the field of elementary education, and the *ipse dixit* of the inspector has come to the front. All these influences may be traced in the proposals at which the Committee eventually arrived.

The foundation of these proposals is laid on regular inspection, such as is contemplated in the case of the schools seeking to earn grants under the new Regulations for Secondary Schools. For them inspection will probably be gratuitous, as it is already for elementary schools. But other schools, including all private schools, which are *ipso facto* ineligible for grants, must pay for inspection. Thus, at the outset, the benefits of the proposed system are to be confined to a comparatively small number of schools. To the system itself there are obvious objections. It postulates a separate set of papers for each school, to be drawn up by the external examiners after communication with the teachers. Nothing could be better for the estimation of the efficiency of a school and for the guidance of its teachers, but it involves a great deal of expense for the composition and printing of papers, an expense which none but a wealthy school could bear. In fact, the saving of such expense has been one of the causes which have fostered the growth of the examinations of the

Joint Board, the University Locals, and the College of Preceptors. When we come to the award of certificates, further objections arise. According to the Proposals, not only do the teachers supply their several syllabuses to the external examiners, but they co-operate with these in examining the papers, and the school career of each candidate is to be taken into account. It is at least doubtful whether the public will attach much value to a certificate in the award of which the teachers have a share. The cry of "branding your own herrings" is sure to be raised, however unreasonably. The external examiner, too, is placed in an awkward position. He has no longer the advantage of seeing the work of a large number of candidates so as to fix his standard of success and failure, but he is expected to make up his mind from the six or eight sets of answers produced by a single school. Most examiners would prefer the sweet simplicity of a large aggregate examination.

In face of all these difficulties it is to be hoped that the Board of Education will hesitate before adopting a revolutionary policy, and confine themselves to the simpler task, adumbrated in some of the "Proposals," of co-ordinating the examinations already in existence. It would certainly be the most English way of dealing with the question.

NOTES.

THE Association of Head Mistresses has been inquiring into "the true cost of education," and has issued a leaflet on the salaries of assistant mistresses, for the edification of the public generally and of the Education Committees particularly. The calculation is based on (1) the expense of equipment for the work—the capital invested—and (2) the cost of efficient living. Tables of the cost of living for educated women are exhibited in detail for salaries of £100, £120, and £150. While one would hesitate to reduce any of the figures, one could readily suggest the importance of increase in some of the items. The Association considers that a fully qualified teacher (with a degree, or its equivalent, and professional training) "should receive for her probationary year a salary of not less than £105 to £120," and for her second year "at least £120, rising to £150." "There should, however, be several higher posts in the school, at least three with salaries rising to £200, and in a fairly large school about four more at salaries rising to £180. In general, the senior classical, mathematical, and science mistresses should receive salaries rising to £180 or £200." The claim throws us back upon fees and endowments. In any case, "it is all-important that at this crisis in educational affairs the new Authorities should be in possession of all available facts," and liberality to teachers—that is, in point of the minimum salary—undoubtedly means more efficiency.

A TRENCHANT article by Mr. J. Horace Round in the *Monthly Review* for December upon the well worn subject of "The Bayeux Tapestry" illustrates once more the exceeding difficulty of establishing securely the truth of history in the face of tradition, prejudice, and loose scholarship. Mr. Round demolished Freeman's famous "palisade" at Senlac,

but now he champions Freeman against M. Marignan, who "challenges the authenticity of the Bayeux Tapestry as a contemporary and unique record of the life of the Conqueror's day." He finds that M. Marignan's work (a translation of which was published in English by Messrs. Bell half a dozen years back) is, in essential arguments, historical and archaeological, but "an instance of that power of self-deception possessed by the writer who sees facts in the light only of his own theory, and who makes them fit that theory whether they support it or not." Another persistent perversion still appears in some English histories for schools—the assertion that King John "signed" Magna Carta, not unfrequently clinched by a full-page illustration. John "sealed" the Charter; but where is the evidence that he did, or could, "sign" it? Once more: the picturesque remonstrance of King Robert Bruce with Randolph at Bannockburn, about a rose having fallen from his chaplet, continues to obscure the real significance of the military situation. And, by the way, how is it made out that Randolph was Bruce's "nephew"?

THERE is always interest, if not also profit, in seeing ourselves as others see us, even though their sight may be a little imperfect. Mr. Frank Pierrepont Graves, of the Teachers' College, University of Missouri, contributes to the November number of the *School Review* (Chicago) an unpretentious and pleasing description of "The Recent Commemoration at Oxford." We are gratified to learn that Lord Goschen "bears the stamp of Nature's nobility upon his face, as clearly imprinted as is his patent from the late Queen"—"a dignified, fine-looking man, with all the glory of old age and much of the vigour of youth"; and that Dr. Merry "fully lived up to his previous reputation" as "the only man in England that can cause an audience to ripple with laughter at Latin jokes." It must have been really more than "a trifle disappointing to see that our Howells was so little known." The applause, indeed, "was distinct and cordially given," but "it did not last long: the *Atlantic Monthly* and 'The Rise of Silas Lapham' must as yet be but names to many of our Oxonian friends." The young barbarians will have to attend Prof. Raleigh's lectures and learn something of the virtues of the famous Luminous Paint. Mr. Graves himself, however, is not quite perfect in the history of the distinguished men whose degrees he chronicles. If Dr. Monro is no more to him than "a distinguished Latinist," still Mr. Graves should know how to spell his name; and his description of the late Vice-Chancellor's "appearance"—well, it savours not of Oxford, but of the freedom of the Wild West.

MANY are the puzzlements of County Court judges. At Southend the other day arose the question of a witness's expenses, the witness being a schoolmaster, and claiming on the scale allowed for "gentlemen." Now, is a schoolmaster "possessed of some special knowledge and refinement, although without the advantage of any University education" a "gentleman" in the eye of the law? The judge decided in the negative. A legal contemporary has industriously rooted out Sir Thomas Smith's venerable

tome, "The Commonwealth of England," dating three centuries ago, and quotes from it (as Blackstone does) as follows:—

As for gentlemen, they be made good cheape in England. For who-soever studieth the lawes of the realme, who studieth in the universities, who professeth liberall sciences, and, to be shorte, who can live idly and without manuell labour, and will beare the port, charge, and countenance of a gentleman, he shall be called master, for that is the title which men give to esquires and other gentlemen, and shall be taken for a gentleman.

If "gentlemen" be "goode cheape in England," what of the non-university schoolmaster? But really, what is the law coming to if County Court judges, with equity jurisdiction, consider themselves bound to flout common sense under the letter of a text-writer of the Dark Ages?

UNFORTUNATELY we do not know the specific reasons that prevailed with the learned judge. The *Law Times*, with laudable thoroughness, has looked up the precedents. It finds that a buyer of silks, a solicitor's clerk out of regular work, a commission agent, and an audit office clerk have failed to qualify for the description while a person following country pursuits (a somewhat wide description) and sleeping partner in some businesses, a medical student, a dismissed coal agent out of work, and a person living on a parent's allowance have all been held to be "gentlemen" in law. There is no difficulty in seeing how all these decisions may be squared with Sir Thomas Smith's definition. If, however, we look at the table of Precedence, we find that the grades lower than gentlemen are yeomen, tradesmen, artificers, and labourers; and it seems still more difficult to range our schoolmaster in any of these four classes. It comes to this, then, that the poor man is nowhere—that, as "gentleman" is a name of "worship" (not of dignity), non-university schoolmaster is a name of no "worship." Truly, as Sir Edward Coke sagaciously remarks, "the law of England is a very particular thing."

SUMMARY OF THE MONTH.

THE London County Council have extended their system of County Scholarships from 600 to some 2,500, at an annual cost of £275,200. The essential change lies in the Junior County Scholarships. They are to be open to all such children of the age of eleven to twelve living within the administrative county as have been attending a public elementary school for at least two years; give free education up to fourteen; and are renewable for two years more. Where the parents' income is under £160, the scholars receive also £6 a year under fourteen, and £15 a year between fourteen and sixteen. Where the parents' income is over £160 and under £300, the scholars receive no money grants under fifteen, but £10 a year over fifteen. Whatever the parents' income, all scholars that enter into an agreement to become teachers receive £15 a year.

THE London Teachers' Association has sent to every member of the L.C.C. Education Committee a memorandum stating that the great blot in the whole scheme appears to be the desire to secure candidates for the teaching profession rather than to improve the general education of the children of London.

"This is shown," says the Association, "by (a) the selection of twice as many girls as boys—a great injustice to the latter; and (b) the restrictions on the continuance of the scholarships after fourteen, unless a bond to become teachers has been entered upon." The memorandum continues: "If the scheme is intended to induce girls to enter the teaching profession, it is admirably conceived; but, if it is to help us in our competition with foreign nations, it is obvious that more scholarships should be given to boys than to girls. Moreover, the parents of the poorest, and, in many cases, the most deserving,

scholarship holders will not be able to enter into a bond that their children, then fourteen, shall become teachers at sixteen, and enter a training college at nineteen, for they are often, as stated in the report, 'dock and other labourers, porters, carmen, charwomen, needlewomen, &c.' Whether intended or not, the suggested regulations will have the effect of depriving some of the poorest children of the advantages to which their intelligence and industry fairly entitle them, and which they have hitherto enjoyed."

The Association urges that the question of selecting pupil-teachers should be dealt with quite apart from the ordinary scholarship scheme.

At the suggestion of the Bishop, Lady Londonderry called a meeting of women of Durham (December 1) with the object of collecting funds for the local Church schools. In a long address, she discussed the position of elementary education under the Act of 1902, urged her hearers to band themselves together "and do all in our power to preserve our Church schools," and contended that "the great danger ahead of us is, not whether the children should be taught the tenets of this or that denomination, but whether they should be Christian at all." Lady Londonderry has subscribed £100 to the central fund.

At the annual general meeting of the Association of Principals and Lecturers in Training Colleges under Government inspection (December 19) the following resolution was adopted:—

That the supply and training of teachers is a matter of national importance, and as such should be dealt with by the Board of Education as the Central Authority, which should organize and direct local effort under a comprehensive scheme.

At the winter session of the General Medical Council (November 26) a report was considered from the Education Committee on the proposals for a school certificate submitted to the Council recently by the Board of Education. After discussion it was decided to inform the Board of Education (1) that any well considered plan which would tend to a diminution in the number of examinations in preliminary subjects of education, and to the unification of standard of those which remain, would meet with the hearty approval of the Medical Council. (2) That, if the standard of the examination contemplated in the scheme were such as to be generally accepted for matriculation by the universities, the Council would be prepared to recognize it as qualifying for entrance on a course of professional study. (3) That, pending the general adoption of a uniform system of unification of educational tests, the Council would welcome the establishment under the Board of Education of a central board for the purpose of classifying examinations according to standard and arranging for the mutual recognition of certificates; and, further, that they regard the establishment of such a board as highly desirable from an educational point of view.

THE Conference of Head Masters of Public Schools, at Christ's Hospital, Horsham (December 22-23), approved of the policy of providing that candidates for pupil-teacherships in public elementary schools should receive a substantial portion of their education in public secondary schools. The recommendations made by the Consultative Committee of the Board of Education for establishing a system of school certificates was referred to a committee with instructions to obtain in writing the opinions of every member of the Conference on the various points. The Conference passed, by a large majority, a resolution disagreeing with the proposals of the Syndicate of Cambridge University respecting Greek in the Previous Examination. They expressed a hope that the scheme for qualifying certificates in the examinations for Woolwich and Sandhurst will be so amended as to encourage the study of Latin. A prolonged discussion took place on the advisability of making membership of the cadet corps compulsory on boys in public schools. A few members, while desirous of promoting the spirit of patriotism, were afraid of the spirit of militarism: they thought conscription should not have its first start in the public school. Ultimately the whole subject was referred to a committee. The committee was asked to consider the Board of Education's syllabus on teaching English literature. It was also resolved to make a strong protest to the War Office against Latin being made only optional at Woolwich and Sandhurst examinations, and to ask for an amendment of the qualifying scheme.

A DEPUTATION from the Association of Chambers of Commerce

of the United Kingdom submitted the following resolution on commercial education to Lord Londonderry:—

That, in order to retain our industrial position and to introduce into this country such further industries as may be profitably developed, it is absolutely necessary to establish or acquire public secondary schools of the highest standard, and to provide sufficient inducements by bursaries, exhibitions, scholarships, or otherwise to make the efficient boys stay long enough to take full advantage of the provisions made for higher technical and higher commercial education.

Lord Londonderry in reply said that the establishment of secondary schools lay, not with the Board of Education, but with Local Authorities, on whom pressure should be brought to bear: the Board could ensure direction, but not supply. It was essentially a matter for co-operation between the public and the Government.

THE scholarships at King's School, Canterbury, have been awarded as follows:—Entrance Scholarships: D. H. Cowie (Miss Hardie, Folkestone, and King's School), P. G. E. Chave (Mr. Pearce, Ripley, and King's School), C. F. M. N. Ryan (Mr. Pulling, Kensington Preparatory School), C. J. Galpin (Junior King's School), G. C. W. Harker (Mr. Watson Willis, Eastbourne), for Mathematics, H. Nevill (Rev. R. J. Martin, St. Leonards), C. F. Freeborn (Mr. Jelf, Folkestone, and King's School), J. C. M. Leech (Mr. Faulkner, Purley), H. Parsons (Mr. Olive, Wimbledon, and King's School).—House Scholarships: C. M. Sutton (Mr. Pearce, Ripley), W. S. Barroll (Mr. Wallis, Westgate), A. N. I. Lilly (Mr. Watson Willis, Eastbourne).—Junior Foundation Scholarships: H. Townshend (for Mathematics), E. B. Hosking, A. R. Bellars—all of King's School.—Probationer Foundation Scholarships: D. H. Cowie (Miss Hardie, Folkestone, and King's School), C. F. M. N. Ryan (Mr. Pulling, Kensington Preparatory School), E. B. Nelson (Mr. Reynolds, Southbourne, and King's School), F. L. Goad (Junior King's School), D. A. Fardell (Junior King's School).

DR. FREDERIC ROSE has sent over from Stuttgart another instructive report, on German art-trade schools. Having traced the history of the rise and growth of these schools, he writes:

The general aim of the art-trade schools is briefly the application of art to industry, the endeavour to impart the methods and develop the facilities for the utilization of the graceful and harmonious in Nature in the production of the ordinary practical objects of trade and daily use. To durability and serviceability, the two cardinal principles necessary in the production of goods, are to be wedded grace of form and harmony of colour. The art-trade worker must not be a mere mechanical producer of useful wares, but must imbue his work with the sense of the beautiful drawn from the measure of his own talent and his contemplation and interpretation of the great book of Nature. The art-trade schools stand on a higher artistic level than the combined art-trade and artisans' schools. They stand in closer connexion to pure art, and endeavour to train technical artists (*technische Kunstler*), not art-skilled artisans (*kunstfertige Handwerker*). The art-trade schools also endeavour to give their instruction in the daytime to full-time pupils, whilst the combined art-trade and artisans' schools lay greater stress upon evening instruction.

HAVING explained the organization, curricula, and conduct of several of the schools, Dr. Rose sums up thus:

It is scarcely possible at present to utter a definite expression of opinion upon the relative merits and failings of the German art-trade schools, as many of them are of too recent origin, and others have only lately been reorganized. The movement in favour of art-trade instruction seems to be still in an experimental and tentative stage, and some time must yet elapse before anything like uniformity is attained in the methods of instruction or unanimity arrived at regarding the cardinal principles of art involved in art-trade instruction. Taken as a whole, with some exceptions, the art-trade schools have not attained the high-water mark of efficiency occupied by technical schools. A weak point is the paucity of instruction in workshops and the insufficient equipment and accommodation of those already installed. This has been caused by the lack of the necessary funds and by the failure to grasp the important rôle played by such workshops in art-trade instruction. These defects, however, are being rapidly remedied; the best proof of this being the large sums voted for new buildings and extensions and the considerable annual subsidies granted by Governments and Municipal Authorities for purposes of maintenance. The art-trade products of Germany show much that is desirable and praiseworthy, beside much that is wholly undesirable. But it is beyond reasonable doubt that the production of the former has been influenced by the art-trade schools, and that the production of the latter is due partly to manufacture solely for purposes of profit and partly to the indifference of an

undiscriminating public. However, good taste and superior manufacture, the fruits of the spread of art-trade instruction, are gradually, but surely, prevailing.

WE regret to note the death of the Rev. T. Roach, M.A., who was a contributor to our mathematical pages. Mr. Roach, son of a Gloucestershire parson, was educated at Marlborough and Cambridge, and held masterships at Lincoln, Repton, and Clifton. He took orders, but an infirmity of speech was against his success in the Church. Latterly, he settled in Hampshire, where he came into some note by his defence of the right of way in a lane by which William Rufus's body was brought to Winchester. The County Council took up the case and won it; but next day Mr. Roach had notice to quit from the baffled landlord. He died at Twyford.

ANOTHER ex-schoolmaster, the Rev. J. D. Williams, Vicar of Bottisham, has recently died at Barnwood Asylum at the age of seventy-five. He was an exceptionally brilliant scholar, still remembered by Cambridge men of his time. After an assistant mastership at Sherborne, he became for a short time Head Master of Christ's Hospital, London, then of Christ's College, Brecon. Unfortunately his talents were not fitted to stand the strain of practical life, and for many years he had been in painful seclusion; forgotten by those who still profit from his collaboration in Liddell and Scott's Dictionary.

WE deeply regret to record the premature death of Mrs. Brownrigg, wife of Mr. C. E. Brownrigg, Head Master of Magdalen College School and an esteemed contributor to our columns, after a severe illness of several weeks. "Deep and widespread sympathy," writes the Oxford correspondent of the *Times*, "is felt both in the University and in the city with Mr. Brownrigg, who is well known to both, and who loses thus prematurely one whose bright and happy disposition and devotion to the boys of the school had won her much esteem and warm affection."

Mrs. Brownrigg belonged to a well known Scotch family. She was Adolphine Mary, eldest daughter of the late William Arbuthnot by his marriage in 1855 to Margaret Rosa, daughter of John Campbell of Kilberry, Argyleshire. Mr. Arbuthnot's grandfather was Sir William Arbuthnot, who was Lord Provost of Edinburgh at the time of George IV.'s visit in 1822, and was created a baronet by the King in person. Sir William was of Aberdeenshire descent, and his mother belonged to the ancient Urquharts of Cromarty, who were for many centuries of great prominence in the North. A noted laird of this family had no fewer than twenty-five sons, seven of whom were killed at the battle of Pinkie. His grandson married the heiress of the Setons, of Meldrum, Aberdeenshire, and the descendants of this union now represent the house of Urquhart, the elder branch of Cromarty having died out. It will be remembered that the late Major Urquhart, of Meldrum, was killed in action at the battle of Atbara in 1898, when the estates passed to his sister. The most remarkable of the family, however, was Sir Thomas Urquhart, who took part in the risings in favour of Charles II. after the execution of Charles I. Being taken prisoner by Cromwell, he at once proceeded to show why his life should be spared by publishing an exhaustive account of his lineage, tracing the family descent from Ourqhartos, who married the Queen of the Amazons and was fifth in descent from Noah! After this it is hardly surprising to learn that Sir Thomas showed himself to be 153rd in succession from Adam. This fantastic and eccentric personage, however, achieved genuine distinction by his admirable translation of Rabelais, accomplishing one of the most perfect pieces of work of the kind ever executed. Sir Thomas's death, which took place abroad, was caused by an uncontrollable fit of laughter on hearing of the Restoration in 1660!

UNIVERSITIES.

Oxford. At a meeting of Congregation (November 29) the statute promulgated to exempt candidates for Honours in Mathematics and Natural Science from Greek in Responsions and in the Holy Scripture Examination, and to allow them to substitute French and German, was *non-placeted* by a majority of 36—200 to 164.

(From our own Correspondent.)

Cambridge. As the greatest changes are generally introduced with the least opposition, perhaps no member of the Senate has realized the revolutionary character of the Regulations for the new Diploma in Geography. Put shortly, the examination for the new Geography Special (on

which a candidate who has previously passed the General can proceed to the B.A. degree) becomes the first part of the examination for the Diploma, while the second part deals with more advanced subjects. Candidates who have already passed the first Diploma Examination shall be deemed to have passed the Special, and *vice versa*. Now, suppose a man has passed the General in his fourth term, having previously taken Part I. of the Diploma Examination: he is in the happy position of having nothing to do for the next five terms but wait till in due course of time he takes his B.A. degree. Surely the diploma which does not necessitate residence will compare rather favourably with the B.A. degree.

The Diploma of Public Health and the Tropical Medicine Certificate are other examples of a similar process. Undoubtedly examinations are an evil, and, if they have to be, it is better that they should be in the hands of competent and impartial bodies. In the case of mining studies, a somewhat similar position arises, and a Syndicate has dealt with the matter in a very thorough and satisfactory manner. The Colliery Act of 1903 enables the Secretary of State to issue certificates to candidates who have had three years' practical experience of mining (instead of five, as formerly) provided such persons have spent two years at a college or institution where mining science is taught. A Diploma in Mining Engineering may be obtained by candidates who reach the Honours standard in Chemistry and Geology in the special examination papers on Structures, Heat-Engines, and Electricity. So far the University examinations are utilized. Three months must be spent in practical mining (a very useful way of employing a Long Vacation); and, after the candidate has obtained a certificate of having done this practical work, he has further to qualify in subjects connected with the application of science to mining. We shall not, it is hoped, see Cambridge men any more going to various institutions to learn the elementary principles of mechanical science as applied to mining.

Prof. Woodhead has been agitating for the creation of a Lectureship in Special Pathology. The Professor is nothing if not original: he has obtained almost the whole of the endowment from his friends in Huddersfield, and the name of that town is to be associated with the new lectureship. This excellent example might, with advantage, be followed. Leeds, Halifax, Bradford, Nottingham, Newcastle could all be accommodated with appropriate subjects.

Mr. F. F. Blackman, of St. John's, has been appointed to the vacant Readership in Botany. The gentleman in question knows a good deal about men and music, and has tried to find out several things about pictures and plants. For several years he has been carrying on research work entailing visits to his workshop at short intervals during the day and night. He is probably better known than any other person to the police on night duty in Cambridge. He has plenty of ideas and no enemies.

The Greek discussion has now passed its first stage. The debate was admirably arranged by the Vice-Chancellor, the genial Master of Trinity Hall, whose tact and humour throughout the proceedings kept the ball rolling to the very end. With few exceptions the speeches were disappointing, being generally tirades against Greek as a compulsory subject or panegyrics of the subject from those who defended the *status quo*. For the promoters the honours were shared by the President of Queens' and the Master of Trinity, while two Emmanuel men, Dr. Adam and Dr. Giles, stood out pre-eminently as the ablest exponents of the pro-Greek arguments. Unfortunately, neither side had much to say on the actual proposals of the report to make Greek an optional subject in the Little-Go. Hardly any of the speakers realized that, if Greek departs from the Little-Go, it must of necessity be lost to the General; yet almost all those who spoke in favour of the report used as an argument that the present requirements pressed unduly upon the Honour men in science and mathematics, and would like the relief limited to the cases where the evil is most felt.

Now, suppose the new proposals are carried: it is absolutely certain that Greek will disappear in all the secondary schools which are not of the highest rank, and the poll man will either have to start Greek as a new subject, or, if alternatives are allowed in Cambridge, will have to learn the language for his ordination if he contemplates taking Holy Orders. Doubtless the amended report will put the issues more clearly before the Senate; but at present, if the voting had to be on the report Aye or No, it would be impossible to satisfy anybody. One speaker, who confessed that he was in a quasi-Athanasian position, deplored

the fact that the University was trying to suit the convenience of the schools instead of taking its courage in both hands and laying down what it thought right. Dr. Jackson, with happy phrasing, described the additional subjects of the Little-Go as the vermiform appendix; while another speaker, in reply to an insinuation that the report reeked of commercialism, remarked that he had no objection to commercial men, but had grave objections to the commercial mind, especially when animating a learned body. Paper war will begin next term.

The politicians have been busy. Sir John Gorst has been solemnly given notice to quit by a majority of 46 to 4, but is resolved to fight, being persuaded that he is a victim to those wicked tariff reformers. Unfortunately those who were the leading parties in the movement are known to be free traders. If a Cabinet Minister is willing to accept the invitation to stand for the University, we shall see a pretty fight between a member of the Government and a nominal supporter of the same, with a possible *tertium quid* in the shape of a Radical candidate.

The football match ended, as was foreshadowed in these notes, in a victory for Cambridge, which shows the immorality of betting in general, and of laying the odds of 3 to 1 on the worse team in particular.

REGULATIONS and courses of instruction in military London. subjects during the coming session have been issued. Colonel H. A. Sawyer, P.S.C., will commence courses on (1) Military History and Strategy and (2) Military Topography, January 16; and a course on (3) Military Engineering on January 19. Lt.-Col. F. N. Maude, P.S.C., late R.E., will commence two courses on (1) Military Law and Administration, on January 18, and (2) Tactics, on January 19. Each course will consist of twenty lectures. All the courses will be delivered at the University, South Kensington.

It will be remembered that last spring Trinity Dublin. College, Dublin, offered its *ad eundem* degrees to women who have passed examinations at Cambridge and Oxford which would have entitled them to degrees had they been admitted to membership of their University. In connexion with this, the Clothworkers' Company, which for more than twenty years has generously given a scholarship to each of the women's colleges at Oxford and Cambridge, has further shown its interest in the cause of education by offering an honorarium of £10 to each of its women scholars past and present, to enable them to defray the cost of taking the Trinity College, Dublin, degrees. It is understood that the offer of the Trinity degrees to women who have not studied in Dublin will not remain open after 1907.

Trinity College has also passed a decree establishing scholarships for women similar in all material respects to the foundation scholarships which, by the statutes of the college, are tenable only by men: the value is £30 a year for five years. It has also passed a decree establishing six entrance scholarships of £20 a year for two years, and six of £15 a year for two years, to be awarded to male and female students who shall have been most successful in the Senior and Middle Grade Examinations of the Board of Intermediate Education in Ireland—a very important reform, introducing for the first time the principle of co-ordination between university and secondary education in Ireland.

CURRENT EVENTS.

THE Half-yearly General Meeting of the members of the College of Preceptors will take place on Saturday, January 28.

THE first of a course of twelve lectures to teachers on "The Psychological and Logical Foundations of Intellectual Education," by W. E. Johnson, M.A., Sidgwick Lecturer on Moral Science in the University of Cambridge, will be delivered at the College of Preceptors on February 9.

PUBLIC Newmarch Lectures, on "Vital Statistics," will be delivered by Mr. Yule at University College, London, on January 20 and 27, at 5.30 p.m.

THE Incorporated Association of Head Masters will hold their annual general meeting at the Guildhall (London) on

January 11, 12; the Incorporated Association of Masters in Secondary Schools, at Mercers' School, Holborn, W.C., on January 4, 5; the Private Schools' Association (Incorporated), at the College of Preceptors (probably), on March 3, 4; the Incorporated Association of Assistant Mistresses in Public Secondary Schools, at Dr. Williams's Library, Gordon Square, W.C., on January 14; and the Public Schools Science Masters' Association, at Westminster School, on January 14.

* * *

THE third annual meeting of the North of England Education Conference will be held in St. George's Hall, Liverpool, on January 6 and 7.

The subjects of discussion on January 6 will be: Leaving Certificates, Manual Training and its place in an Educational Curriculum, the Teaching of Geography, and Child-Study; on January 7, Scholarships (with special reference to the co-ordination of Education), the Teaching of Domestic Science, School Games (with special reference to Day Schools), and the Teaching of English. An exhibition of geographical appliances, prepared and lent by the Geographical Association, will be open in the Hall of the Central Technical School.

* * *

A CONFERENCE of the Incorporated Society of Musicians will be held in Manchester, January 2-7. Addresses of special interest and practical value are expected from Sir F. Bridge, Mr. W. A. Cruickshank, Mus.B. Oxon., Mr. James Dawber, Mus.B. Cantab., and others.

* * *

THE National Diploma Examination in Agriculture will be held at the Yorkshire College, Leeds, in the week commencing May 8, and the Dairying Examination will commence at Reading on September 18, and at Kilmarnock on September 25. Entries must be made by March 31 and August 31 respectively on forms obtainable from the Royal Agricultural Society, 13 Hanover Square, London, W., or the Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh.

* * *

THE Oxford University Dramatic Society will produce "The Clouds" of Aristophanes in March. Evening performances, March 1, 2, 3, 4, 6, 7; *matinées*, March 2, 4, and 6. The music has been specially composed by Sir Hubert Parry, Bart.



THE Nobel Prizes (140,858 kroner, about £7,825, each) have been awarded as follows:—
Honours. for Physics, to Lord Rayleigh; for Chemistry, to Sir William Ramsay, K.C.B., Professor of Chemistry at University College, London; for Medicine and Physiology, to M. Pavloff, Professor at the Military Academy of Medicine, St. Petersburg; for Literature, to M. Mistral, the Provençal poet, and Don José Echegaray, the Spanish dramatist, jointly. The Nobel Peace Prize has been awarded to the Institute of International Law.

* * *

THE University of Glasgow has conferred the honorary degree of LL.D. on Princess Louise, Duchess of Argyll; Lord Ailsa; Dr. James Thomson Bottomley, F.R.S., Arnott and Thomson Demonstrator in Experimental Physics in the University for twenty-four years from 1875; Dr. James Donaldson, Principal of the University of St. Andrews; Admiral Sir John Charles Dalrymple-Hay, F.R.S.; the Very Rev. Dr. John Marshall Lang, Principal of the University of Aberdeen; Mr. Guglielmo Marconi; Mr. Andrew Graham Murray, M.P., Secretary for Scotland; the Hon. Charles A. Parsons, F.R.S.; and Sir John Ure Primrose, Lord Provost of Glasgow.

* * *

THE University of Dublin has conferred the honorary degree of M.D. on Sir Frederick Treves; and the honorary degree of D.Sc. on Major Ronald Ross.

Endowments and Benefactions.

THE University of Chicago has received 2,500,000 dollars from its munificent benefactor Mr. J. D. Rockefeller, to found a School of Engineering. Mr. Rockefeller will also provide buildings.

* * *

THE late Mr. G. T. B. Wigan bequeathed to the University of Cambridge £9,000, the interest on which is to be devoted to the promotion of scientific education and research.

* * *

A SCHOLARSHIP of £80, tenable for three years at Christ's College, Cambridge, by a student of the McGill University, Montreal, has been provided by anonymous donors.

* * *

THE Salters' Company has given £250 to the Institute of Medical Sciences Fund of the University of London.

* * *

MR. RICHARD PEYTON has given £10,000 to endow a Chair of Music in the University of Birmingham; and Sir John Holder, a member of the University Council, has offered £1,000 towards the purposes of the Chair.

* * *

UNDER the will of the late Mr. Francis McClean, F.R.S., the University of Birmingham obtains £5,000 for the Department of Physical Science.

* * *

SIR DONALD CURRIE has given £25,000 to the University of Edinburgh, mainly for the remuneration of a staff of lecturers. The University appeal for funds has brought in some £15,000 more for laboratories and research.

* * *

AN anonymous donor has offered £5,000 to Trinity College, Dublin, towards the new scheme of entrance exhibitions.

* * *

UNDER the will of the late Mr. William Knox, grain importer, Aberdeen, the University of Aberdeen obtains £1,500 for Divinity bursaries, £1,500 for Medical bursaries, and £2,000 for a scholarship in Arts; and the Aberdeen Free Church College obtains £4,000 for Theological scholarships. The bequests are subject to a life rent.

* * *

PROF. GAILLOWAY has presented to Cardiff University College a valuable collection of lantern slides, diagrams, and apparatus for the use of the Mining Department.

* * *

AN appeal, headed by the Warden (the Bishop of Rochester), is made for £13,000 to extend and complete the buildings of Lady Margaret Hall, Oxford. Contributions to Mrs. Arnold Toynbee, 10 Norham Gardens, Oxford, Hon. Treasurer.

* * *

MR. CARNEGIE has founded two scholarships entitling the holders to free tuition for three years at the Guildhall School of Music. Mr. Carnegie is an honorary freeman of the Musicians' Company.

* * *

MESSRS. WERNHER, BEIT, & Co. have contributed £150 to the fund of the London Chamber of Commerce for the promotion of educational work.

* * *

THE Mill Hill School Centenary subscription list has been opened with an anonymous gift of £10,000.

* * *

EARL COWPER, Chairman of the governing body of Hertford Grammar School, proposes to endow the school with a sum yielding £120 a year.

Scholarships
and Prizes.

JESUS COLLEGE, OXFORD, offers various scholarships and exhibitions, without restriction as to age. Examination begins

January 17. Particulars from the Senior Tutor.

* * *

THE King of Siam has contributed £100 to the fund for Scholarships in Oriental Literature intended to commemorate the work of the late Sir Edwin Arnold.

Appointments
and Vacancies.

MR. JOHN STRUTHERS, M.A., First Assistant Secretary in the Scotch Education Department, succeeds Sir Henry Craik; and Mr. George Todd, M.A., takes Mr. Struthers's place as Head of the Department in Edinburgh.

* * *

DR. NORMAN MOORE, M.D., F.R.C.P., Chairman of the Board of Advanced Medical Studies of the University of London, and representative of the Royal College of Physicians on the General Medical Council, has been appointed a member of the Consultative Committee of the Board of Education, in room of Dr. Windle, who has resigned his membership on appointment as President of Queen's College, Cork.

* * *

MR. THOMAS CASE, Waynflete Professor of Moral and Metaphysical Philosophy, Oxford, and Fellow of Magdalen, has been elected President of Corpus Christi College, in succession to the late Dr. Fowler.

* * *

PROF. H. S. HELE-SHAW, LL.D., F.R.S., of Liverpool University, has accepted the post of Principal of the Transvaal Technical Institute and Organizer of Technical Education in the Transvaal for one year. This has involved his resignation of the Professorship of Engineering which he has held for nearly twenty years.

* * *

PROF. ARTHUR ROBINSON, of King's College, London, has been appointed to the Chair of Anatomy in the University of Birmingham, in succession to Prof. Windle.

* * *

SIR EDWARD ELGAR, Mus.D., has accepted the Professorship of Music in the University of Birmingham.

* * *

MR. J. CHURTON COLLINS, M.A., has been appointed Professor of English Literature in the University of Birmingham.

* * *

MR. JOHN WARDELL, M.A., Reader in History, has been appointed Professor of Modern History, in Trinity College, Dublin, in succession to Prof. Bury.

* * *

MR. EMIL ALPHONSE WERNER, Assistant to the Professor of Chemistry, has been appointed to the new Professorship of Applied Chemistry in Trinity College, Dublin.

* * *

MR. J. H. HOPKINSON, Lecturer in Greek in Birmingham University, has been appointed Warden of the Hulme Hall in the University of Manchester.

* * *

MRS. JESSIE WHITE, D.Sc. Lond., has resigned the Vice-Principalship and Head Mistress-ship of the Home and Colonial School Society's Training College and High School for Girls, Highbury Hill House, and will retire at the close of the Spring term.

* * *

MISS MARY MORTON has been appointed head of the Training Department for Secondary Teachers in Bedford College for Women.

MR. D. A. WYNNE-WILLSON, M.A. Oxon., modern language master, St. Edward's School, Oxford, has been appointed assistant master at Gresham's School, Norfolk.

* * *

MR. L. W. R. MERMAGEN, Stevenage School, has been appointed assistant master in Aylesbury Grammar School.

* * *

MR. ALBERT EDWARD PEATFIELD, B.Sc., goes from High Wycombe to the High School, South Shore, Blackpool.

Literary
Items.

APART from general matter, the *Geographical Teacher* for October gives a compact account of the Eighth International Geographic Congress at New York (September 13-14), with pointed abstracts of papers, a list of recent geographical works (supplementary to that given in Dr. H. R. Mill's "Hints to Teachers"), an outline of the geographical courses in the universities and university colleges of the United Kingdom in the current session, and a continuation of "A Regional Bibliography of the United Kingdom." Most useful for reference.

* * *

MESSRS. LONGMANS promise immediately a new edition of the recent Report of the Director of Education in the Transvaal and Orange River Colony for November, 1900, to February, 1904.

* * *

THE Gresham Publishing Company announce a comprehensive work on "Modern Electric Practice" in six volumes, profusely illustrated, under the editorship of Magnus Maclean, M.A., D.Sc., Professor of Electrical Engineering in the Glasgow and West of Scotland Technical College. There will be some three dozen contributors, experts in special departments.

* * *

THE Christmas number of *Occasional Papers* is a worthy effort to foster the taste for a higher class of periodical literature. Mr. A. Acland Allen, L.C.C., shows how London deals with "The Care of Feeble-minded Children"; and a fine reproduction of the Madonna della Sedia of Raphael is given as a supplement.

* * *

THE *Educational Review* (New York) of December contains the most interesting oration delivered by President Butler (October 31), in commemoration of the 150th anniversary of the foundation of King's College, now Columbia University.

* * *

THE *Independent Review* for January has three important articles on home policy—"Finance and the Drink Traffic," "The Unemployed," and "The Army and the People"—with the usual complement of various interests. "The Ideas of Anatole France" should attract literary students.

* * *

DR. JOACHIM, with the assistance of Prof. Andreas Moser (one of his former pupils), is preparing an account of his method of teaching and its results, in three volumes. The first volume will be published presently by Mr. A. Lengnick, of Berners Street.

* * *

A SPECIAL feature of interest in Messrs. Williams & Norgate's "International Book Circular, 139"—an extremely helpful list of current foreign literature—is a series of twenty portraits of contemporary foreign chemists of eminence, with an article by M. O. Forster on the more recent advances they have made in the study of the subject.

* * *

THE Westminster Play, the "Andria" of Terence, was performed with marked success.

TEACHERS' REGISTRATION COUNCIL.

IMPORTANT NOTICE.

THE attention of teachers in secondary schools is specially called to the impending expiration of the "grace" clauses of the Regulations for Registration in Column B.

Applications under Regulation 5 (2) *b* (ten years' service clause) must be received at the Council's offices, 49 and 50 Parliament Street, S.W., on or before March 5, 1905.

Applications under Regulation 4, under which clause training is not obligatory, must be received on or before March 5, 1906.

Copies of the Regulations and forms to be filled in may be obtained on application to the Registrar.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

THE DEFINITION OF "ANGLE."

To the Editor of "The Educational Times."

SIR,—Whilst thanking your reviewer for his notice of my "Elementary Pure Geometry," may I point out that the following statement may be misleading to some readers, viz.:—"The first definition of an angle as a *figure* ignores the idea of an angle as formed by two lines one of which revolves, an idea which is not only nearer the true connotation, but has been found practically to give rise to less confusion in the beginner's mind than any other suggestion."

This implies that *figure* is one suggestion which has been tried but found wanting. Now, as a matter of fact, the "rotation"

idea of angle replaced "inclination" or "opening," but *not* "figure," which is quite new (first used, I believe, by Messrs. Godfrey and Siddons, though I had adopted it independently). And whilst a "rotation" angle is meaningless without the figure of two lines, an angle of two lines (*e.g.*, two edges of a page) can exist as a figure without rotation. Figure is thus fundamental to the concept of an angle, and is, therefore, the proper definition. The conception of *magnitude* in the figure of an angle is easily supplied by folding, and by use of the protractor.

The definition completes the series of rectilinear figures thus: one line, straight line; two lines, angle; three, triangle; and so on.

The difficulty of defining "angle" would never have existed had we had originally a separate name—*e.g.*, "gonth" for the concept of angular magnitude, as we have "length" for linear magnitude. Unfortunately, the earliest definitions—"inclination," &c.—of angle as magnitude have obscured the question, and the rotation definition belongs to the same class as these. No one wishes to define "straight line" as length.—I am, Sir, &c.

E. BUDDEN.

[The definition of an angle as a figure is, as Mr. Budden says, new; therefore, I never intended that it had already caused confusion, which, however, I anticipated that it would cause. Whether it will or not is a matter of opinion. Let the external examiner of Mr. Budden's beginners decide.—THE REVIEWER.]

THE HERTFORDSHIRE BIBLICAL SYLLABUS.

To the Editor of "The Educational Times."

SIR,—I am very glad that Dr. Hayward should find himself in agreement with us. It is perhaps the more satisfactory as I had never seen his book, nor (I believe) had Dr. Whitehouse. If others hold these views of Biblical education, possibly we may have it put on wiser lines in many parts of England.—I am, Sir, &c.

T. C. FRY.

Berkhamsted School, Herts.

November 30, 1904.

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A SYSTEM OF SCHOOL CERTIFICATES.

VIEWS OF THE COLLEGE OF PRECEPTORS.

IN our August number last year (page 326) we mentioned that the Board of Education had issued a Report, presented to them by the Consultative Committee, containing proposals for a system of school certificates, and that they had circulated it to the English universities, to professional bodies, and to individuals interested, with a request for an expression of views upon it; and we outlined both the history of the inquiry and the proposals of the Consultative Committee. We now print the remarks that the Council of the College of Preceptors have addressed to the Board of Education in response to their invitation; and, as these remarks naturally follow the several clauses of the Proposals, we preface them with the text of the Proposals in full for the convenience of our readers.

PROPOSALS OF THE CONSULTATIVE COMMITTEE.

The Consultative Committee are of opinion:—

(1) That, with the object of diminishing the multiplicity of examinations affecting secondary schools, and of providing a test of adequate general education which may be widely accepted, a general system of school certificates is desirable.

The well-known term "Leaving Certificate" has been purposely avoided because it is to some extent misleading and is not unfrequently misunderstood.

(2) That it is not desirable that examinations for such certificates should be conducted by means of papers set for the whole country from a single central organization.

This clause must be read together with clause (6). It will be found that it is not the intention of these proposals to ignore the influence of the State in the supervision of a general system of examinations. On the other hand, it is important to prevent the evils which would almost certainly arise from the State having the sole responsibility in the matter. The desirability of bringing the examining body into closer relation with the teacher being recognised, it is obvious that, in dealing with a population of more than 30,000,000 and a large number and great variety of schools, this object can only be effectively attained by the establishment of more than one examining body. The success of the Scottish and Welsh systems seems to be largely due to the limited number of schools with which they have to deal.

(3) That such examinations should be controlled by a recognized examining body, which should be either (1) a University, or (2) a combination of Universities, or (3) an Examination Board representative of a University or Universities and of the Local Authorities which are prepared to co-operate with them. It is desirable that, whatever the examining body may be, teachers of schools should, where possible, be represented, and with regard to (3), that every such Board should contain a large academic element.

The proposal to form in some cases Boards representing local authorities and teachers in the schools as well as Universities may afford an opportunity for making an important new departure. Those local authorities especially which aid the schools and may perhaps pay the examination fees may be glad to be associated with a neighbouring University. There is further a growing body of public opinion in favour of associating the teachers in the schools with duties of this kind.

No general rule can be laid down requiring a school to be examined by a particular examining body. It may often be desirable that a school should be examined by the University or Board of the district in which it is situated. On the other hand a school may prefer to preserve or to create a connexion with one of the Universities of Oxford, Cambridge or London. It is recognized that it would not be desirable, if it were possible, to disregard the non-local character of these Universities, or the position which their examinations occupy all over the country. The proposals are based on the assumption that it will ultimately be best for the secondary schools which are maintained or largely aided by local authorities to look to provincial examining bodies for the organization of their examinations, and it is not improbable that local authorities may prefer their doing so; but in any case there will be a period of transition during which the new system and the existing University examinations will run side by side for all classes of schools, and the higher secondary schools will doubtless always retain complete liberty in the choice of their examining body.

(4) That recognition of these examining bodies should mean recognition by the Board of Education, acting on the advice of the Consultative Committee.

(5) That the following conditions should be required from schools which present candidates for school certificates:—

(a) Periodical Inspection. Whether this inspection be conducted by officers of the Board of Education, or by a University or other organization recognized under Section 3 of the Board of Education Act, 1899, the report of the inspection should be communicated to the examining body.

(b) The communication of the course of studies pursued in the school to the examining body.

That an examining body should be at liberty to decline to examine a school if the result of the inspection has not been, in their opinion, satisfactory; or if the course of studies is such as they are not able to approve.

It is considered that in this connexion inspection and examination should be treated as complementary one to the other. Inspection is required, in the first place, to enable the examining body to judge whether a school is fitted to be admitted to the benefits of the system; but it is also required to enable the examiners to understand the aims and characters of the different schools, and so, on the one hand, to prevent the examination from becoming mechanical and rigid, and, on the other, to check any tendency in the school to direct its efforts too exclusively to success in the examination.

(6) That a Central Board should be established for England (excluding, for the present, Wales and Monmouth), consisting of representatives from the Board of Education and from the different examining bodies, whose duty should be to co-ordinate and control the standards of these examinations, to secure the interchangeability of certificates, and to consider and as far as possible to adjust the relations of the examining bodies and their spheres of external action.

Although absolute identity of standard between examinations conducted by different bodies and in different places may be an impossible ideal, practical equivalence can probably be secured. Further, more than one combination of subjects may be held to represent a good general education. It will be the duty of the Central Board to see that a sufficient minimum standard is maintained in each subject, so that certificates including these subjects, wherever given, may possess a generally recognized and interchangeable value, and further, that these certificates represent in each case a good general education.

(7) That the Board of Education should constitute this Central Board, as soon as, in their opinion, a sufficient number of recognised examining bodies have signified their willingness to be represented thereupon, and should take all steps that may be necessary to procure the acceptance of the certificates by the professional bodies.

(8) That, since an examination held with the co-operation of the school in which a scholar has been taught is more likely to lead to a just estimate of the knowledge which he possesses than one held entirely by an outside body, the examination should be conducted in each school by external and internal examiners, representing respectively the examining body and the school staff.

(9) That the course of the work pursued by a scholar during his school career should be recorded and reported on by his teachers, and that this school record and report should be available for reference in deciding his fitness or unfitness to obtain a certificate.

The suggestion here is that an examiner, in any case in which he desires to do so, should be able to judge of the character of a candidate's school career. The school records and reports need not be of uniform pattern. What is required is that such materials shall be accessible as will enable an examiner to judge whether the scholar's school career has been satisfactory or not. These materials will include, at the least, the curriculum of all the classes which a candidate has attended, a note of the time he spent in each, and periodical reports of his industry, regularity, and progress.

(10) That the head master or head mistress of the school should certify that the candidate has received instruction during the necessary period, and is, in his or her opinion, fit to enter for the examination.

(11) That the external examiner or examiners should have control of the examination, and should have a veto on the passing of any candidate.

(12) That the papers should be set by the external examiner after consultation with the internal examiner.

This consultation does not necessarily involve a series of personal interviews previous to the examination. Full information as to the courses of study pursued by the candidate would in the first instance be supplied to the examining body for the information of the external examiner. The books read, whether in English, classical, or foreign literature, and the courses of history or geography studied, the practical work done, &c., would thus be reported. The internal examiner, also, would suggest series of questions, or indicate points upon which, in his opinion, questions should be set; and in general the two examiners would correspond on the subject-matter of the examination paper. The paper should, however, be finally made up by the external examiner on his own responsibility.

(13) That the allocation of work in reading and marking papers should be determined by the examining body, provided that papers which are near the minimum pass mark should be considered by both examiners.

(14) That oral and practical examinations should be conducted by the external and internal examiners acting in concert, who

should, subject to section (11), jointly assess the mark for each candidate in this part of any examination.

(15) That in language examinations no special books should be prescribed, but that passages should be included from the books used in the school as well as unseen passages. That an oral examination should always be held in the case of modern languages.

(16) That there should be a senior certificate for pupils who have received not less than four years' instruction in a school or schools accepted for examination under section (5).

That there should be a junior certificate limited to pupils under sixteen years of age who have received not less than three years' instruction in a school or schools accepted for examination under section (5).

With reference to the number of years of instruction required, it will be desirable at first to give some latitude to the Central Board.

(17) That no certificates for honours or marks for special distinction should be given, but that it should be open to the examiners to recommend the award of scholarships within a school or group of schools, when called upon to do so.

(18) That scholars who are in a school which, in the opinion of the Board of Education, is unable to conform to these regulations might be allowed to enter for the examinations under special regulations approved by the Central Board.

REMARKS OF THE COUNCIL OF THE COLLEGE

ON THE PROPOSALS OF THE CONSULTATIVE COMMITTEE.

The Council have carefully considered the proposals of the Consultative Committee for a System of School Certificates, a copy of which has been sent to the Council, together with a copy of a letter from the Secretary of the Consultative Committee and a circular letter from the Secretary of the Board of Education inviting the expression of the views of the College on these proposals, and beg respectfully to submit the following remarks:—

I. The Council observe that the function of the examinations dealt with is twofold—(1) to test the efficiency of schools, and (2) to furnish individual pupils with certificates which shall be accepted by the Recognizing Bodies* and by the public.

Looked at as a means of appraising the teaching and organization of a school, the scheme outlined in the constructive Proposals, with some modifications suggested by practical considerations, seems to the Council worthy of trial as an experiment in school examinations. But until the existing general examinations† have been shown to be insufficient or unsatisfactory and incapable of adaptation to new conditions, there appears to be no reason why these examinations should be superseded by a new scheme.

With regard to the second function, the Council are of opinion that there are serious objections to the issue of certificates under the proposed system.

II. The Council offer the following remarks on the several clauses of the proposals:—

(1) This clause suggests the consideration of the following points:—(a) the position of the existing examinations, (b) the difficulty caused by multiplicity of examinations, and (c) the question whether the establishment of the proposed system is likely to effect a reduction in the number of examinations.

(a) The four most widely used agencies for testing proficiency in schools are the examinations held by the Oxford and Cambridge Joint Board, and the Local Examinations conducted by the Oxford Delegacy, by the Cambridge Syndicate, and by the College of Preceptors. Taken together, these may fairly be said to form a system which provides for the whole field of secondary education. Difficulties arise in certain cases: for example, when a boy in the middle of a school whose sixth form works for the Joint Board Higher Certificates desires, at the age of sixteen or seventeen, to qualify for entrance to the medical profession, or for a clerkship in a bank, or for the lower grades of the Civil Service. But there is little or no reason to think that the majority of teachers are so dissatisfied with the above mentioned examinations as to wish to change them for a totally different system.

It should be mentioned that the present system is not one that has been imposed on schools by authority, but that it is a natural growth arising out of the needs of teachers, of pupils and their

* Bodies which control access to professional study or to employment, and which recognize the passing of certain examinations as evidence of general education sufficient for their purposes—the Board of Education, the General Medical Council, the Law Society, the Pharmaceutical Society, Banking Companies, &c.

† The examination of schools conducted by the Oxford and Cambridge Joint Board, by the Oxford Delegacy, by the Cambridge Syndicate, and by the College of Preceptors.

parents, and of the public at large. What was originally aimed at in these external examinations was (1) for the head of the school an opportunity of placing on record the results of efficient teaching, (2) for the parents of the pupils an impartial test of their children's progress, and (3) for the pupils themselves a healthy stimulus to exertion. After a time the certificates of the several Examining Boards were accepted by the public and by professional bodies as affording trustworthy evidence of attainment, and so they came to be used as Leaving Certificates.

The Scheme of Local Examinations instituted by the College of Preceptors was, from the first, intended to apply not to individual pupils, but to whole classes in a school—to afford a test of general proficiency not only at the end of a pupil's school career, but at various stages of that career, beginning with a time when it was judged that his work could be fairly subjected to a written test, and closing with the completion of the ordinary school course. As might be expected in a scheme framed by an association of teachers, it possesses features which make it peculiarly serviceable to schools. Among these may be mentioned the practice of furnishing to principals of schools complete statements of the marks awarded to their pupils, the provision of written reports on the work of whole classes, and the permission to schools to offer for examination the books in Scripture history, English literature, Latin and Greek, the periods in English history, and the special areas in geography, included in their ordinary schemes of study. The various Certificate Examinations are freely used as school examinations; whole forms are sent in, and reports from the examiners are given. Thus the examinations serve not only to give Certificates to those who deserve them, but to arrange pupils in order of merit for purposes of promotion, and to give a useful estimate of the work of a school.

(b) In the letter of the Secretary of the Consultative Committee reference is made to the "grave inconvenience and waste of time caused by the multiplicity of examinations for entrance into professions." For schools which make a practice of preparing their pupils for one or other of the four great Certificate Examinations—and the majority of secondary schools do so—the multiplicity complained of can hardly be said to exist. The work of the school is arranged with reference to the examination chosen, which, in its turn, is modelled so as to suit the requirements of the various types of schools which submit their pupils to the test, and the Recognizing Bodies mostly accept Certificates granted on the results of these examinations. Whatever difficulty exists appears to arise mainly from the diversity of requirements of certain recognizing bodies, and the Council consider that the extent of this difficulty has been somewhat exaggerated, and can be met by arrangements suggested in Section 6.

(c) The subjects prescribed by the four Recognizing Bodies* which collectively deal with the largest number of candidates are English, Arithmetic, Algebra, Geometry, Latin, and either Greek or a Modern Foreign Language. These subjects form part of the curriculum of the majority of secondary schools; but, so long as they are insisted on, the Proposals now under consideration will not assist pupils in schools which do not teach all the above subjects to satisfy the requirements of the bodies concerned, and the existing examinations must still be made use of. Another fact which must be taken into account is that, while large numbers of pupils, who do not proceed to professional studies, qualify for admission while they are at school, a large proportion of those who actually enter the professions do not qualify till long after they have left school. It would be difficult to meet the case of such persons otherwise than by the existing examinations.

It will be seen from the above considerations that the proposed system does not fully provide for existing conditions, and that it is not likely to effect any great reduction in the number of examinations.

The Council venture here to offer the suggestion that a remedy for any evils which may arise from diversity of schemes of examination or of the requirements of the Recognizing Bodies is to be sought, not in the addition of new examinations to the list of those already in existence, but rather in the periodical conference of the Examining Boards with each other and with other bodies interested in the matter. For this purpose they would welcome the establishment of a Conference Board consisting of representatives of the Board of Education, of the Examining Boards, of the Recognizing Bodies, and of Associations of Teachers.

(2) Most school subjects lend themselves readily to papers emanating from central organizations. Such organizations are

able to command the services of competent examiners, and to secure efficient revision of the papers. At present, schools are able to choose among Examining Bodies, all working on a large scale, and the Council are of opinion that this is better than the supersession of the present system either by a single State Examination or by a separate organization for the examination of each school.

(3) The Council approve, generally, the proposed constitution of the Examining Bodies, but they would strongly urge that the position of the College of Preceptors as a Chartered Corporation concerned with Secondary Education, and the work* that it has carried on for more than fifty years, entitle that body to be included as an alternative constituent of the Examining Bodies named in this clause, and they trust that the College may be allowed to take part in any scheme of examination that may commend itself to the Board of Education.

[The Council of the College of Preceptors, which controls the examinations conducted by that body, has always consisted, with few exceptions, of teachers or ex-teachers of schools, both public and private, and in appointing Examiners the Council generally insist on experience in school teaching as a necessary qualification.]

(5) (a) The Council recognize very fully the advantages of inspection by a sufficient staff of competent Inspectors; but they fear that the requirement of periodical inspection (in addition to examination) would weigh heavily on private and proprietary schools, as it would presumably involve considerable expense to the schools if the burden were laid upon them. It appears that gratuitous inspection is likely, in the immediate future, to be limited to schools eligible for grants under the new Regulations for Secondary Schools, which expressly exclude private and proprietary schools.

As to the concluding paragraph of (5), it seems to the Council that individual pupils through exceptional industry or intelligence might attain to the standard prescribed by the Recognizing Bodies, even if the school as a whole fell short of the requirements of the Inspecting Body, and it does not seem desirable that such pupils should be debarred from submitting themselves to the examination test. According to the Proposals provision for such pupils is possible only under exceptional conditions (Section 18).

(6) This proposal appears to the Council to be an excellent one in intention; but, in view of the number and diversity of constitution of the Examining Boards, and of the arrangements contemplated in Clauses 8, 9, 12, 13, and 14, the Council do not see how it will be possible to secure a reasonable amount of uniformity of standard.

The Council would suggest that the Central Board should include representatives of associations of teachers and of the Recognizing Bodies.

(8), (12), (13), (14) While recognizing the importance of adapting examinations to the peculiarities of the schools examined, the Council would point out several difficulties connected with the Proposals.

(i.) It is doubtful how far, under the conditions of English education, a Certificate in the award of which the teacher has a share would command the confidence of the public.

(ii.) The composition and printing of special papers for each school would involve considerable expense, far beyond what private schools and many endowed schools could bear.

(iii.) It is comparatively easy to draw the line between success and failure when an examiner or a board of awarders have before them a large number of sets of answers to identical papers. The Proposals throw this responsibility on a single person with a very limited number of sets of answers before him; and with the collaboration of teachers whose advice, whether in favour of their pupils or against them, can scarcely be expected to be wholly impartial.

It may interest the Board of Education to know that more than fifty years ago the College of Preceptors carried on for a few years examinations of schools on a plan which in its essential features bore considerable resemblance to the scheme now brought forward by the Consultative Committee.† It is to be observed.

* The College of Preceptors has been the pioneer in the professional training and examination of teachers in secondary schools, in efforts to secure the registration of teachers, and in the examination of pupils in schools. During the past ten years the College has examined 5,598 teachers and 154,422 pupils. Of the latter 11,021 entered for the Senior Grade, 50,494 for the Junior, 65,237 for the Third Class, and 27,670 for the Lower Forms Examination.

† The following are extracts from the Report of the Examination Committee of the College of Preceptors, published in *The Educational Times* for November, 1850:—
"II. (2) That the Examinations be conducted chiefly by the Principal of the School or his own Assistant Master (unless he desire the contrary), the College

* The General Medical Council, the Royal College of Veterinary Surgeons, the Pharmaceutical Society, and the Institute of Chemistry.

however, that the Council of that day do not appear to have contemplated the use of the Certificates granted on the results of these examinations as passports to professional study or employment. The scheme was superseded by the existing plan of examination by identical papers. Some years later the Universities of Oxford and Cambridge decided to take part in the examination of pupils of schools, and it is perhaps not without significance that they chose not the original plan that had been tried and discarded by the College of Preceptors, but the later method of examination by identical papers.

(9), (10), (11) While the Council approve generally these proposals in connexion with the testing of the work of a school as a whole, they are of opinion that, if a satisfactory record of conduct and progress during the school career is to be allowed to compensate for deficiency under the examination test, the value of the Certificate will be obscured for the purposes of the Recognizing Bodies and of the public.* On the other hand, it does not seem reasonable that misconduct, in the school sense, should deprive a pupil of whatever merit attaches to proved intellectual attainment. In this connexion, they would point out that the case of entry on professional study differs somewhat from the procuring of employment.† In the latter case a prospective employer would, of course, insist on satisfactory evidence of good character and of other qualities which seemed to him desirable.

(10) would be likely to lead to much dissatisfaction on the part of teachers. A teacher who had certified to the fitness of a pupil to enter for the examination could hardly be expected to acquiesce in an unfavourable verdict.

(15) In the Examinations of the College of Preceptors no books have at any time been prescribed in modern foreign languages, and for many years provision has been made for oral examination in these languages. With regard to the proposed supersession of prescribed books, the Council would point out that it might possibly have an injurious effect on the systematic reading of classical works in schools.

(16) In this proposal the idea of a Leaving Certificate is evidently implied, and the limitation of age for the lower grade, which has been practically done away with at the University Local Examinations (except in the award of Honours), would, the Committee consider, prove impracticable, if a respectable standard is to be maintained.

The coexistence of two separate Certificates for pupils of different ages should involve the construction of two separate curricula in a given school, which would involve great practical difficulties.

(17) The Council think it desirable that special proficiency in the Examination as a whole, as well as in individual subjects, should receive recognition in accordance with the present practice of Examining Boards. Such recognition affords a valuable stimulus to exertion on the part of the pupils, and is also useful in assisting employers in the selection of applicants for employment. Without some such stimulus there is danger that the work of pupils of ability may fall to a mere "pass" level.

THE MARY DACHELOR TRAINING COLLEGE (Camberwell) for secondary teachers records a very successful year. Four students of the Junior (or academical) Division, who took their B.A. (Lond.) in October, two of them in the First Class, now enter the Senior (or pedagogical) Division, which is largely composed of university graduates, and which carried off last July three out of the eight First Classes in educational theory awarded by the Cambridge Training Syndicate for their Teaching Diploma.

Examiners adding such questions and exercises, and taking such steps as they consider requisite to ensure a *bona fide* examination, and to discountenance any attempt at *crum*."

"III. . . . In order that the particular views of Teachers may be respected, and that no interference may be made by the Examiners with reference to the system pursued, the manuals and text-books employed, or any other matters of detail, Principals shall fill up a Form, to be transmitted to them for that purpose by the Secretary, which Form, when returned, shall serve for the guidance of the Examiners in the performance of their important, delicate, and trustworthy office."

* Take, as a concrete instance, the case of a boy entering a counting-house. It is obvious that, while his ability to perform arithmetical calculations intelligently, quickly, and correctly will be of service to his employer, his previous performance at approved courses of arithmetic lessons will, in itself, be of no value whatever. It is the attainment, not the preparation, that is of practical concern to the employer.

† The plan recently adopted for admission to Osborne in preparation for the Navy really deals with candidates for employment in a branch of the Public Service.

METHOD OF FRENCH INSTRUCTION AFTER THE FIRST STAGES.

At the Members' Meeting of the College of Preceptors on December 14, Mr. FRANCIS STORR in the Chair, Mr. F. B. KIRKMAN, B.A., gave a lecture on "Method of French Instruction after the First Stages."

The lecturer began by making a distinction between instruction in and after the beginners' stage. In the beginners' stage an element was present which dominated the method of this stage. He referred to the teaching of correct pronunciation. Unless a phonetic transcript were used from the start, it was necessary in the interests of pronunciation to make the oral lesson the centre of instruction. After the first stage, pronunciation fell into the background, and the reading book or reader became the centre of instruction. It was only the reader as centre that the lecturer proposed to consider. His remarks applied to readers of any difficulty, to classes of any age, and, speaking generally, to any modern language taught. The word French appeared in the title because it was from this language that he proposed to take his illustrations, and because, as far as details of method were concerned, what applied to French did not necessarily apply to other languages.

In considering the use of a reading book one had to recognize the claims both of the language and of its subject-matter. Hence a double aim—(1) to teach skill in the use of the language, and (2) to ensure that some of the knowledge it conveyed should remain the possession of the pupil. The latter aim raised the whole question of the principle to be adopted in choosing a reading book, a question that had not yet received adequate attention. It did not properly come within the scope of a lecture on method, and could therefore only be accorded brief and somewhat dogmatic treatment.

Speaking for himself, the lecturer said he would require a French reader to fulfil one of two conditions: it must either possess high literary merit or have reference to France and the French. Referring to the first condition, he said that the creation in the mind of the pupil of a permanent interest in at least one great literature besides his own was by common consent recognized as one of the chief aims of modern language instruction. The aim was seldom realized, the interest even when created not always proving permanent enough to endure after the school period. Among other causes, this failure was due to the practice of prescribing books for public examinations. A set book ceased to be a classic and became a text of so many pages to be got through. The reading of it ceased to be a joy and became a commercial transaction—labour in exchange for so many marks. Not until they stirred the literary conscience of examining bodies (assuming they had one), would the foreign classic have a fair field in English schools.

Turning to the second condition, the lecturer said he did not suppose that the reading of French history, or information about the modern French, would of necessity break down insular prejudice and create international sympathy. It would help, and it would supply material for direct lessons on what ought to be our mental attitude towards foreign countries. But this instruction fell more properly under the head of civics. In the very limited time given to French, the first business of the teacher was to teach French, not civics.

The preceding statement of the principles of selection referred only to French as part of a general education. In technical schools, in so far as they were literally technical and not merely upper elementary schools under another name, the selection of subject-matter was determined by the special needs of the pupils, whether scientific, industrial, or commercial.

What should be required in the way of knowledge of subject-matter? Not less than a brief summary of what was of value in the subject-matter of the text. It should be given in French, not necessarily, of course, in one breath, but in answer to a series of questions. Experience had shown that this was realizable.

Passing from subject-matter to the language itself, the lecturer held that ability to read with ease must always remain the paramount aim. It was only a small proportion of their pupils that ever required to write French, or to speak more than the negligible amount needed for touring purposes. But the power to read was essential, whatever the purpose in view, be it literary, scientific, commercial, or industrial. When serious reformers insisted on the value of the oral method or conversation, they were thinking of it, not as an end itself, but as a means.

There was a third general aim to be taken into account in French instruction after the first stages. It might be called the

æsthetic—the cultivation of the power to appreciate a French literary masterpiece, not primarily for the sake of its subject-matter, but simply as a work of art. This should be a natural result of an advanced knowledge of the language, and need not be further considered.

When the question of method of realizing the above aims was reached, one principle in particular demanded prominence, not only on account of its importance, but also because of its almost total neglect in the past. This was the principle of unity. When applied to the curriculum as a whole, it was familiar as the principle of concentration or of correlation of studies; but, whatever the name, and whether applied to a curriculum, a particular study, or a particular lesson, it involved the central idea of an organic whole, freed from all that was non-essential. This, indeed, was the principle that, consciously or unconsciously, underlies the making of any work of art. And a curriculum, a course of lessons, and even a single lesson, were, if perfectly made, works of art fit to rank with, if not above, the greatest artistic masterpieces the world had produced.

The principle of unity was ignored by the old method as commonly taught. This was seen in the complete separation of the grammar and exercises from the reading book. From the start the reformers had insisted that the whole of the instruction should be based upon the reading book. The advantages of thus unifying the instruction were obvious. In the first place, it concentrated attention on a limited word matter, taught this from every point of view, whether of meaning, inflexion, or construction, and sought to fix it in the mind as a whole, closely interdependent in all its parts. Secondly, it ensured that what was important should be taught. The words and the grammatical points that occurred most often in the reader were the most important, because they occurred most often. In this respect the old method showed a fine impartiality. It taught *nous parlâmes* with as much emphasis as *je suis*.

Taking the reader, then, as the centre, they had next to consider the various steps in the method of using it. These fell conveniently under five heads:—(1) establishing the meaning of the portion of text required for the lesson; (2) questions in French on the text to be answered in French, the answers taken together supplying a brief summary of the contents of the prepared page or pages; (3) groups of words based on the summary; (4) grammar practice based mainly upon the summary; (5) written tests.

Each lesson thus became an organic whole, and the final summary, in the case of a continuous text, preserved the unity of the complete course of lessons. Supposing, then, a text in the hands of the class, the first step was to make clear the meaning of the selected portion. This could be done by pointing to objects or pictures, association with known words, translation into English, and, in many cases, by explanations in French. No attempt was made to avoid translation: it was regarded as *one* of the legitimate means of making clear the meaning of new words, and often no other means was possible. On the other hand, there was no attempt to translate merely for the sake of translating. It was French, and not English, they had to teach in the French hour.

The work of establishing the meaning was, in the opinion of the lecturer, best done in the class-room, when time permitted, and not at home. If left to prepare the text by himself, the pupil relied too exclusively on translation, and was also tempted to depend overmuch on editorial notes, dictionary, and weak parents. The old superstition that a boy should be left to "hammer it out" by himself meant in practice licence to the lazy boy to do the reverse. When the preparation of the text was done in the class-room, there was no escape for the lazy boy, as he could be taken in hand and compelled to grapple with difficulties.

When the meaning of the selected portion of the text was clear, the teacher proceeded to the second step, the questions on the text. The idea of some of the earlier reformers was to take a few lines and turn these few lines, so to speak, inside out and upside down by every variety of question and answer. A limited amount of this exercise was no doubt useful, but, if facility to read was the paramount aim, it was necessary to cover the ground much more rapidly. This was done by taking two, three, or more pages as the basis of each lesson, the preparation of the prescribed amount requiring perhaps more than one period of time. On these pages just enough questions were asked to provide the briefest possible summary of their contents. The questions were asked in French to be answered in French (1) from the text, (2) with the text shut. A column of words was

then written on the board, each word taken from and representing each of the answers. By the aid of these recall-words the pupils were gradually led to give the series of answers as one continuous answer, this answer constituting the summary. The summary need not, of course, be in the exact wording of the text, and in the case of an advanced class considerable variety might be introduced, provided always that the teacher was sure of the accuracy of his French.

The summary formed the basis of the remainder of the lesson, the third, fourth, and fifth steps. It was studied first with a view to enriching the pupils' vocabulary (third step). This was done by selecting the common words from the summary, and, with the addition of related words or idioms, forming them into groups. For instance, the word *guerre* might occur, and to this *guerrier* would be added. *Mari* might occur, to which would be added *femme, époux, épouse, épouser, se marier, marier*, and so on. The meaning of the new words would be made clear by association, object-lessons, or translation. The method of practice was, wherever possible, by question and answer in French, *e.g.*: "Comment s'appelle celui qui a épousé une femme? Celle qui a épousé un homme? Qu'est-ce qui marie un homme et une femme? Comment s'appelle l'acte de se marier?" &c. Or inversely: "Qu'est-ce qu'un époux? épouse?" &c. There seemed no limit to the varieties of this form of practice. It was done in French in order to bind the French expression direct to its meaning. Translation, legitimate as a way of making clear the meaning of words, was, of course, strictly excluded whenever possible, from the *practising* stage in this or any other step of the method.

So far the word-matter had been learnt in the form of a summary composed of more or less stereotyped sentences, generally in the third person (second step), and it had been enriched by the addition of new words (third step). In the fourth step, the summary and groups were re-studied from the point of view of inflexion and construction; feminine was given for masculine, or plural for singular, first person for third person, past tense for present tense, infinitive for subjunctive, one construction for another, and so on, or other examples of a construction or inflexion were supplied. It was a process of repetition with variety, the result being to make the pupil master of the word-matter in as many contexts as possible. Looked at in this way, it was evident that grammar could not be dispensed with: in fact, it was absolutely necessary to mastery of the language.

The method in all cases where no rule had to be formulated was nothing but practice by question and answer in French, the end being the instinctive unhesitating use of the right inflexion or construction, and not the ability to patter off examples and exceptions. Forms of practice for each part of speech were easily found. A good illustration was provided by a passage in the "Roi des Montagnes," chapter iii., which described Schultz setting out from his lodgings in Athens on the excursion which was to end so fatally: "Je descendis la rue d'Hermès jusqu'au carrefour de la Belle-Grèce, et je pris la rue d'Eole . . ." The pupil, as a result of the second step in the method, would be able to give an account of this in the third person of the past tense. In the grammar step the teacher might want to have the future tense practised in all its persons. He would begin by having the future inflexions of each verb practised in the ordinary way, *e.g.*, "Je descendrai, tu descendras, il descendra," &c. Then, writing the recall words on the board, he would begin: "Je suis Schultz, je descendrai la rue d'Hermès . . ., je prendrai . . ." &c. Then, to one of the pupils: "Vous êtes Schultz. Qu'est-ce que vous ferez?" And so on with the other persons. "Nous sommes avec Schultz," &c. The same words could, for the sake of further experience, be practised in different contexts, *e.g.*: "Je descendrai la rue; je tournerai à droite; je longerai le Musée Britannique . . ." &c., an imaginary street plan being drawn on the board. Numberless examples of the same kind could be given, for almost any passage of a text would supply ample verb-drill of the most thorough description. Such, at least, was the lecturer's experience. If pupils taught on so-called reform methods proved weak in verbs, it was emphatically not the fault of the oral method.

Turning to syntax, the lecturer pointed out that, whereas the old method began with the rule, the new began with the example. The method he adopted, in common with many others, was as follows. A few simple examples, in part taken from the summary that formed the basis of the lesson, in part made up of words known to the class, were written on the board to illustrate the rule it was required to teach. Over these sentences a question was written. The answer to this question, *i.e.*, the rule, the

class was expected to find out and formulate after careful comparison of the examples. Sometimes aid was needed, sometimes not. The teacher was generally able to tell which pupils had discovered the answer by the change in the expression of their faces. Only when a fair number appeared to have reached a conclusion was the rule asked for, and it was then, with the aid of their comrades, wormed out of the pupils who were still in the dark. Speaking for himself, the lecturer said he never permitted the rule to be written down. He held that it was only of use if in the head of the pupil: if not there, it mattered little where it was. The best way of getting it back into the pupil's head was to repeat the process of induction. But there was no necessity to do this when once the pupil was able to use the correct construction covered by the rule instinctively and without hesitation. When the pupil was able to do this, the rule of course had served its legitimate purpose and might safely be forgotten. Indeed no one could be said to possess a language till he could throw away the grammar, as the halt become whole threw away his crutch. Unfortunately, the rule had also to serve an illegitimate purpose by order of examining bodies, which continued to permit papers to be set in which rules were asked for. Such questions imposed a vicious method on the teacher, amounting often to mere cram, and they could not be condemned too severely.

The formulation of the rule was followed by the inevitable practice conducted wherever possible by means of question and answer in French. Speaking of his own experience, the lecturer said he had always found that the grammar lesson was the one most appreciated by his classes. They were interested because they were finding something out for themselves, they were Cooks—not the modern, but the elder of that name—making discoveries in unexplored linguistic fields. The mental process involved provided, moreover, an excellent training in scientific method. Boys, like men, were often ready to generalize from insufficient particulars. When the teacher quietly put his finger on an example which upset the too hasty generalization, the boy began to understand what was meant by scientific inquiry. It was extraordinary that teachers had ever given up a method which was known and practised in the days of Ascham, merely to commit the enormity of exacting parrot repetition of printed rules. The lesson ended with written tests, of which a large variety, including translation and free composition, were recognized by reform teachers.

The lecturer concluded by remarks on a few detached points. (1) Each lesson, he said, should as far as possible be conducted in French. The necessary directions were taught when required for use, and were learnt without any difficulty. (2) Owing to the unfavourable conditions of modern language instruction in many schools, he recognized that the above method might in particular cases require modification. One had often to be content to teach by mutilated methods. (3) He claimed no originality for most of the details of the method described. They were, or ought to be, familiar to all reform teachers. If he claimed any originality at all, it was for the particular "blend" of methods he had adopted. (4) He was far from believing that the last word had been said on the methods of instruction. The more they studied the subject, the greater the number of unsolved questions that confronted them. What was required was careful accumulation of the results of observations and experiments conducted on strictly scientific lines. Hence absolute liberty to experiment along different lines of inquiry to a common end was necessary, it being, of course, understood that liberty did not mean licence to teach badly. Above all it was necessary to cherish an open mind. (5) There was not one reform method, but many—some worse than the worst of the old. If any one of his hearers chose to declare that his was not among the worst, he would not contradict him. But he recognized that his method was far from perfect, and he would be grateful of their help in making it better.

The CHAIRMAN wished to emphasize the statement of the lecturer that the method he had propounded to them was by no means to be regarded as the only possible one. This method was distinctively intended for the second stage in French, but he would like to be informed as to the period of school life to which it was intended to apply—whether from the second year to the end, or to some other period. Again, he could not conceive of such a lesson based upon a work of art such as a play of Victor Hugo or "Les Lettres Provinciales"; but he was glad to hear denounced the heresy which found favour even with some examiners, that conversation was the very *acme* of French teaching. Very few hours of an Englishman's Continental holiday were spent in speaking French or German, whereas the hours spent in reading in those languages at home were very many. The aim of modern

language teachers was to inspire a love of literature, and induce such a familiarity with the language that it could be read with ease and appreciation. He thought, however, that the lecturer's experience of the girls' school whose pupils discussed critically in French a fable of La Fontaine must be an exceptional one. As to vocabulary, there was a difficulty in choosing books. Very often excellent books, like "Life on a Barge," or a military story, abounded in technical words, and words that could not be considered common. Mr. Nasmyth had found it necessary to take elaborate means to tabulate French words according to the frequency of their occurrence, in order that the really common words should be learned first. He quite agreed that Herr Walther's method of dealing exhaustively with every word was apt to be tedious, but he thought that under the lecturer's method the full benefit of the reading was not secured, there being a tendency to pass over the idioms, or all but the simpler ones. He contended that a blend of the two principles should be aimed at. All would concede that grammar should be based upon the reading. Yet he thought there were certain paradigms which must be acquired by a method more nearly approaching the old, and he ventured to differ somewhat as to the mode of studying syntax also. He knew no more excellent practice in simple logic than for a pupil to see how, of a number of examples, one will illustrate the rule, and another will be a real, or a seeming, exception to it. Further, he would like to know whether the lecturer approved of the questions and written tests being done in advance for the teacher, or of each teacher doing it for himself. The most popular type of French book was one in which there were short sentences at the end of every chapter. His own preference was for the plain text, and he thought two books should be proceeded with simultaneously, the one a short book, which should be read very thoroughly, and so as to compel pupils to know their work *au fond*, and the other a longer work, to be read rapidly, with the intention of enabling the pupils to gain a fair knowledge of the general drift of it. There were certain easy books which it was advantageous to go through in that way, because they gave pupils a feeling of confidence, from the knowledge of their ability to read a French book for enjoyment. It might be hoped that a satisfactory percentage of modern language pupils so taught would continue after they left school to read French or German of their own accord. His own experience went to show that there would be no such danger as had been apprehended by some in the recent controversy, that education would be brought to a lower level through the substitution of modern for classical languages. He considered that unseen French or German without a dictionary was quite as severe a test as unseen Greek with a dictionary, and far harder than the present set book in Greek.

Mr. SAVILLE remarked that nothing had been said about composition or translation into French, as required of pupils in upper forms. What kind of translation did the lecturer favour? Was it to be absolutely new translation, or translation based on the text? In the second place, was the reader to consist of a story so constructed as to illustrate the grammar of the language, and, if so, were they to rely for the study of grammar on taking instances as they arose, or were certain points only to be taken up according to a prearranged scheme? Thirdly, he desired to ask, what was to be the nature of the reading of which so much had been said? Was the lecturer of opinion that a French classic might be read in class in the upper forms, or not? He did not regard word-for-word translation as reading at all, and a boy instructed in this way would never read French on his own account. Reading, as he understood it, meant that the French word should at once suggest the idea it represented without the intermediary of English; and a boy in the fifth or sixth form should be capable of this with but little assistance. Fourthly, would the lecturer recommend use of intelligent "snippets," such as descriptions of beautiful scenery or vivid pictures of events, as a means of securing a wider vocabulary than could be obtained from a single book? And, finally, might he ask the lecturer to make it clear how he would begin an ordinary lesson? Would he put on first one boy to read six lines or a paragraph and then another, and so on?

Mlle. PAQUIER said that a dull class should first translate with every necessary aid it was possible to give them, whether in French or in English, while a good class would not need to translate first. It was also her experience that, with young teachers especially, it was far better that questions should be supplied at the end of the text-book than that they should go on asking questions at random, and she stated that her own students in training had been very grateful for this kind of assistance. If the oral lessons in the early stages had been conducted intelligently, conversation would come naturally in the later stages; though she, of course, agreed that conversation was not the one and only end in view.

The LECTURER, in answer to the various questions, said that the method was intended to be followed from the conclusion of the beginners' stage right to the end of the pupils' school course, but not to the exclusion of other work in French. It was a method for teaching the language as language; but the scholars might at the same time be reading French classics, which should occupy more and more time as they progressed. With regard to the difficulty of acquiring a sufficient vocabulary, he said that many of the available text-books, supplemented by groups of words, did provide a very full and varied vocabulary,

though he saw no objection to a book of well chosen selections in good French. It was, however, necessary to have, in addition to such selections, some book which should be read through rapidly, without delaying to make sure that every word could be translated. If pupils did not grasp the drift of a passage, it was always possible for them to say when they did not understand, though the teacher would generally be aware of failure from the manner in which the passage was read. Any explanation should be asked for and given in French as far as possible. As to translation into French, he said that both the unseen form and that which was based on the text were necessary, the first as a general or public test, the second as a test of the work done in connexion with the reader. Then, as to verb paradigms, he saw not the least objection to their use, provided they were not regarded as the be-all and end-all of grammar. They were excellent as preliminary practice of inflexions, but it was essential that pupils should afterwards practise the tenses in sentence form by means of question and answer in French. And, as to syntax, he had intended it to be understood that the boys should be required to frame their rules in good and definite language, and there was nothing in his method to preclude them from seeing whether examples did or did not illustrate the rule, or from collecting all the idioms they could find. Passing to the question whether the written tests should be the work of the teacher or supplied to him in the text-book, it was undoubtedly better that the teacher should frame them, since he alone was competent to judge what was a true test of the progress of a particular class; but it was unfortunate that lack of time precluded modern language teachers in England from following this ideal. It had been asked whether the reader would be found to contain sufficient material for the study of grammar. It had been his experience that nearly every reader did supply almost enough, but as long as grammar was a necessity in examinations the amount supplied by the reader must be supplemented from other sources, and no teacher should ever feel that he was limited to his reader. Another question had referred to the way of beginning an ordinary lesson. There were many ways. The choice depended entirely on the intelligence and progress of the class. With a backward class the ordinary plan was for the teacher to read aloud first, making the class pronounce each sentence after him, then proceeding to establish the meaning. With advanced classes pupils would simply read aloud in turn straight ahead, pausing only to make sure of the meaning of some new word. This should be the usual course.

A vote of thanks to the lecturer concluded the proceedings.

THE SCHOOL IN SOME OF ITS RELATIONS TO SOCIAL ORGANIZATION AND TO NATIONAL LIFE.

Abstract of a paper read by Prof. M. E. Sadler at a meeting of the Sociological Society on Tuesday, December 13, at 8 p.m., at the School of Economics and Political Science (University of London), Clare Market, W.C., Sir A. W. Rücker, D.C.L., F.R.S. (Principal of the University of London), in the Chair.

1. Has not one great obstacle to the advance of educational science lain in our too habitually thinking of schools as if school work were an end in itself, and in our discussing school problems too little in relation to their social context and with too vague regard to the actual needs of the callings for which the different types of school ought definitely to prepare their pupils?

2. All true education has a double purpose, namely, (1) the development of the moral personality, of the physical powers, and of the intellectual aptitudes of the individual; and (2) the fitting of the pupil skilfully to perform the duties of some definite calling, or type of calling, in life, and worthily to discharge with courage and composure of mind the tasks likely to devolve upon him or her as a member (a) of a family, (b) of a local community, whose claims are based upon physical neighbourhood, (c) of the nation, (d) of some church or other ethical fellowship, based upon affinity of spiritual need but not necessarily conterminous with any one country.

3. The trend of the individualistic doctrine in psychology, in economics, and in ethics was to exaggerate the relative importance of that part of educational effort which aims especially at developing individual capacity, and at "giving every one his chance" by means of "the educational ladder," or by incitements to self-help. The trend of the rationalistic movement in philosophy and ethics was yet further to exaggerate one element in this individualistic type of education, viz., the purely intellectual element, or the side of mere instruction. Against each of these exaggerations, influential sections of English opinion have always maintained a sturdy protest and never an unavailing one. Against exaggerated individualism in educational aims, Anglicanism protested (rather confusedly but stubbornly) on the one hand, and Robert Owen and the Socialists (with too little feeling for historical and spiritual continuity) protested on the other. Against exaggerated intellectualism in educational aims, S. T.

Coleridge, Wordsworth, Tractarian Oxford, and the leaders of English higher secondary education protested on the one hand, and the great mass of shrewd English opinion, with its tough prejudice against mere book-learning, on the other. The result of this conflict of educational ideals, which persisted for more than a century, was not quite a deadlock in English educational development, but painfully obstructed advance, each stage of which was marked by more or less untidy and illogical compromise.

4. The key to the history of English educational struggles, from the middle of the seventeenth century almost down to the present time, lies in this conflict between two disparate ideals. The one ideal was rather narrowly limited to a fervent belief in the intellectual and, as its upholders thought, the resultant moral efficacy of secular instruction of a more or less literary character, given in publicly organized day schools. The other ideal maintained that "national education," in any worthy sense of the word, consists in the joint and often secret operation of many kinds of influence, permeating the heart as well as the mind of the nation, and proceeding from historic institutions, spiritual traditions, ancient and familiar habits of life, intimacy with nature, social relationships, personal loyalties, economic activities, daring adventure, and free discussion. Those who incline to the first of these two views have, more frequently than the best of their opponents, been unconsciously one-sided in their conception of what the whole nation ought to be made to think and how it ought to be made to behave. Those who have inclined to the second view have often been lacking in the pertinacity of argument which comes from rather narrow convictions, have been apt to ignore the darker sides of the existing social order, have underrated the value of good school teaching, and have often been unable to express in words, either to themselves or to other people, what they really felt.

5. The school of thought which attached undue value to mere verbal instruction given to large classes in elementary day schools is now virtually bankrupt. On the other hand, the opposite school of thought finds that the formulated doctrines upon which it implicitly relied have lost their earlier look of certainty, and that the old social order has nearly dissolved away under the influences of the Industrial Revolution. Hence there has been a deliquescence of prejudice and of conviction on both sides.

6. The result is, for the time being, a readiness for joint action in educational affairs which has no precedent in English history. This melting away of old educational prejudices has happened to coincide with three other important changes. The biologists have taught us to assign immense importance to the influences of environment upon the human organism. The effects of slum life in the "drift quarters" of great cities have shown themselves in perilous tendencies to physical and mental deterioration. And English political instinct, always sensitive to new dangers and opportunities, is driving us towards more stringent forms of collective organization in industry, in commerce, and in social regulation. Hence a movement in English educational thought (not without its counterpart even in individualistic America) towards modifications in our educational methods with a view to social unification and increased collective efficiency. For example, there is spreading a conviction that the time has come for dealing with the residual deposit which consists of the physically and mentally deteriorate, especially in the great centres of the population. What is wanted is a resolve to attack the slum problem under scientific guidance, on a well considered plan, with the help of great resources, and with the thoroughness, the energy, and the persistence which are displayed in great works of modern engineering. In such a plan the labours of school teachers and the educational influence of a new type of elementary school would play an important part.

But social "rescue work" is only part of the problem which has to be faced in the organization of English elementary education. Only a small proportion of the elementary schools have to deal with the slum problem. The great increase of economic well-being among the artisan population has brought with it a need for a superior kind of elementary school with smaller classes, highly trained teachers, well equipped buildings, and spacious playgrounds, supplemented by higher courses of continuative instruction. Thus, in respect of elementary as well as of secondary schools, there is every sign that our progress will be in the direction of greater differentiation of type.

7. We are beginning to lay more stress upon the social and corporate influences of education; upon the unconscious education which comes through the pressure of environment; upon the need for better food, better home surroundings, and more

healthy life conditions for the rising generation; and upon the value of those kinds of training which fit a child for the actual duties of life. As the power of individual initiative in danger or difficulty is one of the chief assets of empire, it is essential that, while encouraging the corporate influences of school life, we should develop through our education individuality of character combined with self-control.

In English education, however, we are apt to ignore the value of the imagination and to neglect the educational instruments which can stimulate and train it. We are prone to think that anybody is good enough for the work of school teaching. We miss our opportunities of making the best of the critical early years of a child's education. What is wanted is a combination of the zeal and venturesomeness of American educational effort and of German carefulness in methods of teaching with the English insight into the necessity of manual and corporate training as elements in education, and English preference for those kinds of education which, though not ecclesiastical or theologically dogmatic, make children sensitive to the sacred claims and deeper needs that lie behind the mask of merely mundane things, and are never long without a witness in the common experience of life.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on December 17. Present: Mr. E. A. Butler, Vice-President, in the Chair; Prof. Adams, Mr. Barlet, Mr. Baumann, Rev. Canon Bell, Mr. J. L. Butler, Mr. Charles, Miss Crookshank, Mr. Eve, Rev. Dr. Hiron, Mr. Kelland, Rev. R. Lee, Rev. G. E. Mackie, Mr. Morgan, Mr. Pinches, Miss Punnett, Mr. Rule, and Mr. Starbuck.

The minutes of the last meeting were read and confirmed.

The Secretary reported that for the Certificate and Lower Forms Examinations the number of entries was about 8,550, and the number of entries for the Christmas Examination for Diplomas was 569. These figures were about the same as for the corresponding examinations in 1903.

Mr. W. E. Johnson, M.A., was appointed to deliver the Psychology Course of Lectures to Teachers in 1905.

Saturday, January 28, was fixed as the date of the next Ordinary General Meeting of the members of the College.

The report of the representatives of the College on the Joint Federation Committee was submitted. The report included the preliminary draft of an amending Charter, which, it was recommended, might form the basis of a supplementary Charter, for which application to the Privy Council should be made, if approved by the members of the College at a Special General Meeting to be convened for the purpose. It was resolved: "That the Council gives its general approval to the Draft Charter, but desires to defer the minute consideration of it till the opinion of counsel has been obtained."

The draft Report of the Council to the General Meeting was considered, and was referred to the President, Vice-Presidents, and Dean for final revision.

The following persons were elected members of the College:—

Miss H. Benson, L.C.P., 40 Clapham Common, S.W.

Mr. V. L. Cottell, A.C.P., 7 Churchill Road, Willesden Green, N.W.

Miss E. Dodwell, L.C.P., Old Grammar School for Girls, Thame.

Mr. E. F. Lee, Kwala Lumpur, Federated Malay States.

Mr. W. T. B. Ridge, L.C.P., Ashwood Terrace, Longton, Staffs.

Mr. R. Robson, B.Sc. Durham, L.C.P., Maglona House, Aberayron.

Mr. C. B. Rusbridge, L.C.P., Caerleon, Elmhurst Street, Clapham.

Mr. R. B. B. Tustin, A.C.P., 6 Milwain Road, Stretford, Manchester.

Mr. P. Wertheim, A.C.P., Station Road, Hampton-on-Thames.

The meeting was adjourned to January 23.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—Farrar's Place-Name Correspondences.

By G. BELL & SONS.—Bell's Concise Latin Course.

By the CAMBRIDGE UNIVERSITY PRESS.—Findlay's Epistles of Paul to the Thessalonians (Cambridge Greek Testament).

By HACHETTE & CO.—Kastner's Augier and Sandeau's La Pierre de Touche.

By RIVINGTONS.—Hillard's Acts of the Apostles.

SPECIAL MEETING OF THE COUNCIL.

A Special Meeting of the Council was held on December 3. Present: Sir Philip Magnus, Vice-President, in the Chair; Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. Charles, Miss Crookshank, Mr. Easterbrook, Mr. Eve, Mr. Hawe, Mr. Kelland, Rev. G. E. Mackie, Mr. Millar Inglis, Dr. Maclure, Mr. Morgan, Mr. Pinches, Mr. Rule, Mr. Rushbrooke, Mr. Starbuck, Mr. Vincent, and Dr. Wormell.

The report of the Special Committee on the proposals of the Consultative Committee for a system of School Certificates was considered paragraph by paragraph, and was finally adopted with slight modifications. It was resolved that the views of the Council as embodied in the report should be communicated to the Board of Education.

REVIEWS.

FAMOUS HEAD MASTERS AND FAMOUS BOYS.

(1) *Six Great Schoolmasters*. By F. D. How. (7s. 6d. Methuen.)

(2) *Blundell's Worthies, 1604-1904*. By M. L. Banks, M.A.

(7s. 6d. net. Exeter: James G. Commin. Chatto & Windus.)

(1) Mr. How's six great schoolmasters are Hawtrey, Moberly, Kennedy, Vaughan, Temple, and Bradley. The selection was guided chiefly by two considerations: "first, that they should have occupied their head masterships during some part at least of the thirty years between 1835 and 1865; secondly, that they should not have already formed the subjects of any considerable biography." The second point is somewhat overridden in the single case of Hawtrey—a matter of no moment. The subjects are all eminently worthy of commemoration, and they find in Mr. How a sympathetic and industrious biographer. There are thirteen illustrations, including portraits of the great head masters.

The period chosen is of deep interest: if it does not by any means "mark the progress of the public schools from their worst state to the high-water mark of their efficiency," at any rate it witnessed an advance to a vastly improved position. The influence of Arnold cannot be doubted, whether by direct personal operation, as in the cases of Vaughan and Bradley, or by more or less indirect inspiration of Temple and Kennedy and Moberly, or even Hawtrey—not to go beyond our record. But still more widely and insistently powerful was the influence of public opinion, compelling an expansion of interests and a variation of methods, without any encouragement to sacrifice the honest thoroughness that was perhaps the best feature of the old régime. Mr. How, indeed, seems to regret that the starch has got diluted in the personal bearing of masters. But is it, really, "a sorry sight to see a master, in a flannel coat, capless, and gownless, trundling on his bicycle, just—and only just—in time to take his form?" Is there the smallest solid reason for suggesting that such a master does not "retain a semblance of self-respect"? The world has moved a little: that is all. And, again, how can it be argued that the appointment of a lay head implies "regardlessness of the religious welfare of the boys"? And, once more, is it not a gain to provide an intellectual interest of one kind or another, even modern and practically useful, for all boys without classical bent, while keeping up the classical boys to the old standard, and that too on a materially widened basis?

Mr. How has laboured hard to draw his portraits faithfully, and he has rightly availed himself of the best assistance. For all that, old pupils and friends will inevitably miss characteristic traits, as somebody would do whoever were the biographer. The personal reminiscences and anecdotes, the general setting of each portrait, will recall pleasant memories to many, and interest many outsiders, especially in the profession. It may be, indeed, that teachers (and others) trained in a different school will be amazed to find the common attributes of a good schoolmaster extolled as if they were rather special qualities of a particular one, or a particular six, and marvel at the narrowness of outlook that now seems to have been possible in men of exceptional academic distinction and personal accomplishment. If the personages are overrated here and there, the discreet reader can make his own deductions: it will probably be difficult to accept Dr. Moberly as a "great," or even as a moderately exemplary, head master; and one can only smile at Dr. Kennedy's stupendous intellect, while acknowledging that he was a distinguished classic within limits. Minor matters we pass over: but that *δέξασθαι* is unfortunately jarring, and the indignation story of "the audacious Brunck" and his intrusive comma is surely close to the ludicrous.

(2) There is nothing marvellous in the fact that Peter Blundell's School at Tiverton "attracted cadets of the best families in the West"—that is just what a good school ought to do, and does. Mr. Banks, a late assistant master, has entered into the spirit of the place, and, with the assistance of several writers of special knowledge, has produced a very interesting memorial volume containing twenty-five biographical sketches, with ten illustrations. Most of Mr. Banks's heroes appear to be of comparatively local fame only, but a fair proportion are of general reputation—notably Sir John Popham, Bampfylde Moore Carew, Hayward, and Blackmore. But why is there no attempt to furnish an account of Peter Blundell himself? His story is as exemplary as any that is told in the volume. The merits of the biographies vary with the writers, and they vary considerably; but the work will be deeply interesting to all Blundellians and their friends. It is handsomely printed and got up.

FINITE CONTINUOUS TRANSFORMATION GROUPS.

Introductory Treatise on Lie's Theory of Finite Continuous Transformation Groups. By John Edward Campbell, M.A. (14s. net. Clarendon Press.)

Several important treatises have recently been added to the library of English mathematical literature by writers who have undertaken the task of adapting to the needs of the English reader notable theses based on the special researches of foreign mathematicians. Mr. J. E. Campbell's treatise on the theory of Finite Continuous Transformation Groups is one of the works belonging to this category. In it we have the main outlines of the theory of such groups as developed by the great Norwegian mathematician Lie, to whose investigations the student is indebted for the growth of the subject. But, whilst the theory discussed in Mr. Campbell's treatise is not original, the author hopes and believes that the form in which it is presented to the reader will prove to be, at least in part, new. In confining his work to a single volume of medium dimensions, Mr. Campbell has found it necessary to abstain from giving an absolutely exhaustive treatment of the subject. For example, the theory of the possible types of group-structure is passed over; but this abridgment is fully justified in a work written for the purpose of setting forth Lie's theory, seeing that the portion left out has received much development at the hands of other mathematicians. Mr. Campbell commences by introducing the reader to the broad outlines of the theory of groups: he carefully explains the essential character of a transformation group, clearly distinguishes between the leading classes of such groups—*continuous, finite and continuous, discontinuous, mixed*—and defines also sub-groups and groups of various special types. In his notation for a series of transformation operations the author reverses the order used by Prof. Burnside, the reason being that the predominance in the present work of differential operators renders the order used by the latter writer unsuitable. The important part played here by differential in contradistinction to other operators is readily accounted for by those who consider that the ultimate object of Lie's work in this direction was to contribute materially to the development of the theory of differential equations.

After the introductory consideration of general ideas, Mr. Campbell proceeds to explain and illustrate the principle of "extended point transformation." Subsequent chapters discuss in turn the fundamental propositions of the subject, their application to certain systems of differential equations, the properties of invariants in so far as they affect transformation groups, and the main principles of classification. Space is also devoted to the study of Pfaff's equation, to the consideration of systems of homogeneous functions, and to other equally important points. A method is given for obtaining all possible types of groups in the particular cases in which not more than three variables are involved. It should be noted that the book is free from intricacies of language and style, and a great service has been rendered by the author in producing a work in which a student of advanced mathematics is relieved from the additional difficulties often attendant either on reading a new subject in a foreign tongue or on translating abstruse English into simpler language.

NIBELUNGENLIED AND GUDRUN.

The Nibelungenlied and Gudrun in England and America. By Francis E. Sandbach, B.A., Ph.D., Lecturer in German at the University of Birmingham. (10s. 6d. Nutt.)

In this volume Dr. Sandbach places on record "exactly what attention has been paid in England and America to the two great National Epics of Germany." His plan is to deal with the materials in four sections in each case: first, translations; next, reprints of the old German text; then, miscellaneous accounts and essays; and, finally, influence on literature proper—all in chronological order. An obvious difficulty is to prevent repetition, and Dr. Sandbach meets it by prefixing introductory sections containing fairly detailed abstracts of the two poems, brief accounts of the most important facts and theories connected with them (including the results of recent research), and select bibliographies. The expedient is as effective as could reasonably be expected, and, if many repetitions still remain, they must be regarded as practically inevitable, and they may serve the useful purpose of impressing blunders that seem to run through more or fewer of the works that are passed in review.

The essay was originally written for a Certificate of Research at Cambridge. In that point of view it is certainly a meritorious effort, with fewer marks of restricted outlook than might have been anticipated; and its criticisms will furnish much help and

guidance to students within the field of survey. The review of translations, &c., is quite sufficient once for all: it shows impressively how little good grain there is in the considerable heaps of chaff. For our own part we should sift again, for we cannot but think that Dr. Sandbach has treated several of the better productions—such as Lettson's translation—a good deal too leniently. Most of the writers have been imperfectly acquainted with the language, some of them very imperfectly; and it is plain that on such terms no scholarly work can be accomplished. There is no lack of texts, though we shall be glad when Prof. Fiedler's text of the "Nibelungenlied" is ready; what appears to be more immediately necessary is a good grammar, and a dictionary more accessible than Lexer's. Dr. Sandbach shows, by numerous specimens, that he could present a prose version at once accurate and readable, and capable of keeping the poets right on the text.

The introductions, while ample enough for the special object, might well be reconsidered separately, and expanded to much larger proportions, especially the introduction to the "Nibelungenlied"—say, on the lines of Ernest Koch's *Programmabhandlung* on the "Nibelungenlied" a generation back, with full discussion of origins, history, text, metre, and significance, and some substantial account of adaptations, such as Jordan's remarkable work. Meanwhile, the present volume will be very useful to serious students. It does great credit to the rising Mediæval School at Cambridge which Dr. Breul has laboured so indefatigably to build up.

THE SOCIAL SIDE OF BRITISH HISTORY.

Social England: a Record of the Progress of the People in Religion, Laws, Learning, Arts, Industry, Commerce, Science, Literature, and Manners, from the Earliest Times to the Present Day. Edited by H. D. Traill, D.C.L., and J. S. Mann, M.A. Vol. VI. (14s. net. Cassell.)

The illustrated edition of this comprehensive and laborious work is now complete. The various sections have been written by specialists (for the most part), so as to present a tolerably full view of the developments in each department. The education section in the final volume is somewhat sketchy, and certain influential organizations are ignored; and, although substantial treatment is limited to the period before 1885, the recent changes in the University system in London, Liverpool, Manchester, and Leeds might at least have been noted. Generally speaking, however, the work presents in very popular style a large and instructive outline of the national development on a basis of adequate scholarship. The co-ordination of the different subjects—a matter of much difficulty—has been very satisfactorily carried out; especially in the present volume, where the difficulty is greatest of all, the modern scientific branches of practical as well as of theoretical importance claiming considerable space. The distinctive characteristic of the edition is the illustrations. The present volume has 11 coloured plates, and nearly 450 illustrations; the descriptive list occupies more than 40 pages. The complete work contains 56 coloured plates, and about 2,550 illustrations. The subjects are fairly chosen so as to be really representative of the various departments of the text; and the whole series constitutes a remarkable pictorial representation of the life of the nation throughout its history. The work ought to be on the shelves of school and public libraries: merely to turn the pages and look at the pictures will be eminently instructive and suggestive. Paper and type are excellent, and the get-up is substantial and handsome.

GENERAL NOTICES.

MATHEMATICS.

A Modern Geometry. By G. A. Christian, B.A., and A. Pratt, B.A., B.Sc., F.R.A.S. (2s. Allman.)

Instruction in the theory of elementary geometry is here combined with a junior practical course. The volume deals with the subject-matter of the first two books of Euclid and with parts of the third. The little book is a useful one, and, though not free from minor inaccuracies of thought and expression, it nevertheless gives less frequent occasion for criticism in that respect than many text-books of the same class. Methods of general utility in the solution of riders are well illustrated by the full discussion of typical examples. The treatment of the subject of the determination of loci is not so satisfactory: the two-fold nature of the problem is both recognized and pointed out, but in nearly every case selected for discussion one aspect alone is considered, and no allusion whatever is made to the other. The definition of a straight line as the shortest distance

between two points is always an unhappy one; if, however, it is adopted, there is an obvious inconsistency in demonstrating as a theorem that two sides of a triangle are together greater than the third. Points such as those noted require revision; yet, granting their individual and collective importance, they still form too small a proportion of the entire volume to affect seriously its general excellence.

Theoretical Geometry for Beginners, Part III. By C. H. Allcock. (1s. 6d. Macmillan.)

The first two Parts appeared in the course of last year. We now have the third volume, in which Mr. Allcock devotes his attention to the substance of Euclid's Second Book, together with portions of Books III. and IV. Some further important propositions are demonstrated, and an excellent chapter on the Radical Axis and on Co-axial Circles is added.

MODERN LANGUAGES.—COMMERCIAL APPLICATIONS.

"Hooper and Graham Series." (1) *French Commercial Practice connected with the Export and Import Trade, Part I.* (2) *German Commercial Practice connected with the Export and Import Trade, Part I.* (3) *Spanish Commercial Practice connected with the Export and Import Trade, Part I.* By James Graham and George A. S. Oliver. (2s. 6d. each. Macmillan.)

The three books deal with the three great commercial languages as these are applied in actual commerce, the whole of the matter contained in them being "drawn from real business," and systematized by writers of long business and educational experience. They are "primarily characteristic of the trading practice" of the different countries. The writers assume a merchant doing a good home trade and desirous of developing a foreign trade in addition, and wishing his son to equip himself to look after this desired foreign department. They show the son in a simple and graduated way how to write plain business letters, how to carry through export and import transactions, and how to manage the correspondence at every point. Gradually they introduce him to transactions of increasing difficulty and complexity. A *questionnaire* is added to each chapter. The volumes are thoroughly well done, and form a valuable series. A second—more advanced—series is promised. These works mark a distinct advance in the work of linguistic preparation for commerce on a larger scale, and are certainly well calculated to "aid the maintenance and development of British commerce in foreign markets."

Englische Handelskorrespondenz. Von E. E. Whitfield, M.A. (80 pfg. Leipzig: Göschen.)

An excellent addition to a practical and useful series. First, a judicious exemplification of "Phraseologie" (both in German and in English), and then over a hundred forms in English illustrating transactions in different classes of business at the various stages. We have already spoken very favourably of Mr. Whitfield's work in commercial German, and the present little volume distinctly adds to his credit. It should be serviceable to English as well as to German commercial students.

Messrs. E. Marlborough & Co. issue a sixth edition of *French and English*, by A. Dudevant, in their useful series of "Foreign Commercial Correspondence," revised and enlarged, the editors being Tureau de Marney and C. A. Thimm (1s.). The French and the English occupy parallel columns, and there are tables of moneys, weights, and measures, &c.

SOME FRENCH READERS.

Perhaps the most simple, as well as the most seasonable, of the present pile of reading-books in French is *Des Vacances à Paris*, by Violet Partington (1s. 6d., Horace Marshall). The narrative is easy and vivid; the illustrations are numerous and appropriate; and the notes are just bits of translation, some of them perhaps superfluous, but perhaps still encouraging. A very attractive little book.

No. 4 of "Nutt's Short French Readers" (6d. each) is Legoff's story from *La Roche aux Mouettes*, which Jules Sandeau says he wrote for his little nephew Paul, to persuade him to learn to read. It will also, as Mr. de V. Payen-Payne, the editor, surmises, amuse—and instruct—English children. Brief notes are appended.

Messrs. Blackie's "Little French Classics" (4d. each) are steadily in course of reinforcement. Recent additions are (1) *Episodes from "La Révolution en Angleterre"* (Guizot), edited by W. G. Hartog, B.A.; (2) *Jacomo, ou le Brigand* (Alexandre Dumas), edited by Norman Frazer, M.A.; (3) *Select Fables of Florian*, edited by Marguerite D. M. Goldschmid, B.A.; and (4) *A Book of French Songs* (with music), selected and edited by Louis A. Barbé. The selections are all very good, and afford abundant variety; and the notes are brief and helpful. M. Barbé's songs will vividly impress the language, and arouse interest. They are sure to be extremely popular.

Popular also should be *La Moqueuse*, a one-act comedy by Clémence Saunois (1s., Hachette). The French is fluent, idiomatic, and quite easy—"a perfect little manual of the language of family life in France," says M. George Petilleau, who writes a warmly recommendatory introduction. The comedy appeals to boys as well as girls, and will be voted attractive.

Lectures et Mélanges, by W. G. Hartog, B.A. (2s. 6d., Rivingtons), is an easy and varied set of pieces in prose and verse "for boys and girls in their second and third years of French instruction," with oral and written exercises, vocabulary, and a number of good illustrations by Mary Williams.

CASSELL'S PRACTICAL COMPENDS.

Cassell's New Dictionary of Cookery. (12s. 6d. net.)

What is "the strong point of good cookery"? "Not its gratification of the palate, but its influence on health." How to combine both advantages may be fully learned from the 96 large pages of the introductory essay—"a complete treatise," indeed—on the principles of the science, written "by a gentleman in every way entitled to speak with authority." Then the distinctively practical part of the business is displayed in an alphabetical series of recipes—some 10,000—"the largest and most complete collection ever produced," more than 1,000 of them being new, the discoveries of "the greatest modern masters of the art." They occupy nearly 1,200 pages, double columns. There are 20 plates in colours, and several hundred illustrations. It is certainly a noble volume, teaching amply the principles and the practice of the art.

Cassell's Cabinet Cyclopædia. (12s. 6d. net.)

This work is based upon "Cassell's Concise Cyclopædia," the articles of which have been thoroughly revised, and supplemented by some 20 per cent. of new matter. The size is about the same—1,358 pages, double columns. While old subjects have been brought up to date, a great number of new subjects necessitated by the progress of events have been incorporated. The volume is a very handy repertory of a vast quantity of generally useful information judiciously selected, alphabetically arranged, and compactly digested. There are several hundred illustrations and diagrams, specially prepared for the work. The type is clear and readable, and the binding is strong and flexible. A concise, comprehensive, and most serviceable volume.

Cassell's Physical Educator. By Eustace Miles, M.A. (9s.)

Mr. Miles does nothing by halves. This volume may safely be declared to be thorough-going and exhaustive, defying description in detail. Exercise and diet—and not only the author's own meagre fare—suitable for all sorts and conditions of men, women, and children, are set forth, with reasons annexed. A most sensible and practical exposition, founded on a broad basis, and relieved by a constant flow of humour. There are upwards of 1,000 illustrations and diagrams; and the book is most liberally printed and agreeably got up.

ART—DESIGN—DRAWING.

Figure Drawing. By Richard G. Hatton, Hon. A.R.C.A. (Lond.). (7s. 6d. Chapman & Hall.)

Mr. Hatton considers that "the only way to master proportion is to get thoroughly acquainted with the aspect of the figure"; for "ultimately the artist will, in estimating the correctness of proportions, rely upon his eye, which he not unwisely trusts before all the science in the world." But the eye has to be educated; and Mr. Hatton aims at correcting the originally crude ideas of the student—at "modifying the rude forms latent in the mind into accurate forms"—so as to get at the more effective expression realizable from truer form. After all, the anatomist's results must be a decided help to the draughtsman, and Mr. Hatton does not rule them out, but only subordinates and postpones them. He even makes frequent use of anatomical terms, as is really unavoidable; and he gives a number of anatomical facts, "not so much because they are necessary, as because the reader is likely to want to have them accessible." The treatment is systematic and able, and the work, taken as it offers itself, will be found very instructive and practically valuable. It is liberally illustrated with 377 figures. The type and the get-up are excellent.

School Copies and Examples. Selected by W. R. Lethaby and A. H. Christie. (John Hogg. Artistic Crafts Series.)

The object of the series is "to make available for school purposes fine works of art in facsimile, and also to bring together examples carefully chosen as being educational and suggestive," so that the student "may at once have drawing-copies of a real kind, standards of excellence, and examples of historical art, which should stir his imagination and suggest the very purpose of art." The present group consists of 12 plates, including reproductions of examples of Bewick's animals, and of fine Italian prints of the fifteenth and sixteenth centuries, enlarged about four times. The collection is extremely varied and attractive, and will be most serviceable for school work.

The October issue of *The Art-Workers' Quarterly* (2s. 6d. net, Chapman & Hall) is the "National Competition" number, containing a critical survey of the works by students that gained awards in the national competition of schools of art and art classes under the Board of Education in 1904. The other articles are of the usual high standard, and there are eight supplementary plates, one of them coloured, and all of them beautifully reproduced.

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ANNUALS.

Who's Who (7s. 6d. net, A. & C. Black) has grown to the very comfortable proportions of 1,796 pages, containing more than 17,000 biographies. It has made itself indispensable. The quantity of information is enormous, and the accuracy of it appears to be carefully maintained—a vital consideration.

Who's Who Year-Book (1s. net, A. & C. Black), a recent off-shoot from "Who's Who," is also growing well. The tables and lists are most serviceable, and there is still ample room for expansion. We are curious, however, to see what the General Medical Council will say about the table of "Some leading London Specialists" in medicine, and what other specialists of at least equal capability will think.

The Englishwoman's Year Book, edited by Emily Janes (2s. 6d. net, A. & C. Black), is now in its 25th year. It contains a vast amount of varied and useful information on all departments of women's interests. But we have once more to remonstrate with the editor: our own publisher is not "C. Arthur Pearson" (page 41), but F. Hodgson, and it would really be a practical convenience to have the correction made.

Whitaker's Almanack (2s. 6d. net, cloth, or 1s. net, paper) is, of course, indispensable. In its 37th year, it is still expanding according to public needs. The vast mass of information is systematically and compactly set forth, and care is taken to select the most pointed details for practical utility.

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Willing's Press Guide for 1905 (1s.)—the thirty-second annual issue—is a very convenient manual, reasonably full for reference, with a variety of pertinent general information.

The *Almanach Hachette* (2 fr.)—"petite encyclopédie populaire de la vie pratique"—is an extraordinarily comprehensive repertory of information, with many hundreds of illustrations. As usual, it is daintily got up.

Messrs. George Gill & Sons publish *The Modern Language Calendar, 1905*, with proverbs in three languages (English, French, and German) for each day in the year. The ingenious constructors of this interesting and artistic calendar are J. Eisner and Rose Lamartine Yates.

NEW YEAR GIFT-BOOKS.

VARIOUS MOODS.

His Young Importance, by Ralph Harold Bretherton (6s., Heinemann), is a careful and interesting study of a perverse youngster very much in need of wiser guidance and firmer handling. Though this is not Mr. Bretherton's first appearance, he has yet something to learn in the *technique* of his business. The dialogue and the analytical description might be better mixed with great advantage, and a critical revision would lead to the disappearance of occasional excursions in

unfortunate directions—for example, in the section (there are no chapters) on "Desecration." The matter is so good and so carefully worked up that one cannot but regret the technical weakness. For all that, the book will have many attractions for more thoughtful readers.

The Ocean Cat's-Paw, by G. Manville Fenn (5s., S.P.C.K.), is "the story of a strange cruise"—as strange as any that the prolific author has taken us on before. A chance meeting on Dartmoor (between English holiday-makers and escaped French prisoners), the finding and the fitting-out of the schooner, the *rencontre* with a suspicious-looking brig in Havre harbour, a run to the West Coast of Africa on a scientific expedition under auspices of Government, and then complications ensue. The hero and his scientific uncle make an entertaining pair, and Captain Chubb is drawn with a masterly hand. But those that have voyaged with Mr. Manville Fenn will be eager enough to embark with him again and to see for themselves the strange things he has in store for them. The story is brisk, vivid, and crisply written, and adventures are plentiful. There are several illustrations by W. S. Stacey.

England Expects, by Frederick Harrison (3s. 6d., S.P.C.K.), is, naturally, "a story of the last days of Nelson." An ugly thing in connexion with this "expectation" is the press-gang; and the story opens with a sample of its vile operations. After some land adventures, two youths, friends, get aboard different vessels—an English ship and a French privateer. Each has his experiences, and the reader sees both sides of the game. The events in Trafalgar's Bay are narrated in historical detail; and the private knots take considerable unravelling thereafter. The story is well written, and the interest is lively and sustained. Several illustrations.

Harter's Ranch, by F. B. Forester (2s. 6d., S.P.C.K.), with illustrations by Harold Piffard, is a very stirring story of the Wild West. What had become of the Cheyenne Company's express messenger from Silver City with the dollars for the men's pay? No dollars, no work, and three hundred men are in mutinous mood in the first chapter. The junior engineer undertakes to ride to Silver City—some 400 miles—for the money; and those that accompany him will find adventures in plenty, all concentrating on Harter's Ranch. The story is written with great verve, and it gives a striking picture of the times of the winning of the West, with strong sidelights on character and on the difficulties with Red Indians (Apaches). The dangers and roughnesses of the situation bring out the grit of the people. For the final cause of all the complications, *cherchez la femme*—only in this case *la femme* is entirely innocent.

The Story of Art throughout the Ages, by S. Reinach, Member of the Institute of France (10s. net, Heinemann), has been translated by Florence Simmonds, and handsomely furnished forth by the publisher with 584 illustrations excellently reproduced. The volume is based on lectures delivered by Prof. Reinach at the Ecole du Louvre, and is issued simultaneously with the French edition. Let us hope that the book will be as successful as the lectures; it thoroughly deserves to be so. The exposition is necessarily condensed, but the main points are carefully kept in prominence, and the result is a comprehensive and lucid display of the course of artistic theory and performance from primitive times down to the present day. Bibliographies appended to each chapter point the way to deeper and ampler study.

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Messrs. Hachette offer handsome gift-books, interesting in matter, delightfully written, richly illustrated, and artistically got up. *Le Loup Noir*, by H. Le Charlieu (10 fr.), is one of the best stories of the season. The title rôle is appropriately filled by a rascal of a noble that got his elder brother banished to the Siberian mines, took possession of his estates, attempts to assassinate him on his return, and otherwise plays the villain of the piece. The scene is laid at St. Petersburg, with an excursion to Haarlem, in the reign of Catherine II. The story is brisk in movement and varied in interest, with quite adequate elements of excitement, and with virtuous characteristics fully counterbalancing the wickedness of the Black Wolf. Sixty-six fine wood engravings by Alfred Paris.—*La Pupille du Bonhomme*, from the busy pen of Pierre Maël (10 fr.), is a courageous and very successful attempt to depict in story certain aspects of literary and social Paris in the early part of the second half of the seventeenth century. The "Bonhomme" is La Fontaine, who is shown in the act of utilizing passing events in the composition of a number of his "Fables"

and Louis XIV., personages of the Court, Molière, Boileau-Despréaux, Colbert, and other magnates, political and literary, figure in the scenes. The "pupille" might have had a more attentive guardian, but perhaps she was fortunate enough, after all. The story mainly serves to exhibit the wayward career of La Fontaine, though it has its own interest besides; and it is very cleverly and amusingly managed. Sixty-six fine wood engravings by H. Vogel.

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Lectures pour Tous for 1904 (9 fr., Hachette) has its usual complement of over 1,000 pages of most varied, instructive, and entertaining matter, with countless illustrations—an admirable periodical that ought to be widely read here in these days of modern language teaching.

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(Continued on page 36.)

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Cape of Good Hope: Education Gazette. Vol. III.: 1903-04. Cape Town: issued by the Department of Public Education.

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Child-Study Association, British (London Branch): Tenth Annual Report. 3d. Newbold.

Chile: Annales de la Universidad. Tomos CXIV.-CXV.; año 62° Marzo-Abril de 1904. Santiago: Imprenta Cervantes.

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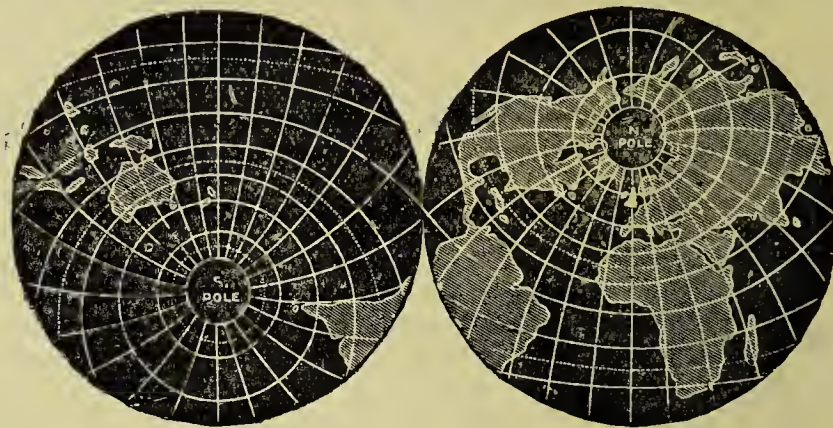
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15636. (C. E. YOUNGMAN, M.A.)—Given two circles and a point, draw two parallel tangents, one to each circle, equidistant from the point.

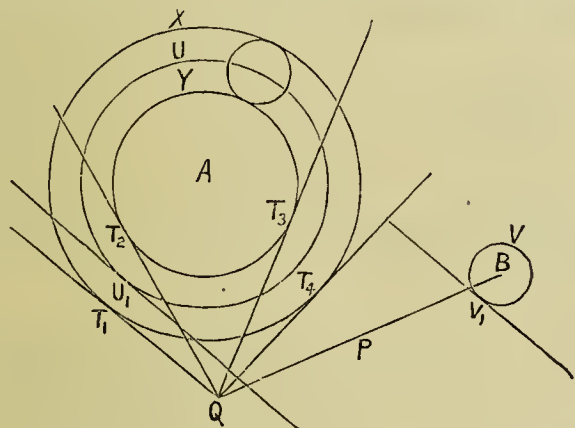
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(I.) The envelope of a straight line parallel to, and equidistant from, two parallel tangents (one to each of two given circles) is a circle having its centre at the middle point of the join of the centres of the given circles and its radius equal to the semi-sum or semi-difference of their radii.

The solution of this problem therefore reduces to the simple operation of drawing tangents from a given point to two determinate concentric circles; so that there may be either four solutions, or two, or none.

(II.) Given two circles and a fixed point, draw parallel tangents, one to each, equally distant from the fixed point. Suppose the problem done and a parallel to the tangents drawn through the given point. If the points of contact are on opposite sides of the line joining the centres, the difference of the perpendiculars from the centres on the parallel through the given point will be equal to the difference of the radii, and is therefore given. Hence bisect the line joining the centres, join the bisection to the given point, and on this line describe a semicircle; with the bisection as centre and half the given difference as radius describe a circle; where this cuts the semicircle join to the given point: this joining line gives the direction of the required tangents. The problem thus reduces to a very old one, namely: Given three points, to draw through one of them a line so that the difference of the perpendiculars drawn to it from the other two may be given. Suppose that the points of contact are on the same side of the line joining the centres. Then the perpendicular from one centre on the parallel through the given point will be radius + half the interval of tangents, while the perpendicular on the same line falling from the other centre will be radius - half the interval; therefore the sum of the perpendiculars will equal the sum of the radii, and is therefore given. Accordingly proceed as before, but use half the sum instead of half the difference of the radii as the distance at which the semicircle is to be cut.

(III.) Let A be the centre of circle U, B of circle V, and let the radius of U be greater than that of V. Let P be the given point. Join BP



and produce it its own length to Q. With A as centre and radii equal to the sum and difference of the circles, describe the circles X, Y. From Q draw tangents QT₁, QT₂, QT₃, QT₄ to these circles. To any of these four tangents parallel tangents can be drawn to the circles U and V such that P is equally distant from them. This follows at once from the fact that P is equidistant from Q and B.

[The PROPOSER remarks that it is clear from these solutions (Mr. Blaikie's especially) that the following construction might be given thus: Draw a circle B' symmetrical to B with respect to P, and then the common tangents to A and B', and lastly parallels to these touching B. And the same first step will serve when the problem is to draw two equal circles touching each other at P; one of them to touch A also, and the other to touch B.]

15591. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Excluding $m = X^4 + 1$, state the forms of m for which $X^{12} + 1 \equiv 0 \pmod{m}$. Show how to find X when m is given. *Ex.*, $m = 99961$.

Solution by the PROPOSER.

m must be either a prime $p = 24\omega + 1$, or a product of such primes. A root of $x^{12} + 1 \equiv 0 \pmod{m}$ may be found by resolving m into its 2-ic partitions

$$m = a^2 + b^2 = c^2 + 2d^2 = A^2 + 3B^2.$$

Then, if x_3, x_4, x_{12} be (proper) roots of the congruences, $x^3 - 1 \equiv 0, x^4 + 1 \equiv 0, x^{12} + 1 \equiv 0 \pmod{m}$, it is known (see page xvii of the Introduction to the present writer's large *Tables of Quadratic Partitions*, now in course of publication) that x_3, x_4, x_{12} may be found from the linear congruences $x_3 \equiv (A-B)/2B, x_4 \equiv (c/2d), (a-b)/b, x_{12} \equiv x_3 \cdot x_4 \pmod{m}$.

Ex.— $m = 99961 = p$. Here

$$m = 295^2 + 156^2 = 293^2 + 2 \cdot 84^2 = 277^2 + 3 \cdot 88^2.$$

Then $x_3 \equiv (277-88)/2 \cdot 88 \equiv 189/176$, whence $176x_3 \equiv 189 \pmod{p}$. Solving, this gives $x_3 = 15336$. Next,

$$x_4 \equiv \frac{293}{2 \cdot 84} \cdot \frac{275-156}{156} \equiv \frac{293}{168} \cdot \frac{119}{156} \equiv \frac{4981}{32 \cdot 9 \cdot 13},$$

whence $32 \cdot 9 \cdot 13x_4 \equiv 4981 \pmod{p}$. Solving, this gives $x_4 = 6062$.

Lastly, $x_{12} \equiv 15336 \cdot 6062 \pmod{p}$, whence $x_{12} = \pm 3102$. The other six roots ($< p$) may be formed as the least positive or negative residues of $x_{12}^5, x_{12}^7, x_{12}^{11} \pmod{p}$.

Note.—The *Tables of Quadratic Partitions* above quoted give the above partitions of all primes not greater than 100,000 (if capable thereof), and therefore enable the roots of the following congruences to be found:— $x^2 + 1 \equiv 0, x^3 \mp 1 \equiv 0, x^4 + 1 \equiv 0, x^6 + 1 \equiv 0, x^{12} + 1 \equiv 0 \pmod{p}$ for all such primes up to the limit 100,000 by the solution of linear congruences only (see page xvii above quoted).

15435. (Professor NANSON.)—If t_r be the arithmetic mean of the r -th powers of n positive quantities which are not all equal, prove that $t_1, t_2, t_3, t_4, \dots$ are in ascending order of magnitude.

Additional Solution by the PROPOSER.

Compounding the arrays

$$\begin{matrix} a^r, b^r, \dots, & a, b, \dots, \\ a^{r-1}, b^{r-1}, \dots, & 1, 1, \dots, \end{matrix}$$

we get

$$s_{r+1}s_{r-1} - s_r^2 = \sum a^{r-1}b^{r-1}(a-b)^2,$$

where $s_r = \sum a^r$. Hence, if a, b, \dots are positive and not all equal, we have $s_r^2 < s_{r+1}s_{r-1}$, and hence also $t_r^2 < t_{r+1}t_{r-1}$. Thus we have

$$t_1 < t_2/t_1 < t_3/t_2 < \dots < t_r/t_{r-1} < t_{r+1}/t_r;$$

whence, by multiplication, $(t_{r+1}/t_r)^r > t_r$; so that $t_r^{1/r} < t_{r+1}^{1/(r+1)}$, and hence $t_1 < t_2^{1/2} < t_3^{1/3} < \dots < t_r^{1/r}$.

15601. (Professor NEUBERG.)—Soient A' le milieu du côté BC d'un triangle ABC; B' et B'' les points où AC est rencontré par la bissectrice intérieure et la bissectrice extérieure de l'angle B; C' et C'' les points de rencontre de AB avec les bissectrices intérieure et extérieure de l'angle C. Les circonférences A'B'C', A'B''C'' peuvent-elles toucher le côté BC sans que l'on ait AB = AC?

Solution by the PROPOSER and W. F. BEARD, M.A.

1. Si la circonférence A'B'C' touche BC et coupe encore AB en C₁ et AC en B₁, on a

$$\begin{aligned} (BA')^2 &= BC' \cdot BC_1, & (CA')^2 &= CB' \cdot CB_1, & AC' \cdot AC_1 &= AB' \cdot AB_1, \\ BC' &= ac/(a+b), & AC' &= bc/(a+b), & CB' &= ab/(a+c), & AB' &= bc/(a+c) \end{aligned}$$

donc

$$\begin{aligned} BC_1 &= \frac{a(a+b)}{4c}, & AC_1 &= \pm(c - BC_1) = \pm \left[c - \frac{a(a+b)}{4c} \right], \\ CB_1 &= \frac{a(a+c)}{4b}, & AB_1 &= \pm \left[b - \frac{a(a+c)}{4b} \right]. \end{aligned}$$

Le signe \pm s'applique respectivement au cas où les points C₁, B₁ sont situés entre A et B ou au-delà de A; c'est le même signe pour les deux points. La condition $AC' \cdot AC_1 = AB' \cdot AB_1$ se traduit par l'égalité

$$\left[c - \frac{a(a+b)}{4c} \right] \frac{bc}{a+b} - \left[b - \frac{a(a+c)}{4b} \right] \frac{bc}{a+c} = 0,$$

qu'on ramène facilement à

$$(b-c)[4bc(a+b+c) + a(a+b)(a+c)] = 0.$$

Elle exige $b-c = 0$.

2. Si la circonférence A'B''C'' touche BC et coupe encore AB en C₂, AC en B₂, il faut que C'' et B'' soient situés du même côté de BC, par exemple du côté opposé à A. La condition $AC'' \cdot AC_2 = AB'' \cdot AB_2$

$$\text{donne alors} \quad \left[c + \frac{a(b-a)}{4c} \right] \frac{bc}{b-a} - \left[b + \frac{a(c-a)}{4b} \right] \frac{bc}{c-a} = 0,$$

$$\text{ou} \quad (b-c)[a^3 - a^2(b+c) + 5abc - 4bc(b+c)] = 0.$$

Cette équation convient encore au cas où C'' et B'' sont situés au-delà de A par rapport à BC. Elle est vérifiée si $b-c = 0$ ou si

$$f(a) \equiv a^3 - a^2(b+c) + 5abc - 4bc(b+c) = 0 \dots \dots \dots (1).$$

Supposons $b > c$. Comme $f(b) = -4bc^2 < 0, f(b+c) = bc(b+c) > 0$, l'équation (1) admet au moins une valeur de a comprise entre $b-c$ et $b+c$. D'ailleurs, l'équation (1) a une seule racine entre b et $(b+c)$. En effet, les racines de l'équation $f'(a) = 0$ sont

$$a' = \frac{1}{2}[b+c - \sqrt{(b^2 - 13bc + c^2)}], \quad a'' = \frac{1}{2}[b+c + \sqrt{(b^2 - 13bc + c^2)}].$$

Si le rapport b/c est compris entre $\frac{1}{2}(13 - \sqrt{165})$ et $\frac{1}{2}(13 + \sqrt{165})$, a' et a'' sont imaginaires, la dérivée $f'(a)$ est toujours positive et la fonction $f(a)$ croît constamment avec a et ne peut s'annuler qu'une seule fois. Si $b/c < \frac{1}{2}(13 - \sqrt{165})$ ou $> \frac{1}{2}(13 + \sqrt{165})$, a' et a'' sont réelles et l'équation $f(a) = 0$ a au plus une racine réelle dans chacun des intervalles $(-\infty, a'), (a', a''), (a'', \infty)$. Donc l'intervalle $(b, b+c)$, étant compris dans l'intervalle (a'', ∞) , a une seule racine de $f(a) = 0$.

15620. (D. BIDDLE.)—ABC being a given plane triangle of which I is the in-centre, draw tangents to the in-circle across the angles, so that the three resulting triangles may be equal and have a maximum area.

Solution by W. F. BEARD, M.A.

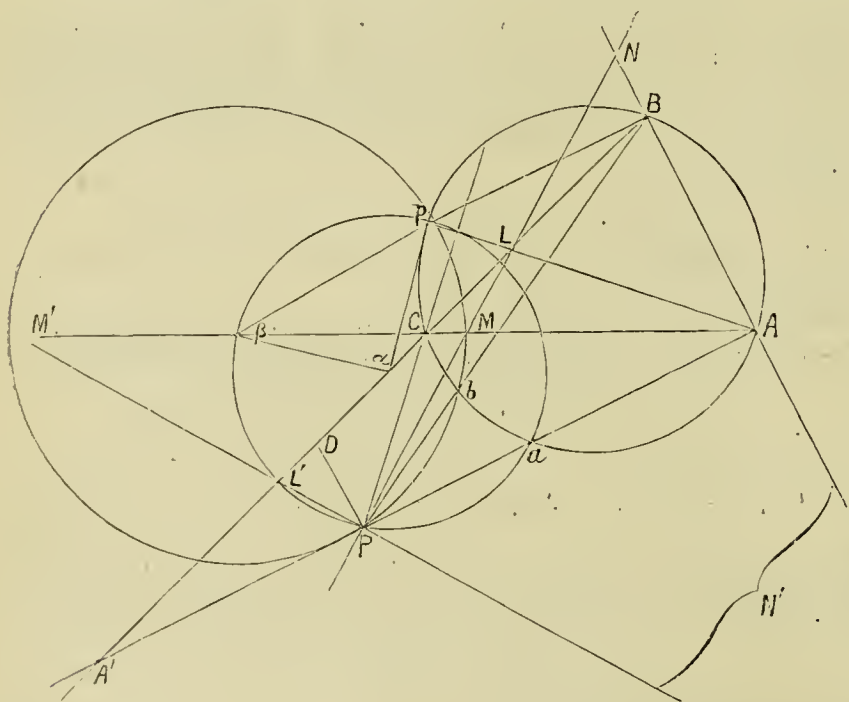
Let x, y, z be the lengths of the tangents which cut off the required equal triangles of maximum area. Then the areas of the triangles are $r(s-a-x), r(s-b-y), r(s-c-z)$. Thus $a+x = b+y = c+z$, and these are to be of minimum value. If $a > b > c$, then the least value of x is the length of the tangent which is bisected by the arc nearest to A; if this length = a_1 , then* $y = a-b+a_1, z = a-c+a_1$. Drawing tangents of these lengths, we obtain the required triangles.

[The PROPOSER suggests the following method for completing the construction of the required tangents:— x, y, z being the bases of the three equal triangles, let h_x, h_y, h_z be the respective heights. Then $xh_x = yh_y = zh_z$, and, h_x being now given, it is easy to geometrically determine h_y, h_z from the values found of x, y, z . Next, join BI, CI, and on them, as diameters, describe circles; also draw from B, C chords equal respectively to h_y+r, h_z+r joining the distant extremities with I. The required intercepts will be afforded by parallels (to these joins) tangential to the in-circle of the given triangle, the points of contact being found by parallels through I to the respective chords.]

15637. (C. E. HILLYER, M.A. Suggested by Question 14111, Vol. LXXI.)—Prove that the mid-points of the segments intercepted by the axes of a conic on the sides of a self-conjugate triangle are collinear; and that the circles described on these segments as diameters cointersect on the circum-circle of the triangle.

Solution by the PROPOSER.

Let ABC be a triangle self-conjugate with respect to a conic whose centre is P, and let the axes meet BC in L and L'. Join PA, meeting



the circum-circle of ABC in a , and BC produced in A' . Draw PD parallel to AB to meet BC in D. Then PA' and the parallel to BC through P are conjugate radii, as also are PD, PC and PL', PL ; therefore L, C, D, L' form an involution of which A' is the centre: therefore $A'C.A'D = A'L.A'L'$. But, since $CDP =$ supplement of $ABC = CaA$, P, D, C, a are concyclic: therefore $A'C.A'D = A'a.A'P$; and therefore $A'L.A'I' = A'a.A'P$; therefore L, a , P, L' are concyclic, i.e., the circle on LL' passes through a . Similarly the circle on MM' passes through b , and the circle on NN' through c .

It is required then to prove that the circles with their centres on the sides of the triangle ABC and passing through P, a and P, b and P, c respectively cointersect on the circum-circle. Let the first of these circles whose centre is a , the mid-point of LL' , meet the circum-circle in p , and let β be the centre of the circle Pbp ; it will be sufficient to prove that β is in AC.

Now $pAB = pbB =$ supplement of $pbP = \frac{1}{2}p\beta P = P\beta a$ and $pBA = paP = p\alpha\beta$;

therefore the triangles pBA and $p\alpha\beta$ are directly similar; and therefore also the triangles $Ap\beta$ and Bpa are directly similar: therefore the angle between βA and aB is equal to ApB ; therefore βA meets aB on the circum-circle, i.e., at C; therefore β is in CA. Similarly, the third circle also passes through p . Thus the three circles cointersect on the circum-circle and their centres are collinear.

* N.B. $a-b+a_1 < s-b$, for $a_1 < s-a$, which shows that it is possible to draw y, z of the required lengths.

Note.—In general one pair of perpendiculars can be drawn through a given point so as to intercept segments on the sides of a triangle whose mid-points are collinear, viz., the axes of the conic having the given point as centre with respect to which the triangle is self-conjugate.

If, however, the given point is the orthocentre of the triangle, then the conic is a circle (real or imaginary) of which any two diameters at right angles are conjugate. Hence Question 14111 is seen to be a particular case of the above.

15668. (Professor NANSON.)—The locus of the meet of perpendicular planes through two fixed lines is a quadric. Show that the three quadrics thus derived from the three pairs of opposite edges of a tetrahedron have a common curve of intersection.

Solution by W. H. BLYTHE, M.A.

Let a, b, c, d be the tetrahedron. Draw ae perpendicular to bed ; then the plane ace is perpendicular to the base plane bed , so that ec is one of the generators of the conicoid through the opposite edges ac, bd . Therefore the point e is on the conicoid, and may be similarly shown to be on the other two conicoids. We find then that the four points in the faces of the tetrahedron where the perpendiculars from the opposite vertices meet them are on the three conicoids; so also are the angular points of the tetrahedron.

Since the conicoids have eight points in common, they have a common curve of intersection. (Salmon's *Geometry of Three Dimensions*, p. 110.)

If we take A, B, C, D as the areas of the faces, and represent the angle between the planes A, B by (AB) , using areal co-ordinates, the equation to the curve becomes

$$BC \cos (BC) \alpha \delta + AD \cos (AD) \beta \gamma = DC \cos (DC) \beta \alpha + AB \cos (AB) \gamma \delta = BD \cos (BD) \alpha \gamma + AC \cos (AC) \beta \delta.$$

Note.—This problem may also be proved by projective axial pencils.

15619. (Professor NEUBERG.)—Soient A, A' les extrémités d'un axe d'une ellipse, M un point mobile sur cette courbe. On inscrit au triangle MAA' un carré PQRS dont le côté RS repose sur AA' . Trouver les lieux des points P, Q et du centre du carré.

Solutions (I.) by Professor SANJANA, M.A.; (II.) by R. TUCKER, M.A., and others.

(I.) Drawing the ordinate MK, we have

$$\begin{aligned} PS/SA &= MK/KA, \\ PS/RA' &= QR/RA' \\ &= MK/KA'; \end{aligned}$$

$$\begin{aligned} \text{hence } PS^2/(SA \cdot RA') &= MK^2/(AK \cdot KA') \\ &= BC^2/AC^2. \end{aligned}$$

Let $PS = y, AS = x$; then

$$y^2/[x(2a-x-y)] = b^2/a^2 \text{ or } a^2y^2 + b^2x^2 + b^2xy - 2ab^2x = 0,$$

an ellipse going through A. So the locus of Q will be an ellipse going through A' .

If O be the centre of the square, with co-ordinates f, g , we have $f = x + \frac{1}{2}y, g = \frac{1}{2}y$, so that $y = 2g, x = f - g$; hence, for O,

$$a^2 \cdot 4g^2 + b^2(f-g)^2 + b^2 \cdot 2g(f-g) - 2ab^2(f-g) = 0,$$

i.e., $b^2f^2 + (4a^2 - b^2)g^2 - 2ab^2f + 2ab^2g = 0$, and the locus is an ellipse going through both A and A' .

(II.) Let the perpendicular $MX = p$; side of square = y . Then $OX^2/a^2 + p^2/b^2 = 1$ (i.), O, the midpoint of AA' , being the origin.

$$p/y = 2a/(2a-y) \dots (ii).$$

Now

$$\begin{aligned} OX &= a - XA' \\ &= a - (a-x)(p/y) \\ &= [a(2x-y)]/(2a-y) \text{ (iii).} \end{aligned}$$

$$\text{Hence } [(2x-y)/(2a-y)]^2 + 4a^2y^2/[b^2(2a-y)^2] = 1$$

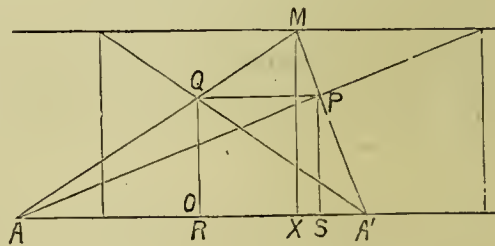
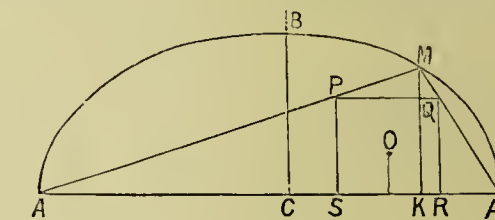
$$\begin{aligned} \text{by (i.), i.e., } & \beta^2(2x-y)^2 + 4a^2y^2 = \beta^2(2a-y)^2, \\ \text{i.e., } & \beta^2x^2 - \beta^2xy + a^2y^2 = \beta^2(a^2 - ay), \end{aligned}$$

i.e., an ellipse, because $\beta^2 < 4a^2$ is the locus of P.

Again, for locus of Q, if $OR = x'$, then $OX = [a(2x'+y)]/(2a-y)$, and the locus is $\beta^2x'^2 + \beta^2x'y + a^2y^2 = \beta^2(a^2 - ay)$, and the result is similar to the former.

Again, if X', Y' be the co-ordinates of the centre of the square in one position, $x' + x = 2X' = 2x' + y = 2x' + 2Y'$ and $y = 2Y'$; hence $x' = X' - Y'$. Substituting for x in the last equation, we get

$$\beta^2(X' - Y')^2 + 2\beta \cdot Y'(X' - Y') + 4a^2Y'^2 = \beta^2(a^2 - 2aY')$$



or $\beta^2 X'^2 + (4a^2 - \beta^2) Y'^2 = \beta^2 (a^2 - 2aY')$;
therefore the locus is an ellipse, because $2a > \beta$.

15671. (Professor SANJANA, M.A.)—From the centre of curvature at every point of a central conic the two normals other than the radius of curvature are drawn. Prove that the envelope of the chord joining the feet of these normals is $x^3/a^3 \pm y^3/b^3 = 1$, and that the locus of the pole of this chord is $a^2/x^2 \pm b^2/y^2 = 1$, the conic being referred to its axes.

Solution by A. S. TOMBE, M.A.

The feet of the four normals passing through (α, β) lie on the conic

$$c^2xy + b^2\beta x - a^2\alpha y = 0 \dots\dots\dots (1).$$

If $lx + my + 1 = 0$ join one pair of feet and $l'x + m'y + 1 = 0$ the other pair, then

$$(lx + my + 1)(l'x + m'y + 1) + x^2/a^2 + y^2/b^2 - 1 = 0 \dots\dots\dots (2)$$

is a conic through four feet and also through the centre of the ellipse. Comparing (1) with (2), $ll' = -1/a^2$, $mm' = -1/b^2$. If $lx + my + 1 = 0$ touches the ellipse, then

$$1 = a^2l^2 + b^2m^2 \dots\dots\dots (3);$$

we have therefore to find the envelope of

$$l'x + m'y + 1 = 0 \text{ or } x/a^2l + y/b^2m - 1 = 0 \dots\dots\dots (4)$$

with condition (3).

Differentiating in the usual way, we get

$$a^2l/(a^2y - a^2b^2m) = b^2m/(b^2x - a^2b^2l) = 1/(-a^2b^2lm).$$

Using (3), we get $x = a^4l^3$, $y = b^4m^3$; therefore $(x/a)^3 + (y/b)^3 = 1$. For the locus of the pole of (4) compare it with $Xx/a^2 + Yy/b^2 = 1$; therefore $x = 1/l$, $y = 1/m$; therefore, using (3), $a^2/x^2 + b^2/y^2 = 1$. For the hyperbola change b^2 into $-b^2$.

15579. (Communicated by Rev. T. WIGGINS, B.A.)—Sum to infinity the series $\sin^2 \theta - 3/2 \sin^2 2\theta + 3^2/3 \sin^2 3\theta - 3^3/4 \sin^2 4\theta + \dots$

[Note.—This was one of several series proposed for solution at an examination conducted by the Board of Education. Is the series convergent?]

Solution by C. M. ROSS.

In the first place let

$$\begin{aligned} S &= \sin^2 \theta - \frac{1}{2}m \sin^2 2\theta + \frac{1}{3}m^2 \sin^2 3\theta - \frac{1}{4}m^3 \sin^2 4\theta \dots \\ &= \frac{1}{2} (1 - \frac{1}{2}m + \frac{1}{3}m^2 - \frac{1}{4}m^3 + \dots) - \frac{1}{2} (\cos 2\theta - \frac{1}{2}m \cos 4\theta + \frac{1}{3}m^2 \cos 6\theta - \dots) \\ &= (1/2m) \log (1 + m) - (1/2m) \log (1 + 2m \cos 2\theta + m^2) \quad [\theta \neq (2n + 1) \frac{1}{2}\pi]. \end{aligned}$$

Now $m > 1$. Hence the given series is not convergent. If m were $\frac{1}{3}$ instead of 3,

$$S = \frac{3}{2} \log \frac{4}{3} - \frac{3}{2} \log (\frac{4}{3} + \frac{2}{3} \cos 2\theta) = \frac{3}{2} \log 2 - \frac{3}{2} \log (2 + \cos 2\theta).$$

15683. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Find a general expression for triangular numbers consisting of a certain digit repeated n times followed by another (different) digit repeated n times.

Solution by the PROPOSER.

A slight examination of triangular numbers will show that

$$x = 666 \dots 6 = 6 \cdot \frac{1}{9} (10^n - 1)$$

is the only number giving $T = \frac{1}{2}x(x + 1)$ of form required for small values of n . And in the general case

$$\begin{aligned} \frac{1}{2} [6 \cdot \frac{1}{9} (10^n - 1)] [6 \cdot \frac{1}{9} (10^n - 1) + 1] &= \frac{1}{9} (10^n - 1) (2 \cdot 10^n + 1) \\ &= [2 \cdot \frac{1}{9} (10^n - 1)] 10^n + \frac{1}{9} (10^n - 1) = 222 \dots 22111 \dots 111, \end{aligned}$$

(n two's followed by n units), as required.

QUESTIONS FOR SOLUTION.

15695. (H. A. WEBB, B.A.)—A spider and a fly are a feet apart. The fly starts moving in a direction at right angles to the line joining the animals, and continues moving with uniform velocity v feet per second in a straight line. At the same moment the spider starts moving towards the fly, and continues moving with uniform speed u feet per second ($u > v$) along the "curve of pursuit," i.e., at any moment the spider is moving directly towards the fly. Show that the spider will catch the fly after $au/(u^2 - v^2)$ seconds.

15696. (G. H. HARDY, M.A.)—Prove that

$$\frac{M_s}{-s} \frac{M_s}{-\infty} \frac{e^{(2m\theta + 2n\phi)\pi i}}{a + m\omega_2 + n\omega_1} = e^{a(\eta_2\theta/\omega_2 - \eta_1\phi/\omega_1)} \frac{\sigma(a + a - \beta)}{\sigma(a)\sigma(a - \beta)},$$

provided that $0 < \theta < 1$, $0 < \phi < 1$; that $\text{Re} \omega_2 / (i\omega_1) > 0$; and that $\sigma(a) \neq 0$.

15697. (Professor E. B. ESCOTT.)—Find all the integral solutions, if possible, of the equation $x^2 - 17 = y^3$.

15698. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Factorize into prime factors $N = (2^{127} + 2^{63} + 1)^2 + 2^{64}$; this contains 77 figures.

15699. (JAMES BLAIKIE, M.A.)—Prove that $m^{2n+1} + (m-1)^{n+2}$ is a multiple of $m^2 - m + 1$ [e.g., $1000^{15} + 999^9 = M(999001)$].

15700. (Professor NANSON.)—Eliminate the variables from

$$L_1/M_1 = L_2/M_2 = \dots = L_n/M_n$$

where L_p, M_p are linear homogeneous functions of $n - 1$ variables.

15701. (A. M. NESBITT, M.A.)—In the expansion of $(1 + x + x^2 + x^3)^n$ find the sum of the coefficients of x^{kn+r} where r is fixed (≥ 0 but $< n$), and k has all integral values from 0 to $3 - r/n$. [Examples.—If $n = 3$, the three sums are $r = 0, s = 22$; $r = 1, s = 21$; $r = 2, s = 21$. If $n = 4$, the four sums are each 64. If $n = 5$, the sum when $r = 0$ is 204, and for any of the other four values of r is 205.]

15702. (J. J. BARNVILLE, B.A., I.C.S.)—Having $u_n + u_{n+1} = u_{n+3}$ prove that

$$\begin{aligned} \frac{1.9.16}{1.2.3.6} + \frac{1.13.22}{2.3.4.7} + \frac{1.16.29}{4.4.5.9} + \frac{2.22.38}{3.5.7.13} + \dots &= \frac{119}{12}; \\ \frac{1.1.6}{2.3.3.4} - \frac{1.2.7}{2.3.4.5} + \frac{1.3.10}{3.4.6.7} - \frac{2.3.13}{4.6.7.9} + \dots &= 0. \end{aligned}$$

15703. (Communicated by A. V. KUTTI KRISHNA MENON, B.A.)—Prove that

$$\begin{aligned} \cos ax &= 1 - ax \sin bx - [a(a-2b)/2!]x^2 \cos 2bx + [a(a-3b)^2/3!]x^3 \sin 3bx \\ &\quad + [a(a-4b)^3/4!]x^4 \cos 4bx - \dots \end{aligned}$$

[Note.—The Proposer desires to obtain an elegant solution.]

15704. (R. F. WHITEHEAD, B.A.)—Expand $\theta/\sin \theta$ in ascending powers of $\cos \theta$.

15705. (S. C. BAGCHI, B.A.)—Four pairs of inverse points are taken on a cubic which is its own inverse in normal co-ordinates. The joins of corresponding points cut a series of straight lines in points ${}_rP_s$ ($r = 1, s = 1, 2, 3, 4$ for the first line of the series; $r = 2, s = 1, 2, 3, 4$ for the second; and so on). These points are mapped into curves in another part of the plane. The scheme of transformation

$${}_rP_s = \phi(x, y, {}_r\lambda_s)$$

gives that the range formed by the points where a parallel to the y -axis in the transformed figure cuts a group of four curves is equi-cross with any of the ranges in the first figure. Show that $\phi = u$ (u being a solution of Riccati's equation) is a possible form.

[Note.—The word "inverse" is to be taken in the general sense given by Salmon; see *Higher Plane Curves*.]

15706. (Professor COCHEZ.)—Construire les courbes

$$(1) \rho^2 = a + b \sin \omega + c \sin^2 \omega, \quad (2) \rho = \sin \omega / (2\omega - 3 \cos \omega).$$

15707. (Professor NEUBERG.)—On joint le sommet A d'une ellipse à un point quelconque M de cette courbe; la perpendiculaire en M sur AM rencontre l'ellipse en un second point N; enfin on achève le rectangle AMNP. Trouver le lieu du point P.

15708. (Professor NANSON.)—From Pascal's theorem deduce the equation of a conic referred to any two conjugate diameters as axes.

15709. (C. E. YOUNGMAN, M.A.)—The problem, To draw through a given point P across a triangle ABC a transversal DEF such that D bisects EF, belongs properly to the parabola (see Question 15456, Vol. VI., New Series, p. 103); but for actual drawing the following construction is easier:—Draw PMN parallel to BC (M on CA, N on AB); on it PL = PN; LV parallel to AB (V on CA); slide MV along CA till M comes to C, and then at its mid-point m erect a perpendicular mp = $\sqrt{CA \cdot CM}$; then mE = Cp, or (when P is below BC) pE = Cm. Prove geometrically, and modify for the case when DE : DF is to be a given ratio.

15710. (R. TUCKER, M.A.)—ABC is a triangle; d, e, f are the mid-points of the sides. Through the points d, e, f are drawn the anti-parallel $d'L', dM; eM', eK, fK', fL$, thus forming two triangles $K'L'M', KLM$. Prove

$$BC \cdot KK' + CA \cdot LL' + AB \cdot MM' = 0 \text{ (attention to signs) } \dots (i.);$$

$$2ABC - \Sigma CK'L' - \Sigma CKL = \Delta (11a^2b^2c^2 - \Sigma a^2 \cdot \Sigma b^2c^2) / 4a^2b^2c^2 \dots (ii.);$$

the equation to the circle KLM

$$D \cdot \Sigma \alpha\beta\gamma = \Sigma \alpha a \cdot \Sigma e^2 (2e^2 - a^2) (3a^2b^2 - b^4 + b^2c^2 - 2c^2a^2) \alpha \alpha \dots (iii.);$$

and to the circle K'L'M'

$$D' \cdot \Sigma \alpha\beta\gamma = \Sigma \alpha a \cdot \Sigma b^2 (2b^2 - a^2) (3c^2a^2 - e^4 + b^2c^2 - 2a^2b^2) \alpha \alpha$$

where $D \equiv 4abc [4a^2b^2c^2 - 2(a^4b^2 + b^4c^2 + c^4a^2) + a^2b^4 + b^2c^4 + c^2a^4]$

and $D' \equiv 4abc [4a^2b^2c^2 - 2(a^2b^4 + b^2c^4 + c^2a^4) + a^4b^2 + b^4c^2 + c^4a^2]$.

Find also the points O, O' (MacClelland, *Geometry of the Circle*) for the circles CLK, ALM, BMK and CL'K', AL'M', BM'K'.

15711. (I. ARNOLD.)—The sides of a plane triangle are in arithmetical progression. It is required to construct it when the common difference and vertical angle are given.

15712. (Professor SANJANA, M.A.)—In the triangle ABC, AD is the median to the side BC and GQ is the perpendicular to BC from G, the median point; also AD₁ is the symmedian, and KQ₁ the perpendicular from K, the symmedian point; segments ER, E₁R₁ and FS, F₁S₁ are similarly taken on CA and AB. Prove that

$$(D_1Q_1/DQ)(l^2 + e^2) + (F_1R_1/ER)(c^2 + a^2) + (F_1S_1/FS)(a^2 + b^2) = 12S \tan \omega.$$

15713. (Professor LAUVERNAV.)—Dans un triangle rectangle ABC, α, β, γ sont les points de contact de cercles ex-inscrits respectivement avec les côtés BC, CA, AB. Démontrer que, si les droites $A\alpha, B\beta, C\gamma$ sont concourantes sur la circonférence inscrite à ce triangle, les côtés de ce triangle sont proportionnels aux nombres 3, 4, 5.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9512. (ARTEMAS MARTIN, LL.D.)—The sides of a triangle are known not to exceed the lengths a, b, c . Find the chance that it is acute.

9924. (C. E. McVICKER, B.A.)—Two ellipses A, B have double contact. An ellipse C, confocal with A, meets B in four real points, and the common tangents to B, C are drawn. Using Graves's theorem, prove that one pair of the endless bands formed by these common tangents and the intercepted arcs are of equal length. Also note the following cases:—(a) when B reduces to a point pair (Graves's theorem); (b) when C reduces to a point pair, *i.e.*, the foci of A. Deduce MacCullagh's theorem by supposing B in case (b) to pass through one focus of A.

10285. (H. W. SEGAR.)—Show that the surfaces

$$xyz = a^3, \quad x^2(y^2 + z^2) = c^3(y^2/z^2 + z^2/y^2)$$

cannot have a common tangent plane without touching each other.

10376. (Professor SYLVESTER.)—If ϕ, ψ, ω are three algebraic functions of x, y, y', y'' such that ϕ', ψ', ω' contain a common factor $\theta(x, y, y', y'', y''')$, show that the complete primitive of $F(\phi, \psi, \omega) = 0$, where F is any function form, may be found algebraically.

[Professor Sylvester remarks that this question is an extension of a well known principle of Lagrange, and that it may itself be indefinitely extended in more than one direction.]

10465. (J. C. MALET, F.R.S.)—Writing $f(k, \theta)$ for

$$\sqrt{[k \sin \theta \cos \theta / (1 - k \sin^2 \theta)]},$$

prove that $2 \int_0^{\frac{1}{2}\pi} f(k, \theta) d\theta = \int_0^{\frac{1}{2}\pi} f(\lambda, \theta) d\theta$,

λ and k being connected by the relation

$$(1 - \lambda)^{\frac{1}{2}} = [2(1 - k)^{\frac{1}{2}} - k] / [2(1 - k)^{\frac{1}{2}} + k].$$

10493. (Professor BRILL, M.A.)—A top is apparently spinning steadily on a rough horizontal plane, the axis appearing to describe a cone of semi-vertical angle α about the vertical, with constant angular velocity Ω . Prove that, if the angular velocity of the top about its axis of figure be very slowly diminishing through friction and the resistance of the atmosphere, the angle of the cone will be increasing at the rate

$$kA\Omega^2 \sin \alpha (A\Omega^2 \cos \alpha + mga) / (A^2\Omega^4 - m^2g^2a^2),$$

where k is the ratio of decrease of the angular velocity about the axis of figure to its present value, A is the moment of inertia of the top about an axis through its centre of inertia perpendicular to its axis of figure, and a is the distance of the centre of inertia from the end of the peg.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, December 8th, 1904.—Prof. A. R. Forsyth, President, in the Chair.

Messrs. H. W. Chapman, I. O. Griffiths, L. N. G. Filon were elected members.

The following papers were communicated:—

"On a Deficient Multinomial Expansion," by Major P. A. MacMahon.

"The Application of Basic Numbers to Bessel's and Legendre's Functions," by Rev. F. H. Jackson.

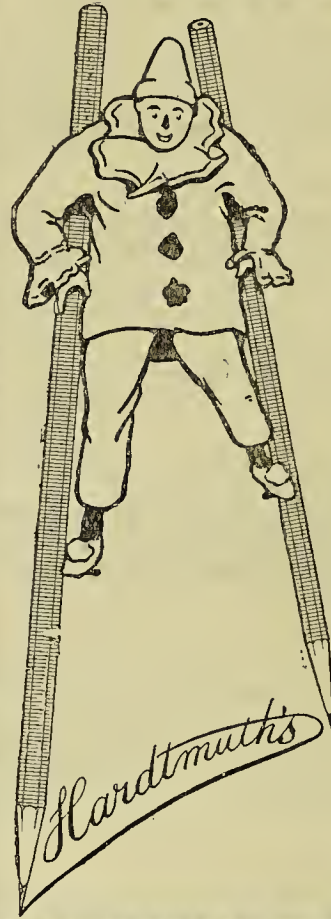
"On Groups of Order p^2q^2 ," by Prof. W. Burnside.

"On the Failure of Convergence of Fourier's Series," by Dr. E. W. Hobson.

"An Extension of Borel's Exponential Method of Summation of Divergent Series applied to Linear Differential Equations," by Mr. E. Cunningham.

"On the Linear Differential Equation of the Second Order," by Prof. A. C. Dixon.

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4. **LOWER FORMS EXAMINATIONS.**—The Midsummer Examination will commence on the 27th of June.

5. **PROFESSIONAL PRELIMINARY EXAMINATIONS.**—These Examinations are held in March and September. The Spring Examination in 1905 will commence on the 7th of March.

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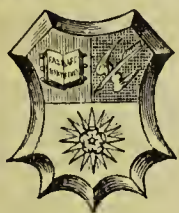
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The Educational Times.

WHATEVER may be the issue of the present *Greek* tussle over Greek—and those that know most of battles will be least confident in prediction—at all events the conduct of the contest affords significant hints of perils in the way of education. In other departments of national activity, indeed, we are very familiar with similar perils, and we suffer from them disastrously enough; but such experiences might be expected to induce some special forethought to safeguard the educational system, which has at last been recognized to be of peculiar importance for the future of the country. One cannot, however, but feel that the taint is in the blood, and that, as usual, the difficulty will have to be "worried through." Dr. Gow tells the official Army educationists that they know nothing about it; Prof. Armstrong brings down his sledge-hammer on the paynim; and an "up-to-date" journal in a region that bears a proverbial reputation for shrewdness tells the world that the opinion of the Head Masters is not of the slightest consequence. Men that have been trained in classics with little tincture of science cannot conceive of culture without Greek; men that have been trained in science with little tincture of classics would shovel Greek to the scrap-heap. Do not both parties alike misconceive not only the immediate question but also the far more important general question underlying it? And, if so, is there not danger in the counsels of both, except in so far as they prompt inquiry? A comprehensive view seems to be strangely rare.

The value of Greek, whether as discipline or as literature, is in no way involved in the present question. Though dragged into the controversy on both sides—on the one hand to support the particular case, or on the other hand to discredit the subject generally, or on both hands through honest logical oversight—the general importance of Greek is wholly irrelevant; and, it may be added, is no more assailable than the importance of Sanskrit or of the calculus. Whatever the issue of the conflict, Greek study—anything that can be properly dignified by the name—will certainly re-

main undiminished. But all that is aside from the question whether some meagre knowledge of the elements of Greek should continue to be required from a small number of lads of mathematical and scientific bent on the plea of all-round training. Now, there is no disagreement on the desirability of an all-round training before specialization; the only question is what this training shall consist in. Plainly a selection of materials must be made. And, supposing—on assumption of the worst—that Greek were dropped, would the training prove a failure? The experience of other countries—Germany, France, America, wherever there has been experience—appears to indicate that it would not. Misgivings there have been, just as there are misgivings here; but they have steadily been cleared away, we believe, by actual experience—a very familiar result in many other departments of life. But, we are told, this consequence would also follow: that presently Greek would be extinguished in all but a few public schools. Who in his senses could believe any such thing so long as there are boys with a faculty for language and literature, and the great universities are constantly offering golden gifts for classical attainments and promise? How can the Master of Emmanuel, for example, survey the classical prizes in his own university and agree with those that forecast "the practical extinction of the study of Greek" in the public schools? On the contrary, if the recalcitrant Grecians were disbanded, would the willing remainder not make more conspicuous progress? Whatever loss there might be would befall the students that dropped Greek.

Apart from experience elsewhere, would the non-Greek boy really suffer any appreciable loss? His time would be filled up somehow. If by a modern language, surely the discipline would go a considerable way to make amends for the absence of Greek accidence; and it is puzzling to understand how it comes about that classicists so stubbornly refuse to acknowledge the patent efficiency, say of French, both for discipline and for culture. Is it, indeed, a "soft option" to substitute translation and composition in French for translation and composition in Greek? Let those that have tried it and had their exercises competently examined make answer. The mere accidence, no doubt, shows French at a disadvantage; but beyond the accidence there are com-

pensations. Besides, consider Dr. Gow's remarkable—and, from one point of view, irrefragable—argument for the “scientific” character of the exercise in Latin. May it not tell heavily against Greek? If a boy has gone through the Latin discipline, may it not be asked why he should duplicate it? Having obtained it, how much does he lose by substituting French for Greek? The extent of grip of Greek is not to be exaggerated. It is not the first-class man's Greek that is in question: it is the boy's Greek—the unwilling boy's Greek; and nobody has ventured to assess it at a high figure. Altogether, like some mathematical oddments, the loss—to the boy of pronounced scientific bent—may be set down as less than any assignable quantity and equal to nought.

At the same time no one that appreciates Greek can regard its exclusion without regret, especially with the conviction that the menace has been brought upon it by its friends. Perverse methods, cherished by the University system, have gratuitously brought it to this pass; and recent efforts at reform, like the reforms of the years preceding the French Revolution, may possibly have come too late. New subjects have been crushing forward, and cannot find room except by the extrusion of subjects in possession. If some of these are “bread-and-butter” subjects, they are none the less instruments of culture; and, even if they be inferior instruments, their practical usefulness is a quality not to be ignored. Not every boy will be able to make a living wage on “culture”; and it by no means follows that “the keeping of our souls alive” is dependent on Dr. Rouse's cult of “the useless.” One would have more hope in frankly large views—such as the national outlook insisted on by Prof. Sadler—an unprejudiced recognition of the potentialities of all subjects, and no taboos on any route of study. The opening of the university doors to modern studies, so far, has been the entertaining of angels unawares; and the doors may advantageously be opened wider. The standpoint of the boy, too, needs to be more patiently regarded. There is much wisdom, it seems to us, in the words of Mr. A. C. Benson (*Times*, January 21): “It is not from the point of view of an anti-classicist that I desire that Greek should be made optional, but that the university should give a lead to the public schools in the direction of possible simplification, and thus promote the interests of the large majority of average boys at the schools without excluding them from her precincts; for it is my honest belief that, between antiquated methods and multiplicity of subjects, the average boy's educational prospects are—I will not say deliberately, but timidly—neglected and sacrificed at many secondary schools.” And it is only the average boy's own subjects that will bring him “culture” or raise him above the average. We would keep Greek if by reformed method and discipline it can yet be kept; but even Greek cannot be allowed to “sacrifice” the average boy when alternatives are known to be able to save him and make the best of him.

In the *Empire Review* for January, Mr. H. A. Roberts presents an interesting discussion of the question of “The Employment of the Graduate.”

NOTES.

ONE cannot but admire the boldness and dexterity of Dr. Gow when the irony of fate placed him in the chair at the conference of Public-School Science Masters. His claim that Latin is practically the best introduction to scientific method was set forth in remorseless detail, with complete lucidity, and, from his own point of view, with cogent force. Still, it could not but be patent that the material to which the method is applied makes a profound difference for scholastic purposes. Boys that remain stupid and listless in face of declensions and conjugations kindle into intelligence and alertness before a Bunsen burner or the leg of a frog. By his emphatic pronouncement in favour of natural science, however, Dr. Gow showed himself broad-minded as well as conciliatory. But the time difficulty still presses; and, if the method of teaching Greek is held to be as perfect as Dr. Gow holds the teaching of Latin to be, then the difficulty will inevitably be solved by the strain.

MR. WILLIAM BOUSFIELD, Master of the Clothworkers' Company and Chairman of the Girls' Public Day Schools Company, writes to the *Times* (December 29) to drive home the significance of the fact that Trinity College, Dublin, on December 20, conferred the degree of M.A. on nineteen women and the degree of B.A. on twenty women, who “were not *alumni* [*? alumnae*] of the college, but were students of women's colleges at Oxford and Cambridge.” The Clothworkers, who certainly “have done their share in aiding many forms of education, and the wide range of whose sympathies and the practical labour which they have as business men expended in the study of administrative methods give their opinion some weight in this matter,” have generously, as we have already intimated, paid these lady graduates' fees, and will continue to pay for others during the next two years, while the Dublin offer remains open. Oxford and Cambridge can hardly afford to remain quiescent in the face of this thoroughly well deserved rebuke: they may be expected promptly to set about devising some method of removing the difficulty and “determining the form which the change shall take and the share to be allotted to women in university counsels.” Meanwhile their isolation in this respect is by no means splendid.

THE Bishop of Elphin strongly seconds Mr. John Redmond's declaration that the university question in Ireland is not a Bishop's question, nor an aristocratic question, but pre-eminently a poor man's question. There need be no doubt that there is a substantial amount of truth in this view. At the same time there are evidences that many on the Catholic side are of opinion that “the policy of mere negation is no longer tenable.” It is pointed out that even a Maynooth professor has expressed doubts whether the benefits of such a university as Mr. Dillon advocates would “be sufficient to justify the Roman Catholics in refusing to make terms with the institutions already in existence”—that is to say, a “National” university, open to all religious denominations and relying for a Catholic “atmosphere” on

a numerical majority of Catholic students. Again, it appears that within the past two years fifty Catholic students have entered University College; while Trinity College has made a notable advance in offering the Roman Catholics a Divinity School of their own, with chapel and Catholic dean, within the College—a concession regarded by zealous Protestants with disfavour. Why not enter Trinity in hundreds instead of tens, and create there the desired numerical “atmosphere”? Would that lead to demonstrations, as at Innsbruck? Or is it preferable to continue to “pummel the Government”?

DR. R. D. ROBERTS, the Secretary to the Gilchrist Trustees, gives a most interesting sketch of the life of Dr. Gilchrist, of the nature of the Trust, and of the methods adopted by the Trustees, in the November issue of *University Extension*. He writes:

The name of the Gilchrist Lectures is a name to conjure with in the great centres of industry throughout the country. For over forty years the Gilchrist Lectures have drawn large audiences of artisans wherever they have been given. The most capacious available hall is secured in every place where the lectures are arranged; and, as a rule, the hall, however large, is crowded on the lecture nights. Since 1865, when the Trustees first established the lectures, about two and a-half million persons have attended the lectures, mostly of the artisan and wage-earning classes. During that period the Trustees have spent about £25,000 in carrying on these lectures. It is to the Gilchrist Trustees that the credit belongs of having started a movement for bringing larger opportunities of higher education within the reach of the working classes, and no organization has approached the success achieved by the Trustees within the limits they imposed upon their operations.

With this may be considered the work of another great educational trust, the Dick Bequest, whose latest report, covering the past fifteen years, by Prof. Laurie, has just been published. There is not a head master in an elementary school in the three north-eastern counties of Scotland participating in the Bequest that is not a university graduate.

IN the December number of *Education* (Boston), Prof. Elizabeth H. Avery, of Redfield College, South Dakota, offers “The Historical Solution of a Literary Problem”—the contrast in moral tone between the writings of the Italian Renaissance and the Shakespearean drama. She rejects Taine’s explanation by physical geography: “it was not that Italian skies do not favour stern control, so that southern peoples are naturally licentious and northern peoples chaste.” “It was rather,” she argues, “that in each case all previous history had prepared the way for results as we find them. England was, moreover, the meeting place of the sense of beauty and fitness born of the Italian Renaissance and the moral earnestness born of successive Teutonic reformations.” If the argument is not quite new to us, it is at any rate set forth pointedly and effectively.

THE American Rhodes Scholars’ views of their experiences at Oxford are presented by an Oxford correspondent in the *New York Tribune*. “Every one speaks well of them,” he says, “and there is no prejudice against them.” Well, that is just what ought to have been expected. “They are happy in their new life, frank in their recognition of what is useful and beneficial to them here, and not disposed to be critical or to look a gift horse in the mouth.” What is it that has made the deepest impression upon them?—

“It is the social life within the colleges and in the University town”—“what may be called the family life of the colleges, and the democratic spirit of the place.” What is most distasteful to them?—“The traditional discipline of the colleges.” This is not surprising, for the average age of the forty-three scholars is twenty-two; some of them have been teachers, and at least one of them has been a college lecturer. Still, “there is no evidence that they are seriously irritated or annoyed.” They look at the humorous side of the situation, and they have a native faculty of accommodation to environment.

It is the Oxford way to condense the arduous work of a year into three short terms of eight weeks each, and while the lectures are in progress to have neither recitation nor review, but to teach systematically and to coach incessantly, and to straighten out all the difficult passages and the most complex problems, leaving the student free to regain his breath and to read by himself during the holidays. This is a feature of the English system which impresses the American Rhodes Scholars. They tell me frankly that after being educated in the American way they are now being re-educated in “the English way. A neater way of putting it would be that they are combining the energy and variety of one system with the thoroughness and precision of the other.

A little experience will no doubt rub down the rough edges on both sides.

ADDRESSING a recent meeting of the Aberdeen Branch of the Educational Institute of Scotland, Dr. W. Leslie Mackenzie, of the Local Government Board, Edinburgh, enforced strongly the necessity for a regular medical examination of school children. There is one solid fact, he said, that makes short work of difficulties (such as trouble to the teachers and expense to the Boards), namely, that there are in Scotland at this moment 800,000 school-children, and, from all the positive information we have, percentages varying from 10 or thereby to 79 or thereby according to locality, are suffering from some ailment or defect that in some degree or another unfits them for school work, and damages their progress in the long race for life and a living. This is a very serious representation, undoubtedly. Is the state of matters any better in England?—a much wider question, and similarly important and insistent. Dr. Mackenzie pointed to the advances that have been made in medical inspection of schools in Germany, Switzerland, and Austria-Hungary—Nuremberg, for example, has fifteen school doctors. Among ourselves some halting steps have been taken, especially in the matter of eyesight; but no less important and urgent are throat and ear, and heart, and general as well as special conditions.

AT the annual Christmas Tree Festival at the Royal Normal College for the Blind, the energetic Principal, Dr. F. J. Campbell, challenged the world to find a happier family than his own, in spite of their affliction. Such a challenge speaks volumes for the administration, and should attract a generous reply to his plea for an increase of funds. Another strong argument in favour of a larger expenditure on the education of the blind is the astonishing fact that so many as 89 per cent. of the pupils that leave the College are able to earn their own livings. Surely Dr. Campbell will not have difficulty in finding three thousand subscribers of one guinea a year for five years to pay off the mortgage on the buildings.

SUMMARY OF THE MONTH.

IMPORTANT EDUCATIONAL CONFERENCES.

THE ASSOCIATION OF HEAD MASTERS.

THE annual general meeting of the Incorporated Association of Head Masters was held at the Guildhall, London, on January 11 and 12, under the presidency of the Rev. James Went, M.A., Head Master of Wyggeston School, Leicester. Mr. Went spoke strongly of the backwardness of secondary education, tracing it to various causes, and hoping for good results under the Act of 1902. He looked with interest on the experiment of educating pupil-teachers in secondary schools; but he thought that, as a matter of principle, it was obvious that the cost of training should be defrayed by the national Exchequer, although it was hopeless to ask increased grants from the now depleted Treasury. There might be a social difficulty with a certain number of parents; but the idea that because a boy's parents were in relatively poor circumstances that boy was not fit to associate with sons of successful manufacturers was one which he found it difficult to describe in terms of due moderation. Speaking of the new Regulations for Secondary Schools, he said that the most striking fact about them was that they had been received with so much calm approval. This was highly satisfactory. But he believed that the calmness was partly due to the fact that they had not yet got over the shock caused by their sudden publication. The Regulations would come before the conference, and he proposed to mention only two points. The scale of grants suggested that, given an equal number of boys in each of the four years, the amount *per caput* would be £3. 10s. Few schools would be able to claim on any considerable number in the fourth year, and the average grant would not, he thought, much exceed £3. The loss to all schools of the A type, which had been earning an average of about £5, would, of course, be very serious. The other point referred to the question of examinations. By Clause 9, schools in the first or second year might not, except by express permission of the Board, sit for any external examination, except one which comprised the whole school, or one held solely for the award of scholarships. It was not easy to see the reason for this restriction. Many of them found the Local Examinations, Preliminary, Junior and Senior, an effective way of maintaining a standard. They were a stimulus to the boys, and they were not without a wholesome effect even on the masters. They had received an authoritative assurance that, when the University Local Examinations were utilized for the school examination, the conditions of the clause would be fulfilled. In many schools this would remove the objections felt to this clause. There were other schools, however, which would suffer serious inconvenience, and, having regard not only to these schools, but to the general convenience and comfort of working, it was unfortunate that the Board had not felt able to leave a detail of this kind to the discretion of the head master. This point at once raised the question of the inspection and examination of schools. It was a question which would have to be considered in the near future, on the ground of expense as well as of educational efficiency. He believed, as the result of a good deal of experience of various methods, that a combination of the University Local Examinations, or of the examinations of the Joint Board, with an inspection of the whole school by a qualified man sent down by the universities, and an oral examination, when necessary, of the younger boys, would be found to be the best, not only as regarded convenience and efficiency, but also as regarded economy.

The following resolution, proposed by Dr. W. H. D. Rouse (Perse School, Cambridge) and seconded by the Rev. R. D. Swallow (Chigwell), was passed after considerable discussion:—

That this Association regards the new Regulations for Secondary Schools with satisfaction in general, but regrets that the Board of Education does not provide—(1) for the calculation of grants upon terminal attendance; (2) for the recognition of advanced courses to follow upon the existing four-year course; (3) for ensuring comparative freedom of curricula to schools satisfying certain tests of a higher liberal education.

A rider, moved by Mr. T. Varley (Winchester), was adopted in these terms:

But that this Association does not consider that the financial basis on which grants are calculated is at all adequate, and earnestly protests against any application of the Regulations to secondary schools hitherto earning grants from the Board, and recognized as doing good educational work, which would result in such schools receiving grants on a lower basis than in the past, and particularly in the case of schools which have,

with the sanction of the Board, incurred substantial capital expenditure in the matter of buildings or equipment to enable them to qualify for such grants.

And, on the proposal of Mr. R. W. Hinton (West Hampstead), it was agreed to add to the resolution this clause:

And (4) that the Board of Education does not provide for an elastic percentage division of the whole school time when prescribing for groups of subjects, in place of the existing rigid *minima* of hours or periods in each week.

On the question of School (Leaving) Certificates the following resolutions were passed:—

(1) That this Association desires (a) that all university authorities in England should co-operate in establishing a general system of school certificates, and (b) that the Board of Education should appoint a Board of Control for the purpose of correlating the proposals of such authorities. (2) That there should be a division of successful candidates into a first and a second class, and that marks of distinction should be given in the several subjects to such pupils as are worthy of special notice. (3) That periodical inspection of a school should form a condition of the grant of certificates to its pupils, and that the report of such inspection should be taken into consideration by the examiners for these certificates. (4) That the Association deprecates the division of the work between, and the system of dual marking by, external and internal examiners; provided always that the examining body takes sufficient measures to recognize the curriculum of the school examined and to set papers suitable thereto.

On the motion of Canon Bell the recommendations of the conference on the tenure of assistant masters in public secondary schools under Board of Education schemes or other special instruments of like effect were adopted. Among other things this conference recommended that a salaries scheme should, with the approval of the governing body, be established for each school, to include (a) provision for annual or other periodic increases of assistant masters' salaries, such increases to be automatic, but each rise to require the assent in writing of the head master; (b) power for the head master to recommend increased salaries, a note being added to the effect that it was considered highly desirable that the commencing salary paid in a public secondary school to any master registered in Column B should be not less than £150 per annum, non-resident. It was further recommended that provision should be made for pensions for assistant masters, and a form of agreement was submitted. The Council were also instructed to consider what further action could be taken.

Resolutions were also adopted with reference to the federation of educational associations, approving the draft charter of the proposed College.

The main feature of the second day's proceedings was the discussion of the question of Greek on a motion by Mr. Swallow, who reviewed the recent history of the question and declared that the adoption of the report of the Cambridge Syndicate would presently extinguish Greek in all but a few public schools, and soon render it as much a luxury of the few as Hebrew is to-day. He thought they must leave it to schoolmasters, influenced by leaving certificates, to secure what was, to his mind, so essential in the readjustment of studies and examinations—that while, on the one hand, candidates for a degree in Mathematics and in Science must receive their share of humanistic training, whether under the form of modern or ancient languages, candidates, on the other hand, for a degree in Arts should not be left without training in mathematics and natural science. The following resolutions were carried, four or five amendments having been put to the meeting and lost:—

(1) That, in the opinion of this Association, it is desirable that the universities should institute a twofold Entrance Examination—(a) for candidates proceeding to degrees in Arts, in general as at present, but with a higher standard in literary subjects; (b) for candidates proceeding to degrees in Mathematics and Science with a modern language—including translation by sight, composition, and an oral test—as an alternative for Greek. (2) That the provision for papers in English and History, and for the omission of Paley's "Evidences" from the Cambridge Previous Examination as laid down in the first report of the Cambridge Studies Syndicate, should be insisted upon in examinations under both (a) and (b) above. (3) That a new degree in Mathematics and in Science should be instituted, differing in title from the degree in Arts, but of precisely the same university standing.

After some discussion, resolutions on the education of intending pupil-teachers were adopted as follows:—

(1) That this Association cordially approves of the proposal of the Board of Education that candidates for pupil-teacherships in public elementary schools should receive a substantial portion of their education

in a public secondary school. (2) That this Association further considers it desirable that as many recruits as possible for pupil-teacherships in public elementary schools should be obtained from the ranks of ordinary pupils of endowed secondary schools. (3) That, in order to effect the latter purpose, the salaries of assistant teachers in elementary schools should be considerably increased.

A discussion on "The Teaching of Geometry," opened by Mr. Montague Jones, concluded the proceedings.

THE PUBLIC SCHOOLS SCIENCE MASTERS.

THE Public Schools Science Masters' Association held their Annual Meeting and Conference in Westminster School on January 14, Dr. Gow in the chair, in the absence of the President, Sir Michael Foster, through illness. Dr. Gow said that, in the nature of things, there was no absurdity in a classical teacher's presiding over an assembly of science teachers, since the earlier stages of classics, as now taught, were designed to be an introduction to scientific method, and were, in his opinion, the best foundation for work in natural science. Consider for a moment what was the real function of the elementary classes in Latin. A boy began by learning certain typical forms in declension and conjugation. It was true that he did not make those typical forms for himself, but neither did he in any other inductive science. There was not time enough for that, and he assumed, in grammar, as elsewhere, the generalizations made by the labour of many ages of men. Given the typical forms, he was next put through an elaborate course of parsing, which was merely scientific classification. When a boy described *amabo* as "first person singular, future indicative active, first conjugation," he assigned to that one word no less than six characteristics arranged in a scientific, logical order from species to genus. The process was precisely the same as that which was required of the student of zoology or botany or conchology, with this advantage, that in language the process can more easily be reversed, and the learner required, when certain characteristics were given, to name a word which contained them all. After practice of this kind in one genus at a time, the boy proceeded to translate short sentences from Latin into English and from English into Latin. He thus learned, little by little, that certain genera and species might or must occur in combination and certain others not. Gradually he came to a Latin book, and what, for practical purposes, was a Latin book in the first instance? It was a huge collection of words of all genera and species grouped together in every conceivable way, and at first sight utterly confusing. The boy was required, then, first to parse every word as it stood, and then to look for the necessary constituents of groups and to add to them the other possible constituents, and so gradually to arrive by instalments at the mind of the creator of that book. So far, this was a purely scientific process; and not only did it lie within the compass of any boy of average intelligence, but also it was by far the most convenient introduction to science, for the specimens were practically unlimited. They were not destroyed by the process of analysis, and, if all the boys in a class had the same book, then all of them had the same specimens arranged in the same order without any trouble and with a *minimum* of cost. He might add here that for the present purpose French and German and English were inferior to Latin and Greek, simply because in the former the genera and species were not distinguished by such clear marks and the groups were not of anything like the same complexity. They neither stimulated nor taxed a boy's mind to the same degree. This scientific process had been brought, in the teaching of Latin, to such a degree of perfection that its very perfection was likely to be its undoing. There were some persons, including, he was sorry to say, many classical scholars, who, bitten by the prevailing craze for utility and immediate results, thought that Latin was learnt in the first instance for the purpose of reading Latin books, and wanted to get at the books quicker, without so much preliminary training. He wished to protest against that suggestion. If it were carried out, it would deprive education of its best instrument, the most handy and rapid and versatile machine of them all. He had no objection to a more summary treatment of any other language if Latin had been well taught first, but elementary Latin contained the concentrated wisdom of many ages of teachers, and it would be foolish to alter it materially. It was true that they taught in Latin grammar some genera and species that did not often occur in literature; but to the man of science the exception was quite as interesting as the rule, the rarity as the common form, and our ancestors added these things to the Latin grammar because they would have no

slovenliness in what they regarded as the basis of all education, the best introduction to every study. If comparisons were required, he could point to many by-ways of natural science that to the vulgar would seem as ridiculous as any nicety of Latin grammar. The scientific treatment of Latin grammar required that the exceptions should not be ignored, and it seemed to him of the highest importance that children should be taught from their earliest years to do their work perfectly without haste and without scamping of details. For that purpose the *minutiae* of Latin grammar were as important as the weightier matters. It was not an alteration of method that was wanted, but a clearer theory of education and a closer watching of boys. The scientific study of Latin passed gradually into the artistic, and many boys who were good at the first were not good at the second, which required some special faculties. The schoolmaster should at this stage be on the look-out to prevent waste and injustice, to discern the boy who had a call to literature from the boy who had a call to science, and to transfer the latter to the *pabulum* on which he could thrive. In the controversy that was now raging at the universities he was an advocate, not of the exclusion of Greek, but of the inclusion of natural science. He should not say anything about Greek, because his reasons for wishing to retain it were, in the main, temporary and might be removed if some other reforms were introduced at the same time. But his wish to add natural science was permanent. He thought that a boy should have it impressed on his mind that literature and art and politics and philosophy were not the whole of the humanities, as they were usually said to be, and that he should be given at least a glimpse of the vast field of human labour which a classical education left unexplored. Not all boys, of course, would profit by it, any more than all science men profited by a glimpse of Greek, but the best of them, the most thoughtful and the most modest, would always be grateful for it.

There was a brisk discussion on "The Importance of including both Latin and Natural Science in a scheme of General Education," a paper by Mr. Douglas Berridge (Malvern); and other papers read were "Recent Proposals for School-Leaving Certificates," by Mr. C. I. Gardiner (Cheltenham); "The Use and Misuse of Terms in Science Teaching," by Mr. T. L. Humberstone (Toynbee Hall); and "The Possibility of Teaching 'Scientific Method' to Boys whose Education is almost entirely Literary and who have no time for a regular Course in Chemistry and Physics," by Mr. F. B. Stead (Clifton).

THE CLASSICAL ASSOCIATION.

THE Classical Association of England and Wales held a brilliant *conversazione* at University College, London (January 6). Two short lectures were delivered, by Prof. Percy Gardner and by Dr. Gilbert Murray. Prof. Gardner explained and illustrated the advantages of "The Use of Lantern Slides in Classical Teaching." Incidentally, he said he was inclined to think that, while training in Latin grammar was a splendid discipline, Greek might well, in most cases, be studied with less exactness, haste being made to introduce pupils to the literature. Dr. Murray spoke on "Some Points in teaching Greek Plays." The main thing was to realize in a play the inner motives of the actors, and to remember that the words were spoken and not written to be read, and that they needed to be immediately intelligible. The teacher should read and re-read his play with this in his mind, and not treat it mainly from the analytic point of view in the matter of language. There had been a vast improvement in this respect during the last twenty-five years.

The general meeting of the Classical Association was continued and concluded on January 7. After some discussion of the very old question of the pronunciation of Latin, and a couple of papers on the very obvious utility of Latin and Greek as instruments of mental discipline, the Lord Chancellor, who has succeeded the Master of the Rolls as President, delivered an address, advocating wider reading for the attainment of facility and enjoyment, technical accuracy being acquired gradually: we quote the main points in another column. A motion by Prof. Ernest Gardner was carried: "That the Council be requested to nominate a representative Committee to consider by what methods those employed in classical teaching can be helped to keep in touch with the most recent results of discovery and investigation." Mr. T. E. Page read a humorous paper on the concentration of classical work in schools on what is essential. The Rev. W. C. Compton wished to see a simplification of school grammars by separation of the indispensable from the more exceptional forms; and Prof. Postgate wanted a new Latin

dictionary to replace Lewis and Short—"one of our greatest needs."

THE MODERN LANGUAGE ASSOCIATION.

THE Modern Language Association held their annual general meeting at Manchester on January 12 and 13, Prof. M. E. Sadler, President, in the chair. In his presidential address, Prof. Sadler said that in the educational movement which was now stirring the mind of England certain conclusions seemed to be receiving almost general assent—first, there was need for more of the humanities in our national education, need for more training of the imagination and the sympathies through the study of literature, history, and art, and need for more development of the power of expression in the mother tongue; secondly, that there was special need for the closer adjustment of the courses of study in our secondary schools for boys to the real requirements of those who were destined for important positions in business and administrative life; thirdly, that it was becoming necessary to decide more definitely what should be the relation of the central authority of the State to the work of national education, and especially to the work of the secondary and higher schools; fourthly, that it was essential to secure for our schools, and especially for our secondary day schools, a sufficient and steady supply of highly competent and liberally educated teachers, and to retain their services by adequate salaries and suitable conditions of work. It was on the personality, the intellectual and moral power, the gifts and experience of the teacher, not on the mere provision of buildings or on the planning of courses of study, though both of these were important, that the real vitality and welfare of a national system of education depended. Did not the humanities in their deeper sense mean a study of man and of his environment, the physical conditions which affected his life, the language in which he expressed his thought, the relationship between nations and between races, the influence of past generations on the present, the economic factors which determined his wealth or poverty, the institutions which had been the backbone of his corporate life, his philosophy, and his ideals? Did we not really mean by the humanities that whole group of studies which threw light upon man in his relation both to other men and to the world in which he lived? From this point of view there was no ultimate conflict between the humanities and physical science. Both aspects of study were indispensable to any real knowledge of the conditions of human life. What was really at issue was, partly, the amount of time which it was expedient to assign in a course of general education to each of the two disciplines, and, chiefly and fundamentally, the relative importance which should be attached to the material and to the moral or intellectual factors respectively in the explanation of the course of human development. But were not these questions such that it was wise to allow for great and necessary divergence of opinion? Nor, again, was it just to maintain a sharp antithesis between the classical humanities and the modern. Both in their seasons were necessary elements in a course of humane education. Imperial organization was not a modern question only, and Plato had a message as well as Hegel or Herbert Spencer. The points really at issue were, partly, the choice of a particular linguistic instrument for the training of the mind, and, partly, though not to any great extent, a certain difference of view as to the relative claim upon school time of the study of man in the past and the study of man in more recent days and in the present. But were not these, again, points in regard to which it was prudent to allow wide latitude to those engaged in education and upon which any ruling was impossible? The humanities had, however, become sterile in education unless they were informed by a purpose. Was not their purpose in training, apart from their virtue in intellectual discipline and in the carrying forward of great traditions of thought and feeling, to inspire a desire for the betterment of human life? This led him to a thought which seemed to be gradually taking more definite form in our educational discussions. Was it not expedient that the work and studies of our schools should be more consciously inspired by national feeling and by more definite national aims? Was it not true that we might find more motive power, applicable alike to many different types of schools? Our national unity was based upon admitted diversity of conviction, and a national system of education must correspond to and reflect the essential qualities of national life. Instead of endeavouring by a fixed and uniform system of education to make perfect the same, should we not rather give free scope to everything that made for variety and to sincerity of personal conviction and of aim?

A resolution welcoming the report of the Cambridge Examination and Studies Syndicate, and pledging the meeting to make every effort to further the carrying of the report, was adopted; and some good papers were read.

The second day opened with an excellent paper on "The Teaching of French Literature in English Schools," by M. Barlet (Mercers' School), who claimed more time for the subject, and emphasized the distinction between instruction and education. Mr. M. P. Andrews (Bolton) dealt with "Some Considerations of Time in Modern Language Teaching"; he thought ten was the earliest age for beginning—perhaps eleven might be better. Mr. J. W. Headlam, Staff Inspector of Secondary Schools for the Board of Education, spoke energetically on the neglect of English in English schools, and the Rev. H. J. Chaytor (Crosby) contended that French was the best language for philological training.

THE ASSOCIATION OF ASSISTANT MASTERS.

THE annual general meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held at Mercers' School, Holborn, on January 4. Mr. G. E. S. Coxhead (Liverpool Institute), President, said the Act of 1902 gave the secondary schools an opportunity of getting back again into the stream of national feeling and progress. That Association could help to co-ordinate the three grades of education, and, at the same time, they could also help to promote a clearer realization among all sections of teachers that they were members of a common profession. Mr. G. F. Daniell, the retiring Chairman, presented the Council's report for 1904, which stated that the number of members of the Association had risen from 1,652 to 1,748. If they still had to wait for the satisfaction of their just claims to better security of tenure, higher pay, and pensions, the fault did not lie at the door of the head masters. In a fairly recent scheme of the Board of Education for one of the greatest public schools in England there was a proviso that all the 32 house masters should, with six possible exceptions, "be bachelors or live as such." In many schools marriage was practically inhibited by the smallness of the salaries paid. He believed it possible to have a great organization of higher education (including secondary) without destroying the individuality of the teacher or of the school. But there was a grave danger of petty and injudicious interference with the details of school management. With regard to the regulations for secondary-school buildings and for the training of pupil-teachers, he feared that when the available rates and other sources of income had been drawn upon there would be no money properly to remunerate a good teaching staff. He welcomed the intrusion of the Local Authorities. After some preliminary, and probably costly, mistakes we should find a greatly improved state of affairs in higher education. The following resolution was agreed to:—

That, in the opinion of this Association, any endowed school for which the Local Education Authority—acting through an Education Committee constituted in accordance with the provisions of the Education Act of 1902—provides, or is prepared to provide, a large proportion of the money required for the maintenance of the school, should be controlled in the manner which appears most desirable to the Local Education Authority; and, further, that the Board of Education should not oppose, in such a case, the abolition of the existing governing body, if the Local Education Authority is in favour of such abolition—provided that both on the Local Authority and on the committee of managers of the school there is adequate representation of secondary and university education.

A number of other resolutions were adopted, recommending increase of salaries and the advertising of vacancies in the public Press, criticizing the new regulations in regard to the average grant and the omission to recognize the official Register of Teachers, urging the claim of the Association to direct representation on the Teachers' Registration Council, and approving of the proposed formation of a federation of associations of secondary teachers. In a racy paper entitled "A Plea for the Useless," Dr. Rouse (Cambridge) said the great problem of to-day was, not how to keep our trade, but how to keep our souls alive; if any person with a living soul needed compulsion to learn Greek, there must be something wrong with the way he was taught. A motion "that this meeting welcomes the report of the Cambridge University Syndicate on Studies and Examinations, especially that candidates should be permitted to take one or two modern languages in place of a classical language," was carried, after discussion, by 49 votes to 13. The final discussion had for subject "The Teaching of English."

THE ASSOCIATION OF ASSISTANT MISTRESSES.

THE twenty-first annual meeting of the Incorporated Association of Assistant Mistresses in Public Secondary Schools was held on January 14, at University Hall, Gordon Square, W.C., Miss Laurie, President, in the chair. Miss Laurie said that the number of members was now over eight hundred, an increase of over a hundred in the last year. She also reported an increase in special donations. The Association had taken definite action with regard to the representation of women on the London Education Committee and on the Scotch Education Board. A memorial on the regulations for secondary schools had been sent to the Board of Education, urging that the total of seventeen hours required by the Board for the course of study prescribed in order that the grant may be duly obtained would tend seriously to diminish the freedom that now exists in secondary schools for girls not at present in receipt of Government grants. On school certificates the Association had expressed general agreement with the scheme of the Board of Education. The salary scheme was the outcome of discussion at five Committee meetings. As to the organization of secondary education in this country, she pointed out that, although a determined effort was being made, the difficulties were great, because the nation dreaded organization almost as much as it dreaded ideas.

After much discussion of the salaries question, it was agreed that the *minimum* initial salary during a probationary year for a mistress with a University degree, or its equivalent, and training should be £120 a year, and that for others the *minimum* should be £100. It was also agreed that the *minimum* rate of augmentation should be £10 a year for the first two years, and afterwards £5 a year until a *minimum maximum* of £150 for non-graduates or of £200 for graduates was reached. The Committee had proposed that further increase should be a matter of arrangement with the governing bodies from time to time, so that senior mistresses of special qualification should receive £180 to £200 a year. An amendment substituting the words "£300 or more" as the proposed *maximum* was carried.—On the question of school certificates, it was resolved "that it is not desirable that examinations for such certificates should be conducted by a single central organization"; and several motions on points of detail were adopted.

ASSOCIATION OF UNIVERSITY WOMEN TEACHERS.

THE annual report of the Association of University Women Teachers shows an increase alike in membership and in work accomplished. The number of applications for teachers received and the number of appointments made were both in excess of the numbers last year—403 applications as against 298, and 242 appointments as against 185. There has been a marked increase in the applications received for posts of greater importance and responsibility. The past year has been in many ways a prosperous one for well qualified teachers, owing, in large measure, to the opening of so many new secondary schools by the Education Authorities of the counties and county boroughs. In this connexion it is noteworthy that a considerable number of applications for teachers has come from the directors of education in various country districts, and that, in some cases, this direct application has been the means of raising the scale of salaries originally contemplated. Miss Clough, Vice-Principal of Newnham College, Cambridge, has been elected President of the Association for the current year.

THE NORTH OF ENGLAND CONFERENCE.

THE third annual meeting of the North of England Education Conference was held in Liverpool on January 6 and 7, Lord Stanley of Alderley presiding over an attendance of some 2,200 members. Papers were read on Scotch, Welsh, and English "leaving certificates"—the last, by the Rev. J. B. Lancelot, Principal of Liverpool College, being a vigorous and scathing denunciation of the system proposed for secondary schools. In the course of the discussion Sir Oliver Lodge said the use, and not the abuse, of examinations is admitted by all as an adjunct to teaching, but the point is to determine the relation between teachers and examiners and between teachers and inspectors. People are no longer going to be satisfied with purely external examinations imposed from above upon the schools. It is not a dignified position for the schools, and they have rebelled. Prof. Sherrington, F.R.S., read a paper later on child study, in which he urged that this study could not devote itself more profitably at the present time than to what may be termed the natural history of the child. In healthy school life lay the first line of defence

against race deterioration. It would help society if teachers and physiologists could combine to examine into the mischief to growth resulting from hours of breathing vitiated air, from want of warm clothing that economized food, from semi-starvation, from improper food, from chronic fatigue, and from insufficient rest and sleep in bed. Among other subjects dealt with were the teaching of geography, the teaching of domestic science, and the place of handwork in the school curriculum.

ELEMENTARY, SECONDARY, AND TECHNICAL.

A CONFERENCE of teachers from elementary and secondary schools and technical institutes was held under the auspices of the London County Council at the Medical Examination Hall, Victoria Embankment, on January 5, 6, and 7, under the presidency of Sir William Collins. Discussing the teaching of arithmetic, Mr. C. T. Millis, Principal of the Borough Polytechnic, said that what is needed is that some of the time now spent in teaching special rules in money sums should be devoted to giving a sound knowledge of general principles. Mr. S. O. Andrew (Croydon) said that, whatever part of arithmetic may be given up or postponed, there is a general agreement that it must still include a knowledge of the standards of measurement necessary for the investigation of physical phenomena. The need for a co-ordination of the elementary instruction in arithmetic and geometry was emphasized by subsequent speakers.

THE NATIONAL FEDERATION OF HEAD TEACHERS.

THE eighth annual conference of the National Federation of Head Teachers' Associations was opened at Cambridge on January 4. On the second day, Dr. Hill, Master of Downing College, opened the proceedings with a paper on "Words and Thoughts—the Importance of Training in Expression." A training in a highly grammatical language, he said, was a training in the art of thinking. The object of all school education might be summed up as teaching to read. It was through reading, and after school-days, that all fertile knowledge was obtained, and, since the purpose of written language was the representation of speech, he would propose as the test of efficiency in reading the scholar's ability to reconvert print into speech. The following resolutions were carried:—

That this conference deplores the fact that teachers of insufficient qualifications and training in the art of teaching are, owing to the dearth of teachers, now being appointed by Education Authorities on the staff of our schools.

That the most effective way to increase the supply of teachers is to make their position and prospects more attractive by an equitable treatment of them as public servants.

That this Federation hopes that Educational Authorities will establish additional training colleges for teachers as soon as convenient, which shall be attached to a university or college of university rank.

That this conference desires to point out the grave danger to education which would arise from compelling teachers to serve in particular districts after the training college course or on becoming qualified as certified teachers, and requests the Board of Education not to sanction such compulsory services.

That educational work, being a matter of great national importance, requires the services of persons of high character and proved intellectual ability, and the interests of the work demand that in no case should the qualifying examination for a teacher's certificate be lowered.

That this conference is strongly of opinion that pupil-teachers should not be counted on the effective staff of any school, and that their qualification for thirty scholars each should be deleted from the Code.

A specially interesting paper on "Scholarships," by Prof. Sadler, was read by the Secretary. Prof. Sadler urged that in building up a complete scholarship system in a locality, the need for the following kinds of scholarships must be borne in mind:—

- (1) Minor scholarships tenable at secondary schools from twelve to sixteen years of age with power of extension to eighteen or nineteen in cases of exceptional merit and in appropriate schools;
- (2) major scholarships carrying on boys and girls of special promise from the secondary schools to universities or other places of general or technical education;
- (3) evening-class scholarships to carry on students from the ordinary evening continuation schools to higher evening centres, for technical or commercial instruction;
- (4) scholarships for art students carrying on pupils from the elementary drawing classes to the higher classes (day or evening) in the locality, and, in cases of exceptional promise, from the local school of art to schools or studios elsewhere in Great Britain and abroad;
- and (5) a miscellaneous group of scholarships tenable at day courses at places of

technical or professional instruction, including schools of domestic economy. In the case of the last four classes, he would urge that, as far as may be, the award should be made, not in competitive examination, but after consideration of the pupil's own record supported by the recommendation and confidential report of his teachers. He discussed the method of awarding junior scholarships tenable at secondary schools. The remainder of the session was devoted to a discussion of questions connected with superannuation.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

Oxford. Your correspondent must be forgiven if—writing, as he does, with term only just in its infancy—he has little to record and if, with the chill of the weather in his bones, he does not feel inspired to assume the mantle of the prophet. Since he last wrote a new President of Corpus has been elected. Prof. Case is well known in Oxford and in the columns of the *Times*. He is a good philosopher and a good fighting Tory; he is also very excellent company, and, like his predecessor at Corpus, the subject of many stories, veracious and otherwise. Honours men will bear witness to the vivacity of his lectures (and he has lectured on history as well as philosophy), and the pass man, though he may forget that the new President was a cricket Blue, will, perhaps, have a memory sufficiently long to remember that he has given us two good cricketering sons, both of whom were mainstays of the Winchester Eleven, though only the elder passed into the University Eleven here.

During the vacation Oxford, academic and civic, suffered two losses in the death of the Vicar of St. Mary's (the Rev. H. L. Thompson) and the recently appointed Mayor, Mr. Taphouse.

Mr. Thompson made an ideal Vicar of St. Mary's—a difficult position to fill and still more difficult to refill, and he had been a successful Warden of Radley College. Mr. Taphouse had been with difficulty persuaded to accept the "chief civic office," and it was therefore pathetic that he should have died so soon after his acceptance of the offer.

In the premature death of Mrs. Brownrigg, of Magdalen College School, both the University and city lost a lady who was widely and deservedly popular amongst those of even the most divergent tastes.

Oxford, we hear, is to welcome back as a Fellow of his old college (New College) Mr. G. G. A. Murray, formerly Professor of Greek at Glasgow. Mr. Murray is to lecture, we believe, on a subject which he has made peculiarly his own—Euripides. But, if New College are to gain, they are also soon to lose; for, unless rumour be a lying jade, Mr. Nowell Smith has been persuaded by Dr. Burge to join the staff at Winchester.

There is a report about, and one which seems more definite than some Oxford reports, to the effect that the abolition of Coopers Hill is to be followed by the institution here of one of the Coopers Hill departments—to wit, Forestry. If the report be true, it is not very easy to see what position, if any, the students will take in the University. There is no diploma in Forestry, and in itself it hardly seems fitted for an untechnical university.

Your correspondent hesitates to mention Greek; but "those in the know" seem to think that the sleeping dogs will not be content to lie long quiescent, and that the whole question may be started again before long owing to the scheme of a "School-leaving Certificate" which has been formulated by the Oxford and Cambridge Board. If the certificate is to be accepted as a general test of education, then, say some, it will be hard to exclude the holders from entrance to the University, even though they be Greekless. Against this stands the fact that it is at the moment practicable to obtain a "Senior Certificate" without a knowledge of either Latin or Greek, and yet there has been no agitation for the admission of such candidates to the University on the strength of their certificate.

Our grounds are frozen and slippery and the river is encumbered with ice; so that it is no good inventing athletic details. By next month we shall know more of the chances of the University Eight and of the athletes for Queen's Club.

Dublin. In making the munificent gift to Trinity College, Dublin, which we record elsewhere, Sir John Nutting, Bart., says that, whatever the causes, "there can be no doubt that the inability of Irish Roman Catholics to

obtain the advantages of the best kind of University education is a public misfortune, the unhappy results of which are visible in every aspect of the national life." No remedy, it seems to him, can be permanent or satisfactory which does not satisfy three conditions:—

(1) That a University education of the best type shall be easily accessible to all young Irishmen and Irishwomen of ability and ambition, without distinction of creed or class. (2) That such young men and women of all creeds and classes shall receive their University education in common, and that no barriers shall divide them at the time when they are being shaped into useful citizens of a country whose traditions and opportunities are their common heritage. (3) That it shall be possible for University students of all creeds to have the religious opportunities which their conscience demands, so that no students shall be required to sacrifice in the smallest degree any religious scruple to the claims of secular education.

Sir John concludes that "the remedy which is at once the simplest, the most practical, and the most efficacious, and which can easily be made to satisfy those three conditions, is to be found in the direction of your present efforts to make Dublin University in fact what it has been in name—the National University of Ireland." Two obstacles have prevailed hitherto to make this remedy unattainable in practice—

(1) The fact that the facilities offered to young men and clever Roman Catholics of the less wealthy classes to obtain higher education within your walls have been in the past extremely inadequate. (2) The scruples of the Roman Catholic ecclesiastical authorities with regard to the religious welfare of Roman Catholic students in Trinity College.

"I respect these scruples," adds Sir John, "and believe that they ought not to be ignored, even if to ignore them were a practical possibility."

Lecds. THE West Riding Education Committee has agreed that the proposal of a sub-committee to allocate £4,500 to the University of Leeds and £1,500 to Sheffield should be adopted, both grants to be annual and subject to the following conditions:—(1) the right of the County Council to representation on the Court, the Council, and any Advisory Committee of the Universities as constituted by statute; (2) the reference to the County Council of any new principles affecting the finances of the Universities, which may be proposed from time to time; (3) the right of the County Council to consider and investigate the financial *status* and business position of the Universities from time to time, and, if not satisfied upon such investigation, to withhold the grant or any instalment of it; (4) the allocation of a fixed sum to the department for the training of teachers and the study of education—£800 to the University of Leeds, and £400 to the University of Sheffield, with provision for the representation of the County Council on any committee of management of such department.

Edinburgh. THERE were 3,000 matriculated students (including 317 women) attending Edinburgh University during 1904, which is the highest reached for eleven years. Of that number 881 (including 289 women) were enrolled in the Faculty of Arts, 231 (including 7 women) in Science, 47 in Divinity, 341 in Law, 1,480 (including 4 women) in Medicine, and 20 (including 12 women) in Music. Of the medical students, 683, or over 46 per cent., belonged to Scotland; 352 were from England and Wales; 113 from Ireland; 74 from India; 238 from British colonies; and 20 from foreign countries. Besides these matriculated students, there were 69 non-matriculated students, 33 of whom were women, attending music and French and German literature classes. The number of women attending extra-academical lectures, with a view to graduation in Medicine in the University, was 116.

Lampeter. THE annual report indicates that the past year has been a very successful one. The average number of students in residence was the highest that has ever been attained, and has been only once equalled—in 1884. The examiners' report and the result of the Bishop's examinations show—in the words of the examiners' report—the "excellence of the teaching in all subjects" and "abundant interest on the part of the learners." The work done in the *Parochialia* examination shows the interest taken by the men in the practical or professional side of their training.

At the New Year's reception yesterday (says the Berlin *Lokalanzeiger*, January 2) the Emperor William entered into a long conversation with the American Ambassador. His Majesty expressed the wish that American scholars might come to Germany and give lectures in German Universities; while, on the other hand, German professors should visit American Universities and spread German learning there. The carrying out of such a scheme would contribute to a better mutual understanding on the part of the two peoples. The Ambassador promised to do everything he could to give effect to the Emperor's suggestion. We understand that Berlin and Harvard Universities have taken up, in a practical spirit, this idea of a temporary interchange of professors.

SIR LAUDER BRUNTON's proposal for the establishment of a National League for Physical Education and Improvement has received the approval and promised support of a remarkable body of public men. Nearly 250 men of eminence in the Church, politics, law, medicine, science, and literature have authorized publication of their names as being willing to assist in the movement, the majority of them having agreed to become vice-presidents.

At a meeting in Manchester (January 11), presided over by the Lord Mayor, a brisk discussion took place as to the extended employment of University men in business posts. The following resolutions were passed:—

That it is highly desirable that more graduates of the Universities and other persons who have received education on the University standard should be drawn into business, and that there is a need in this city of some organization whereby such of them as desire to enter business may be brought into contact with its business houses.

That, in the opinion of this meeting, the best means by which this object can be secured in Manchester would be the establishment, in connexion with the Manchester Chamber of Commerce, of a bureau for graduates and other highly trained men who would keep in touch with universities and institutions of similar character on the one hand and with business houses on the other.

At a meeting of the North Staffordshire Institute of Mining and Mechanical Engineers (January 9), Mr. A. H. Heath, M.P., presiding, it was decided to send a deputation to the Staffordshire County Council, pointing out the growing necessity of a Technical College for North Staffordshire. The President announced that the Mining Institute had promised to subscribe liberally towards the cost of the proposed new college, which would consist of a training college for pupil-teachers, a mining school, and possibly a pottery school. Prof. Turner, of Birmingham University (formerly Director of Technical Education under Staffordshire County Council), said that all that could at present be aimed at was a college of University type, affiliated with some University outside the district. They were striving for this scheme to obtain £25,000, so as to cover part of three acres of ground with suitable buildings. The site had already been provided for them at Stoke-on-Trent by the late Mr. A. S. Bolton, of Oakmoor. The North Staffordshire College might be affiliated with the Manchester or the Birmingham University. The part of the buildings required for teachers and for pupil-teachers they might expect the County Council would pay for. That would be rather more than half the cost. The County Council might also provide part of the cost of the technological, science, and administrative sections. From the County Council also the proposed college might receive assistance equal to the money now spent in teaching, apparatus, and materials for the technological classes of the district. Mr. A. W. Brown, Secretary to the North Staffordshire Council for Promotion of Higher Education, briefly outlined the scheme for the proposed college, and said that of the £25,000 required half would have to come in public subscriptions. He believed they would get that amount.

A DEPUTATION from the Executive Committee of the Association of Education Committees (England and Wales) waited upon the Board of Education (January 5) to urge the adoption of a more liberal scale of grants for secondary schools, to ask for a larger share from the Government of the cost of training pupil-teachers, and to urge the necessity for the compulsory attendance up to the age of fourteen at evening continuation schools of all children who do not continue as whole-day scholars up to that

age. Sir William Anson, in reply to the deputation, agreed that more money should be allowed to secondary schools, but, though such a demand would have his support, he was by no means sure of obtaining the necessary funds. He expressed the opinion that the question of cost made it almost impossible to enforce a system of compulsory attendance at evening continuation schools up to fourteen years of age for children leaving the day school before that time. Until we had a better system for the training of pupil-teachers and a better security that the education given in the elementary school lasted, and a system of evening continuation schools and a better secondary education system with larger grants for secondary schools, Sir William added, he would not be a party to asking for another penny for elementary education, as such.

At a meeting of the Royal Statistical Society, Mr. L. L. Price, M.A., read a paper on "The Accounts of the Colleges of Oxford, 1893-1903, with special reference to their Agricultural Revenues." Mr. Price mentioned that the gross external receipts of the colleges and the University in 1903 exhibited an increase on 1893 of £20,797, and on 1883 of £16,343. The net external receipts of the colleges alone showed an increase of £16,566 on 1893, and a decrease of £10,311 from 1883. In 1903 the total receipts from the lands of the colleges were £720 more than in 1893, and £15,805 less than in 1883. In the case of one college, which was largely dependent upon tithe, the receipts from lands increased slightly between 1883 and 1903; but the fall in tithe caused a decrease of more than a sixth in the income from lands and tithe together, and the expectations once entertained of a large increase in the agricultural income of the colleges by the substitution of rack-rent tenancies for beneficial leases had been in most instances continuously disproved. Had it not been for an increase in revenues derived from other sources, the colleges and the University would have been crippled yet more seriously. Any serious diminution in their external receipts was not unlikely to exert a prejudicial influence on their educational potentialities. A similar general deduction was drawn from the accounts of the University as distinct from the colleges.

THE Report of the Commissioners of National Education in Ireland, while noting many difficulties traceable to lack of funds, exhibits interesting figures of educational progress. In the year 1851 the population of Ireland was 6,552,385, and 47 per cent. of the population of five years old and upwards could neither read nor write. In the year 1901 the population was 4,458,775, and only 14 per cent. of the population of five years old and upwards could neither read nor write. In 1871, of children of five years and under ten years of age, only 20 per cent. could read and write. In 1901 the percentage was 53.5. In 1871, of children of ten years of age and under fifteen, 59 per cent. could read and write, and in 1901 the percentage had risen to 94.

THE Committee nominated by the four hundred Irish Roman Catholic laymen who, in 1902, signed a petition in favour of Irish university reform, on the lines of the Dunraven scheme, met in the beginning of last month and adopted a statement defending the principles of that scheme and denying that it was calculated to consolidate or to increase clerical control over education. The statement says: "The scheme of university reform projected last year sought to add another college to the University of Dublin; but this college was to be absolutely free from tests. Catholics and non-Catholics were alike to be admissible to its studies, honours, and administration. The clergy were to have no representation *de jure* on the governing body, and such representation as they might have *de facto* was to be strictly limited." The statement points out that a monopoly of education devolved on the Roman Catholic clergy as a natural result of the penal laws; that they have still no lay competitors; that a university education is necessary to the creation of an effective body of lay teachers; that until a strong body of lay teachers shall have been created the education of lay Roman Catholics must remain under clerical control; and that to withhold from Roman Catholic laymen a satisfactory university system is to perpetuate such control. It adds: "While we Catholics gratefully recognize the important services in the matter of education rendered by the clergy, and while we are strongly opposed to the secularization of schools, we are not blind to the advantages which would result from the creation of

a profession of lay teachers such as in every enlightened country. Catholic or non-Catholic, exists and co-operates in the work of the secondary schools." In conclusion, the statement protests strongly against "the novel plea officially made last Session, that the Government is not called upon to act until there is an agreement among all parties on the question."

THE Most Rev. Dr. Clancy, Bishop of Elphin, speaking at the annual distribution of prizes at Summerhill College, Sligo (December 30), thought the educational outlook in Ireland was much brighter than it had been for a long time. The Bishop of Limerick had done much to disabuse the public of the false idea that the university question was more or less a bishops' question; but nothing, in Dr. Clancy's opinion, had occurred in many years better calculated to set the country right on this vital question than the speech delivered at Belfast by Mr. John Redmond. Mr. Redmond showed that the university question, so far from being a bishops' question or an aristocratic question, was pre-eminently a poor man's question, and that for the absence of university education in Ireland the sufferers are the sons of the labourers, the artisans, the shopkeepers, and the farmers of the country. Already his action had produced its natural result: County and District Councils, Boards of Guardians, urban corporations, committees appointed for the management of public institutions had all taken the matter up. The next step was the ardent adoption of the cause by the branches of the League throughout the country. The Irish Party should take off their coats to it. The country should support them by every means that could strengthen their position, and by their united efforts they must make it hot for the Government. Then, and not till then, could they hope to have any serious effort made by our rulers to do justice to Ireland in the matter of university education.

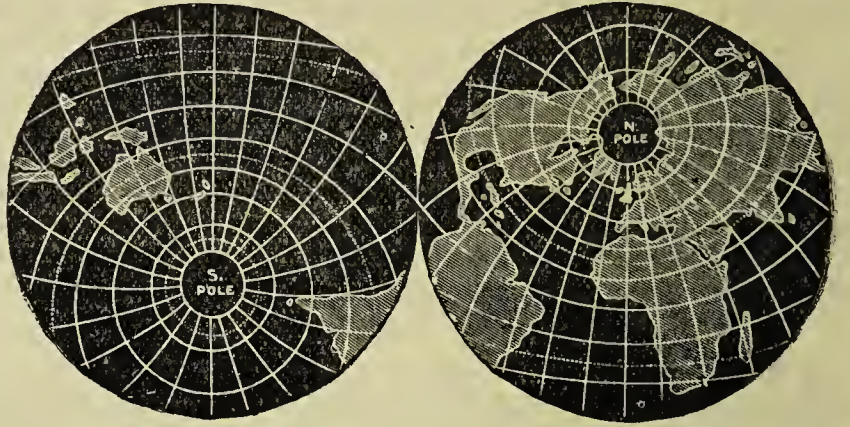
At the annual meeting of the Association of Teachers in the Secondary Schools of Scotland Mr. J. B. Clark (George Heriot's College School, Edinburgh), President, in his retiring address said he hoped that the next Education Bill would place the control of education in the hands of County Councils as against the *ad hoc* system, and, although he at first was in favour of one national council in place of four prominent provincial councils, he was now rather inclined to support the creation of provincial councils, because they would be admirably suited to take charge of the training of teachers.

At a meeting of the representatives of the various educational bodies in Scotland interested in the formation of a Local Committee for the Training of Teachers, held in Edinburgh University (December 9), a letter from Sir Henry Craik, in answer to the proposals forwarded to the Scotch Education Department by the conference held on November 10 last, was laid before the meeting. "While my Lords have received the proposals with much interest, they refrain," wrote Sir Henry Craik, "from dealing with them in detail pending the result of certain proposals which have been discussed with some of the training college authorities, and which, if realized, would lead to the formation of committees for the training of teachers on a wider basis and with a more comprehensive scope." After consideration, the representatives resolved to delay taking any further steps until they were informed of the result of their lordships' negotiations with the existing training colleges.

OUR readers will remember the sad death of Mrs. Greenstreet, wife of Mr. Greenstreet, Head Master of Marling School, Stroud, and an esteemed contributor to our mathematical columns, in a courageous, but unsuccessful, attempt to save the life of her maid when bathing at West Pentire some eighteen months ago. The following resolution passed by the Committee of the Royal Humane Society on December 15 last, and engrossed on vellum, has now been received by Mr. Greenstreet:—

That the heroism displayed by the late Mrs. Ethel de Medina Greenstreet, who, unfortunately, lost her life while attempting to rescue Kate Wilks, who was drowned while bathing in the sea in Crantock Bay, Cornwall, on the 26th August, 1903, merits the highest praise of this meeting, and the Committee, in sympathizing with her relations, desire to record their admiration of her courageous and noble conduct.

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CURRENT EVENTS.

THE next Evening Meeting of the Members Fixtures. of the College of Preceptors will take place on Wednesday, February 15, at 7.30 p.m., when Prof. J. Adams, M.A., will read a paper on "The Sunny Side of Egotism: an Examination of the Educational Applications of Self-reference."

THE REV. DR. MOORE'S Barlow Lectures on "Dante's Paradiso" at University College, London, will be delivered on February 8, 9, 15, 16, 22, 23, at 3 p.m. Open.

A CONFERENCE on school hygiene, arranged by the Royal Sanitary Institute, will be held in the University of London, under the presidency of Sir Arthur W. Rücker, on February 7–10.

M. LE PASTEUR DÉGREMONT, B.A., B.D., will lecture to the Société Nationale des Professeurs de Français en Angleterre at the College of Preceptors on "Sainte-Beuve," on February 25.

A STUDENTS' Congress of representatives of all the British Universities will be held in London, June 26 to July 1.

PROF. GEDDES, of University College, Dundee (University of St. Andrews), will give a course of ten lectures on "Great Cities: their place in Geography, and their relation to Human Development," at the Horniman Museum, Forest Hill, on Saturdays at 11.30 a.m., during February and March.

THE Modern Languages Holiday Courses arranged by the Teachers' Guild will be held again in August at Tours, Honfleur, Neuwied-am-Rhein, and Santander. Preliminary circular ready this month, and handbook (with final arrangements) on May 1 (6d., post free 6½d.).

THE honorary freedom of the Musicians' Company has been conferred upon Dr. W. H. Cummings, the Principal of the Guildhall School of Music, and the Rev. F. W. Galpin, of the Vicarage, Hatfield Broad Oak, Harlow, Essex, for services rendered by them in connexion with the Company's Tercentenary Exhibition, 1904.

SIR HENRY CRAIK has been presented with the freedom of the Worshipful Company of Plumbers in recognition of his services to the cause of education, particularly as Secretary to the Scottish Education Department.

THE Archbishop of Canterbury has conferred the honorary degree of Doctor of Music upon Mr. William Stevenson Hoyte, who has been for upwards of thirty-six years the organist and choirmaster of All Saints', Margaret Street, London.

IN Convocation at Oxford, on February 7, it will be proposed to confer the honorary degree of Doctor of Music on

Prof. Sir Edward Elgar, Hon. Mus.Doc. Cambridge and Durham.

* * *

THE Court of the University of Manchester has conferred the honorary degree of D.Sc. on Prof. Calmette of Lille, Prof. Perroncito of Turin, Prof. C. J. Salomonsen of Copenhagen, and Captain Scott of the "Discovery," on the occasion of the opening of the new Public Health Laboratories.

Endowments and Benefactions.

SIR JOHN NUTTING, Bart., has offered to endow for a period of five years ten annual entrance exhibitions, each £50 for two years, at Trinity College, Dublin, for "ten young men or women who shall have competed with success at the Senior or Middle Grade Examinations of the Board of Intermediate Education in Ireland," being "pupils of Irish secondary schools (Protestant and Roman Catholic) which have no other endowment than the 'results fees' of the Intermediate Board." Sir John also offers, in case his exhibition scheme succeed in attracting "a sufficient number of Roman Catholics," to give £5,000 towards the erection of a Roman Catholic chapel within the walls of Trinity College on the site to be provided by the College. Trinity College has accepted the proposals.

* * *

THE late Dr. Fowler, President of Corpus Christi College, Oxford, bequeathed £1,000 to Merton College (where he was an undergraduate), £1,500 to Lincoln College (where he was Fellow and Tutor), £1,500 to Corpus Christi College, and £1,000 to King William's College, Isle of Man.

* * *

MR. NORMAN MACCOLL, late editor of the *Athenæum*, bequeathed £500 to the University of Cambridge to provide lectures on "The Language and Literature of Spain and Portugal," and he left his books on these subjects to the Library of the University of Cambridge.

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AN appeal for funds on behalf of the Cambridge University Library is being issued by the University Association, with the approval of the Library Syndicate.

* * *

MRS. STRONG has presented the Oriental section of the library of the late Mr. Arthur Strong, Professor of Arabic in University College, London, and Librarian to the House of Lords, to University College.

* * *

THE Drapers' Company have voted a further sum of £400 a year for five years towards the statistical work and higher teaching of the Department of Applied Mathematics, and the Mercers' Company have voted £1,000 to the Chair of Physiology, in University College, London.

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THE Duke of Devonshire has promised £1,000 towards the Leeds University Fund.

* * *

THE HON. EMILY CRAWFORD MEYNELL-INGRAM has left additional endowments of Meynell-Ingram Scholarships at Lichfield Theological College, and at St. Anne's College, Abbots Bromley, Staffordshire.

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CONTRIBUTIONS are invited to the fund for acquiring 250 acres on the east side of Harrow Hill for Harrow School. The price is £75,000.

* * *

It is reported that the Viceroy of the Chi-li Province has endowed the University of California with five scholarships for Chinese students, to whom employment under the Chinese Government is promised when they have graduated; and that four students under the endowment have already been selected.

Two leaving exhibitions to the University (£40 a year for three or four years) have been promised to Bath College—one by Messrs. Mallett and Pitt (Governors of the College), and one by "two distinguished Old Bathonians," at present unnamed.

Scholarships and Prizes.

QUEEN'S COLLEGE, OXFORD, offers during the present year a Dixon Exhibition, £38 a year for four years, tenable by a native of Whitehaven under twenty-one. Candidates forward certificates of birth and character to the Provost, May 1-15. Examination in June.

* * *

ABOUT twenty scholarships, £20 to £50 a year, and exhibitions for men and women, tenable at University College, London, King's College, London, and East London Technical College, in the Faculties of Arts, Science, and Engineering, will be offered for competition on June 27. Entries close on May 30. Particulars and forms of application from the Secretary of the London Intercollegiate Scholarships Board, King's College, Strand, W.C.

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A CARNEGIE Research Scholarship (or scholarships) will presently be awarded on the recommendation of the Iron and Steel Institute. Candidates to be trained men under thirty-five. Apply to the Secretary by the end of February.

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THE Board of Education give notice that applicants for Studentships-in-Training at the Royal College of Science are required to fill up and forward the proper form by June 15 or June 20. Copies of forms from the Secretary, Board of Education, South Kensington, S.W.

Appointments and Vacancies.

THE President of the Board of Education has appointed Mr. R. B. Haldane, K.C., M.P., to be Chairman of the Departmental Committee inquiring into the present and future working of the Royal College of Science and Royal School of Mines, South Kensington, in place of Sir Francis Mowatt, G.C.B., late Secretary to the Treasury, who, while remaining a member of the Committee, has resigned the chairmanship on account of illness.

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MR. GIBBERT KAPP, Lecturer on Dynamo Construction in the Technical Institute, Charlottenburg, has been elected first Professor of Electrical Engineering in Birmingham University.

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DR. CAMERON, Medical Officer of Health for Leeds, has been appointed Professor of Public Health in Leeds University.

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MR. T. S. DYMOND, Lecturer to the Essex Technical Instruction Committee and Essex Education Committee, and Principal Lecturer of the Agricultural and Chemical Department of the County Technical Laboratories at Chelmsford, has been appointed to an Inspectorship under the Board of Education, and to act as special adviser in matters of rural education, of Nature study in public elementary schools, of agricultural instruction in evening (including afternoon and Saturday) schools, and of the advancement of various forms of technical education in rural districts.

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MR. WILLIAM LORING, M.A., formerly Fellow of King's College, Cambridge, and late Director of Education under the West Riding County Council, has been appointed Warden of the Goldsmiths' College, New Cross (University of London).

It is reported from New York that Mr. Louis Rouillon, Professor of Manual Training at the Teachers' College, Columbia University, has been appointed Chief Inspector of Technical Education for Ireland.

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At the Northampton Institute (London), Mr. H. M. Hobart has been appointed Lecturer in Electrical Engineering Design, in succession to Mr. E. Kilburn Scott, who has been appointed Lecturer in Electrical Engineering in the University of Sydney; and

Mr. M. Holroyd Smith has been appointed Chief Assistant in the Mechanical Engineering Department, in succession to Mr. W. E. Curnock, who has been appointed Head of the Mechanical Engineering Department of the Technical College, Huddersfield.

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MR. EDGAR SCHUSTER, M.A. New College, Oxford, has been appointed to the Francis Galton Research Fellowship in National Engenics.

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MR. HUGH DICKIE, B.A. (Lond.), LL.D. (Glas.), retires from the Head Mastership of Kilmarnock Academy, which he has held for 29 years.

* * *

MR. CHARLES H. CLARKE, Ph.D., Head Master of the Modern Languages Department, Montröse Academy, has been appointed Senior Modern Languages Master, Campbell College, Belfast. He is succeeded by Dr. H. Cimino, Higher-Grade School, Darwen.

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MISS C. J. M. HUBBACK, of University Hall, Fairfield, Liverpool, has been appointed Head Mistress of Chester City and County School for Girls.

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MR. ERNEST SHEARER, M.A., B.Sc., has been appointed Lecturer on Agriculture at the Pusa Imperial College, Bengal.



Literary Items.

THE Committee of the Liverpool Institute of Archæology has been enabled by the munificence of Sir John Brunner to take in hand the publication of a "History of Egypt," to include all the results of modern research, and to be, so far as possible, a complete history of the Egyptian civilization from the earliest times down to the conquest by Alexander the Great. It is estimated that the work will take two years to complete, and it will be published with full photographic illustrations.

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"CASSELL'S Illustrated History of England," which has been undergoing improvement for some fifty years, is now beginning to appear in an "Empire Edition," with new Rembrandt photogravure plates reproduced from famous pictures in the public galleries, and with additional coloured plates and maps in colours expressly prepared for the present edition. The first weekly number is just issued.

* * *

DR. ANDREW MACPHAIL'S "Essays in Puritanism," just published by Mr. Fisher Unwin, is a series of studies of five representative figures—Jonathan Edwards, John Winthrop, Margaret Fuller, Walt Whitman, and John Wesley.

* * *

MR. FROWDE will publish immediately for the Clarendon Press an edition of the "Euthydemus" of Plato, by the Rev. E. H. Gifford, D.D., and a text-book on "The Elements of Railway Economics," by Mr. W. M. Acworth.

* * *

THE Cambridge University Press has just issued an important volume of "Studies on Anglo-Saxon Institutions," by H. Munro Chadwick.

MESSRS. SAMPSON LOW, MARSTON, & CO. announce a reissue of the Rev. Dr. Paterson Smyth's "Old Documents and the New Bible"—an easy lesson in Biblical criticism.

* * *

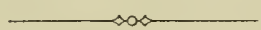
THE *Independent Review* for February is predominantly political, substantial, and varied. Mr. J. A. Hobson writes trenchantly on "Millionaire Endowments."

* * *

THE January number of *Child Life* (Is., Philips) has half a dozen varied and interesting papers, one of which is a continuation of Mr. Ebenezer Cooke's inquiry, "Is Development from within?" with polemics against Mr. Graham Wallas and Mr. H. C. Bowen.

* * *

THE Religious Tract Society will start "Every Boy's Monthly" (1d.) on February 14, under the editorship of Mr. G. A. Hutchison, who has edited the *Boy's Own Paper* for more than a quarter of a century. We wish the new paper every success in its object, which is "to counteract the effects of the literary garbage still so largely circulated amongst lads."



THE Board of Education are now giving General. special attention to the various problems connected with rural schools, and hope to bring gradually to the notice of the Local Education Authorities different methods and lines of teaching, of object lessons, and of Nature study which have been found effective in rural elementary and secondary schools, and also to assist and advise Local Authorities in developing in evening and day technical classes such special forms of home industries and of technical instruction as are specially needed in rural districts.

* * *

A CONFERENCE of representatives of the Universities of Leeds, Manchester, and Liverpool, of University College, Sheffield, and of the principal Educational Authorities in Yorkshire, Lancashire, and Cheshire, held at Manchester (January 20), resolved "that by the joint action of the Local Educational Authorities and Universities of Cheshire, Lancashire, and Yorkshire, a Joint Examining Board should be established."

* * *

THE REV. THEOPHILUS BARTON ROWE, Head Master of Tonbridge School (1876-90), died at Bournemouth. He was a Chancellor's Medallist in 1856, and an assistant master at Bath College, and at Uppingham (1861-1876). Though a classic, and an especially successful teacher of Latin verse, he developed modern studies at Tonbridge in the face of not a little opposition.

* * *

THE Board of Education have issued the Regulations and Syllabus for the King's Scholarship Examination for the Blind, 1905 (July 4), and the Regulations for the Examination of Blind Candidates for Teachers' Certificates (Syllabus for Men and Women), 1905 (July 3); also a Circular (432, revised) to school authorities on Defective and Epileptic Children.

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THE University Court of Wales has decided to promote a supplemental charter enabling them to affiliate colleges fully equipped to give instruction of a university character in applied and technical science.

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THE Regulations for the Cambridge Local Examinations for 1905 may now be obtained from Dr. Keynes, Syndicate Buildings, Cambridge. Various important changes are announced.

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THE *Strad* (December) gives a sketch of Miss Evangeline Anthony, the violinist, with excellent portrait.

THE total amount expended on technical education in England during the year 1902-3 was £1,149,216. 15s. 11d.

* * *

MADAME MICHAELIS, pupil of Baroness von Bülow and pioneer of the kindergarten system in this country, died on December 30. She was the first Principal of the Froebel Educational Institute in West Kensington, which grew out of her Kindergarten and Training College for Kindergarten Teachers in Norland Place, Notting Hill. She was a native of Botha, in Thüringen.

COLLEGE OF PRECEPTORS.

HALF-YEARLY GENERAL MEETING.

THE ordinary Half-yearly General Meeting of the members of the Corporation was held at the College on Saturday, January 28.

The Secretary having read the advertisement convening the meeting, Dr. WORMELL was appointed Chairman.

The report of the Council was laid before the meeting and was taken as read, a copy of the same, together with the abstract of accounts for the past year, having been previously forwarded to every member. It was as follows:—

REPORT OF THE COUNCIL.

The Council beg to lay before the members of the College the following Report of their proceedings during the past half-year:—

1. They have to report that the number of candidates entered for the Christmas Certificate and Lower Forms Examinations is about 8,550, showing no diminution as compared with the number of entries for the corresponding Examination last year. For the Midsummer Examination the number of entries was about 5,770, making a total for the year of about 14,300, an increase of 240 on last year's figures. There is a considerable increase in the entries from the Colonial Centres, especially in South Africa, there being no fewer than eleven separate Centres in the Transvaal, Orange River Colony, and Cape Colony.

2. The Professional Preliminary Examination for intending Medical Students and others was held in the first week in September, and was attended by 275 candidates, an increase of 71 as compared with the number entered for the September Examination last year.

3. The Summer Examination of Teachers for the College Diplomas was held this year for the first time at the end of the Midsummer Vacation, instead of in July as heretofore. The number of candidates examined was 445. For the Christmas Examination, to take place in the first week in January, the number of entries is 569, so that the total number of Diploma candidates for the year is over 1,000, a larger number than has been examined by the College in any former year. During the past half-year, the Diploma of Licentiate has been conferred on 14 candidates, and that of Associate on 122, who had passed the required examinations.

4. In addition to the above Examinations of pupils and teachers, the Council have conducted during the past half-year the Examination and Inspection of 7 schools by Visiting Examiners and Inspectors.

5. The Thirty-second Annual Series of Lectures to Teachers on "The Science and Art of Education," which commenced on February 25 with a Course of Twelve Lectures on "The Psychological and Logical Foundations of Intellectual Education," by W. E. Johnson, M.A., was concluded on December 15 with the last of a Course of Twelve Lectures on "Practical Applications of the Art of Teaching," by Prof. J. Adams, M.A., B.Sc., F.C.P.

6. At the Members' Meetings held during the past half-year, the following Lectures have been given:—"How to evoke a Taste for Reading and Continued Study after the Pupil leaves School," by the Rev. J. O. Bevan, M.A.; "On the Method of Teaching French after the First Stages," by F. B. Kirkman, B.A. At the November Meeting a Discussion was opened by the Rev. Dr. Scott on the subject of the New Geometry Teaching. Reports of the Lectures and Discussions have been published, as usual, in *The Educational Times*.

7. The Council have been invited by the Board of Education to express their views on certain Proposals for a System of School Certificates brought forward by the Consultative Committee. These Proposals provide for the examination of schools and the granting of Certificates to selected pupils; the intention being that these Certificates should serve to satisfy the requirements of bodies like the Medical Council, the Law Society, Banking Companies, &c., which control access to professional study or to employment. There are several remarkable features which distinguish the projected scheme from existing Certificate Examination Schemes. Inspection of the school is a necessary preliminary to the examination of the pupils. The Examination is to be conducted by examiners appointed by an external examining body in collaboration with members of the school teaching staff, who are called "internal examiners." The Proposals provide for the setting up of new Examining Bodies which

may include representatives of Local Authorities, and also for the establishment of a central controlling and co-ordinating Board. The Council have very carefully considered the Proposals, and have communicated to the Board of Education a detailed statement of their views; and, while agreeing that the scheme might be found useful as a method of school examination, they have pointed out certain serious objections to the issue of Certificates under the proposed system. It appears to the Council that existing examinations already fairly cover the field of secondary education, and that, if some means of controlling and co-ordinating these examinations could be devised, they could be completely adapted to the requirements of secondary schools and Recognizing Bodies; and they are of opinion that some effort should be made in this direction before elaborate and costly new machinery is set up. For this purpose they have suggested that a Conference Board should be established consisting of representatives of the Board of Education, of the Examining Bodies, of Associations of Teachers, and of Bodies which determine the preliminary requirements for admission to professional study or to business life.

8. The question of the Federation of the several Associations of Teachers concerned with secondary education has during the past half-year engaged the anxious attention of the Council. They recognize the great advantages that would ensue from a co-operation of forces at present divided, which would enable the collective opinion of secondary teachers to be available for the guidance of the authorities who have to administer both primary and secondary education. The Council thoroughly approve the principle of a union of forces, and have expressed their willingness to take part in such a movement, and to give it the support which the financial position of the College, the large extent of its work, and its position as a chartered corporation would afford. The Council have therefore given their earnest consideration to the proposals made to them from the outside, with a view to arrive at a basis of co-operation on just and reasonable lines. The difficulties of detail connected with such an attempt at amalgamation are not slight; and, before bringing the matter before the members at a Special Meeting to be convened for the purpose, the Council are taking the opinion of a high legal authority as to the possibility of obtaining such a modification of the College Charter as would enable the proposed Federation to be effected.

9. A special Committee of the Council has recently addressed inquiries to local secretaries and others connected with the College as to the way in which private and proprietary schools are being affected by the operation of the Education Act of 1902. The Committee has not yet reported, but many replies have been received, and from these, so far as they have been examined, it would appear that Local Authorities in some areas are inclined to ignore the spirit of that clause in the Act which enjoins consideration for the existing provision of efficient secondary schools before new rate-aided schools are established. On the other hand, it is gratifying to take note of the spirit of fairness which animates the action of certain of the Local Authorities, who are arranging for the inclusion of efficient private schools as part of the recognized machinery for secondary education.

10. During the first half of the year a new catalogue of the Library was prepared, and a copy was sent to every member in July. Since the publication of the new catalogue about 1,000 volumes have been issued to members.

11. The Council have been enabled, out of the surplus funds accruing from the regular operations of the College, to place the sum of £300 to the credit of the Benevolent Fund.

12. During the past half-year 19 new members have been elected, and notice has been received of the withdrawal of one. The Council regret to have to report the death of the following members of the College:—Rev. E. De Ewer, Mr. W. M. Jackson, Mr. W. Lamborn, and Mr. F. Pritchard, F.C.P.

Paragraphs 1 to 7 were adopted without discussion.

The CHAIRMAN said that, before the meeting proceeded to the consideration of paragraph 8, relating to the proposals for Federation, he thought it right to read a communication which the Council had had before them that day, and which had only been received the previous day. It was within the knowledge of the members that the Council, considering the great importance of suggestions made by outsiders with regard to matters contained in paragraph 8, had taken the best legal advice obtainable as to the way in which they might deal with their Charter if modification should be thought necessary. They had consulted the Right Hon. R. B. Haldane, K.C., M.P., who was a member of the Privy Council and a great legal authority, and they had also consulted Mr. T. T. Methold, a man who could not be surpassed for his legal acumen. The opinion was as follows:—

"The tendency of the times and the disposition to regard the qualification of teachers from a changed point of view appears to us to render it probable that the Lord President of the Council would not advise the grant of the proposed Charter, and we do not see that any amendment germane to the purposes of the present application could be introduced with the prospect of making success more likely. If however the applicants determine to proceed we see no legal difficulties which stand in the way of success. Such cases as the King

v. Passmore 3 Term. Rep. 199 show that if the majority of the Corporation desire a change it is within the competency of the Crown to grant a new or further Charter effecting it."

Mr. J. WILSON thought that the members of the College ought, in the first place, to have been consulted as to whether they desired any alteration of the existing Charter, and before counsel's opinion had been obtained. As to the opinion that had been expressed, he considered that it was not so much an opinion on legal points as on matters of policy. He commented strongly on the ambiguity of paragraph 8, and in order to clear up the matter he desired to put one or two questions, which perhaps the Chairman might answer:—(1) Had the Council come to the conclusion that the objects of the proposed Federation could not be attained under the existing Charter? (2) Was the proposed scheme of union one of federation or amalgamation? (3) What associations of secondary teachers outside had made proposals with a view to federation or amalgamation with the College? (4) Would teachers engaged in primary education be eligible in the future for membership of the College on the same terms as at present? (5) What funds belonging to the Corporation were available to support objects not within the purview of the present Charter? He contended that the Council had no power to act beyond the limits of the objects defined in the Charter from which their powers were derived. It was for the promoters of the scheme inside the College to take action if they thought fit, and not for the Council. If the Council were acting in contravention of the provisions of the Charter, the Crown might intervene and suppress it, on the ground of actual or apprehended public mischief. This being so, the next step was for those promoting the federation or amalgamation to summon a meeting of the members and put the scheme before them. It was a question of policy whether the members would entertain the scheme or not. They could not do away with the rights of the members, and every single member had the right to go to the Court of Chancery to obtain an injunction restraining the Council from proceeding with the business. He thought they were opening up litigation by the way they were proceeding, and it must not be forgotten that the minority could claim their rights and retain the accumulated funds, as had recently happened to the Church in Scotland. The whole matter bristled with difficulties, and he was amazed that these difficulties were not more fully appreciated. With regard to the second question, federation of course implied that each of the separate bodies preserved its own rights and privileges *minus* those that it gave up for the sake of the union which ought to be embodied in the federal compact, if such there were. Over these different managing bodies there would be superimposed a Council to carry out the federal compact. Who was to finance that federated Council? Amalgamation was quite a different thing, and involved the merging of each of the bodies into one body, when they could go forward with solidarity of interests.

The CHAIRMAN said he would endeavour to answer the questions that had been put by Mr. Wilson. The first question was as to the opinion of the Council about the Charter. This was a question of fact. All those who had taken a leading part in urging the advisability of securing co-operation, and, if possible, federation, between the various associations concerned with secondary education had expressed the opinion that, if such a union was to be brought about, it must be by means of an amended Charter. As to the second question, whether the proposed scheme was to be one of union or amalgamation, there had been both notions afloat—the notion of federation and the notion of amalgamation—and he believed at one time it was suggested that there should be an almost complete amalgamation of the various bodies for certain purposes. But the notion of federation was the one which the Council were disposed to regard more favourably. They pointed out, as Mr. Wilson had done, that the difficulties of detail connected with an attempt at amalgamation were not slight. The Council had considered those difficulties very fully, and it was in view of those difficulties that the paragraph had been so worded. He trusted that members generally were not in the same doubt as to the meaning of paragraph 8. It stated that the Council thoroughly approved the principle of a union of forces, and had expressed their willingness to take part in such a movement, and to give it the support which the financial position of the College, the large extent of its work, and its position as a chartered Corporation would afford. That meant, of course, giving it such support with the sanction of the members in general meeting. It was not proposed that the Council should, off their own bat, do anything which was so

described, but, with the approval of the members gathered together in general meeting, they saw no difficulty in furthering the movement. The Council had not yet got as far as to decide that federation was possible, and that a new Charter could be obtained. They had only considered the question, and approved of affording that support which the Corporation could give on an equitable basis. That was quite clear from the paragraph, and there was no desire either to be hasty in coming to a conclusion, or to check useful aspirations on the part of other bodies by standing in the way of federation, provided that the scheme received the sanction of the members of the College. With regard to question 3, the paragraph stated that the difficulties of detail were very great, and the Council, therefore, did not see their way to bringing forward a detailed scheme at the present time. A number of associations having to do with secondary education had approved—in a somewhat similar way as the Council had approved—of the principle of a union of forces, if it could be brought about. As to the fourth question, there was nothing before the Council of the College which affected the status of any members of the College, whether they happened to be primary or secondary teachers. They were bound by the Charter and the by-laws, and there was no proposition before them at the present time for altering the Charter or the rules. The Treasurer could answer question 5 better than himself; he did not know of any of the corporate funds which were available for the support of objects which were not defined in the existing Charter.

Mr. EVE said the Council were approached by a Federation Committee, on which were represented the Head Masters' Conference, the Head Masters' Association, the Head Mistresses' Association, the Assistant Masters and Mistresses' Associations, the Private Schools Association, and the Preparatory Schools Association. All these bodies sent delegates to a meeting, which came to the conclusion that they should approach the College of Preceptors on the matter of federation. The Council of the College considered the proposition, and a joint Committee consisting of members of the College Council and of the Federation Committee conferred as to the conditions that might be offered for the consideration of all the bodies concerned, and embodied these conditions in the form of an amending Charter, and that draft Charter had been submitted to Mr. Haldane and Mr. Methold, but the Council did not think it desirable to offer the matter for the consideration of the members until they could lay it before them in a definite and complete form. He thought they could hardly be said to have acted *ultra vires* in considering the question of amendment of the Charter, as every corporate body had the power to try and improve its own regulations. That was one of the things not specified in a Charter: it rather would go as a matter of course, that, if they thought proper to ask for an improvement in their Charter, they had a right to do so, and the Crown had a right to grant or refuse it.

Mr. PINCHES said it appeared to him that Mr. Wilson was mistaken in the view he took of the action of the Council. He did not himself intend to speak to the merits of the proposals that had been submitted to the Council, and he held no brief for those who were promoting the scheme; his sole duty was to promote the interests of the College so far as he could, and to watch over its welfare. But the movement was promoted by men whose names should command respect for the part they had taken in many of the educational movements of the day; and when the matter came before the Council backed by these names only two courses were open to them. They could either have declined to entertain the idea, or determined to give the matter preliminary consideration before submitting it for decision to the members of the College assembled in general meeting. The latter course was the one they had adopted. The Council had very carefully considered the proposals of the Federation Committee, and had secured certain alterations which would protect the interests of the College, supposing that a federation (for that was the right term) could be brought about. The Council next considered whether the time was ripe for bringing the matter before the notice of the members in general meeting, and they were unanimously of opinion that they should first ascertain whether it could be legally pursued. That seemed to him to be the natural and proper course, and he did not think that it would be the opinion of the majority of the members that the Council had deserved censure for what they had done.

By permission of the Chairman, Canon BELL, speaking as Chairman of the Federation Committee, gave the following information as to the proposals. First, as to the name. Two alternatives had been suggested for the new Body, viz., (1) "The College of Preceptors and of Secondary Teachers,"

and (2) "The College of Secondary Teachers, hitherto known as the College of Preceptors." Provision was made for admission to membership as follows:—(1) Persons admitted on an annual payment: viz., ordinary members of the College of Preceptors at the date of the amending Charter, secondary teachers registered in Column B of the Teachers' Register, and such other teachers as possessed the qualification required by the Corporation. (2) To be admitted without payment: Life members of the College of Preceptors, teachers in secondary schools who at the date of the amending Charter enjoyed the privileges of membership of the College of Preceptors and made application therefor, and persons who had been for ten years previous to the date of the amending Charter subscribers to the College of Preceptors. (3) Persons to be admitted on payment made on their behalf by public bodies according to an agreed scale. Provision was also made for the appointment of six trustees, in whom the property, both real and personal, of the reconstituted Corporation should be vested under certain conditions; and the Trustees were to be *ex officio* members of the Council of the Corporation. The Council was to include representative members in equal numbers from each of the federating bodies, and, for a time, twelve members, elected by the members of the existing College of Preceptors. Canon Bell then proceeded to speak on one or two points which he had heard mentioned in conferences he had had with members of different associations and in particular of the Private Schools Association. One question was, whether the Federal Council would be prepared to support the equitable claims of private schools. The promoters were certainly anxious to secure the same aid for private as for public schools under proper conditions. Other doubters demanded an assurance that the new Council would endeavour to restrict subsidies from public bodies to parents who were unable to afford the necessary fees for secondary education. Personally he would be willing to make such a regulation, but any one acquainted with the proposed constitution of the new Council would hesitate to pronounce an opinion as to their action on that point. Another question was whether the new Council would discourage State inspection, with its attendant dangers. All he could say was that any intelligent body of teachers must agree with the feeling that the freedom, variety, and elasticity of schools should be maintained as far as possible. He wished to draw serious attention to three points: (1) That in resisting encroachments of the State or Local Authorities (and the latter were to be feared more than the former) the Federated Council could speak with far greater weight than a crowd of separate bodies. (2) Federation would leave intact the freedom of each association to act independently in matters that concerned its own policy and interest. He would only add that the rejection of these proposals would finally destroy the promising hope of effecting such a union of secondary teachers as would do much to promote the cause of secondary education throughout England. The Private Schools Association would further their own policy if they consented to leave the new Federal Council with the influence of their opinion and experience.

Dr. FRY asked that, as Secretary of the Federation Committee, he might be permitted to say a word or two upon this subject. That Committee considered that a vast change was taking place with regard to secondary education in consequence of the recent Act; that the State, in fact, was stepping in; that, unless the forces of secondary education could somehow find means to federate, they might be left out in the cold, and that it was only by union that they could secure a reasonable measure of freedom and elasticity. The private schools of England would be the first to suffer from a lack of union. He was strongly of opinion that private schools, where they fulfilled the needs of their districts, ought to be supported, under proper regulations, by public money, and that they ought to be capable of earning grants just as much as public schools. That could only be secured to them in districts where they were strong, and not in districts where they were weak, except by the union of organizations of secondary teachers. For this reason he was anxious to see this proposal carried through. He believed that, when the full scheme was placed before them, the members of the College of Preceptors would recognize that every effort had been made, with the fullest possible sympathy of other bodies, to secure to every member of the College of Preceptors his full rights. The opinion of Mr. Haldane was to the effect that there was no legal objection, but he said that the drift of the times would make the Privy Council hesitate. If the members ultimately agreed that Federation was the right policy to adopt,

the tide would go with them, and the public would come to the same conclusion.

The CHAIRMAN said that he must now bring the members back to the consideration of paragraph 8. That paragraph described the attitude of the Council: it said that a scheme of federation had been considered by certain bodies; but that the Council had not considered it so as to present the members with any number of points on which they were agreed; and, although the Council recognized that there would be great advantages from organization, they contented themselves with the remark that approval might be given to the principle of the union of forces. They further said that they would be willing to co-operate in any reasonable scheme which had for its purpose the formation of a Federation; and that the Council had sought the opinion of legal authority. The paragraph also referred to a future meeting of the members to be called to consider the scheme; and he did not think there was any member present who would disapprove of the action of the Council so far.

Mr. SPRATLING said he should like to move that no scheme would be acceptable to the members which did not contain some means by which the whole teaching profession could be welded into one.

The CHAIRMAN said that could not be considered at the present meeting.

Mr. MILLAR INGLIS, in referring to paragraph 9, said that in Gloucestershire and Oxfordshire they had no scheme, and did not propose to take up a scheme, though in the majority of cases the Local Authorities had gone straight ahead, and especially in municipalities they had municipalized secondary education to the disadvantage of private schools. Sir William Anson had decided that no school not in the hands of trustees was able to receive an Imperial grant; and private schools were therefore excluded from participation in such grants, even although they might be approved by the Local Authority. The Report of the Royal Commission on Secondary Education stated that almost the universal testimony of the witnesses was that it would be a national calamity if private schools ceased to exist, and again, more recently Prof. Sadler, in speaking of the Birkenhead scheme, said that it was for the benefit of the community that private schools should be retained. The point he wished to make was this: that, although it was to the interests of the community, those interests were seldom regarded. Upon most of the Local Authorities there was no real representative of those interests of the community which favoured the retention of private schools. One scheme which he had seen placed all schools on the same footing. The Sunderland scheme provided for a great number of free places, and so did away with the necessity of assisting private schools. Another scheme took all efficient schools into it; it did not propose to give the schools money, but to aid them in certain ways. The three schemes were interesting, and he hoped the Committee would before long be able to give a careful and detailed report.

Mr. MAPLES, with reference to the statement of accounts accompanying the report, drew attention to the amount of arrears of subscriptions as compared with the subscriptions received during the year. He also drew attention to the very high expenditure for salaries, &c., and asked whether it would not be possible in future statements for the fees of the examiners and sub-examiners to be shown in a separate item. He also remarked on the loss upon *The Educational Times*.

Mr. WILSON said he noticed that many of the assets of the College were ear-marked for specific purposes, and he should be glad to know what would become of these funds under the federation scheme.

Mr. BROCKLEHURST asked whether the £20 paid as rent by the Joint Scholastic Agency included taxes, coal, and gas. The sum appeared ridiculous compared with the sums asked for similar rooms in the same street.

Mr. PINCHES, replying to Mr. Wilson, said it was not for him to say what would become of any money under any scheme of federation which was not yet approved, but care would be taken that the rights of the College, not only with regard to trust funds but other moneys, would be duly safeguarded. With regard to the rent paid by the Joint Scholastic Agency, the College had formerly conducted an agency itself without any charge to members, and when the Agency was established the College gladly welcomed it and gave every possible assistance, and they had the satisfaction of knowing that it was becoming a flourishing institution of great benefit to teachers. The Council were aware that £20 was not an adequate return as a matter of business. One speaker had stated that *The Educational Times* was not a paying concern. The member who made

that observation had overlooked the fact that the journal was sent post free to every member of the College. If those copies were paid for, the account would show a balance on the other side; but surely it was not the wish of the members that a flourishing College like theirs, with money at its command, should require this payment from its members? For his own part, he thought the accounts were unusually satisfactory. There had been large expenses incurred in preparing the new catalogue and in redecorating the premises—the two items amounting to about £400; but, after paying this sum, they had still sufficient over to enable them to add £300 to the corpus of the Benevolent Fund, and to carry over a larger net balance than they had ever done before. The assets and liabilities were also very satisfactory, because it must be remembered that the various funds were invested in what were called gilt-edged securities, which at the present time were much depreciated. They were estimated at the market value of the day, and even at the depreciated value they had a Reserve Fund of £2,200, formed from the compositions paid by life members. The Building Redemption Fund was increasing at such a rate that those who succeeded them at the expiration of the lease would have at their command a sum of money double that which had been expended on the building. The Teachers' Training Fund amounted to £2,400, and the Benevolent Fund to about £2,800, compared with £150, at which figure it stood seventeen years ago. Eventually they would have in addition a sum of £2,000, being the reversion of property left them by a former member of the College, Dr. Hopkins. The library and building had been valued at a very low figure, the building being put at half the money it cost, and on the whole he thought they might congratulate themselves upon being in a very sound financial position.

The report of the Council, together with the accompanying statement of accounts, was then adopted.

The meeting then proceeded to the election of twelve members of the Council to fill the places of the twelve retiring by rotation, and three auditors.

The Chairman having appointed Mr. SOUTHER and Mr. CHANDLER to act as Scrutators, the voting-papers were distributed, and the election was proceeded with. When the Scrutators subsequently presented their report, the following were declared to be duly elected:—

MEMBERS OF THE COUNCIL.

J. L. Butler, B.A., The Douglas School, Cheltenham.
 J. Easterbrook, M.A., Owen's School, Islington, N.
 H. W. Eve, M.A., F.C.P., 37 Gordon Square, W.C.
 Rev. R. Lee, M.A., Elm Grove Road, Ealing Common, W.
 Rev. G. E. Mackie, M.A., Grafton Lodge, Acton, W.
 Sir Philip Magnus, B.A., B.Sc., F.C.P., 16 Gloucester Terrace, W.
 Bishop Mitchinson, D.D., F.C.P., Pembroke College, Oxford.
 W. G. Rushbrooke, LL.M., B.A., 13 Cathcart Hill, N.
 A. P. Starbuck, B.A., St. John's College, Green Lanes, N.
 Rev. J. Stewart, F.C.P., The Manse, Felixstowe, Suffolk.
 W. Vincent, Loughton School, Loughton.
 R. Wormell, M.A., D. Sc., F.C.P., Roydon, near Ware.

AUDITORS.

J. Bell, M.A., LL.D., 4 Beatrice Avenue, Norbury, S.W.
 W. C. Brown, M.A., F.C.P., Tollington Schools, Muswell Hill, N.
 A. E. C. Dickinson, B.A., LL.D., L.C.P., Grove House, Highgate.

The Dean presented his Report, which was as follows:—

THE DEAN'S REPORT.

IN addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Christmas Examination of candidates for Certificates took place on the 6th to the 10th of December at 229 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Aldershot, Anerley, Ashbourne, Ashford (Kent), Ashton-in-Makerfield, Bangor (Co. Down), Barnsley, Bath, Beckington, Bedford, Bewdley, Biggleswade, Birkdale, Birmingham, Blackheath, Blackpool, Blandford, Bognor, Bolton, Bournemouth, Bracknell, Braunton, Brentwood, Bridgwater, Brighton, Bristol, Burnham (Som.), Camborne, Cardiff, Carlisle, Cheltenham, Chepstow, Chertsey, Chiswick, Clacton-on-Sea, Clevedon, Coleford, Congleton, Coventry, Cowes, Crewe, Croydon, Deal, Derby, Devizes, Devonport, Doncaster, Dublin, Dumfries, Durham, Ealing, Earl's Colne, Eastbourne, Edinburgh, Elmswell, Evesham, Exeter, Fakenham, Farnworth (Bolton), Fraserburgh, Frome, Gosberton, Grantham, Gravesend, Great Ayton, Greenwich, Halifax, Halstead (Essex), Harlow, Harrogate, Hastings, Hereford, Herne Bay, Hornsea, Horsmonden, Hull, Ilkley, Inverurie, Jersey, Kibworth,

King's Lynn, Kingston-on-Thames, Launceston, Leeds, Lincoln, Liskeard, Liverpool, Llandudno, London, Loughton, Lytham, Maidenhead, Maidstone, Malmesbury, Manchester, Margate, Market Deeping, Marlborough, Morecambe, New Brighton, Newcastle-on-Tyne, Newport (Mon.), Newton Abbot, Northampton, Norwich, Nottingham, Ongar, Penketh, Penmaenawr, Penzance, Peterborough, Pinner, Plymouth, Portsea, Portsmouth, Ramsey (Hunts), Reading, Reigate, Richmond-on-Thames, Ripley (Surrey), Ryde, Saham, St. Anne's, St. Leonards-on-Sea, Sale, Sandwich, Scarborough, Selby, Sheffield, Shirley, Shoreham, Southampton, Southend, Southport, Southwold-on-Sea, Stamford (Lines), Staple Hill, Sudbury (Suffolk), Sunderland, Swindon, Tamworth, Taunton, Tettenhall, Torquay, Totland Bay, Wallington, Walton (Liverpool), Wanstead, Warminster, Warrington, Wellingborough, Wellington (Salop), Welshpool, West Norwood, Weston-super-Mare, Wigton, Winchcombe, Winchester, Winslow, Wisbech, Woking, Wokingham, Worcester, Worthing, Yarmouth, and York. The Examination was also held at Batticaloa and Colombo (Ceylon); Brockville (Ontario); Stewart Town (Jamaica); Nassau (Bahamas); Georgetown and New Amsterdam (British Guiana); St. George's (Grenada); St. Lucia and St. Vincent (B.W.I.); Port of Spain (Trinidad); Bloemfontein, Johannesburg, Kimberley, Klerksdorp, Krugersdorp, Potchefstroom, Pretoria, and Uitenhage (S. Africa); Abonema (Nigeria); Lagos; Mussooree (India); and Lomas de Zamora (Argentine Republic).

The total number of candidates examined (not including 545 examined at Colonial and Foreign Centres) was 5,596, of whom 3,611 were boys and 1,985 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined for Certificates during the year (not including those who attended the Supplementary Examinations in March and September) was 10,497.

The following table shows the proportion of the candidates at the recent Examination who passed in the class for which they were entered:—

	Entered.	Passed.	Percentage.
First Class (or Senior)...	496	241	49
Second Class (or Junior) ...	2,096	1,113	53
Third Class	2,661	2,019	76

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (343 in number) who entered only for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 317 examined at Colonial and Foreign Centres) was 1,823—966 boys and 857 girls. Of these 1,492 passed, or 82 per cent.

At the supplementary Examination for First and Second Class Certificates, which was held on the 6th to 8th of September in London and at the following Provincial Centres, viz., Alnwick, Birmingham, Bristol, Jersey, Leeds, Liverpool, and Manchester, 267 candidates presented themselves. The number of candidates examined at these supplementary examinations during the year was 611.

The Summer Examination of Teachers for the College Diplomas took place on the 30th of August and four following days in London and at the following Local Centres:—Alnwick, Birmingham, Blackburn, Bristol, Colchester, Inverness, Jersey, Leeds, Manchester, Newcastle-on-Tyne, Plymouth, West Hartlepool, and at Malta, Murree (India), and Worcester (S. Africa). It was attended by 445 candidates—221 men and 224 women. On the results of this Examination, 14 candidates obtained the Diploma of Licentiate, and 122 that of Associate.

The Christmas Examination of Teachers for the College Diplomas took place on the 2nd of January and five following days in London and at the following Local Centres:—Birmingham, Blackburn, Bristol, Falkirk, Jersey, Leeds, Manchester, Newcastle-on-Tyne, Plymouth, Rugby, Southbourne, Stornoway, West Hartlepool, and at Hankow (China) and Georgetown (B. Guiana). It was attended by 541 candidates—310 men and 231 women. On the results of this Examination 32 candidates qualified for the Diploma of Licentiate and 145 for that of Associate.

Practical Examinations to test Ability to Teach were held in February, May, June, July, October, and November. At these Examinations 71 candidates presented themselves. Of these 31 obtained Certificates, and 35 satisfied the conditions prescribed by the Teachers' Registration Council for candidates applying under Reg. 5 (2) (b).

The number of schools examined and inspected during the year under the Visiting Examination and Inspection Schemes (A), (B), and (C) was 12.

The College has also conducted certain Examinations for other Bodies.

Suggestions were made by various members for modifications in the examination papers, and the DEAN promised that the suggestions should receive consideration. The report was then adopted.

Mr. G. J. PASS moved the following resolution, of which previous notice had been given:—

That it is desirable that Higher History be an optional group in the Diploma Examinations, and that Higher English be accorded the full recognition of a group, instead of a subject as heretofore.

He thought that both higher English and History were subjects of special importance, and it was desirable therefore that teachers should be encouraged to study them. Such encouragement would be afforded if these subjects received a more prominent place in the scheme of examinations for the College Diplomas. It was satisfactory that higher English had received some recognition; but the more extensive requirements in this subject as compared with the examination in other modern languages suggested that it was entitled to be regarded as a group rather than as a constituent member of a group.

Mr. EVE said these questions might very fairly be left to the Examination Committee for consideration. English, even including all that had been specified in the regulations, was not more difficult than the languages with which it was grouped, and could hardly form a group of itself.

Mr. PASS expressed his willingness to withdraw the motion, which, by consent of the meeting, was accordingly withdrawn.

A vote of thanks to the Chairman concluded the proceedings.

ADJOURNED MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

AN adjourned meeting of the Council was held on January 28. Present: Mr. E. A. Butler, Vice-President, in the Chair; Mr. Barlet, Mr. Baumann, Rev. Canon Bell, Rev. J. O. Bevan, Rev. J. B. Blomfield, Dr. Breul, Mr. J. L. Butler, Mr. Charles, Miss Crookshank, Miss Dawes, Mr. Easterbrook, Mr. Eve, Mr. Hawe, Mr. Kelland, Rev. R. Lee, Rev. G. E. Mackie, Dr. McClure, Mr. Millar Inglis, Mr. Pinches, Miss Punnett, Mr. Rule, Mr. Rushbrooke, Mr. Starbuck, Mr. Storr, Mr. Vincent, and Dr. Wormell.

The Secretary reported that the Christmas Examination for Diplomas had been held on the 2nd to 7th January at sixteen centres, and had been attended by 541 candidates. The Diplomas would be granted at the meeting of the Council in February.

The opinion of counsel on the question of the application for a supplementary or amending Charter, in connexion with the proposals for federation, was read, and it was resolved that it should be communicated to the members at the General Meeting.

The use of the College Lecture Hall was granted to the Assistant Masters' Association and to the Froebel Society for meetings to be held on February 18 and March 31.

TRADE SCHOOLS FOR SOCIAL BETTERMENT.

[From the "School Journal."]

At a meeting recently held in the interests of the Manhattan Trade School for Girls, addresses were made by Dr. Felix Adler, Robert C. Ogden, and William J. Schieffelin. The last presented a statement concerning the work of the school. It cost 26,000 dols. to conduct the school last year. Of this sum 10,000 dols. was devoted to students' aid. This means that a hundred poor families received 100 dols. each for allowing their children to be trained. This aid is given only to families who are in such circumstances that the income from the young worker is absolutely necessary.

Dr. Adler said in the course of his address: "This work, now in its incipiency, is destined to become a powerful factor in the social scheme, a strengthening of our commercial standing, a bettering of our working classes, a raising of our quality of work, and a means of solving some of our most difficult problems. Let this little school be perfected and schools of its kind will spring up everywhere. This work promises to do something in a direction in which civilization hitherto has been helpless. Factory workers in their present condition are drudges. The sordid monotony of it has created socialism. Take this same class, educate them to skilled labour, train them to know thoroughly all the parts of their trade, and you have a new generation. Everything tends to stimulate the mind and cultivate the taste and raise the grade of our products. You double, and in many cases treble, the wages of the worker. The Manhattan Trade School has placed at least double the wages originally received by every young girl it has taught. The whole scheme is eminently practical and yet ideal. It is a threefold work: intellectual, moral, and social—intellectual, because it makes the work of the hand stimulate the mind; social, because it reaches and uplifts the condition of one class of society; and moral, because it forms one of the strongest protections for young girls around whom temptation is so often thrown."

THE VALUE OF LATIN TO TEACHERS.

A COUNTERBLAST FROM CANADA.

By Prof. JOHN E. MCFADYEN, M.A. (Glas.), B.A. (Oxon.), Toronto.

[From the *Educational Monthly of Canada*.]

It is with much surprise and regret that I learn that there is a movement on foot in certain educational circles to reduce the emphasis which has hitherto been placed upon Latin as a qualification for the teacher's certificate. I am surprised, because to one who knows experimentally the discipline of Latin such an educational policy, however much it may be inspired by the laudable desire to be content with no teaching that is not relevant and useful, must seem to be essentially retrograde; and I profoundly regret the movement, because I cannot but regard this comparative indifference to Latin which the proposal suggests as significant of an indifference to elements that are of the very first importance to human progress. Though I have personally nothing to do, directly or indirectly, with the teaching of the classics, I welcome the opportunity which the pages of this widely circulated magazine afford me to say a word, however brief, in defence of a discipline whose importance it is only too easy to underestimate.

When we speak of Latin, we may think of it either as a language or as a literature. Most of those who study it probably never get beyond the consideration of it as a language: it is the few who know and appreciate it as a literature, for the simple reason that to know this, to know any literature or science well, takes more time than the ordinary boy or young man has to spare. But, to begin with, I should like to say that even to know it only as a language, and, even as a language, only very imperfectly, is supremely worth while. A little Latin is not a dangerous thing, but a very wholesome and helpful thing, and sometimes keeps a man from making a fool of himself. As a result of considerable experience in educational matters, on both sides of the Atlantic, I can confidently say that much of the mis-spelling which disfigures the work of nominally educated men—not even, I regret to say, excluding teachers and University graduates—is the direct result of ignorance of or inattention to the simplest facts of etymology, which could hardly escape the notice of any one who had had one or two years of proper training in the Latin language. It is difficult to see how men who have even a smattering of Latin should so maltreat their own mother tongue as to perpetrate such spellings as these: "accomodation," "indispensible," "incontrovertable," "infallable," "degredation." The tables cannot be turned by saying that men who do such things are not educated men; for they are—at least they are in the common acceptation of the term, though I am quite prepared to admit that that acceptation stands much in need of revision—revision, too, in the direction of renewed emphasis on Latin. Is it a small thing that a man should spell his own language correctly? Rather, is it not a disgrace that he should not? And this sureness is guaranteed even by an imperfect knowledge of Latin, as by nothing else.

One might also point out that to one who has even a very elementary acquaintance with common Latin roots, English words have a colour, a picturesqueness, and a richness of association, which they cannot possibly have to one ignorant of their origin. But I hasten over this interesting point to one of even more importance; for clearness of thinking is of even more importance than correctness of spelling and appreciation of the pictorial associations of words. Now, it is a simple fact, which would hardly be denied by any one who has ever written Latin himself or watched others write it, that the composition of Latin prose is one of the severest tests of the clearness and accuracy of one's thinking, and one of the surest means of securing this clearness and accuracy—qualities which are no less desirable in the discussion of social and political affairs than of things scientific. You cannot even begin to translate English into Latin until you have perfectly and lucidly mastered the thought you have to express. This is more or less true of all languages—especially of those whose idiom differs widely from our own; but it is peculiarly true of Latin, partly because the Latin language has a special genius for brevity. It is a language in which there are no words to waste. Every word tells, and therefore every word has to be weighed; and, if it is found wanting—that is, if it does not contribute to advance the thought of the sentence—it has to be rejected. It may be said that this ideal ought to govern all human speech. That is true; but the point is that it is pecu-

liarily characteristic of Latin. One never realizes how diffuse and verbose an ordinary piece of English is until one attempts to put it into Latin; and it will usually be found that the words of a Latin translation stand to the words of an English original in the ratio of about three to four. This is, of course, accounted for largely by the fact that Latin is an inflected language; but in great measure also by the further fact that it concentrates attention severely on essentials. Thus translation into Latin prose constitutes a mental discipline of the highest order; it is a good thing—good especially for those who are just learning to think—to be compelled to face an English sentence, to sift out the relatively unimportant things and place them into subordinate positions, and to throw the great idea which the sentence is designed to express into clear and striking prominence. Such an exercise teaches us to think both clearly and in perspective; and surely this is a great thing. Of course, no one would deny that this power could be acquired in later years by earnest concentration on almost any branch of study; but what I maintain is that, to the attainment of this power, no discipline is comparable to Latin, for those who are learning to think, or teaching others to think. This leads to the further remark that Latin teaches, as perhaps no other language can, the majesty of human speech. Greek may be subtle, and Italian musical; but the dignity of human speech reaches its height in Latin. It is what, in another sphere, the Romans themselves call gravity—a certain lofty, noble seriousness. It is not unimportant to emphasize this at a time when so much of the English that one reads is slipshod, trivial, and commonplace. There is to-day, no doubt, much clever and able writing; but not many writers seem to realize what a noble and beautiful instrument of thought human speech may be. One need have little hesitation in ascribing this circumstance to the decline of interest in the study of the classics. No man who had ever come into close and sympathetic contact with such writers as Virgil and Tacitus, no thoughtful boy in the upper forms of our schools who had had his attention wisely directed by a capable teacher to the niceties, precision, and nobility of their expressions, could ever be altogether slovenly again in the composition of his own language; at any rate, if he could be, it would be under the sting of a perpetual inward rebuke.

In all that we have said we have been dealing largely with the outside, but the last consideration carries us deeper. For the unquestioned and unquestionable nobility of Latin style is but the literary reflex of the nobility of the Roman spirit. In other words, a study of the literature—and it is to be presumed that a capable teacher would be able to inspire at least some sort of rudimentary affection for the literature in the hearts of his more responsive and susceptible pupils—a study of the literature carries us right into the study of humanity, and surely this is a study of undying interest. And it is here the proposal to reduce the importance of Latin as a qualification for the teacher's certificate, and to replace it by Nature study, seems to me almost pathetically unfortunate, because it is symptomatic of the tendency of the times to ignore the indefeasible importance of the spiritual element in education—using the word spiritual in the widest sense to cover literature and every other influence that touches the emotional or moral nature of man. Nature and her laws undoubtedly form a great and worthy study. In wise hands such a study might even be made to yield a contribution—and not an unimportant one—to religion. But, after all, the things that touch and move us most deeply are the things that come from other spirits like our own—the thoughts that breathe and words that burn. Our debt to the theoretical and practical scientists is immeasurable. Their discoveries are true revelations of God, and their genius has transformed the world. But, while science can do much, it cannot do everything; nor—and we say it with deliberation—can it do the deepest things. There are worlds into which we cannot be transported by any electric tramway or motor-car—worlds, too, which it concerns us, as spiritual beings, to inhabit. As a distinguished English scholar has recently said: "It is not in science that our true life consists. Provided some one knows how to make a pump or a telegraph, and some one knows what nebulae are made of and the properties of argon, this is all we want. It is not of importance to us as human beings that we should all have an independent knowledge of scientific results. We can leave them to specialists." But the spiritual life concerns us all. Man is always interesting to man, and has always something to learn from him for the development of his own deepest nature.

But, it may be asked, what has this to do with the study of Latin? Much every way. For the men who spoke the Latin

language were a great race—a race of imperial instincts, and of unexampled thoroughness in every undertaking, whether the building of a road or the organizing of an empire. They produced splendid orators, profound thinkers, tender-hearted poets, great lawyers, and mighty historians. It was through Latin that religion, to say nothing of literature, was kept alive in Europe through the darkness of many centuries. It was for long the familiar language of correspondence among educated men. It is the parent of many of the great languages of modern Europe, and the easy key to their literatures; and it has left an indelible mark upon the noble language which is spoken in the British Isles, throughout the continent of North America, and indeed almost everywhere that men gather together. Without some knowledge of a language which has had, and still has, so stupendous an influence on history a man can hardly call himself an educated man.

THE LORD CHANCELLOR ON CLASSICAL STUDY.

A PLEA FOR FREER AND WIDER READING.

THE Earl of Halsbury, in delivering his presidential address to the Classical Association at University College, London (January 7), disclaimed "any pretension to lecture or to assume the attitude of a professor"; he would rather put it that he was "initiating a conversation and suggesting a topic or two than delivering a thesis." After preliminaries, he said:

METHODS OF CLASSICAL TEACHING.

I did not have the privilege of hearing, but I have read with deep interest, Mr. Mackail's address on the place of Greek and Latin in human life; and I note that he thinks "there is much to be done in quickening the spirit and renewing the methods of classical teaching." There are few, if any, of us who would controvert that proposition; but we are immediately brought face to face with the question—how is that work to be done? We are agreed as to the object—we are not so clear about the means. It is an old remark that it is by mistakes we learn; and I venture to suggest that the main end will be best attained by familiarizing those whom we seek to influence with the objects of our study in such a manner as to awaken a human interest in them. When such an associated body as this is agreed in its object, and when I look at the names which I see counted among its members, I cannot doubt but that some progress may be made in the direction which we all desire. But may I drop a hint as to the tone and temper of the discussion which such questions are likely to raise? Among many interesting things which I read in Mr. Mackail's essay there was a quotation from Lord Bowen which is, I think, most appropriate to the topic which I am endeavouring to treat with a very light hand. I mean that passage in which Lord Bowen referred to the sort of proprietary rights in classic studies which some scholars seem to claim and the right apparently to warn off all others from approaching that sacred ground. Only the day before yesterday I read a letter from one whose learning and experience entitle him to be heard, conceived in a spirit, I think, of somewhat exaggerated pessimism. I do not myself think that compulsory Greek has been rendered injurious and ridiculous; and I must be allowed to doubt, notwithstanding my respect for the learning of the writer, that there is any class (I speak not, of course, of individuals) who "deliberately omit from the course of compulsory Greek all that constitutes scholarship or could give to exercises a humanizing quality. All information is excluded as to who the Greeks were, their history, influence, merits, and defects."

FREER INTERCOURSE WITH GREEK WRITERS.

Now, though I still timidly suggest exaggeration here, I do not mean to say that the jealous treatment of Greek literature in the sense that none but the very best models shall be presented to a pupil's mind has not been too rigidly insisted on, and that there might not well be a more diffused and more free intercourse with Greek writers, even if not the best specimens of Attic Greek. Few books are more amusing, and more amusing to a boy, than Herodotus, and assembled Greece loved him, though he was provincial enough in manner and dialect. What would be said of an effort to teach a man a good English style if he was never allowed to read anything but Bolingbroke or Addison? I know it will be said that in teaching you must have regard to accurate scholarship, and no one will undervalue accurate scholarship. But the question is not what will be ultimately reached, but what in the order of events is the best way to attain to that accuracy. Children, if they were not allowed to speak except upon strict grammatical rules, would be a long time in learning to talk their own language; and I suppose it is the experience of most people in learning a foreign language that, if they confine their reading to what would be called lessons for

children, their progress is slow. In truth, what I have quoted before is true here—by mistakes we learn, and a wider study of the Greek of a thousand years and more, I think, would excite a more real interest and create a more numerous body of students who would read Greek writers, not merely for an examination, but for the enjoyment derived from the reading itself. It is astonishing sometimes, when one speaks to those who have left their classics behind them, to note how narrow has been the curriculum, how sparse and scanty has been the dip into a language which, nevertheless, has such abundant and copious sources of interest. How many of such students have ever opened a book of Diodorus Siculus or Dion Cassius, or in the Greek of Plutarch, and even of Plutarch either in Greek or English, anything but the "Lives" in Langhorne's translations, or a single word of Athenaeus, except such as are found quoted by Mr. Mackail in some of his notes to those plays of Aristophanes which he has edited? Now consider what a man does when he is learning French, we will say, with a real desire to read and enjoy it. He seizes every book he can get hold of and every newspaper. He makes many mistakes, he misunderstands and forgets; but, if he perseveres, he learns where he has been mistaken, and his discovered blunder becomes a fixture in his memory. I know not how it may be now; but when I was in Oxford as an undergraduate a man might have a creditable degree and never read an oration of Demosthenes or any one of the *oratores Attici*. I hope I shall not make any of my hearers shudder when I even advocate the perusal of the Byzantine historians and even the Greek Fathers. One result of such studies is that the appetite grows by what it feeds on, and the general knowledge thus acquired sets at defiance the coach or the crammer, or whatever he is to be called, who sets himself to defeat the efforts of the examiner to test real knowledge. The Greek romancers and satirists—especially among the latter, Lucian—form almost a literature of their own; but I am at present only concerned with the suggestion that it is not only Thucydides and the dramatists who will give facility in, and taste for, reading Greek.

THE LATIN CURRICULUM.

I have referred to Greek, but it is only because the cry against Greek has been the loudest and most insistent. The narrowness of the Latin curriculum is still what one learns from those who have ceased to take any interest in Latin literature. Horace and Virgil, Virgil and Horace, how many have read or heard of the "Quaestiones Naturales" of Seneca; and how many, but for the exertions of Mr. Rowe and Mr. Justice Ridley, would have read Lucan's "Pharsalia"? I think Sir Walter Scott tells a story of a Jacobite who had effected his escape from captivity while under a charge of high treason, but was recaptured when he returned to get back a copy of Livy which it had been the delight of his life to read and which he had left behind. I fear there are not many now who would risk their life for a copy of Livy; and Sir Walter expresses his grief that his hero's classic tastes were not found a sufficient justification for high treason. I do not deny that what I have suggested might seem to make too little of the accurate scholarship which it has been the glory of the English universities to attain to; but, as I have already said, it is only the order of events upon which I am insisting. Let a man learn to read Greek or Latin with facility, and it will soon be with enjoyment, and, if with enjoyment, then with gradually advancing accuracy. All I say is that, if you wish for complete accuracy at first and teach the *nuances* of Greek grammar before the pupil knows anything of the language, you run the risk of doing what I saw a gentleman said had occurred to him when discussing this subject—that he had hated Greek for the rest of his life; and, after all, we are not dealing with those who are to become Bentleys or Porsons or Prof. Jebb or Prof. Butcher, but with people who, short of that standard of learning, may take a real and lively interest in classic literature and hand over the lamp to others in their turn.

THE STIMULATION OF INTEREST.

One other topic, which I would approach in the same spirit of suggestion rather than of dogmatic assertion; and I would like to make the suggestion by way of parallel. Every one recognizes that, if you were reading a novel, the connexion of the events that the narrator suggests and the gradual development of the story create and sustain the interest of the reader; but, if you dislocate and disfigure the relation of the events to each other, you deprive the narrative of its chief attraction. Let me take an illustration. Suppose you are teaching the boy to read Cicero's "Second Philippic"—that which Juvenal described as of divine fame—the interest of the events between the murder of Caesar and Cicero's own murder by Antony is what lends to that oration its deep and even thrilling interest; and, without what I will call the context of that comparatively short interval, the life of Cicero, the intrigues of Antony, Cicero's "First Philippic," a tentative and even timid remonstrance against Antony, Antony's ferocious attack, and then Cicero's "Second Philippic," which sealed Cicero's doom, present a picture of political intrigue and of violent conflict which a boy would be dull indeed if, when presented to him in this form, he did not learn to read with avidity and interest. And, as part of what I have called the context, Cicero's "Letters,"

edited by Mr. Albert Watson, formerly Principal of Brasenose College, Oxford, would supply materials for developing the story. I give this only as an illustration; many more might be adduced; but I cannot forbear from adding that Mr. Watson's book and the latest account—published, I think, only last year—of the state of Rome between Caesar and Nero might be, indeed, an answer to the supposed decay of scholarship among us. But I have said enough in the way of hint and suggestion—I do not profess to do more—and I will only conclude with what Horace has said:

"Si quid novisti rectius istis
Caudidus imperti; si non, his utere mecum."

TECHNICAL EDUCATION:

ITS MONEY VALUE.

By A UNIVERSITY LECTURER.

[From the *Electrical Review*.]

In a recent issue of the *Electrical Review* there appeared an interesting diagram showing the value of a good technical education to the American youth. Almost simultaneously a reliable educational expert in England published some telling figures. An uneducated child, in this age of competition, has one chance in 150,000 of attaining distinction as a factor in the progress of the age. A common school education increases his chance about four times; an education at a high school gives the child eighty-three times the chance of his less fortunate and uneducated rival in the battle of life. A college education increases the chance of the high-school boy nine times, thus giving him eight hundred times the chance of the untrained. So much for the general chances of success in the various walks of life.

There is a common superstition among people who have but little to do with educational affairs that "genius will always shine," and that, whatever the obstacles placed in the path of the really clever youths, they will always of themselves forge ahead. But there was never a greater fallacy. Genius, and even cleverness, is a hot-house plant that requires culture and protection. It can seldom survive a struggle for the bare necessities of life. The drain of an active mentality, if insufficiently supported by careful attention to the body, will tell a sad and pitiful story, and oftentimes a bright lad loses the chance of his lifetime because his people cannot afford to keep him at college.

Here is a case in point. At a certain university in Great Britain there were two engineering students. They worked side by side for two years: A. was first of his year in many subjects; B. was always second, except in the few subjects in which he proved that he was a better student than A. And at the end of the two years' arduous, but never irksome, work both A. and B. came with long faces to a lecturer, and told him that they must both go out into the world and earn their own living. But the lecturer was sad, for he saw in these two engineers—that-were-to-be two good men. And he told the pitiful story to his chief, who was also sorry, but did not quite see what to do. There were no scholarships for which the youths were eligible, although at the technical school in the same city there had been spent something like £100,000 by the City Council, who had provided no scholarships for the University. Now the lecturer consulted his fellow lecturers and demonstrators, all of whom were earning, perhaps, one-fifth of the salary of the Professor. But, although they, too, were immersed in research work, yet they were very sympathetic with those who struggled hard to learn, for their own paths had been none too smooth. And so these few put aside, maybe, one-tenth of their yearly income in order that the fees of either A. or B. for a third year might be paid. And they argued it out, at length, that B., who was less clever than A., should have the advantage. And they obtained for A. a post at 30s. a week after his two years' training at a university and his two years' shop experience, and in four years A. is worth about double that salary; so says his employer. But that same employer had B. to work for him (after his three years at a university) on higher-class work, such as testing; and B. has done splendidly, earning at present more than twice A.'s salary. For the employer selected B. because of his greater knowledge.

There is a still sadder aspect. A. is compelled to do routine work; B. has full scope for his originality. They have taken two different paths now; A. will never catch up to B. And yet A. went to evening technical schools—he tells me that he used to almost fall asleep sometimes—and has honestly done his best.

It is only in recent years that there has been any real provision

for training engineers outside of the Admiralty training schools; and the money value of their education to those students who were fortunate enough to pass through the Royal School of Naval Architecture is apparent, for we find them holding some of the most responsible positions in engineering work. About fifteen months ago, Mr. Alfred Morcom approached some of the old students of this school with the idea of meeting each other, if only for an evening. And what a gathering that was! How it showed the money value of the education of these men! Take a few of the names of those present:—Sir William White, Sir Nathaniel Barnaby, Sir E. J. Reed, Mr. Philip Watts, F.R.S. (Director of Naval Construction), Sir John Durston, Prof. Elgar (of Fairfield Shipbuilding Works), Mr. Pratten (manager of Harland & Wolff), Mr. Seaton (late of Earle's Shipbuilding Yard), Mr. Alfred Morcom (of high-speed engine fame), Mr. Milton (chief engineer-surveyor to Lloyd's), and several others equally well known. How Prof. Unwin must have felt a pardonable pride as he looked round upon his old pupils who were there before him to show the value of an engineering education!

Few people connect the sudden rise of Japan with such a secondary subject as education. But that famous statesman the Marquis Ito says that the success of the fleet and the army has been almost entirely due to the college which he was instrumental in founding some years ago in Japan. It is now the University of Tokio. Even our own Admiralty acknowledge that it is upon the mechanical training of the officers and men, rather than the number of ships, that the efficiency of the Navy depends. Napoleon used to say: "In war men are nothing—a man is everything," and we all know of his ceaseless training in military affairs. In an engineering works the trained man is everything—the other men are machines.

There is, fortunately for English engineers, a wave of feeling in favour of better colleges and training grounds for the younger generation of our profession. Quite lately the writer was in Birmingham, and saw how lavishly they have spent money for applied science. Prof. Turner, in the Metallurgical Section, told him how one building with its equipment for his work (there will be other metallurgical laboratories) cost £10,000, and they told me in the Midland city that there would be spent, for applied science only, nearly half a million pounds sterling, in five or six years. It is a good investment. Ask the people in Manchester whether the School of Technology has done the city any good. In a few years you will know of the good work which the London polytechnics and colleges are doing. For of all these places "by their fruits shall ye know them."

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

REGISTRATION OF TEACHERS, COLUMN B.

To the Editor of "The Educational Times."

SIR,—You are no doubt acquainted with the fact, sufficiently notorious, that assistant masters in the public schools and the larger grammar schools have shown no great anxiety to get their names entered on the Register of Teachers. In view of the early expiration of the "days of grace," may I call your readers' attention to the following facts?—

In consequence of the passing of the Education Act, some modification has become necessary in almost every scheme governing any endowed school in England. However trivial the modification may be, if it only adds, say, a single representative governor, it gives the Board of Education the opportunity of adding whatever "clauses of common form" are fashionable at the moment. Now among the clauses in favour just now is one that runs: "The head master (to be appointed) shall be a graduate . . . &c., and shall be a registered teacher."

Thus it comes about that for the future practically no head masters will be appointed to endowed or municipal schools in England who are not registered teachers, and so all secondary teachers of standing ought to see that their names get on the Register in the course of the next few months.—I am, Sir, &c.,

Wigan Grammar School,

G. C. CHAMBRES.

January 17, 1905.

REVIEWS.

HELPS TO THE STUDY OF GREEK.

A Companion to Greek Studies. Edited by Leonard Whibley, M.A. (18s. net. Cambridge University Press.)

A few glances at this long expected and welcome volume should go some way to reassure such as are concerned for the maintenance of the study of Greek. The Syndics of the Cambridge University Press are to be warmly congratulated on the conspicuously successful accomplishment of their project of presenting in a single volume such information as is likely to be most useful to the student of Greek literature, apart from the ordinary matters available in histories and grammars. Mr. Whibley, the editor, has secured the assistance of thirty other specialists of acknowledged distinction in their several subjects. The plan of the work is analogous to that of Mr. F. P. Barnard's excellent "Companion to British History (Middle Ages)," recently published at the Clarendon Press and duly commended to the attention of our readers; but it is even more comprehensive and on a larger scale. It surveys Greek life, thought, and art in their different branches, with special chapters on important collateral matters. First, the Geography, and the Fauna and Flora, are fully treated, by Mr. H. F. Tozer and Canon Tristram respectively. Next, the History—chronology, generally, with elaborate chronological tables down to the Roman domination—by Mr. R. D. Hicks. Then a spacious handling of the Literature by Prof. Sir Richard Jebb, of the Philosophy by Dr. Jackson and Mr. R. D. Hicks (Dr. Jackson expounding the Schools to Aristotle in masterly fashion), and of Science by Dr. Gow. Sir Richard Jebb stops short when "Hellenism gave place to Byzantinism," and for ordinary purposes he has gone far enough; yet we should have welcomed a page or two upon the Byzantine period. Art in half a dozen forms is treated by the late Dr. F. C. Penrose, Dr. Waldstein, Prof. Ridgeway, Mr. R. D. Archer-Hind, and others. Mythology and Religion receive a very luminous handling by Prof. E. A. Gardner. The Public Antiquities fall under a dozen heads: the Constitutions, by Mr. Whibley; Law and Finance, by Mr. Wyse (fresh from the Attic orators, and particularly Isaios); Population and Slavery, by Mr. R. J. G. Mayor; Colonies, and Commerce and Industry, by Mr. H. J. Edwards; Measures, Weights, and Money, by Prof. Ridgeway; War, by Prof. Oman (the only Oxford contributor, we think, except Mr. Tozer); Ships, by Mr. A. B. Cook; and the Calendar, by Dr. Gow. The Private Antiquities are distributed under nine heads: Education being expounded by Dr. A. S. Wilkins; Daily Life (surroundings, employments, and amusements), as well as House and Furniture, by Prof. A. E. Gardner; and Books and Writing, the Position of Women, Dress (by Lady Evans), and Medicine, by other writers of special knowledge. The final chapter contains several important sections of information not always readily accessible: especially interesting are the articles on Palaeography and Textual Criticism, by Dr. Rendel Harris and Sir Richard Jebb respectively: indeed, in both sections the crucial points might well have been more fully exemplified. Other articles in this chapter are on Dialects (Dr. Neil and Dr. Giles), Epigraphy (Mr. E. S. Roberts), Metre (Dr. Verrall), and the History of Scholarship (Dr. Sandys). The completeness of the scope is obvious. The excellence of the work is guaranteed by the names of the contributors. The volume should be on the Greek library shelves of every school where Greek is seriously taught. Not for reference merely; it will be read with avidity, apart from task-work, by any boy that has the root of the matter in him. There are 5 maps and 141 excellent illustrations; and the book is beautifully printed and produced.

OUR GLORIOUS CONSTITUTION.

(1) *The Governance of England.* By Sidney Low, M.A. Balliol College, Oxford; late Lecturer on History at King's College, London. (7s. 6d. net. T. Fisher Unwin.) (2) *Democracy and Reaction.* By L. T. Hobhouse. (5s. net. T. Fisher Unwin.)

(1) Mr. Low has revived an ancient title of honour more than four centuries old, and has given it a broad scope of which Sir John Fortescue never dreamed or could have dreamed. Indeed, it is very remarkable how different his work is from the more cognate essay of Mr. Bagehot, which dates scarcely half a century back, so rapid have been the comparatively silent changes in the government of the country. The constitution is unwritten. It

has not been built; it has grown. There has been no compulsion to make a formal revision and to recast it in a mould specifically representing the facts. "So we have carefully avoided systematization; we provide for immediate necessities; and we are content with a constitution which has been found to meet our practical requirements, though it is partly law, and partly history, and partly ethics, and partly custom, and partly the result of the various influences which are moulding and transforming the whole structure of society from year to year, and one might almost say from hour to hour." The constitutional history of theory and of the text-books is not to be neglected, but its significance will be little appreciated without an understanding of the practical working of the system; and this is what Mr. Low has delineated with ample knowledge, acute insight, and conspicuous ability and fairness.

The Cabinet is the most astonishing of all the curiosities of government among a people that pride themselves upon their practicality and insist on the open door in the transaction of public business. Historically and (so far as it has any separate legal existence) legally but a Committee of the Privy Council, conventionally the responsible executive, though not recognized in any official document till (probably) four years ago, the Cabinet is actually a secret (not merely a private) Committee—its most famous historical parallel being the Venetian Council of Ten—selected by one member of one party in Parliament from among other members of the same party, servants of the Crown at the same time as they are servants of the nation, and for the time being practically absolute managers of the whole system of the Empire, yet, keeping no records of their proceedings. Nay, "if we peer below the surface of things a little closer, we might even conclude that its chief functions have passed from the Cabinet as a whole, and that they have been transferred to an inner council or conclave consisting of the Prime Minister and the three or four influential colleagues who share his confidence and are habitually consulted by him." Mr. Gladstone constantly professed the theory of complete ministerial subordination to the House of Commons as "the cardinal axiom" in the modern British constitution; it would be well, then, for the members of that body to note carefully the actual tendencies of the system. Mr. Low writes:

If we did not know that the Cabinet system not only existed, but was in practice extremely efficient, we might deem it a fantasy as strange as any conceived in the brain of a philosophical visionary. It might seem the nightmare of a satirist, the burlesque of an Aristophanes or a Rabelais, that the laws of a country should be made by a big, miscellaneous public meeting, composed for the most part of rather idle men, who were not paid for their services, and who attended or stayed away as they pleased; that the chief functions of actual rule, the command of fleets and armies, the protection of life and property, the direction of foreign policy, should be entrusted to the nominees of rather more than half this meeting, and that they should perform their duties subject to constant molestation and attack from the other portion; that the administration of this country should be carried on in a manner extremely distasteful to perhaps a third or nearly a half of its inhabitants; that the Government should be elected for an indefinite period, as the result of a sort of plébiscite; that it should consist of a secret Committee; and that its members should be rewarded or punished, not for their own acts, but for those of their colleagues, so that a minister who had managed his department well might be deprived of office because another minister had managed his badly. Fantastic as these attitudes must seem when badly presented, they do, in fact, belong to the essence of our polity, in its present phase.

Mr. Low reviews in the same incisive fashion the functions of the House of Commons, the House of Lords, the position of the Monarchy, the Electorate, the working of the Parliamentary system, and the influence of the personal and social element in English politics. The text-book theory casts dust in the eyes at every point: "account should be taken of the extent and real character of the responsibility of ministers; the relations of the members of the Cabinet to one another and to the Prime Minister; the development of the party system; and the diminished power and importance of the House of Commons as compared with the Ministry on the one hand and the Electorate on the other. The last is the most significant feature in our recent political evolution." Mr. Low concludes that "representative Government, like the constitutional Monarchy, is still on its trial," and that "it has yet to prove its complete capacity to deal adequately with the novel problems before it"—notably the problems that may be generally classed as "Imperial," but also many of the social questions that are steadily emerging and growing insistent. One may hope vaguely that the difficulties will be met by the processes of adaptation and adjustment that have hitherto tided

us over grave situations; but probably it will be advisable to make the earlier adjustments provide for a fuller supply of brains in the governing coterie, even after devolution has done its utmost. The volume is based less on the acquirements of the Balliol man and the lecturer on history than on the prolonged experience of the practical, instructed, and thoughtful journalist. Neither students of the constitution nor politicians of whatever class or colour can afford to neglect it. The style is perspicuous, fluent, and agreeable; and the interest is absorbing throughout.

(2) Mr. Hobhouse, another of our most cultivated and thoughtful publicists, is concerned about the symptoms and causes of the reaction that has been manifesting itself during the past quarter of a century in different departments of thought and action. He sets out in its proper light the position of Cobden and his school; traces the rise of "Imperialism," and analyzes the Imperial idea; examines the forces of the intellectual reaction in diverse forms and modes of operation, and notably the influence of the biological conception of evolution; and pursues various lines of inquiry tending to "a truer view of evolution" as "exhibiting the attempt to remodel society by a reasoned conception of social justice as precisely the movement required at the present stage of the growth of mind." Mr. Hobhouse is of the Liberal vanguard: but for all that he inquires ruthlessly into "the limitations of democracy," and his exposition and argument claim sober consideration at the hands of thinking men of whatever political complexion.

ELECTRICITY IN GASES.

Conduction of Electricity in Gases. By J. J. Thomson, D.Sc., LL.D., Ph.D., F.R.S., Professor of Experimental Physics in the University of Cambridge. (16s. Cambridge University Press.)

Prof. J. J. Thomson and the school of physicists he has created have shifted the centre of gravity of physical research from the Continent to this country. The Mecca of the physicist is no longer Berlin: it is now Cambridge. This volume contains a masterly exposition of the most important results achieved in recent years by Prof. Thomson and his pupils. The views of the constitution of matter here revealed were hardly dreamt of by the physicist of fifty years ago. The beginning of the nineteenth century was distinguished in the history of physics and chemistry by the discovery of the atom by Dalton; the end of that century will always be distinguished by the still more remarkable discovery by Prof. Thomson that the atom, under certain conditions, can be split up into a thousand or more corpuscles. The discovery of the negatively electrified corpuscle has completely revolutionized molecular physics, and is intimately connected with the conduction of electricity in gases. Electricity, according to the new theory, can pass through gases only when it is carried by material particles known as ions. The old idea of an electric current as a subtle fluid passing through the solid substance of a conductor has been swept away.

The ion, which is so often mentioned in this work, has long been known in the theory of electrolysis, and is now shown by Prof. Thomson to play an equally important part in the conduction of electricity in gases, while it also gives explanations of many hitherto mysterious meteorological and cosmical phenomena. The ion is a particle of matter with either a positive or a negative electric charge. The particle of matter may be a corpuscle or an atom or a group of atoms, according to circumstances, but its constant characteristic is that each ion possesses an attraction for another ion with an electrical charge of opposite sign. The corpuscle is the smallest known particle of matter, having a mass only one-thousandth part of the mass of an atom of hydrogen, and has always a negative charge. This corpuscle was first discovered by Prof. Thomson in the cathode rays, but it has since been discovered also in the rays given off by radium and other radio-active substances. The particle of matter associated with a positive charge of electricity is never less than atomic size.

One of the most interesting applications of the ionic theory is to the explanation of meteorological phenomena. It has been shown, chiefly by the labours of Elster and Geitel, that free positive and negative ions exist in varying amounts in the atmosphere. Now Wilson has shown that when air approaches its saturation point these ions form nuclei for the condensation of moisture. Aiken, many years ago, showed that particles of dust acted as nuclei, which is quite true; but what the ionic theory added to this is that after all dust particles have been removed the negative ions will assume the function of the dust particles, and, finally, the positive ions will take the place of the

negative ions. We learn from the present work that incandescent carbon gives off negative corpuscles. The Sun's atmosphere contains large masses of incandescent carbon, and must be continually emitting a stream of negative corpuscles. These corpuscles, whose progress is assisted by the light-waves from the Sun, strike the rarefied upper atmosphere of the Earth, flow along lines of magnetic force towards the poles, and produce the striking phenomena of the Aurora Borealis.

These are only a few examples of the new light thrown on many phenomena by the investigations so clearly described in this remarkable work. The highest qualifications of the mathematical and the experimental physicist have rarely been so happily combined as in its author. The chapter on the Roentgen rays is a fine example of this combination. The explanation of the discovery of Roentgen for long defied all the efforts of physicists. The experiments of Prof. Thomson and the mathematical skill of Stokes have now apparently completely solved the puzzle, and bound together in a logical theory the formerly inexplicable properties. The electric spark—which on a large scale is the lightning flash—has new light thrown upon it by the ionic theory. A great advance, in fact, has been made in all directions in the understanding of the phenomena of atmospheric electricity. Mountain sickness, for example, has been shown to be due to an excess of positive ions near the tops of mountains.

This work ought to be read and studied by every one that desires to keep abreast of the times in physical science. Here will be found much that has not yet made its appearance in the ordinary school text-books.

THE END OF THE OLD RÉGIME.

From the Monarchy to the Republic in France, 1788-1792.

By Sophia H. MacLehose. (6s. net. MacLehose.)

Miss MacLehose narrates concisely and clearly the story of the struggle between the nation and the Crown that ended in the fall of the old French Monarchy. She confines herself very closely to the events that took place at Versailles and in Paris—the immediately determining events; and she holds fast to the evolution of effect from cause without turning aside to formal descriptions of the turbulent scenes of the period. She has thus followed the plan of her previous admirable account of "The Last Days of the French Monarchy." The result is, of course, to leave much unsaid, but also to say the essential things in a simple and effective way. The course of the evolution of events in those four momentous years is set forth clear of the multiplicity of distracting details, so that there could hardly be a better introduction to the history of the great movement. The book has manifestly been written with most patient care and thoughtfulness on a basis of ample knowledge of the best and the latest authorities. There are more than forty very pertinent illustrations, and the volume is excellently printed and got up. With Miss MacLehose's two volumes and Mr. Edward J. Lowell's "The Eve of the French Revolution" (published by Messrs. Houghton, Mifflin, & Co., a dozen years back) the student will be fully equipped to tackle the great histories without embarrassment and with immediate advantage.

GENERAL NOTICES.

CLASSICS.

Murray's Small Classical Atlas. Edited by G. B. Grundy, M.A., D.Litt. (6s. John Murray.)

Dr. Grundy's new atlas consists of 14 maps disposed so as to cover effectively the ancient lands of the classics, one of the sheets containing 14 plans of famous battlefields. He again uses coloured contours, bringing into necessary prominence the natural features of the countries, and he has taken care to print the names in a specially clear type. The index is very full. Schoolboys of these days do not know how fortunate they are in having such an excellent atlas to guide them.

Bell's Concise Latin Course. By E. C. Marchant, M.A., and J. G. Spencer, B.A. (2s. George Bell.)

The three parts of the original Course are compressed into one volume. The essentials of the grammar stand out distinctly, and the exercises have been cut down; and at the same time the more rapid advance in grammar gives space for further exemplification of the simpler subordinate sentence constructions. The volume is carefully graduated; the matter is interesting; and there are full vocabularies and indexes. An excellent first book for older pupils, or for pupils not pressed for time.

Longmans' Latin Course. Part III. By W. Horton Spragge, M.A. (3s.)

The work forms "a stepping-stone to the writing of Continuous Latin Prose." The chief points of construction are systematically explained with brevity and clearness; special attention is given to idioms; the exercises are careful and sufficient (none of them recapitulatory); and there is an ample vocabulary. A sound and attractive book.

Exercises in Latin Prose. By G. G. Ramsay, LL.D., Litt.D., Professor of Humanity in the University of Glasgow. (2s. 6d. Clarendon Press.)

The completion of the School Edition of the author's well known "Latin Prose Composition, Vol. I." In selection and treatment the volume is thoroughly practical, judicious, and effective.

We welcome a second and enlarged edition of the *Roman Law Examination Guide for Bar and University*, by W. Addington Willis, LL.B., and David T. Oliver, LL.D., Barristers at Law (8s. 6d., Butterworth). Though cast in the form of question and answer, it is very readable; and for elementary instruction it is reasonably full and representative on the more important matters. But it ought not to be confined to law students: it would be very helpful to classical students on many points on which they are apt to go astray, and we do not know any more lucid and safe guide in small compass for general readers that wish an easy outline of the Roman Law.

MATHEMATICS.

The Story of Arithmetic. By Susan Cunnington.

(3s. 6d. Swan Sonnenschein & Co.)

Miss Cunnington traces "for learners of school age and general readers" the most interesting history and development of arithmetic. Those that puzzle over figures will find that the story of the art of computation has many elements of romance, and Prof. Hudson, who furnishes a brief preface, and ought to know, affirms that it is "also an aid to further progress." Progress in the past, indeed, has been slow: habit has been too strong, and ignorance has encouraged habit. But "we moderns do more in our heads, less with our fingers," and "the progress of the art is to be sought in bringing written processes more closely into accord with mental operation, even if they thereby deviate more widely from mechanical." Who invented arithmetic? Miss Cunnington cannot give a short and concise answer. But "the first calculation was, no doubt, that of I and 1," and "many centuries passed" before men grasped "the abstract idea that one and one are two." She has much curious matter about ancient and mediæval arithmetic and about Old English (sixteenth to eighteenth century) arithmetic books—not forgetting the immortal Cocker (1700)—with fuller treatment of later works and methods down to "A Modern Text-Book." Nor must we forget the absorbing chapters on Folk-Lore in Arithmetic, Shakespearean Arithmetic, and Arithmetic in Modern Literature. Appropriately enough, the book ends with problems, "ancient, mediæval, and characteristic," and questions and exercises. There are 7 diagrams. A laborious, careful, useful, and most interesting work.

Elementary Geometry. Parts I. and II. By Cecil Hawkins, M.A. (2s. each. Blackie.)

The work deals both theoretically and practically with elementary geometry, discussing the straight line, the circle, and plane rectilinear figures. The subject of ratio and proportion is also included, and is followed by a treatment of the theory of similar figures. Incommensurable magnitudes are not introduced. The course is intended to cover rather more than the syllabus for the Cambridge Previous Examination. In many respects the text-book is a good one, but it requires considerable revision in order that what is clear to the author may always be equally so to his reader. Moreover, many of the constructions are marked by the want of mathematical precision which is noticeable in so large a proportion of the newer school treatises on elementary geometry; and often there is no attempt made to demonstrate theoretically the validity of the methods adopted for the solutions of problems.

Practical Geometry for Beginners. By V. le Neve Foster and F. W. Dobbs. (2s. 6d. Macmillan.)

A large and very useful collection of graduated exercises. The early sections are designed as a preliminary course in geometry, being devoted to elementary work of a purely practical character; later, both theory and practice are supposed to accompany each other, whilst the concluding portion of the volume consists of a series of miscellaneous exercises together with an attractive introduction to the art of constructing geometrical patterns. In the entire work there is very little that deals with matter beyond what is included in the First Book of Euclid.

Plane Trigonometry. By James M. Taylor, A.M., LL.D. (3s. 6d. Ginn.)

A thoroughly useful little book suitable for junior students. The subject of the text and the manner of imparting it are equally good. The principles are illustrated by a series of clear diagrams, and are applied to a number of worked examples, scope for practice being afforded by the usual complement of exercises.

Messrs. Macmillan issue a second edition of *A School Geometry, Parts I-VI.*, by H. S. Hall, M.A., and F. H. Stevens, M.A. (4s. 6d.). The volume contains Plane and Solid Geometry, treated both theoretically and graphically, and is undoubtedly one of the best text-books on the subjects.

Messrs. Bell publish a second edition of *Arithmetical Examples*, by W. G. Borchardt, M.A., B.Sc., without answers (3s.). There have been added five new sets of examples of an easy problem type on the first four rules, compound rules, vulgar fractions, the metric system, and percentages, and also a large number of easy oral questions. A very serviceable collection.

Messrs. Chambers publish separately Part I. of *Elementary Pure Geometry with Mensuration*, by E. Budden, M.A. Oxon., B.Sc. Lond. (10d.). We noticed the complete work in December.

The Cambridge University Press issue *Solutions to the Exercises in Godfrey and Siddons's Elementary Geometry*, by E. A. Price, B.A. (5s. net); and Messrs. Blackie furnish a *Key to Elementary Geometry*, by Cecil Hawkins, M.A. Both are instructive and serviceable.

SCIENCE.

A Manual and Dictionary of the Flowering Plants and Ferns. By J. C. Willis, M.A., Director of the Royal Botanic Gardens, Ceylon. (10s. 6d. Cambridge University Press. Cambridge Biological Series.)

This is a second edition of a most able and useful compilation, the work being thoroughly revised and rearranged in a single volume. Part I. (pages 1-216) gives a general exposition of the morphology, natural history, classification, geographical distribution, and economic uses of the flowering plants and ferns: it may, for the most part, be read consecutively by students with but a slight knowledge of the subject, and is, indeed, a masterly summary. Part II. (pages 217-622) is the dictionary portion—very full, and elaborately compiled from a multitude of sources; a most valuable compendium of such information as is needed by any but specialists. Part III. (pages 623-670) is a convenient glossarial index of English names, economic products, technical terms, &c. The work is indispensable to the serious student of botany. It is beautifully printed and strongly and flexibly bound.

Notes on the Composition of Scientific Papers. By T. Clifford Allbutt, M.A., M.D., &c., Regius Professor of Physic in the University of Cambridge. (3s. net. Macmillan.)

Prof. Allbutt peruses annually sixty or seventy theses for M.B. and about twenty-five for M.D., and he finds that, while a few are well composed, "the greater number are written badly, some very ill indeed." It is not mere inelegance; "it is such as to obscure, to perplex, and even to hide or to travesty the sense itself." So he sets forth a handy book of criticisms, which may well appeal to a far wider circle. He does not profess to be immaculate himself—"monitis sum minor ipse meis"—and examples are available; but, looking at the matter broadly, one can but hope that his criticisms will be well considered by his students, greatly to their own benefit and his comfort. And there is much in the book that will be suggestive to students of composition generally.

A Primer of Physiology. By E. H. Starling, F.R.S. (1s. Murray.)

Prof. Starling's work in physiology needs no commendation, but it is gratifying to find a master of the subject competent, as well as willing, to present its leading ideas effectively to mere beginners. The exposition is lucid and simple, only the necessary elementary knowledge of the main facts of chemistry and physics being assumed. There are 35 good illustrations.

The third edition of *Elements of the Mathematical Theory of Electricity and Magnetism*, by Prof. J. J. Thomson, M.A., D.Sc., F.R.S., &c. (10s. Cambridge University Press), is strengthened by a new chapter on the properties of moving electrified bodies—a welcome addition to a very able, lucid, and serviceable volume.—Excellent, too, on different lines is the *Higher Text-Book of Magnetism and Electricity* (Volume IV. of "The Tutorial Physics"), by R. Wallace Stewart, D.Sc. Lond. (6s. 6d., Clive)—the author's former work on the subject recast, extended, and brought up to the standard of final degree work. A capable book by an experienced teacher. 358 figures.—*The First Stage Magnetism and Electricity* (treated from the standpoint of Potential and Potential-Gradient), by R. H. Jude, M.A. Cantab., D.Sc. Lond. (2s., Clive), has been entirely recast and markedly improved, the practical needs of young engineers being kept well in view. Judicious exercises (with answers); examination papers; 121 figures.

A revised edition of *Elements of Botany*, by Joseph Y. Bergen, A.M. (5s., Ginn), shows considerable alterations under experience, the exposition being curtailed in some places and expanded in others, and several useful additions being made. Much care has also been bestowed on the illustrations—frontispiece, 15 plates, and nearly two hundred figures. A practical and helpful book.

MODERN LANGUAGES.

Portuguese Grammar. By Frank Thomas. (4s. Hirschfeld. Hossfeld's Method.)

A good practical exposition and illustration of the usages of the language, with special care upon the points of real difficulty. Conver-

sations, exercises for translation, retranslation, questions on grammar, ample passages for reading, the more common forms of commercial correspondence, &c., render the work very comprehensive, and, for practical purposes, complete. There are occasional weaknesses in the logical treatment, we think; but that is no peculiarity, and matters little from the practical point of view. The volume is an excellent addition to the series.

Frases y Cuentos para Niños. (Madrid: S. Calleja.)

This is the second part of "El Instructor: Metodo de lectura conforme con la inteligencia de los Niños," by Don Mateo Jiménez Avoca, approved by both the ecclesiastical and the secular authorities. The illustrations are numerous and appropriate, if not very lively or stimulating; and a good portrait of Pope Pío X. watches over all by way of frontispiece. The "frases" are moral sentences; the "cuentos" are stories, with a moral, religious, or patriotic purpose, simple enough to the adult, but little graduated, though some help is derived from repetitions. The pedagogical aspect of the little book, except for the pictures, takes an Englishman back to the earlier half of the last century. Yet the pictures give hopes of other coming improvements—freshness and variety of matter, and graduation of linguistic difficulties. A very interesting little volume.

Commercial German. By Gustav Hein, Senior German Master, Aberdeen High School for Girls, and Michel Becker, Professor of Modern Languages in the Ecole Alsacienne, Paris. (4s. 6d. Murray.)

The volume consists of 85 passages, partly original, but mostly selected from contemporary books and newspapers, conveying extensive and useful information about German trade, manufactures, geography, and commercial resources. A series of questions is appended to each passage, not only to impress the facts stated, but also to suggest further instruction on the part of the teacher. Brief notes in German are added at the end of the book, and there is a good map of the German Empire (in Europe). Within its professed scope, the book is skilfully executed, and it is well printed and tastefully got up.

SOME ENGLISH READERS.

Nelson's Literature Readers, Book II., selected and annotated by Dr. Richard Garnett, C.B., and arranged for use as Book VII. of the "Royal Prince" or "Royal Princess" Readers (2s.), is a substantial repertory of excellent literary passages of widely varied character. Brief notices of the authors cited are appended with the laudable purpose of "affording a glimpse of an ampler world."

The Jack Readers, Fifth Book, by Thomas Cartwright, B.A., B.Sc. Lond. (1s. 6d.), continues the series with good matter and numerous illustrations.—*The Children's Pickwick* and *The Children's Scott*, consisting of readings from Dickens and Scott chosen and annotated by Mr. Cartwright, make interesting and attractive reading books for fairly advanced pupils.

Two new volumes of the "Ludgate Supplementary Readers" (1s. 6d. each, Routledge)—*Round the Coast*, by George F. Bosworth, F.R.G.S.; and *Heroes of Industry*, by Frances E. Cooke—both with numerous illustrations and brief notes, will be cordially welcomed.

The "Round the World" Geographical Series—one of Messrs. Jack's new enterprises—opens with several attractive and agreeably instructive volumes, which promise well for those that are to follow. (1) *Tales of Travel* (10d.) and (2) *Land and Water* (1s.), by Charles F. Hayward, and (3) *Our English Home* (1s. 3d.), by Charles W. Crook, B.A., B.Sc. Lond., and W. H. Weston, B.A. Lond., are simple introductory books, interestingly written and liberally illustrated. (4) *Europe*, by W. Vere Mingard, (5) *America*, by John Kelly, and (6) *Australasia*, by G. L. Glover, B.A. Lond. (1s. 6d. each), are more advanced, describing the countries broadly in easy language, so that the children may receive a substantial knowledge of the more important characteristics. Many of the illustrations are coloured, and they are all judiciously chosen to impress various aspects of the countries and of the life of the people. The maps also are most helpful.

The volume on *The British Isles* (1s. 6d.), in Nelson's able and interesting "The World and its People Series," gives a capable and lucid, yet simple, description of the geographical features, the trade and commerce, the life of the people, and so forth. The illustrations, many of which are coloured, are varied and abundant, the maps being specially good and useful. Summaries are appended.

Pitman's "New Era Geography Reader," *The World* (1s. 10d.), is a substantial volume, ably descriptive, and profusely and picturesquely illustrated. Many of the illustrations are coloured, and there are many helpful maps. A summary is appended.—*Book II.* of the same series, by Robert Bunting (1s.), consists of very interesting lessons, both in prose and in verse, based upon and indirectly teaching the simpler facts of physical geography. Again the illustrations are profuse, and some of them are coloured.

"The Jack Historical Readers"—(1) *Roman and Saxon England*, by Charles F. Hayward (1s.), (2) *Norman and Plantagenet England*, by Charles F. Vernon, B.A. Lond. (1s. 3d.), and (3) *Tudor England*, by A. R. Tilley, F.E.I.S. (1s. 6d.)—narrate the main course of events vividly enough, with occasional summaries supplying further details.

The illustrations are numerous and mostly good; several of them are coloured. King John, we are glad to note, is pictured *sealing* (not signing) the great Charter. But Bruce did not "serve in the English Army at the battle of Falkirk," and the numbers of the opposing armies at Bannockburn are, as usual, much overstated.

The Addison Temperance Reader, by William Finemore (1s. 6d., Addison Publishing Co.), is intended to convey to the upper standards in schools timely lessons upon the evils arising from drink, juvenile smoking, and thriftlessness, and upon the importance of good habits in general. Fortunately, it is temperately written. Anecdote and poem are pressed into service, and the argument is adequately presented in concrete and reasonable form, while the scientific aspects are fully recognized. The lessons are bright and attractive. If early teaching is to prove effective, this volume seems to stand a better chance of success than others we remember. There are several illustrations, all of a properly sober character. The type is good, and the binding strong.

EDUCATION.

A Short History of Education. By G. Benson Clough. (2s. 6d. Ralph, Holland, & Co.)

A very judicious selection of main points in the whole history of educational ideas and practice (except in America), with special attention to the English system since Bell and Laneaster. An account of "The Great Foundations" in England is presented in chronological order and in concise detail; and "The Legislative Growth of English Education" is similarly traced from the First Factory Act (1802) down to the Education Act (London), 1903. The volume will convey a great deal of information to "a public lamentably ill-informed as to the growth of our English system," and furnish a sound and convenient basis for more extensive study.

The Educational Ideas of Pestalozzi and Froebel. By F. H. Hayward, D.Lit., M.A., B.Sc. (Lond.), B.A. (Cantab.), F.C.P. (2s. Ralph, Holland, & Co.)

If this is not the exhaustive treatise that Dr. Hayward would have liked to write, it will at any rate prove a great boon to such teachers as take their Certificate Examination next year, and it will serve the further more important purpose of stimulating interest and inquiry. It is written with abundant knowledge and with acute, forcible, and independent criticism. The hardest knocks are bestowed—and in large measure well bestowed—upon Rousseau; Dr. Hayward rejoices "to have the opportunity of protesting against the pernicious and extraordinary influence of this thief, parasite, rogue, and voluptuary of Geneva," though admitting that "on many matters he was highly stimulating and suggestive." We hope that Dr. Hayward will go ahead with his idea of "a synthesis of educational thought, the discovery and exposition of a mass of educational agreement among the master minds." He will then begin to appreciate the (entirely benevolent) remark we recently made in our "drowsier moments" about his "exalted mood."

RELIGION AND MORALS.

Old Testament History for Schools. By the Rev. T. C. Fry, D.D. (2s. 6d. Edward Arnold.)

Dr. Fry, with his accustomed courage, frankly takes, "speaking generally, the critical view," which he believes "to be unanswerable on all main points." He also believes that "the teaching of the Old Testament should not conceal these points"; for "boys think about these things, when they read of or are told of them, more than their elders imagine," and "the faith of the next generation largely depends on the truth being told." But there is no ground for alarm: Dr. Fry handles his materials with great prudence, "and whatever is here written is written with a full sense that new light may teach us yet more." The book is a very able and lucid presentation of the subject. There are three very serviceable maps, and the get-up is excellent.

Old Testament History, for use in Schools. By the Rev. W. F. Burnside, M.A. (3s. 6d. Methuen.)

The volume is primarily addressed to "Forms below the Sixth in Secondary Schools, in the belief that it is possible, with all reverence for tradition, though not on strictly conservative lines, to make the Old Testament a real living force in religious education." Every paragraph of the narrative and exposition has its reference to the text of the Bible, and considerable extracts, selected for their importance, beauty, or familiarity, are inserted. Though not "strictly conservative," Mr. Burnside will not be quarrelled with for lack of conservatism. The narrative is lucid; much illustrative matter is introduced; and the style is interesting. There are three welcome maps. The volume is altogether exceedingly well executed, and cannot fail to be alike popular and useful.

The Life Radiant. By Lilian Whiting. (4s. 6d. net. Gay & Bird.)

"The Life Radiant is that transfiguration of the ordinary daily events and circumstances which lifts them to the spiritual plane and sees them as the signs and the indications of the divine leading." Miss Whiting works out in some detail five lines of exemplification in an easy and attractive style, with plenty of illustrative anecdotes.

The tone is sympathetic and elevated. The volume is beautifully got up.

NATURE STUDY.

Botany Rambles. By Ella Thomson. Parts I., II., and III. (10d., 1s., 1s. Horace Marshall.)

The three parts exemplify respectively the more familiar botanical interests of spring, summer, and autumn. The text is simply and attractively written, and the illustrations are very helpful. The books are intended "mainly for revision, after practical lessons have been given," and "not merely as class reading-books." But, as they consist of "little talks about the trees and plants which you are likely to see on your walks," they may be taken as aids to Nature study (in its ordinary sense). They are capably executed, and cannot but be most serviceable for their purpose. They are also nicely and liberally got up.

Observation Lessons on Plant Life. By Mrs. Beverley Ussher and Dorothy Jebb. (3s. 6d. net. Newmann.)

The work is intended as "a guide to the teacher" as well as a storehouse of instruction for the pupil; and it is calculated for a two years' course, or seventy-four hours of study. The treatment is intentionally informal, and, if the sequence is irregular, yet there is preserved a general progression, and the authors appeal to the Board of Education's injunction that "the instruction should in every case be appropriate to the season of the year and the circumstances of the locality." The illustrations are numerous and good, and the get up is handsome. A very engaging book.

In the "How-and-Why Series" Messrs. Charles & Dible present *Flowers of the Prime and More Flowers of the Prime*, by F. H. Shoosmith, B.Sc. Lond., illustrated by the author, 2d. net each. Both brochures are interestingly written, and calculated to foster a love of the subject as well as to give immediate particular instruction and suggestion.

ANNUALS.

The Schoolmasters Yearbook and Directory, 1905. (5s. net. Swan Sonnenschein & Co.)

The third annual issue of this indispensable "reference-book of secondary education in England and Wales" exhibits abundant vitality. It runs on the former general lines, and brings together into handy compass an enormous number of facts, very important for reference. The outstanding points of the past educational year are concisely and clearly presented on a somewhat larger scale than before. The difficulty of finding space for everything that everybody would like to see in the volume is obvious enough; but we sympathize with the correspondent that wished "that the names of all professors and lecturers at universities and university colleges could be inserted in the Directory," and are rather surprised that the editor finds it "impossible to accept this suggestion" when he has elsewhere made room for all the members of all the Education Committees. Should the "Schoolmasters" of the title have an apostrophe or not? Mr. Horace Hart decides that it should, being "distinctly in the possessive case." We agree with the editor that it should not, being distinctly not in the possessive case. Small matters these, no doubt; but they indicate a laudable desire for the best results.

The Public Schools Year-Book (2s. 6d., Swan Sonnenschein) continues to effect its purpose of "providing a record, at once comprehensive and concise, of all matters of interest to parents, schoolmasters, and boys." The information is ample, judiciously selected, and to all appearance accurate. New features also have been introduced, and old features have been expanded. The work is limited to such public schools as are represented at the Head Masters' Conference, and the difficulties of drawing the line in details are surmounted with good judgment. "Colonial openings for public-school boys" is the subject of a full and careful section, and a future section on professional openings is contemplated, and will no doubt be welcomed. A very comprehensive, businesslike, and serviceable manual.

Hazell's Annual for 1905 (3s. 6d. net, Hazell, Watson, & Viney) is—for the twentieth time—indispensable. Apart from advertisements (which also have their interest and uses), it now extends to nearly 800 pages in double columns of close (but very clear) type, and is more encyclopædic than ever, new "men and topics of the day" ("the men, in this instance, embracing the women," we are told), pressing forward for notice and duly receiving attention. This, the main object of the book, constitutes the essential value of the book. It is an instructive and never-failing companion to the newspaper. How did we ever get on without it?

MUSIC.

The first numbers of *The Musical Home Journal* (1d. each, Cassell) give high promise of satisfying a want that must be widely felt. Each number contains half a dozen copyright songs and pieces by well known composers, well varied in character, and simple to any one with a rudimentary knowledge of music. The type is clear, and the paper is good. We have no doubt that this new enterprise of Messrs. Cassell's, on their traditional lines of popular instruction and entertainment, will be very generally appreciated.

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- Thoughts, A Few, on Education. By Sir Gooroo Dass Banerjee, M.A., D.L., sometime Vice-Chancellor of Calcutta University. Rs. 5. Calcutta: Thacker, Spink, & Co.
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- United States, A History of Education in the. By Edwin Grant Dexter, Ph.D. (Columbia), Professor of Education in the University of Illinois. 8s. 6d. net. Macmillan.
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MATHEMATICS.

15648. (C. E. YOUNGMAN, M.A.)—The number 666 is apparently the greatest triangular number which has all its figures alike. Is there proof of this?

Solutions (I.) by Professor ESCOTT; (II.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.

(I.) $\frac{1}{2}x(x+1) = a + 10a + 100a + \dots + 10^{r-1}a = \frac{1}{2}a(10^r - 1)$.

Multiplying by 8 and adding 1,

$(2x+1)^2 = \frac{1}{2}[8a(10^r-1)+9]$ ($a = 1, 2, \dots, 9$).

We see at once that the values $a = 2, 4, 7, 8, 9$ are impossible, and that 3 is impossible excepting for $r = 1$. This leaves the following cases:—

$a = 1, 8 \cdot 10^r + 1 = y^2; \quad a = 5, 40 \cdot 10^r - 31 = y^2;$
 $a = 6, 48 \cdot 10^r - 39 = y^2.$

We can determine whether or not any one of these equations has a solution for r below any desired limit, by using Gauss's "method of exclusion." For example, when $a = 5$,

$y^2 = 40 \cdot 10^r - 31 \equiv 4(1 + 3^{r+1}) \pmod{7}.$

Therefore, since 4 is a quadratic residue of 7, $1 + 3^{r+1}$ must also be congruent to a quadratic residue, *i.e.*,

$1 + 3^{r+1} \equiv 0, 1, 2, 4 \pmod{7}$ or $3^r \equiv 2, 0, 5, 1 \pmod{7}$;

therefore $r = 6t + 2, 0, 5$.

Similarly, by taking residues with respect to modulus 13, we get $r = 3s + 2, 0$; and, from modulus (17),

$r \equiv 0, 2, 3, 5, 10, 11, 12, 14, 15 \pmod{16}.$

By continuing this process, we can find as many expressions for the form of r as we please. I find that the only value of $r < 122$ is 2. Therefore, there is no triangular number containing less than 123 digits all of whose digits are 5's excepting 55.

In this way I find that there are no triangular numbers of less than 30 digits of the required form excepting 1, 3, 55, 6, 66, 666.

[Rest in Reprint.]

15669. (Communicated by A. V. KUTTI KRISHNA MENON, B.A.)—O and O' are two fixed points, P any point in a curve defined by the equation $1/r - 1/r' = 1/c$ where $r = OP$, $r' = O'P$, and c is constant. Prove that the distance between P and the consecutive curve obtained by changing c to $c + \delta c$ is ultimately $\delta c / \sqrt{[1 + 3c^2/(rr') + a^2c^4/(r^3r'^3)]}$, where $a = OO'$.

[Note.—The Proposer desires to obtain an elegant solution of the above "Smith's Prize" Question.]

Solutions (I.) by R. F. DAVIS, M.A., and M. V. A. SASTRY, B.A.; (II.) by S. C. BAGCHI, B.A.

(I.) Since $r' - r = rr'/c$,
 $r^2 - 2rr' + r'^2 = r^2r'^2/c^2$
 and $\cos P = 1 + rr'/2c^2 - a^2/2rr'$.

Differentiating;

$(1/r^2)(dr/ds) = (1/r'^2)(dr'/ds)$,

or $r'^2 \cos \phi = r^2 \cos (P - \phi)$;

whence

$\tan \phi = (r'^2 - r^2 \cos P) / r^2 \sin P$

and $\cos \phi = r^2 \sin P / T$, where

$T^2 = r^4 + r'^4 - 2r^2r'^2 \cos P$
 $= 4r^2r'^2(1 + rr'/c^2 + r^2r'^2/4c^4)$
 $- 2r^2r'^2$
 $- 2r^2r'^2(1 + rr'/2c^2 - a^2/2rr')$
 $= r^4r'^4/c^4 + 3r^3r'^3/c^2 + a^2r^2r'$.

Thus $T = (r^2r'^2/c^2) \sqrt{[1 + 3c^2/(rr') + a^2c^4/(r^3r'^3)]}$. Now, taking a point Q on the normal at P such that PQ = ξ , then

$1/r - 1/r' = 1/c$ and $1/(r + \xi \sin \phi) - 1/(r' - \xi \sin (P - \phi)) = 1/(c + \delta c)$.

Therefore $\xi \sin \phi / r^2 + \xi \sin (P - \phi) / r'^2 = \delta c / c^2$,

or $\xi [\sin \phi (r'^2/r^2) + \sin (P - \phi)] = \delta c (r'^2/c^2)$,

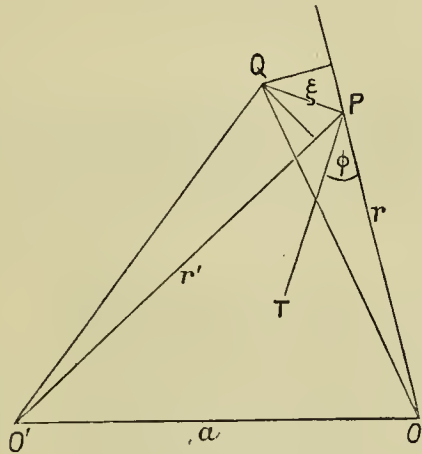
$\xi [\cos (P - \phi) \sec \phi \sin \phi + \sin (P - \phi)] = \dots, \quad \xi \sin P \sec \phi = \dots$

But $\cos \phi = r^2 \sin P / T$. Hence $\xi T = \delta c (r^2r'^2/c^2)$, which gives the required result.

(II.) Consider the potential V at a point P due to charges (+1, -1) placed at O, O' respectively. Let

$cV = 1, \quad (c + \delta c) V_1 = 1 \dots \dots \dots (i., ii.),$

where $c, c + \delta c$ are constants and δc is very small. Then (i.) and (ii.) are two consecutive equipotential curves. If the electric intensity at P be R, and if the element of normal to (i.) cut off by (ii.) is $dn = PP'$, we



have $R \cdot dn =$ work done when a unit positive charge is taken from P to $P' = -\delta V = \delta c / c^2$ ultimately; therefore

$dn = \delta c / Rc^2 \dots \dots \dots (iii.).$

But the force along OP = $-\partial V / \partial r$ and that along O'P = $-\partial V / \partial r'$, where $V = 1/r - 1/r' = 1/c$, and $\cos OPO' = (r^2 + r'^2 - a^2) / 2rr'$; therefore

$R^2 = 1/r^4 + 1/r'^4 - (r^2 + r'^2 - a^2) / r^3r'^3 = 1/c^4 + (3/rr')(1/c^2) + a^2/r^3r'^3 \dots (iv.).$

Substituting in (iii.) the value of R given by (iv.), we get

$dn = \delta c / \sqrt{[1 + 3c^2/(rr') + a^2c^4/(r^3r'^3)]}.$

15616. (Professor NANSON)—Four lines S_1, S_2, S_3, S_4 , each passing through three of the lines. Show that S_1, S_2, S_3, S_4 are connected by an identical equation $\sum \lambda_{pq} S_p S_q = 0$ where λ_{pq} is a constant which vanishes when the lines p, q intersect.

Solution by Rev. J. CULLEN.

Using vectors, a given line p can always be put in the form

$\rho = \alpha_p \beta_p^{-1} + x \beta_p$
 $S \alpha_p \beta_p = 0 \dots \dots \dots (1).$

The two lines p and q intersect if ρ is common, which implies

$S(\alpha_p \beta_q + \alpha_q \beta_p) = 0 \dots \dots \dots (2).$

Put $\mu_p = \alpha_p + V \beta_p$; then, by (1),

$S \beta_p \mu_p = 0 \dots \dots \dots (3)$

and $\lambda_{p,q} = S(\beta_q \mu_p + \beta_p \mu_q) \dots \dots \dots (4).$

Now the quadric determined by the lines p, q, r is

$S \mu_p \mu_q \mu_r = 0 \dots \dots \dots (5);$

so, substituting in $\sum \lambda_{p,q} S_p S_q$, we see that this expression takes the form

$\sum S_1 S_2 (\mu_2 S_3 \mu_4 \mu_1 + \mu_3 S_4 \mu_2 \mu_1 + \mu_4 S \mu_2 \mu_3 \mu_1).$

Observing that in general $\delta S \alpha \beta \gamma = \sum \alpha S \beta \gamma \delta$ and that $S_1 = S \mu_4 \mu_3 \mu_2$, we find

$\sum \lambda_{p,q} S_p S_q = -\sum S_p^2 S \beta_p \mu_p.$

Each term on the right vanishes in virtue of (3); hence the result.

15678. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show that $F_m^4 + F_n^2$, where $F_x = 2^{2^x} + 1$ (a Fermat's number), can always be resolved into two factors when $n - m \leq 2$. Write down the co-factors when $n - m = 2$.

Solution by the PROPOSER.

Let $E_x = 2^{2^x}$, so that $E_{x+1} = E_x^2$ and $F_x = E_x + 1$. Let $G_x = E_x - 1$; then $G_x = (E_{x-1}^2 - 1) = (E_{x-1} + 1)(E_{x-1} - 1) = F_{x-1} \cdot G_{x-1}$. Hence also $G_x = F_{x-1} \cdot F_{x-2} \dots F_2 \cdot F_1 \cdot F_0$. Let $N = F_m^4 + F_n^2$; then

$N = (F_m^4 + 4) + (F_n^2 - 4).$

But $F_m^4 + 4 = \{(F_m - 1)^2 + 1\} \cdot \{(F_m + 1)^2 + 1\}$
 $= (E_m^2 + 1) \cdot \{(E_m + 2)^2 + 1\}$
 $= (E_{m+1} + 1) \cdot (E_m^2 + 4E_m + 5) = F_{m+1} \cdot (E_m^2 + 4E_m + 5)$
 and $F_n^2 - 4 = (F_n - 2) \cdot (F_n + 2) = G_n \cdot (E_n + 3) = F_{n-1} \cdot G_{n-1} \cdot (E_n + 3)$
 $= (F_{n-1} \cdot F_{n-2} \dots F_2 \cdot F_1 \cdot F_0) \cdot (E_n + 3).$

Hence $(F_m^4 + 4), (F_n^2 - 4)$ will both contain F_{m+1} if the latter = any of the factors of G_n , *i.e.*, if $m + 1 \geq n - 1$, or $n - m \leq 2$; and in this case N will also contain F_{m+1} and will thus be resolvable into (at least) two factors.

Next, if $n - m = 2$, then $F_{m+1} = F_{n-1}$; therefore

$N = F_{m+1} \cdot \{(E_m^2 + 4E_m + 5) + G_{n-1} \cdot (E_n + 3)\}$
 $= F_{m+1} \cdot \{(E_m^2 + 4E_m + 5) + (E_{m+1} - 1)(E_{m+2} + 3)\}$
 $= F_{m+1} \cdot \{E_m^6 - E_m^4 + E_m^2 + 4E_m + 2\}.$

8747. (Professor HAUGHTON, F.R.S.)—The law of cooling of the Sun is $dT/dt = aT^3 - bT$. Integrate this equation, and show the relation between Sun heat and time.

Solution by ERNEST MCKENZIE.

$dT/dt = aT^3 - bT, \quad dT/dt + bT = aT^3, \quad (1/T^3)(dT/dt) + b/T^2 = a,$
 $[-\frac{1}{2}d(1/T^2)]/dt + b/T^2 = a.$

Put

$1/T^2 = z, \quad dz/dt - 2bz = -2a,$

$ze^{\int -2bdx} = \int -2ae^{\int -2bdx} dx + C, \quad ze^{-2bt} = \int -2ae^{-2bt} dt + C,$

$ze^{-2bt} = (a/b)e^{-2bt} + C, \quad z = a/b + Ce^{2bt},$

$1/T^2 = a/b + Ce^{2bt}$ = relation between T and t.

Note.—The Editor remarks that, assuming the Sun heat T_0 at a time t_0 known, then the arbitrary constant C may be eliminated, and the required relation obtained in the form

$(1/T^2 - a/b) / (1/T_0^2 - a/b) = e^{2b(t-t_0)};$

or, simplifying, $T^2 e^{2bt} / (b - aT^2) = T_0^2 e^{2bt_0} / (b - aT_0^2).$

15523. (A. M. NESBITT, M.A.)—A man, who has m hats of his own in his hall, is visited by n friends, each wearing a hat. They leave their hats

with those of their host. When they are going away they are unfortunately not in a condition to distinguish between one hat and another. Find the chance that no guest takes away his own hat.

Note by the PROPOSER.

I am loth to disagree with two of our valued contributors, who have independently arrived at the same result as the solution of this problem. It is easy to show that they are wrong; it is much harder to point out where and how they have gone astray.

If we put $m = 0$, we get the old question of letters and envelopes, the result of which is known to be $1/2! - 1/3! + \dots \pm 1/n!$. Now if in the result given in the *Reprint*, New Series, Vol. VI., p. 113, we put $m = 0$, we get $(n-1)^n/n^n$, which is therefore manifestly wrong. The method by which I solved the question has already been sufficiently indicated in the Algebraical Note of mine which appears in *The Educational Times*, November, 1904, and in the *Reprint*, New Series, Vol. VII., p. 93. But I can show by two different methods what the chance really is that the first two men to leave take wrong hats. For simplicity I will take $m = 0$, though there is no difficulty in arguing the matter when $m \neq 0$.

First method.—A. may take B.'s hat—chance $1/n$; in this case B. is sure to go wrong. Thus the chance that A. takes B.'s hat and B. does not take his own is $1/n$. Again, A. may take a wrong hat (though not B.'s)—chance $(n-2)/n$; in this case B. has also $n-2$ wrong hats to choose from, and the chance he selects a wrong one is $(n-2)/(n-1)$. Thus the chance that A. and B. take wrong hats is

$$1/n + (n-2)^2/[n(n-1)] \text{ or } (n^2 - 3n + 3)/[n(n-1)].$$

Second method.—There is one way of their going wrong in which they simply exchange hats: put this aside for the present. Then A. can choose $n-1$ wrong hats; and B. (who is debarred, for the present, from choosing A.'s) may choose $n-2$ wrong hats. Thus the total number of ways in which A. and B. may choose wrong hats is $(n-1)(n-2) + 1$, and the chance that they do choose wrong hats is, as before,

$$(n^2 - 3n + 3)/[n(n-1)].$$

I have not the leisure just now to devote to the matter; but I should be very glad to get from some of our contributors a definite reason why the solutions published are wrong and where the two solvers have made a mistake. I have a vague idea; its vagueness is precisely what I want to get rid of. So far as I can see, however, the question cannot be solved by any method analogous to that employed; for we do not seem to be any nearer to a solution when we have discovered the chance that the first two or, for that matter, the first r guests have chosen wrong hats.

10872. (Professor HUDSON, M.A.)—A paraboloid of revolution floats with the lowest point of its base in the surface of a fluid, and its axis inclined at an angle θ to the horizon. Find its height and specific gravity.

Solution by FRANCES E. CAVE.

Let h be the height, $y^2 + z^2 = 4ax$ the equation of the paraboloid, $z + \sqrt{4ah} + (x-h)\tan\theta = 0$ the equation of the plane of flotation, V the centre of section, and PV the corresponding diameter. The centre of gravity of the solid is $(\frac{2}{3}h, 0, 0)$, and the centre of buoyancy is $[\frac{2}{3}h - \frac{4}{3}\sqrt{ah}\cot\theta + \frac{2}{3}a\cot^2\theta, 0, -2a\cot\theta]$. The join of these is perpendicular to the plane of flotation; therefore $h = \frac{1}{10}a(6\tan\theta + 5\cot^2\theta)^2$.

Volume immersed $= 2a\pi PV^2 = 2a\pi[h - 2\sqrt{ah}\cot\theta + a\cot^2\theta]^2$; therefore

$$\text{specific gravity} = \left(\frac{h - 2\sqrt{ah}\cot\theta + a\cot^2\theta}{h} \right)^2 = \left(\frac{1 + 5\sin^2\theta}{5 + \sin^2\theta} \right)^4.$$

15682. (J. J. BARNIVILLE, B.A.)—Having $u_n + 2u_{n+1} + u_{n+2} = u_{n+3}$, prove that

$$\frac{1.2.5}{1.2.3.4} + \frac{3.5.10}{1.4.6.9} + \frac{6.10.22}{3.9.13.19} + \frac{13.22.47}{6.19.28.41} + \dots = \frac{3}{2};$$

$$\frac{2.3.7}{1.3.4.6} + \frac{4.7.15}{2.6.9.13} + \frac{9.15.32}{4.13.19.28} + \frac{19.32.69}{9.28.41.60} + \dots = \frac{7}{6}.$$

Solution by C. M. ROSS.

1. The scale of relation of the series 2, 5, 10, 22, 47, ... is

$$u_n + 2u_{n+1} + u_{n+2} = u_{n+3};$$

however, it is better to find the scale of relation of 1, 2, 3, 4, 6, 9, If $u_0, u_1, u_2, u_3, u_4, \dots$ denote it, the required scale is $u_{n+3} = u_{n+2} + u_n$. Then

$$\frac{1.2.5}{1.2.3.4} = \frac{(u_1 - u_0)(u_3 - u_1)(u_3 + u_0)}{u_0 u_1 u_2 u_3}$$

$$= \frac{[u_1 u_3 (u_3 - u_1) - u_0 u_1 (u_1 - u_0) - u_0 u_3 (u_3 + u_0) + 2u_0 u_1 u_3]}{u_0 u_1 u_2 u_3}$$

$$= \frac{[u_1 u_3 (u_2 - u_0) - u_0 u_1 (u_3 - u_2) - u_0 u_3 (u_1 + u_2) + 2u_0 u_1 u_3]}{u_0 u_1 u_2 u_3}$$

$$= \frac{1}{u_0} - \frac{1}{u_1} - \frac{1}{u_2} + \frac{1}{u_3}.$$

Similarly $\frac{3.5.10}{1.4.6.9} = \frac{1}{u_0} - \frac{1}{u_3} - \frac{1}{u_4} + \frac{1}{u_5},$

and so on; therefore, by addition,

$$S_\infty = \frac{2}{u_0} - \frac{1}{u_1} = \frac{3}{2}.$$

2. Again

$$\frac{2.3.7}{1.3.4.6} = \frac{1}{u_0} - \frac{1}{u_2} - \frac{1}{u_3} + \frac{1}{u_4},$$

$$\frac{4.7.15}{2.6.9.13} = \frac{1}{u_2} - \frac{1}{u_4} - \frac{1}{u_5} + \frac{1}{u_6},$$

and so on; therefore, by addition,

$$S_\infty = \frac{1}{u_0} + \frac{1}{u_4} = \frac{7}{6}.$$

15674. (W. F. BEARD, M.A.)—TP, TQ are tangents, and TAB a secant, to a circle; any circle through AB cuts BP, BQ at C, D. Prove that PQ bisects CD.

Solutions (I.) by R. F. DAVIS, M.A.; (II.) by the PROPOSER; (III.) by A. W. T.; (IV.) by M. V. A. SASTRIS, B.A.

(I.) Let PQ, CD intersect in O. Since BCAD is cyclic, the angles ACD, ABD are equal. Thus the angles ACO, APO are also equal, and OAPC is cyclic. The triangles AOC, AQB are therefore directly similar, and $OC : OA = QB : QA = TQ : TA$. In precisely similar fashion it can be shown that $OD : OA = TP : TA$. Hence $OC = OD$.

(II.) Join AC, AP, AQ, AD.

$$\angle AQD = \angle APC,$$

$$\angle ADQ = \angle ACP$$

(Euc. III. 22); therefore the triangles ADQ, ACP are similar; therefore

$$DQ/AQ = CP/AP \dots (1).$$

From similar triangles ATP, PTB,

$$AP/TP = PB/BT,$$

and similarly

$$AQ/TQ = QB/BT.$$

But $TP = TQ$;

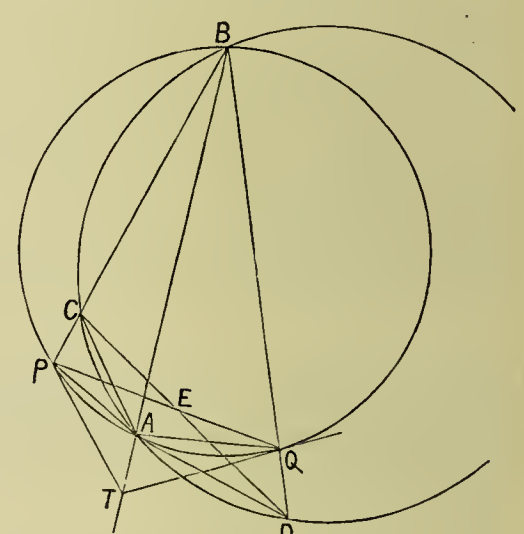
therefore

$$AP/PB = AQ/QB;$$

therefore, from (1),

$$DQ/QB = CP/PB.$$

But, by Menelaus' theorem, $CE/ED \cdot DQ/QB \cdot BP/PC = 1$; therefore $CE = ED$. [Rest in *Reprint*.]



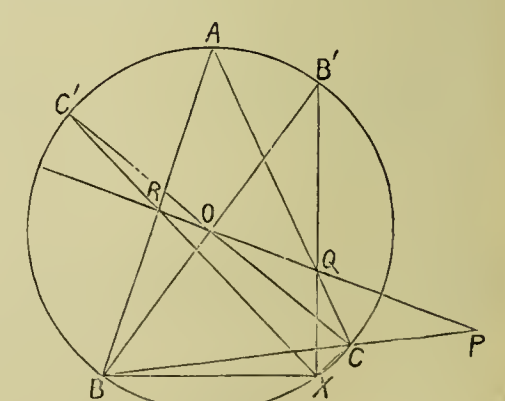
15633. (JAMES BLAIKIE, M.A.)—If a straight line drawn through the circum-centre of a triangle ABC meet BC, CA, AB in P, Q, R, prove that the circles described on AP, BQ, CR as diameters concur in two points, one on the circum-circle, the other on the nine-point circle, and that their common chord passes through the orthocentre.

Solution by the PROPOSER.

Draw the diameters BOB', COC'. Join B'Q, C'R and produce them to meet in X. Then, by Pascal's theorem (converse), since ABB'XC'C is a hexagon and since the intersection of the diagonals Q, O, R are collinear, X is a point on the circle ABC. The angles BXB', CXC' are right angles, being angles in semicircles. Therefore the semicircles on BQ, CR as diameters pass through X. Similarly the circle on AP as diameter passes through X. Let the circle BXQ meet AC in M and let CXR meet AB in N. Then BM, CN are perpendicular to AC, AB, and intersect in H. Let XH meet BXQ in Y. Then

$$HX \cdot HY = BH \cdot HM = CH \cdot HN,$$

since B, M, N, C are concyclic; therefore Y is a point on CXR; that is, the circles meet on XH. Also $XH \cdot HY$ is constant; therefore Y is the inverse of X and its locus is a circle, since the locus of X is a circle. Also, when X coincides with A, B, C, Y coincides with the feet of the altitudes; therefore the locus of Y is the nine-point circle.



15310. (R. TUCKER, M.A.)—PF and QE are the radii of curvature at the extremities of a focal chord of a parabola. Show that PE and QF produced intersect on the hyperbola $2x^2 - y^2 = 4ax$.

Solution by the PROPOSER.

Let PF, QE be the radii of curvature; then the equations to QF, PE are

$$y(3m^2 + 2 - m'^2) + 2(m^3 + m')x = 4a(m' - m)$$

and

$$y(3m'^2 + 2 - m^2) + 2(m'^3 + m)x = 4a(m - m'),$$

with the relation $mm' = -1$. Adding, we get

$$y + (m' + m)x = 0.$$

Subtracting,

$$2y(m' + m) + x[(m' + m)^2 + 2] = 4a.$$

Eliminating $m' + m$, we get $2x^2 - y^2 = 4ax$.

14073. (Professor S. SIRCOM, M.A.)—If n is a positive integer, prove that

$$\int_0^\pi \frac{\sin^n \theta}{\theta^n} d\theta = \frac{1}{(n-1)! 2^n} \left\{ n^{n-1} - n(n-2)^{n-1} + \frac{n(n-1)}{1 \cdot 2} (n-4)^{n-1} - \frac{n(n-1)(n-2)}{1 \cdot 2 \cdot 3} (n-6)^{n-1} + \dots \right\} \pi.$$

[I have only seen this theorem worked for low values of n .]

Additional Solution and Remarks by Professor NANSON.

Integrating by parts, we have

$$\int_0^\pi \frac{\sin^n \theta}{\theta^n} d\theta = \frac{1}{(n-1)!} \int_0^\pi \frac{1}{\theta} \left(\frac{d}{d\theta} \right)^{n-1} \sin^n \theta d\theta,$$

the integrated terms clearly vanishing at the limits. Now

$$\sin^n \theta = \frac{1}{2^{n-1}} \sum n_r \cos(n-2r)(\theta - \frac{1}{2}\pi) + \text{const.};$$

therefore $\left(\frac{d}{d\theta} \right)^{n-1} \sin^n \theta = \frac{1}{2^{n-1}} \sum (-1)^r n_r (n-2r)^{n-1} \sin(n-2r)\theta$;

therefore $\int_0^\pi \frac{\sin^n \theta}{\theta^n} d\theta = \frac{\pi}{(n-1)! 2^n} \sum (-1)^r n_r (n-2r)^{n-1}$.

Another solution is given in *Reprint*, Vol. LXXI., pp. 115-7, in regard to which reference should be made to a paper by Dr. Glaisher, *Proc. London Math. Soc.*, Vol. IV., pp. 291-302.

15637. (R. CHARTRES.)—Three random points are taken in the sides of a triangle, one in each side, and joined. Find the mean value of the square of the area of the triangle thus formed. Elementary proof wanted.

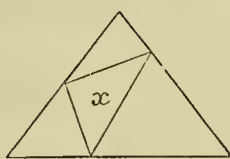
Solution by the PROPOSER.

Let $\Delta - x = y$,

$$M(x^2) = Mx(\Delta - y)$$

$$= \frac{1}{4}\Delta^2 - \frac{1}{3}\Delta^2$$

$$= \frac{1}{12}\Delta^2.$$



15633. (Professor LANGHORNE ORCHARD, M.A., B.Sc.)—Find the product of n terms of the series $2 + 34 + 246 + 1028 + 3130 + \dots$ by n terms of the series $0 + 30 + 240 + 1020 + 3120 + \dots$.

Solution by C. M. ROSS.

The first series may be written

$$1 + 1^5 + (2 + 2^5) + (3 + 3^5) + (4 + 4^5) + (5 + 5^5) + \dots = \sum n^5 + \sum n.$$

Similarly, the second series is equal to

$$1^5 - 1 + (2^5 - 2) + (3^5 - 3) + (4^5 - 4) + (5^5 - 5) + \dots = \sum n^5 - \sum n.$$

If S and S_1 are the required sums of above,

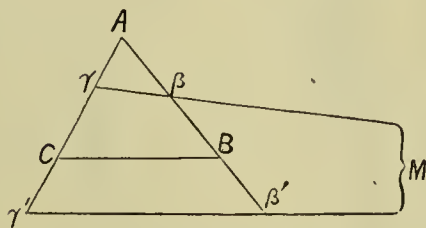
$$SS_1 = (\sum n^5)^2 - (\sum n)^2 = \left[\frac{1}{12} n^2 (n+1)^2 (2n^2 + 2n - 1) \right]^2 - \left[\frac{1}{2} n (n+1) \right]^2$$

$$= \frac{1}{144} n^2 (n+1)^2 [n^2 (n+1)^2 (2n^2 + 2n - 1)^2 - 36],$$

which is the required product.

15635. (Professor COCHEZ.)—

On donne un triangle ABC; on porte sur AB et AC les segments $\Delta\beta$, $\Delta\gamma$ tels que $\Delta\beta/\Delta\gamma = K$, puis $\beta\beta' = \Delta\beta$ et $\gamma\gamma' = \Delta\gamma$. Trouver le lieu du point M de rencontre des droites $\beta\gamma$ et $\beta'\gamma'$.



Solution by R. TUCKER, M.A., and A. M. NESBITT, M.A.

Take AB, AC for axes and put $\Delta\beta = h$, $\Delta\gamma = k$; then

$$x/h + y/k = 1, \quad x/(c+h) + y/(b+k) = 1, \quad h = k\lambda \dots (\text{i., ii., iii.}).$$

From (i.) and (ii.), $cx/(c+h) + by/(b+k) = 0$; and, from (i.), $x + \lambda y = h$; whence, eliminating k , we get $(x + \lambda y)(bc\lambda + cx + b\lambda^2 y) = 0$; whence the locus is $x/b\lambda + \lambda y/c = -1$.

10041. (Professor EMMERICH, Ph.D.)—K being the symmedian point of the triangle ABC, we have $AK + BK + CK \equiv (a + b + c)/\sqrt{3}$.

Remarks by Professor SANJANA, M.A., and others.

The result is inaccurate. Drawing the perpendiculars from G and K to AB and AC respectively, we have the triangles AGX, AKY similar, as G and K are isogonal conjugates. Hence

$$AK/AG = KY/GX = \lambda b/(\mu/C);$$

therefore

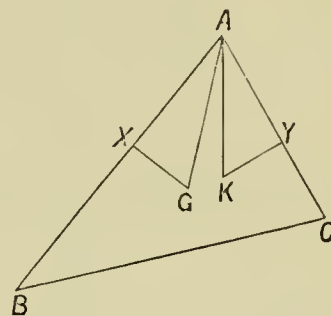
$$AK = (\lambda/\mu) bc \cdot AG = \frac{2}{3} (\lambda/\mu) bcm_1,$$

where m_1 is the median from A. Also

$$\lambda = \frac{1}{2} \tan \omega, \quad \mu = \frac{2}{3} \Delta; \quad \text{so that, finally,}$$

$$AK = \frac{1}{3} \frac{\tan \omega}{\Delta} bcm_1 = \frac{2bcm_1}{a^2 + b^2 + c^2} = \frac{bc \sqrt{(b^2 + c^2 + 2bc \cos A)}}{a^2 + b^2 + c^2}.$$

Hence $\sum AK = [\sum bc \sqrt{(b^2 + c^2 + 2bc \cos A)}] / (a^2 + b^2 + c^2)$, which is not equal to $\sum a/\sqrt{3}$ when the triangle is general.



15564. (A. M. NESBITT, M.A.)—The normals at the extremities of a chord of an ellipse meet in the curve. Prove that the pole of the chord lies on a concentric ellipse.

Solution by FRANCES E. CAVE and W. F. BEARD, M.A.

(I.) Let (h, k) be the intersection of the normals, (ξ, η) the pole. Then the polar of (ξ, η) and a certain chord through (h, k) form a conic through the four feet of the normals; therefore

$$x^2/a^2 + y^2/b^2 - 1 + \lambda[(a^2 - b^2)xy - a^2hy + b^2kx] \equiv (x\xi/a^2 + y\eta/b^2 - 1)[A(x-h) + B(y-k)]$$

for suitable values of λ, A, B . Equating coefficients and eliminating,

$$(a^2 - b^2)/(a^2\eta^2 + b^2\xi^2) = k/[\eta(\xi^2 - a^2)] = -1/(\xi^2 - \eta^2 - a^2 + b^2);$$

therefore the pole lies on $a^2x^2 + b^2y^2 = (a^2 - b^2)^2$.

QUESTIONS FOR SOLUTION.

15714. (ROBERT W. D. CHRISTIE.)—Multiply 567×543 in three operations and prove the general theory. (Either number at top.)

Ex.—	5 67	5 43
	5 43	5 67
	<u>3078.21</u>	<u>3080.21</u>
	6	-1 4
	<u>3078 81</u>	<u>3078 81</u>

15715. (Professor E. B. ESCOTT.)—In Fermat's (Pell's) equation $x^2 - Ny^2 = 1$, where N is a prime of the form $4n + 3$, prove that the middle partial quotient of \sqrt{N} expressed as a continued fraction is always odd and equal to a or $a - 1$ according as a is odd or even (a being the integral part of \sqrt{N}). In the last case the quotient immediately preceding the middle quotient is unity.

15716. (A. H. BELL.)—Given $3x + 1 = \square$ and $7x + 1 = \square$: to find four integral values of x . One of them is 5.

15717. (R. CHARTRES.)—Find integral values of x , and n ($n > 3$), so that $x^n - 1$ shall equal the product of two consecutive integers. When $n = 3$, $7^3 - 1 = 342 = 18 \cdot 19$.

15718. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Find several numbers (N) expressible in scales of radix r by a single digit (say a) repeated not less than three times. ($N = aa \dots a$.)

15719. (J. J. BARNIVILLE, B.A., I.C.S.)—Having $u_n + 2u_{n+1} = u_{n+2}$, prove $\frac{2 \cdot 11 \cdot 29}{1 \cdot 3 \cdot 7 \cdot 17} + \frac{5 \cdot 27 \cdot 69}{1 \cdot 7 \cdot 17 \cdot 41} + \frac{12 \cdot 65 \cdot 167}{3 \cdot 17 \cdot 41 \cdot 99} + \dots = \frac{67}{14}$.

15720. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Find the coefficient of n^6 in the product of the two series

$$1^7 + 2^7 + 3^7 + 4^7 + \dots + (n-1)^7 + n^7, \quad 1^8 + 2^8 + 3^8 + 4^8 + \dots + (n-1)^8 + n^8.$$

15721. (Professor M. W. CROFTON, F.R.S.)—Two players A., B., whose chances of winning a game are p, q ($p + q = 1$), put down each a stake, and play on the condition that whoever wins two games running shall receive the whole. Show that in fairness their stakes ought to be in the proportion $p^2(1+q) : q^2(1+p)$.

15722. (D. BIDDLE.)—ABC is an equilateral triangle, of side a . About A, B, C, as centres, equal circles, of radius r , are described. Points P, Q, R are taken on their circumferences respectively. Find the mean area of PQR.

15723. (Professor NANSON.)—Trace the curves

$$(x^2 \pm a^2)y^2 = b^3(c - 2y).$$

15724. (S. C. BAGCHI, B.A.)—The transformation

$$\xi = \alpha x + \beta y, \quad \eta = \gamma x + \delta y$$

makes a point (ξ, η) on the curve c_2 correspond to a point (x, y) on the curve c_1 . If $\alpha\delta - \beta\gamma = \pm 1$, show that, when c_1 satisfies $\phi(\rho^3) = 0$, c_2 will satisfy the same functional equation, where ρ is the radius of curvature at a point and ϕ is the distance of the tangent at that point from the origin.

15725. (Professor NEUBERG.)—Soient α, β les perpendiculaires abaissées de deux points fixes A, B sur une droite u . Si cette droite u se déplace dans l'espace de manière qu'on ait constamment $a^2 - m^2\beta^2 = n^2$, où m et n sont des quantités fixes, il existe sur la droite AB deux points C, D dont les projections sur u sont situées sur une sphère fixe. Cas particulier de $m = 1$.

15726. (Professor SANJANA, M.A.)—Show that the normals drawn at the extremities of any chord of a parabola and terminated by the axis have equal projections upon that chord; and that these projections are constant when the chord moves so that the algebraical difference of the ordinates of the two extremities has a constant projection on the chord. Prove also that this condition is satisfied by every focal chord.

15727. (Professor COCHEZ.)—Lieu du sommet des angles droits dont les côtés sont normaux à une conique.

15728. (C. E. YOUNGMAN, M.A.)—Consider two series of coaxial circles, A and B. In general, every A touches two B's, and the points of contact trace out a bicircular quartic. Examine particular cases, especially (1) when this curve is inverse to a rectangular hyperbola, (2) when it breaks up into two circles, (3) when the two series have a circle in common. In case (2) show that the envelope of the line of centres AB is also two circles.

15729. (R. TUCKER, M.A.)—The circle $dd'k$ touches AB, AC, and the arc BC of the circle ABC (internally); the circle $ee'k'$ touches BC, BA, and the arc CA; and the circle $ff'k''$ touches CA, CB, and the arc AB. Prove (i.) ed', fe', df' are parallel to AB, BC, CA respectively; (ii.) $Cd'. Ae'. Bf' = Af. Bd. Ce$; (iii.) ρ_1 (radius of circle $dd'k$) = $r \sec^2 \frac{1}{2}A$; (iv.) Ak, Bk', Ck'' intersect in a point.

15730. (JAMES BLAIRIE, M.A.)—ABC is a triangle of which O is the circum-centre, and BC, CA, AB meet a given straight line in P, Q, R; F is the foot of the perpendicular from O to the given line; and P', Q', R' are points in the line such that F is the mid-point of PP', QQ', RR'. Prove that AP', BQ', CR' meet in a point on the circum-circle of ABC.

15731. (A. M. NESBITT, M.A.)—A circle DEFK is cut by two parallel chords DK, EF, and O is the image of D in EF. OE, OF meet the circle in X, V. Prove that the circum-centre of the triangle OXV is at the intersection of OD with the circle. Further, if OE, OF meet DK in B, C, and the circles DBE, DCF cut in A, the circle AHD will cut BC in points which are harmonic conjugates of B, C.

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1804. (N'IMPORTE.)—Three given weights (considered as having material points) are attached to the surface of a sphere. Determine the position of equilibrium of the sphere when resting on a horizontal plane. Give also the result in the particular case in which the weights are arranged in a great circle.

1930. (Professor SYLVESTER.)—A uniform ellipsoid, with fixed centre, rolls on an indefinitely rough plane. Determine the time, pressure, and friction of the plane corresponding to any given position of the body. Find also the same when the axes of the ellipsoid remain the principal axes of the body, but the principal moments of the latter are in any given ratios to one another: state the condition in order that, during the whole continuance of the motion, the pressure and friction may be *nil*, and also, in general, under what circumstances the time will be expressible by an elliptic function.

1998. (R. BALL, M.A.)—If k be the constant term in the equation of a surface, and $\Delta = 0$ the condition necessary that this surface and three others pass through a point, what is the geometrical meaning of the roots of the equation $e^{-x(d/dk)}\Delta = 0$?

2361. (Rev. R. TOWNSEND, F.R.S.)—(1) Show that the three chords of intersection of the circumscribed with the three escribed circles of a plane triangle intersect collinearly with the three corresponding sides of the triangle. (2) Prove the corresponding property for a spherical triangle.

2564. (M. COLLINS, B.A.)—A being a curve whose equation is given in the usual Cartesian rectangular co-ordinates, B the evolute of A, and C the evolute of B; required a general differential expression for the radius of curvature of C on the usual supposition of dx being taken constant, and likewise on the supposition of $dv^2 + dy^2 (= dz^2)$ being taken constant.

2611. (W. S. B. WOOLHOUSE, F.R.A.S.)—Let $1, \delta_1, \delta_2, \delta_3, \dots, \delta_n$ be

the first differences of the coefficients of the expansion of the binomial $(1+x)^{2n}$ taken as far as the central or maximum coefficient; also let $\nu = \frac{1}{2}(n+1)n$, $\nu' = \frac{1}{2}n(n-1)$, $\nu'' = \frac{1}{2}(n-1)(n-2)$, ... Then show that the algebraic function $x^\nu - \delta_1 x^{\nu'} + \delta_2 x^{\nu''} - \delta_3 x^{\nu'''} + \dots$ is divisible by $(x-1)^n$ without a remainder, and that the sum of the numerical coefficients of the quotient is $1.3.5 \dots (2n-1)$. [See Solution to Question 1894, Reprint, Vol. v., p. 113.]

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, January 12th, 1905.—Prof. A. R. Forsyth, President, in the Chair.

Mr. O. Glauert was elected a member.

Messrs. J. H. Jeans and H. W. Chapman were admitted into the Society.

The following papers were communicated:—

"Basic Generalizations of well known Analytic Functions," by Rev. F. H. Jackson.

"Current Flow in Rectangular Conductors," by Mr. H. Fletcher Moulton.

"On the Kinematics and Dynamics of a Granular Medium in Normal Piling," by Mr. J. H. Jeans.

"Generational Relations for the Abstract Group simply isomorphic with the Group $LF[2, p^n]$," by Dr. W. H. Bussey.

"On Alternants and Continuous Groups," by Dr. H. F. Baker.

"A Generalization of the Legendre Polynomial," by Mr. H. Bateman.

"Isogonal Transformation and the Diameter Transformation," by Mr. H. L. Trachtenberg.

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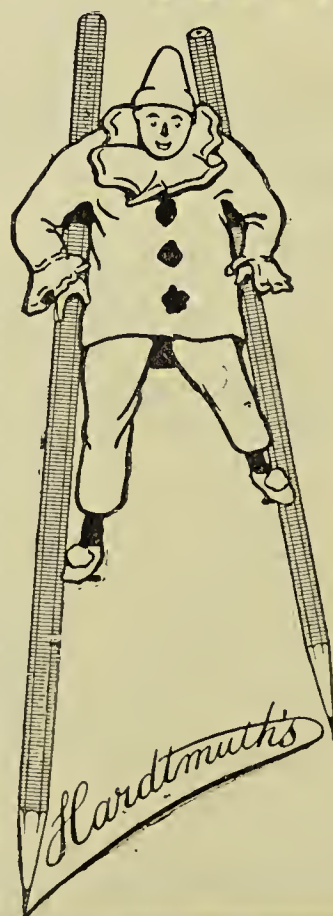
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
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| 1. Wetherall, G. C. | Mr. Skey, Cliftonville College, Margate. |
| 2. Horsefield, C. S. W. | Mr. Cowen, Littleton House School, Knowle, Bristol. |
| 3. Cliff, H. S. | Mr. Coombe, High School, Torquay. |
| 4. Bennell, Miss M. | Miss Cowdroy, Crouch End High School, Weston Park, N. |

English Subjects.

- | | |
|-----------------------|---|
| 1. Coombes, C. S. | Mr. Rider, Devonport High School, Stoke. |
| 2. Cooper, Miss K. D. | Miss Conder, Milton Mount College, Gravesend. |

Mathematics.*

- | | |
|---|---|
| 1. (Nixon, J. C.
Pfeleiderer, R. A.) | Mr. Freeman, Technical Institute, Portsmouth.
Mr. Bayley, Wellington College, Salop. |
|---|---|

Modern Foreign Languages.

- | | |
|--|--|
| 1. Spear, J. H. | Mr. Dymond, Hoe Grammar School, Plymouth. |
| 2. (Preece, J. F.
Richards, R. S. H.) | Mr. Richards, Stoke Newington Grammar School.
Mr. Richards, Stoke Newington Grammar School. |

Classics.

- | | |
|----------------------|------------------|
| 1. Woodward, Miss A. | Private tuition. |
| 2. [Not awarded.] | |

Natural Sciences.

- | | |
|-----------------------------------|--|
| 1. (Akers, W. A.
Nixon, J. C.) | Rev. A. H. Cooke, Aldenham School, Elstree.
Mr. Freeman, Technical Institute, Portsmouth. |
|-----------------------------------|--|

Taylor-Jones Prize for Scripture History.

- | | |
|------------------|-------------------------------------|
| Nicolas, Miss V. | Miss Blake, The Royal School, Bath. |
|------------------|-------------------------------------|

Pitman Medals for Shorthand.

- | | |
|--|--|
| 1. Redfern, Miss D. L.
<i>(Silver Medal.)</i> | Miss Rance, Commercial Travellers' School, Pinner. |
| 2. Barlow, H. R.
<i>(Bronze Medal.)</i> | Private tuition. |

* C. S. Coombes, Devonport High School, Stoke, was disqualified for the First Prize for Mathematics in consequence of having obtained it at a previous Examination.

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS. (Only those who obtained Distinction are included.)

Scripture History.

- | | | |
|--|--|--|
| 1. Nicolas, Miss V. | Miss Blake, The Royal School, Bath. | |
| 2. (Etches, Miss A. B.
Hobson, Miss M.
Jacoby, Miss E. G.) | Mrs. Hiatt, Ladies' College, Wellington, Salop.
Private tuition.
Miss Cowdroy, Crouch End High School, Weston Park, N. | |
| | Maitland, J. P. | Mr. Hawe, The High School for Boys, Croydon. |
| | Ridler, Miss J. B.
Tucker, Miss M. H. | Miss Conder, Milton Mount College, Gravesend.
Miss Conder, Milton Mount College, Gravesend. |

English Language.

- | | | |
|--|--|--|
| 1. Nicolas, Miss V. | Miss Blake, The Royal School, Bath. | |
| 2. (Cooper, Miss K. D.
Hobson, Miss M.
Jacoby, Miss E. G.) | Miss Conder, Milton Mount College, Gravesend.
Private tuition.
Miss Cowdroy, Crouch End High School, Weston Park, N. | |
| | Pfeleiderer, R. A. | Mr. Bayley, Wellington College, Salop. |

English History.

- | | |
|----------------------|--|
| 1. Nicolas, Miss V. | Miss Blake, The Royal School, Bath. |
| 2. Seymour-Jones, A. | Mr. Bayley, Wellington College, Salop. |

Geography.

- | | |
|-------------------|--|
| 1. Coombes, C. S. | Mr. Rider, Devonport High School, Stoke. |
|-------------------|--|

Arithmetic.

- | | |
|-------------------|--|
| 1. Bennett, W. | Mr. Rider, Devonport High School, Stoke. |
| 2. Coombes, C. S. | Mr. Rider, Devonport High School, Stoke. |

Algebra.

- | | |
|------------------------------------|--|
| 1. Peters, W. H.
Coombes, C. S. | Private tuition.
Mr. Rider, Devonport High School, Stoke. |
| 2. (Frazer, W. M.
Hall, L. E.) | Mr. Oakes, Oakes Institute, Walton, Liverpool. |
| | Riggall, F. S. |

Geometry.

- | | |
|---------------------------------|--|
| 1. Hall, L. E. | Mr. Hawe, The High School for Boys, Croydon. |
| 2. (Ballard, A. L.
Bate, A.) | Mr. Hardy, Dunheved College, Launceston. |
| | Rev. Dr. Scott, Mercers' School, Holborn, E.C. |

Trigonometry.

- | | |
|-------------------|--|
| 1. Coombes, C. S. | Mr. Rider, Devonport High School, Stoke. |
|-------------------|--|

Mechanics.

- | | |
|-----------------------|--|
| 1. Barnett, E. de B. | Private tuition. |
| 2. Pfeleiderer, R. A. | Mr. Bayley, Wellington College, Salop. |

Book-keeping.

- | | |
|-------------------------------------|--|
| 1. Bennett, W. | Mr. Rider, Devonport High School, Stoke. |
| 2. (Bisson, W. G.
Thomas, W. D.) | Messrs. Davey, Oxenford House, St. Lawrence, Jersey.
Mr. Staddon, St. Winifred's School, Torquay. |

Mensuration.

- | | |
|--------------------------------|--|
| 1. Frazer, W. M. | Mr. Oakes, Oakes Institute, Walton, Liverpool. |
| 2. (Bennett, W.
Onions, C.) | Mr. Rider, Devonport High School, Stoke.
Mr. Bayley, Wellington College, Salop. |

French.

- | | |
|------------------------------------|---|
| 1. (Bisson, J. R.
Spear, J. H.) | Private tuition.
Mr. Dymond, Hoe Grammar School, Plymouth. |
|------------------------------------|---|

German.

- | | |
|--|--|
| 1. (Ambrose, Miss N.
Thiemann, F. W.) | Mrs. Needham, The Limes, Buckhurst Hill.
Mr. Haynes, Highbury High School, N. |
|--|--|

Italian.

- | | |
|------------------|--|
| 1. Forbes, V. W. | Mr. Clayton, Warwick House School, Southsea. |
|------------------|--|

Spanish.		Magnetism and Electricity.		Music.	
1. Spear, J. H.	Mr. Dymond, Hoe Grammar School, Plymouth.	1. Nixon, J. C.	Mr. Freeman, Technical Institute, Portsmouth.	2. {	Etches, Miss A. B. Mrs. Hiatt, Ladies' College, Wellington, Salop.
		2. Lake, N. C.	Mr. Brown, Municipal Technical School, Plymouth.		Read, Miss M. The Misses Waller & Woodfall, Highfield School, Croydon.
Latin.		Chemistry.		Shorthand.	
1. Woodward, Miss A.	Private tuition.	1. Tonks, J. W.	Mr. Smith, Walsall Grammar School.	1. Redfern, Miss D. L.	Miss Rance, Commercial Travellers' School, Pinner.
2. Bate, A.	Rev. Dr. Scott, Mercers' School, Holborn, E.C.	2. {		2. Barlow, H. R.	Private tuition.
		Dew, F. A.	Mr. Oakes, Oakes Institute, Walton, Liverpool.		
		Everest, A. E.	Mr. Bayley, Wellington College, Salop.		
Greek.		Natural History.		Domestic Economy.	
1. Woodward, Miss A.	Private tuition.	1. Park, Miss C.	Miss Bowen, Red Maids' School, Bristol.	1. Gibbs, Miss F. E.	Private tuition.
		2. {		Allder, Miss L. S.	The Misses Barrett & Price, Cambridge House, West Dulwich.
		Goodman, Miss M. E.	Messrs. Goodman & Evershed, Ripley Commercial School.	2. Tugwood, Miss E.	Miss Byrne, Pupil-Teachers' Centre, Mount Pleasant, Liverpool.
		Killingback, W. J.	Mr. Clark, Grammar School, Ongar.	Ward, Miss C.	Miss Shepherd, Westcliff College, Westcliff-on-Sea.
Sound, Light, and Heat.		Drawing.			
1. {		1. Richards, R. S. H.	Mr. Richards, Stoke Newington Grammar School, Private tuition.		
Coombes, C. S.	Mr. Rider, Devonport High School, Stoke.	2. Barry, Miss V. T.			
Everest, A. E.	Mr. Bayley, Wellington College, Salop.				
Millers, J. T.	Mr. Bayley, Wellington College, Salop.				
Pfleiderer, B. J.	Mr. Bayley, Wellington College, Salop.				
Pfleiderer, R. A.	Mr. Bayley, Wellington College, Salop.				
Standen, W.	Private tuition.				

CLASS LIST — BOYS.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

<i>a.</i> = Arithmetic.	<i>e.</i> = English.	<i>h.</i> = History.	<i>mu.</i> = Music.	<i>sd.</i> = Sound, Light, and Heat.
<i>al.</i> = Algebra.	<i>f.</i> = French.	<i>he.</i> = Hebrew.	<i>nh.</i> = Natural History.	<i>sh.</i> = Shorthand.
<i>b.</i> = Botany.	<i>g.</i> = Geography.	<i>i.</i> = Italian.	<i>p.</i> = Political Economy.	<i>sp.</i> = Spanish.
<i>bk.</i> = Bookkeeping.	<i>ge.</i> = German.	<i>l.</i> = Latin.	<i>ph.</i> = Physiology.	<i>tr.</i> = Trigonometry.
<i>ch.</i> = Chemistry.	<i>geo.</i> = Geology.	<i>m.</i> = Mechanics.	<i>phys.</i> = Elementary Physics.	<i>z.</i> = Zoology.
<i>d.</i> = Drawing.	<i>gm.</i> = Geometry.	<i>ma.</i> = Magnetism & Electricity.	<i>s.</i> = Scripture.	
<i>do.</i> = Domestic Economy.	<i>gr.</i> = Greek.	<i>ms.</i> = Mensuration.	<i>sc.</i> = Elementary Science.	

The small figures ¹ and ² prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, End. = Endowed, Found. = Foundation, H. = House, Inst. = Institute, Int. = International, Inter. = Intermediate, Prep. = Preparatory, S. = School, Tech. = Technical, Univ. = University.

FIRST CLASS [or SENIOR].
Honours Division.

Coombes, C.S. *g.a.al.gm.tr.sd.ch.d.sh.* Devonport High S.
Pfleiderer, R.A. *e.al.gm.m.f.ge.sd.ch.* Wellington Coll., Salop
Hall, L.E. *s.al.gm.* High S. for Boys, Croydon
Bate, A. *gm.ms.ge.l.ch.* Mercers' School, E.C.
Spear, J.H. *f.ge.sp.* Hoe Gram.S., Plymouth
Nixon, J.C. *a.al.gm.ma.ch.* Technical Inst., Portsmouth
Simmonds, C. *al.ch.* Council Secondary S., Portsmouth
Carr, R.M. *a.bk.ch.ph.* Elmfield Coll., York
Williams, H.F. *e.a.al.ms.* The Coll., Weston-s.-Mare
Everest, A.E. *sd.ch.d.* Wellington Coll., Salop
Frazer, W.M. *al.ms.ch.* Oakes Inst., Walton
Pfleiderer, B.J. *sd.ch.* Wellington Coll., Salop
Bennett, W. *a.al.bk.ms.sh.* Devonport High S.
Seymour Jones, A. *h.ch.* Wellington Coll., Salop
Barnes, H. *a.al.* Argyle H., Sunderland
Ballard, A.L. *a.gm.ch.* Dunheved Coll., Launceston
Brown, W.H. *al.* High S. for Boys, Croydon
Redhead, J.F. *ch.* Elmfield Coll., York
Gough, A.T. *h.d.* Wellington Coll., Salop
Killingback, W.J. *bk.ph.* Gram. S., Ongar
Peters, W.H. *al.ch.* Private tuition
Winter, D.T. *ch.* Council Secondary S., Portsmouth
Richards, R.S.H. *al.ge.d.* Stoke Newington Gram. S., N.
Fox, J.H. *ch.* Wellington Coll., Salop
Maitland, J.P. *s.ge.* High S. for Boys, Croydon
Gill, W.C. *ch.* Council Secondary S., Portsmouth
Ferraro, F.W. *s.* Devonport High S.
Payn, L. *al.* High S. for Boys, Croydon
Kerr, R. *f.* Ashford Gram. S.
Lake, N.C. *a.al.ma.ch.* Municipal Technical S., Plymouth

Millers, J.T. *sd.ch.* Wellington Coll., Salop
Tippett, G.H. *al.* Council Secondary S., Portsmouth
Bensly, H.F. *ch.* Wellington Coll., Salop
Cumine, G.F. *al.* Gram. S., Shoreham
McCallum, W.C. *al.* Mercers' School, E.C.
Budgen, S.N. *ch.* Carlyon Coll., Chancery Lane, W.C.
Akers, W.A. *ma.ch.* Aldenham S., Elstree
Grout, J.L.A. *al.* Wellington Coll., Salop
Preece, J.F. *ge.* Stoke Newington Gram. S., N.
Barnett, E. *deB. m.ma.ch.* Private tuition
Phillips, J.M. *al.* St. Joseph's Coll., Beulah Hill, S.E.

FIRST CLASS [or SENIOR].
Pass Division.

Gow, J.S. *al.* Elmfield College, York
Besant, C.T. *d.* Taunton's S., Southampton
Bisson, W.G. *bk.f.* Oxenford II., St. Lawrence, Jersey
Henson, G.W. *al.* Deacon's S. Peterborough
Bernstein, A. *al.* Central Foundation S., Cowper St., E.C.
Loynes, H.N. *al.* Wellington Coll., Salop
Cortazzi, M.E. *al.* High S. for Boys, Croydon
Bainbridge, I. *d.* Private tuition
Coulson, E.T. *al.* Gram. S., Searboro'
Rubenstein, B. *al.* Central Foundation S., Cowper St., E.C.
Travers, L.A. *gm.d.* Mercers' School, E.C.
Pascoe, C.A.L. *ch.* Gothic House, Upper Tooting
Caton E.R. *al.* Oakes Inst., Walton
Hore, C. *ch.* Council Secondary S., Portsmouth
Neale, C.D. *d.* The College, Clevedon
Breinher, L.J. *al.* Oakes Inst., Walton
Forbes, V.W. *it.* Warwick H., Southsea
Newman, W.M. *al.* Warwick II., Southsea
Sergeant, E.P. *al.* Oakes Inst., Walton
Buss, H.G. *al.* Ashford Gram. S.
Humphreys, E.G. *al.* Mercers' School, E.C.
Jordan, E.J.S. *ch.* Oakes Inst., Walton
Moore, A.E. *al.* Private tuition

Tibbetts, W.P. *al.* Mercers' School, E.C.
Tonks, J.W. *ch.* Gram. S., Walsall
Ethoré, D.J. *f.ph.* St. Boniface's Coll., Plymouth
Hodgkinson, P. *d.* Private tuition
Williams, H.L. *f.* Kendrick Boys' S., Reading
Winnard, J. *al.* Hindley Gram. S.
Knight, E.J. *al.* Taunton School
LeSueur, J. *al.* Jersey Modern S., St. Heliers
Barlow, H.R. *sh.* Private tuition
Bonnet, A.E. *f.* St. Boniface's Coll., Plymouth
Osborn, S. *al.* Argyle H., Sunderland
Holzapfel, G.L. *al.* High S. for Boys, Croydon
Turner, J.A. *al.* Stoke Newington Gram. S., N.
Remington, B.C. *al.* High S. for Boys, Croydon
Bateman, E.W. *al.* Mercers' School, E.C.
LePévédic, J.M. *f.* Private tuition
Robson, J.A. *ma. ch.* Technical Day S., Walsall
Mitchell, W. *al.* Argyle H., Sunderland
Hill, T.R. *al.* Gunnersbury S., Chiswick
King, W.H. *al.* St. Leonards Coll. S.
Peat, A.F. *al.* Broomy Hill Acad., Hereford
Cooke, J.W. *al.* Oakes Inst., Walton
Cochrane, D.T. *al.* St. John's Coll., Green Lanes, N.
McCormick, C. *al.* Argyle H., Sunderland
Smith, F.W. *al.* Bourne Coll., Quinton
Barnes, T.J. *al.* Mercers' School, E.C.
Eckersall, J.W. *al.* Farnworth Gram. S.
Lees, C. *al.* Elmfield Coll., York
Booth, S.G. *al.* Farnworth Gram. S.
Riggall, F.S. *e. al.* Private tuition
Seys, S.A. *al.* Clairville S., Ross-on-Wye
Corbett, R.G. *al.* Wellington Coll., Salop
Grover, M.R. *al.* Winchester H., Redland
White, T.L. *ch.d.* Private tuition
Mann, D. *al.* High S., Torquay
Davies, E.B. *al.* Tollington Schools, N.
Bishop, E. *al.* Woolwich Polytechnic Day S.
Pollard, H.B.C. *al.* Private tuition
Falkner, J.W. *al.* High S. for Boys, Croydon
Watson, W. *al.* High S., Brentwood
Eccleshall, G.B. *al.* Farnworth Gram. S.
Sawtell, H.M. *al.* Kendrick Boys' S., Reading

Evans, H.A. *al.* Private tuition
Hagger, S.H. *al.* Cliftonville Coll., Margate
Dew, F.A. *ch.* Oakes Inst., Walton
Syvret, J.P. *al.* Jersey Modern S., St. Heliers
Law, E.A. *al.* Hindley Gram. S.
Wilson, O.R.L. *al.* High S. for Boys, Croydon
Eyles, H.W. *al.* Winchester H., Redland
Fitch, L.C. *al.* Comm. Coll., Acton
Fluck, C.G. *al.* Stoke Newington Gram. S., N.
Law, F.P. *al.* Private tuition
Bayne, W.R. *ms.* Wellington Coll., Salop
Errington, R. *al.* Argyle H., Sunderland
Mather, H.A. *al.* Woolwich Polytechnic Day S.
Larke, A.J. *al.* Stoke Newington Gram. S., N.
Edmonds, A.T. *al.* Comm. Coll., Acton
Oluwole, A.L. *al.* African Training Inst., Colwyn Bay
Akers, N.C. *ch.* Private tuition
Freeman, E.P. *h.* Christ's Coll., Blackheath
Spence, T. *al.* Comm. Coll., York
Cole, C.T. *bk.* Hillmartin Coll., Camden Rd., N.W.
Jebson, F. *al.* Comm. Coll., York
McAllister, A.C. *al.* High S. for Boys, Croydon
Rienaecker, H. *al.* Herne House, Cliftonville
Standen, W. *sd.* Private tuition
McKee, D. *al.* Harlesden College, N.W.
Swabey, W.G. *al.* Ripley Commercial S.
Thomas, W.D. *bk.sh.* St. Winifred's S., Torquay
Royle, G.E. *al.* University S., Southport
Lauderdale, E.O. *ph.* Ripley Commercial S.
Everleigh, S.C. *al.* Dunheved Coll., Launceston
Sewell, A.C.H. *al.* Lancaster Coll., West Norwood
Thatcher, C. *al.* Winchester H., Redland
Brignall, R.S. *al.* Private tuition
Emery, B.J. *d.* The College, Lowestoft
Hookey, A.T. *al.* St. Leonards Coll. S.
Fibbens, C.W. *al.* Gram. S. Worthing
Bisson, J.R. *f.* Private tuition
Servanté, F.A. *al.* Private tuition
Cowell, A.T. *al.* The Palace S., Bewdley
Ward, M. *al.* Mount St. Michael's Coll., Dumfries
Palmer, P.J. *al.* Ashford Gram. S.
Paull, C.W. *al.* Wellington Road S., Taunton

BOYS, 1st CLASS, Pass—Continued.

Scanlan, J. Mount St. Michael's Coll., Dumfries
Blount, W.S. Merton H., Cliftonville
Mercer, T. ch. Oakes Inst., Walton
Harrington, B.L. Douglas S., Cheltenham
Lewis, S. Private tuition
Pritchard, C.R. ch. Technical Day S., Walsall
Möller, A.R. Argyle H., Sunderland
Beal, J.K. Modern S., Newcastle-on-Tyne
Singleton, G.F. Kilgrimol S., St. Annes-on-Sea
Tilley, V.J. Montrose Coll., Streatham Hill, S.W.
Cooksey, W.M. The College, Clevedon
Gerrard, L.A. Elmfield Coll., York
Gronan, H.E. Oakes Inst., Walton
Schroter, O.E. al. Oakes Inst., Walton
Pulling, H.W.C. St. John's Coll., Green Lanes, N.
Harrison, G.S. bk. Private tuition
Queen's Pk. Coll., Harrow Rd., W.
Aveling, N.H. Christ's Coll., Blackheath
Booth, J. Farnworth Gram. S.
Collins, C.E. Private tuition
Freeman, H.J. Commercial Coll., York
McCormack, F. Mount St. Michael's Coll., Dumfries
Snell, E. Ashford Gram. S.
Boulden, J. Fern Terrace S., Southborough
Fell, K.G. Arlington Park Coll., Chiswick
Matthews, W.H. New Coll., Cliftonville
Wilkinson, A.A. Kingsbridge Gram. S., Walsall
Parker, H.A. d. Licensed Victuallers' S., Lambeth
Walls, H. Private tuition
Earnshaw, N. University S., Southport
Grindel, R.S.M. Sandwich School
Allwright, C.A.J. Kendrick Boys' S., Reading
Bibby, T.M. Private tuition
Delo-Dosunu, A. sh. African Training Inst., Colwyn Bay

SECOND CLASS [or JUNIOR].
Honours Division.

Onions, C. a.al.ms.ch.d. Wellington Coll., Salop
Bilson, W.H.A. a.al.phys.ch. Council Secondary S., Portsmouth
Bland, A.J. a.al.gm.bk. Deacon's S., Peterborough
Hamilton, S. a.al.gm.ch. Polam Grange S., Darlington
Ingram, G.L.Y. al. Private tuition
Tildesley, G.H.R. a.al.f. Pomfret Coll., Pontefract
Ward, H.E. a.al.ma. Training Coll., York
Heath, A.E. al.phys.ch. Wellington Coll., Salop
Thiemann, F.W. ge. Highbury High S., N.
Campain, J.H. al.m. The College, Southport
Gough, W.K. al.phys.ch. Wellington Coll., Salop
Levy, L. Foundation S., Whitechapel
Masters, J.J. a.al.ch. Council Secondary S., Portsmouth
Tann, A.B. a.al. Mercers' S., E.C.
Caplin, A.H. ch. Foundation S., Whitechapel
Arkill, H.A. ch.d. St. Paul's S., West Kensington
Goldman, I. ch. Foundation S., Whitechapel
Jeune, O.E. a.al. Jersey Modern S., St. Heliers
Pendlebury, J. al.ch. Gram. S., Ashton-in-Makerfield
Marsh, R. al.phys.ch. Wellington Coll., Salop
Harris, J.E.G. ch.d. St. Dunstan's Coll., Catford
Holmes, E.M. al. Wellington Coll., Salop
Roberts, B.H. phys.ch. Wellington Coll., Salop
Espley, T.H. a.ch. Wellington Coll., Salop
Baker, H. a.al.bk.sh. Ripley Comm. S.
Bate, L.J. al. St. Dunstan's Coll., Catford
Jones, T.A. gm.phys.ch.d. Wellington Coll., Salop
Petty, A.H. s.a.d. Eton H., Hull
Alderson, J.B. c.bk. Argyle H., Sunderland
Roe, R.H. gm.f.ch. Kibworth Gram. S.
Johnson, F.L. al.gm.d. Fleet Rd. Higher-Grade S., Hampstead
Johnson, G. ch. St. Paul's S., West Kensington
Watts, B.O. d. Private tuition
Austin, E. bk.f. St. Winifred S., Torquay
Reed, N.L. al.f. High S., Torquay
Heath, T.A. a.al. Sandwich School
Fortune, G.W. a.al.d. Gram. S., Ashton-in-Makerfield
Forshaw, W. ch. Gram. S., Ashton-in-Makerfield
Adams, A.F. h.g. Private tuition
Hutchinson, H.J. St. Dunstan's Coll., Catford

Wright, R.D. f. High S., Barnsley
Steinberg, D.B. he. Central Foundation S., Cowper St., E.C.
Bartlett, H.J. al.sh. Blue Coat S., Reading
Wolley, J.M. al.ch. Wellington Coll., Salop
Bailey, C.W. a.d. Atherstone Gram. S.
Naylor, H. gm. Gram. S., Ashton-in-Makerfield
Williams, O.T. ch. Gram. S., Ashton-in-Makerfield
Cannon, J.F. s. Queen Elizabeth's Gram. S., Ashburne
King, W.H. ch. St. Dunstan's Coll., Catford
Selby, E.J. ch.d. Wellington Coll., Salop
Weston, C.R. f.ch. Kibworth Gram. S.
Brown, J.J. al.d. Blue Coat S., Reading
Smith, G.T. Allyn's School, Dulwich
Smith, H.E. ch. Wellington Coll., Salop
Aff, D. f. Great Ealing School
Gill, N. Wadham S., Liskeard
Ingram, S.W. Private tuition
Mallinson, R. d. High School for Boys, Croydon
Basebe, A.C. ma. Milton House, Watford
Holyoak, E.F. gm. St. Olave's Gram. S., S.E.
Marks, U. ch. Foundation S., Whitechapel
Jacobs, S. ch. Foundation S., Whitechapel
Morris, W.G. gm.bk. Antrobus H., Congleton
White, A.C. gm. Oxford County S., Thame
Beck, D.S. Cliftonville Coll., Margate
Clark, F.L. e.g. Allyn's S., Dulwich
Edwards, G.R. ma. Allyn's S., Dulwich
Graves, B. h.f.l. Private tuition
Radway, E.C. a.gm.ms. Central Foundation S., Cowper St., E.C.
Whitter, J. ch. Gram. S., Ashton-in-Makerfield
Allen, A.S. a.bk. Clyde H., Hereford
Dodd, J.W. al.ch. Gram. S., Ashton-in-Makerfield
Mendoza, M. a.al.ch. Central Foundation S., Cowper St., E.C.
Wilde, O.P. al. Fleet Rd. Higher-Grade S., Hampstead
Darbyshire, F.J. ma. Hindley Gram. S.
McKenna, J.P.L. ch. Central Foundation S., Cowper St., E.C.
Potton, A. ch. Central Foundation S., Cowper St., E.C.
Fry, J.E. a.al. Oakes Inst., Walton
Harrison, P.D. ch. Wellington Coll., Salop
James, R.C. Mercers' School, E.C.
Nuttall, W. a.al. Farnworth Gram. S.
Bullwinkle, C.H. al. Wandsworth Tech. Inst., S.W.
Fitchie, D. a.al. Grimshaw St. British S., Preston
Gimson, C.S. ma.phys.ch. Tottenhall Coll., nr. Wolverhampton
Timmis, A.B. Fleet Rd. Higher-Grade S., Hampstead
Berry, J.D. al. St. Olave's Gram. S., S.E.
Foster, T. al.gm. St. Olave's Gram. S., S.E.
Johnson, F. ch. Foundation S., Whitechapel
Lewis, W.T. phys.ch. Wellington Coll., Salop
Webb, H.P. Wellington Coll., Salop
Bullar, A.J. a. Clyde H., Hereford
Wyatt, F.A. d. Alderman Norman's Endowed S., Norwich
Howell, D.L. Cliftonville Coll., Margate
Grimes, S.C. Clapham Coll. S.
Knight, P. e.h. Colebrook H., Bognor
Reid, D. Mercers' School, E.C.
Williams, C.L. Hoe Gram. S., Plymouth
Ridley, S.D. a.al.gm. Central Foundation S., Cowper St., E.C.
Phillips, F.S. Clairville S., Ross-on-Wye
Wetherall, F.J. Cliftonville Coll., Margate
Box, J.H.G. Blue Coat S., Reading
Tibbalds, W.E.A. e.d. Private tuition
Trotter, W.W. Crossley & Porter S., Halifax
Turvey, F. Argyle H., Sunderland
Barrett, C.W. Kibworth Gram. S.
Bryce, A.G. f. The Modern S., Southport
Dry, R. bk. St. John's Coll., Green Lanes, N.
Dulley, T.S. Wandsworth Tech. Inst., S.W.
Howell, W.R. d. Cliftonville Coll., Margate
Lankfer, E.W. ma. Barton S., Wisbech
Pounds, R.T. Clark's Civil Service Coll., W.C.
Raddon, C. phys. Wilsford H., Devizes
Sinclair, H.M. Oxford County S., Thame
Wilson, F.C. Private tuition
Bishop, C.T. s.al. Gram. S., Welshpool
Fullerton, W.F.H. ch. St. Paul's S., West Kensington
Gibson, R. ch. Private tuition
Hendrie, H.A. al. St. Olave's Gram. S., S.E.
Webster, P.L.C. Maida Vale School, W.
Dutton, T.D. al.bk. Cliftonville Coll., Margate
Ridley, H. Crossley & Porter S., Halifax
Wasserman, E. al. Central Foundation S., Cowper St., E.C.
Wills, T.E. d. Dunheved Coll., Launceston

SECOND CLASS [or JUNIOR].
Pass Division.

1Jabavu, D. African Training Inst., Colwyn Bay
1Fillen, J.C. Jersey Modern S., St. Heliers
1Bateson, R.H. Hutton Gram. S.
1Beaty, F.A. Sandwich School
1Clarkson, A.V. Gram. S., Ongar
1Hodge, H.P. 38 Tavistock Place, Plymouth
1Rodda, B.C. Jersey Modern S., St. Heliers
1Hibberd, A.M. The Palace S., Bewdley
1Brown, A.L. Cliftonville Coll., Margate
1Castor, B.K. Holt House, Cheshunt
1Hume, G. New Coll., Cliftonville
1Brougham, C.W. Herne H., Cliftonville
1Green, J.S. Lancaster Coll., West Norwood
1Jones, B.S. The College, Clevedon
Espley, D.J. Wellington Coll., Salop
1Fryer, B.J. Gram. S., Wallington
1Illing, R.W. gm. Central Foundation S., Cowper St., E.C.
Mindel, N. Central Foundation S., Cowper St., E.C.
Piveteau, C.f. St. Boniface's Coll., Plymouth
Simon, P. ch. Foundation S., Whitechapel
Jordan, E.G. St. Olave's Gram. S., S.E.
Chittell, S. Cliftonville Coll., Margate
1Gaskell, C.C.T. d. Private tuition
Gregory, H.G. h. Gram. S., Ongar
Horniblow, E.C.T. St. Olave's Gram. S., S.E.
1Inskip, F.C. Gram. S., Ongar
Jopling, J.F. Friends' School, Wigton
Purdum, R. High S. for Boys, Croydon
Sherman, H. Ripley Commercial S.
Strike, W.B. a. Argyle H., Sunderland
Watson, E.L. Cliftonville Coll., Margate
Weisberg, H. gm. Central Foundation S., Cowper St., E.C.
1Bex, F.P. Boys' Coll. S., Aldershot
Cook, A.C. phys.ch. Wellington Coll., Salop
Furness, A.J. al.gm. Central Foundation S., Cowper St., E.C.
Hingle, J.N. al. St. Mark's Coll. Upper S., Chelsea
Large, R.F. al. Central Foundation S., Cowper St., E.C.
Smart, J.E. ch. Gram. S., Ashton-in-Makerfield
Smyth, S.L.A. Epsom College
1Symons, D.W. Gram. S., Shorham
Webb, L.J. a.al. Crompton S., Southend-on-Sea
Wright, G.A. High S., Barnsley
1Harrison, C. High S. for Boys, Croydon
Hill, T. a.al. Westmorland Rd. S., Newcastle-on-Tyne
Livesey, C.R. d. Grimshaw St. British S., Preston.
1Morrissy, M.I. St. Boniface's Coll., Plymouth
Neidle, M. ch. Foundation S., Whitechapel
Ponter, H.W. ma. Green Park Coll., Bath
Silverhammer, J.D. al. Central Foundation S., Cowper St., E.C.
Symons, A. d. Mercers' S., Holborn, E.C.
Armitage, H.G.P. Private tuition
Beare, S.S. Gram. S., Newton Abbot
Beaumont, G.W. ch. The Modern S., Southport
Betts, B. Talbot H., Old Trafford
Gamble, T. New Benwell Council S., Benwell-o.-Tyne
Geen, W.H. Chaloner's S., Braunton
1Hardy, B. Dunheved Coll., Launceston
Le Gros, J.A. Jersey Modern S., St. Heliers
Malpas, H.J. ch. Gillingham Gram. S.
Pearson, C.McM. h. Private tuition
Pettit, A.R. ma. Battersea Polytechnic Secondary S.
Poore, W.G. Wandsworth Tech. Inst., S.W.
1Sharroek, J.H. Christ Church Hr.-Grade S., Southport
Smith, W.L. a.al. Central Foundation S., Cowper St., E.C.
Taylor, J.C. High S., Brentwood
Berry, N.W. al.f. Private tuition
Edey, W.J. a. Allyn's S., Dulwich
Hughes, F.T. St. Olave's Gram. S., S.E.
Marks, C. Private tuition
Sharp, G. a.d. Oakes Inst., Walton
1Wigg, A.H. High S., Brentwood
Cole, A.D. Clyde H., Hereford
Edwards, S.C. St. Olave's Gram. S., S.E.
Galbraith, A. High S., Brentwood
1Hawkins, L. St. Marylebone Central Hr.-Grade S., W
1Oliplant, L. Grosvenor Coll., Carlisle
Traies, E.J. Mercers' S., Holborn, E.C.
Wheldon, H.J. ch.d. Oakes Inst., Walton
Wilson, A. Queen Elizabeth's Gram. S., Ashburne
Foskett, F. al. Mercers' S., Holborn, E.C.
Hamilton, J.K. al. Westmorland Rd. S., Newcastle-on-Tyne
Hayes, G. al. University Coll. S., W.C.
Hunter, R.M. bk. Clapham Coll. S.
Oglesby, F. bk.d. Englefield H., Highbury
Philp, R.E. ch. Wellington Coll., Salop
Tilling, H.W. a.al. Private tuition
Whitmore, R.D. Allyn's S., Dulwich

Aspin, T.A. Oakes Inst., Walton
Brown, F.W. High S. for Boys, Croydon
Geekie, B.J. Private tuition
Hughes, R.H. Sandwich School
1Hughes-Hallett, F. Ashford Gram. S.
1Knight, A.R. Ashford Gram. S.
McInley, E.S. d. Kendrick Boys' S., Reading
Shaw, H.N. Crossley & Porter S., Halifax
Taylor, F. Crossley & Porter S., Halifax
Vollum, L. a.d. Municipal S., Scarborough
Watson, C.T. ch. Gram. S., Stockton-on-Tees
White, E.V. s.ch. Kingswood S., Bath
Barnes, W.S. Crossley & Porter S., Halifax
Lathwaite, J.H. ch. Hindley Gram. S.
Stevenson, W. ch. Hindley Gram. S.
Toogood, F.G. Deacon's S., Peterborough
Whittington, G. f. Ruthin Gram. S.
Adney, T.H.L. Clyde H., Hereford
Cook, L.G. High S., Brentwood
Dippie, H.E. St. John's Coll., Green Lanes, N.
Schwaben, H.R. Gunnersbury S., Chiswick
Taylor, C.A. Deacon's S., Peterborough
Wigan, C.L. Private tuition
Berger, S. Central Foundation S., Cowper St., E.C.
1Bevis, W.S. Portsmouth Gram. S.
Brown, E. al. Oakes Inst., Walton
Gould, E.F. Clifton H., Eastbourne
Halerow, J.W. Central Foundation S., Cowper St., E.C.
Jemmett, L.S. bk.f. Worthing High S.
1Lawson, W.E. Waterloo-with-Seaforth Inst., Seaforth
Tootal, H.J.A. Private tuition
Turner, E.V.B. f. Private tuition
1Ambrose, W. Oakes Inst., Walton
1Anderson, H. Argyle H., Sunderland
Armstrong, J.J.V. West Ealing College
Heaton, A. ch. Gram. S., Ashton-in-Makerfield
Lee, A.H. High S. for Boys, Croydon
Leheup, C.W. Cliftonville Coll., Margate
1Turner, E. Winchester H., Redland
Baker, C.L. al. Deacon's S., Peterborough
Blamey, P.R. Wadham S., Liskeard
Cabot, D.A.E. f. High S. for Boys, Jersey
Dolland, W.G. ma. Sandwich School
Duck, L.S. Allyn's S., Dulwich
Frapp, J.T. Private tuition
1Schaeffer, E.D. St. John's Coll., Green Lanes, N.
Scholes, H. Hindley Gram. S.
Allen, S.T. al. Sir Walter St. John's S., Battersea
Burgis, B. Duncan H., Gt. Yarmouth
Clope, C.S. Holborn Estate Gram. S., W.C.
1Easton-Cook, A.D. f. Gram. S., Shorham
1McWilliam, A.S. Farnworth Gram. S.
1Pickering, E.R. St. Leonards Coll. S.
Record, H.H. Brunswick H., Maidstone
Briggs, A.R. al. Gram. S., Friern Barnet
Burrows, H. bk. Lytham Coll., Lancs.
1Coope, S. Farnworth Gram. S.
1Hammond, F.H.R. Grammar S., Forest Gate
1Hasler, A.E. Jersey Modern S., St. Heliers
Holroyd, J.B.H. Private tuition
Preston, G.L. Private tuition
Reeve, R.H. d. Ashford Gram. S.
Reid, R.C. Central Foundation S., Cowper St., E.C.
1Stansbury, J.N. Gram. S., Shorham
1Tiffen, J.H. Grosvenor Coll., Carlisle
Ashton-Jones, E.T. Kingswood S., Bath
Davis, J.H.C. al. Private tuition
Lloyd, H.H. High S., Barnsley
Michael, F.B. Gosberton Hall S., nr. Spalding
1Norris, P.E. Central Foundation S., Cowper St., E.C.
Solly, R. Sandwich School
Sweet, R.J. Devonport High S.
1Tongue, F.A. Private tuition
Vaughan, S.P. d. St. Olave's Gram. S., S.E.
Williams, C.G. Hazelcroft, Weston-s.-Mare
Ashworth, F.G. The Modern S., Southport
Batt, F.E. Kingsholme S., Weston-s.-Mare
Cunningham, J.A. Cloughton Coll. S., Birkenhead
Dane, B.T. ma. Private tuition
Ferraro, R. al. Devonport High S.
Gates, S. St. Leonards Coll. S.
1Hanbridge, C.M. Taunton H., Brighton
Ormerod, J. d. Private tuition
Presland, F.R. Tollington Schools, N.
Rogers-Tillstone, H.F. h. Wuyport H., Brighton
Spencer, L.S. Kingswood S., Bath
Watson, J.H. High S., Brentwood
Whittington, W.W. Private tuition
Byrne, H.S. Brunswick II., Maidstone
Cobb, I.G. Private tuition
Murphy, G.P. Wynport H., Brighton
Pope, A.B. bk. The College, Herne Bay
Smith, T.H.W. Up. Hornsey Rise High S., N.
Woodecock, E. bk.d. Middle-Class S., Sheffield
1Beveridge, H.J.C. Commercial Coll., York
Bolton, P.F. Deacon's S., Peterborough

BOYS, 2ND CLASS, PASS—Continued.
 Cartwright, T. Gram. S. Shoreham
 Guard, H. Private tuition
 Jackson, A.F. Bedford H., Bexhill-on-Sea
 Jones, H. Hindley Gram. S.
 Long, M.I. s. Kendrick Boys' S., Reading
 MacIntyre, D. St. Olave's Gram. S., S.E.
 Powell, E.F. St. John's Coll., Green Lanes, N.
 Rutherford, A.H. bk. The College, Churwell
 Amos, T. Ashford Gram. S.
 Armstrong, R. a. West Ealing College
 Bush, F.R. al. Johnstone Ter. S., Devonport
 Davies, A.V. Stanley H., Cliftonville
 Manning, A.H. d. Private tuition
 Christ Church Higher Grade S., Southport
 Moillet, A.K. l. Private tuition
 Stobie, H. Private tuition
 Wilson, G. Ellesmere S., Harrogate
 Coultard, J. Grosvenor Coll., Carlisle
 Kidman, T.R. Ivel Bury S., Biggleswade
 Killard-Leavey, T.J. Private tuition
 Lynn, A.A. ch. Hindley Gram. S.
 Parratt, H.E.A. Mercers' S., Holborn, E.C.
 Ashworth, W. Private tuition
 Creas, A.J. The College, Weston-s.-Mare
 Hearn, W.G. St. Winifred's S., Torquay
 Lowe, H.B. f. St. Olave's Gram. S., S.E.
 Peck, L. ge. Wellington Coll., Salop
 Pritchard, W.A. Central Foundation S., Cowper St., E.C.
 Stone, E. d. Kendrick Boys' S., Reading
 Vickery, B.P. a. Allyn's School, Dulwich
 Bell, S.M. Simon Langton S., Canterbury
 Edkins, G.F. Gram. S., Shoreham
 Manaton, F.H. Chaloner's S., Braunton
 Viner, R. ch. Bourne Coll., Quinton
 Bailey, F. Oakes Inst., Walton
 Cussell, S.J. Allyn's School, Dulwich
 Deane, H.N. d. Gram. S., Shoreham
 Hesse, E.T. High S. for Boys, Croydon
 Jump, P.T.H. a. King Edward VI. Middle S., Norwich
 Machin, L.J. Deacon's S., Peterborough
 Owens, J.H. f. Fauconberge S., Beceles
 Parker, H. Johnston Ter. S., Devonport
 Schrader, H.J. Skinners S., Tunbridge Wells
 Shaw, F.M. Woolwich Polytechnic Day S.
 Sykes, J. Crossley & Porter S., Halifax
 Beeson, S.S. Broomy Hill Acad., Hereford
 Cackett, C.W. Brunswick H., Maidstone
 Catt, H.A. Gram. S., Shoreham
 Foulks, W.H. d. Queen Elizabeth's Gram. S., Ashburne
 Ginger, E.J.B. Gram. S., Shoreham
 Gooch, R.N. Hillmartin Coll., Camden Rd., N.W.
 Holland, F.H. d. Allyn's S., Dulwich
 Holliman, C.S. al. Wandsworth Tech. Inst., S.W.
 Hughes, D.E.J.S. Private tuition
 Hume, A.A. New Coll., Cliftonville
 Privett, A.B. Holborn Estate Gram. S., W.C.
 Stanley, J.S. ch. King Ed. VI. Middle S., Norwich
 Stevens, E.V. Oxford County S., Thame
 Terrell, V. Eversley S., Stamford
 Yaxley, S.W. Woolston Coll., Southampton
 Allsup, W. f. West Cliff S., Preston
 Carlisle, R. Allyn's S., Dulwich
 Corke, G.D. Gunnersbury S., Chiswick
 Fletcher, C.A. Kibworth Gram. S.
 Furse, F.L. Beechen Cliff, E. Dulwich
 Jones, F.W. Clyde H., Hereford
 Martin, P. Faruworth Gram. S.
 Pearce, V. Harlow College
 Pratt, W.P. High S., Brentwood
 Richardson, C.J. Wandsworth Tech. Inst., S.W.
 Ruck, C.F.L. al. The Douglas S., Cheltenham
 Turner, R.A. d. Kendrick Boys' S., Reading
 Wiggins, R.J. Kendrick Boys' S., Reading
 Allen, R. Gram. S., East Finchley
 Bright, R.F. Deacon's S., Peterborough
 Egan, A. St. Boniface's Coll., Plymouth
 French, H.F. ch. Private tuition
 Goddard, A.R. Private tuition
 Haywood, A.V. Queen Elizabeth's Gram. S., Ashburne
 Hodgson, J. Gram. S., Blackpool
 Hutchinson, P.G. Deal College
 Piper, W. Daveutry Gram. S.
 Primrose, H. King Edward VI. Middle S., Norwich
 Witherington, A.S. Argyle H., Sunderland
 Atherton, W.W. New Benwell Councils, Benwell-on-Tyne
 Crow, C.G. Up. Hornsey Rise High S., N.
 Flexman, E.L. Deal College
 Foreman, E.R. Mercers' S., Holborn, E.C.
 Maclure, T.C.G. High S., Brentwood
 Pattinson, J. Friends' S., Wigton
 Rymmer, W. Gram. High S., Thirsk
 Seward, G.F. St. Leonards Coll. S.
 Vivian, R.M. Gunnersbury S., Chiswick
 Coussey, J.H. Gram. S., Shoreham
 Dadds, S.J. Portland Coll., Chiswick
 deGruchy, O.W. Oxenford H., St. Lawrence, Jersey

Grellier, N. Cranfield, Worple Rd., Wimbledon
 Jemmett, R.F. Worthing High S.
 Knight, W.R. Colebrook H., Bognor
 Lloyd, E.A. e. Huntington S., Kington
 Mealand, H.G. bk. Ripley Commercial S.
 Murray, F.W. Crossley & Porter S., Halifax
 Pearce, W. Allyn's S., Dulwich
 Priestley, E.C. Kendrick Boys' S., Reading
 Scarlett, J.W. Mary St. H., Taunton
 Shaw, A.C. Haringey Park S., Crouch End
 Snow, C.J. Cliftonville Coll., Margate
 Spain, H.G. Private tuition
 Sproston, J. Antrobus H., Congleton
 Webber, S.B. Philological S., Southsea
 Williams, E.R. d. Hoe Gram. S., Plymouth
 Ahier, C. Jersey Modern S., St. Heliers
 Barry, C.H. Gram. S., Shoreham
 Bryant, W. Winchester H., Redland
 Creasy, H.P. Kingswood S., Bath
 Criper, S.F. Gram. S., Shoreham
 Fielding, W. al. Gram. S., Blackpool
 Hall, E.W. Private tuition
 Llewellyn, G.E. Council Secondary S., Portsmouth
 Marsland, D.C. ch. Allyn's S., Dulwich
 McOwan, D. Corner H., Godstone
 Mead, A.M. St. Olave's Gram. S., S.E.
 Nettleton, J.E. Elmfield Coll., York
 Sibthorpe, W.E. Hatfield H., St. Leonards-on-Sea
 Spreckley, T. Eversley S., Stamford
 Underwood, V.J. Allyn's S., Dulwich
 Ward, C. Higher-Grade S., Selby
 Wilson, B. ma. Barton S., Wisbech
 Chappell, S.E. al. Finsbury Park Coll., N.
 Clowes, A.V. Gram. S., Ongar
 Easton-Cook, W.P. bk. Gram. S., Shoreham
 Farnar, T.C. Private tuition
 Farr, M.A. St. Paul's S., West Kensington
 Fownes, B. Private tuition
 Griffiths, J. Private tuition
 Jacobs, S.L. Tivoli H., Gravesend
 Oglesby, L.W. Hall Gate S., Doncaster
 Whittle, W.N. d. Mercers' S., Holborn, E.C.
 Adey, F.C. Richmond Hill S., Richmond
 Cooper, A.J.C. Gram. S., Shoreham
 French, S.A. St. Duстан's Coll., Catford
 Greaves, F. Queen Elizabeth's Gram. S., Ashburne
 Howard, E. Private tuition
 Page, J. St. Leonards Coll. S.
 Painter, F.S. High S. for Boys, Croydon
 Parker, A.T.H. bk. Brighton Gram. S.
 Stevens, R. Winchester H., Redland
 Tuitt, M.A.W. Eversley S., Southwold
 White, A. Harlow College
 Wrate, H.H. Sudbury Gram. S.
 Harvey, J.G. The Palace S., Bewdley
 Jerrard, R. Higher-Grade S., Margate
 Lane, H.W. Deal College
 Lappage, P.W. Modern S., Gravesend
 McConnell, P. Loughton School
 Peters, C.A. St. Olave's Gram. S., S.E.
 Rogers, F.A. Private tuition
 Allen, C.H. Deacon's S., Peterborough
 Bazell, C.C. Collegiate S., Bridgwater
 Chave, W. ch. Blundell's S., Tiverton
 Franks, J.J. Tivoli H., Gravesend
 Garner, J.K. Private tuition
 Guild, G. Oakes Inst., Walton
 Hoyle, E.W. Kendrick Boys' S., Reading
 Hughes, G.T.D. Private tuition
 Innes, R.S. h. Victoria Park S., Manchester
 Leonard, A.J. Blundell's S., Tiverton
 Page, A.S. High S. for Boys, Croydon
 Vautier, J.G. Jersey Modern S., St. Heliers
 Yellon, M. Central Foundation S., Cowper St., E.C.
 Ditcham, V. King Edward VI. Gram. S., Southampton
 Gostling, C. Gram. S., East Finchley
 Hickey, A.G.R. ma. Private tuition
 Oakshott, R.S. Philological S., Southsea
 Rapley, R.A. Holborn Estate Gram. S., W.C.
 Williams, J.W. Private tuition
 Abraham, E.S. High S., Trowbridge
 Barnard, J.H.M. Duncan H., Gt. Yarmouth
 Brown, B.J. Private tuition
 Burford, J.A.H. Queen Elizabeth's Gram. S., Ashburne
 Corby, G.F. Allyn's S., Dulwich
 Dagg, A. Oxenford H., St. Lawrence, Jersey
 Davidson, C.C. Elmfield Coll., York
 Hastie, W.A. The Modern S., Southport
 Hookey, A.R. St. Leonards Coll. S.
 Mitchell, A. Oakes Inst., Walton
 Saunders, N.V. Private tuition
 Stebbings, J.M. Deal College
 Burnham, C.R. Eton House, Hull
 Crees, N.H. The College, Weston-s.-Mare
 Edgar, N. Private tuition
 Howse, J. Kendrick Boys' S., Reading
 Leigh, R.B. The Palace S., Bewdley
 Lill, J. ma. Barton S., Wisbech
 Palmer, C.G.R. Private tuition
 Parsonage, E. Crossley & Porter S., Halifax
 Pritchard, F.W.R. Private tuition

Reveirs, A.G. Lancaster Coll., West Norwood
 Wade, E.H. a. Kendrick Boys' S., Reading
 Bradshaw, S.G. Loughton School
 Bradley, B.R. Royal Technical Inst., Salford
 Brick, F.D. Gram. S., Welshpool
 Church, J.J. Central Foundation S., Cowper St., E.C.
 Cock, M.C.D. Richmond Hills, Richmond
 Collingwood, S.E. d. High S. for Boys, Croydon
 Daniel, A.M. High S. for Boys, Croydon
 Fiddick, T.L. Private tuition
 Gunton, F. Deacon's S., Peterborough
 Lee, J.H. Grosvenor Coll., Carlisle
 Leigh, H.V. Private tuition
 Maden, W.H. Private tuition
 Matvey, C.P. Clyde H., Hereford
 Mercer, F. a. Oakes Inst., Walton
 Panioty, N. West Ealing College
 Stansbury, D.H.N. Gram. S., Shoreham
 Vincent, S.L. Loughton School
 Wain, D. Gram. S., Belper
 Warburton, L.R. Carlyon Coll., Chancery Lane, W.C.
 Wells, P.C. Winchester H., Redland
 Williams, C.A. Camden Rd. Coll. S., N.
 Algar, H. King Edward VI. Middle S., Norwich
 Andrews, W.R. Gram. S., Shoreham
 Crowther, L.B. Private tuition
 Edrupt, S.N. Gram. S., Ealing
 Herbert, A.H. Bedford H., Oxford
 Rossiter, J.T. Oxford County S., Thame
 Scope, R. Elmfield Coll., York
 Steeple, H. Private tuition
 Watt, W. Grosvenor Coll., Carlisle
 Beesley, A.E. ch. Stramongate S., Kendal
 Burch, H.J. Private tuition
 Gadsdon, G. Eastbourne College
 Griffiths, L.P. High S., Alsager
 Holburn, H. Private tuition
 Hoyland, F.W. ch. Lady Manners' Gram. S., Bakewell
 Jones, R.G. Holyhead County S.
 Kennard, B.C. Mercers' S., Holborn, E.C.
 Macvean, D.C. Arlington Park Coll., Chiswick
 Bainbridge, J.R. d. Middle-Class S., Stalybridge
 Bunt, I.W. Central Foundation S., Cowper St., E.C.
 Berry, W.H.S. Kendrick Boys' S., Reading
 Cleator, C.D. Crossley & Porter S., Halifax
 Crake, W. Friends' S., Great Ayton
 Jolly, R.W. d. Gram. S., Blackpool
 Laing, C.Y. Private tuition
 Schofield, W.H. Rivington Gram. S., Horwich
 Smith, L.S. ch. Blundell's S., Tiverton
 Snow, F. Private tuition
 Willard, A.J. St. Leonards Coll. S.
 Bowen, S.W. Modern S., Gravesend
 De Quetteville, S.N. f. Jersey Modern S., St. Heliers
 Eversley S., Stamford
 Marriott, C. Private tuition
 Alexander, H.G. Gram. S., Shoreham
 Chamberlain, R.R. The Palace S., Bewdley
 Hewish, B.F. High S., Brentwood
 Hodgson, L.M. High S., Brentwood
 Mumford, A.J. a. Allyn's S., Dulwich
 Shepherd, W.C. Mercers' S., Holborn, E.C.
 Aarons, S. Foundation S., Whitechapel
 Daniel, G.C. Private tuition
 Hampson, E.R. Commercial Coll., Southport
 Jones, W. a. Carmarthen Gram. S.
 King, H.W. Brunswick H., Maidstone
 Lambert, R.B. Higher-Grade S., Selby
 Linton, W. Oxford H., Croydon
 Rose, A.N. Commercial Coll., York
 Ballard, G. Ashford Gram. S.
 Bamford, T.J. The Douglas S., Cheltenham
 Brownson, H.O. Queen Elizabeth's Gram. S., Ashburne
 Prince, G.R. Streatham Hill College, S.W.
 Restall, A.C. bk. Philological S., Southsea
 Steers, L.G. Winchester H., Redland
 Wright, H.C. Ripley Commercial S.
 Akester, G. Crossley & Porter S., Halifax
 Brewer, A.V. Bradley High S., Newton Abbot
 Coombs, H.W. Maida Vale School, W.
 Gibby, G.M. h. County S., Naberth
 Johnston, S. Gram. S., Sale
 Lavers, F.J.R. bk. St. Winifred's S., Torquay
 Margerison, L.A. Fulwood Gram. S., Preston
 May, J.L. New Coll., Cliftonville
 Williams, R.W. County S., Dolgelly
 Aldridge, A.A. Gram. S., Worthing
 Bamford, T.G. The Modern S., Southport
 Blampied, J. Oxenford H., St. Lawrence, Jersey
 Chadwick, J.W. Elmfield Coll., York
 Couch, A.G. Brunswick H., Maidstone
 Darneley, A.L. Eton House, Hull
 Evans, C.J. Halstead Gram. S.
 Hainsworth, W. Hall Gate S., Doncaster

Harvey, W. Brunswick H., Maidstone
 Hill, H. Municipal S., Scarborough
 Milner, J. Easingwold Gram. S.
 Spratling, W.N. Private tuition
 Williams, C.E. Gram. S., Walsall
 Banks, C.S.J. Christ's Coll., Blackheath
 Barry, W. Salesian S., Battersea
 Bullock, T.W. Emwell S., Warmminster
 Dyer, A.B. d. Gram. S., Walsall
 Johnson, A. Crossley & Porter S., Halifax
 Neale, F.B. Deal College
 Slater, G.A. Penketh S., nr. Warrington
 Thomson, P. Friends' S., Great Ayton
 Treherne, T.A. Allyn's S., Dulwich
 Blackall, A.W. Kingswood S., Bath
 Clayton, C.J.W. Ashfield, Winchester
 Fearnside, J.S. Elmfield Coll., York
 Fewson, H. Eton House, Hull
 Hammond, J. King Edward VI. Middle S., Norwich
 Hill, E. Private tuition
 Hough, G.H. The Institute, Wigton
 Pennant, D.H. The College, Clevedon
 Robson, J. Delaval Council S., Benwell
 Spill, A.E.V. Private tuition
 Vierke, C.F. Merton H., Cliftonville
 Welch, H.A. Longwood Gram. S., Huddersfield
 Whyte, D.C. Harlow College
 Williams, E.G. ch. Kingswood S., Bath
 Clark, K. Private tuition
 Dunn, S.S. Sir Roger Manwood's S., Sandwich
 Emmet, T.W.C. Duncan H., Gt. Yarmouth
 Hemsley, M.S. The College, Tankerton-on-Sea
 Kiddell, H.M.B. New Coll., Cliftonville
 Lefmann, J.R. The Cedars, Ealing
 Myddleton, W.N. Lancaster Coll., Morecambe
 Payne, E.S. Enwell S., Warminster
 Shaw, G.R. Colebrook H., Bognor
 Thompson, W.N. Ivel Bury S., Biggleswade
 Thorne, H.W.J. Clyde H., Hereford
 Walton, E.H. The Modern S., Southport
 Bates, W.E. King Edward VI. Middle S., Norwich
 Blackman, H.G.B. Private tuition
 Bolter, C.A. St. Paul's S., West Kensington
 Burns, T. Westmorland Rd. S., Newcastle-on-Tyne
 Hughes, C.J. Private tuition
 Jacobs, H.S. Tivoli H., Gravesend
 Jordan, R.L. f. Kendrick Boys' S., Reading
 Marsland, W.R. Bourne Coll., Quinton
 Munns, A.H. Allyn's S., Dulwich
 Newbery, W. Caversham H., Caversham
 Reeve, H.W. Sudbury Gram. S.
 Ross, R.S. Jersey Modern S., St. Heliers
 Torry, E.N. Private tuition
 Davey, R.A. d. Vermont Coll., Clapton, N.E.
 Goldie, H.A. d. Lancaster Coll., West Norwood
 Isbell, R. af. Private tuition
 Merrington, F.A. Eagle H., St. Leonards-on-Sea
 Mudd, L.S. Modern S., Gravesend
 Pium, A. Channel View S., Clevedon
 Seelig, C. Central Foundation S., Cowper St., E.C.
 Thompson, J. Westmorland Rd. S., Newcastle-on-Tyne
 West, A.H. Modern S., Gravesend
 Baxter, B.H. Hall Gate S., Doncaster
 Birch, J.A. Northern Inst., Leeds
 Drage, F.H. Collett H., Bournemouth
 Landau, G. s. Townley Castle S., Ramsgate
 Lawrence, W.B. Taunton School
 Morley, W.H. Lytham Coll., Lancs.
 Peat, W.H. High S. for Boys, Croydon
 Pott, M. Comm. Coll., Southport
 Simmons, M.A. Private tuition
 Scales, W.H. Bickerton H., Birkdale
 Zoers, F.W. Gram. S., Ongar
 Barden, J. d. Pembroke Coll., Harrogate
 Callwood, H.J. Bourne Coll., Quinton
 Champness, E.F. Milton Coll., Bexleyheath
 Cruttenden, R. Wandsworth Tech. Inst., S.W.
 Dear, M.G. Elmhurst S., Kingston-on-Thames
 Grant, K.G. Private tuition
 Kidd, D.L. University Coll. S., W.C.
 Lumb, E. Gram. S., Blackpool
 Marshall, C. High S. for Boys, Croydon
 Parker, D. Crossley & Porter S., Halifax
 Ruben, E. Private tuition
 Smith, J.F. Finsbury Park Coll., N.
 Wallond, F. Deal College
 Wanostrocht, D.V. Anerley College
 Butler, E. Highfield S., Chertsey
 Colls, L.B. ma. Barton S., Wisbech
 Flood, J. Higher-Grade S., Margate
 Groves, H. Ripon Gram. S.
 Hughes, R.C. Private tuition
 Hymers, P. Westmorland Rd. S., Newcastle-on-Tyne
 Jennings, H.M. f. Harlston H., St. Lawrence, Jersey
 Marriott, E. Kendrick Boys' S., Reading
 Owen, J.C. County S., Dolgelly

BOYS, 2ND CLASS, Pass—Continued.

Parry, W.S. High S. for Boys, Croydon
 Smith, W. Salesian S., Battersea
 Tanner, R.D. High S. for Boys, Croydon
 Atkins, E.A. d. Private tuition
 Denny, E. Private tuition
 Escolme, R. Penketh S., nr. Warrington
 Forrest, T.H.N. Private tuition
 Maywhort, J.H. Private tuition
 Pritchard, J. Catholic Gram. S., St. Helens
 Saxton, S. Private tuition
 Scrine, H. The High S., Romford
 Thomas, W.W. Long Ashton, nr. Bristol
 Hay, J. W. Private tuition
 Le Masurier, P.J. High S. for Boys, Jersey
 Penwill, A.A. Gram. S., Newton Abbot
 Pern, A.S. Alwyne Inst., Gower St., W.C.
 Potter, K.R. Streatham Hill College, S.W.
 Shilton, A.V. Handsworth Gram. S.
 Beer, G.W. Bradley High S., Newton Abbot
 Blows, C.E. Private tuition
 Bower, H.E. Private tuition
 Evans, D.A. Private tuition
 Hanson, A. Tottenhall Coll., nr. Wolverhampton
 Grimes, W.S. Bracknell Coll., Berks
 How, F.G. Merton H., Penmaenmawr
 Joyner, E. The College, Weston-s.-Mare
 LeGresley, A.J. f. Harlston H., St. Lawrence, Jersey
 Magee, A.W.D. Birkdale Gram. S., Southport
 Pomeroy, J.M. Private tuition
 Pyle, W.B. Schorne S., Winslow
 Pywell, C.H. Private tuition
 Robinson, G. Private tuition
 Ross, K.D. Jersey Modern S., St. Heliers
 Smeeton, L.F. Gram. School, Friern Barnet
 Smithson, S. Commercial Coll., York
 Yates, F.S. Merton H., Cliftonville
 Carpenter, G.E. Duncan H., Gt. Yarmouth
 Crabtree, J.P. Brighton H., Oldham
 Cutler, H.B. Private tuition
 Dainty, J.E. Private tuition
 Glendinning, C. Crossley & Porter S., Halifax
 Hutchinson, J. Delaval Councils, Benwell
 Jones, E.V. Elmfield Coll., York
 Lagden, W.J. High S., Brentwood
 Webb, S.F. Rugby School
 Barber, A.L. Kingsholme S., Weston-s.-Mare
 Brown, D.L. Municipal Technical S., Plymouth
 Horrell, J.B. Pierremont Coll., Broadstairs
 Lucas, S. Magdalen Coll. S., Wainfleet
 Miller, C.R. Merton H., Cliftonville
 Newbery S. Caversham H., Caversham
 Parkyn, K. Kingswood S., Bath
 Skinner, L.E. Winchester H., Redland
 Stonebridge, E.E. King Edward VI. Middle S., Norwich
 Younie, T. Private tuition
 Andrews, H. Private tuition
 Chart, E.R. St. Olave's Gram. S., S.E.
 Lang, L.W. Private tuition
 McRae, D. Private tuition
 Neal, P.T. Private tuition
 Reed, J.G. Argyle H., Sunderland
 Smith, J.S. Modern S., Newcastle-on-Tyne
 Speeding, C. High S. for Boys, Croydon
 Stamper, E.P.F. Carlyon Coll., Chancery Lane, W.C.
 Walker, G.R. f. The Douglas S., Cheltenham

Bates, J. High S. for Boys, Croydon
 Bridger, T.D. Mercers' S., Holborn, E.C.
 Daniels, L.M. Belle Vue H., Norwich
 Gill, H.C. Gram. S., Chorlton-cum-Hardy
 Gosling, C.W. Coleford Gram. S.
 Henderson, B.H. High S. for Boys, Jersey
 Kent, E.J. King Edward VI. Middle S., Norwich
 Macgregor, R.K. St. Peter's Coll., Brockley
 Weston, W.J. bk. St. Leonards Coll. S.
 Andrew, W. The College, Southport
 Baldwin, E.W. Birkdale Gram. S., Southport
 Barton, A.S. Central Foundation S., Cowper St., E.C.
 Butterfield, A. Private tuition
 Charter, E.J. Bootham S., York
 Graham, W.J. Grosvenor Coll., Carlisle
 Mawdsley, F.A. Gram. S., Sale
 Mallion, M. St. Augustine's Coll., Ashford
 Palmer, H.N.B. Duncan H., Gt. Yarmouth
 Rogers-Tillstone, J.H. f. Wynport H., Brighton
 Rowan, J.W. St. Peter's Eaton Sq. Choir S., W.
 Barnett, H.A. Winchester H., Redland
 Davis, L.J. High S., Brentwood
 Dickson, W.A. The College, Herne Bay
 Joyce, J. Gram. S., Sale
 Saunders, E.J. Ivel Bury S., Biggleswade
 Bradshaw, J. Springfield Coll., Acton
 Brooks, A.R. Up. Hornsey Rise High S., N.
 Caulerick, J.A. Private tuition
 Cecil, H. Private tuition

Day, C.F. King Edward VI. Middle S., Norwich
 Ford, J.W. County S., Newtown, Mon.
 Jeandron, E. High S. for Boys, Jersey
 Johnstone, R.C.S. Hatfield H., St. Leonards-on-Sea
 Jopling, A.E. Woolston Coll., Southampton
 McNab, C.E. Private tuition
 Smith, S.A. Queen Elizabeth Gram. S., Ashburne
 Yates, N.C. Preston Gram. S., Cleveland
 Bradbury, A.V. Hall Gate S., Doncaster
 Dorner, F. Boys' Coll. S., Aldershot
 Ferguson, A.D. Private tuition
 Fowler, H. Eversley S., Stamford
 Hickey, S.G.M. St. Mark's S., Windsor
 Holliday, J.F. Oakes Inst., Walton
 Littlefair, T. Friends' S., Gt. Ayton
 Oakley, H. Collegiate S., Smethwick
 Roper, W.S. The Palace S., Bewdley
 Scoble, H. Coleford Gram. S.
 Booth, R.S. Christ's Coll., Blackheath
 Daniels, C.H. Kendrick Boys' S., Reading
 Evans, D.A. Alun County S., Mold
 Jago, L.E.G. Gram. S., Newton Abbot
 Lewson, W.R. Gram. S. Scarborough
 McMyn, W. al. Private tuition
 Morris, G.F. al. Oakes Inst., Walton
 Oakes, C.G. Private tuition
 Paton, W.B. St. Olave's Gram. S., S.E.
 Wood, H.H. Holborn Estate Gram. S., W.C.
 Bergholtz, D. Boys' High S., Wareham
 Charlton, J.E. Private tuition
 Durant, W.T. Private tuition
 Hill, J.R. Hillmartin Coll., Camden Rd., N.W.
 Kerr, M.C. Gram. S., Belper
 Landau, B. s. Townley Castle S., Ramsgate
 Levy, V.I. Maida Vale School, W.
 Mitchell, V.C. Up. Hornsey Rise High S., N.
 Pratt, R.C. Private tuition
 Rickford, L.R.T. Pierremont Coll., Broadstairs
 Shawcross, C.F. Private tuition
 Smith, I.G. King Edward VI. Middle S., Norwich
 Williams, A.B. Pierremont Coll., Broadstairs

THIRD CLASS.
 Honours Division.

De Morsier, T.E. e.h.a.f. Jersey Modern S., St. Heliers
 Wetherall, G.C. e.a.al.f. Cliftonville Coll., Margate
 Couture, P.J. e.h.g.m.f. Milton Coll., Bexley Heath
 Horsefield, C.S.W. s.e.h.a.al.f. Littleton H., Knowle, Bristol
 Cliff, H.S. e.a.al.g.m.f. High S., Torquay
 Gillford, F.H. e.h.a.f.g.e. Wellington Coll., Salop
 Gittins, F.J. e.a.sc.d. Wellington Coll., Salop
 King, H. e.a. Kendrick Boys' S., Reading
 Barrett, F. s.e.g.a. Oakes Inst., Walton
 Titcombe, W.J.C. e.h.a. Gram. S., Devizes
 Hackforth-Jones, M. e.a.f.l. Gunnersbury S., Chiswick
 Lord, F.A. e.h.a.f. Loughton School
 Macnamara, J.G. e.a.al. Cranbrook College, Ilford
 Hamilton, B. e.h.a. Polam Grange S., Darlington
 Symonds, L.W. e. a.f.sc.d. Wellington Coll., Salop
 Frazer, R.F. e.h.a.al.g.m. Oakes Inst., Walton
 Graham, G.H. e.a.d. New Benwell Council S., Benwell-on-Tyne
 Powell, H.S. e.a.f.g.e.sc. Wellington Coll., Salop
 Atkinson, E. s.e.a. Christ Church Higher-Grade S., Southport
 Brooks, C.E. e.a.sc. Wilsford H., Devizes
 Cooper, J. a. Wellington Coll., Salop
 Marsh, J. h.a.sc. Wellington Coll., Salop
 Hiekman, W.C. e.a.sc.d. Wilsford H., Devizes
 Higson, G.I. e.a.f. Bickerton H., Birkdale
 Swithinbank, H., e.d. The School, Chapel Allerton
 Graham, G.S. e.a.al.g.m. Oakes Inst., Walton
 Harris, J.H. e.a. The College, Herne Bay
 Hughes, A.G. e.a. Wellington Coll., Salop
 Pickles, A., e.a.d. New Benwell Council S., Benwell-on-Tyne
 Pierce, W. e.g.a. Gram. S., St. Ives
 Sandwell, A.E. g.a.d. Cranbrook Coll., Ilford
 Shipley, R.J. a.d. New Benwell Council S., Benwell-on-Tyne
 Tupper, H. e.a.d. Brunswick H., Maidstone
 Jones, W.H. g.a.d. Wellington Coll., Salop
 Rickards, P.J. a.f. Great Ealing School
 Chancellor, M.C. a.al.f. Up. Hornsey Rise High S., N.
 Sockett, J.W. e.a.d. Wellington Coll., Salop

Anderson, G. a. New Benwell Council S., Benwell-on-Tyne
 Barnes, J.N. e.a. Alderman Norman's Endowed S., Norwich
 Graham, J.T. a. New Benwell Council S., Benwell-on-Tyne
 Jackson, F.H. s.a. Collegiate S., Reading
 Jones, A.A. e.a.al. High S., Swindon
 Lewis, D.S. e.a.d. Kingsholme S., Weston-s.-Mare
 Oddie, H.A. s.e.f. Kibworth Gram. S.
 Roberts, L.D. e.f.g.e. Wellington Coll., Salop
 Wallace, W. e.a.al.f. Argyle H., Sunderland
 Iliffe, D. s.e. Kibworth Gram. S.
 Jolly, A. a. Loughton School
 Mitchell, D. a. Brunswick H., Maidstone
 Mitchell, B.E. G. e. Brunswick H., Maidstone
 Wilson, J.M. e. Penketh S., nr. Warrington
 Gaudin, R.B. e.a.f. Jersey Modern S., St. Heliers
 Henderson, D. f. Westbourne Rd. Prep. S., Sheffield
 Limpus, F.M. d. Orchard Gardens S., Teignmouth
 Phillips, R.P. e.a. St. Winifred's S., Torquay
 Chivers, H.F. a. Gram. S., Devizes
 Denny, G.H. e.f.d. King Edward VI. Middle S., Norwich
 Goodman, S. s.e.a. Great Ealing S.
 Hogarth, E.H. e.a. New Benwell Council S., Benwell-on-Tyne
 Keen, C.M. s.e.a. Hatfield H., St. Leonards-on-Sea
 Saphin, A.B. e.a. Steyne S., Worthing
 Smerdon, A.W. a.f. High S., Torquay
 Smith, G.T. a. Gram. S., Ongar
 Spencer, H. a. Oakes Inst., Walton
 Cox, J.S. s.e.h.a. Collegiate S., Reading
 Davis, E. e.a. Tivoli H., Gravesend
 Mole, V. a. d. Wellington Coll., Salop
 Taplin, W.G. e.a.f.d. Finsbury Park Coll., N.
 Wright, T. e.h.d. New Benwell Council S., Benwell-on-Tyne
 Alderson, C.L. a. New Benwell Council S., Benwell-on-Tyne
 Applegate, B.F. a. Portway High S., Bath
 Baker, E.C. e.a.f. Wykeham H., Worthing
 Carpenter, H. a. St. John's Coll., Green Lanes, N.
 Hayward, P.G. e.a.f. Boys' High S., Wareham
 Kent, W.S. Gosberton Hall S., nr. Spalding
 MacKenny, F.L. e. Jersey Modern S., St. Heliers
 Mansfield, G. e.l. St. Catherine's Coll., Richmond
 Thatcher, R.L. a.f.d. Winchester H., Redland
 Warren, S. d. Brunswick H., Maidstone
 Zeitlin, M. s.e. Tivoli H., Gravesend
 Rawsthorne, B. a. Clyde H., Hereford
 Sheppard, H.B. d. Westbury H., Southsea
 Singleton, F. a. St. Winifred's S., Torquay
 Watkins, B.N. a.f. Wellington Coll., Salop
 Whitehead, H. a. Westmorland Rd. S., Newcastle-on-Tyne
 Brown, A. h.a.d. High S. for Boys, Croydon
 Donohoe, J.D.P. a.al.d. Portland Coll., Chiswick
 Hulland, E.S. Kibworth Gram. S.
 Maynard, E.J. a.d. St. Winifred's S., Torquay
 Radford, C.W. e.a.f. Winchester H., Redland
 Brooks, A. a. Farnworth Gram. S.
 Cundall, W.L. a. Gram. S., Sale
 Johnson, E. e.a. Elmhurst S., Kingston-on-Thames
 Jones, A.E. g.d. Wellington Coll., Salop
 Kemp, R.W. a.f. Winchester H., Redland
 Palmer, H.J. e.a. Loughton School
 Perham, E. e. Clifton Coll., Harrogate
 Vinden, G. e.a. Collegiate S., Reading
 Wallace, W.H. e.a. Licensed Victuallers' S., Lambeth
 Brown, D.R. e.f. Clifton H., Uxbridge
 Cox, E.G. e. Collegiate S., Reading
 Donald, R. a.d. The College, Weston-s.-Mare
 Godwin, S.W. s. Collegiate S., Reading
 Hitchens, A.P. a. Oxford Coll., Waterloo, L'pool
 Luce, R.W. e.a. Jersey Modern S., St. Heliers
 Walton, N. e.a. Westmorland Rd. S., Newcastle-on-Tyne
 Wookey, E.E. s. The College, Clevedon
 Hare, B.C.P. f.d. Cathcart Coll., Junction Rd., N.
 Hendry, F.S. a. Deacon's S., Peterborough
 Jennings, A. e.f. Salam Coll., Watton
 Major, A.G. e.sc. Wellington Coll., Salop
 Malzard, J.C. e.a. Jersey Modern S., St. Heliers
 Woods, F.W. a.f. Camden Rd. Coll. S., N.
 Brown, S.P. e.a.f. Camden Rd. Coll. S., N.
 Elliott, R. Cliftonville Coll., Margate
 Floate, G.T. e.h.a. Steyne S., Worthing
 Hulme, E.J. a. Rose Hill High S., Bowdon
 Naish, E.P. e. Gunnersbury S., Chiswick

Neill, J.M. sc. Wellington Coll., Salop
 Oliver, K.M. h.a.sc. Wellington Coll., Salop
 Pinnix, E.E. e.d. King Edward VI. Middle S., Norwich
 Quadling, E.S. a.ch. King Edward VI. Middle S., Norwich
 Aplin, H.S. Wilsford H., Devizes
 Bottrill, F.N. Fulwood Gram. S., Preston
 Coughingam, H. a. Loughton School
 Hunt, A.J. s.e. Chaloner's S., Braunton
 Sibthorpe, R.K. s. Hatfield H., St. Leonards-on-Sea
 Wernig, M.H. e.a.f. Modern S., Woking
 Bell, S. New Benwell Council S., Benwell-on-Tyne
 Cole, P.W. a.al. Deacon's S., Peterborough
 Gilbert, R. e.a. Penketh S., nr. Warrington
 Hutson, A. e.d. Clifton H., Uxbridge
 Lake, W.J. e.d. Elmhurst S., Kingston-on-Thames
 Lloyd, P.C. e.f. Winchester H., Redland
 Rapson, N. Higher-Grade S., Margate
 Shaw, W.K. a. The College, Churwell
 Williams, F. s.e.a. Great Ealing School
 Woodman, R. d. Friends' S., Great Ayton
 Durlacher, H.W. a.f. Cliftonville Coll., Margate
 Lawrence, R.W. e. Tudor H., Denmark Hill
 Peters, H. a. Oakes Inst., Walton
 Sionville, E. Charing Cross S., St. Heliers
 Benson, T.R. e.a. Long Ashton S., nr. Bristol
 Dutton, G. a. Brunswick H., Maidstone
 Gosse, M.J. a.f. Camden Rd. Coll. S., N.
 Green, A.J. f. Argyle H., Sunderland
 Harris, L. e.a.f. Oxenford H., St. Lawrence, Jersey
 Hovell, W.G. e. King Edward VI. Middle S., Norwich
 Logie, R. a. Christ Church Hr.-Grade S., Southport
 Scoltock, P. d. Wellington Coll., Salop
 Wheeler, A. e.a. Gram. S., Scarborough

THIRD CLASS.
 Pass Division.

Hudson, T.W.C. a.m.a. Model S., Training Coll., York
 Crompton, J. Gram. S., Ashton-in-Makerfield
 Butian, H.M. h. Gram. S., Ongar
 Paget, J.H. g.e. Dirleton House, St. Albans
 Haggarty, R.G. al. Devonport High S.
 Fletcher, T.W. m. Private tuition
 Scott, D.C. Central Foundation S., Cowper St., E.C.
 Bateman, A.P. Milton House, Watford
 Gammon, A.T. Mercers' S., Holborn, E.C.
 Davies, G.R. Atherstone Grand S.
 White, A.I. ma. Atherstone Grand S.
 Ball, A. Devonport High S.
 Brothers, R.J. d. Ashford Gram. S.
 Fielding, T. Lytham Coll., Lanes
 Marsden, G.D. Crossley & Porter S., Halifax
 Sauvage, E.H. bk. St. James's Coll. S., Jersey
 The Cedars, Ealing
 Abbott, S.S. Oxford County S., Thame
 Bhuttacharji, M.C. d. Coll. S., Bridgwater
 Fletcher, H.S. Gram. S., Newton Abbot
 Holman, F. Crossley & Porter S., Halifax
 Harnor, F.H. Harlow College
 Marshall, H. f. Harlow College
 Donaldson, L. l. St. Paul's H., St. Leonards-on-Sea
 Bundy, P.C. Blue Coat S., Reading
 Elliott, P.F. ma. The Modern S., Southport
 Hammond, C.H. Christ Church Hr.-Grade S., Southport
 Petter, R.S. Highfield S., Chertsey
 Dodson, F. Classical & Comm. S., Preston
 Allin, G.T. High S. for Boys, Jersey
 Jones, F.J. Kendrick Boys' S., Reading
 Perkins, S.K. d. Kendrick Boys' S., Reading
 Lightfoot, H.B. Elmfield Coll., York
 Darbey, H. bk. Gram. S., Newton Abbot
 Hall, A. Friends' S., Wigton
 Vincent, H. f. St. Boniface's Coll., Plymouth
 Fredman, A. King Edward VI. Middle S., Norwich
 Pirrie, W.C. Modern S., Gravesend
 Richards, A. Winchester H., Redland
 Hewitt, H.H. Oakes Inst., Walton
 Ryland, H.H. Kibworth Gram. S.
 Sankey, R.A. Gram. S., Blackpool
 Murs, G.H. ch. Tottenhall Coll., nr. Wolverhampton
 Norton, W.J. Larrah, New Malden
 Rutherford, P.V.B. The College, Churwell
 Stansbury, B.N. Gram. S., Shoreham
 Haigh, S. Crossley & Porter S., Halifax
 Horner, F.R. Gram. S., Newton Abbot
 Hutchings, S.W. Christ's Coll., Blackheath
 Barclay, V.L. bk. Holloway College, N.
 Black, H.F. Devonport High S.
 Kent, W.B. d. Clifford S., Beckington
 James, R. Gram. S., Newton Abbot
 Knight, W. St. Boniface's Coll., Plymouth

BOYS, 3RD CLASS, PASS—Continued.
 2Grainger, F. Friends' S., Wigton
 2Martin, E.J. Gram. S., East Finchley
 2Maynard, C.G. Elmfield Coll., York
 2Oglesby, F. Middle Class S., Sheffield
 2Payne, L. Gram. S., Blackpool
 2Pilliner, L.G.H. Gram. S., Ealing
 2Staniland, P. Deacon's S., Peterborough
 2Chackfield, A.A. Ashford Gram. S.
 2Davidson, J.G. Lancaster Coll., West Norwood
 2Falkner, P. Harlow College
 2Harrison, W. Eton House, Hull
 2Mabbott, E.T. Comm. S., Penzance
 2Armstrong, E. Farnworth Gram. S.
 2Crook, F.A. King Edward VI. Gram. S., Southampton
 2Gee, T. Farnworth Gram. S.
 2Holbourn, G.H. Barton S., Wisbech
 2Pinch, L.J. Loughton School
 2Power, W. The Academy, Crewe
 2Sayer, H.E. Beverley S., Barnes
 2Atkinson, A. Gram. S., Devizes
 2Blampied, T. Oxenford H., St. Lawrence, Jersey
 2Davis, H. Newcastle Modern S.
 2Gray, N. St. Martin's Gram. S., Scarborough
 2Honywill, S.J. Bradley High S., Newton Abbot
 2Ingram, C.E. Vermont Coll., Clapton, N.E.
 2Kendrick, F.W. Richmond Hill S., Richmond
 2Laker, T.T. Sudbury Gram. S.
 2Tucker, S.C. Sandwich School
 2Black, R.S. Middle Class S., Sheffield
 2Brown, N.A. High S. for Boys, Croydon
 2Farr, J. a. d. York Manor S., York
 2Hobbs, A.K. Steyne S., Worthing
 2Jolliffe, H.H. Catholic Gram. S., St. Helens
 2Smith, R.J. Thornton Gram. S., Bradford
 2Bodin, H.D. a. Argyle H., Sunderland
 2Bolton, R.W. a. Kibworth Gram. S.
 2Brewster, T. New Benwell Council S., Benwell-on-Tyne
 2Du Val, J.G. f. Oxenford H., St. Lawrence, Jersey
 2Gugenheim, F. ge. Oxford H., Junction Rd., N.
 2Heppell, S.B. Fulwood Gram. S., Preston
 2Highton, R.D. f. DeGresley Lodge, Southsea
 2John, C.T. R. a. sc. Wellington Coll., Salop
 2Jones, F.R. a. Christ Church Hr.-Grade S., Southport
 2Knott, A. a. Westmorland Rd. S., Newcastle-on-Tyne
 2Lambourn, C. s. e. a. Kendrick Boys' S., Reading
 2Lyon, J.S. Tivoli H., Gravesend
 2Marston, P. a. d. Crossley & Porter S., Halifax
 2Mosseri, L.N. it. Great Ealing School
 2Polge, H. High S. for Boys, Croydon
 2Riley, A.J. Boys' Coll. S., Aldershot
 2Smith, J. de C. h. Duncan H., Gt. Yarmouth
 2Smith, J.G. Crossley & Porter S., Halifax
 2Vernon, F. a. Oakes Inst., Walton
 2Woodward, L.C. a. d. Gram. S., Chichester
 2Wootton, R. e. Higher-Grade S., Margate
 2Ballard, S.G. Brunswick H., Maidstone
 2Evers, H. a. Saham Coll., Watton
 2Hart, L.P.L. a. Private tuition
 2Holden, R.K. The Coll., Tankerton-on-Sea
 2Ingram, R.S. e. Wilsford H., Devizes
 2Jacobs, A.H. Tivoli H., Gravesend
 2Jameson, S. a. Argyle H., Sunderland
 2Lancaster, A.H. Wilsford H., Devizes
 2Masters, C.S. a. Johnstone Terrace S., Devonport
 2Philp, R. d. Woolston Coll., Southampton
 2Salmon, M.W. a. Collegiate S., Reading
 2Shackell, R.W. a. Grosvenor S., Bath
 2Stockley, F.S. a. High S. for Boys, Croydon
 2Tovell, A.W. St. Martin's Gram. S., Scarborough
 2Whyte, C.C. s. f. Harlow College
 2Wood, W.J. e. a. The College, Herne Bay
 2Bedford, K.S. The College, Scarborough
 2Boys, W. Grammar S., Walsall
 2Brown, J.R.L. New Benwell Council S., Benwell-on-T.
 2Clarke, J.H.P. a. Camden Rd. Coll. S., N.
 2Cleall, M. e. f. Boys' High S., Wareham
 2Crouch, C.S. St. John's Coll., Green Lanes, N.
 2Grimes, S.E. Collegiate S., Reading
 2Hawkrigde, B. Crossley & Porter S., Halifax
 2Hill, A. a. Ramsey Gram. S., Hunts
 2Holborn, C.L. St. Leonards Coll. S.
 2Johnson, S.S. a. Northern Polytechnic Day S., N.
 2Joyner, C.F. The College, Clevedon
 2Pickard, A.H. Central Foundation S., Cowper St., E.C.
 2Potts, D.J. s. Ramsey Gram. S., Hunts
 2Racey, B.R. a. Wykeham H., Worthing
 2Shuttleworth, R.C. Christ Church Hr.-Grade S., Southport
 2Tinnion, T. e. a. Edgbaston Acad., Birmingham
 2Vian, R. Crossley & Porter S., Halifax

Waldegrave, A.H. Modern S., Gravesend
 Wallis, J.S. Tivoli H., Gravesend
 Young, R.A. a. Finsbury Park College, N.
 2Allcorn, W.J. a. Brunswick H., Maidstone
 2Ames, S.S. Belle Vue H., Norwich
 2Cantor, J.S. St. John's Coll., Green Lanes, N.
 2Cavey, A.M. h. Jersey Modern S., St. Heliers
 2Charman, E.H. e. a. Kendrick Boys' S., Reading.
 2Colman, R.C. The Cedars, Ealing
 2Crabtree, S. St. Winifred's S., Torquay
 2Eady, S.H. Jersey Modern S., St. Heliers
 2Foster, J.W. Crossley & Porter S., Halifax
 2Grimes, S.N. e. Clapham Coll. S., S.W.
 2Hotson, W.A. Mereers' S., Holborn, E.C.
 2Irwin, W. Friends' S., Wigton
 2Johnson, M.K. Devonport High S.
 2Lewis, E. Friends' S., Great Ayton
 2Martin, H.L. Brunswick H., Maidstone
 2Moore, A. Eversley S., Stamford
 2Pitt, S. Clyde H., Hereford
 2Roper, L.W. e. a. Bickerton H., Birkdale
 2Vaughan, R.C. Charleote S., Worthing
 2Wanstall, E.C. e. Cliftonville Coll., Margate
 2Ward, T.S. a. d. Oakes Inst., Walton
 2Weaver, E.A. Handsworth Gram. S.
 2Whitaker, A. The College, Churwell
 2Whitehead, H.H. ch. Holborn Estate Gram. S., W.C.
 2Bertram, W.J. f. Les Marais High S., La Rocque, Jersey
 2Boyd, E.A. Bracondale S., Norwich
 2Brittan, S.V. St. Leonards Coll. S.
 2Bunn, E.A. King Edward VI. Middle S., Norwich
 2Calvert, J.P. Commercial S., Horsforth
 2Cook, G.D. e. Portway High S., Bath
 2Crabb, E.F. e. a. d. Up. Hornsey Rise High S., N.
 2Cruteh, W.J. a. St. Winifred's S., Torquay
 2Easton, F.J. St. John's Coll., Brixton
 2Forder, L. a. Brunswick H., Maidstone
 2Goodman, R.J. Kendrick Boys' S., Reading
 2Henderson, L.C. New Benwell Council S., Benwell-on-T.
 2Houghton, F. Grosvenor S., Bath
 2Howard, G.F. Duncan H., Gt. Yarmouth
 2Lovell, A. Licensed Victuallers' S., Lambeth
 2Palmer, E. e. Ramsey Gram. S., Hunts
 2Postlethwaite, J. Oakes Inst., Walton
 2Roberts, J.C. Cliftonville Coll., Margate
 2Saunders, G.F. e. a. Coleford Gram. S.
 2Stone, L.M. Clapham Coll. S., S.W.
 2Teece, L.F. Modern S., Gravesend
 2Watkinson, H. Farnworth Gram. S.
 2Allen, W.E. a. d. Wellington Coll., Salop
 2Atkinson, H. d. Gram. S., Devizes
 2Ball, R. e. The College, Weston-s.-Mare
 2Butcher, J.W. Wilsford H., Devizes
 2Cowles, A. Deal College
 2Eke, W.R. Old Elvet S., Durham
 2Frost, F.J. The College, Weston-s.-Mare
 2Fulljames, S. a. Brunswick H., Maidstone
 2Grant, H. a. d. St. Winifred's S., Torquay
 2Hall, R.S. Highbury Park School, N.
 2Hislop, P.R. Wilson Coll., Stoke Newington
 2Hosgood, W.J. e. Chandos Gram. S., Winchcombe
 2Hoyle, R. Laneaster Coll., Morecambe
 2Jackson, M.K. High S. for Boys, Croydon
 2King, A. a. Crossley & Porter S., Halifax
 2Mellard, J.B. Wellington Coll., Salop
 2Morris, A.F. W. High S. for Boys, Croydon
 2Murgatroyd, S. Crossley & Porter S., Halifax
 2Oldham, E. a. Wellington Coll., Salop
 2Palmer, A.A. d. Loughton School
 2Pickup, V. St. Martin's Gram. S., Scarborough
 2Roberts, J.L. Cliftonville Coll., Margate
 2Robinson, S.H. Private tuition
 2Rose, S. s. Higher-Grade S., Margate
 2Seabrook, C.A. a. Central Foundation S., Cowper St., E.C.
 2Wheeler, C.E. a. Kendrick Boys' S., Reading
 2Wilkins, F.H. Norfolk Coll., Southsea
 2Woodhams, F. Steyne S., Worthing
 2Atkinson, J.C. Kendrick Boys' S., Reading
 2Bateman, L. Farnworth Gram. S.
 2Batho, T. Wellington Coll., Salop
 2Bevan, H. h. a. Coleford Gram. S.
 2Bush, W.O. d. King Ed. VI. Middle S., Norwich
 2Cave, A.H. Klugsholme S., Weston-s.-Mare
 2Cotton, C.J. Antrobus H., Congleton
 2Davies, E. Oakes Inst., Walton
 2Giblett, W.T. Loughton School
 2Harris, S. h. Jersey Modern S., St. Heliers
 2Holloway, M. s. a. Gram. S., Welshpool
 2Kewley, R.C. e. Oakes Inst., Walton
 2Maxwell, C.W.G. Coll. S., Reading
 2Parvin, L.R. Milton Coll., Bexley Heath
 2Schorr, M. Tivoli H., Gravesend
 2Shaw, C.G. d. Boys' High S., Wareham
 2Shepherd, C. King Ed. VI. Middle S., Norwich
 2Skudder, G.A.R. Tivoli H., Gravesend
 2Speck, A.H. d. Elmfield College, York
 2Stanton, H.O. a. Modern S., Woking

2Taylor, C.C. Portland Coll., Chiswick
 2Vick, L.F. Grammar S., Chichester
 2Allison, C.M. Wellington Coll., Salop
 2Bartlett, A.F. e. Colebrook H., Bognor
 2Brankstone, T. Westmorland Rd. S., Newcastle-on-Tyne
 2Clark, H.S. a. Alton H., Blackheath, S.E.
 2Cox, H. Harlow College
 2Curtis, W.G. High S., Brentwood
 2Docking, C.W. a. High S. for Boys, Croydon
 2Godfrey, B.D. St. John's Coll., Green Lanes, N.
 2Goodwin, A.S. Collegiate S., Reading
 2Holliday, H. Bailey S., Durham
 2Howard, H. Up. Hornsey Rise High S., N.
 2Hutchinson, L.R. e. Cliftonville Coll., Margate
 2Le Gresley, R.J. High S. for Boys, Jersey
 2Liddle, R.A. d. Loughton School
 2McLauchlan, M.S. King Edward VI. Gram. S., Southampton
 2Start, E.C. a. Deacon's S., Peterborough
 2Tanner, G.F. High S., Brentwood
 2Taylor, H.L. e. a. Barton S., Wisbech
 2Tytherleigh, W.J. Wilsford H., Devizes
 2Wareup, W. e. a. Bourne Coll., Quinton
 2Webb, A.W. Kendrick Boys' S., Reading
 2Whiteside, D. Birkdale Gram. S., Southport
 2Arnold, H.J. a. High S., Brentwood
 2Balding, C. Harlesden College, N.W.
 2Bray, T. Eversley S., Stamford
 2Bride, E.C. a. Gram. S., Chichester
 2Bryant, J.H. a. Brunswick H., Maidstone
 2Burkitt, S.M. d. Argyle H., Sunderland
 2Chapman, W.B. Winchester H., Redland
 2Crosskill, A.R. King Edward VI. Middle S., Norwich
 2Edwards, E. f. Friends' S., Great Ayton
 2Gibson, O.L. Long Ashton S., nr. Bristol
 2Girling, A.R. Private tuition
 2Haswell, S.V. Newcastle Modern S.
 2Hobson, A.P. d. Northampton H., Cheltenham
 2Ingersoll, C.T. d. Gram. S., Ealing
 2Irons, M.C. Crossley & Porter S., Halifax
 2Jeantet, G.E. Bourne Coll., Quinton
 2Jones, A.W. Wadham S., Liskeard
 2Jones, W.H. Oakes Inst., Walton
 2Lacey, A.T. Bracondale S., Norwich
 2Laey, R.F. Loughton School
 2Mackenzie, A.M. Up. Hornsey Rise High S., N.
 2Mason, N. d. Wellington Coll., Salop
 2Millige, L.H. e. a. f. Winchester H., Redland
 2Peck, F. Middle Class S., Sheffield
 2Rix, L.J. Gram. S., Shoreham
 2Roberts, W.E. Snaresbrook College
 2Romeril, S.M. s. a. f. Harleston H., St. Lawrence, Jersey
 2Stephen, W. Croad's S., Lynn
 2Tibbotts, G.M. a. Portway High S., Bath
 2Warner, F.M. Duncan H., Gt. Yarmouth
 2Wood, T. Grosvenor Coll., Carlisle
 2Bell, T.H. Lancaster Coll., West Norwood
 2Convers, G.F. Clifton Coll., Harrogate
 2Cortazzi, R.A. High S. for Boys, Croydon
 2Dowse, T.W. High S., Thorpe, Norwich
 2Evans, G.H. a. Cathcart Coll., Junction Rd., N.
 2George, P.A. Saham Coll., Watton
 2Groom, R.W. Barton S., Wisbech
 2Jacobs, D. Tivoli H., Gravesend
 2Lewin, A.G. Kibworth Gram. S.
 2Macleod, R. f. l. Colchester H., Clifton
 2Molloy, A. a. Christ Church Hr.-Grade S., Southport
 2Newton, S.N. Ramsey Gram. S., Hunts
 2Parsons, C. s. a. Harlow College
 2Raimbach, D.W. Harlesden College, N.W.
 2Richardson, C.F. J. a. Brunswick H., Maidstone
 2Scholey, P.G. High S. for Boys, Croydon
 2Sunner, J.L. Gram. S., Chorley
 2Thatcher, W.I. Castle Hill S., Ealing
 2Thomas, F.M. a. Commercial Coll., Acton
 2Thompson, H. a. d. Westmorland Rd. S., Newcastle-on-Tyne
 2Vose, J. Catholic Gram. S., St. Helens
 2Azenstein, S. e. Tivoli H., Gravesend
 2Beeby, H.J. Up. Hornsey Rise High S., N.
 2Benham, R.G. d. Chandos Gram. S., Winchcombe
 2Brill, S.W. Gram. S., Wallington
 2Brinson, H.N. e. Ashford House, Birkenhead
 2Carlile, H.C. S. Polytechnic Secondary S., Regent St., W.
 2Chattin, A.E. f. High S. for Boys, Croydon
 2Cullimore, R.T. Gram. S., Ongar
 2Dyke, H. Heston H., Hounslow
 2Embery, D.G. St. Peter's Eaton Sq. Choir S., W.
 2Evans, B. d. Vicar's Choir S., Hull
 2Figgs, H.J. Kendrick Boys' S., Reading
 2Highton, J.H. a. Commercial Coll., Southport
 2Hill, E.F. Antrobus H., Congleton
 2Hobson, J.S. The Palace S., Bewdley
 2Holroyd, H. a. d. Catholic Coll. S., Lytham
 2Jernyn, W.G. King Edward VI. Middle S., Norwich
 2Lowe, G. Kilgrimol S., St. Anne's-on-Sea

2Maher, J. New Benwell Council S., Benwell-on-T.
 2McNish, M. Eagle H., St. Leonards-on-Sea
 2Pain, H. a. Deal College
 2Parry, R.N. Crossley & Porter S., Halifax
 2Prowse, M. s. e. Higher-Grade S., Margate
 2Robin, C.E. Oakes Inst., Walton
 2Stone, T.H. d. Taunton School
 2Turner, J. a. Christ Church Hr.-Grade S., Southport
 2Williams, E.S. Portland Coll., Chiswick
 2Woods, H.E. Gram. S., Ealing
 2Wright, H.C. d. Ivel Bury S., Biggleswade
 2Yull, G.A. High School, Brentwood
 2Barton, K.W. a. Barton S., Wisbech
 2Boret, O. a. Deal College
 2Bridgman, H.C. Gram. S., Newton Abbot
 2Clarke, T.P. f. Camden Rd. Coll. S., N.
 2Dana, W.H. e. a. Cathcart Coll., Junction Rd., N.
 2Edwards, R.H. e. a. Modern S., Gravesend
 2Haighton, F. e. Kilgrimol S., St. Anne's-on-Sea
 2Hall, S.B. e. a. d. Private tuition
 2Hews, R. York H., Reading
 2Jones, J.C. a. Oakes Inst., Walton
 2Keen, A.E. a. Castle Hill S., Ealing
 2Lawrence, W.H. The Palace S., Bewdley
 2Little, H.L. Boys' High S., Erdington
 2Lonsdale, C. Grosvenor Coll., Carlisle
 2Manning, F.O. Christ Church Hr.-Grade S., Southport
 2Thompson, R.G. a. d. High S., South Shore, Blackpool
 2Trevors, L. Deal College
 2Tucker, L. Jersey Modern S., St. Heliers
 2Widdowson, E.W. e. a. Public Coll., Torquay
 2Aked, T.W. Crossley & Porter S., Halifax
 2Archdale, J. Cliftonville Coll., Margate
 2Armstrong, C.H. St. John's Coll., Green Lanes, N.
 2Bailey, H. a. d. Brighton H., Oldham
 2Board, H.W. a. Coll. S., Lapford
 2Campbell, S.G. Barton S., Wisbech
 2Collier, T.G. Highfield S., Chertsey
 2Connah, W.N. Comm. S., Uxbridge
 2De Norman, A.N. W. Taunton H., Brighton
 2Gould, R.M. Caversham H., Caversham
 2Graves, J.H. Finsbury Park College, N.
 2Heygate, L.W. a. l. Highbury Park School, N.
 2Hollings, H. Comm. Coll., York
 2Howson, J.F. King Ed. VI. Middle S., Norwich
 2Huclih, H.F. f. Harleston H., St. Lawrence, Jersey
 2Jameson, C.V. Modern S., Gravesend
 2Johnson, S. Comm. Coll., York
 2Lewis, H. Great Ealing School
 2McClymont, C.G. High S., Brentwood
 2Price, C.L. Wadham S., Liskeard
 2Soward, R.L. Sutton Park School
 2Tiffen, T.W. Grosvenor Coll., Carlisle
 2Turnham, T.S. Licensed Victuallers' S., Lambeth
 2Warne, R.F. Littleton H., Knowle, Bristol
 2Willis, H.A. d. Gram. S., Chichester
 2Beard, W.A. Up. Hornsey Rise High S., N.
 2Boucher, P.W. Brunswick H., Maidstone
 2Cheetham, G.T. a. Victoria Park S., Manchester
 2Craze, W.C.T. Gram. S., Hayle
 2Fielder, G. Stranraer S., Fareham
 2Frampton, W.J. a. Gram. S., Worthing
 2Gill, P. Wadham S., Liskeard
 2Griffiths, C.H.H. Gram. S., Shoreham
 2Jones, P.G. Elmfield Coll., York
 2Mercer, W.S. Norman Court, New Barnet
 2Oglesby, P. Englefield H., Highbury
 2Overett, T.H. Pierremont Coll., Broadstairs
 2Phillips, E.R. Gram. S., Ongar
 2Pitts, A.C. e. King Ed. VI. Middle S., Norwich
 2Stuttard, F. ch. Penketh S., nr. Warrington
 2Wiseman, R.C. a. The Coll., Gt. Yarmouth
 2Allen, E.R. e. St. Aubyn's, Woodford Green
 2Amos, J.A. Commercial S., Stretford
 2Barnsley, F.H. Edgbaston Acad., Birmingham
 2Bishop, A.W. The College, Weston-s.-Mare
 2Bond, A.P. Norfolk Coll., Southsea
 2Boyce, C.L. Littleton H., Knowle, Bristol
 2Bulleid, R.F. Public Coll., Torquay
 2Burlace, L.B. f. The Cedars, Ealing
 2Colliver, C.G. Comm. S., Penzance
 2Cooper, H. Deal College
 2George, S. Taunton School
 2Graves, R.P. Finsbury Park College, N.
 2Hagith, G.A. d. King Ed. VI. Middle S., Norwich
 2Hibberd, F. Clifford S., Beckington
 2Higgins, L.B. St. John's Coll., Brixton
 2Holloway, A.G. Christ's Coll., Blackheath
 2Jackson, H. d. Elmfield College, York
 2Leak, E.F. The College, Gt. Yarmouth
 2Lewis, A.W. Gram. S., Wallington
 2Loads, G.W. King Ed. VI. Middle S., Norwich
 2Munn, A. s. Higher-Grade S., Margate
 2Panchaud, L.A. Southdown Coll., Eastbourne
 2Parsons, G.B. Kendrick Boys' S., Reading

BOYS, 3RD CLASS, PASS—Continued. Payze, R.R. a.d. Richmond Hill S., Richmond

Aspinall, G. Crossley & Porter S., Halifax Brass, E.S. Tudor H., Denmark Hill

Arthur, W.H.D. Wellington Coll., Salop 2Bailey, L.G. Bourne Coll., Quinton

Cockrill, A.C. e. Duncan H., Gt. Yarmouth Cook, H. s. Higher-Grade S., Margate

2Adams, E.C.W. Handel Coll., Southampton 2Allen, H.S. Barton S., Wisbech

Wilson, A.E. New Benwell Council S., Benwell-on-Tyne Woodruff, C.J. a. Cliftonville Coll., Margate

Archdale, F. Cliftonville Coll., Margate Aubrey, R.F. Ivel Bury S., Biggleswade

Church, J.V. Loughton School Dally, A. Devonport High S.

Black, S. Devonport High S. Block, A. Tivoli H., Gravesend

Martin, T.M. Wellington Coll., Salop Middleton, B.H. e. Public Coll., Torquay

Taylor, F. Lancaster Coll., Morecambe 2Watkins, R.J. The College, Weston-s.-Mare

Anderson, R. The College, Weston-s.-Mare 2Ayre, H.O. Gram. S., Blackpool

Bevan, M. Hasland H., Penarth Brown, S. Elmfield Coll., York

Barraclough, H. Kilgrimol S., St. Anne's-on-Sea Bevan, M. Hasland H., Penarth

Stroud, P. Higher-Grade S., Margate Timmis, C.H. a. Wellington Coll., Salop

Addison, L. Preston Gram. S., Cleveland Billot, J.R. f. Jersey Modern S., St. Heliers

Black, J. Newcastle Modern S. Bonnerjee, K.K. High S. for Boys, Croydon

Black, J. Newcastle Modern S. Bonnerjee, K.K. High S. for Boys, Croydon

Addis, H.S. Emwell S., Warminster Baker, A.G. e. a. High S., Brentwood

BOYS, 3RD CLASS, PASS—Continued.
 Bainsmith, B.F. Gram. S., St. Ives
 Batsford, J.F. St. John's Coll., Green Lanes, N.
 Bishop, J.E. Taunton School
 Bloomer, H.S. Commercial S., Stretford
 Callow, G.E.C. The Cedars, Ealing
 Campling, D.W. Philological S., Southsea
 Chown, H. Kendrick Boys' S., Reading
 Dann, A. Elmfield Collège, York
 Edrich, E.S. a. King Ed. VI. Middle S., Norwich
 Fraser, A.G. e. Christ Church Hr.-Grade S., Southport
 Gardner, A. Catholic Gram. S., St. Helens
 Gentle, F.W. Taunton H., Brighton
 Goodall, G.F. Collegiate S., Reading
 Grant, S.T. High S. for Boys, Croydon
 Ham, J.B. Montrose House, Plymouth
 Harris, A.W. Emwell S., Warminster
 Hibbard, J. Winchester H., Redland
 Mason, E.P. d. Chandos Gram. S., Winchcombe
 Morgan, A.G. Public Coll., Torquay
 Morton, C.L. Tudor House, Denmark Hill
 Pontifex, L. f. Harlow College
 Slade, E. f. Jersey Modern S., St. Heliers
 Smith, A.V.W. d. Chandos Gram. S., Winchcombe
 Squire, S. a. High S., Barnsley
 Barker, F.N. Manor H., Clapham
 Bairsto, A. Oakes Inst., Walton
 Berry, W.E. Farnworth Gram. S.
 Byford, C. Sudbury Gram. S.
 Catford, J.A. d. Gram. S., Wallington
 Chambers, R. Modern S., Gravesend
 Clayton, M.C. f. Barton S., Wisbech
 Cooper, H.E.W. The Cedars, Ealing
 Crook, W.J. Gram. S., Chorley
 Dodd, H. d. Wellington Coll., Salop
 Dow, W.H. Friends' S., Wigton
 Farnell, F.W. Birkdale Gram. S., Southport
 Greenhill, S.T. Taunton School
 Hardcastle, N.D. Taunton H., Brighton
 Harris, P. Oxenford H., St. Lawrence, Jersey
 Hassan, R.E. Maida Vale School, W.
 Holmes, V.R. s. a. Victoria Park S., Manchester
 Lee, D.F. King Ed. VI. Middle S., Norwich
 Linell, E.A. West Cliff S., Preston
 McNeill, H. Jersey Modern S., St. Heliers
 Newhill, W.F. Lytham Coll., Lancs
 Ramsden, R.W. St. John's Coll., Frome
 Ripley, J.V. Western Coll., Harrogate
 Roberts, E. Hove High School
 Roberts, S.C.H. Pierremont Coll., Broadstairs
 Sack, M. Townley Castle S., Ramsgate
 Savins, W.G. Ripley Commercial S.
 Schuitema, D.B.A. The Cedars, Ealing
 Shaekell, A. a. Jersey Modern S., St. Heliers
 Shillitoe, J.S. Anerley College
 Watkins, A.H. Lytham Coll., Lancs
 Wood, A.C. Crompton S., Southend-on-Sea
 St. Peter's Eaton Sq. Choir S., W.
 Ballard, L.A. a. Anerley College
 Bird, C.D. Modern S., Gravesend
 Bowering, J.D. Wilsford H., Devizes
 Carpenter, H.T. Steyne S., Worthing
 Clarke, C.G. Catholic Gram. S., St. Helens
 Claypole, P.J. Deacon's S., Peterborough
 Critchett, H.E. s. Sandwich School
 Dent, A.E. York Manor S., York
 Doubleday, J.E. Taunton School
 Fudge, E. Boys' Coll. & High S., Southampton
 Garne, T. Etonhurst Prep. S., Weston-s.-Mare
 Hammond, A.F. High S. for Boys, Croydon
 Hansell, R.E. Osborne High S., West Hartlepool
 Herbert, H. a. Hall Gate S., Doncaster
 Jenkins, B.J. Crompton S., Southend-on-Sea
 Lueking, R. Springfield Coll., Acton
 Padwick, H.D.H. Gram. S., Taplow
 Perry, A.O. Modern S., Woking
 Shaw, C. Kilgrimol S., St. Anne's-on-Sea
 Slack, W.R. a. Bailey S., Durham
 Slatter, E.C.M. Haringey Park S., Crouch End
 Smith, T. Boys' Coll. & High S., Southampton
 Van de Water, N.H.S. St. John's Coll., Brixton
 Waterland, W.J.H. Ellesmere S., Harrogate
 White, R.D. Lancaster Coll., West Norwood
 Wills, H. Public Coll., Torquay
 Wood, H.T. High S., Alsager
 Wooldridge, F.G. Modern S., Woking
 Allison, E. Higher-Grade S., Selby
 Ashford, D.E. Ripley Commercial S.
 Birkhead, R. Higher-Grade S., Selby
 Bonar, J.D. Lytham Coll., Lancs
 Boxall, P.A. Anerley College
 Brown, C.B. Mt. Hermon S., Woking
 Carson, L.H. a. Autrobus H., Congleton
 Danbney, F. York H., Reading
 Dennis, G. King Ed. VI. Middle S., Norwich
 Dunn, C.P. Boys' High S., Warcham

Elliott, L.B. Gram. S., Belper
 Ferrier, H. McD. d. Taunton School
 Flook, G. a. Sandwich School
 Gibbs, H.S. a. King Ed. VI. Middle S., Norwich
 Grundy, L.J. Clyde H., Hereford
 Hazard, W.N. Eversley S., Southwold
 Henden, T. Milton Coll., Bexley Heath
 Hobson, C.O. Ellesmere S., Harrogate
 Mytton, J. a. Gram. S., East Finchley
 Paine, C.H. Gram. S., Shoreham
 Palmer, D.A. King Ed. VI. Middle S., Norwich
 Rosenbaum, M. Townley Castle S., Ramsgate
 Sanger, W. Heston H., Hounslow
 Smellie, A. Manor H., Clapham
 Snowden, H.E. Modern S., Gravesend
 Suggett, A. Croad's S., Lynn
 Thomas, E.H. Comm. S., Penzance
 Wilson, H.P. Commercial Coll., York
 Adams, H.A. Commercial Coll., Acton
 Barrett, R.E. Kilgrimol S., St. Anne's-on-Sea
 Beach, F. e. Chandos Gram. S., Winchcombe
 Blaxall, M.L. Haringey Pk.S., Crouch End
 Bradbury, D.P. Colebrook H., Bognor
 Chandos, H.L. Commercial Coll., Hounslow
 Cheeld, W.H. Warwick H., Southsea
 Constable, F.A. King Ed. VI. Middle S., Norwich
 Dale, H. Handel Coll., Southampton
 De Lisle, D. Harlow College
 Dent, G.R. d. Ellesmere S., Harrogate
 Duckett, H. a. St. Bede's Coll., Hornsea
 Ellis, J. Kilgrimol S., St. Anne's-on-Sea
 Fielding, J.D. Duncan H., Gt. Yarmouth
 Gomm, W. Springfield Coll., Acton
 Hague, H. Gram. S., Blackpool
 Hall, C.W. High S. for Boys, Croydon
 Hill, R.L. Ramsey Gram. S., Hunts
 Horne, S.E. King Ed. VI. Middle S., Norwich
 Houghton, H.A. Catholic Gram. S., St. Helens
 Hunter, C.C. Argyle H., Sunderland
 Jackson, F.K. Pembroke Coll., Harrogate
 Jigins, R.A. Modern S., Gravesend
 Joel, W.L. Modern S., Gravesend
 Johnson, F.B. Private tuition
 King, S.C. Haringey Park S., Crouch End
 Le Brun, J. Jersey Modern S., St. Heliers
 Morris, G.W. Gram. S., Chorley
 Mumford, B.L. High S., Brentwood
 Nias, R.J.D. High S. for Boys, Croydon
 Pittaway, A. d. Bourne Coll., Quinton
 Rands, A.J. Gram. S., Wallington
 Richards, F.R. The Palace S., Bewdley
 Roberts, H. Jersey Modern S., St. Heliers
 Tibbs, F.S. f. Camden Rd. Coll. S., N.
 Wells, D.H. e. Kendrick Boys' S., Reading
 Wills, T. Cambridge H., Bath
 Wood, J.H. Lytham Coll., Lancs
 Wright, H.L. a. Long Ashton, nr. Bristol
 Aagaard, O.A.V. Western Coll., Harrogate
 Bellamy, E.A. a. Deacon's S., Peterborough
 Blackman, W. Oakes Inst., Walton
 Bradshaw, T.B. e. d. King Ed. VI. Middle S. Norwich
 Cary, A.S. Portland Coll., Chiswick
 Chrystal, C.B. a. Taunton School
 Crookes, R.N. Boys' Coll. S., Aldershot
 Dussek, R.W. St. Peter's Eaton Sq. Choir S., W.
 Duval, A.C. Jersey Modern S., St. Heliers
 Ford, S.W. Gram. S. Ealing
 Gilbert, R.C. Collegiate S., Reading
 Graham, C. Crossley & Porter S., Halifax
 Graham, D. a. Comm. S., Horsforth
 Hall, S.O. Chandos Gram. S., Winchcombe
 Marston, A.D. Manor H., Clapham
 Maylor, H. Classical & Comm. S., Preston
 Mensah, T.K. African Training Inst., Colwyn Bay
 Mossley, H.L. Ripley Comm. S.
 Peak, C.W. Ripley Comm. S.
 Price, G.H. Elmfield Coll., York
 Priestwood, W.M.L. Jersey Modern S., St. Heliers
 Mills, H. a. Bourne Coll., Quinton
 Raby, G.H. Loughton School
 Rainbow, H.G. Collegiate S., Reading
 Stutchbury, B. a. Boys' Coll. & High S., Southampton
 Turner, E.P. The Coll., Gt. Yarmouth
 Turner, R. e. Dunheved Coll., Launceston
 Windle, T.H. Collegiate S., Reading
 Anderson, W.A. e. The College, Weston-s.-Mare
 Armiger, W.J. Elmhurst S., Kingston-on-Thames
 Bunting, A.R. King Ed. VI. Middle S., Norwich
 Burston, R. The College, Weston-s.-Mare
 Curwen, H. Kilgrimol S., St. Anne's-on-Sea
 Davies, H.E. Gram. S., Ealing
 de Lacy, S.A. Gunnersbury S., Chiswick
 De Wardt, A. Modern S., Gravesend
 Endicott, G.J. Bradley High S., Newton Abbot
 Gilding, F. Ramsey Gram. S., Hunts
 Gregson, F.L. a. Old Elvet S., Durham
 Herdman, J.S. Croad's S., Lynn

Hull, J.A. Catholic Gram. S., St. Helens
 Humphreys, L. Boys' Coll. & High S., Southampton
 Kinmont, H. Higher-Grade S., Margate
 Little, R.S. Grosvenor Coll., Carlisle
 Loxton, G. Bourne Coll., Quinton
 Lueking, F. Springfield Coll., Acton
 Lyne, R. The Academy, Crewe
 Mayor, E. Bickerton H., Birkdale
 McMillan, J.F. Holloway College, N.
 Morris, V.L. al. Oakes Inst., Walton
 Moulden, E.H. Fulwood Gram. S., Preston
 Osmond, C.F.S. Cambridge H., Bath
 Parker, S. St. Bede's Coll., Hornsea
 Pascall, G.W. Licensed Victuallers' S., Lambeth
 Payne, W. The College, Weston-s.-Mare
 Pipe, C.J. Eversley S., Southwold
 Rochester, T. New Benwell Council S., Benwell-on-Tyne
 Scott, T.H. a. New Coll., Cliftonville
 Seward, A.G. Eversley S., Southwold
 Smith, S. Green Park Coll., Bath
 Tattersall, J. Kilgrimol S., St. Anne's-on-Sea
 Thom, J.H. Grosvenor S., Bath
 Thomson, J. Duncan H., Gt. Yarmouth
 Twintoh, D.K. African Training Inst., Colwyn Bay
 Waite, H.C. Christ's Coll., Blackheath
 Angwin, R.P. Highbury Park School, N.
 Ashford, L.J. Coll. S., Bridgwater
 Banks, W.G. Gram. S., Ongar
 Boraston, J.P.S. Gram. S., Sale
 Brennan, J. Stanley H., Cliftonville
 Clark, F.H. Bourne Coll., Quinton
 Corden, R.W. a. Emwell S., Warminster
 Drayton, C. Higher-Grade S., Selby
 Easterbrook, R. The College, Clevedon
 Harris, P.F. Stanley H., Cliftonville
 Harrison, D.H. Gram. S., Blackpool
 Hoare, R.A. Camden Rd. Coll. S., N.
 Knight, R.L. Taunton H., Brighton
 Martin, F. Crompton S., Southend-on-Sea
 Matthews, C.H. Gram. S., Shoreham
 Meredith, T.B. The Palace S., Bewdley
 Morris, W.C. Farnworth Gram. S.
 Palmer, H.G.D. Clifford S., Beckington
 Richards, A.K. Warwick H., Southsea
 Smith, H. Preston Gram. S., Cleveland
 Stebbing, H. Loughton School
 Striegler, H. The Cedars, Ealing
 Underwood, D.L. Christ's Coll., Blackheath
 White, F.C. Hall Gate S., Doncaster
 Wilnot, J.H.A. Maida Vale School, W.
 Amos, T. Commercial S., Stretford
 Arridge, W.I. Old Elvet S., Durham
 Blatchford, S.G. Public Coll., Torquay
 Bonsey, H. Clifton H., Uxbridge
 Brown, T.K. Eagle H., St. Leonards-on-Sea
 Brown, W.A. a. Oakes Inst., Walton
 Burton, E.W. Bourne Coll., Quinton
 Clark, O.G. King Ed. VI. Middle S., Norwich
 Cundall, H.W. Gram. S., Ongar
 Dickie, F. Springfield Coll., Acton
 Foster, G.K. Clifton Coll., Harrogate
 Harris, H.T. Hove High S.
 Harrison, P. Vicar's Choir S., Hull
 Mackenzie, F.W. Gram. S., Shoreham
 Marriott, R.T. Lyncombe S., Titchfield
 Mitchell, T. Merton H., Cliftonville
 Mullins, L. e. The College, Weston-s.-Mare
 Odling, V.G. Schorne S., Winslow
 Pitts, C.R. Collegiate S., Reading
 Rew, J.F.G. Pierremont Coll., Broadstairs
 Sainsbury, A.P. Castle Hill S., Ealing
 Shephard, G. York Manor S., York
 Short, B.P. Kendrick Boys' S., Reading
 Soutter, J.C. Tollington Schools, N.
 Stockley, C.I. High S. for Boys, Croydon
 Taylor, R.L. Birkdale Gram. S., Southport
 Thoburn, W.N. Delaval Council S., Benwell
 Walton, A.J. Kilgrimol S., St. Anne's-on-Sea
 Webb-Fowler, E.T. Elmfield Coll., York
 Wharton, T.H. King Ed. VI. Middle S., Norwich
 Ball, C.M. Commercial S., Downham Mkt.
 Davis, T.W. High S. for Boys, Croydon
 Dunn, H. St. Bede's Coll., Hornsea
 Forden, H. York Manor S., York
 Garrard, T.K. Hatfield H., St. Leonards-on-Sea
 Gendle, S.W. Bradley High S., Newton Abbot
 Gibbs, A.F. Philological S., Southsea
 Harrison, A.V. Vicar's Choir S., Hull
 Harrison, F.R.S. Etonhurst Prep. S., Weston-s.-Mare
 Helliwell, H.C. Farnworth Gram. S.
 Knowles, C.R. New Coll., Harrogate
 Longlands, F.G. a. Grammar S., Chichester
 Miller, H.N. Etonhurst Prep. S., Weston-s.-Mare
 Moutrie, C. Boys' Coll. S., Aldershot
 Norman, J.M. Oxenford H., St. Lawrence, Jersey
 Nott, C. Marlborough Coll., Tue Brook
 Nuttall, J.A. Farnworth Gram. S.
 Pearce, E.R. Clifford S., Beckington
 Pendlebury, W.H. The Avenue, Leigh, Lancs

Sennett, N.S. Manor H., Clapham
 Stackhouse, E. Pembroke Coll., Harrogate
 Stanton, A.H.H. Belgrave Villa, Lee, S.E.
 Tolmie, O.W. Highfield S., Chertsey
 Warren, A. a. Commercial S., Downham Mkt.
 Woodcock, C.H. Bourne Coll., Quinton
 Abey, S.G. Vicar's Choir S., Hull
 Baker, H.T. High S., South Shore, Blackpool
 Beale, G.T. Comm. S., Penzance
 Boyes, R.R. Gram. S., Scarborough
 Breeden, V.G.C. Gram. S., Chorlton-cum-Hardy
 Bullock, C. Oakes Inst., Walton
 Camp, A.W. Dorchester H., Clacton-on-Sea
 Carwin, J.H. Fulwood Gram. S., Preston
 Castle, M. e. Duncan II., Gt. Yarmouth
 Davison, B.D. Bracondale S., Norwich
 Edmonds, H.W. Kendrick Boys' S., Reading
 Furniss, H. bk. Catholic Coll. S., Lytham
 Hall, W.N. Barton S., Wisbech
 Harris, A. St. John's Coll., Frome
 Herring, E.J.C. Gram. S., Wallington
 Jordan, W. Harlow College
 Lewtas, O. Gram. S., Sale
 Lister, H.I. St. Bede's Coll., Hornsea
 Powell, R. Eversley S., Stamford
 Stone, E.S. High S., Brentwood
 Thompson, J.S. Victoria Park S., Manchester
 Trouvay, M. f. King Charles I. S., Kidderminster
 Wright, P. Boys' Preparatory S., Maidstone
 Bainbridge, E. Middle Class S., Stalybridge
 Bennett, S. Higher-Grade S., Margate
 Blackie, A.S. Gram. S., Wallington
 Bloomfield, J.A. e. High S., Brentwood
 Broade, A.H.L. Private tuition
 Charter, J.R.N. Belle Vue H., Norwich
 Compton, A.S. St. John's Coll., Frome
 Craze, G.G.T. Grammar S., Hayle
 Davies, E.A. Bourne Coll., Quinton
 Elsom, H. Gosberton Hall S., nr. Spalding
 Gamble, H.N. d. King Ed. VI. Middle S., Norwich
 Gibbons, H.W. a. Lancaster Coll., West Norwood
 Gough, H.G. Gram. S., Ongar
 Gribble, P.R. Sutton Park School
 Hill, H.O. King Ed. VI. Middle S., Norwich
 Karge, F.M. a. Gram. S., Chorlton-cum-Hardy
 Payne, E.T. Modern S., Gravesend
 Rice, H. Devonport High S.
 Rippengill, S. d. Croad's S., Lynn
 Sewell, G.S. New Coll., Harrogate
 Shore, C. Preston Gram. S., Cleveland
 Simpson, T.A. Commercial Coll., Hounslow
 Stevens, H.J. Emwell S., Warminster
 Wood, R.F. The Cedars, Ealing
 Adderly, D.H. High S., South Shore, Blackpool
 Clarke, K.B. Comm. S., Penzance
 Curry, J.R. Elmfield Coll., York
 Bellars, G.E. Barton S., Wisbech
 Britain, H.T.L. The Palace S., Bewdley
 Brown, H.W. Claughton Coll. S., Birkenhead
 Cross, W.C. Boys' Coll. and High S., Southampton
 Dennis, D.H. St. Joseph's Coll. S., Totland Bay
 Flatau, H. s. Springhaven, Eastbourne
 Harris, H.G. Ripley Comm. S.
 Hawkins, L. Deal College
 Hebditch, B.S. Taunton School
 Hewson, H.H. The College, Weston-s.-Mare
 Insell, J.R. Caversham H., Caversham
 Johnson, W. Commercial Coll., York
 Le Lievre, C.G. Jersey Modern S., St. Heliers
 Levy, S. Mazenod Coll., Kilburn
 Poole, A.H. Elmhurst S., Kingston-on-Thames
 Long, H.O. Kendrick Boys' S., Reading
 Osborne, W.T. Oxford H., Bexhill
 Rake, P.T. Wadhams S., Liskard
 Reading, H.V. Licensed Victuallers' S., Lambeth
 Sharp, G. Devonport High S.
 Thompson, A. Eversley S., Stamford
 Vincent, B.R. St. James's Coll. S., Jersey
 Watkins, G. Gram. S., East Finchley
 Webber, H.P. d. Coll. S., Bridgwater
 Abram, R. a. Christ Church Hr.-Grade S., Southport
 Baily, R.G. Wellington Road S., Taunton
 Beagley, L. Modern S., Woking
 Casson, C.L. Bickerton H., Birkdale
 Cose, P.H. Bradley High S., Newton Abbot
 Dixey, S.G.W. Boys' Coll. & High S., Southampton
 Finegold, B. Townley Castle S., Ramsgate
 Gray, C.C. Lyle H., Marlow
 Hollowell, N.A. Farnworth Gram. S.
 Jenkins, Edmund Long Ashton, nr. Bristol
 Laidman, J. Handel Coll., Southampton
 McCubbin, J. Catford Coll. S., Lewisham

BOYS, 3RD CLASS, PASS—Continued.
 Oliver, R.J. Public Coll., Torquay
 Palk, H.M. Public Coll., Torquay
 Parker, H. Elmfield Coll., York
 Pears, B.S. St. Leonards Coll. S.
 Raymond, J. Sudbury Gram. S.
 Setterfield, S.L. Sandwich School
 Thomas, W.C. Farnworth Gram. S.
 Allen, F.H. High S., Swindon
 Bell, A. Oakes Inst., Walton
 Bennett, E.L. Schorne S., Winslow
 Brown, C.S. The College, Gt. Yarmouth
 Clarke, A.C.W. Bourne Coll., Quinton
 Coote, G.S. High S. for Boys, Croydon
 Dunn, S.E. Taunton School
 Ellison, H.J. Highfield S., Chertsey
 Evison, C.T. Barton S., Wisbech
 Johnson, G.W. Gosberton Hall S., nr. Spalding
 McCowat, R.H. Private tuition
 Milroy, N.A. Oakes Inst., Walton
 Peach, W. Gram. S., Belper
 Schneider, E.H.L. Gram. S., Ongar
 Selby, G.E. a. Vicar's Choir S., Hull
 Thompson, R. Newcastle Modern S.
 Willis, R.B. Christ Church Hr.-Grade S., Southport
 Brown, B. a. King Ed. VI. Middle S., Norwich
 Brown, E.G. Gram. S., Margate
 Buckley, F. Kilgrimol S., St. Anne's-on-Sea
 Clayton, J. Oakes Inst., Walton
 Drinkrow, R.W. St. Bede's Coll., Hornsea
 Ford, A.T. Portland Coll., Chiswick
 Gilmore, R. Lyncombe S., Titchfield
 Hemphill, H.H. Stanley H., Cliftonville
 Hill, W.L. Gram. S., Sale
 Howels, F.E. Leigh Hall Coll., Leigh-on-Sea
 Hutchinson, W.H. Municipal S., Scarborough
 Llewelyn, E. Harlow College
 Mainwaring, H.A. Lancaster Coll., West Norwood
 March, G. Higher-Grade S., Margate
 Newman, R.P. Taunton School

Read, W.N. Bourne Coll., Quinton
 Saul, H.M. Oxford H., Sutherland Avenue, W.
 Sharpe, F. Crossley & Porter S., Halifax
 Simpson, H. Long Ashton S., nr. Bristol
 Stedman, B.J. Handel Coll., Southampton
 Tollington, R.S. High S., South Shore, Blackpool
 Warr, S. Woolston Coll., Southampton
 Whitmore-Searle, B. High S. for Boys, Croydon
 Woolger, C.M. Manor H., Clapham
 Brodie, V.B. Oakes Inst., Walton
 Davis, L.C. Cliftonville Coll., Margate
 Howroyd, B.W. New Coll., Harrogate
 Kevern, J. Harlow College
 Lewis, C.H. Oxford Coll., Waterloo, L'pool
 Lush, J.K. Grosvenor S., Bath
 Normandale, C.L. Sudbury Gram. S.
 Pamphilon, L.F. Cliftonville Coll., Margate
 Phillips, W.A. Abbey S., Penzance
 Smyter, A.E. Sandwich School
 Vivian, H.L. Gunnersbury S., Chiswick
 von Limburg, H. St. Aubyn's, Woodford Green
 Wallace, D.H. Lancaster Coll., West Norwood
 Wilson, R.B. Mary Street H., Taunton
 Wood, L.H.E. The Cedars, Ealing
 Barleycorn, N. Bourne Coll., Quinton
 Cordery, P.T. Gram. S., Ongar
 Cox, J.H. Taunton School
 Cross, G. Ripley Commercial S.
 Dean, W.G.W. Kingswood S., Bath
 Deason, T.G. Pembroke Coll., Harrogate
 de Pokorny, L.L.M. York H., Folkestone
 Fawcett, W. Ellesmere S., Harrogate
 Greenhalgh, H.H. Kilgrimol S., St. Anne's-on-Sea
 Hinder, L.W. St. Aubyn's, Woodford Green
 Jenkins, C.M. Taunton School
 King, C.E. Kendrick Boys' S., Reading
 Labey, R.J. f. Oxenford H., St. Lawrence, Jersey

Miller, H.C. Oxford H., Croydon
 Philpot, L.C. Hatfield H., St. Leonards-on-Sea
 Scott, J.B. Maida Vale School, W.
 Shea, L. Merton H., Cliftonville
 Simpkin, F.V.G. Kibworth Gram. S.
 Stembridge, G.A. Bourne Coll., Quinton
 Whittingham, C. Devonport High S.
 Barton, S.J. The Douglas S., Cheltenham
 Bugden, J.C. Manor H., Clapham
 Cowlshaw, L. Wykeham H., Worthing
 Daniels, C.W. Belle Vue H., Norwich
 Douglas, W. Gram. S., Wallington
 Elkington, S.H. New Coll., Harrogate
 Greenland, R. Oakes Inst., Walton
 Hocking, H.F. Oakes Inst., Walton
 Hughes, B.E.H. Sandwich School
 Hyne, L.J. Oxenford H., St. Lawrence, Jersey
 Letchford, G. Sudbury Gram. S.
 Miller, D.M. Haringey Park S., Crouch End
 Neatby, W.B. Sutton Park School
 Ogden, H.H. High S., South Shore, Blackpool
 Pain, S. Deal College
 Schwarzl, E.A. High S. for Boys, Croydon
 Shaw, H. Farnworth Gram. S.
 Thornton, R.G. e. Mary Street H., Taunton
 Whettam, H.E. Oxenford H., St. Lawrence, Jersey
 Bickerstaff, R. Oakes Inst., Walton
 Braga, J.V.C. Auerley College
 Brooks, C.A. Sutton Park School
 Chester-Master, G.E. Etonhurst Prep. S., Weston-s.-Mare
 Crump, V. Public Coll., Torquay
 Dix, W.R. Gram. S., Shoreham
 Havre, D. Elmfield Coll., York
 Houghton, A. Lytham Coll., Lancs
 Inglis, H.M. Antrobus H., Congleton
 Lake, C.M. Elmhurst S., Kingston-on-Thames
 Lukey, A.J. Wintoun H., Croydon
 Martin, G.H. Gram. S., Shoreham

Meadmore, W.H. Gram. S., Ongar
 Norgate, F. Devonport High S.
 Ridgway, R.E. The Cedars, Ealing
 Smith, L.J. Loughton School
 Stocks, H. Crossley & Porter S., Halifax
 Walters, F. Hasland H., Penarth
 Warr, G. New College, Cliftonville
 Bodger, C.S. a. Deacon's S., Peterborough
 Bodger, J.R. Barton S., Wisbech
 Brown, G.P. Duncan II., Gt. Yarmouth
 Cooke, G. Gram. S., Shoreham
 Dean, S.E. Gram. S., Margate
 Fenton, N.R. Gram. S., Blackpool
 Haskins, C.H. Taunton School
 Hobbs, W.B. Ashford Gram. S.
 Hough, A.D. St. Aubyn's, Woodford Green
 Humphreys, L. Oakes Inst., Walton
 King, K.T.A. King Ed. VI. Middle S., Norwich
 Tucker, D.S. Moorland Coll., Westbourne
 Turner, J. Crossley & Porter S., Halifax
 Viggers, F. Devonport High S.
 Carter, H.B. Private tuition
 Cassell, H. Townley Castle S., Ramsgate
 Frear, H. Crossley & Porter S., Halifax
 Hardy, J. Philological S., Southsea
 Jones, A.W. Highfield S., Chertsey
 Place, T. The Academy, Crewe
 Schroter, A. Oakes Inst., Walton
 Scott, E.B. King Ed. VI. Middle S., Norwich
 Turner, F.H. Gram. S., Shoreham
 Walsh, G.P. Eversley S., Southwold
 White, H.T. Camden Rd. Coll. S., N.
 Douglas, J. Western College, Harrogate
 Halliwell, H.A. Gram. S., Scarborough
 Langman, J.A. Kendrick Boys' S., Reading
 Marks, E. Oxford H., Sutherland Avenue, W.
 Parker, W. Long Ashton S., nr. Bristol
 Robinson, H.A. Elmfield Coll., York
 Rumsey, C.T. Modern S., Gravesend
 Sharpe, J. Eversley School, Stamford
 Tucker, K. Devonport High S.

CLASS LIST — GIRLS.

(For list of abbreviations, see page 98.)

FIRST CLASS [or SENIOR].
Honours Division.
 Woodward, A. e.al.f.ge.l.gr. Private tuition
 Cooper, K.D. e. Milton Mount Coll., Gravesend
 Jacoby, E.G. s.e. Crouch End High S., Weston Pk., N.
 Graham, F.M.L. f. Private tuition
 Etches, A.B. s.e.f.mu. Ladies' Coll., Wellington, Salop
 Hobson, M. s.e.f.ge.ph. Private tuition
FIRST CLASS [or SENIOR].
Pass Division.
 Tucker, M.H. s. Milton Mount Coll., Gravesend
 Wolstenholme, H.M. Milton Mount Coll., Gravesend
 Barry, V.T. f.d. Private tuition
 Willis, E. Stainsbridge Coll., Malmesbury
 Wright, M.B. Milton Mount Coll., Gravesend
 Rees, D. Milton Mount Coll., Gravesend
 Small, D.F. Private tuition
 Saum, C. e.f. P.-T. Centre, Mt. Pleasant, L'pool
 Ridler, J.B. s. Milton Mount Coll., Gravesend
 Pierce, O. Milton Mount Coll., Gravesend
 Shepperd, A.I. Ashton H., St. Clement's, Jersey
 Vennndt, A.F. A.O. ge. Hillcroft S., Wellingborough
 Lowe, A. Ladies' Coll., Wellington, Salop
 Squire, M. ph. Red Maids' S., Bristol
 Broome, A.K. Sunfield H., Wellington, Salop
 Read, M. mu. Highfield S., Croydon
 Franklin, E. Newton H., Tunbridge Wells
 Ventress, J.A. Milton Mount Coll., Gravesend

Bunker, E. Regent St. Higher-Grade S., Plymouth
 Davies, M. Milton Mount Coll., Gravesend
 Edmonds, A.M. Ellerker Coll., Richmond
 Jones, W. Stainsbridge Coll., Malmesbury
 Costello, W.G. St. James's Ladies' S., St. Heliers
 Goodman, M.E. ph. Ripley Comm. S.
 Ahier, C.L. Ashton H., St. Clement's, Jersey
 Driscoll, N.E. f. Ashton H., St. Clement's, Jersey
 Green, G.R. Private tuition
 Pulleyn, E.D. ph. Private tuition
 Forbes, G.H. Kensington H., Chiswick
 Dimclow, M. Ladies' Coll., Wellington, Salop
 Burch, M.M. Longford Girls' S., Cotham
 Harrington, H.A. Girls' Coll. S., Aldershot
 Metcalfe, J. West End High S., Newcastle-on-Tyne
 Griffiths, C.L. Preswylfn, Cardiff
 Roberts, V.E. Harley H., Hereford
 Gay, G.A. d. Milton Mount Coll., Gravesend
 Lakin, M.E. Private tuition
 Archer, P.R. High S., St. Heliers
 Lawton, M.F. Kensington H., Chiswick
 Lock, E.A. Wright's Lane Higher-Grade S., Old Hill
 Millwood, W.M. Private tuition
 Corbyn, E.E. Oakley High S., Southsea
 Robinson, H.P. Girls' Gram. S., Levenshulme
 Cowley, M. P.-T. Centre, Mt. Pleasant, L'pool
 Byrne, M. Highwood H., Liskeard
 Joslin, M.E. Avon H., Southsea
 Abbott, E.L. Headland Park S., Plymouth
 Buisseret, M.J. St. Joseph's Coll. S., Totland Bay
 Mitchell, C.A. d. Girls' Gram. S., Farnham
 Taylor, E.L. Kendrick H., Brighton
 Halifax, B.B. Hillside, Clifton, Bristol
 Low, V.N. Alexandra Coll., Shirley
 Whitburn, C.M. Woking High S., Woking

SECOND CLASS [or JUNIOR].
Honours Division.
 Redfern, D.L. s.e.g.bk.sh. Commercial Travellers' S., Pinner
 Höfler, M.Y. f.ge. Burlington Middle S., Boyle Street, W.
 Ambrose, N.f.ge. The Limes, Buckhurst Hill
 Wilkinson, H.A. g.bk. Commercial Travellers' S., Pinner
 Harland, D.K. bk. Commercial Travellers' S., Pinner
 Norman, F.A. al.phys. Beethoven St. Hr.-Grade S., Queen's Pk., W.
 Nicolas, V. s.e.h.f. The Royal School, Bath
 Jukes, C. e.g. P.-T. Centre, Mt. Pleasant, L'pool
 Rushton, G.V. s.d. Hr.-Grade S., St. Andrew's Hall, Southport
 Johnson, D.M. d. Hr.-Grade S., St. Andrew's Hall, Southport
 Cooper, H.S. Mountside High S., Hastings
 Moore, G.E. E. s. Ladies' Coll., Wellington, Salop
 Wilton, V.F.C. bk. Commercial Travellers' S., Pinner
 Burrows, A. Ladies' Coll. Wellington, Salop
 Smithies, E. e.g. Queen Mary's High S., Walsall
 Jones, G.M. e. Private tuition
 Mackenzie, A.J.C. f. Arundel H., Scarboro'
 Gledhill, J.A. Hr.-Grade S., St. Andrew's Hall, Southport
 Green, G.e.a.f. Stoke Public Girls' Higher S.
 Kemp, E. mu. Crossbeck H., Ilkley
 Nunnerley, H.M. Hr.-Grade S., St. Andrew's Hall, Southport
 Park, C. ph. Red Maids' S., Bristol
 Tingey, M.K. Fleet Rd. Higher-Grade S., Hampstead
 Jacobs, E.S. e. Coborn S., Bow Road, E.

Haddow, H.M. Middle Class S., High Wycombe
 Irvine, J. Convent S., Birkenhead
 Martin, K.S. Bishop Fox's High S., Taunton
 Pankhurst, E.F. Beethoven St. Hr.-Grade S., Queen's Pk., W.
SECOND CLASS [or JUNIOR].
Pass Division.
 Jones, E.J. Harley H., Hereford
 Townsend, G.E. Elvaston S., West Dulwich
 Cargill, M. Polam Hall, Darlington
 Guthrie, D.A.C. d. Beethoven St. Hr.-Grade S., Queen's Pk., W.
 Kidner, W.M. Bishop Fox's High S., Taunton
 Pidduck, M. Hr.-Grade S., St. Andrew's Hall, Southport
 Alcock, R.E. f. Oakover Girls' S., Burnham
 Blood-Smyth, M.M.G. s. Hillside, Clifton, Bristol
 Hodgson, V. Holmwood Coll., Westcliff-on-Sea
 Harvey, M.R. Kelsey H., Crouch Hill, N.
 Walters, O. Stoke Public Girls' Higher S.
 Ford, E.F. d. Stainsbridge Coll., Malmesbury
 Jolliffe, E.L.F. Brean Down H., Burnham, Som.
 Lodge, M.A. Commercial Travellers' S., Pinner
 Wood, M.T. f. St. Paul's S., Wigan
 Fisher, L. s.d. Coborn S., Bow Road, E.
 Lucas, O. Collegiate S., Havant
 Brown, E.M. Southside H., Weston-s.-Mare
 Molyneux, M.A. Gram. S., Ashton-in-Makerfield

GIRLS, 2ND CLASS, PASS—Continued.

Bemrose, M.L. Ladies' Coll., Wellington, Salop
 Gilhespy, E. al. Westmorland Rd. Council S., N'castle-on-T.
 Howard, M.E. Wordsworth Coll., Shirland Gardens, W.
 1 Hampshire, E. Girls' High S., Rothwell
 1 Ciner, G.E. ph. Stapleton Hall S., Stroud Green
 1 Diggle, L.W. Gartlet, Watford
 Goody, M.E. mu. Park Coll., Northumberland Pk., N.
 1 Nichols, D. Wilber & Camden S., Biggleswade
 1 Norris, E.M. Private tuition
 Thompson, F. P.-T. Centre, Mt. Pleasant, L'pool
 Chatfield, E.M. Bourne H., Eastbourne
 Cross, F.E. e. Wellington Coll., Hastings
 1 Tanner, M. Stainsbridge Coll., Malmesbury
 McDowell, M. Red Maids' S., Bristol
 1 Ward, E.A. Welby Coll., Market Deeping
 Mackney, D.M. West Ham High S.
 Southworth, B. d. Hr.-Grade S., St. Andrew's Hall, Southport
 Wilkinson, M.B. U. Private tuition
 1 Alder, L.S. do. Cambridge H., W. Dulwich
 Ball, L. e. Roman Catholic Practising S., Liverpool
 Benson, G. Sea View Coll., St. Anne's-on-Sea
 Hawkins, M.B. Red Maids' S., Bristol
 1 Merron, M. P.-T. Centre, Mt. Pleasant, Liverpool
 Pettitt, H.C. s. Woodside S., Hastings
 1 Porter, H.M. Devonshire H., Bridlington
 Greensmith, D. Comm. Travellers' S., Pinner
 1 Jolley, J. P.-T. Centre, Mt. Pleasant, L'pool
 Rawling, B.L. h. Arundel H., Scarborough
 Cashmore, B.M. Queen Mary's High S., Walsall
 Dence, M.C. e. Private tuition
 1 Hunt, H.B. High S., Teignmouth
 Porter, A.S. Emwell S., Warminster
 Schofield, M.A. Waveney H., Harleston
 1 Taylor, E.M. Private tuition
 Barber, E.M. Ladies' Coll., Wellington, Salop
 May, F. Goodrich Rd. Higher-Grade S., E. Dulwich
 Seymour, N. Westmorland Rd. Council S., N'castle-on-T.
 Stevens, E.S. Lynton H., Portsmouth
 Dean, E. St. Catherine's Coll., Hammersmith
 Griffiths, M.A. Harley H., Hereford
 Kane, S. P.-T. Centre, Mt. Pleasant, Liverpool
 Swenson, J.M. f. Summerfield Hall, Maccyswimmer
 Clayton, W. Royal Masonic Inst., Clapham Junction
 Davidson, H.R. Harley H., Hereford
 Lumley, W.F. s.e. Woodside S., Hastings
 O'Connor, N.F.M. Lynton H., Portsmouth
 Tolson, W.L. Private tuition
 Alexandre, C. St. James's Ladies' S., St. Heliers
 Beaumont, B.J. s. Victoria H., Dorking
 Bryant, I.S. St. Bernard's S., Southsea
 1 Cawley, G. Stoke Public Girls' Higher S.
 Cook, M. New Benwell Council S., Benwell-on-T.
 French, E.M. The College, Totnes.
 Holman, E.M. Hr.-Grade S., St. Andrew's Hall, Southport
 Mann, A.D. Milton H., Highgate, N.
 Riley, D. Queen Mary's High S., Walsall
 Smith, V.F. d. St. Catherine's Coll., Hammersmith
 Bennett, E.M. d. Milton Mount Coll., Gravesend
 1 Cane, W. Stainsbridge Coll., Malmesbury
 Gerrard, J. Gram. S., Ashton-in-Makerfield
 Harle, W.M.M. Wellington Coll., Hastings
 Morris, F.A. Lonsdale H., Norwich
 Turnham, G.M. Licensed Victuallers' Girls' S., S.E.
 1 Andrew, C. Private tuition
 1 Ball, J. P.-T. Centre, Mt. Pleasant, L'pool
 Douman, F. P.-T. Centre, Mt. Pleasant, L'pool
 Thornton, E. Osborne H., Redditch
 Edwards, E.G. Commercial Travellers' S., Pinner
 Gaunt, D. Osborne H., Redditch
 1 Murray, A. d. P.-T. Centre, Mt. Pleasant, L'pool
 Tugwood, E. do. Roman Catholic Practising S., L'pool
 Anthony, E.L. Malvern House, Birkdale
 Baker, M.G. d. Westcliff S., Weston-s.-Mare
 Cook, C.A. Commercial Travellers' S., Pinner
 Edmunds, G.M. Ladies' Coll., Wellington, Salop
 Greenwood, C.W. Arundel H., Scarborough

Hopper, R. Westmorland Rd. Council S., N'castle-on-T.
 Law, E. Hindley Gram. S.
 McGill, K.M. Gram. S., Ashton-in-Makerfield
 Fransès, E.L. School for Girls, Gravesend
 Macey, W.H. Milton Mount Coll., Gravesend
 Dunn, G. e. St. David's S., South Wanstead
 Mason, W.V. ph. Red Maids' S., Bristol
 Stebbings, H.M. Deal College
 Tuck, M.E. Mansfield Coll., Maida Vale, W.
 1 Ward, G. Westcliff Coll., Westcliff-on-Sea
 Barnes, D.M. s. Alexandra Coll., Shirley
 Bedford, M.G.C. Woodside S., Hastings
 Brunskill, L. Holt Hill Convent S., Birkenhead
 Duckworth, D. Hr.-Grade S., St. Andrew's Hall, Southport
 Francis, D. Stainsbridge Coll., Malmesbury
 1 Henwood, M.G. Gainsboro' S., Plymouth
 James, E. High S. for Girls, Wanstead
 Lea, M. Gram. S., Ashton-in-Makerfield
 Qualtrough, G.L. Girtonville Coll., Aintree
 Sims, D.E. s. Church High S., Penzance
 Stubbs, L. Hr.-Grade S., St. Andrew's Hall, Southport
 Anderson, E. Holt Hill Convent S., Birkenhead
 Fisher, N.A. mu. St. Kilda's Coll., Redland
 Harris, M.M. Emwell S., Warminster
 Holden, M. Hr.-Grade S., St. Andrew's Hall, Southport
 Game, A.M. Girls' High S., Sudbury
 Goff, W. Roman Catholic Practising S., L'pool
 Pinnock, V.L. Home S., Clifton, Bristol
 Seed, W. P.-T. Centre, Mt. Pleasant, L'pool
 Shillingford, M.K. d. Malvern H., Lewisham Park, S.E.
 1 Spicer, E.M. St. Winifred's S., Torquay
 Armitage, M.F. Polam Hall, Darlington
 Edwards, O.M. Milton Mount Coll., Gravesend
 Parks, M. Fernside, Grantham
 Pell, G.A., mu. Grove H., Ashover
 1 Prowse, E.I. Private tuition
 Stedman, K.S. Priory S., Earls Colne
 Coles, G.M. Highfield S., Croydon
 Duns, I. Westmorland Rd. Council S., N'castle-o-T.
 1 Fletcher, E.M. Wilber & Camden S., Biggleswade
 Fletcher, I.E. High S., Holyhead Rd., Coventry
 Kirkby, D. Westmorland Rd. Council S., N'castle-o-T.
 Palmer, E.M. Ellerker Coll., Richmond
 Pressly, E.W. Fulford Field H., York
 Abrahams, B. Alexandra Coll., Shirley
 Allen, P.M. Girls' High S., Sudbury
 Collis, M.M. Ladies' Coll., Wellington, Salop
 Crossing, G. West Holmes S., Clacton-on-Sea
 Dickinson, E. New Benwell Council S., Benwell-on-Tyne
 Fishley, A. Regent St. Hr.-Grade S., Plymouth
 Mitchell, A. The Poplars, Small Heath
 Morrish, P. High S. for Girls, Devonport
 Rivett, H.M. s. Holt H., Fakenham
 Russell, D.K. Hemdean H., Caversham
 1 Simkin, A.M. North Villa S., Sudbury
 1 Walpole, R. St. Catherine's Coll., Hammersmith
 1 Weston, E.M. Hollybank S., Cheetham Hill
 Boath, C.M. Shamrock H., Palmers Green, N.
 Clarke, M. Ellerker Coll., Richmond
 Cockroft, A.I. Royal Masonic Inst., Clapham Junction
 Cook, M.C. s. Alexandra Coll., Shirley
 French, L.M. Alexandra Coll., Shirley
 Frost, L.J. Queen Mary's High S., Walsall
 Harrison, E.D. Hemdean H., Caversham
 1 Marsh, D.E. Alexandra Coll., Shirley
 Weygang, E.L. Woking High S., Woking
 Williams, F.S. e. Brooklyn H., Wellington, Salop
 Cooper, A.L. Hyde House High S., Tollington Park, N.
 Gulland, D.B.K. Mecklenburg H., Putney Hill
 1 James, M.W. Private tuition
 Lloyd, S.J. Huntingdon S., Knighton
 1 Lucas, D. Emwell S., Warminster
 Mann, P. d. Wellington Coll., Hastings
 Matthyssens, M.E. Senghennydd, Caerphilly
 Melville, B.M. s.g. Vida H., Coventry
 Reid, C. Friends' S., Great Ayton
 Serle, A.C. St. Olave's S., Taunton
 Ellis, D. Academy, Crewe
 Jackson, E. P.-T. Centre, Mt. Pleasant, L'pool
 Jeffrey, M.S. Wordsworth Coll., Shirland Gardens, W.
 McQuhae, M. Roman Catholic Practising S., L'pool
 Bevis, A.M. Oakley High S., Southsea
 1 Brockman, F.E. Private tuition

1 Cull, E.L. Tavistock H., Sheerness-on-Sea
 Sanson, O. Stoke Public Girls' Higher S.
 Thorne, M.D. Mall Rd. Middle Class S., Hammersmith
 1 Smith, E.W. Nautly H., Heston, Hounslow
 Griffith, M.P. Private tuition
 Hall, O.A. Roden H., Ongar
 Homeyer, E.M. Warwick H., Roade
 Jackson, W.A. Elvaston S., West Dulwich
 Schwabe, D.L. Carlyon Coll., Chancery Lane, W.C.
 Colgate, W.E. Carden S., Peckham Rye, S.E.
 Henry, E. P.-T. Coll., Everton Valley
 May, R. Priory S., Earls Colne
 1 Reese, L.J. County S., Pontypool
 Albon, L.G. West Ham High S.
 Bevan, M.A. Ripley Comm. S.
 Bowen, W. Private tuition
 Lidington, D.B. Clydesdale, E. Finchley, N.
 Marsden, L.D. Crossbeck H., Ilkley
 Randall, A.E. Maindee Lawn S., Newport, Mon.
 Saffer, F. al. Northern Institute, Leeds
 Tucker, W.M. Carden S., Peckham Rye, S.E.
 Whitburn, R.M. Quarry H., Guildford
 Brown, A. Pupil-Teachers' Coll., Everton Valley
 Carpenter, D.L.I. St. Cloud, Southsea
 Crippin, L.E. Ramsey Endowed S., Hunt's
 Dix, J. 12 Reginald Terrace, Leeds
 Gleeson, V. St. Bernard's S., Southsea
 Rogers, W.H. Bleak H., Brentwood
 1 Ward, C. do. Westcliffe Coll., Westcliff-on-Sea
 Gabe, K. Bryn Holly, Newport, Mon.
 Hackman, M. Lynton H., Portsmouth
 Horwood, E.L. s. Coborn S., Bow Road, E.
 Jack, M.R. Alexandra Coll., Shirley
 Jesse, E.E. e. Girtonville Coll., Aintree
 Lane, W.J. St. Cuthbert's Coll., Forest Hill, S.E.
 McOwan, M. Corner H., Godstone
 Morris, F. Hr.-Grade S., St. Andrew's Hall, Southport
 Scott, B. Girls' S., Maryport
 Travis, G. d. Hr.-Grade S., St. Andrew's Hall, Southport
 Walton, M.L. Woodside S., Hastings
 Warner, O.I. West Ham High S.
 Hyslop, J.M. Harley H., Hereford
 1 Williams, S.M. Beech Tree H., Market Drayton
 Bowden, M. Holly Park Coll., New Southgate
 Lane, I.F. s. Fernside, Grantham
 Peres, J. St. Mary's S., Deal
 Shoemith, E.D. Cornwallis High S., Hastings
 Speak, L.A. Fulford Field H., York
 Winks, D.A. Alwyne Coll., Canonbury
 Bailey, H. s. Pupil-Teachers' Coll., Everton Valley
 Fielder, E. British S., Wokingham
 Guthrie, B. New Benwell Council S., Benwell-on-T.
 Reynolds, E.F. St. Joseph's Coll. S., Totland Bay
 Tuer, I. Roman Catholic Practising S., L'pool
 Windsor, R.M. High S. for Girls, Wanstead
 Bonsor, L.R. High S., Holyhead Rd., Coventry
 Cove, G. Camborne H., Torquay
 Gibbs, F.E. do. Private tuition
 Greenaway, J.S. Addey & Stanhope S., New Cross, S.E.
 Harrop, E. New Mills High S., nr. Stockport
 Latham, R. Roden H., Ongar
 Matthews, A. Roden H., Ongar
 Stedman, E.L.M. Stoke H., Guildford
 Stevenson, F.M. Cambridge H., Preston
 Walker, L.A. Queen Mary's High S., Walsall
 1 Wilson, R.M. Private tuition
 Brewster, J. f. Summerland S., Richmond
 Burton, M.E. Western H., Nottingham
 Coburn, H. Gram. S., Ashton-in-Makerfield
 Cross, M. New Benwell Council S., Benwell-on-T.
 Davis, W. Stoke Public Girls' Higher S.
 Moore, E.M. Convent, The Avenue, Southampton
 Pittman, M.J. Coborn S., Bow Road, E.
 Roy, L. f. The High S., Attleborough
 Tilley, E.J. Ascham H., Clifton, Bristol
 Armitage, M. Duchy Court, Harrogate
 Batchelor, E. Lyncombe S., Titchfield
 Colgan, A. Roman Catholic Practising S., L'pool
 Key, D.M. Chislon House, Ramsey, Hunts
 Lott, N.D. Brackliff H., S. Norwood
 Mann, L.W. Priory S., Earls Colne
 1 Morris, S.J. Private tuition
 Gilbert, A. Melbourne Coll., Thornton Heath
 Logan, A. Westmorland Rd. Council S., N'castle-on-T.
 Lupton, G.F.H. Private tuition
 1 Matheson, C.M. Honndiscombe S., Plymouth
 Whitfield, B.A. Ladies' Coll., Wellington, Salop

Barrs, E.H. High S., Holyhead Rd., Coventry
 Boast, K.E. Highfield S., Croydon
 Buggs, B.G. Heathleigh S., Horsmonden
 Davis, G.M. West Cliff S., Preston
 England, E. St. George's Coll., Barnsley
 Escolme, A.P. Penketh S., nr. Warrington
 Haselden, M. Gram. S., Ashton-in-Makerfield
 Lacey, E.M. St. Aubyn's, Winchester
 Ravell, A.E. Fernside, Grantham
 Sivewright, L. Westmorland Rd. Council S., N'castle-on-T.
 Snell, K. Priory S., Earls Colne
 Walker, D.M. Malvern H., Birkdale
 1 Wall, L.E. County S., Pontypool
 Wood, E. Penketh S., nr. Warrington
 Gottheiner, E. Lancaster Coll., W. Norwood
 1 Loftus, E. P.-T. Centre, Mt. Pleasant, L'pool
 Powell, C.E. Queen Mary's High S., Walsall
 Speller, E.L. d. Coborn S., Bow Road, E.
 Woodward, M. d. High S., Stechford
 Bemrose, A.M. Ladies' Coll., Wellington, Salop
 Bramwell, L. Middle Class S., Sheffield
 Fountain, C.G. Malvern H., Lewisham Park, S.E.
 Hough, M. Hr.-Grade S., St. Andrew's Hall, Southport
 Land, E.A. The Bronshill S., Torquay
 Owen, M. Royal Masonic Inst., Clapham Junction
 Pickett, H.B. High S., Tunbridge Wells
 Saint, M.A. Hyde House High S., Tollington Park, N.
 Black, J.C. Mall Rd. Middle Class S., Hammersmith
 Clark, M.G. Ladies' Coll., Deal
 Goody, H.E. Avonclyffe, Bromley
 Harrison, E. P.-T. Centre, Mt. Pleasant, L'pool
 O'Sullivan, C. a. Pupil-Teachers' Coll., Everton Valley
 1 Smith, E. Avenue S., Leigh, Lancs
 Smith, F. Stainsbridge Coll., Malmesbury
 Stephens, E. Regent St. Higher-Grade S., Plymouth
 Atkinson, V.H. Friedenheim, Ealing
 Bean, E. Howard Coll., Bedford
 Blight, G.M. St. George's H., Doncaster
 Burman, C.D. Warwick H., Roade
 Campbell, M.G. Holly Park Coll., New Southgate
 Cramphorn, M.A. Montpelier H., Brentwood
 Hammond, E. St. Winifred's High S., Southampton
 Leaver, M.O. Penketh S., nr. Warrington
 1 Sargood, F.M. Private tuition
 Shearer, C.L. Alexandra Coll., Shirley
 Boyce, W. Coborn S., Bow Road, E.
 Brainhall, M. Queen Mary's High S., Walsall
 Carroll, H. Holt Hill Convent S., Birkenhead
 Case, M.B. f. Mecklenburg H., Putney Hill
 1 Lunt, A. P.-T. Centre, Mt. Pleasant, L'pool
 Moore, R.F. Hillside, Clifton, Bristol
 Oliver, M. Girls' High S., Sudbury
 Pinhorn, M.G. Carlton Crescent Girls' Coll., Southampton
 Ray, F.E. Alexandra Coll., Shirley
 Ridge, M.F. Portsea Coll. S.
 Smith, J. Delaval Council S., Benwell-on-Tyne
 Windebank, B.L. Crossbeck H., Ilkley
 1 Baxter, D. Gartlet, Watford
 Clarke, A.M. Glendale H., Westcliff-on-Sea
 Bone, E.P. St. George's H., Doncaster
 1 Clarke, M. P.-T. Centre, Mt. Pleasant, L'pool
 Crouch, D.M. High S. for Girls, Wanstead
 Harvey, L.M. Stour H., Sandwich
 James, W.A. Westbourne H., Cowes
 Melsom, E. Battersca Polytechnic S., S.W.
 Newland, D.B.M. Private tuition
 Paterson, F.M. Hr.-Grade S., St. Andrew's Hall, Southport
 Chappell, J.L. St. Joseph's Coll. S., Totland Bay
 Church, A.P. Pemberton Coll., Up. Holloway, N.
 Elrich, M.M. Irvine H., Derby
 Lee, J.M. s. Milton Mount Coll., Gravesend
 Lush, E.L. British S., Wokingham
 Maishman, A. Malvern House, Birkdale
 McDonnell, E. Holt Hill Convent S., Birkenhead
 Rosser, E. St. Maur Coll., Chesham
 Tarbet, A. Dixfield S., Exeter
 Gatford, F. Sullivan Coll., Southampton
 Guest, M.F. Montpelier H., Brentwood
 Miller, E.B. High Trees S., Bournemouth
 Rigby, L. Pupil-Teachers' Coll., Everton Valley
 Shoobert, C.L. Ellerker Coll., Richmond
 Smith, J. A. West Ham High S.
 1 Wilson, M. 12 Reginald Terrace, Leeds

GIRLS, 2ND CLASS, Pass—Continued.

Johnson, H. St. Winifred's High S., Southampton
 Leader, J. Stainsbridge Coll., Malmesbury
 Swinyard, E. Cambridge H., West Dulwich
 Brown, K. W. Woodside S., Hastings
 Lyne, E. Academy, Crewe
 Scott, S. Pencairg Coll., Newport, Mon.
 Stephenson, W. West Ham High S.
 Davison, M. Delaval Council S., Benwell-on-Tyne
 Duffy, A. L. Bank H., Crediton
 Ploughman, D. Belmont S., Southampton
 Goulding, M. Convent of the Sacred Heart, Wandsworth
 Parker, G. Cambridge H., West Dulwich
 Scott, B. E. Private tuition
 Wilson, M. Westmorland Rd. Council S., N'castle-on-T.
 Baines, M. P.-T. Centre, Mt. Pleasant, L'pool
 Cliffe, L. Holt Hill Convent S., Birkenhead
 Coombe, L. Dixfield S., Exeter
 Martin, M. A. Woodside S., Hastings
 Penfold, B. M. Normanton, Preston Park, Brighton
 Simons, W. Linley H., Worthing
 Slater, C. M. Mecklenburg H., Putney Hill
 Walton, R. A. Woodside S., Hastings
 Avila, M. H. d. Coborn S., Bow Road, E.
 Bathurst, E. A. Brooklyn H., Wellington, Salop
 Bloomer, A. M. Hyde House High S., Tollington Park, N.
 Boshier, M. C. Stoke H., Guildford
 Fisher, G. Girtonville Coll., Aintree
 Jones, E. W. The Bronshill S., Torquay
 Watts, G. M. Milton Mount Coll., Gravesend
 Johnson, M. St. Winifred's High S., Southampton
 Kite, E. M. West Ham High S.
 Payn, A. V. High S., St. Heliers
 Stones, K. Coll. S., Hall Gate, Doncaster
 Batty, D. M. Milton Mount Coll., Gravesend
 Maguire, L. Roman Catholic Practising S., Liverpool
 Mann, G. M. Landrock H., Stroud Green, N.
 Ogram, E. Manor House, Driffild
 Phillips, L. E. Private tuition
 Skardon, E. Stoke Public Girls' Higher S.
 Youens, D. Licensed Victuallers' Girls' S., S.E.
 Young, H. M. Abercorn Coll., Dublin
 Buissert, K. J. St. Joseph's Coll. S., Totland Bay
 Cosier, D. Shamrock H., Palmer's Green, N.
 Henry, M. P.-T. Centre, Mt. Pleasant, L'pool
 Jeffery, F. M. Dixfield S., Exeter
 McIver, C. P.-T. Centre, Mt. Pleasant, L'pool
 Moore, C. Holt Hill Convent S., Birkenhead
 Mulholland, A. P.-T. Centre, Mt. Pleasant, L'pool
 Spencer, M. Mechanics' Inst., Pudsey
 Doubell, I. K. Western H., Nottingham
 Jeffery, A. H. Private tuition
 Slade, A. G. Brownhills H., Southampton

THIRD CLASS.

Honours Division.

Harman, W. M. s.e.h.a.f.m.u. Private tuition
 Bennell, M. e. h. Crouch End High S., Weston Pk., N.
 Blanquet, E. B. L. L. s.f.g.e. Hill Croft S., Wellingborough
 King, D. M. e.a.f.d. Hr.-Grade S., St. Andrew's Hall, Southport
 Tyler, E. e.a.f. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Hain, M. M. a.f.d. Crossley & Porter S., Halifax
 Hill, A. e.a.f. Alexandra Coll., Shirley
 Watts, G. e.h.g.a.f. Crossley & Porter S., Halifax
 Dobson, E. s.e.a.d. P.-T. Centre, Mt. Pleasant, L'pool
 Sheldrick, E. M. s.a.d. Wellington H., Hailsham
 Turner, M. e.a.f.d. Hr.-Grade S., St. Andrew's Hall, Southport
 McCormac, K. e.a.f. Holy Trinity Girls' S., Halifax
 Brown, S. C. e.a.f.g.e. Matteredale, Uxbridge
 Hawkus, H. e.g.a.f. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Beeton, I. K. a. Wellington Coll., Hastings
 Evans, E. E. e.a. Camden S. for Girls, Kentish Town, N. W.
 Walker, M. e.a.d. Crossbeck H., Ilkley
 Bridges, L. E. T. e.a. Bodman H., Maidstone
 Lough, M. I. e.a. New Benwell Council S., Benwell-on-T.
 Schofield, G. a.f. Goodrich Rd. Hr.-Grade S., E. Dulwich

Cook, E. G. s.e.a. Harley H., Hereford
 Johnson, N. H. e. h. Girtonville Coll., Aintree
 White, E. s.e.a. Uppingham House High S., Bradford
 Benson, M. I. s.d. Hr.-Grade S., St. Andrew's Hall, Southport
 Deane, T. M. C. n. s.e.d. Private tuition
 Higginbotham, C. e. h. Hr.-Grade S., St. Andrew's Hall, Southport
 Jacobs, I. C. e.a.f. Wellington Coll., Hastings
 Mackenzie, B. H. e. Crossbeck H., Ilkley
 Middleton, P. New Benwell Council S., Benwell-on-T.
 Norman, E. e.f. 31-33 Brigstock Rd., Thornton Heath
 Campbell, E. J. C. e.f. West Ham High S.
 Dennis, J. e.d. Larchmont Hall, Yatton
 Skull, D. s.e.a. Ladies' Coll., Wellington, Salop
 Alexandre, C. E. e.f. St. James's Ladies' S., St. Heliers
 Bellis, H. e.a. Hr.-Grade S., St. Andrew's Hall, Southport
 Boshier, D. G. s.e. Royal Masonic Inst., Clapham Junction
 Brown, M. F. e.h.a. Milton Mount Coll., Gravesend
 Brownridge, C. M. e.a.d. Lyddon Villa S., Leeds
 Dennis, M. A. T. s.e.a. High S. for Girls, Wanstead
 Reid, F. L. e.d. Hr.-Grade S., St. Andrew's Hall, Southport
 Sullivan, H. L. e.a.f. Camden S. for Girls, Kentish Town, N. W.
 Allen, B. F. e.f. Melbourne Coll., Thornton Heath
 Batson, J. M. e.a. Heathleigh S., Horsmonden
 Davies, M. a. Girls' Coll., Penmaenmawr
 Ferguson, D. B. s. High S. for Girls, Wanstead
 Wallis, E. A. e. Alexandra Coll., Shirley
 Wilkinson, A. G. s. St. George's H., Doncaster
 Yelland, C. M. V. s.d. Buda, Aldrington, Hove
 Carradus, E. M. f. Crossley & Porter S., Halifax
 Gill, W. E. e. Camden S. for Girls, Kentish Town, N. W.
 Hassall, L. G. a. Parnella H., Devizes
 Mackenzie, M. E. s. Crossbeck H., Ilkley
 Cliff, E. s.e.h. Langley H., Ashbourne
 Dodgson, E. M. s.h. Lyddon Villa S., Leeds
 Grose, O. I. a.f. St. Winifred's S., Torquay
 Morton, S. s.e.h.d. Girtonville Coll., Aintree
 Parsley, M. e.a. Camden S. for Girls, Kentish Town, N. W.
 Podmore, G. M. s.e.g.a. Ladies' Coll., Wellington, Salop
 Reffell, I. M. e.f. Stoke H., Guildford
 Symons, D. A. e.d. High S., Thorpe, Norwich
 Thomson, K. McC. d. Home S., Clifton, Bristol
 Westrop, A. e.a.f. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Barbieux, G. a.f. Kenilworth S., Ealing
 Barnes, V. B. f. Grosvenor S., Wokingham
 Bourne, N. s.e.f.d. St. Aubyn's, Winchester
 Prond, H. e.a. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Binns, W. M. f. Highfield S., Croydon
 Chandler, N. E. h. Alexandra Coll., Shirley
 Cole, A. M. L. s.e. Harley H., Hereford
 Eldridge, O. C. e.f.d. Wellington Coll., Hastings
 Jowett, E. D. s.e. Private tuition
 Rugman, A. Ashburne H., Chepstow
 Simmons, K. d. Larchmont Hall, Yatton
 Wallas, J. f. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Warmington, E. F. a.h. Parc Bracket Coll. S., Camborne
 Backhouse, E. Crossbeck H., Ilkley
 Barker, E. R. e. Brooklyn High S., Leytonstone
 Hall, W. e.d. Shrubbery S., Staple Hill
 Holt, E. M. f. Grosvenor S., Wokingham
 Laister, E. A. a. Crossbeck H., Ilkley
 Legard, E. e. Fonthill High S., Barnsley
 Mallett, C. A. e.a. Licensed Victuallers' Girls' S., S.E.
 Marshall, B. A. Crossley & Porter S., Halifax
 Raikes, K. L. C. s.e. Private tuition
 Thatcher, M. R. St. Kilda's Coll., Redland
 Bushell, H. M. e.h.f. Cheltenham H., Newport, Mon.
 Griffiths, B. W. e. Camden S. for Girls, Kentish Town, N. W.
 Keeley, E. Bodman H., Maidstone
 Langley, L. M. s.e.a. Belle-Vue, Cadoxton Barry
 Lempriere, I. M. e. Lancefield S., Southend-on-Sea
 Ross, S. M. e.h.f.d. Danehurst S., Putney
 Ryder, D. e. Seaton Coll., Mutley
 Smith, L. M. e. Wellington S., Deal

Watt, I. L. M. Crouch End High S., Weston Park, N.
 Carman, M. L. e.a. Clark's College High S., Holloway, N.
 Fowkes, G. e.d. St. George's Coll., Barnsley
 Gow, J. L. f. Private tuition
 Johnson, D. s. Hatton Hill S., Windlesham
 Lillington, F. M. a. Lynton H., Portsmouth
 Richardson, E. Larchmont Hall, Yatton
 Simpson, M. e.a. Crescent College, York
 Daffarn, D. E. e. Camden S. for Girls, Kentish Town, N. W.
 Driskell, M. I. s. Hemdean House, Caversham
 Greenland, E. I. d. Emwell S., Warminster
 Ripley, O. C. d. Wellington Coll., Hastings
 Robinson, M. L. s.e. Rose Bank, Brentwood
 Weatherlake, G. M. a. St. Winifred's S., Torquay
 Angus, A. B. a. Crossbeck H., Ilkley
 Bowden, G. E. e. Milton Mount Coll., Gravesend
 Buckeridge, M. e.a. Camden S. for Girls, Kentish Town, N. W.
 Cattlin, K. e.a. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Godfrey, C. L. e. Licensed Victuallers' Girls' S., S.E.
 Greggs, M. E. e.h. New Benwell Council S., Benwell-on-T.
 Higginbotham, E. E. f. Arundel H., Scarborough
 Matthyssens, E. M. e. Senghennydd H., Caerphilly
 Moreau, V. f. d. The French Convent, Newhaven
 Robertson, B. E. Larchmont Hall, Yatton
 Robinson, G. H. Holmwood Coll., Westcliff-on-Sea
 Royle, M. G. St. Helen's Coll., Seven Kings
 Hart, D. Regent St. Hr.-Grade S., Plymouth
 McNair, B. E. e. Girtonville Coll., Aintree
 Megginson, M. E. e.f. High S., Holyhead Rd., Coventry
 Robertson, E. A. s.e.a. Portway Coll., Reading
 Bratt, E. s.e. Dresden H., Evesham
 Colbran, R. d. St. Helen's Coll., Seven Kings
 Evans, E. T. s.e. Ladies' Coll., Wellington, Salop
 Goold, F. e. Westholme S., Clacton-on-Sea
 Parsons, J. s.f. d. The Close, Dyke Rd., Brighton
 Piper, I. M. d.m.u. Bourne H., Eastbourne
 Spindler, G. M. s.e. Portway Coll., Reading
 Stevens, C. A. e.d. Camden S. for Girls, Kentish Town, N. W.
 Vaughan, I. M. Ashburne H., Chepstow
 Webster, D. e. Private tuition
 Williams, A. B. e.d. Highwood H., Liskeard

THIRD CLASS.

Pass Division.

Dunstone, B. A. a.d.phys. Beethoven St. Hr.-Grade S., Queens Pk., W.
 Cooper, G. M. Red Maids' S., Bristol
 Jacques, G. Commercial Travellers' S., Pinner
 Poole, G. E. Ascham H., Clifton
 Widden, M. E. Lansdowne Coll., Notting Hill, W.
 Gray, S. J. Private tuition
 Jarvis, K. E. Woking High S.
 Trant, G. m.u. Stoke Public Girls' Higher S.
 Cawte, M. C. Alexandra Coll., Shirley
 Francis, J. Stainsbridge Coll., Malmesbury
 Widdens, L. Lansdowne Coll., Notting Hill, W.
 Broadhurst, G. B. Ladies' Coll., Wellington, Salop
 Watson, G. E. A. Westoe High S., South Shields
 Cathcart, J. G. Milton H., Highgate, N.
 Marsh, C. P.-T. Centre, Mt. Pleasant, L'pool
 Turner, J. Montpellier H., Brentwood
 Stedman, E. K. G. Stoke H., Guildford
 Traviss, L. F. M. Eversley H., Willesden Green, N. W.
 Parry, H. A. M. Bitterne Pk. Council S., Southampton
 Trull, E. S. Kilda's Coll., Redland
 Freeman, W. M. E. Private tuition
 Mannington, M. R. Private tuition
 Taylor, W. G. West Ham High S.
 Rosen, A. M. Bow Modern S., Bow Road, E.
 Watson, G. Friends' S., Great Ayton
 Woodforde, D. Torrhill Coll., Hastings
 Bell, D. Friends' S., Great Ayton
 Evans, J. A. Bow Modern S., Bow Road, E.
 Martin, E. G. d. Regent St. Hr.-Grade S., Plymouth
 Wilson, A. S. Croydon College
 Adams, D. M. Wordsworth Coll., Shirland Gardens, W.
 Bolton, A. R. L. High S. for Girls, Wanstead
 Meyer, M. A. Tinwald S., Heswall

Horseman, E. Dresden H., Evesham
 Pursey, W. R. Coborn S., Bow Road, E.
 Washington, A. M. Wandsworth Technical Inst., S. W.
 Cody, M. S. Philological S., Southsea
 Monson, H. E. Church High S., Penzance
 Betts, W. L. Stapleton Hall S., Stroud Green, N.
 Chapman, O. a.f. Whitgift H., Croydon
 Goodall, A. I. Grosvenor S., Wokingham
 Kibble, H. Priory S., Earls Colne
 Morrison, E. d. Pendennis Coll., Streatham
 Newstead, O. S. H. Wolvershill, Harrogate
 Rhind, M. I. e.a. Fonthill High S., Barnsley
 Rix, D. E. f. Normanton, Preston Park, Brighton
 Taylor, E. e.a. Redby Girls' S., Sunderland
 Adams, E. M. a.d. Regent St. Hr.-Grade S., Plymouth
 Anslie, D. P. s.e. Royal Masonic Inst., Clapham Junction
 Barry, E. G. M. e. The College, Totnes
 Boyes, I. f. Arundel H., Scarborough
 Boys, R. M. Ladies' Coll., Wellington, Salop
 Cowan, W. E. f. Oakley High S., Southsea
 Crawshaw, M. L. s.f. The College, Totnes
 Crow, S. D. e.f. Mayfield Coll., Marlborough
 Hughes, G. H. S. Cranbury High S., Southampton
 Hutchinson, B. B. d. Duchy Court, Harrogate
 Jones, C. M. s. Sunfield H., Wellington, Salop
 Keeley, M. J. e.f. High S., Woodford
 McDonnell, M. P.-T. Centre, Mt. Pleasant, L'pool
 Moseley, R. M. Licensed Victuallers' Girls' S., S.E.
 Moxy, D. F. Stainsbridge Coll., Malmesbury
 Riches, A. I. e.f. Matteredale, Uxbridge
 Ridge, M. s.e. High S., Twickenham
 Robinson, D. G. Holmwood Coll., Westcliff-on-Sea
 Robinson, E. T. e.f. Park Terrace S., Whitby
 Stanger, H. B. a.f. Arundel H., Scarborough
 Tetlow, M. h. St. Andrew's Hall, Southport
 Thompson, D. Cranfant S., Buckhurst Hill
 Weeds, J. e.a. Lausdowne H., Llandudno
 Wilkinson, E. E. Coborn S., Bow Rd., E.
 Allen, F. M. Clark's College High S., Holloway, N.
 Forster, E. M. d. Wilton H., Reading
 Gruneberg, L. A. Camden S. for Girls, Kentish Town, N. W.
 Jones, M. J. Girls' Coll., Penmaenmawr
 Mackenzie, C. J. e.d. Glengarry, Birkdale
 Prestney, E. Priory S., Earls Colne
 Smith, M. C. I. Emwell S., Warminster
 Wake, G. Summerland S., Richmond
 Wood, F. s. Langley H., Ashbourne
 Wright, C. I. Highfield S., Croydon
 Alison, R. s.d. Duchy Court, Harrogate
 Bowen, K. E. s.a. Ladies' Coll., Wellington, Salop
 Crompton, E. E. e.a.f. Camden S. for Girls, Kentish Town, N. W.
 Davies, J. D. St. Andrew's Hall, Southport
 Davies, R. St. Maur Coll., Chepstow
 Duvall, N. h. Camden S. for Girls, Kentish Town, N. W.
 Hammond, M. O. Glengall, Romford
 Harvey, A. M. High S., Thorpe, Norwich
 Hinchcliffe, D. Westbourne H., Cowes
 Martin, M. Avonclyffe, Bromley
 Newton, B. e.d. Sullivan Coll., Southampton
 Newton, R. E. Parc Bracket Coll. S., Camborne
 Taylor, A. Friends' S., Great Ayton
 Thomas, D. K. e.d. Holmwood Coll., Westcliff-on-Sea
 Townend, D. St. George's H., Doncaster
 Twort, M. Woking High S.
 White, L. E. Coborn S., Bow Road, E.
 Witted, E. e.a. The Laurels, Lincoln
 Bice, W. B. s.d. Brean Down H., Burnham. Som.
 Crossley, N. St. Andrew's Hall, Southport
 Faulkner, H. L. e.f. Grosvenor S., Wokingham
 Gough, E. M. Ellerker Coll., Richmond
 Graham, D. P. d. Crossley & Porter S., Halifax
 Hay, G. C. Clare S., Worthing
 Head, K. D. M. f. Oakwood H., Brighton
 Hogben, M. M. e. Alexandra Coll., Shirley
 King, C. e.a. Camborne H., Torquay
 Meikleham, M. G. h. Camden S. for Girls, Kentish Town, N. W.
 Ormesher, A. Penketh S., nr. Warrington
 Richards, W. E. d. Regent St. Hr.-Grade S., Plymouth
 Spry, I. e. The College, Totnes
 Stephens, L. Rose Bank, Brentwood
 Stevens, M. H. Milton Mount Coll., Gravesend
 Taylor, L. H. d. Friends' S., Wigton
 Adams, F. West View, Alstonefield
 Beal, V. h. f. Normanton, Preston Pk., Brighton

GIRLS, 3RD CLASS, PASS—Continued.
 Colley, D.E. d. Harley H., Hereford
 2Evans, A. Summerfield Hall, Maesywmmmer
 Findlay, E.M. e.h.f. Private tuition
 2Foot, E.K. St. Winifred's High S., Southampton
 2Foster, M. Durlston H., Colchester
 Garbutt, A.E. e. West View, Alstonefield
 Henshaw, J. e. Grosvenor Coll., Bath
 Hunt, K. e. Fernside, Grantham
 2Isherwood, E.B. Norma S., Waterloo, L'pool
 Pakeman, L. d. Colville H., Swindon
 Pounder, K. Friends' S., Great Ayton
 Pritchard, G. e.f. 31-33 Brigstock Road, Thornton Heath
 Rothney, M.G. e.f. Fairlight, Croydon
 Tanner, M.M. e.f.d. Royal Masonic Inst., Clapham Junction
 Taylor, M.F. Hr.-Grade S., St. Andrew's Hall, Southport
 2Thomas, G.W. Senghennydd H., Caerphilly
 Andrew, W. e. Gunnerside S., Plymouth
 2Cavill, E. St. George's Coll., Barnsley
 Cooper, E.M. Intermediate S., Clewer St. Stephen
 Ford, E.M. a.m.u. Northover S., Ilchester
 Ford, W.E. d. Stainsbridge Coll., Malmesbury
 2Galvin, M. P.-T. Centre, Mt. Pleasant, L'pool
 Hartley, M. Crossley & Porter S., Halifax
 Kippax, N. d. Hr.-Grade S., St. Andrew's Hall, Southport
 LeQuesne, R.M. e. Glengarry, Birkdale
 Mitchell, K. s. The Close, Dyke Rd., Brighton
 2Morgan, G.A. Holly Park Coll., New Southgate
 Mussett, M. e. High S., Thorpe, Norwich
 Noakes, A.M. e.a.f.d. Lingdale Rd. Acad., W. Kirby
 Northmore, F.C. Holmwood Coll., Westcliff-on-Sea
 Pedder, I. e.f. Crossley & Porter S., Halifax
 2Roberts, F.M. Irvine H., Derby
 Ronald, A.B.M. e.f. Clough School, Reigate
 Thornley, A. e.a. Gram S., Ashton-in-Makerfield
 Ward, H.G. Welby Coll., Market Deeping
 Wills, F. Hr.-Grade S., St. Andrew's Hall, Southport
 Wilson, N. Girls' High S., Rothwell
 Avcry, R.M. Holmwood Coll., Westcliff-on-Sea
 Beswick, M.C. s. Arundel H., Scarborough
 Brooks, L. e. Longford Girls' S., Cotham
 Butcher, M.E. e. Lonsdale H., Norwich
 Craven, N. e. High S., Twickenham
 2Edwards, G.J.C. Albert Villas S., Cheetham
 2Farrant, K. Stainsbridge Coll., Malmesbury
 Fry, F.E. e. Milton Mount Coll., Gravesend
 Hamlyn, A.F. s. Regent St. Hr.-Grade S., Plymouth
 Harrison, D.M. e. Milton Mount Coll., Gravesend
 Holman, M.R. f. Normanton, Preston Park, Brighton
 2Hornby, D. Kensington H., York
 Hughes, B. e. Girls' High S., Swindon
 Kennard, D.M.L. s.a.f.d. 51 Ditchling Rise, Brighton
 Lynn, G.M.C. d. New Benwell Council S., Benwell-on-T.
 Marshall, D.M. e. Clark's College High S., Holloway, N.
 2Miell, D.E. Brownhills H., Southampton
 Mitchell, L.M. e. Royal Masonic Inst., Clapham Junction
 Mullis, A.M. Licensed Victuallers' Girls' S., S.E.
 Nye, E.M. Crossley & Porter S., Halifax
 Rogers, P. e. Priory School, Earls Colne
 Serle, J.M. St. Olave's S., Taunton
 Smart, E.L. Parnella H., Devizes
 Spikins, K.M. Stoke H., Guildford
 Thompson, O. f. Crossley & Porter S., Halifax
 2Walwin, S.B. Emwell S., Warminster
 Ward, L.D. Eton H., Cheltenham
 Wood, M.G. f. Crossley & Porter S., Halifax
 Barratt, D.V. e. Westbourne S., Westbourne Pk., W.
 2Bayliss, E.A. Pontypridd County S.
 2Bingham, A.G.I. Gram S., Whitechureh
 Earle, M.E. e. The Magnolias, Southsea
 Ehrmann, R. e.a.f. Camden S. for Girls, Kentish Town, N.W.
 Elliott, K.M. Wandsworth House, Heaton
 Farley, K. a.d. Heathleigh S., Horsmonden
 2Hawksfield, E.B. Priory S., Dover
 2Humphries, V.M. Athelstan H., Cliftonville
 Meginn, A. e.d. P.-T. Centre, Mt. Pleasant, L'pool
 2Moore, N.B. Harley H., Hereford
 Newton, D.S.R. Carden S., Peckham Rye, S.E.
 Noakes, F.M. e.f.d. Lingdale Rd. Acad., W. Kirby

Pearce, F.H. a. Alexandra Coll., Shirley
 Rattenbury, D. Hr.-Grade S., St. Andrew's Hall, Southport
 2Rawson, F.L. St. George's H., Doneaster
 Rimmer, J. Hr.-Grade S., St. Andrew's Hall, Southport
 Seymour, G. Home Park S., Stoke, Devonport
 2Townrow, M. Old Grange S., Hampton-on-Thames
 Amooore, M. Lyndale Coll., Worthing
 Brett E. s. The Close, Dyke Rd., Brighton
 2Buck, D.G. Emwell S., Warminster
 Cawood, E. e. Brooklyn High S., Leytonstone
 Hurt, W.E. e. Northfield Modern S., Southend-on-Sea
 Mossman, D. e.a. Bishop Fox's High S., Taunton
 Perry, L.E. f. Westbourne H., Cowes
 2Guillemot, E.A.M. f. St. Andrew's Con., St. Mary's Parish, Jersey
 Senesall, M. a. Fernside, Grantham
 Sibbitt, J. e.f.d. Lingdale Rd. Acad., W. Kirby
 Thompson, C.E. e. Crouch End High S., Weston Park, N.
 Walker, N.C. s.e. Woodside S., Hastings
 2Andrews, E.M. Central Council S., Weston-s.-Mare
 Atkins, M.B. Cornwallis High S., Hastings
 Bailey, D.G. e. Quarry H., Guildford
 2Barker, M. Collingwood Coll., Lee, S.E.
 Bassett, D. e. Seaton College, Mutley
 Cobb, M. a. P.-T. Centre, Mt. Pleasant, L'pool
 Eagle, E.F. e. Irvine H., Derby
 Fletcher, K. a. Springfield, Stockport
 Haigh, G.A. e.d. Rougemont Ladies' Coll., Blackpool
 Halsall, W. e. Hr.-Grade S., St. Andrew's Hall, Southport
 Haywood, F.A. Royal Masonic Inst., Clapham Junction
 Holley, C. e.f. St. Andrew's Con., St. Mary's Parish, Jersey
 House, D.A. e. Westbourne H., Cowes
 Kay, G. Friends' S., Wighton
 2Law, J. P.-T. Centre, Mt. Pleasant, L'pool
 2Martin, D. Gram S., Hayle
 Robinson, E.H. d. Hill Croft S., Wellingborough
 Ruddy, A. e.h.a. P.-T. Centre, Mt. Pleasant, L'pool
 Sinclair, N.K. s.d. Sutherland H., Gt. Yarmouth
 Smith, C.M. Hr.-Grade S., St. Andrew's Hall, Southport
 Syner, W. e. Stoke Public Girls' Higher S.
 Thomas, M.A. e.f. Milton Mount Coll., Gravesend
 Wilkin, D.A. e. Hopefield H., Norwich
 Ashman, E. s. Selwood S., Frome
 Blake, W.E. e. Intermediate S., Clewer St. Stephen
 Buckley, E.A. Hr.-Grade S., St. Andrew's Hall, Southport
 Clewlow, L.A. s. Ronton Vicarage, Eecleshall
 2Collins, A.L. Dresden H., Evesham
 Crofts, E. s. Selwood S., Frome
 2Dobson, I.E. Abbey H., Selby
 2Euan-Smith, E.V.L. McL. Private tuition
 Found, E.M. Westbourne H., Cowes
 Haines, B.E. e.f. Danehurst S., Putney
 Hall, M. e.a. Colville H., Swindon
 2Hallett, G.R. Coborn S., Bow Road, E.
 2Hammond, N.E. Private tuition
 Harrison, E.E. a. Welby Coll., Market Deeping
 2Harrowing, E.B. Coborn S., Bow Road, E.
 Harvey, L.M. Kelsey H., Crouch Hill, N.
 Huntley, E.E. Hope Lodge S., Bexley Heath
 2Keown, A. P.-T. Centre, Mt. Pleasant, L'pool
 2Lang, E.A. Cambridge House, Millbrook
 2Lawler, M. P.-T. Centre, Mt. Pleasant, L'pool
 Mayne, H. St. H.E.E. d. High S., Paignton
 Mitchell, I. Goodrieh Rd. Hr.-Grade S., E. Dulwich
 2Mowitt, S. Wellington H., Waterloo, Blyth
 2Saunders, M.A. The College, Twickenham
 2Sutton, E.C. Woodside S., Hastings
 2Trout, N. Coll. S., Hall Gate, Doncaster
 Walker, A. a. Howard Coll., Bedford
 Warren, M. Shamrock H., Palmer's Green, N.
 Wells, A.M. e. High S., Woodford
 Wooderson, V.M. Salecombe H., Herne Hill, S.E.
 Constant, E. Grosvenor Creseent S., Scarborough
 Covington, N.B. Athelstan H., Cliftonville
 Edwards, W. Pare Braeket Coll. S., Camborne
 Espley, J. Sunfield H., Wellington, Salop
 Fuller, V.G. e. The Magnolias, Southsea
 Glass, R.E. e. Chudleigh H., W. Hampstead
 Hawkes, D. St. Olave's S., Taunton
 2Hodge, M. Porthminster S., St. Ives

Jackson, E. Hr.-Grade S., St. Andrew's Hall, Southport
 2Jeffery, E.M. Dixfield S., Exeter
 Lorains, M. e.f. Park Terrace S., Whitby
 Marshall, C.M. f. Crossley & Porter S., Halifax
 Morfey, E.M. Lancefield S., Southend-on-Sea
 2Morris, M.F. P.-T. Centre, Mt. Pleasant, L'pool
 Morris, W. Hr.-Grade S., St. Andrew's Hall, Southport
 Newton, F. e. Hr.-Grade S., St. Andrew's Hall, Southport
 Petcovich, A. e. P.-T. Centre, Mt. Pleasant, L'pool
 Pickering, W.M. Crossley & Porter S., Halifax
 Priestwood, C.B. Collegiate S., Val Plaisant, Jersey
 Rowlands, C. e. P.-T. Centre, Mt. Pleasant, L'pool
 Simpson, R.M. Royal Masonic Inst., Clapham Junction
 Skeif, H.N. Chislon H., Ramsey, Hunts
 2Vaughan-Williams, B.F.P. Grosvenor Coll., Bath
 2Warner, F.A. Holmwood Coll., Westcliff-on-Sea
 Whitfield, G.F. e. Milton Mount Coll., Gravesend
 Wilde, F.M. e. Lonsdale H., Norwich
 2Wright, P. Wellesley Terrace S., Liverpool
 Yellings, G.W. Preswylfn S., Cardiff
 Berry, N. a. P.-T. Centre, Mt. Pleasant, L'pool
 Bice, E.M. e. Brean Down H., Burnham, Som.
 2Bowden, M.F.W. Hillside, Clifton
 Bragg, E.O. Maindee Lawn S., Newport, Mon.
 2Brett, G.F. Private tuition
 2Byrd, E.A. Dresden H., Evesham
 Byron, F.D. Malvern H., Birkdale
 Cutbush, R. High S. for Girls, Wanstead
 Davies, G.G. Pencraig Coll., Newport, Mon.
 Durham, N. Hr.-Grade S., St. Andrew's Hall, Southport
 2Ensum, E.M. The Pebbles, Tenterden
 2Galloway, G. Girtonville Coll., Aintree
 Hopper, C.F. Muswell Hill High S., N.
 2Hutchings, D.C. Howard Coll., Bedford
 Lloyd, H. e.h.f. Sandford Grove Rd. S., Sheffield
 Moffat, K.J. Wilber & Camden S., Biggleswade
 Naish, D.E. Abergeldie H., Clifton
 O'Hagan, R. s. P.-T. Centre, Mt. Pleasant, L'pool
 Owen, A.H. e. Milton Mount Coll., Gravesend
 Priestley, R.W. f. 46 Buckley Rd., Brondesbury
 2Ralph, M. British S., Wokingham
 Taylor, D. e. Breck Coll., Poulton-le-Fylde
 Toplis, D.E. d. Camden S. for Girls, Kentish Town, N.W.
 Webster, K. d. Private tuition
 Wells, D.E. a. Queen's Coll., Wandsworth Common, S.W.
 Wilson, M. P.-T. Centre, Mt. Pleasant, L'pool
 Anderson, E. Goodrieh Rd. Hr.-Grade S., E. Dulwich
 Argent, H.T. Westcliffe Coll., Westcliff-on-Sea
 Beecroft, E.D. e. Howard Coll., Bedford
 Brice Bruce, M.M. e. Girls' Coll., Penmaenmawr
 Clark, M.G. s. Girls' High S., Sudbury
 Coulson, G.M. High S., Paignton
 Dunning, E. Cambridge H., West Dulwich
 Dyster, M.E. St. Helen's Coll., Seven Kings
 Eales, R. a. Camborne H., Torquay
 Gifkins, M. Royal Masonic Inst., Clapham Junction
 Hodder, M.W. The Bronshill S., Torquay
 Hoey, M. 9 Victoria Rd., Barnsley
 Levett, J.G. Cornwallis High S., Hastings
 Lyth, M.N. St. George's H., Doneaster
 Malley, D.H. Hr. Grade S., St. Andrew's Hall, Southport
 2MeAllister, S.E. St. Paul's S., Wigan
 2Moger, F.E. Central Council S., Weston-s.-Mare
 Perry, M. f. Modern Coll., Stoke Bishop
 Povey, L.E. Hemden House, Caversham
 Smith, F. West Holme S., Clacton-on-Sea
 2Stace, A.C. Coll. S., Hall Gate, Doncaster
 Sudbury, D. d. Priory School, Earls Colne
 Baker, F.V. High S. for Girls, Wanstead
 2Baker, M.A. Royal Bay H., Gorey, Jersey
 Burgon, W.M. Girls' High S., Sudbury
 Caley, D.M. Intermediate S., Clewer St. Stephen
 Chartres, P. North Park Coll., Croydon
 2Durham, M.G. St. Andrew's Con., St. Mary's Parish, Jersey
 Foster, D. d. Glengarry, Birkdale
 2Hart, M. P.-T. Centre, Mt. Pleasant, L'pool
 Hill, M. e.f. Alexandra Coll., Shirley
 Hussey, G.W. Private tuition
 Leadlay, A.E. Arundel H., Scarborough

Lee, E.M. Modern S., Torquay
 Love, J.B. Stoke H., Guildford
 Mareh, E.M. Licensed Victuallers' Girls' S., S.E.
 Merrick, E.M. Selwood S., Frome
 Murray, C.A. d. Hr. Grade S., St. Andrew's Hall, Southport
 Niolle, M.F. f. Six Roads S., St. Lawrence, Jersey
 2Pennington, H. P.-T. Centre, Mt. Pleasant, L'pool
 2Popplestone, G. Modern S., Torquay
 2Priestley, B.H. Claremont Coll. S., Forest Gate
 Richardson, D. e. Hr.-Grade S., St. Andrew's Hall, Southport
 Seeker, D.M. Royal Masonic Inst., Clapham Junction
 Thomson, H.G. f. Gwyrfaï H., East Cowes
 2Westbrook, O. St. Aubyn's, Winchester
 Bird, N.L. e. Brooklyn High S., Leytonstone
 Calley, V.E. e. Crouch End High S., Weston Park, N.
 Chapman, M.W. e. Royal Masonic Inst., Clapham Junction
 2Corbett, W.B. Ellerker Coll., Richmond
 Dunn, E. Paradise Terrace S., Darlington
 Felton, F.W. 4 Royal Parade, Cheltenham
 Furrell, D. Laton H., Hastings
 Gibbs, E.M. e. Sunnyside, Reepham
 2Graydon, M.L. Burlington Middle S., Boyle Street, W.
 Jones, I.K. Ashlea H., Southend-on-Sea
 2Lord, M.T. The Gables, Elmstead
 Mackenzie, A.W.M. Preswylfn S., Cardiff
 Marshall, C.A. Sea View Coll., St. Anne's-on-Sea
 McGrath, E. P.-T. Centre, Mt. Pleasant, L'pool
 Morgan, J.E. Gelliwastad S., Pontypridd
 2Owen, D.I. Milton Mount Coll., Gravesend
 Palmer, A.J.M. a. Wellington Coll., Hastings
 Pickup, B.K. e. St. George's H., Doneaster
 Pridham, E. Bishop Fox's High S., Taunton
 2Richards, J.J. Private tuition
 Salt, G.M. Stafford St. Girls' S., Brewood
 Scott, A.M. Irvine H., Derby
 2Stanton, R.M. Girtonville Coll., Aintree
 2Sullivan, A.M. Grade and Ruan Minor National S.
 Swinstead, N. e. Swanwick Coll., Parkgate
 Torrens, M.M.L. f. Kensington H., Chiswick
 Vanes, H.M. Southside H., Weston-super-Mare
 Wallis, G.M. s. Oakley High S., Southsea
 Webb, M. Gram S., Ashton-in-Makerfield
 Whitlock, G. Beecholme Coll., Belper
 Williamson, M. e. Evering High S., Stoke Newington
 2Barry, A. Marist Convent, Tottenham, N.
 Batten, M. Grove II., Baldoek
 2Branston, N.M. Froebel Coll. S., Spalding
 Burra, M. Lime Tree H., York
 Cleverley, W.F. Emwell S., Warminster
 2Day, P. Summerland S., Richmond
 Drake, M. f. Arundel H., Scarborough
 2Egan, K. P.-T. Centre, Mount Pleasant, L'pool
 Fearn, E. e.f. Mazenod Coll., Kilburn, N.W.
 France, E.F. Hr.-Grade S., St. Andrew's Hall, Southport
 Gange, M.W. K.s. High S. for Girls, Wanstead
 Gozzett, E.B. e. Royal Masonic Inst., Clapham Junction
 Graham, G.B.L. Girls' S., Tuxford
 Hamel, Y. s.f. The French Convent, Newhaven
 Jordan, M.D. Athelstan H., Cliftonville
 Laverack, D. a. Abbey H., Selby
 Light, M.A. f. High Trees S., Bournemouth
 Lomax, E.M. f. High S., Chorlton-cum-Hardy
 2Luffingham, F.E. St. Cuthbert's Coll., Forest Hill, S.E.
 Marris, H.M. St. Winifred's High S., Southampton
 Mowbray, D.A. Holloway College, N.
 2Oldfield, F. Valley Bridge H., Scarborough
 Robinson, F.M. Stapleton Hall S., Stroud Green, N.
 Robinson, I.M. Iselden, Boseombe
 Roeh, N. e.a. Stoke Public Girls' Higher S.
 Searle, M.A. Crafnant S., Buckhurst Hill
 Smith, E.L. h. Highfield S., Croydon
 Swiggs, G.L. e. Haslemere, Clapham Park, S.W.
 2Webster, J.M. Private tuition
 Wells, F.E. Ceelle H., Hornsey, N.
 Ball, K.E. Iselden, Boseombe
 Barata, O.R. d. Girls' Coll., Penmaenmawr
 Bishop, N.C. Oakley High S., Southsea
 Blake, G.L. d. Montpelier H., Brentwood
 Blakeley, H.G. Milton Mount Coll., Gravesend
 Carman, J. Heathleigh S., Horsmonden
 Caudle, E.B. e.f. St. Aubyn's, Winchester
 2Chapman, L. Kensington H., York
 Cole, L.B. Westbourne H., Cowes
 Coombe, D.A. Montpelier H., Brentwood

GIRLS, 3RD CLASS, PASS—Continued.
 Dale, A. e. a. P.-T. Centre, Mt. Pleasant, L'pool
 Eungblut, M. E. e. Tufnell Pk. Terrace S., Holloway Rd., N.
 Fairweather, N. Crescent Coll., York
 Farebrother, N. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Godfrey, A. Wandsworth H., Heaton
 Gold, I. Orton Coll., Colleshill
 Harris, E. 31-33 Brigstock Road, Thornton Heath
 Hill, H. E. St. Winifred's S., Torquay
 Hoskins, M. S. s. Bank H., Crediton
 Jones, M. E. N. Pemberton Coll., Upper Holloway, N.
 Leeper, H. M. H. Abercorn Coll., Dublin.
 McCarragher, C. Private tuition
 Morgan, G. Regent St. Hr.-Grade S., Plymouth
 Morgan, V. Summerfield Hall, Maesywmmmer
 Nurse, H. E. Welby Coll., Market Deeping
 Parr, M. M. Hopefield H., Norwich
 Ricardo, E. C. d. Brean Down H., Burnham, Som.
 Roberts, M. L. Lansdowne H., Llandudno
 Routley, H. 31-33 Brigstock Rd., Thornton Heath
 Schwabe, D. a. Cornwallis High S., Hastings
 Taylor, L. a. Hr.-Grade S., St. Andrew's Hall, Southport
 Thompson, E. E. Wellington Coll., Hastings
 Warrick, M. A. Hemdean H., Caversham
 Wilcock, L. Gram. S., Ashton-in-Makerfield
 Wilks, N. B. Coborn S., Bow Road, E.
 Armstrong, L. H. St. Winifred's High S., Southampton
 Bainbridge, F. Enville Place S., Ashton-under-Lyne
 Batchelor, E. E. Lyncombe S., Titchfield
 Bendon, L. E. Bishop Fox's High S., Taunton
 Berry, H. W. Burrfield S., Pendleton
 Bradbury, A. Regent St. Hr.-Grade S., Plymouth
 Briggs, M. s. Girtonville Coll., Aintree
 Brown, H. Girtonville Coll., Aintree
 Clark, I. L. Clark's College High S., Holloway, N.
 Cory, M. St. James's Ladies' S., St. Heliers, Jersey
 Cowell, L. G. Claremont Coll. S., Forest Gate
 Craig, E. Private tuition
 Deacon, E. V. e. Girls' High S., Swindon
 Dinham, E. B. Summerbrook S., Reading
 Harrison, M. H. 114 Cathedral Road, Cardiff
 Hawgood, D. A. Cambridge H., West Dulwich
 Ince, A. G. Forest Place S., Leytonstone
 Irwin, C. Friends' S., Wigton
 Jeffery, D. M. Stella House Coll. S., Cathcart Hill, N.
 March, D. P. e. Bleak H., Brentwood
 Parsons, W. M. Alexandra Coll., Shirley
 Scott, E. 31-33 Brigstock Road, Thornton Heath
 Sheldon, A. H. Milton Mount Coll., Gravesend
 Sutherland, J. G. Gelliwastad S., Pontypridd
 Taylor, N. Crescent Coll., York
 Thompson, N. e. a. d. Bishop Fox's High S., Taunton
 Wealsby, M. E. Dresden H., Evesham
 Welman, E. A. e. Parnella H., Devizes
 Wood, E. L. Elgin House, Powis Square, W.
 Woodman, M. Stainsbridge Coll., Malmesbury
 Alexander, S. Parnella H., Devizes
 Brown, N. M. d. Brean Down H., Burnham, Som.
 Coles, D. G. e. Ellerker Coll., Richmond
 Cook, M. Thornton Gram. S., Bradford
 Cox, D. H. Holloway College, N.
 Davis, M. Academy, Crewe
 Douglas, E. A. e. The College, Churwell, Leeds
 Eglington, D. Brean Down H., Burnham, Som.
 Gilbert, E. a. Ladies' Coll., Wellington, Salop
 Goodrick, M. B. a. Abbey H., Selby
 Hodson, E. S. Augustine's Upper S., Kilburn
 Horsfall, M. Girls' Coll., Penmaenmawr
 Joll, A. d. St. George's Coll., Barnsley
 Jones, E. M. Licensed Victuallers' Girls' S., S.E.
 Kelsey, E. A. Suncroft S., Lingfield
 Lallow, H. J. Westbourne H., Cowes
 Marquess, C. P.-T. Centre, Mt. Pleasant, L'pool
 Mitchell, E. M. a. Parc Bracket Coll. S., Camborne
 Moore, A. A. Muswell Hill High S., N.
 Mott, L. S. Hemdean H., Caversham
 Myer, O. e. Newnam H., Hereford
 Pilkington, E. M. Ellerker Coll., Richmond
 Ratchford, S. e. P.-T. Centre, Mt. Pleasant, L'pool
 Shelford, A. Hillcroft S., Wellingborough

Toghill, A. E. e. Licensed Victuallers' Girls' S., S.E.
 Trachy, B. e. f. Chestnut Farm, St. Mary's Parish, Jersey
 Ward, W. Clark's College High S., Holloway, N.
 Wright, E. A. e. Lancelot S., Southend-on-Sea
 Atkinson, F. J. f. Private tuition
 Beevor, J. E. M. e. 54 Kensington Gardens Sq., Bayswater
 Boardman, E. Hindley Gram. S.
 Browne, B. I. St. Winifred's S., Torquay
 Clarke, D. s. Dresden H., Evesham
 Collins, J. H. Royal Masonic Inst., Clapham Junction
 Copping, E. St. George's Coll., Barnsley
 Day, D. e. Camden Road Coll. S., N.
 Eedy, C. Lyncombe S., Titchfield
 Fairbank, A. Uppingham House High S., Bradford
 Harper, E. M. Ellerker Coll., Richmond
 Hassett, S. P.-T. Centre, Mt. Pleasant, L'pool
 Longman, E. M. Brean Down H., Burnham, Som.
 MacDonald, F. Hyde Park S., Mutley
 Oldham, J. M. Crossbeck H., Ilkley
 Powell, F. Melbourne H., Halesowen
 Price, M. Milton Mount Coll., Gravesend
 Waymouth, N. W. Modern S., Torquay
 Barnard, F. Colville H., Swindon
 Charnley, A. Highfield Coll., Blackpool
 Christelow, W. A. St. Mary's Convent S., York
 Cohn, G. f. The Close, Dyke Rd., Brighton
 Coles, E. M. Ellerker Coll., Richmond
 Deacon, O. M. Girls' High S., Swindon
 Dundas, V. M. Howard Coll., Bedford
 Fayers, E. A. s. Rose Bank, Brentwood
 Fielder, M. D. British S., Wokingham
 Garlick, G. E. London Coll., Stratford, E.
 Glass, P. The Close, Dyke Rd., Brighton
 Gostelow, M. E. Froebel Coll. S., Spalding
 Hain, M. Gram. S., St. Ives
 Hinkley, L. N. Private tuition
 Hodgson, E. Girtonville Coll., Aintree
 Hurd, L. D. Private tuition
 Jarvis, W. B. Windycroft Coll., West Hampstead
 Littlewood, E. M. St. George's H., Doneaster
 Lockwood, C. St. George's Coll., Barnsley
 Mace, M. E. Summerbrook S., Reading
 Norwood, M. E. G. Intermediate S., Clewer St. Stephen
 Pickering, A. H. Friends' S., Wigton
 Raymond, H. M. Portsea Coll. S.
 Sedgwick, G. C. Fellenberg S., Maidstone
 Stubbings, E. Girls' Gram. S., Bridlington
 Thomas, M. Summerfield Hall, Maesywmmmer
 Whyte, M. e. St. Monica's, Peterborough
 Baker, C. P. a. 114 Cathedral Rd., Cardiff
 Barnett, A. E. d. High S., Holyhead Rd., Coventry
 Beek, A. Stoke Public Girls' Higher S.
 Brewer, V. Maindee Lawn S., Newport, Mon.
 Collings, L. Summerfield Hall, Maesywmmmer
 Cutts, L. F. Rlgin H., Powis Square, W.
 Etches, A. G. e. a. Ladies' Coll., Wellington, Salop
 Fox, A. M. Milton H., Atherstone
 Glass, F. K. Mayfield Coll., Marlborough
 Gould, E. West Holme S., Clacton-on-Sea
 Martin, A. M. Hanworth Rd. Kindergarten S., Feltham
 Mawdsley, S. Glengarry, Birkdale
 Maxwell, G. e. P.-T. Centre, Mt. Pleasant, L'pool
 McNaie, B. Collegiate S., Brentford
 Mears, F. M. e. Muswell Hill High S., N.
 Phillips, J. Summerfield Hall, Maesywmmmer
 Pratt, H. Holloway College, N.
 Price, F. M. e. a. Cranbury High S., Southampton
 Riley, E. Whitgitt H., Croydon
 Salt, M. d. Beechholme Coll., Belper
 Smith, C. Shrubbery S., Staple Hill
 Solman, D. I. Stapleton Hall S., Stroud Green, N.
 Starling, K. C. e. d. Wakefield H., Tower Hamlet, Norwich
 Wardell, M. E. Private tuition
 Baker, A. M. Westoe High S., South Shields
 Barton, D. Hemdean H., Caversham
 Beaumont, D. Royal Masonic Inst., Clapham Junction
 Birch, B. A. e. Langley H., Ashbourne
 Bradbury, M. Regent St. Hr.-Grade S., Plymouth
 Byrd, D. M. Dresden H., Evesham
 Calpin, M. e. Friends' S., Great Ayton
 Coonubs, V. A. High S., Woodford
 Cruickshank, G. Durnstone H., Southsea
 Evans, H. M. P. e. f. Melbourne Coll., Thornton Heath
 Hunter, A. C. Clough S., Reigate
 Hurst, H. Goodrich Rd. Hr.-Grade S., E Dulwich
 Lee, F. K. Eversleigh High S. Sheffield

Light, D. A. High Tree S., Bournemouth
 Mason, I. e. a. Crossbeck H., Ilkley
 May, M. C. Rhampore H., Wembley
 Morris, M. L. Milton Mount Coll., Gravesend
 Perolz, K. A. Kelsey H., Crouch Hill, N.
 Prouton, B. Swanwick Coll., Parkgate
 Ward, F. E. Parnella H., Devizes
 Windridge, M. Hope Lodge S., Bexley Heath
 Athey, E. Wellesley Terrace S., Liverpool
 Burningham, H. J. F. f. Athelstan H., Cliftonville
 Chant, E. G. High S., New Brompton
 Faulke, K. M. Girls' High S., Sudbury
 Fisher, E. Dresden H., Evesham
 Halsall, E. Hr.-Grade S., St. Andrew's Hall, Southport
 Heaton, E. M. St. Paul's S., Wigan
 Hough, E. P.-T. Centre, Mt. Pleasant, L'pool
 May, E. I. Colville House S., Swindon
 Mold, C. M. Wordsworth Coll., Shirland Gardens, W.
 Pond, E. L. Stoneville, Blandford
 Railton, M. s. Cheltenham H., Newport, Mon.
 Riley, M. A. Sunfield H., Wellington, Salop
 Roberts, W. M. Lulworth H., Caerleon, Mon.
 Sadler, H. A. f. Stoneville, Blandford
 Sheehan, M. Lansdowne Coll., Notting Hill, W.
 Teverson, B. Coborn S., Bow Road, E.
 Timms, G. a. Colville H., Swindon
 Warman, E. Westcliff Coll., Westcliff-on-Sea
 Whemman, G. L. L. Clark's College High S., Holloway, N.
 Ashton, M. S. Sunnyholme S., Southport
 Baker, E. M. Brooklyn High S., Leytonstone
 Blundell, E. e. Royal Masonic Inst., Clapham Junction
 Butcher, E. M. Quarry H., Guildford
 Cotterell, P. f. Modern Coll., Stoke Bishop
 Ferris, A. M. W. St. Ronan's High S., Dawlish
 Gosselin, M. A. e. Lyndhurst, Upper Norwood
 Hall, E. B. High S., Woodford
 Lawson, D. Licensed Victuallers' Girls' S., S.E.
 Masters, M. Brean Down H., Burnham, Som.
 Newton, F. V. Parc Bracket Coll. S., Camborne
 Platt, W. Glengarry, Birkdale
 Pyne, M. A. St. Olave's S., Taunton
 Reeve, A. The College, Twickenham
 Salter, G. L. f. Holt H., Fakenham
 Saftleben, L. Girtonville Coll., Aintree
 Scott, M. H. S. Athelstan H., Cliftonville
 Seeley, V. M. Alexandra Coll., Hastings
 Smart, G. Alderhurst, Sale
 Smith, M. F. Wellesley Terrace S., Liverpool
 Spencer, E. M. d. Swanwick Coll., Parkgate
 Taylor, R. E. N. Cornwallis High S., Hastings
 Thomas, M. E. Westbourne H., Cowes
 Vincent, C. M. Holmeroft, Loughton
 Weekes, E. A. Wolvershill, Harrogate
 Williamson, E. Friends' S., Wigton
 Wood, D. M. d. Clark's College High S., Holloway, N.
 Adams, E. e. a. P.-T. Centre, Mt. Pleasant, L'pool
 Chauning, R. M. Stoke H., Guildford
 Collins, D. L. Forest Place S., Leytonstone
 Crabtree, A. Sea View Coll., St. Anne's-on-Sea
 Crossley, W. M. Hr.-Grade S., St. Andrew's Hall, Southport
 Downing, G. H. s. Clovelly, Cliftonville
 Edwards, N. d. Norma S., Waterloo, L'pool
 English, M. Clarence H., Filey
 Gilbert, M. e. a. P.-T. Centre, Mt. Pleasant, L'pool
 Gill, L. F. Hanover H., Ryde
 Graves, V. Hanover H., Ryde
 Higginbottom, G. f. New Mills High S., nr. Stockport
 Loadman, F. St. Mary's Convent S., York
 Mason, G. M. Stafford St. Girls S., Brewood
 Pearce, D. J. Bishop Fox's High S., Taunton
 Rimmer, G. Norma S., Waterloo, L'pool
 Seex, C. M. C. R. f. 3 Trelawny Rd., Cotham
 Sharpe, N. St. Maur College, Chesham
 Symons, E. Regent St. Hr.-Grade S., Plymouth
 Wilkinson, E. M. Crossley & Porter S., Halifax
 Williams, E. K. a. Commercial S., Astley Bridge
 Anderson, E. F. Melbourne H., Clapton Sq., N.E.
 Awcock, C. E. Private tuition
 Bosworth, M. I. Norma S., Waterloo, L'pool
 Bowles, D. K. Girls' High S., Sudbury
 Burrows, E. M. Private tuition
 Collingwood, M. L. Bodman H., Maidstone
 Eileen, H. Marist Convent, Tottenham, N.
 Hampshire, M. Girls' High S., Rothwell
 Harper, M. E. Hyde House High S., Tollington Pk., N.
 Harrop, E. Royal Masonic Inst., Clapham Junction
 Luck, E. M. Heathleigh S., Horsmonden

Mansfield, D. E. Melbourne H., Clapton Square, N.E.
 Papworth, M. e. Teviot II., Northampton
 Stewart, I. London Coll., Stratford, E.
 Waterhouse, E. L. e. St. Joseph's Coll. S., Totland Bay
 Alcock, D. E. Coborn S., Bow Road, E.
 Astorri, L. M. f. Northcote H., Bexhill
 Baldwin, A. M. a. d. Crescent H., Gravesend
 Bamford, S. A. Girls' High S., Rochdale
 Buckley, J. P.-T. Centre, Mt. Pleasant, L'pool
 Callaway, A. K. Clark's College High S., Holloway, N.
 Clutton, A. E. e. Private tuition
 Deane, H. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Fenwick, G. Hr.-Grade S., St. Andrew's Hall, Southport
 Greentree, A. L. St. Mary's Convent S., York
 Hill, A. M. d. Alexandra Coll., Shirley
 Howard, C. G. Alexandra Coll., Shirley
 Jenkin, N. Parc Bracket Coll. S., Camborne
 Kelly, M. e. P.-T. Centre, Mt. Pleasant, L'pool
 McDonnell, M. P.-T. Centre, Mt. Pleasant, L'pool
 Pearson, E. F. Westwing Coll., Ryde
 Preston, T. A. Devonshire H., Bridlington
 Sampson, L. P.-T. Centre, Mt. Pleasant, L'pool
 Schofield, L. Girtonville Coll., Aintree
 Taylor, A. Hr.-Grade S., St. Andrew's Hall, Southport
 Thornton, P. a. d. Gram. S., Ashton-in-Makerfield
 Toms, B. Ebrington H., Exeter
 Touzel, E. M. f. Les Marias High S., La Rocque, Jersey
 Witt, R. Academy, Crewe
 Young, L. f. The Home S., Heighington
 Adamson, A. B. Gram. S., Ashton-in-Makerfield
 Ashmore, E. Goodrich Rd. Hr.-Grade S., E. Dulwich
 Bogers, M. J. Intermediate S., Clewer St. Stephen
 Butcher, E. M. Brooklyn High S., Leytonstone
 Chapman, D. C. e. Ripley Comm. S.
 Clift, E. High S., Twickenham
 Craig, P. I. Private tuition
 Dacombe, M. M. Alexandra Coll., Shirley
 Dacre, S. I. Penketh S., nr. Warrington
 Davey, I. M. Northfield Modern S., Southend-on-Sea
 Davies, G. M. Summerfield Hall, Maesywmmmer
 de la Pole, A. B. Vida H., Coventry
 Gray, B. St. Mary's Convent S., York
 Hardman, E. P.-T. Centre, Mt. Pleasant, L'pool
 Kennett, O. Royal Masonic Inst., Clapham Junction
 King, E. Intermediate S., Clewer St. Stephen
 Latimer, B. 4 The Crescent, Selby
 Livingston, I. S. Arundel II., Scarborough
 Martin, E. R. e. Hr.-Grade S., St. Andrew's Hall, Southport
 Mills, D. J. Parc Bracket Coll. S., Camborne
 Morgan, G. M. Holly Park Coll., New Southgate
 Pidgeon, H. High S., Hazel Grove, nr. Stockport
 Rees, M. d. St. Maur Coll., Chesham
 Reid, E. E. Hyde Park S., Mutley
 Robinson, M. Beechholme Coll., Belper
 Rodda, G. H. Friedenheim, Ealing
 Season, D. e. Parnella H., Devizes
 Smith, W. High S. for Girls, Devonport
 Thomson, N. A. e. Brooklyn High S., Leytonstone
 Vibert, M. High S., St. Heliers, Jersey
 Wade, E. M. Alexandra Coll., Shirley
 Wedgwood, C. High S., Thorpe, Norwich
 Whitlock, O. M. St. Margaret's, Blakeney
 Wray, M. Highfield Coll., Blackpool
 Baker, G. V. Lulworth H., Caerleon, Mon.
 Bradley, R. S. Portway Coll., Reading
 Evernden, N. K. Middle Class Girls' S., Maidstone
 Greenwood, A. R. M. s. f. The College, Churwell, Leeds
 Greenwood, E. Lyndale Coll., Worthing
 Henry, D. M. Royal Masonic Inst., Clapham Junction
 Herring, M. E. Avonclyffe, Bromley
 Key, M. E. High S., Steelhead
 Latimore, M. Sutherland H., Gt. Yarmouth
 Lock, M. Mountside High S., Hastings
 Martin, E. Chestnut H., Lincoln
 Strong, E. M. Parnella H., Devizes
 Tolfree, M. B. Alexandra Coll., Shirley
 Warren, B. M. Westoe High S., South Shields
 Wood, H. B. Guelph Coll., Bristol
 Anderson, W. G. Melbourne H., Clapton Square, N.E.
 Davies, D. Crescent Coll., York
 Downs, D. d. Westholme S., Clacton-on-Sea
 Garbett, H. Brooklyn H., Wellington, Salop
 Gartrell, M. f. Ville Guyon, St. John's, Jersey
 Griffin, G. e. Avonclyffe, Bromley

GIRLS, 3RD CLASS, PASS—Continued.

Grimshaw, A.	Gram. S., Ashton-in-Makerfield	Lewis, E.G.	Emwell S., Warminster	Ferris, D.	Salisbury Rd. Girls' S., Plymouth	Cockburn, D.	Wordsworth Coll., Shirland Gardens, W.
Hawgood, O.	York H., Farnham	Marks, R.M.	Lyddon Villa S., Leeds	Franchini, G.	St. Peter's Coll. S., Fulham Rd., S.W.	Goodrich, W.E.	Sutherland H., Gt. Yarmouth
Hocken, J.	Stoke Public Girls' Higher S.	Millard, M.A.	Lyncombe S., Titchfield	Haile, A.D.	St. Maur Coll., Chepstow	Green, J.	Crossbeck H., Ilkley
Langham, E.B.	Highfield S., Croydon	Moore, E.G.	High S., Thorpe, Norwich	Harvey, M.L.	Houndiscombe S., Plymouth	Gruchy, F. f.	St. James's Ladies' S., St. Heliers, Jersey
Meakin, E.	St. Peter's Girls' S., L'pool	Olver, F.L. a.	Houndiscombe S., Plymouth	Lawry, Y. e.	Penpol Girls' S., Hayle	Gully, M.A.L. f.	High S., Farnborough
Milsum, W.M.	Stoke H., Guildford	Pratt, D.F.	Orton Coll., Coleshill	Porter, L.		Lupton, E.M.M.	Private tuition
Pepper, W.D. e.	Dresden H., Evesham	Pritchard, E.M. e.	Lulworth H., Caerleon, Mon.		Stella House Coll. S., Cathcart Hill, N.	Reeve, D.K.	Athelstan H., Cliftonville
Potts, D. d.	Breck Coll., Poulton-le-Fylde	Ride, E.L.	High S., New Brompton	Powell, M.D.	Sulworth H., Caerleon, Mon.	Thomson, E.	Durnstone H., Southsea
Robinson, E.M.		Sanderson, M.J.	Girls' Coll., Penmaenmawr	Purnell, V.G.	Westwing Coll., Ryde		
	Stapleton Hall S., Stroud Green, N.	Turner, A.H.		Simpson, M.I.	Hillside, Clifton		
Schleselman, L.M.		Whittick, E.	Clovelly, Cliftonville	Smith, A.M.	Lansdowne H., Llandudno		
	St. Stephen's Coll., Hounslow	Wyatt, E.R.	Castle Hill Coll. S., Maidenhead	White, E.M.	Chestnut H., Lincoln		
Winy, G.M.	London Coll., Stratford, E.						
Armstrong, D.B. a.		2Aspinall, J.	High S., Longsight	2Botly, B.			
	St. Winifred's High S., Southampton	Broadhurst, P. s.		French Prot. S., Shaftesbury Avenue, W.C.			
Comins, S.	12 Reginald Terrace, Leeds		Ladies' Coll., Wellington, Salop	Dew, E.M.C.	Ashburne H., Chepstow		
Cook, E.B.	Crossbeck H., Ilkley	Evans, E.	Gram. S. for Girls, Worcester	Fawdon, V.	Haslemere, Clapham Park, S.W.		
Courtial, D.		Hughes, N.	Lansdowne H., Llandudno	2Knibbs, M.M.			
	St. Peter's Coll. S., Fulham Road, S.W.	Keary, A. P.-T.	Centre, Mt. Pleasant, L'pool		Kempstow H., Malvern Link.		
Doyle, N.	St. Mary's Convent S., York	Lawler, H.M.	Abbey H., Selby	Russell, N.	Houndiscombe S., Plymouth		
Fitzmaurice, D. s.		Mitchell, F.I.	Ivy House, Crouch Hill, N.	Schontheil, G.			
	P.-T. Centre, Mt. Pleasant, L'pool	Moore, H.A.	Ebrington H., Exeter		Westbourne S., Westbourne Pk., W.		
Horn, D.G.	Roden H., Ongar	Neale, E.	Linwood S., Altrincham	Williams, K.	Pencraig Coll., Newport, Mon.		
Ibbotson, M.	Glengarry, Birkdale	2Smith, A.	Oakwood H., Brighton	Yates, U.M.	Wellesley Terrace S., Liverpool		
Kendall, O.M.	Holt H., Fakenham	Warren, D.M.	Newnham H., Grantham				
Miller, G.M.	Cecil H., Hornsey, N.	Willett, R.	Belle Vue S., Cadoxton, Barry	Butterfield, M.	High S., Twickenham		
Panting, E.F.	St. Olave's S., Taunton	Winsland, M.O. s.	Lee Coll., Eastbourne	Coleman, E.M.	Girls' High S., Swindon		
Ranger, D.M. e.				2Cunning, E.S.J.			
	Evering High S., Stoke Newington	Benyon, J.	Crossley & Porter S., Halifax		Mary Datchelor Girls' S., Camberwell		
2Richer, M.	Private tuition	Blackler, F.A.	The Bronshill S., Torquay	Gilbert, E.A.			
Smith, B.D.	Ellerker Coll., Richmond	Cottee, E.G.	Rose Bank, Brentwood		Clark's College High S., Holloway, N.		
Sowerbutts, E.M.	Springfield, Stockport	Essex, L.V.		Gillingham, W.M.			
Thompson, F.A.			Hyde House High S., Tollington Pk., N.		St. Joseph's Convent, Redhill		
	Licensed Victuallers' Girls' S., S.E.	Hickman, I.M. d.	Girls' High S., Swindon	Hawkins, E.M.	Ridgmont S., Bristol		
Williams, E.M.B.	Ashburne H., Chepstow	Lazarus, A. e.	Mazenod Coll., Kilburn, N.W.	Herbert, F.	Broadfield S., Rochdale		
Wreun, G.L.	Collingwood Coll., Lee, S.E.	Luff, E.E.	Heathleigh S., Horsmonden	Hill, P.L.	Brean Down H., Burnham, Som.		
		Parsons, F.	Clarence H., Filey	Jones, M.J.	Bank H., Crediton		
		Richards, M.	St. Maur Coll., Chepstow	Lefever, E.M.			
		Ashcroft, C.			French Prot. S., Shaftesbury Avenue, W.C.		
2Adams, E.P.	Queen Mary's High S., Walsall		P.-T. Centre, Mt. Pleasant, L'pool	Lowson, F.	Newnham H., Grantham		
Anderson, G.M.		Beddo, A.F.	Coborn S., Bow Road, E.	MacCracken, R.M.	Friends' S., Wigton		
	Ladies' Coll., Wellington, Salop	Coldman, V.M.	Collegiate S., Havant	Mead, D.H.	S. Kilda's Coll., Redland		
2Bentley, M.E.		2Finch, R.	Royal Coll., South Shields	Pinshon, E.	Elmswood Coll., Stretford		
	Grimshaw St. British S., Preston	Jefferson, I.	Lime Tree H., York	Rickards, G.B.			
Brown, C.	Friends' S., Great Ayton	Lewis, F.	Coborn S., Bow Road, E.		Stapleton Hall S., Stroud Green, N.		
Carritte, E.	Brighton H., Oldham	Manning, F.M. d.	Warwick H., Roade	Wright, H.L.	Bishop Fox's High S., Taunton		
Craig, J.E.	London Coll., Stratford, E.	Peace, A.K. a.					
Eames, H.C.	High S., Frome	Pryce, M. e.	Royal Masonic Inst., Clapham Junction				
Earwaker, A.M.	Gwyrfa H., East Cowes			Balshaw, G.M.			
Edwards, E.W.	Grosvenor Coll., Bath		P.-T. Centre, Mt. Pleasant, L'pool	2Barker, E.E.	Coll. S., Hall Gate, Doncaster		
Fewster, O.E.	Clyde H., Reading	2Splatt, M.F.	Wellesley Terrace S., L'pool	2Bridges, R.E.	The Gables, Elmswell		
Macleau, E.F.	Sullivan Coll., Southampton	Stott, B.L.	Girtonville Coll., Aintree	2Clarke, E.F.			
Noel, A.	Holloway College, N.	Vodden, D.			Cranbury High S., Southampton		
Penwell, A.J. f.			Salisbury Rd. Girls' S., Plymouth	Gammou, G.	Ripley Comm. S.		
	Ville Guyon, St. John's, Jersey	Beaumont, B.F.M.	Avonclyffe, Bromley	Greenham, B.R.L.	Westwing Coll., Ryde		
Preston, M.D.		Brook, L.L.	School for Girls, Gravesend	Haworth, D.	High S., Longsight		
	Salcombe H., Herne Hill, S.E.	Hare, V.E.	Westwing Coll., Ryde	Howarth, E.	Brighton H., Oldham		
Quilter, V.H.		Hitchon, M.B.	Girls' High S., Rochdale	Jones, M.G.			
	Wordsworth Coll., Shirland Gardens, W.	Jennings, F.			Sunfield H., Wellington, Salop		
Shapiro, L.	Lansdowne H., Llandudno		Goodrich Rd. Hr.-Grade S., E. Dulwich	Llewellyn, E.D. f.	Abercorn Coll., Dublin		
Thompson, G.E.	Holt H., Fakenham	Pitt, N.F.	Grosvenor S., Wokingham	Merry, E.	High S., Twickenham		
2Walters, C.	Lulworth H., Caerleon, Mon.	2Protheroe, K.	High S., Roath, Cardiff	2Plover, E.E.			
Winter, N.E.	Bishop Fox's High S., Taunton	Stevens, V.			Kempstow H., Malvern Link		
			Cumberland H., Stoke Newington, N.	Ruusey, L.	Airedale H., Gravesend		
2Austiu, F.E.	Collegiate S., Wincanton	Watts, A.B.	Emwell S., Warminster				
Banks, M.W.	Heathleigh S., Horsmonden			Burgess, M.I.			
Blew, R.L.	Ladies' S., Sedgley	2Barlow, E.	Westbourne S., Lincoln		Portland Crescent S., Manchester		
Felgate, A.S.	Sharman's Hall, Dedham	Bowes, E. a.	High S., Twickenham	Chambers, M.	Chestnut H., Lincoln		
2Haine, H.M.	Hyde Park S., Mutley						

LOWER FORMS EXAMINATION.—PASS LIST, CHRISTMAS, 1904.

BOYS.

Abbott, E.G.	The Briary, Northwood	Barling, E.G.	Brunswick H., Maidstone	Boast, W.G.	St. Leonards Coll. S.	Buck, F.A.	Antrobus H., Congleton
Abel, H.J.J.	Camden Road Coll. S., N.	Barlow, C.T.		Boddington, A.		Burdett, F.	Middle-Class S., Sheffield
Abrahams, B.	Springhaven, Eastbourne		Boys' Coll. and High S., Southampton	Christ Church Higher-Grade S., Southport		Burge, G.A.	
Abrahams, R.	Margate Jewish Coll.	Barrett, F.K.	The College, Herne Bay	Bolwell, H.G.	Richmond Hill S., Richmond		Winchester House, Redland, Bristol
Aefield, E.T.	Handel Coll., Southampton	Bartholomew, J.C.	Colebrook H., Bognor	Bond, C.A.	High S., Swindon	Burge, G.H.K.	Cliftonville Coll., Margate
Agnew, J.		Bates, J.G.	Brunswick H., Maidstone	Bond, E.	Lancaster Coll., Morecambe	Burgess, E.	Wellington S., Heaton Moor
	Ward National S., Bangor, Co. Down	Bates, R.	Higher-Grade S., Margate	Bond, H.I.P.	High S., Swindon	Burgess, T.W.	The Modern S., Southport
Ahier, C.	Jersey Modern S., St. Heliers	Battersby, A.H.		Bond, W.K.	Taunton School	Burgis, F.R.	Barton S., Wisbech
Alford, L.W.G.	Mount Radford S., Exeter		Christ Church Higher-Grade S., Southport	Boshier, O.	British S., Wokingham	Burnett, A.M.	High S., Barnsley
Alison, G.M.	New Brighton High S. for Boys	Bauer, P.	Victoria Park S., Manchester	Bowden, J.C.	Gram. S., Blackpool	Burnett, D.	
Allison, G.	Wellington Coll., Salop	Beak, D.E.	Brean H., Weston-s.-Marc	Bowhill, W.	Higher-Grade S., Margate		Winchester House, Redland, Bristol
Anderson, H.		Beale, B.G.	Comm. S., Penzance	Box, R.L.	Grosvenor S., Bath	Burrell, F.C.	Croad's S., Lynn
	Ward National S., Bangor, Co. Down	Beale, J.R.	Highfield S., Chertsey	Box, W.G.	Edgbaston Academy, Birmingham	Burton, G.J.L.	
Andrews, A.V.	Cliftonville Coll., Margate	Beales, E.A.	Boys' Coll. S., Aldershot	Bradbury, C.H.	Wellington Coll., Salop		Hatfield H., St. Leonards-on-Sea
Annesley, J.C.	De Gresley Lodge, Southsea	Beck, L.	Cliftonville Coll., Margate	Bradley, E.	Highfield S., Chertsey		
Anthony, M.G.	Gram. S., St. Anne's-on-Sea	Beckhuson, D.F.	Private tuition	Bradley, W.H.			
Aplin, F.G.	Westbourne House, Cowes	Bell, N.M.	Arnold House, Northampton		Chandos Gram. S., Winchcombe		
Arbuthnot, J.G.	Seulac S., Paignton	Bellerby, W.	Grosvenor Coll., Carlisle	Bradshaw, E.M.	Loughton School		
Armstrong, E.F.	Gram. S., Sale	Bennett, G.M.	Camden Road Coll. S., N.	Bradshaw, F.B.W.	Duncan H., Gt. Yarmouth		
Arnold, F.I.	Tivoli H., Gravesend	Bertram, G.W.		Braithwaite, D.C.	New College, Harrogate		
Aronson, G.P.	Maida Vale School, W.		Oxford H., St. Lawrence, Jersey	Branwhite, H.	Sudbury Gram. S.		
Ash, S.J.	Mutley Gram. S., Plymouth	Bessant, W.G.	Ripley Commercial S.	Brilliant, S.	Tivoli H., Gravesend		
Ashbee, T.W.	The College, Herne Bay	Bevan, A.H.R.	Terrace S., North Walsham	Brisbourne, E.	Wellington Coll., Salop		
Bacon, H.	British S., Wokingham	Biggs, G.C.	Antrobus H., Congleton	Broad, G.A.	Antrobus H., Congleton		
Bailey, A.	Gram. S., East Finchley	Bird, R.	Taunton School	Broad, W.S.	Mutley Gram. S., Plymouth		
Baker, G.	Boys' High S., Wareham	Birkett, G.E.	Lancaster Coll., Morecambe	Brookhill, L.H.	St. Leonards Coll. S.		
Baker, W.	Commercial S., Astley Bridge	Black, S.	Osborne High S., West Hartlepool	Brown, A.R.			
Balden, W.R.	New Coll., Harrogate	Blackhurst, T.R.			Boys' Coll. and High S., Southampton		
Ballard, G.J.	Handel Coll., Southampton		High S., South Shore, Blackpool	Brown, S.	St. Winifred's S., Torquay		
Bamford, H.C.	The Modern S., Southport	Blair, A.R.	Gram. S., Devizes	Brown, V.L.W.	Grammar S., St. Anne's-on-Sea		
Banks, V.W.		Blinman, P.	Taunton School	Browning, D.	The College, Tankerton-on-Sea		
	Elmhurst S. Kingston-on-Thames	Block, I.	Tivoli H., Gravesend	Broxup, E.	Higher-Grade S., Margate		

BOYS, LOWER FORMS—Continued.
 Castle, G. Sandwich School
 Castledine, H. W. G. Sandwich School
 Cates, G.
 King's Coll., Worpole Rd., Wimbeldon
 Catterall, E. C. Southdown Coll., Eastbourne
 Chambers, G. V. Brunswick H., Maidstone
 Chapman, A. H. Richmond Hill S., Richmond
 Chapman, B. W. Gram. S., Scarborough
 Cheetham, A. S. The Modern S., Southport
 Chester, C. C. St. Leonards Coll. S.
 Chureh, F. P. The College, Tankerton-on-Sea
 Clapp, F. Grammar S., Streatham
 Clark, C. F. Stranraer S., Fareham
 Clayton, F. J. Highfield S., Chertsey
 Clegg, F. Deal College
 Clegg, J. E. High S., Barnsley
 Clemmens, E. W. S. Camden Road Coll. S., N.
 Glibborn, P. V. Loughton School
 Clinch, F. Modern S., Gravesend
 Coad, H. Clifton H., Uxbridge
 Coates, A. C. Clifton Coll., Harrogate
 Coath, S. H. Wadhams S., Liskeard
 Cochrane, D. W. St. John's Coll., Brixton
 Cockrill, A. G. Dunean H., Gt. Yarmouth
 Cohen, C. Tivoli H., Gravesend
 Coke, J. H. De Gresley Lodge, Southsea
 Cole, E. H. Upper Westbourne Villas S., Hoye
 Cole, N. F. E. Clyde H., Hereford
 Coleman, J. H.
 Orchard Gardens S., Teignmouth
 Coley, A. A. Sudbury Gram. S.
 Collings, J. Brunswick H., Maidstone
 Collins, S. Oxenford H., St. Lawrence, Jersey
 Colman, B. A. Taunton School
 Constatine, R. B.
 High S., South Shore, Blackpool
 Conyers, J. E. Milton Abbas S., Blandford
 Cook, H. Saham Coll., Watton
 Cook, R. P. St. Leonards Coll. S.
 Coppendale, L.
 Licensed Victuallers' S., Lambeth
 Copsey, F. Warwick H., Southsea
 Coruish, E. C. The Coll., Gt. Yarmouth
 Cornish, F. Wellington Coll., Salop
 Coste, R. K. Milton Abbas S., Blandford
 Cousell, P. N. Woodroughs S., Moseley
 Counsell, S. The Coll., Weston-s.-Mare
 Coutanche, A.
 Oxenford H., St. Lawrence, Jersey
 Cowell, C. H. G. Arnold House, Northampton
 Craig, K. A. St. James's Coll. S., Jersey
 Croftley, H. Lytham Coll., Lancs
 Crofton, C. Bailey School, Durham
 Crompton, F. The Avenue, Leigh, Lancs
 Cropp, F. C. New Brighton High S. for Boys
 Cumberland, W. H. Eversley S., Stamford
 Cundall, C. E. Gram. S., Sale
 Currie, F.
 Ward National S., Bangor, Co. Down
 Curtis, A. H. St. Ronan's High S., Dawlish
 Curtis, W. D.
 Elmhurst S., Kingston-on-Thames
 Cutland, P. W. Heston H., Hounslow
 Cuzner, G. St. John's Coll., Frome
 Dabbs, R. H. Gram. S., Wallington
 Dale, L. Marlborough Coll., Tue Brook
 Daltou, C. R. V.
 Licensed Victuallers' S., Lambeth
 Dannatt, B. Duncan H., Gt. Yarmouth
 Darby, C. Mary St. H., Taunton
 Davey, N. H. Ellesmere S., Harrogate
 Davies, H. M. Nantley H., Heston, Hounslow
 Davies, S. N. Wellington Coll., Salop
 Davis, M. L. Great Ealing S.
 Day, F. B. Brunswick H., Maidstone
 Day, F. J. Modern S., Gravesend
 Dayau, J. Townley Castle S., Ramsgate
 DeKoningh, L. W. St. John's Coll., Brixton
 Denize, P. Jersey Modern S., St. Heliers
 Dexter, E. W. Mutley Gram. S., Plymouth
 Digby, J. R. Gram. S., Shoreham
 Dighton, R. H. Taunton School
 Diver, O. H. St. Leonards Coll. S.
 Docker, P. Woodroughs S., Moseley
 Dodds, T. V. Handel Coll., Southampton
 Duckitt, W. M. Marlborough Coll., Tue Brook
 Dudman, L. H. Cliftonville Coll., Margate
 DuHeaume, C. Jersey Modern S., St. Heliers
 Duley, H. J. Cliftonville Coll., Margate
 Dunhill, R. E. Clifton Coll., Harrogate
 Dunn, R. L. Boys' High S., Wareham
 Eales, R. G. St. Winifred's S., Torquay
 Ebbs, W. Croad's S., Lynn
 Eckersley, A. I. Gram. S., Sale
 Edgar, L. Deal College
 Edge, A. S. Gram. S., Blackpool
 Edwards, A. L.
 Christ Church Higher-Grade S., Southport
 Edwards, C. J. Modern S., Gravesend
 Ellett, J. Jersey Modern S., St. Heliers
 Elliot, B. W. St. Winifred's S., Torquay
 Ellis, J. B. Grosvenor S., Bath
 Elphick, W. Highfield S., Chertsey
 Else, V. R. Brunswick H., Maidstone
 Elverston, W. H. Wellington S., Heaton Moor
 Entwistle, A. Farnworth Gram. S.
 Epstein, I. Margate Jewish Coll.
 Erwood, C. V. Kingsholme S., Weston-s.-Mare
 Esworthy, L. St. J.
 Crompton S., Southend-on-Sea
 Evans, R. B. Taunton H., Brighton
 Evens, J. Mutley Gram. S., Plymouth
 Everett, E. L. Ramsey Gram. S., Hunts

Fagg, H. E. Sandwich School
 Farley, J. E. W. Bradley High S., Newton Abbot
 Farr, S. G. Brunswick H., Maidstone
 Farrar, C. B. Gram. S., Shoreham
 Fear, C. A. Southdown Coll., Eastbourne
 Fear, J. R. K. Gram. S., Devizes
 Fegan, P. Oxford Coll., Waterloo, L'pool
 Ferguson, W. Ward National S., Bangor, Co. Down
 Ferris, F. W. Gram. S., Devizes
 Filleul, H. Jersey Modern S., St. Heliers
 Finn, F. J. Sandwich School
 Fisher, C. E. Licensed Victuallers' S., Lambeth
 Fisher, H. M. St. John's Coll., Brixton
 Fisher, T. R. Licensed Victuallers' S., Lambeth
 Fiske, E. W. Richmond Hill S., Richmond
 FitzGerald, E. F. Gresham Coll., Southsea
 FitzGerald, W. G. Gresham Coll., Southsea
 Flatt, H. W. Camden Road Coll. S., N.
 Flexman, F. Deal College
 Flynn, E. R. H. Gram. S., Margate
 Foden, R. Antrobus H., Congleton
 Ford, J. J. St. Winifred's S., Torquay
 Foster, H. New Brighton High S. for Boys
 Fowler, A. E. Warwick H., Southsea
 Fowler, R. G. The Modern S., Southport
 Fowles, G. A. Highfield S., Chertsey
 Franks, C. Christ Church Higher-Grade S., Southport
 Fraser, F. J. New Brighton High S. for Boys
 Free, F. Laton H., Hastings
 Freedman, L. Townley Castle S., Ramsgate
 Froud, R. H. Brunswick H., Maidstone
 Fryer, C. F. Pierremont Coll., Broadstairs
 Fuller, H. A. St. Leonards Coll. S.
 Fussell, R. Clifford S., Beckington, Bath
 Galliehan, R. J. Oxenford H., St. Lawrence, Jersey
 Gammon, W. Ripley Commercial S.
 Garlick, J. Lytham Coll., Lancs
 Gaskell, E. C. S. Private tuition
 Gay, F. W. Winchester House, Redland, Bristol
 Geach, E. C. St. Winifred's S., Torquay
 Gee, W. Jersey Modern S., St. Heliers
 Geere, D. J. St. Aubyn's, Woodford Green
 Geiler, O. E. Gram. S., Sale
 Gentle, F. S. Taunton H., Brighton
 George, M. T. St. Leonards Coll. S.
 Gibaut, H. M. St. James's Coll. S., Jersey
 Gibson-Pattinson, R. C. Marlborough Coll., Tue Brook
 Gillham, S. Boys' Coll. & High S., Southampton
 Glasse, T. Loughton School
 Godfrey, D. P. M. Gresham Coll., Southsea
 Godsall, B. Clyde H., Hereford
 Godwin, E. J. High S., Swindon
 Godwin, S. Cliftonville Coll., Margate
 Gordon, E. Townley Castle S., Ramsgate
 Gordon, H. B. Southdown Coll., Eastbourne
 Goss, J. A. St. Winifred's S., Torquay
 Gotfrey, A. Highfield S., Chertsey
 Gould, C. H. Loughton School
 Gould, S. E. Loughton School
 Grace, N. Wellington Coll., Salop
 Graham, C. K. New Brighton High S. for Boys
 Graves, T. H. Modern S., Gravesend
 Green, H. V. Elmhurst S., Kingston-on-Thames
 Greenhous, S. Wellington Coll., Salop
 Greensill, O. Ellesmere S., Harrogate
 Greenwood, A. L. New College, Harrogate
 Gregg, T. G. Taunton School
 Griffiths, A. H. Birkdale Gram. S., Southport
 Griffiths, F. C. Woodroughs S., Moseley
 Grigg, A. T. Winchester House, Redland, Bristol
 Grimes, S. S. Bracknell Coll., Berks
 Grose, J. W. St. Winifred's S., Torquay
 Grugeon, H. E. Halstead Gram. S.
 Guppy, R. Milton Abbas S., Blandford
 Haag, N. C. Cliftonville Coll., Margate
 Haggett, H. Coll. S., Bridgwater
 Hallas, G. S. The Modern S., Southport
 Halsey, F. W. St. Anbyn's, Woodford Green
 Hambourg, C. Mazenod Coll., Kilburn
 Hamilton, N. W. High S., Thorpe, Norwich
 Hampson, A. C. Commercial Coll., Southport
 Handley, C. C. Ivel Bury S., Biggleswade
 Hanson, C. S. Cliftonville Coll., Margate
 Hansford, R. A. Mutley Gram. S., Plymouth
 Harrison, G. Commercial S., Astley Bridge
 Harrison, G. C. Camden Road Coll. S., N.
 Harrison, T. A. Kingsholme S., Weston-s.-Mare
 Harrold, S. St. John's Coll., Frome
 Hartley, J. Crossley & Porter S., Halifax
 Harvey, H. Brunswick H., Maidstone
 Hatcher, H. Deal College
 Haworth, T. Grammar S., St. Anne's-on-Sea
 Heaton, W. 21 Avenham Lane, Preston
 Heaton, W. J. High S., Swindon
 Hedgecock, C. E. Wellington S., Deal
 Hemm, G. Wellington S., Heaton Moor
 Henderson, H. R. Modern S., Gravesend
 Hewitson, W. A. Bailey School, Durham
 Hewitt, E. Higher-Grade S., Margate
 Higgins, C. H. Bracknell Coll., Berks
 Hilborne, A. V. Coll. S., Bridgwater
 Hill, H. Eversley S., Stamford
 Hill, J. C. The College, Herne Bay
 Hills, F. W. St. Leonards Coll. S.
 Hodge, H. W. Senlac S., Paignton

Hogan, E. E. M. South View, St. Leonards-on-Sea
 Hogben, F. L. Sandwich School
 Hoggins, T. Wellington Coll., Salop
 Holland, V. C. Duncan H., Gt. Yarmouth
 Holborn, H. R. St. Leonards Coll. S.
 Holloway, F. A. Winchester House, Redland, Bristol
 Holmer, B. Deal College
 Holmes, H. J. Senlac S., Paignton
 Hooper, M. Milton Abbas S., Blandford
 Hosgood, A. E. Chandos Gram. S., Winchcombe
 Hoskin, A. Wadhams S., Liskeard
 Howard, A. L. Grimshaw St. British S., Preston
 Howlett, G. T. Saham Coll., Watton
 House, C. H. Barton S., Wisbech
 House, F. A. Winchester House, Redland, Bristol
 Hudson, W. A. H. Southdown Coll., Eastbourne
 Humphreys, W. Boys' Coll. & High S., Southampton
 Hunter, C. J. Catholic Gram. S., St. Helens
 Hutelings, H. J. St. John's Coll., Frome
 Huxtable, T. F. Chaloner's S., Braunton
 Hyde, C. A. Victoria Park S., Manchester
 Iddon, R. Commercial Coll., Southport
 Instone, T. A. Wellington Coll., Salop
 Jacobs, C. Great Ealing S.
 Janitsch, E. M. Taunton H., Brighton
 Jarvis, H. Wellington Coll., Salop
 Jehangeer, D. K. D. J. Maida Vale School, W.
 Jenkyn, A. T. Crompton S., Southend-on-Sea
 Jenkyn, O. R. Crompton S., Southend-on-Sea
 Job, P. R. Hatfield H., St. Leonards-on-Sea
 Joel, G. W. Modern S., Gravesend
 Johnson, S. R. Wilsford H., Devizes
 Jolley, H. Gram. S., Blackpool
 Jones, D. L. Crossley & Porter S., Halifax
 Jones, H. H. Belmont S., Exmouth
 Jones, L. E. Holloway Coll., N.
 Jones, R. A. High S., Swindon
 Jones, R. H. T. Crossley & Porter S., Halifax
 Jones, S. B. High S., Swindon
 Jones, V. E. Camden Road Coll. S., N.
 Jones, W. A. High S., Swindon
 Joyce, J. H. Ivel Bury S., Biggleswade
 Joyce, W. H. Ivel Bury S., Biggleswade
 Karr, B. Ward National S., Bangor, Co. Down
 Kaas, C. K. Marlborough Coll., Tue Brook
 Kelf, W. C. The Coll., Gt. Yarmouth
 Kendall, J. M. Gram. S., Sale
 Kendall, R. St. Leonards Coll. S.
 Kerans, P. F. J. Boys' Coll. S., Aldershot
 Kewley, G. New Brighton High S. for Boys
 King, B. E. Grosvenor S., Bath
 King, E. A. St. Winifred's S., Torquay
 King, E. R. Gram. S., East Finchley
 King, H. J. Commercial Coll., Hounslow
 King, J. B. Mutley Gram. S., Plymouth
 Killick, E. A. Ripley Commercial S.
 Kingwill, L. P. The Coll., Weston-s.-Mare
 Knatehull, R. E. Oxenford H., St. Lawrence, Jersey
 Knight, R. N. Lancaster Coll., Morecambe
 Koorie, J. The Modern S., Southport
 Kreutzberger, W. Jersey Modern S., St. Heliers
 Lalonde, E. E. Kingsholme S., Weston-s.-Mare
 Lambert, C. Taunton School
 Lambert, H. The Modern S., Southport
 Lambert, H. M. Cliftonville Coll., Margate
 Lambshead, J. Bradley High S., Newton Abbot
 Lane, J. Chandos Gram. S., Winchcombe
 Langford, J. A. Lancaster Coll., West Norwood
 Langley, C. G. Croad's School, Lynn
 Langman, S. Cliftonville Coll., Margate
 Langman, O. R. Tudor H., Denmark Hill
 Langmaid, A. C. Gresham Coll., Southsea
 Larkins, S. N. Modern S., Gravesend
 Laurens, H. G. Oxenford H., St. Lawrence, Jersey
 Lawrence, F. Tivoli H., Gravesend
 Lawrence, I. T. Taunton School
 Lawson, F. G. Licensed Victuallers' S., Lambeth
 Lazarus, A. Tivoli H., Gravesend
 LeBrocq, A. Jersey Modern S., St. Heliers
 Lee, F. L. Emwell S., Warminster
 Lee, J. F. Belmont S., Exmouth
 Lefebvre, F. R. Taunton School
 Lefever, W. G. The College, Herne Bay
 Lemberger, J. Victoria Park S., Manchester
 LeSueur, H. Jersey Modern S., St. Heliers
 Levene, N. N. Gram. S., Blackpool
 Levett, H. C. Taunton School
 Lewis, A. J. P. Boys' Coll. S., Aldershot
 Lewis, E. D. Oxenford H., St. Lawrence, Jersey
 Lewis, T. M. Gram. S., Shoreham
 Lewis, L. Clifford S., Beckington, Bath
 Litchfield, J. B. Winchester House, Redland, Bristol
 Leyshon, E. D. S. Commercial S., Astley Bridge
 Leyshon, W. C. H. Commercial S., Astley Bridge
 Liddle, S. C. Loughton School
 Liggi, A. Tivoli H., Gravesend
 Liggi, R. Tivoli H., Gravesend
 Lineoln, J. Croad's School, Lynn
 Lion, R. Townley Castle S., Ramsgate
 Lipscombe, J. W. Highfield S., Chertsey
 Lipson, H. Great Ealing School

Lisby, L. N. Handel Coll., Southampton
 Little, C. W. R. The Briary, Northwood
 Little, F. Wadhams S., Liskeard
 Locke, J. East Park Coll., Southampton
 Loftus, A. M. Gram. S., Sale
 Lomax, R. Wellington Coll., Salop
 Lones, J. A. Wellington Coll., Salop
 Lovell, R. C. Taunton School
 Lowe, R. A. Kilgrimol S., St. Anne's-on-Sea
 Lupton, S. W. Kingsholme S., Weston-s.-Mare
 Lynn, G. W. Pierremont Coll., Broadstairs
 MacDonnagh, F. Ward National S., Bangor, Co. Down
 Maddock, D. Wellington Coll., Salop
 Maidment, W. Coll. S., Bridgwater
 Main, R. Kilgrimol S., St. Anne's-on-Sea
 Maitland-Jones, H. J. M. Taunton School
 Mallalieu, F. Grammar S., St. Anne's-on-Sea
 Manaton, G. A. Chaloner's S., Braunton
 Mansfield, C. Coll., Weston-s.-Mare
 Mansfield, J. A. Brunswick H., Maidstone
 Marehant, S. A. Cliftonville Coll., Margate
 Markham, C. G. Chaloner's S., Braunton
 Marriott, L. Ripley Commercial S.
 Marsh, T. W. Boys' Coll. S., Aldershot
 Martin, A. Mutley Gram. S., Plymouth
 Marx, H. Springhaven, Eastbourne
 Mason, C. S. Anerley College
 Mason, R. P. S. De Gresley Lodge, Southsea
 Mason, W. P. Modern S., Gravesend
 M'Auley, P. J. Stranraer S., Fareham
 Maylam, H. W. Brunswick H., Maidstone
 McConnell, W. G. Wellington Coll., Salop
 McCormack, E. H. The Modern S., Southport
 McCormack, J. Ward National S., Bangor, Co. Down
 McCumskey, H. Grosvenor Coll., Carlisle
 McKenna, J. L. Winchester House, Redland, Bristol
 McWilliam, N. Farnworth Gram. S.
 Meadmore, C. R. A. The Briary, Northwood
 Meakes, A. M. Oxenford H., St. Lawrence, Jersey
 Mears, A. De Q. Milton Abbas S., Blandford
 Merrieks, E. A. High S., Swindon
 Miller, H. Barton S., Wisbech
 Millican, A. Elmhurst S., Kingston-on-Thames
 Minehin, A. The Cedars, Ealing
 Mitchell, O. Kilgrimol S., St. Anne's-on-Sea
 Moffat, A. T. Tudor H., Denmark Hill
 Moffat, F. A. Tudor H., Denmark Hill
 Monkman, E. A. Croad's S., Lynn
 Monkman, W. A. Croad's S., Lynn
 Moorfield, G. Lytham Coll., Lancs
 Moore, G. M. Wadhams S., Liskeard
 Morgan, H. Coll. S., Bridgwater
 Morgan, T. H. Taunton School
 Morley, L. J. Clyde H., Hereford
 Morley, V. G. Taunton H., Brighton
 Morris, D. D. Cliftonville Coll., Margate
 Moss, F. Lytham Coll., Lancs
 Mott, F. T. J. Caversham H., Caversham
 Mottershead, F. J. Bradley High S., Newton Abbot
 Mountain, H. Grimshaw St. British S., Preston
 Mullins, J. H. The Coll., Weston-s.-Mare
 Musson, J. H. Cliftonville Coll., Margate
 Myhill, R. H. Saham Coll., Watton
 Mylrea, F. Gram. S., Sale
 Neall, K. P. Anerley College
 Newbery, J. St. Leonards Coll. S.
 Newby, G. L. Crossley & Porter S., Halifax
 Newland, L. J. Pierremont Coll., Broadstairs
 Newsham, T. Christ Church Higher-Grade S., Southport
 Newton, R. C. Barton S., Wisbech
 Niehol, J. Grosvenor Coll., Carlisle
 Nicholas, L. V. The Modern S., Southport
 Nicholson, W. Comm. S., Astley Bridge
 Nicklin, S. H. Edgbaston Acad., Birmingham
 Nind, P. N. Senlac S., Paignton
 Noakes, A. W. Crompton S., Southend-on-Sea
 Norman, J. Gram. S., Devizes
 Norton-Smith, C. A. Cliftonville Coll., Margate
 Nunnerley, N. Wellington Coll., Salop
 Ogdon, J. M. Ellesmere S., Harrogate
 Ogdon, J. R. Ellesmere S., Harrogate
 Orpwood, T. C. Cliftonville Coll., Margate
 Osborn, G. Heston H., Hounslow
 Ost, P. W. Wellington Coll., Salop
 Owen, T. B. Brean H., Weston-s.-Mare
 Page, D. A. Handel Coll., Southampton
 Painter, H. Cliftonville Coll., Margate
 Palmer, F. G. Croad's S., Lynn
 Palmer, H. L. Wellington Road S., Taunton
 Palmer, W. E. Duncan H., Gt. Yarmouth
 Panchaud, L. B. Southdown Coll., Eastbourne
 Pank, J. D. Ellesmere S., Harrogate
 Pargeter, G. L. Pierremont Coll., Broadstairs
 Pargiter, R. Deal College
 Parkinson, R. Deal College
 Parr, J. Catholic Gram. S., St. Helens
 Parry, R. Taunton H., Brighton
 Paterson, R. F. The Modern S., Southport
 Payne, G. V. Bracknell Coll., Berks
 Peace, G. Wellington Coll., Salop
 Peck, E. S. Gram. S., Wallington
 Peck, R. G. Gram. S., Wallington
 Peermud, R. E. Licensed Victuallers' S., Lambeth
 Pennington, R. Catholic Gram. S., St. Helens

BOYS, LOWER FORMS—Continued.
 Percy, A.F. Wellington Road S., Taunton
 Percy, D.W. Lancaster Coll., West Norwood
 Perkins, C.J. Taunton School
 Perkins, E.H. Wellington Road S., Taunton
 Perrée, A. Oxenford H., St. Lawrence, Jersey
 Perrins, G. Farnworth Gram. S.
 Perry, S.F. Croad's School, Lynn
 Petley, H.S. Ripley Comm. S.
 Phelps, D. High S., Swindon
 Phillips, E.J.R. Anerley College
 Phillips, E.S. Kingsholme S., Weston-s.-Mare
 Phipps, J.A. Cliftonville Coll., Margate
 Pickering, G.C. Saham Coll., Watton
 Pickering, J. Woodroughs S., Moseley
 Pickstock, A.C. Gram. S., Shoreham
 Picot, W. Jersey Modern S., St. Heliers
 Pierce, H. Christ Church Higher-Grade S., Southport
 Pirouet, C. Jersey Modern S., St. Heliers
 Pirouet, E.N. Oxenford H., St. Lawrence, Jersey
 Pittock, H. Deal College
 Plank, A.J. Gram. S., Devizes
 Plumb, A. Grimshaw St. British S., Preston
 Polsue, J.R. Modern S., Gravesend
 Pomfret, N. deD. North Hill, Roundhay, Leeds
 Poole, C.G. St. James's Coll. S., Jersey
 Poole, F.B. Cliftonville Coll., Margate
 Porter, F.W. Milton Abbas S., Blandford
 Prain, S. Jersey Modern S., St. Heliers
 Procter, E. The College, Tankerton-on-Sea
 Pryor, G. Deal College
 Pryor, J.W. Wilsford H., Devizes
 Pudner, R.W.H. Bradley High S., Newton Abbot
 Pullen, R.E. Winchester House, Redland, Bristol
 Purry, L.B. Southdown Coll., Eastbourne
 Raekstraw, C.S. Richmond Hill S., Richmond
 Raeburn, F.C. Oxenford H., St. Lawrence, Jersey
 Rahtkens, G. Gram. S., Shoreham
 Raine, J. Bailey School, Durham
 Rainey, A.V. The Coll., Weston-s.-Mare
 Raisin, L.F. Ripley Commercial S.
 Rayne, J.E. Gram. S., Shoreham
 Rayner, V.G. Gladstone S., Ramsgate
 Read, H.E. Crossley & Porter S., Halifax
 Reason, H. Taunton School
 Redhead, F. Birkdale Gram. S., Southport
 Redmore, J.M. St. Winifred's S., Torquay
 Reed, J. Clifton H., Uxbridge
 Reed, R. The Coll., Weston-s.-Mare
 Rees, C.L.J. Private tuition
 Rees, J.W. The College, Herne Bay
 Reid, C.T. The Modern S., Southport
 Renouf, K. Oxenford H., St. Lawrence, Jersey
 Revell, S.R. Mutley Gram. S., Plymouth
 Reynolds, H. Jersey Modern S., St. Heliers
 Rhind, H.P. Grammar S., St. Anne's-on-Sea
 Rhodes, N. Wellington Coll., Salop
 Richards, F. Clifton H., Uxbridge
 Richards, J.G. The Cedars, Ealing
 Richards, J.H. St. Winifred's S., Torquay
 Richardson, C.H.L. The Coll., Weston-s.-Mare
 Richardson, H.L. Elmhurst S., Kingston-on-Thames
 Rickard, A.R. Farnworth Gram. S.

Ricon, A.J. St. James's Coll. S., Jersey
 Rigby, W. Milton Abbas S., Blandford
 Rimner, T. Christ Church Higher-Grade S., Southport
 Rivett, J.H. Saham Coll., Watton
 Robb, W.A. Barton S., Wisbech
 Roberts, E.H. Beverley S., Barnes
 Roberts, J. Bradley High S., Newton Abbot
 Roberts, W. Bradley High S., Newton Abbot
 Roberts, W.H. Highfield S., Chertsey
 Robertson, K.A. Mary St. H., Taunton
 Rogers, J. Higher-Grade S., Margate
 Rosenberg, L. Great Ealing School
 Ross, C.D. New Brighton High S. for Boys
 Rowe, H.T. Comm. S., Penzance
 Rowley, C.F. Ripley Commercial S.
 Ruben, L. Townley Castle S., Ramsgate
 Rudderham, S.W. Halstead Gram. S.
 Russell, B.E. High School, Brentwood
 Saeré, L.H. Montauban, St. Anne's-on-Sea
 Salmon, C.G. Mary St. H., Taunton
 Salthouse, C. Grammar S., St. Anne's-on-Sea
 Sampson, L. Highfield S., Chertsey
 Sanderson, F. Christ Church Higher-Grade S., Southport
 Sandys, W.E. Grosvenor S., Bath
 Sangster, W.M. The Modern S., Southport
 Savage, G.H. St. Anbyn's, Woodford Green
 Sawyer, E. Wellington S., Heaton Moor
 Sawyer, C. Brunswick H., Maidstone
 Sawyer, C.P.B. Pembroke S., Hove
 Seammell, W.S. Taunton School
 Seabrough, F. Cliftonville Coll., Margate
 Searlett, E.S. Mary St. H., Taunton
 Seoles, H.J. Public Coll., Torquay
 Scott, A.C. Victoria Park S., Manchester
 Scott, J.A. St. Aubyn's, Woodford Green
 Scott, W. Victoria Park S., Manchester
 Seruby, E.C. Sandwich School
 Selous, J.G. Oxenford H., St. Lawrence, Jersey
 Senior, P.F. Leigh Hall Coll., Leigh-on-Sea
 Serjeant, E.V. Drafton House Coll. S., Newport, Mon.
 Shapiro, C. Townley Castle S., Ramsgate
 Sharman, P.R.B. Southdown Coll., Eastbourne
 Sharpe, H.R. Crompton S., Southend-on-Sea
 Shaw, A.F. The Modern S., Southport
 Shepherd, F.J. The Coll., Weston-s.-Mare
 Shipley, W. Duncan H., Gt. Yarmouth
 Shipp, F. Green Park Coll., Bath
 Shorland, C. Higher-Grade S., Margate
 Sinmonds, H.A. Licensed Victuallers' S., Lambeth
 Simpkins, F.G. Taunton School
 Simpson, A. Higher-Grade S., Margate
 Sinclair, R.F. Ripley Commercial S.
 Slade, R.B. Gram. S., Shoreham
 Slingsby, W.L. Anerley College
 Smedley, E.F.L. Brunswick H., Maidstone
 Smith, F. Grimshaw St. British S., Preston
 Smith, H.W. St. Bede's Coll., Hornsea
 Smith, W.E. New Brighton High S. for Boys
 Smyly, P.A. Anerley College
 Snell, A. Wadham S., Liskeard
 Snow, F.L. Gram. S., Margate
 Sowerbutts, W. Grimshaw St. British S., Preston
 Spicer, A.H. Licensed Victuallers' S., Lambeth

Spicer, S.S. Licensed Victuallers' S., Lambeth
 Spink, C.A. St. John's Coll., Brixton
 Spring, F.J. Elmhurst S., Kingston-on-Thames
 Sproston, E. Antrobus H., Congleton
 Sproston, J.B. Antrobus H., Congleton
 Spurrell, R.C. St. John's Coll., Brixton
 Stafford, F.W. Birkdale Gram. S.
 Stanford, H.E. Modern S., Gravesend
 Stannage, T. Ward National S., Bangor, Co. Down
 Staples, A.E.V. Richmond Hill S., Richmond
 Stedman, F. Brunswick H., Maidstone
 Stedman, R.C. Boys' Coll. S., Aldershot
 Steel, F.D. Mary St. H., Taunton
 Stephens, C.H. Mutley Gram. S., Plymouth
 Stevens, D.B. Bracknell Coll., Berks
 Stevens, F.W. Wellington Coll., Salop
 Stewart, H.L.G. Private tuition
 Stock, W.H. Littleton H., Knowle, Bristol
 Stocks, H. St. George's Coll., Barnsley
 Stonehouse, H. Crossley & Porter S., Halifax
 Stott, S. Highfield S., Chertsey
 Stranger, H.E. Jersey Modern S., St. Heliers
 Stringer, C.H. Highfield S., Chertsey
 Stuart, D. Wellington S., Heaton Moor
 Stubbs, J.B. Antrobus H., Congleton
 Suter, F.A. Gram. S., Blackpool
 Swaby, T.H. The College, Herne Bay
 Swift, T.C. Catholic Gram. S., St. Helens
 Symé, A. Salesian S., Battersea
 Talbot, P. Modern S., Gravesend
 Tapper, L.A. Pierremont Coll., Broadstairs
 Tattersall, C. The Coll., Weston-s.-Mare
 Taylor, G. St. Bede's Coll., Hornsea
 Taylor, L. Bradley High S., Newton Abbot
 Taylor, T.J. The Modern S., Southport
 Taylor, T.T. Wadham S., Liskeard
 Temple, L.G.L. Handell Coll., Southampton
 Tetlow, C.L. Gram. S., Sale
 Thomson, J.B. Duncan H., Gt. Yarmouth
 Thorp, L. Anerley College
 Thowless, L.M. Ripley Commercial S.
 Threlfall, N. Christ Church Higher-Grade S., Southport
 Tidswell, F.H. Christ Church Higher-Grade S., Southport
 Tierney, J. Hazel Grove High S., near Stockport
 Titcombe, A.L. Taunton H., Brighton
 Todd, H.J. Brunswick H., Maidstone
 Tolley, A.H. Cromwell Rd. S., Bristol
 Touzel, J. Jersey Modern S., St. Heliers
 Townsend, B.R. The Modern S., Southport
 Towse, F. St. Bede's Coll., Hornsea
 Trevenen, W.J. Comm. S., Penzance
 Trotter, P. Crossley & Porter S., Halifax
 Tueker, E. Modern S., Gravesend
 Tucker, G. Modern S., Gravesend
 Tucker, H.G. Sandwich School
 Turner, H.E. Elmhurst S., Kingston-on-Thames
 Tynan, J. Victoria Park S., Manchester
 Underwood, C.H. St. Aubyn's, Woodford Green
 Valentine, A.C. Catholic Gram. S., St. Helens
 Vernon, K.R. Grimshaw St. British S., Preston
 Vigers, E.B. Southdown Coll., Eastbourne
 Vilven, G. Green Park Coll., Bath
 Waddington, C. Clifton H., Uxbridge

Walker, J.H. Kingsholme S., Weston-s.-Mare
 Walker, R.C. Antrobus H., Congleton
 Walker, S.R. Belle Vue H., Norwich
 Walsh, E. Salesian S., Battersea
 Walter, C.H. Winchester H., Redland, Bristol
 Walton, S. Kilgrimol S., St. Anne's-on-Sea
 Ward, S.L. Taunton School
 Ward-Smith, W.G. Senlae S., Paignton
 Ware, F.H. Brunswick H., Maidstone
 Ware, W.H. Brunswick H., Maidstone
 Warner, B.J. Modern S., Gravesend
 Waters, H. Lancaster Coll., Morecambe
 Waters, H.T. Saham Coll., Watton
 Watson, C.R. Clifton Coll., Harrogate
 Watson, F. Farnworth Gram. S.
 Watson, G.H. Loughton School
 Watson, N. Christ Church Higher-Grade S., Southport
 Watson, P.L. Sandwich School
 Watt, J.F. Anerley College
 Webb, A.H.E. Chandos Gram. S., Winchcombe
 Webb, E. Wellington Coll., Salop
 Webber, E.C. De Gresley Lodge, Southsea
 Webster, W. Taunton H., Brighton
 Weekes, H.F. Boys' Coll. and High S., Southampton
 Welsby, A. Farnworth Gram. S.
 West, S.L. Wadham S., Liskeard
 Westgate, T.R. The Coll., Gt. Yarmouth
 Whatley, N.L. Taunton School
 Wheeler, A.L.D. Hillcroft S., Amburst Pk., N.
 White, F. St. John's Coll., Brixton
 White, J.C. Taunton School
 Whitlam, H.C. Gram. S., Scarborough
 Whiteman, J.D. Gram. S., Wallington
 Whittard, R.R. Holloway College, N.
 Whitmore, E.J. Taunton H., Brighton
 Whybrow, J.W. Hatfield H., St. Leonards-on-Sea
 Wildblood, D.R. Gram. S., Blackpool
 Wilkinson, R. Vernon H., Higher Broughton
 Williams, G.H. Wadham S., Liskeard
 Williams, R. Clifton H., Uxbridge
 Williams, S.T. Richmond Hill S., Richmond
 Williamson, T.H. Girtonville Coll., Aintree
 Willis, G.J. High S., Swindon
 Wills, C.W.M. Gram. S., Shoreham
 Wills, J. Girls' Coll., Gregory Boulevard, Nottingham
 Wills, W.H. Cliftonville Coll., Margate
 Wolfe, G. Springhaven, Eastbourne
 Wood, J. Grosvenor Coll., Carlisle
 Wood, J. Brunswick H., Maidstone
 Woodin, H.P.A. St. Anbyn's, Woodford Green
 Woodward, L. Higher-Grade S., Margate
 Woollett, W.C. The College, Herne Bay
 Wooster, T.H. Elmhurst S., Kingston-on-Thames
 Wright, A.B. Ripley Commercial S.
 Wright, A.T. Bracknell Coll., Berks
 Wright, J.G. Richmond Hill S., Richmond
 Wright, L.G. Lancaster Coll., West Norwood
 Yates, J.A. Tudor H., Denmark Hill
 Youlton, L. Hasland H., Penarth
 Young, J.A.C. High School, Brentwood
 Zachary, C. Ward National S., Bangor, Co. Down
 Zeitlin, S. Tivoli H., Gravesend

GIRLS.

Adams, W. High S. for Girls, Coventry
 Adamson, G.M. Belle Vue, Herne Bay
 Adecock, M.M. Milton H., Atherstone
 Agland, I. Salisbury Road Girls' S., Plymouth
 Ainsworth, E.K. Girls' High S., Swindon
 Alexander, P.M. Claremont Coll., Stockport
 Allen, F.S.A. Girls' High S., Sudbury
 Allen, T. St. Catherine's S., Sheffield
 Anderson, A. Home Park S., Stoke, Devonport
 Anderson, I.M. Ladies' Coll., Bedford
 Anson, M. Abbey H., Selby
 Ashley, D.E. Southolme High S., Whalley Range
 Atkinson, E.E. Howard Coll., Bedford
 Atkinson, G.M. St. Catherine's High S., Bow Road, E.
 Atkinson, K.C. Clyde H., Reading
 Atkinson, M.L. 50 Western Hill, Durham
 Austin, I. Cleveland H., Queen's Down Rd., N.E.
 Ayres, D.H. Cranfant S., Buckhurst Hill
 Baddeley, D.H. Cheltenham H., Newport, Mon.
 Bailey, L. The Priory S., Earls Colne
 Bailey, N. Girtonville Coll., Aintree
 Baines, D.F. The Priory S., Earls Colne
 Baker, C. Girls' High S., Sudbury
 Baker, G.M. Crossbeck H., Ilkley
 Baker, H.M. Lee Coll., Eastbourne
 Baleh, D.K. Colville H., Swindon
 Bale, J.G. St. John's Coll., Brixton, S.W.
 Balfry, O.C. Royal Masonic Inst., Clapham Junction
 Banfield, S. Orchard Lodge, Malvern
 Banks, M.C. Girtonville Coll., Aintree
 Banks, M.M. West End S., Lymington
 Bardsley, E. Beech H., Heaton Chapel
 Barker, G. High S., Northbrook
 Barker, H. Private tuition

Barker, J.A. Portway Coll., Reading
 Barker, M.E. Orton Coll., Coleshill
 Barnes, I.F. Alexandra Coll., Shirley, Southampton
 Barnes, V.A. High School, Frome
 Baruett, M. Summerbrook S., Reading
 Barry, G.M.E. Clough S., Reigate
 Bartholomew, E.C. Heathleigh S., Horsmonden
 Bartlett, G.M. Wilber and Camden H., Biggleswade
 Base, F.E. Ebenezer H., Norwich
 Batchelor, B.S. High S. for Girls, Coventry
 Bates, E.C. Clare House, Northampton
 Bateson, V. Royal Deaf S., Old Trafford
 Baverstock, A. Grimshaw St. British S., Preston
 Bayliss, W.A. Ridgmont S., Bristol
 Beavan, P. Girls' Coll. S., Aldershot
 Belcham, M. Ladies' Coll., Margate
 Bell, M.A. Castle Hall S., Northampton
 Bellhouse, D. Crossbeck H., Ilkley
 Bengé, L.E.E. Stuart H., Gravesend
 Bennett, E. High S., Warrington
 Bennett, E. Highfield Coll., Blackpool
 Bennett, M.S. Gunnettside S., Plymouth
 Benson, S.N. Blenheim House, Olton
 Bentall, E.E.M. Danley H., Gravesend
 Berrington, E.A. Weirfield S., Taunton
 Bertie, W.K. Brownswood Coll., N.
 Bibby, E. Girtonville Coll., Aintree
 Biden, D.A. Lynton H., Portsmouth
 Bishop, K. The Pebbles, Tenterden
 Blackmore, R.W. Essex House, Saltash
 Blair, A.D. Highleigh H., St. John's, S.E.
 Bleaney, A.M. Liceused Victuallers' Girls' S., S.E.
 Blyde, M.K. Elsmere S., Reading
 Bolitho, D.E. Dunnington, Muswell Hill, N.

Bolland, C.E. Highfield S., Harrogate
 Bond, A.S. Ladies' Coll., Margate
 Botham, L. Girls' Gram. S., Bridlington
 Botting, G.M. Ripley Comm. S.
 Bound, R.W. Trevello, Winton
 Bourehier, E.F.M. High S. for Girls, Coventry
 Bowen, E.I. Holloway College, N.
 Boyce, F.M. Girls' High S., Sudbury
 Braccamp, D. High S., Warrington
 Brade, J. Clyde H., Reading
 Bradford, L. North Hill, Roundhay, Leeds
 Brady, D.V. Ellerker Coll., Richmond
 Branson, N. 51, Ditchling Rise, Brighton
 Bray, G.A.R. Mayfield Coll., Marlborough
 Breese, M.E. Harley H., Hereford
 Briece, E. Ward National S., Bangor, Co. Down
 Bridge, I.H. Heathleigh S., Horsmonden
 Brigden, F.E. Ladies' Coll., Margate
 Briggs, D. Warwick H., Roade
 Briggs, M. Warwick H., Roade
 Bright, G.W. Holloway College, N.
 Broekbanks, H.M. Wandsworth H., Heaton
 Bromly, M. High School, Woodford
 Broome, E. High S., Warrington
 Brown, A.C. St. Hilda's S., Gosforth
 Brown, E. Middle Hulton Ladies' S., Bolton
 Brown, G.E. Alexandra Coll., Shirley, Southampton
 Brunet, M. The French Convent, Newhaven
 Bucknell, E. Claremont Coll. S., Forest Gate, E.
 Buggs, E.A. Heathleigh S., Horsmonden
 Bnlgin, D. Merton S., Hall Gate, Doncaster
 Burgess, D. Linwood S., Altrincham
 Burns, M.A. Cranley H., Muswell Hill, N.
 Bush, M.E. Gladstone S., Ramsgate
 Buss, C.F. Cornwallis High S., Hastings
 Butler, R.A. Girls' High S., Swindon
 Bygrave, E.V. Fellenberg S., Maidstone

Byrom, C.M.A. Ingersley H., Birkdale
 Campbell, C.A. Holly Park Coll., New Southgate
 Cardy, V.M. Royal Bay H., Gorey, Jersey
 Care, M.E. Manor H., Driffild
 Carpenter, M.E. Heathleigh S., Horsmonden
 Carr, E.J. Ravensworth Terrace S., Durham
 Carter, A.B. Clarendon S., Exmouth
 Carter, D.M. Mechanics' Inst., Pudsey
 Carter, E. Sherwood S., Woolwich
 Carter, G.E. Howard Coll., Bedford
 Case, C.H. Westbourne H., Cowes
 Catesby, D.M. Milton H., Highgate, N.
 Challis, K.M. Drayton H., Newport, Mon.
 Chambers, E. Ward National S., Bangor, Co. Down
 Chapman, D. Royal Masonic Inst., Clapham Junction
 Chapman, J.M. Holnwood Coll., Westcliff-on-Sea
 Chapman, W.C. Stuart H., Gravesend
 Chappell, M. Shrubbery S., Staple Hill, near Bristol
 Charlesworth, K.W. Fonthill High S., Barnsley
 Chatterton, A.A. Springfield, Stockport
 Chattey, E.I. Cornwallis High S., Hastings
 Chattey, M. Hill Cross S., Amhurst Park, N.
 Cheate, H.B. Milton H., Atherstone
 Chesnay, R.E. Clark's College High S., Holloway
 Chippendale, M. St. Hilda's S., Gosforth
 Chisnall, G.E. Stoke H., Guildford
 Clark, E.A. The Laurels, Lincoln
 Clarke, D.M. Gram. S. for Girls, Worcester
 Clench, E.M. Harringay Park S., Hornsey, N.
 Cleveland-Smith, N. Private tuition
 Cleverly, F.A. St. Clare S., Southwick
 Clifford, M. British S., Wokingham

GIRLS, LOWER FORMS—Continued.

Clough, M.A. Highfield S., Harrogate
 Cole, W.M.C. S. Kilda's Coll., Redland
 Colebrook, D.A. Gwrfai H., East Cowes
 Coles, E.F. Wynnstay High S., West Ealing
 Collins, G.M. Convent S., Kensal Road, W.
 Collins, G.O. Ridgmont S., Bristol
 Colson, K.
 Shrubbery S., Staple Hill, nr. Bristol
 Comins, J. 12 Reginald Terrace, Leeds
 Cook, D.P. Bodman H., Maidstone
 Cook, E.F. Wandsworth H., Heaton
 Cookson, F.J. Girtonville Coll., Aintree
 Cooper, D. Trevello, Winton
 Corrie, N. Merton S., Hall Gate, Doncaster
 Cox, E.D. High S. for Girls, Coventry
 Cox, H.G. Brean Down H., Burnham, Som.
 Cox, M.A.
 Alexandra Coll., Shirley, Southampton
 Cozens, E.H. Bishop Fox's High S., Taunton
 Crabtree, W. Merton S., Hall Gate, Doncaster
 Crampton, G.J. Westwing Coll., Ryde, I.W.
 Creasey, E.E. Ruskin Coll., Brockley, S.E.
 Crickmay, E.M. Thornton Girls' S., Grays
 Cross, K.E. Bourne H., Eastbourne
 Curry, B.E. Ravensworth Terrace S., Durham
 Daily, A. Ward National S., Bangor, Co. Down
 Daish, M.E. Westwing Coll., Ryde, I.W.
 Dale, D. Girls' High S., Swindon
 Dale, E.K.
 Alexandra Coll., Shirley, Southampton
 Dale, G. Stamford Hill & Clapton High S., N.
 Dallow, E.E. Harley H., Hereford
 Daulby, H.M.
 Wilber and Camden H., Biggleswade
 David, O.E. 114 Cathedral Rd., Cardiff
 Davidson, C. Grimshaw St. British S., Preston
 Davies, F.P. Buckhurst Coll., Buckhurst Hill
 Davies, H.G. Nuthurst, Sanderstead
 Davies, V.E. Finsbury Park High S., N.
 Davis, G.E. High S., Woking
 Dawkins, D.A.M. Chestnut H., Lincoln
 Daynes, A.M. Holt H., Fakenham
 Deacock, G.E. Ladies' Coll., Margate
 Deacock, H.R. Ladies Coll., Margate
 Deadman, R.J. Stuart H., Gravesend
 Deakin, G.E.
 Licensed Victuallers' Girls' S., S.E.
 Dean, M. Tentercroft S., Lincoln
 de la Pole, R.E. Vida House, Coventry
 de Launay, W. Westwing Coll., Ryde, I.W.
 De Meza, A.C. Milton H., Highgate, N.
 Denby, A.F. Tentercroft S., Lincoln
 Denman, M.E. Powerscroft, South Woodford
 Dennett, M.G. Clive Vale Coll., Hastings
 Dennis, M.E. Durham H., Eastbourne
 Dennis, W. Durham H., Eastbourne
 Dexter, D.V. High S., Farnborough
 Dickinson, M.J. Crossbeck H., Ilkley
 Dickinson, M.E.
 Claremont Coll. S., Forest Gate, E.
 Dingley, V.K.
 Royal Masonic Inst., Clapham Junction
 Dixon, M.I. East Park Coll., Southampton
 Dobbs, M.F.I.
 Brean Down H., Burnham, Som.
 Donald, J. Hill Croft S., Wellingborough
 Doubleday, M. Fernside, Grantham
 Dowsett, M. British S., Wokingham
 Doyley, D.L. Harringay Park S., Hornsey, N.
 Dulley, D.M. New Road S., Brentwood
 Dunlop, K.F. Clive Vale Coll., Hastings
 Dunning, C.M.
 Buckhurst Coll., Buckhurst Hill
 Dutton, M.S. York H., Farnham
 Eastham, E. Lancaster Coll., West Norwood
 Eastham, F.E. Lancaster Coll., West Norwood
 Edwards, M.C.
 Royal Masonic Inst., Clapham Junction
 Elliott, I.E. Eton H., Brighton
 Ellis, E.M. Clarendon S., Exmouth
 Ellis, F.C. Bodman H., Maidstone
 Ellis, H. Ward National S., Bangor, Co. Down
 Errey, C.A.M. Durham H., Eastbourne
 Ethel, C.H.
 Rougemont Ladies' Coll., Blackpool
 Evans, E.P. St. Maur Coll., Chesham
 Evans, H.A. Marist Convent S., Paignton
 Evelyn, D.
 Royal Masonic Inst., Clapham Junction
 Everitt, E.M.
 Royal Masonic Inst., Clapham Junction
 Ewan, D.D.B. School for Girls, Gravesend
 Fanshawe, G.M.
 Licensed Victuallers' Girls' S., S.E.
 Faull, L.M. Porthminster S., St. Ives
 Feacher, D.
 Uppingham House High S., Bradford
 Fell, F.I. Braeside Coll., Fortis Green, N.
 Ferguson, H.L.S. Private tuition
 Field, E. Weirfield S., Taunton
 Fiquet, J. The French Convent, Newhaven
 Finlow, M.K. Private tuition
 Fischer, E.F.
 Harringay Park S., Hornsey, N.
 Flatow, I.A. Lyddon Villa S., Leeds
 Fluck, E.L. Nantly H., Heston, Hounslow
 Flux, N.L. Westwing Coll., Ryde, I.W.
 Forbisher, K. British S., Wokingham
 Fox, I. 9 Victoria Road, Barnsley
 Foxton, I. Abbey H., Selby
 Foxton, M. Abbey H., Selby
 Fraser, M. Ladies' Coll., Margate
 Frearson, L.E. Colville H., Swindon

Fridy, S.P. St. Stephen's Coll., Hounslow
 Friend, S. Bow Modern S., Bow Road, E.
 Gainsford, D.M.
 St. Michael's Avenue S., Northampton
 Garland, B. St. Maur Coll., Chesham
 Garratt, E. Powerscroft, South Woodford
 Genot, A. Marist Convent, Tottenham, N.
 Genot, M. Marist Convent, Tottenham, N.
 George, W.M. Olive House, Brockley, S.E.
 Gerahty, K.E. Ellerker Coll., Richmond
 Gibbs, H.M. Private tuition
 Gieve, G.M.
 Crouch End High S., Weston Park, N.
 Glanville G.
 Stamford Hill & Clapton High S., N.
 Glassborow, M.A. Lyndale Coll., Worthing
 Gloss, D.M. Clare S., Worthing
 Golding, E.G. Grosvenor Preparatory S., Bath
 Golds, F. British S., Wokingham
 Goodman, M.M. Clyde H., Reading
 Goold, P.V. Fernside, Grantham
 Gordon, D. Victoria H., Congleton
 Gorton, D.H.
 Pemberton Coll., Upper Holloway
 Gottrell, I.G.
 Ashton H., St. Clement's, Jersey
 Gradidge, E. Bow Modern S., Bow Rd., E.
 Grandidge, M.
 Rougemont Ladies' Coll., Blackpool
 Gray, L. St. George's Coll., Barnsley
 Green, A.R.
 Royal Masonic Inst., Clapham Junction
 Green, M. Merton S., Hall Gate, Doncaster
 Greenacre, H.G. Hopefield H., Norwich
 Grenfell, M.M. Private tuition
 Guest, E.K. St. George's H., Doncaster
 Guest, L. St. Catherine's S., Sheffield
 Gunn, F. Oakwood H., Grand Parade, Brighton
 Hague, F. 9 Victoria Rd., Barnsley
 Hale, Stephens, M. St. Maur Coll., Chesham
 Hall, I.L. South View, St. Leonards-on-Sea
 Hall, M.M.J. Cranford S., Buckhurst Hill
 Hamilton, G. Avondale, Winchmore Hill, N.
 Hammond, E.M.
 Royal Masonic Inst., Clapham Junction
 Hampshire, M. Lyddon Villa S., Leeds
 Harper, A.G. Hope Lodge S., Bexleyheath
 Harston, H.A. Chestnut H., Lincoln
 Hartley, D. The Laurels, Lincoln
 Harvey, I.I. High S. for Girls, Wanstead
 Hatch, K. Summerbrook S., Reading
 Hawkins, E.M. High School, Wednesbury
 Haworth, J. Breck Coll., Poulton-le-Fylde
 Hay, J. Clive Vale Coll., Hastings
 Hay, M.I. Carden S., Peckham Rye, S.E.
 Hedley, M. 50 Western Hill, Durham
 Henson, E.E. Clare House, Northampton
 Herbert, E. Broadfield S., Rochdale
 Hesketh, J.M. Ingersley H., Birkdale
 Hesketh, M. High S., Norbreck
 Hick, M. 12 Reginald Terrace, Leeds
 Hickman, E.M. Girls' High S., Swindon
 Hicks, H.D. Gram. S. for Girls, Worcester
 Hignett, A. High S., Warrington
 Hill, H. Girls' S., Mechanics' Inst., Thornton
 Hill, I.E. London Coll., Stratford, E.
 Hill, M.E. Moody H., Congleton
 Hill, S.E. Girls' S., Mechanics' Inst., Thornton
 Hilton, E.A. Commercial S., Astley Bridge
 Hilton, F. Girls' High S., Swindon
 Hinchcliff, J. St. George's H., Doncaster
 Hinchliff, F.M. Fonthill High S., Barnsley
 Hinds, G.E. Hill Croft S., Wellingborough
 Hirst, M.C. Crossbeck H., Ilkley
 Hitchings, G. Orchard Lodge, Malvern
 Hives, D. Manor H., Driffield
 Holland, W.M. 114 Cathedral Rd., Cardiff
 Hollett, E.M.E. Girls' Coll. S., Aldershot
 Holness, M.V. Guelph H., Margate
 Holt, L. Girls' High S., Rochdale
 Homfray, D.F.
 South View, St. Leonards-on-Sea
 Honeybourne, D.M. Private tuition
 Hopperton, W.B.
 Carden S., Peckham Rye, S.E.
 Horner, M.M.
 St. Michael's Avenue S., Northampton
 Horsfall, M.G. Iglewood, Bramhall
 Horton, D.S. Colville H., Swindon
 Hosking, E. Belle Vue, Saltash
 Howard, E.C.
 Old Grange S., Hampton-on-Thames
 Howarth, F.M.
 Handfield Coll., Waterloo, L'pool
 Howse, P.M. Private tuition
 Hudson, E.C.
 Southolme High S., Whalley Range
 Hudson, M.T. Lingdale Rd. Acad., W. Kirby
 Hughes, G.G. Girls' Coll., Penmaenmawr
 Hunt, A.D. Gram. S. for Girls, Worcester
 Ibbotson, P.M. Cranley H., Muswell Hill, N.
 Ingram, R. St. Olave's S., Taunton
 Isaac, E.M. Whitville Coll., Nottingham
 Jackson, G. The Priory S., Earls Colne
 Jackson, L. Fonthill High S., Barnsley
 James, B.M. Fernside, Grantham
 James, W. 114 Cathedral Rd., Cardiff
 Jaques, P.
 St. Winifred's S., Moorgreen, nr. Nottingham
 Jarvis, F.E. Ladies' Coll., Margate
 Jennins, H. 12 Reginald Terrace, Leeds
 Jephcott, V. High S. for Girls, Coventry
 Jessemann, D.E. Maindee Lawn S., Newport
 Johnson, M. Teviot House, Northampton

Johnson, W.A.
 Holly Park Coll., New Southgate
 Jones, D.I. Preswylfa S., Cardiff
 Jones, E.M. Ashburne H., Chesham
 Jones, H.M. Preswylfa S., Cardiff
 Jones, R.C.
 St. Peter's Coll. S., Fulham Road, S.W.
 Jordan, D.
 St. Winifred's S., Moorgreen, nr. Nottingham
 Judd, L.F. Holloway College, N.
 Jupe, E.M. East Park Coll., Southampton
 Keay, E.Y. Girtonville Coll., Aintree
 Keeble, M.H. Woodroughs S., Moseley
 Keele, M.P. Southdown Coll., Eastbourne
 Keeling, E.M.
 Shrubbery S., Staple Hill, nr. Bristol
 Kelly, E.E.
 Alexandra Coll., Shirley, Southampton
 Kembal, G. Buckhurst Coll., Buckhurst Hill
 Kemp, I.J.D. Quarry H., Guildford
 Kendall, W.M. Grosvenor S., Wokingham
 Kennagh, M.B. St. George's H., Doncaster
 Kennedy, M.D. Private tuition
 Kenyon, A. High S., Warrington
 King, M.E.
 St. Michael's Avenue S., Northampton
 Kinkead, C.M.
 10 Mont le Grand, Heavitree, Exeter
 Kinkead, M.E.
 10 Mont le Grand, Heavitree, Exeter
 Kirkpatrick, S. Ingersley H., Birkdale
 Kitcatt, G.M.
 Royal Masonic Inst., Clapham Junction
 Knapman, A.
 Stamford Hill and Clapton High S., N.
 Knightbridge, C.L.
 High S. for Girls, Wanstead
 Ladner, E. Alverton S., Penzance
 Lait, E.M. Private tuition
 Lait, E.E. Porthminster S., St. Ives
 Lambert, M.M. Guelph Coll., Bristol
 Langford, C.M. Olive House, Brockley, S.E.
 Large, E.G. Landrock H., Stroud Green, N.
 Lathom, M. High S., Alsgar
 Lawrence, I.D. Portway College, Reading
 Leather, M. Middle Hulton Ladies' S., Bolton
 Le Brun, M.D.E.
 St. James's Ladies' S., St. Heliers
 Le Montais, Z.R. de L.
 St. James's Ladies' S., St. Heliers
 Lesley, D.
 Stamford Hill and Clapton High S., N.
 Lewer, M.R. St. Clare S., Southwick
 Lewis, E. High School, Wednesbury
 Lewis, G.
 Stamford Hill and Clapton High S., N.
 Lewis, G.A. Elm H., Ealing
 Lewis, J.
 Royal Masonic Inst., Clapham Junction
 Lewis, M.J. Castle Hill Coll. S., Maidenhead
 Lidbetter, K.M. Camden Road Coll. S., N.
 Liddell, M.I. High S. for Girls, Coventry
 Lilley, M.E. Clough S., Reigate
 Lingwood, S.R. Ladies' Coll., Margate
 Lippiatt, K. Selwood S., Frome
 Little, G. The Close, Dyke Rd., Brighton
 Lloyd, B.N. High S. for Girls, Coventry
 Lloyd, V.W.
 10 Maxwell Road, Rathgar, Dublin
 Lock, E.M. Crescent S., Norwich
 Lomax, J.N.M. Comm. S., Astley Bridge
 Lomax, M. Claremont Coll., Stockport
 Longhurst, K.M. Girls' Coll. S., Aldershot
 Lonsley, E.L. Hemdean H., Caversham
 Low, E. Crescent S., Norwich
 Lucas, W. Chestnut H., Lincoln
 Luckham, E.L.
 Alexandra Coll., Shirley, Southampton
 Lynch, M. Marist Convent, Tottenham, N.
 Machin, E. Grimshaw St. British S., Preston
 Madge, Q.L. Porthminster S., St. Ives
 Maher, F.R. Castle Hill Coll. S., Maidenhead
 Malden, Elaine S. Private tuition
 Malden, Enid S. Private tuition
 Malzard, J.L.
 Ashton H., St. Clement's, Jersey
 Mander, L.E. Westwing Coll., Ryde, I.W.
 Mann, D. Braeside Coll., Fortis Green, N.
 Mannix, L.E.
 St. Catherine's High S., Bow Rd., E.
 Marks, J. Wandsworth H., Heaton
 Marks, S. School for Girls, Gravesend
 Marr, M.L. Lancaster Coll., West Norwood
 Marshall, D.S. London Coll., Stratford, E.
 Martin, I. St. Maur Coll., Chesham
 Mathews, T.F. S. Kilda's Coll., Redland
 Matthews, E.F. Dunnington, Muswell Hill, N.
 Mattingly, C.H. Girls' High S., Sudbury
 May, L.L. Rhampore, Wembley
 Mayne, A.G. Preswylfa S., Cardiff
 McDaugall, M.
 Ward National S., Bangor, Co. Down
 McEwen, J.A.
 St. Catherine's High S., Bow Rd., E.
 McGillivray, L.R.
 Alexandra Coll., Shirley, Southampton
 McPherson, A.B. Norma S., Waterloo, L'pool
 McRoberts, J.
 Ward National S., Bangor, Co. Down
 Meaby, E.D. Hemdean House, Caversham
 Meacock, H.
 Westbourne S., Westbourne Pk., W.
 Meldrum, R.G. Linwood S., Altrincham
 Merryweather, N. Foathill High S., Barnsley

Mewburn, A.G. High S. for Girls, Coventry
 Miles, A. British S., Wokingham
 Milling, M.M. Duchy Court, Harrogate
 Milton, D.P. Private tuition
 Moncur, M. 7 Grange Crescent, Sunderland
 Moore, A.L.
 Wilber and Camden H., Biggleswade
 Moore, A.L. Harley H., Hereford
 Moore, E. Waudsworth H., Heaton
 Morgan, D.M. Southernhay S., Exeter
 Morris, B.P. Milton H., Atherstone
 Morris, E.
 Royal Masonic Inst., Clapham Junction
 Morris, E.G. East Park Coll., Southampton
 Morten, S.J. Girls' High S., Sudbury
 Mossman, M.J. Bishop Fox's High S., Taunton
 Mould, M. North Hill, Roundhay, Leeds
 Mowbray, E.V.
 Clark's College High S., Holloway
 Munday, M.C. Nuthurst, Sanderstead
 Murray, I.
 Shrubbery S., Staple Hill, nr. Bristol
 Myott, M. Private tuition
 Nathan, D.H. Cairnbrook Coll., S. Woodford
 Nelder, M.L. Southernhay S., Exeter
 Nettleton, D.J. North Hill, Roundhay, Leeds
 Newcombe, D.M. Ellerker Coll., Richmond
 Newman, L. St. Maur Coll., Chesham
 Nicholson, A.M.
 Crouch End High S., Weston Park, N.
 Nixon, E. Grimshaw St. British S., Preston
 Nockels, G.L. Lyndale Coll., Worthing
 Nokes, C.M.
 Crouch End High S., Weston Park, N.
 Norman, E.G. Hope Lodge S., Bexley Heath
 Northfield, M.
 Stamford Hill and Clapton High S., N.
 Northmore, B.J.C.
 Holmwood Coll., Westcliff-on-Sea
 Norton, E.G. Bishop Fox's High S., Taunton
 Notley, M. Gildredge S., Eastbourne
 Oates, I.M. St. George's H., Doncaster
 Offord, M.F. Thornton Girls' S., Grays
 Oldham, M. New Mills High S., nr. Stockport
 O'Neill, E.I. 10 Maxwell Rd., Rathgar, Dublin
 O'Neill, G.R.
 10 Maxwell Rd., Rathgar, Dublin
 O'Neill, N.A.P.
 10 Maxwell Rd., Rathgar, Dublin
 Oppenheim, D. Gloucester House, Kew
 Ormiston, F.E. High S., Warrington
 Osborn, H.R. Cranbrook Coll., S. Woodford
 Osborne, W.K. Brentwood, Southport
 Overton, M. Harringay Park S., Hornsey, N.
 Owen, G.H. Handfield Coll., Waterloo, L'pool
 Page, A.B.
 Royal Masonic Inst., Clapham Junction
 Palmer, G.M. Grosvenor S., Wokingham
 Panting, A. Bank H., Crediton
 Papworth, N. Teviot House, Northampton
 Parker, M.H. St. George's H., Doncaster
 Parker, P.A. Girtonville Coll., Aintree
 Paton, D. High S. for Girls, Wanstead
 Paul, E. St. Olave's S., Taunton
 Pavitt, G. The French Convent, Newhaven
 Peake, E.M. Orton Coll., Coleshill
 Peerless, E. Clough S., Reigate
 Pellet, G.I. Porthminster S., St. Ives
 Pennington, M. Newuham H., Hereford
 Percival, L. High S., Warrington
 Perkins, A.E. Ystrad House, Newport, Mon.
 Perry, E. Ystrad House, Newport, Mon.
 Perry, R.
 Alexandra Coll., Shirley, Southampton
 Phillips, U. St. Maur Coll., Chesham
 Pickering, G.A. Wendover Coll., Bowes Pk., N.
 Pickering, K.M. Woodside, Hastings
 Pickles, A. Grimshaw St. British S., Preston
 Picot, A.G. St. James's Ladies' S., St. Heliers
 Piggott, M.R.C.
 Royal Masonic Inst., Clapham Junction
 Pinnington, W.D. Rose Park S., Upper Tooting
 Pitts, R.G. Brean Down H., Burnham, Som.
 Plowman, D.M. Hill Croft S., Wellingborough
 Plumridge, C.V.
 Royal Masonic Inst., Clapham Junction
 Pond, M.M. Emwell S., Warminster
 Ponsford, S.M. Maindee Lawn S., Newport
 Poole, O.W. Finsbury Park High S., N.
 Port, B.M. Marist Convent S., Paignton
 Potter, D.R. Elm H., Ealing
 Potter, E.W.
 St. Catherine's High S., Bow Rd., E.
 Pout, C. Wellington S., Deal
 Pratt, C.A. Wendover Coll., Bowes Park, N.
 Pressey, G.E. Private tuition
 Proudlove, C. Private tuition
 Pryn, N. Salisbury Road Girls' S., Plymouth
 Purnell, F. Hanover H., Ryde
 Pye, D.W. Mayfield Coll., Marlborough
 Quartermaine, M.J. High S., Woking
 Race, M.V.
 Royal Masonic Inst., Clapham Junction
 Radbourne, A. British S., Wokingham
 Ramsden, E.C. Victoria H., Congleton
 Ransted, M. Avonclyffe, Bromley
 Reading, M.H. Tentercroft S., Lincoln
 Redgrave, E.
 High S., Hazel Grove, nr. Stockport
 Reed, G.E. Ebrington H., Exeter
 Rees, G.L. Preswylfa S., Cardiff
 Reeve, J.M. Girls' High S., Sudbury
 Renaut, C.M.
 Licensed Victuallers' Girls' S., S.E.

<p>GIRLS, LOWER FORMS—Continued. Reynolds, O.M. High S. for Girls, Coventry Richards, A.M. Preswylfa S., Cardiff Richards, C. The College, Southend-on-Sea Richards, V.A. Emwell S., Warminster Richardson, S.D. Merton S., Hall Gate, Doncaster Ridgway, E. Clare House, Northampton Rigby, E. Grimshaw St. British S., Preston Rimmer, A.M.M. York H., Farnham Roberts, E.M. Sunnyholme S., Southport Roberts, G.B. High S. for Girls, Wanstead Roberts, H.M. St. Helen's Coll., Seven Kings Roberts, N. Penpol Girls' S., Hayle Rocky, E. Salisbury Road Girls' S., Plymouth Rogerson, V.C. The High S., Oakengates, Salop Rose, M.E. Portway Coll., Reading Rossiter, C.B. Marist Convent S., Paignton Rowe, R. The Grammar S., East Finchley Rowles, G.M. Portway Coll., Reading Runciman, G.L. High S. for Girls, Wanstead Rupert, E.E. Nantly H., Heston, Hounslow Rushton, L. High School, Wednesbury Russell, D.L. Alexandra Coll., Shirley, Southampton Ryde, K. Nantly H., Heston, Hounslow Sadler, E. 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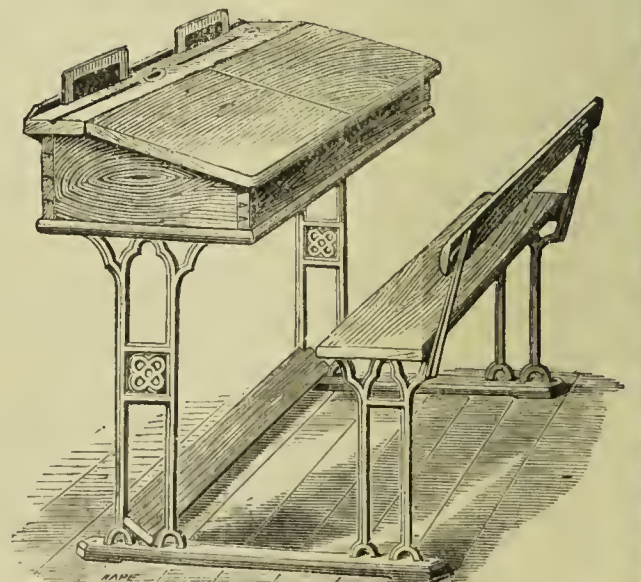
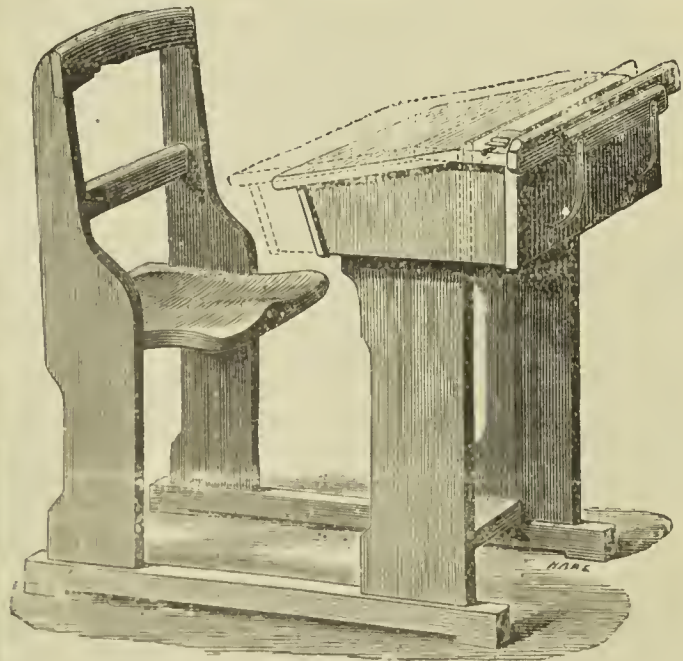
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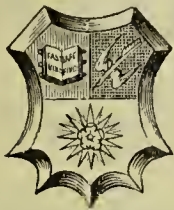
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The Educational Times.

Greek once more.

THE Greek Question, as it is called, is for the moment the one absorbing topic of thought and conversation with secondary teachers, and in the course of the next few days the vote of the Cambridge Senate will influence the studies not only of the older universities, but also of the higher schools, of England for at least another decade. We have no wish to exaggerate the importance of the vote, and the declaration of a learned professor that this is "the most momentous crisis that has ever defined itself in the history of advanced education" may be dismissed as a coruscation of rhetoric. Greek flourished at Cambridge before 1822, the year when it was first made a compulsory study: and Cambridge, even though it should refuse to move with the times, will continue to flourish, in spite of Greek.

It is not our intention to take part in the fray or add one to the innumerable fly-leaves that have rained on electors during the past month. All have by this time made up their minds, and it is doubtful whether any arguments, however cogent, would now influence a single vote. Our excuse for recurring to the subject is that it has far more than a passing interest, and touches the first principles of pedagogics.

By a happy accident we are able to see how the question struck a contemporary—one of the acutest and most philosophic minds of our generation, well qualified both by experience and study to form a judgment, and writing at a time before Greek had become a shibboleth of academic politics.

Henry Sidgwick's essay on "The Theory of Classical Education," written in 1867 for a volume edited by Dean Farrar, which had long been out of print, has been recently reprinted among his remains, and as we reperuse it we are struck by the grasp he shows of the problem in all its aspects—how he has anticipated nearly all the arguments put forward in the full-dress Senate House debate; how all the changes and developments in our secondary schools that have since occurred serve only to enforce his position.

The essay must be read to be appreciated, and a *précis* would give but a faint indication even of the chain of argument and its logical conclusiveness. We must confine

ourselves to drawing attention to one of two aspects of the question that were passed over or only glanced at in our previous article.

Perhaps the most question-begging epithet in the whole discussion is "utilitarian," as the adjective is used by the classicists. To brand any study—of modern languages, for instance—as "utilitarian" is, for them, tantamount to reducing it to the lowest educational value; it is intended to convey the same stigma as the German phrase: "a bread-and-butter science." But, as Sidgwick points out, the true distinction is not between utilitarian and liberal studies, but between a natural and an artificial education. By a natural education he means one that teaches a boy subjects that will interest his future life: not merely help to gain him a living. An artificial education is one which, in order that man may ultimately know one thing, teaches him another; which gives the boy the rudiments of some learning or accomplishment that the mature man will be content to forget. It is not disputed that for all save a limited class—clergymen and *littérateurs*—classics are part of an artificial education. If so, the *onus probandi* lies with the classicists. They must demonstrate that the process of learning Latin and Greek is a better mental gymnastic than any subject that could be substituted, and gives a training that cannot be equally given by English or French or science or any "natural" subject. We cannot now pursue the inquiry, but must refer our readers to the essay for the masterly analysis of the unique virtues and no less glaring defects of a purely classical training.

There is, moreover, an ambiguity in the advocacy of "classical studies" which has never been so well exposed as in the essay. "There seems no adequate reason why Latin and Greek should be regarded as a sort of linguistic Siamese twins, which Nature has joined together and which would wither if separated." Let us grant all the virtues that the classicists claim for the study of *one* dead language; it does not follow that these virtues will be doubled by studying two. The half, in this case, may prove to be greater than the whole—ininitely greater if the artificial half that is subtracted is replaced by some natural study.

Another fallacy that needs no less exposing underlies the belief that, because a complete study of Latin and Greek is felt by some who have successfully pursued it (not by all or

by Mr. Sidgwick himself) to have been the best possible literary training, therefore half as much Latin and Greek ought to produce about half as much the same result. We might as well contend that the Londoner who reaches Dover will have seen half as much of France as his companion who crosses the Channel. "It is a point of capital importance that instruction in any language should be carried to the point at which it really throws open a literature, while it is not a point of capital importance that any particular literature should be so thrown open." With the greater number of boys who are put through the mill of Latin and Greek, "the mind, exhausted with the labours of language, imbibes miserably little of the lessons of literature."

One other point, in conclusion, we may illustrate by a quotation which will serve as a specimen of the essayist's vigorous style. Both sides in the controversy, Greeks and Trojans alike, have complained of the multiplicity of subjects now taught in schools, and, though they differ as to the remedy, either side would welcome a lightening of the over-burdened curriculum. The evil is real and pressing; but it must not be interpreted as meaning that there is any incompatibility between literature and science. If a choice has to be made, we must, undoubtedly, choose "that study which best fits us for communion with our fellow-men"; but, at least in the earlier stages of education, there is no need for any such alternative.

"I absolutely deny this incompatibility; nor do I think it would ever have occurred to any one except for the strange illusion that in the age in which we live classics must necessarily be the 'substratum,' 'basis,' 'backbone' (or whatever analogous metaphor is used) of a literary education, and that therefore we must leave on one side every other form of literature with a view of imparting as much classics as possible. The consequence is that half the undergraduates at our universities, and a larger proportion of the boys at all (except, perhaps, one or two) of our public schools, if they have received a literary education at all, have got it for themselves; the fragments of Latin and Greek that they have struggled through have not given it them. If so many of our most expensively educated youths regard athletic sports as the one conceivable mode of enjoying leisure, if so many professional persons confine their extra-professional reading to the newspapers and novels, if the middle-class Englishman (as he is continually told) is narrow, unrefined, conventional, ignorant of what is really good and really evil in human life, it is not because these persons have had a literary education which their 'invincible brutality' has rendered inefficacious: it is because the education has not been (to them) literary; their minds have been simply put through various unmeaning linguistic exercises."

This was written more than a quarter of a century ago, when in the same volume Archdeacon Wilson was pleading for the introduction of natural science and Prof. Hales for the study of English literature as a school subject. Both subjects have since been admitted by our classical head masters, but grudgingly and of necessity; but classics is still the predominant partner. Is not Sidgwick's indictment of our schools and universities still in the main true? Let Mr. Arthur Benson answer for the public-school boy and Dr. Montagu Butler for the undergraduate.

NOTES.

ONE of the most important of the pamphlets on the Greek question is certainly "Greek and its Humanistic Alternatives in the 'Little-Go,'" by Dr. Karl Breul (1s. net. Heffer; Simpkin, Marshall, & Co.). Dr. Breul reprints in fuller form his speech in the Senate House (December 2), adds very instructive notes amplifying or illustrating particular points, and supplements all this by a series of critical notes on the Discussion of the First Report of the Studies and Examinations Syndicate as published in the *Cambridge University Reporter* (December 17). The pamphlet is well worth the attention of both sides. It is well informed, keenly argued, and moderate in tone.

WE cordially welcome the republication of the First Part of Dr. Allchin's "Account of the Reconstruction of the University of London" from the pages of the *Medical Magazine* (2s. 6d. net, Lewis). The period from the foundation of the University down to the first efforts of reconstruction is briefly outlined; but the work of reconstruction down to 1888 is very fully detailed, with quotations from speeches and documents and an appendix of charters and other pertinent materials of illustration. A second part, we dare say, will bring the record up to date. The work will be extremely convenient for reference. It is a melancholy story. The obstacles to development in London do, no doubt, prevent any close comparison with the rapid transformations in Liverpool, Manchester, and Birmingham; and probably enough the newer universities profited by the earlier struggles of London and by the general rise of interest in the higher education. At the same time, it cannot but seem amazing that such a prolonged and confused conflict should have been necessary for the establishment of an institution that could reasonably be called a University in the very Metropolis of the British Empire in the last quarter of the nineteenth century. Even as it stands, the University lacks the means for anything like an adequate fulfilment of its purposes. Why, it does not yet appear to have even attempted to constitute a Faculty of Law. It is for the Government to show an example, and to communicate an impulse, to private beneficence.

THE results garnered by the Mosely Commission to the United States have been well connoed and duly appreciated in this country, and there is no intelligent dissent from the contention that the new universities should provide liberally for "a sound and thoroughly scientific education in commercial affairs." Nor, indeed, is there any good reason why such provision should not be made in all the universities, older as well as newer. We do not suppose that Mr. Mosely, in his speeches at Leeds, meant either to restrict scientific commercial education to the newer universities or to exclude from these institutions other forms of higher study; we imagine he simply insisted, with the emphasis necessary to produce and to extend conviction, upon the side of education that is uppermost in his mind as a man of business. It was well, however, for the Mayor of Bradford—

also a man of business—to put forward an explicit claim for “the highest forms of learning.” He pointed out that towns like Bradford could themselves train their students for their own purely technical work, and that they looked to the university for “more than they could obtain locally.” Even if they obtained a higher stage of technical training in the university, that would be quite insufficient for the battle of life, which is a very much wider affair. “This country,” he wisely contended, “can hope to fulfil its destiny only by giving heed to the highest forms of learning.” The only security is to see that the sources are full and constant. Such enlightened words from a business man at the head of a great commercial town are very encouraging indeed; and we are glad to note that they were received with marked applause by his audience and emphatically endorsed by the local organs of the press.

THE same sense of the necessity of a wide academic scope was significantly manifested in the proceedings at the fifth yearly meeting of the Court of Governors of the University of Birmingham the day before (February 5). The Principal, Sir Oliver Lodge, expressly stated that “it was desirable to stem the idea that the University of Birmingham had nothing to do but with hardware and matters of technical education”: though it had a great deal to do with technical education, it was “not limited to ‘bread’ subjects.” Indeed, he actually “must say a word for a Chair of Greek; he felt that the University was not complete on the Arts side without one.” His idea is not to teach the Greek language in the hope that the students may one day want to read Greek literature, but to provide opportunities for students that want to learn the Greek language in consequence of having been impressed with the beauties of Greek literature. Well, anyhow, he, the eminent man of science, wants a Chair of Greek. Moreover, Mr. Chamberlain, man of business and holder of various learned degrees, “heartily agreed with the Principal’s suggestion.” “Whether compulsory or not,” he said, “Greek could not be excluded from the idea of a complete and liberal education.” So the hardware reproach will soon be taken away by the establishment of a Greek Chair; for they do not talk half a generation about doing things in Birmingham. Like the *Birmingham Post*, we find this scientific and business excursion for the humanities “quite refreshing.”

WHILE Sir Henry Craik blessed altogether the new Minute of the Scotch Education Department at Dundee, and laid special stress on the preservation of the religious teaching of the past, the *Dundee Advertiser* laments that “the perfection of the scheme is seriously marred” by the retention of the religious element, and “a great opportunity lost.” Our contemporary affirms that, “in point of fact, there has never been anything properly to be called denominational teaching in the training colleges,” and that, if anybody shall say that the colleges, when managed by Committees under the State, propagate the views of special ecclesiastical bodies, “it will be an unfair charge.” But the institutions should have been placed beyond suspicion. “With the development of the national ideal, it has been felt in growing measure to be an anomaly that teachers in

the national schools should be obliged to pass through the portals of denominational institutions; and the chance might very well have been taken of sweeping away that anomaly now, giving us instead a system of education free of the taint of sectarianism from top to bottom.” This is, no doubt, the more advanced view, but the popular feeling is very largely in favour of religious teaching, and will scarcely be excited by random allegations of undue ecclesiastical bias that will neither exist nor be believed to exist.

SPEAKING at West Hartlepool Technical College, Sir Christopher Furness dealt wisely, and, we should hope, persuasively, with the importance of technical education to the rising generation of our industrial workers. The first thing for a boy is to secure “a good mother,” and there are agencies at work to improve the prospects of the future. The next thing is “steady, plodding perseverance.” There is really nothing new here, but the conditions of the time give fresh point to the ancient doctrine. The boy’s perseverance is to be directed to the acquisition of technical knowledge during his spare time, in defiance of the multiplicity of social distractions. Then the world is his oyster, which he may open by means of his acquirements. If it is a just saying, it is yet a hard saying, especially to the very poor, and boys of any moral grit short of the highest need to be very judiciously encouraged in the first stages of a long road towards prospects that may very well seem doubtful as well as dim. Yet the activity and hopefulness of youth will do wonders under wise guidance. We should hope that the attractive conduct of the evening technical classes will furnish a sufficient inducement, without any necessity of compulsory measures. There is no stronger form of attraction than making a youth feel that he is seeing into his subject and getting a tangible grasp of an instrument that he can use to practical purpose.

ON presenting the annual report of the Assistant Masters’ Association for 1904, Mr. G. F. Daniell, the retiring Chairman, said (*inter alia*):

The Regulations for Secondary-School Buildings and for the Training of Pupil-Teachers fill me with an admiration which is only qualified by a haunting fear, which I hope will be speedily removed. My fear is that, when the available rates and other sources of income have been drawn upon, and by great judgment and economy the Board’s requirements (excellent, most of them) have been satisfied, you will have the buildings and the pupils, but no money to remunerate properly a good teaching staff. There is no sign that the Board have considered this aspect of the question—in fact, the importance of having a properly remunerated staff of well qualified teachers is utterly neglected in the latest edition of the Regulations. Verily, there is work for this Association to do.

We should hope that Mr. Daniell’s fear is groundless. The Board can scarcely be supposed to have taken leave of their senses. Only buildings have before now affected the proper remuneration of a good teaching staff, and he did well to place the danger pointedly before the Association. The report, which exhibits a year of strenuous activity, contains some important tables of “conditions of service,” including the matter of salary, which is plainly inadequate for “a good teaching staff.” It must ever remain true, up to a maximum that is not yet in sight, that, as Mr. Holland said, “the quality of the teacher is decided by the salary paid him.”

MANY of our readers will no doubt be interested in an inquiry instituted by the editors of *L'Enseignement Mathématique* with a view to promoting the improvement of mathematical study and teaching. The editors write:

Le but de cette enquête est de consulter les mathématiciens sur des questions relatives à leur méthode de travail et de dégager de l'ensemble des réponses un certain nombre de renseignements et de conseils qui seront profitables non seulement aux jeunes mathématiciens, mais à l'enseignement mathématique d'une manière générale. Certains résultats apporteront en outre une contribution à la psychologie des professions. . . . Il est certain que la manière dont l'ensemble des mathématiciens travaille a le plus grand intérêt. Et même de l'inévitable diversité des réponses doit sortir un très utile enseignement.

Such mathematicians as are willing to assist the research are invited to give information as to their experience and their methods of work; and, in order that the help thus obtained for the cause may be as efficient as possible, the promoters of the inquiry have prepared for circulation a series of questions bearing directly on the subject of investigation, and they will be glad to forward the schedule to any one applying to them for a copy. Address: M. C.-A. Laisant, 162 avenue Victor Hugo, Paris.

SUMMARY OF THE MONTH.

THE Greek question comes up again at Cambridge on March 3 and 4, and both sides are conducting a vigorous campaign. In an amended report the Syndicate appointed "to consider what changes, if any, are desirable in the studies, teaching, and examinations of the University" propose to include in the examination in the classical languages a paper containing as alternatives (1) passages for translation from a selected book or books, and (2) unprepared passages for translation, a vocabulary of unusual words being supplied. Having regard to the discussion of their first report in the Senate, they further propose that there should be no separate paper or part of a paper in grammar, but that, besides the exercise in grammar provided by the passages for translation into Latin and by the short sentences for translation into Greek, questions should be set on accidence and syntax in connexion with the translation papers. In Part III. they add to their recommendations (1) a paper on one of the Synoptic Gospels in Greek as alternative to the paper on one of the Synoptic Gospels together with the Acts of the Apostles in English, and (2) a paper on Elementary Logic to be included among the optional subjects.

THE Board of Education have issued a circular to Local Education Authorities pointing out that the establishment of new Local Authorities for Education throughout the country affords a fitting opportunity for once more calling attention to the importance of the encouragement of thrift amongst the children of elementary schools, and to the practical assistance given to this aim by the establishment of penny banks.

A MINUTE of the Committee of Council on Education in Scotland (January 30) provides for the establishment of committees for the training of teachers in connexion with the several Universities. Each Committee shall have power to provide, whether in University classes or otherwise, courses of instruction suitable for the training of teachers (including teachers for secondary schools), and embracing, if the Committee so determine, instruction in religious subjects. The Committee shall also have power to institute, with the consent of the Department, subsidiary courses of training at approved centres in connexion with either a secondary or a higher-grade school. The members of the Committees are drawn exclusively from bodies directly concerned with education, the idea of the representation of municipalities having disappeared. The scheme has been produced after conference with the Committees of the Scottish Churches.

THE nature of the provisions required by the Churches may be read in the following excerpts from the Minute:—

XI. When a training college so transferred is the property of or is held in trust by the representatives of any Church or religious denomina-

tion, it shall be a condition of such transference that provision shall be made therein for religious instruction in accordance with the views of the said Church or denomination to an extent not less than that which is at present customary in the college so transferred, which instruction may either be provided by the accepting Committee or the transferring Church or denomination as may be agreed between them, and further, where the accepting Committee undertake to provide such instruction on their own behalf, it shall be a condition that they also undertake to afford adequate facilities for the periodical inspection of the said instruction by duly accredited representatives of the transferring Church or denomination under conditions to be determined by the Department.

XII. Where a training college is transferred as set forth in the preceding section, the accepting Committee shall co-opt, as fully privileged members, representatives of the said Church or denomination.

DISCUSSING the Minute at a meeting of Dundee teachers (February 4), Sir Henry Craik said:

The overtures made to the representatives of the Churches who had hitherto been responsible for the training colleges had been met in the broadest spirit with the greatest desire for conciliation and with an admirable resolution to put the public interest beyond all others. The Minute had been drawn up in such a way as to recognize fully the debt they owed to the Churches for their work in the past, and not only that, but to give them full securities for that religious education in future which the country (he believed) desired, and which the perfect freedom of their Scottish system of education looked upon as one of its central points. Secondly, it brought into sympathy with and into co-operation in this great work a vast number of different agencies who had hitherto been debarred from taking part in it. The new Committees, which were to play so large a part in that training, were to be representative of interests which were largely concerned in the training of teachers, but which had hitherto found themselves excluded from any part in that. They would now work in co-operation without overlapping of agency or waste of energy, and all parts of the great work of training the army of teachers on which so much of the prosperity of the country depended would be fitly dovetailed together. Lastly, it would link on the training of teachers to the work of the great universities by making their part in the universities greater than it had hitherto been. Teachers would hereafter form a profession not trained alone, but running side by side with the great intellectual interests of the country, recruited from the same sources as the other learned professions, widened in their sympathies and intellectual range, and, he believed, stimulated in their energies by the wider sympathy that would thus be gained. He believed in that Minute there were great possibilities. If the Department had ever been able to make a decided move forward, it had made such a move forward in this Minute, because its main object had hitherto been, and he was certain would be in the future, to understand the real aim and the trend of the educational movement in the country.

PROF. DARROCH lectured to the members of the Secondary Teachers' Association (Eastern Branch), Edinburgh (February 18), on "The Inner Reform of the Scottish Universities' System." Prof. Darroch remarked that the question of the reconstruction of the Arts curriculum had for some considerable time engaged the attention of the university authorities; but, owing to the want of unanimity amongst the various universities as to the necessity and urgency of many of the changes advocated, little progress had been made in the realization of the reforms.

Under the recently announced Minute of the Scottish Education Department for the Training of Teachers, the Scottish universities would probably be asked to take a larger share in the work of preparing the primary and secondary teachers of the country, and therefore the reconstruction of the Arts curriculum was a matter of pressing and urgent importance. He laid stress on the broadening of the Preliminary Examination and the bringing it into conformity with the new Grouped Leaving Certificate of the Scottish Education Department. At present the entrance examination to the university was constructed on too rigid lines, and in consequence the modern side of education was unduly handicapped in its contest with the classical side. If the universities were to take their proper place in the work of training the secondary-school teacher, they must organize courses of study to suit the varying needs of the various classes of teachers. Dealing with the defects of the present system, which, he said, allowed too much freedom of choice to individual students, both as to subjects taken and order of study, he advocated the adoption of a five-subject course, in which two of the subjects should be taken during two successive years and passed on a higher standard than the remaining subjects. A definite order of studies should be laid down. He went on to condemn the lecturing system, urging increase of teaching power so that the lecturing system might be supplemented by the tutorial. In particular, if the universities were to undertake successfully the work of training secondary-school teachers, provision would require to be made for the appointment of qualified lecturers to give instruction in the methods of teaching secondary-school subjects, and who would be able to co-operate with the head

masters of the city in the work of practical training. The extension of the teaching year would largely tend to the abolition of the present large classes. In conclusion, Prof. Darroch pointed out that the Universities of Scotland were at present unable to advance owing to the lack of individual freedom. The remedy for this was allow a large measure of autonomy to each university.

THE distribution of the prizes and certificates awarded after the twentieth annual competition in the French literature and language under the auspices of the National Society of Professors of French in England took place (February 4) at the Mansion House. The Lord Mayor presided, and he was accompanied by the French Ambassador, the Lady Mayoress, the Sheriffs, M. S. Barlet (President of the Society), M. A. Barrère (Hon. Secretary and President of the Competition Commission), the Rev. G. H. Rendall (Head Master of Charterhouse), M. Barbeau (Docteur-ès-Lettres, delegate of the University of Caen), M. B. Minssen, M. Pétilleau, and others. M. Cambou presented the Society to the Lord Mayor. M. Barlet said that in extending his protection to the competitions, in giving to the examinations that valuable publicity, the Lord Mayor not only lent prestige to the study of French in the United Kingdom, but he contributed much to the *entente cordiale* between two great nations who, in order that they might love one another, only needed to know one another. M. Albert Barrère said that the various competitions of the Society had become firmly established institutions, and their working continued to go on with the usual success. The monthly competitions, to the number of seven, had brought together in 1904 nearly 2,000 candidates. The Lord Mayor congratulated the prize-winners and the Society.

At the sixth anniversary meeting of the London Branch of the German Language Association, the founder of the Branch, Prof. Aloys Weiss, Ph.D., M.A., congratulated a large gathering of members on the continued success of the society, the roll showing 542 members—a considerable increase on the previous year. Their literary aims had been advanced by means of lectures, meetings, the circulation of books, and examinations in the German language and literature. Mr. Balfour, in acknowledging the second edition of the German version of his address to the British Association at Cambridge, had said: "I would that the disinterested community of aim which thus binds together the scientific men throughout the world into one international brotherhood could extend its healing influence through all classes and all interests." Dr. Weiss added: "May our endeavours to spread an appreciation of the beauties of German literature and to unite Englishmen and Germans in the study of the language of Goethe and Schiller likewise strengthen the bond of union between the sister countries England and Germany!" After the presidential address, Mr. Hermann Meyer gave a highly appreciated discourse on "Modern Literature and Modern Notions." A musical programme followed.

THE annual meeting of the Mathematical Association was held at King's College on January 28. Prof. G. B. Mathews, F.R.S., was elected President for the ensuing year. Papers were read on "Models and their Uses," by Mr. E. M. Langley, and on "The New Geometry," by Mr. W. H. Wagstaff, who does not think it is desirable to make all boys learn deductive geometry, but that some should learn logic instead, and that some training in practical geometry should be given to all. A discussion on the question: "Should Greek be Compulsory for Mathematicians at Cambridge?" was opened by Mr. A. W. Siddons, who urged that mathematicians should not have special arrangements made for them; that, if Greek was compulsory for others, it should be for mathematicians also. Prof. A. R. Forsyth, F.R.S., said it is to his mind extraordinary that teachers of classics argue that, if Greek be made optional, therefore the subject will become extinct. The subject has a strong hold on the public schools and the universities; every outside inducement to its continuation is still maintained, but in a large number of schools in the country Greek is now extinct. If the ancient universities maintain this barrier of Greek as a preliminary qualification for a degree, it means one of two things—either that all the boys in those schools where Greek is now extinct are cut off from the universities, and so those institutions cease to be contributing to the educational wealth of the country to the same extent as they used to do, or else that many boys often proceed to get up the subject from the point of view of satisfying a miserable minimum. What is asked for is a relaxation in favour of

education in general, and not in favour of any special class of people. The elimination of literary training in the country is not being sought.

MR. E. A. BAUGHAN addressed a large meeting of the Incorporated Society of Musicians at Hanover Square (February 11) on "The Profession and the Art of Music," Dr. Cummings in the chair. In illustrating some of the drawbacks in the life of the music teacher, Mr. Baughan said the teacher had no incentive to keep himself abreast of modern thought in music. His complaint against London teachers was that, with all the opportunities they had for hearing the finest music performed in the most perfect way, they allowed themselves to be atrophied by the daily grind of their profession. They did not regard the hearing of music as part of their education. In his opinion the education of a violin teacher was not complete unless he was familiar not only with the works of Joachim a couple of decades ago, but also with the playing of modern artists like Kreisler and Ysaye. The same principle applied to the theorist and the singing teacher. "You have your examinations, your diplomas and degrees," said Mr. Baughan, "but you have no proof of a teacher's competence." There was no examination to show that the teacher was specially fitted for the work. Dr. Cummings, agreeing in the main with Mr. Baughan, spoke of the destructive influence of inferior teaching on the voice of the pupil.

THE Council of the Association of Technical Institutions has published its report of an inquiry, undertaken in May, 1904, as to the conditions of admission to evening classes in technical institutions and evening continuation schools throughout the country. The conclusions are:—(1) That it is undesirable to establish any general system of free admission to evening continuation schools, or of free admission or admission at specially reduced fees to evening classes in technical institutions; (2) that it is unnecessary to grant entirely free admission to evening classes in technical institutions to any special class or body of students or workers engaged in skilled industries, such as apprentices or persons under twenty-one years of age; (3) that there is need for the establishment in all technical institutions of sufficient "free studentships" or "scholarships" to secure the admission of all qualified and deserving students who are unable, by reason of their limited means, to pay the usual class fees without more sacrifice than should reasonably be expected of them. The conclusions are based upon information specially received with reference to sixty evening continuation school areas and from eighty-three technical institutions. Of the technical institutions, fifty-five are not in favour of free admission, and one only in favour of it. The remaining institutions gave no definite answer. Thirty-eight Education Committees are against free admission to evening continuation schools, two are in favour of it, sixteen expressed no opinion, and four suggest scholarships.

At the twelfth Annual Conference of the Associations of Technical Institutions at Manchester (January 27), Sir John Gorst, K.C., M.P., in the chair, Sir Philip Magnus, who was elected President for the ensuing year, discussed the character and scope of the education and preliminary training needed to enable students to take full advantage of the teaching at such institutions as were represented at the Conference. He advocated that elementary education should be made more practical than it was at present, and he believed that in the near future their work-room would gradually supersede the class-room in the elementary school, and that manual training would become the central feature of the teaching, around which other studies would be grouped. The training of the hand and brain by suitable lessons or practical work was recognized by the Board of Education, who had shown they were alive to the necessity of introducing some such changes as had been suggested in the methods of elementary education. Sir Philip sounded a note of warning as to the potential dangers inherent in the scholarship schemes which municipalities and other authorities were now elaborating, and which might possibly impede intellectual growth and development of the more backward children—those who might not so quickly rise to the surface. What, he could not help thinking, must happen if Oxford and Cambridge insisted on requiring from all candidates for admission a knowledge of both Greek and Latin was that students of engineering and other branches of applied science would flock to London, and to the newer local universities, and that Oxford and Cambridge would in the future, as they were mainly in the past, be the great

schools for humanistic studies. Principal Reynolds (Manchester), Mr. Wilkinson (Bolton), and Principal Crowther (Halifax) read papers on the co-ordination of the work of evening continuation schools and municipal technical institutions.

SPEAKING as Chancellor at the annual meeting of the Court of Governors of Birmingham University (February 6), Mr. Chamberlain said:

As to finance, it is the business of a treasurer to be pessimistic, and it is, I think, the business of a Chancellor to be optimistic, and I am not alarmed by any anticipations of possible deficits in the future. It is something to find that the Government are becoming alive to our needs and to our deserts, and that they have been able to double the sum previously given for the university education, but we may bear in mind at the same time that the present Chancellor of the Exchequer has promised to double it again in his next Budget, and, therefore, I anticipate that from that source we shall receive a very considerable addition. I do not at all accept it as in any way a satisfaction of our demands, because it is my conviction that public opinion will soon insist upon larger sums being devoted to this purpose. When I think that we are spending thirteen millions a year at least on primary education, I say the sum now given for the purpose of the highest education, the most profitable of all the investments we can make in that direction, is altogether inadequate.

In a lecture delivered to a meeting of teachers at Birmingham University, on February 10, Sir Oliver Lodge is reported to have said hard things about arithmetical sums "dealing with artificial complexities of pretended commerce expressed in units of barbaric origin." And, as to the teaching of history:

What were we to say about the teaching of history in schools—the history of the world, of mankind in general, of one's own nation and city in particular? Usually the term "history" was applied, in schools, in the sense of the history of our own nation, beginning at some well marked epoch and finishing a century or two away, so that events might not become too complicated or too personal. Much of what was so taught was rather the dry bones of history; it was anatomy rather than physiology—a scrutiny of the structure of defunct organism rather than a study of living function. Part of that anatomical study was necessary and might be acquired young. The order of the kings, for instance, with their dates, was a harmless and useful piece of memory work: it served afterwards as a sort of framework in which to set more vital details. But, for any real insight into the history and institutions of a people in their struggles and revolts, their failures and successes, their emancipations and their oppressions, for any real sympathy with the feelings and efforts of a statesman, something beyond infantile age was necessary.

At the Conference held at the Sanitary Institute on "School Hygiene" (February 9) Sir Aston Webb, R.A., dealt with the subject of "The Building and Equipment of Schools." There should be at least three parties consulted (he said) before any school could be built—doctors for the sake of health, schoolmasters for the sake of scholastic needs, and the architect for the building. The most important matter of all was that of hygiene, for a mistake in this could never be rectified. The school should be cheerful within and without. A series of connected blocks he thought the best form of school.

An Irish correspondent of the *Spectator* sends an interesting extract from a letter written by Edmund Burke in July, 1746, about a month after he had obtained a scholarship at Trinity College, Dublin. It is addressed to his schoolfellow and lifelong friend Richard Shackleton, son of his teacher at Ballitore, co. Kildare. Burke wrote:

Your office of a schoolmaster throws you amongst the ancient authors, who are generally reputed the best; but as they are commonly read and taught, the only use that seems to be made of 'em, is barely to learn the language they are written in—a very strange application of the use of that kind of learning—to read of things to understand words, instead of teaching words that we may better be enabled to profit by the excellent things which are wrapt up in them. I would therefore advise you to be less inquisitive about the grammatical parts of the authors than you have been, not only for the above-mentioned reason, but because you will find it much the easier way of attaining the language. And you will be pleased to consider after what manner we learn our mother tongue. We first by conversation (to which reading, when the language is dead, is equivalent) come to know the signification of all words, and the manner of placing 'em. Afterwards we may, if we will, know the rules and laws by which they are to be placed so and so: which will then be quite easy to us, as they are only the laws of words reduced to writing.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

Oxford. As we write, the wind howls from the north-east, and the Torpids are rowing and the spectators are inhaling influenza, and every one seems uncomfortable. We can only snatch a fearful joy by watching (as has happened more than once during the week) the sinking or partial sinking of a crew, thanks to the want of skill or the impetuosity of the cox. in the boat behind.

The east wind seems to have numbed our faculties, and we are unable to get up any excitement over University affairs. There has, indeed, been an election to the Boards of Faculties, and, in one or two cases, there were more candidates than vacancies: as usual, this happened in the Arts Faculty. The voting was fairly close, and it is not very easy to judge by what issues it was guided. Mr. Cookson, of Magdalen, who is in the anti-Greek camp, was defeated; but, on the other hand, the President of Magdalen—who is nothing nowadays but a Progressive—was fairly high on the list.

Dr. Grundy, of Corpus, who grinds many axes, seemed to commend himself least of all to the electors. As regards the election at all, it seems a pity that, if the candidates cannot be arranged by friendly compromise between different parties and colleges, those capable of voting should not turn up in larger numbers, as a whip among the voters in two or three colleges can, under present circumstances, decide the result.

Prof. Firth's Inaugural Lecture seems to have moved the waters and a good deal of discussion has been started as regards the real aims and objects of our History School. There is no doubt that—as Mr. George Trevelyan said in the *Independent Review*—the danger nowadays is that men will "from sheer want of time fall back on mere text-books." But we should like to point out that it seems the end and object of many of our history teachers up here to devote their leisure time to turning out such text-books, or even a complete series of them: and they might possibly argue that the text-book is more "up-to-date" than what Mr. Trevelyan describes somewhat vaguely as "the best books."

Mr. Beit's offer of the Colonial History Professorship may be said to be now definitely accepted, and we confess that we cannot see any ground in the sneers levelled at the University for accepting. The gift is of generous dimensions, the application of it practically in the control of the University, and all the talk of "timeo Danaos" seems idle.

In the death of Mr. J. C. Wilson, of Exeter, Oxford has lost an interesting figure: in the Department of Jurisprudence he had held a prominent place as teacher, examiner, and then Chairman of the Board of Faculty in the subject.

He was besides a well known personage in the town as being one of the few University men who really took an interest in municipal matters, and he had filled many municipal posts.

Consequently "Town and Gown," both official and private, met in large numbers at his funeral.

The mention of the town and municipal matters leads one by an easy transition into a denunciation of the sins of the City Council: from time to time street widenings or repairs are necessary, and we have become accustomed to these being invariably carried out during term, but it is going beyond a joke when the alteration or something of the kind in the drainage system is allowed during term time to disorganize traffic in some of the main thoroughfares.

The Eights Week and Commemoration proposals are still agitating public opinion, and the promoters of the view that Eights Week should be postponed till the end of the term have issued a kind of scheme of the possible rearrangement of things. The *Oxford Magazine* is now apparently on the side of the reformers, and published in a recent number a comparative chart of the Cambridge and the Oxford Summer Term, or, at any rate, the last half of those terms. The main difficulty in the suggested rearrangement lies with the disposition of the examinations, and it appears as if, anyhow, the reformers, by putting these examinations earlier, will not add so much as they think to the working hours of the term.

A correspondent shrewdly points out that a great deal of the fault of the slackness of Summer Term lies with the "parks system," which year by year utilizes the fine weather for garden parties and picnics, and finds the undergraduate quite ready to be entertained.

The production of "The Clouds" promises to be a success; the mistakes of "The Knights" are not likely to be repeated now

that the production is to be supervised by distinguished classical and archæological authorities, and an expert from one of the ladies' colleges is superintending the costumes.

Such other news as remains is rather disconnected. Mr. Lionel Smith's appointment as Ford Lecturer has been a popular choice, as few of our history teachers have worked harder and longer. His son, the newly elected of All Souls, will, we suppose, carry on the historical lamp.

The scheme for the instruction of university candidates in military subjects has been eventually developed, after some trouble, and four courses of lectures are being given this term. Not unnatural indignation is felt at the practice which the War Office has adopted of apportioning appointments equally among the older and newer universities, considering the wide difference in the number of potential candidates.

The victory of the Association XI. over Cambridge came as a pleasant surprise to us, and confounded the prophets who are wise before the event.

The Torpids have been mainly noticeable for the success of University, who have not only gone head with their first boat, but made a series of bumps with their second. The first boat was fortunate in having the services of two Eight men who were prevented by illness from rowing in the Eight last summer, and were, therefore, qualified by the rules to appear in the Torpid.

The Golf Club is on the point of deserting Hinksey for the new course near Radley. Those who have little time to spare in the afternoon will probably stick to the monotony of the Cowley course; but without two courses we should be sadly handicapped, as the number of players—senior and undergraduate—is nowadays legion.

Rumour speaks of the 'Varsity Eight as of a respectable mediocrity.

(From our own Correspondent.)

THE Lent term is always gloomy, and this year Cambridge. we have had special reasons for depression.

Hardly had we returned to residence when all were shocked by the sudden death of the Provost of King's. Mr. Austen Leigh seemed to many of us the embodiment of a type of which the late Master of Magdalene was so notable an example—the Cambridge man to whom we could point as representing the learning of Cambridge and the culture of a cosmopolitan. Others have written of his special claim to distinction in the academical world, but it is only fitting that these notes should bear witness to the real power possessed by one whose high principle, unfailing courtesy, and strong judgment have left their impress on the University, while remaining comparatively unknown in the world without. We were proud of him in his life and we mourn him now that he is taken from us.

The death of Mr. C. J. Clay was also comparatively a surprise. A busy life of strenuous labour extending well beyond the allotted three score years and ten had left him unimpaired in mind and body: almost it can be said that he died in harness; within a few days of his death he was doing his municipal work and giving free scope to his robust common sense as a magistrate for the Borough. Mr. Clay possessed a talent amounting to genius for detecting frauds, and the unfortunate had in him a kindly helper: many a discharged prisoner has been able to make a fresh start in life through his care and kindness; every agency connected with the helping of those who cannot help themselves was indebted to the watchful care of the good citizen of Cambridge who has been taken away.

Turning to lighter subjects, we may notice that the Greek question comes up for settlement on March 3 and 4. Incidentally, one may observe that the scheme as it is to be voted upon raises more than one issue; it puts before us a highly complex examination, framed upon the model of the London University Matriculation in its worst days. This is to be in substitution for the present Little-go—Greek and Latin, of course, being made alternatives. What nobody yet seems to have grasped is the fact that the schedule of subjects for the new Previous trenches considerably upon the ground of the existing General, so as to make a re-organization of that examination absolutely necessary. Whatever may be the merits of the new scheme (and they certainly are hard to find), it is abundantly clear that the issues to be decided in the Senate House are of the most confused character. Already one eminent supporter of the Syndicate has withdrawn his allegiance on the technical grounds that the scheme is unworkable for special reasons quite apart from the Greek question. This is not to be wondered at when we consider that hardly a single member of the anti-Greek majority of the Syndicate has

any qualifications to speak as a successful teacher of the poll man. Doubtless we shall have alarms and excursions, flour-bags, squibs, and bonfires before it is all over.

There has been a very pretty little discussion going on lately *à propos* of a proposal to transfer the law books of the University Library to the new Squire Law School. There seemed to be hardly any possible objection to a plan which removed books from an overcrowded library where little use could be made of them to a place where they will be accessible at more convenient hours to those who really require them. For years the Library authorities have been clamouring for space; now a sensible proposal is made a few people who cannot require law books show a prompt desire to interfere with the comforts of the lawyers. However, the agitation has fizzled out, and the books will be duly transferred.

The late Mr. Frank McClean has bequeathed to the University his splendid collection of MSS. and early printed books, with many precious examples of ancient art. Special mention should be made of the Limosin enamels and some Limoges *champlevé* work of the thirteenth and fourteenth centuries. Many of the specimens come from such celebrated collections as those of Bateman, Magniac, Spitzer, and Carmichael. Mr. McClean also bequeathed the sum of £5,000 in aid of the further equipment of the Newall Observatory.

The publication of the report of the Board of Examinations discloses the curious fact that the Law Special has at last proved its title to being the most popular avenue to the B.A. degree. For the first time this subject bears away the pride of place from Theology; History and Chemistry come next after a long interval, while, with the exception of Engineering, all the other subjects seem to be losing in popularity.

A letter from Mr. Mark Judge addressed to the *Times* on the question of our sanitary administration in Cambridge has provoked much discussion; the Town Council are apathetic and the University Authorities are lethargic or moribund. We have periodical scares about diphtheria, scarlet fever, and smallpox, or the more humble measles and influenza; but the death rate among undergraduates keeps low, and a policy of judicious suppression of facts is universally adopted as the safest. Some day people like Mr. Judge will tell us some more things which we know already, and then we shall be sorry for ourselves.

The coming General Election at Cambridge will be amusing, to say the least of it. Sir Robert Fitzgerald does not seek re-election for the borough in the Conservative interest, having never quite recovered from the severe handling he received from the roughs at Cottenham some three years ago. Mr. Buckmaster, the Radical candidate, is progressing well, and assiduously courts the Barnwell vote. No Conservative candidate has yet been chosen, but the names of Colonel Coldwell, Mr. George Kett, and Dr. Dalton are freely mentioned.

The University election will also be interesting. Mr. J. F. P. Rawlinson, K.C., was selected at a meeting of the Conservative party instead of an eminent scholar who was nominated by the self-elected caucus. The Radicals will doubtless support Sir John Gorst. If the General Election comes in the Long Vacation, we shall all be sorry and vote by proxy.

The University crew are bad: rumour says that Oxford are worse. The standard of college rowing here is, however, improving; so that we can indulge in hopes for the future.

Our Association Football XI. went down before Oxford—another surprise for the experts. Our golf team is a remarkably strong one: in this department of sport we make a brave show in spite of the handicap of our so-called links at Coton.

There have been some festivities in the way of balls given by the Pitt Club and the United Hunts. Even the least expert performers had room and enough for their gyrations.

The Honourable Artillery Company paid us a visit this month, and had a combined field day with our local army. The hostile forces attended the theatre in the evening and the proceedings were lively.

We have had several varieties of weather during the current month and are prepared for more. We go down gladly on March 22 and return on April 27.

THE School of Local History founded in connexion with the University has begun its work.

The members have devoted themselves to collecting, copying, and translating various materials for the history of Liverpool, and the committee intend to publish a series of works on local history. Volumes bearing on Lancashire, Cheshire, and

other parts of the district served by the University will be included in the series. The first five volumes will embrace (1) Royal Charters to Liverpool; (2) Moore Charters; (3) Liverpool under the Tudors; (4) Liverpool in the Civil War; (5) Municipal Government in the Nineteenth Century. Succeeding volumes will form either collections of mediæval documents or studies of the more recent history of the city.

The affiliation of St. Aidan's Theological College, Birkenhead, to the University of Liverpool was celebrated at a meeting held in the Birkenhead Town Hall (February 20). The Mayor of Birkenhead, who presided, said that one of the main results of the affiliation which had just been brought about would be that theological students would now be able to take degrees, the want of which in the past had militated against the interest of the students and the success of the college. The students would now have the benefit of an Arts course offered to them, to be engaged in concurrently with that of Divinity. The Vice-Chancellor of Liverpool University (Mr. A. W. Dale) said the object of the affiliation was to encourage those who would become students of theology to lay a broad and strong foundation on which to build. On the motion of the Bishop of Chester, seconded by the Bishop of Liverpool, the meeting expressed approval of the affiliation and its cordial wish that prosperity might attend the scheme of co-operation. It was further resolved that an endowment fund for the provision of scholarships should be raised with a special view to meeting the increased responsibilities arising out of the affiliation of the college to the University.

THE *Manchester Evening News* has been informed that the directors of the Vulcan Boiler and General Insurance Company, Limited, 67 King Street, Manchester, are arranging with the authorities of the Victoria University, Manchester, to establish a Fellowship for Study and Research in Engineering. This, our contemporary believes, is the first instance of such a step being taken by any firm, the company who have initiated this new departure having a very large business of an engineering character. They are, therefore, deeply interested in the preparation of students suitably equipped to assist them in carrying out the duties involved in a business of the nature carried on by them. It is an example which we trust will be extensively followed.

THE Vice-Chancellor has received an intimation from the Secretary to the Gilchrist Educational Trust that the Trustees have decided to assign to the University a post-graduate studentship of £80, tenable for one year, to be awarded to a student of either sex who has taken a degree with Honours in modern languages and is proposing to become a teacher in a secondary school. The purpose of the studentship will be to enable the holder to pursue a special course of work abroad with a view to becoming a teacher of modern languages. Similar studentships will be assigned to the Universities of Manchester and Liverpool, and the new studentships tenable at the three Universities will take the place of the scholarship and studentship hitherto maintained by the Trustees in the Victoria University.

THE handsome offer towards the Sheffield University Fund, which we record in another column, has been made (says the *Sheffield Telegraph*) by Mr. William Edgar Allen, of Whirlow House, and of the Imperial Steel Works, Tinsley, Sheffield. Mr. Allen, in communicating his generous intention through a friend to the University authorities, indicated the idea which was dominant in his mind and which led him to make the offer in the form he did. "Mr. Mark Firth and Mr. Thomas Jessop," he wrote, "both did grand things, and Sheffield people would no doubt like to see the names of their prominent citizens of to-day handed down to posterity in connexion with the University scheme." The people, he thought, would be gratified to see chairs endowed in perpetuity with the names of those who occupy the leading positions in the manufacturing and professional life of the city. Of course, there are others who are not thus actively engaged, but who are in a position to give help in this or other ways, and probably would be willing to do so. The University Committee, our contemporary understands, will now take steps to bring Mr. Allen's offer directly before those who are most likely to be in sympathy with it, and it is to be hoped that they will meet with a whole-hearted response.

Wales—
Aberystwyth. THE University College, Aberystwyth, is about to lose a valued servant by the retirement of Miss Carpenter, Principal of the Alexandra Hall of Residence. She has held the appointment since 1886, and has taken an active interest in the many and important changes through which the college has passed during that time. The Teachers' Guild and the Society for the Development of Education as a Science have found in her a warm supporter, and generations of women students speak in the highest praise of the way in which she has performed her duties as Principal. Miss Carpenter's resignation will come before the next meeting of the College Council.

Dublin. THE Board of Trinity College has elected Lieut.-Colonel George Speirs Alexander Ranking, M.D., to the vacant Chair of Arabic, Persian, and Hindustani. Colonel Ranking at present holds the position of Examiner in Oriental Languages under the Government of India. He graduated from St. Catharine's College, Cambridge, in 1874, and obtained his M.D. in 1879. He has written several works on Oriental languages, which have been adopted by the Indian Army authorities. In addition to these, he has just completed a translation of General Baden-Powell's "Aids to Scouting," and is at present engaged on an English-Hindustani dictionary.

IMPROVEMENT OF TECHNICAL EDUCATION. EMPLOYERS AND APPRENTICES.

SPEAKING recently at the annual distribution of prizes of the West Hartlepool Technical College, Sir Christopher Furness, the member for the borough, after dealing with the local circumstances of that institution, said:

In Germany 90 per cent. of the young men engaged in the steel trade attended technical classes. But that was the case, not only in Germany, but also in Switzerland and America, and, unless the youths of this country realized the great importance of acquiring a good technical knowledge, the time would come when the employers would be compelled to make it a fixed rule that none of those who did not regularly attend such classes should be engaged in their respective works. None of them liked compulsion. It was much better to impress upon every one the importance of realizing their responsibility in this matter, and by moral suasion to encourage them to walk in the right path, and make those little sacrifices which in the end would prove to be for their own benefit. But, in the event of that failing, it would, he was convinced, become necessary for the employers of this country, when they were arranging their articles of indenture for apprentices, to make it compulsory for every apprentice to attend technical classes.

He had made it his business to visit different works in various manufacturing countries of the world. What did he find? A year ago he visited some of the principal works in Germany and Switzerland, and a year before that the principal works in Germany and America, and he found that all the works, not only engineering but also those connected with the steel trade and other different industries, were crowded, as it were, with highly intelligent, active young men, who were going to do great service for their country in the future. No effort should be spared to impress upon the youths of their town that, as in America every boy born into that country was open to win the Presidency, so to every boy born in their town was open the highest position that was within their grasp. It was not sufficient to say that, if a boy's parents were poor, there was no chance of his rising in the world. It was not sufficient for him or his parents to say that the laws of the country were such as to make it impossible for the poor to improve themselves because the laws were passed exclusively in the interest of the rich and well-to-do classes. It was within the power of any young man, be his parents rich or poor, if he would make the necessary sacrifices from his earliest days, by steady, plodding perseverance, to win the highest position in the commercial world or any other walk of life.

The last time he was in America spending a few days with one of the great employers of labour there, a man who by his own industry and perseverance and energy had raised himself from the humblest position to that of an enormously large employer and an exceedingly wealthy man, he (Sir Christopher) asked him what had been his secret in the selection of so many thousand heads of departments and staffs in his various works. He replied that he always had around him young men who, he saw, were steady and industrious, and possessing the desire to improve themselves, but first of all he used to get to know whether a young man had good parents. If, he said, they could find a boy had a good mother, in nine cases out of ten they would find that the boy was of the right stamp.

They heard, he said, a good deal about dumping some time ago, and he was very much exercised in his mind as to why Germany was able to send steel to this country at a lower price than was current here. He sent experts, not only to Germany, but to other countries, to report to him as to the consumption of fuel per ton of steel produced, for he found that, though in many respects some countries were much behind us, yet

other countries were in various particulars ahead of us. The result was that he set to work to encourage his very able managers at the South Durham Steel Works to see if it were not possible to reduce the cost of fuel per ton of steel produced. This was over a year ago. That day, in going closely through the figures, he found they had saved in consumption 102,000 tons of coal, and yet produced the same quantity of steel.

THE TEACHING OF HYGIENE.

ADDRESS BY PRINCIPAL SIR ARTHUR W. RÜCKER.

A CONFERENCE on School Hygiene, organized by the Royal Sanitary Institute with the view of maintaining interest in, and preparing the way for, the International Congress on the subject to be held in London in 1907, was held at the University of London on February 7-10. On the opening day the Duke of Northumberland, President of the Institute, presided, and Sir Arthur W. Rücker, President of the Conference, delivered an address on the co-ordination of the teaching of hygiene.

He said he took his appointment to the Presidency as a proof of the importance the Conference attached to the place of hygiene in any well considered scheme of education. He referred to the correspondence in the *Times* as showing that the advocates of classical and of scientific education were afraid of each other, both sides complaining that their subjects were unduly neglected, and neither party believing that the principles it upheld were secure in the struggle for existence unless supported by rigid examinational regulations. Amid the welter of conflicting opinions the subject in which that Conference was chiefly interested had been steadily making its way to a position of more importance in educational curricula. Sanitary science had long occupied a relatively prominent position in this country; so that now the determination with which we insisted on sanitary precautions struck the foreigner with amazement. M. Emile Boutmy, of the Institute of France, contended that in England there was "no province with clearly defined boundaries which belongs theoretically to private individuals alone, and access to which is, in principle, denied to the State." In our regulations as to the isolation of persons suffering from infectious diseases, M. Boutmy recognized "a power of coercion which has no parallel in France," and described the intervention of the officer of health as "insolent and arbitrary." Average English opinion would not agree that in sanitary regulations the State or Local Authorities had outstepped the limits of their legitimate functions. But where there was not the same unanimity, as in the case of building laws, he deprecated risking reaction by moving too far in advance of public opinion. He gave reasons for assurance that the claims of hygiene in elementary-school education were being widely recognized, but observed a curious difference between the official theory of the Board of Education as to what was desirable in elementary schools and the practice followed in the education of the richer classes. He believed in the study of the elements of science, hygiene included, being carried on side by side with the study of language and arithmetic, from a very early stage. He discouraged a too exclusive reliance upon compulsory examinations in the promotion of the study of hygiene, and defended the new system of the University of London against the supposition that in abandoning a particular method of enforcing its views it renounced its right to express opinions as to what was desirable in education, or to use more legitimate methods of giving effect to them. He described and approved the Government regulations for training of teachers in hygiene, but regretted the small number of responses to the Sanitary Institute when it offered advice as to the preparation and working out of schemes under these regulations. The magnificent gift of the Goldsmiths' Company to the University of London was to be utilized, in part, for the training of teachers for elementary schools. In the scheme of education there hygiene would form an essential feature. The knowledge of school hygiene was required by authorities granting diplomas of education. He looked to the success of their endeavour for the reasonable cultivation of the study of hygiene not to its figuring in the list of subjects for Matriculation, but to the steady pressure of opinion. They would insist, as they had insisted, that the elements of education should include not merely the study of other forms of life, but some knowledge of the dangers by which they were surrounded and of the means of keeping them at bay. They would insist that those to whom young lives were entrusted should have learned, as part of their business, the main outlines of hygienic science; and in extending their influence further than it had already reached they would go forward with the consciousness that in a very short time the merits of their cause had already attained an amount of general acceptance which was as hopeful as, in educational controversies, it was rare.

A number of excellent practical papers were read and discussed at the Conference, including "Physical and Mental Development during School Life," by Miss A. J. Cooper; "Physical Inspection," by Dr. A. K. Chalmers; "Building and Equipment," by Sir Aston Webb, R.A.; "Sanitary Inspection," by Dr. J. F. J. Sykes; "Training of Teachers," by Prof. C. S. Sherrington, F.R.S.; and "Training of Scholars," by Prof. Findlay.

AS TO THE TEACHER.

By Prof. JOHN DEWEY, Chicago.

[From the "*Popular Educator*."]]

If there is a single public-school system in the United States where there is official and constitutional provision made for submitting questions of methods of discipline and teaching, and the questions of the curriculum, text-books, &c., to the discussion and decision of those actually engaged in the work of teaching, that fact has escaped my notice. Indeed, the opposite situation is so common that it seems, as a rule, to be absolutely taken for granted as the *normal and final condition* of affairs. The number of persons to whom any other course has occurred as desirable, or even possible—to say nothing of necessary—is apparently very limited.

But until the public-school system is organized in such a way that every teacher has some regular and representative way in which he or she can register judgment upon matters of educational importance, with the assurance that this judgment will somehow affect the school system, the assertion that the present system is not from the internal standpoint democratic seems to be justified. Either we come here upon some fixed and inherent limitation of the democratic principle, or else we find in this fact an obvious discrepancy between the conduct of the school and the conduct of social life—a discrepancy so great as to demand immediate and persistent effort at reform.

Just because education is the most personal, the most intimate, of all human affairs, there, more than anywhere else, the sole ultimate reliance and final source of power are in the training, character, and intelligence of the individual. If any scheme could be devised which would draw to the calling of teaching persons of force of character, of sympathy with children, and consequent interest in the problems of teaching and of scholarship, no one need be troubled for a moment about other educational reforms or the solution of other educational problems. But as long as a school organization which is undemocratic in principle tends to repel from all but the higher portions of the school system those of independent force, of intellectual initiative, and of inventive ability, or tends to hamper them in their work after they find their way into the schoolroom, so long all other reforms are compromised at their source and postponed indefinitely for fruition.

MR. ROBERT TUCKER.

It is with great regret that we announce the death in his seventy-third year of Mr. Robert Tucker, M.A., whose name is a very familiar one to the readers of our mathematical columns. It is now some time since, owing to a complete failure of health, Mr. Tucker was obliged to leave London, and to relinquish one after another the occupations to which he had devoted the best years of a long and very busy career. Even if he had done nothing else, his mastership at University College School and his work as an examiner in connexion with various public examining boards would have demanded no small expenditure of labour and energy, but it is not either as teacher or as examiner that he became so well known to our readers and to a large number of mathematicians. From the commencement almost of the existence of the London Mathematical Society until about two years ago, a period of thirty-five years, Mr. Tucker acted as Honorary Secretary to the Society, serving it in that capacity with surpassing zeal, and so thoroughly identifying himself with its interests as to be considered one of the leading promoters of its progress and success. It was Mr. Tucker also who accomplished the task of editing the papers of the late Prof. W. K. Clifford. The mathematical section of *The Educational Times* has from its earliest days reckoned Mr. Tucker amongst the most active and regular contributors to its columns, and problems and articles were received from him until within a few weeks of his death. His investigations in mathematical science were confined chiefly, though not entirely, to the modern geometry of the triangle and the circle, and he was the author of a considerable number of original papers, many of which will be found in the volumes of the *Proceedings* of the London Mathematical Society. We desire to express on our own and our readers' behalf sincere sympathy with Mrs. Tucker and her daughters.

THE SCOPE OF A UNIVERSITY.

VIEWS OF A BUSINESS MAN.

THE most striking incident in the visit of Mr. Mosely to Leeds (February 6) was a speech by the Mayor of Bradford (Alderman W. E. B. Priestly). Mr. Mosely set forth in the Philosophical Hall the more important lessons learnt by his recent "Commission of Educationists" to the United States, and further enforced them at the dinner given in his honour by the Leeds University Court, naturally dwelling with the greater emphasis on "the need in the new University of a sound and thoroughly scientific education in commercial affairs." The Mayor of Bradford supplied the wider outlook:—

He remarked that towns like Bradford were able to train their own students in purely technical work, and they looked to the University of Leeds for something higher. Bradford, as the centre of the worsted trade, could train its students in that branch. He did not say this to belittle the University of Leeds, but rather to raise it, and to get the citizens to appreciate what it could do. He must dissent from the remark that a university must be simply an institution to educate business men for business affairs. This could best be left for the particular trades to see to in the different towns. They had in Bradford a hundred students in their Technical College, and it was for the University to undertake a branch of education that did not lie within the scope of places like Bradford, Halifax, or Dewsbury. They appealed to the University of Leeds to undertake this education if they hoped for the support of the great towns. They should look at education from the highest standpoint, and not from the lowest. Some of their students in Bradford longed for more than they could obtain locally, and the citizens hoped that instead of sending them to the older universities, they would get all they required in the University of Leeds. That could not be expected if they reduced the University simply to the level of a technical college. He would like to see a system established by means of which, through the rates, they in Bradford would be able to send to this University several students to receive the education which could not be given locally. Let them look at the matter from the Arts side, the Science side; but not necessarily from the applied science side. If they did so restrict it, they would have great support from the Clothworkers' Company; but, he asked, what was going to be the end of such education? They would be simply training students for their own particular industries; and in Bradford they had their own ideas as to what was necessary for local industries. If they regarded education merely from that standpoint, it would be very difficult for them to get sympathy from Bradford and other outside towns. "But surely," he remarked, "education is not going to be reduced simply to a system of technical training, nor are students, I hope, going to fight the battle of life merely from the commercial standpoint. No country has ever been built up on such a foundation. There is something higher that appeals to us, and it is something that has produced the greatest thinkers, and the great men who have built up this Empire." Industries are built up by technical knowledge, but this country could hope to fulfil its destiny only by giving heed to the highest forms of learning.

THE SCOTTISH MINUTE ON TRAINING.

THE FUTURE OF THE TRAINING COLLEGES.

IN a "communicated" article in the *Aberdeen Free Press* (February 6), a writer of some enthusiasm remarks that the new Minute of the Scotch Education Department on the training of teachers "marks an epoch in the history of education in Scotland." It is, indeed, "a splendid piece of constructive administration, bearing the mark of a master hand, and it shows a fine combination of audacity and prudence, most refreshing and encouraging amid so much peddling and half-hearted effort at reform by means of legislation."

The main design of the Minute is to provide a sufficient supply of well trained teachers, which does not at present exist, for the nation's requirements. It aims at correlating the different agencies at present at work and imparting the unity of a single comprehensive national system. The existing university machinery is more or less closely adopted, but it is expanded in all directions—representation, educational institutions, organization, finance. The training colleges are absorbed in the system, but, far from being injured or restricted, they are granted a much more extended sphere of usefulness and set free from the restrictions which are at present thought to hamper them. Still retaining their religious instruction, they drop their denominational character in order to assume a national one. The nation will henceforth enjoy directly the benefits of their organization and of their highly trained and highly accomplished and devoted staffs. The universities also will be the gainers if they also are able to take advantage to some extent of the services of these highly skilled instructors.

The ideal foreshadowed by the Minute is complete, or at least adequate,

for every teacher, elementary or secondary, graduate or non-graduate. Both quantity and quality will be improved; we shall have more teachers, and these better trained than at present. An inherent part of the ideal is to bring as many of the students as possible into touch with the free intellectual life of the universities. Liberal culture will widen the horizon, raise the teachers' aims, and at the same time provide the most secure basis for professional studies and training. The university influence will penetrate even to institutions remote from its seat, where these are utilized, as they may be, for subsidiary courses of instruction. And it is certain that the university will itself benefit from the extension of its sympathies and activities. Many will regard the retention of religious instruction as among the most valuable features of the scheme; others may be disposed to take an opposite view. The Department has taken the line of least resistance in maintaining the *status quo*. If properly administered, the scheme of religious training will prove a sanctifying influence which could not without serious detriment be dispensed with; if not, it will die a natural death. The Churches have a great opportunity, but it will rest with them to use it aright.

One is not disposed to cavil at points in the Minute which are controversial, or at any rate open to criticism. At most they are details, for the main principles are eminently sound and sane. A difficult and thorny subject has been handled in an able and statesmanlike fashion. All interested in education—and who is not?—will hope for its speedy ratification by Parliament.

THE PROPOSED ANTHROPOMETRIC SURVEY.

By JOHN GRAY, B.Sc.*

THE greatest nation of the future will be the nation which best realizes the extreme importance of the scientific study and culture of the physique of its people.

Universal education has been for many years regarded, in this country, as the best means of increasing the efficiency of the nation, and the State has spent enormous sums in spreading elementary and technical education among the people. There are signs, however, that we have now nearly reached the limit of the improvement which can be effected by this means. The spectacle of a national educational system attempting to cram knowledge into the exhausted brains of tens of thousands of underfed children is not an edifying one; and it is obviously not the best way of improving the efficiency of that particular class of the population.

IS IMPROVEMENT OF OUR PHYSIQUE POSSIBLE?

Before undertaking any measures for the improvement of our national physique, we must decide whether such improvement is possible. In the extremely able report of the Interdepartmental Committee appointed by the Government to investigate this question the conclusion arrived at is that there is no evidence that progressive physical deterioration exists among the people generally. But there is abundant evidence that serious deterioration exists among certain classes of the population. For example, 40 to 60 per cent. of candidates for enlistment in the Army are rejected on account of physical defects. And these defects are not inherited (and therefore inevitable), for competent authorities allege that 90 per cent. of the children belonging to the same class from which the recruits are drawn are born physically healthy.

We see, therefore, that contingents of the lower strata of society start life with 10 per cent. of inefficient, but before they reach adolescence the inefficient amount to 60 per cent.: 80 per cent. of the physical inefficiency of the submerged tenth is due to their environment, and may be removed by making suitable changes in environment.

THE CAUSES OF DETERIORATION.

What are the causes of this deterioration? There can be little doubt that much of it is due to the environment—to the unhealthy conditions under which these people live. Overcrowding, pollution of atmosphere, bad and insufficient food, are accepted by most authorities as conditions that exercise an unfavourable influence on the physique, but especially on the growth of the juvenile population; and there are many others.

Though there is general agreement as to the enumeration of causes that unfavourably affect the physique, there is little agreement among the authorities as to the degree in which these causes affect the physique. Some allege that pollution of the

* Paper read in opening a discussion on the subject at a joint meeting of the Childhood Society and the British Child-Study Association at the Parkes Museum on February 16, Sir William Church, Bart., K.C.B., &c., in the chair.

atmosphere is responsible for nearly the whole of the physical deterioration we find in towns; others favour unhealthy and unsuitable food.

Most authorities believe that the rapid concentration of the population of the country in large towns is injurious to the national physique. There is much evidence in favour of this view. But, on the other hand, there is much evidence against it: the death rate in towns is less than in the country; finer and healthier children can be found nowhere in the country than in healthy suburbs of large towns.

It is evidently of primary importance to settle these disputed points, and to determine the amount of influence exerted by the different causes of physical deterioration, before remedies can be intelligently applied. The only way to determine the true causes of physical deterioration and their amount is the establishment of a continuous Anthropometric Survey of the People.

AN ANTHROPOMETRIC SURVEY.

An Anthropometric Survey to be of any value must be carried out by the State. Since it must be carried out over the whole population and at intervals of ten years continuously as long as the nation exists, it is evidently not a work that can be carried out by private enterprise.

All authorities are agreed that anthropometric records are the only tests of the national physique available, and that, if collected on a sufficient scale, they would constitute the supreme criterion of physical deterioration or the reverse.

The usual anthropometric tests applied are measurements of a few dimensions of the body, but the information which we derive from these data is not restricted to the body only, for the body and the mind of man are parts of a single entity, and every part of this entity is correlated to every other part. In collecting anthropometric data about the body, we acquire at the same time a great deal of information about the mind. This is of great importance, because it is much more difficult to measure the mental characters directly; though a certain amount of progress has been made even in this difficult subject.

HOW THE SURVEY IS TO BE CARRIED OUT.

It is obviously necessary to consider whether such a survey as is required can be carried out at reasonable cost.

Fortunately it is not necessary to measure the whole of the population once every ten years. Though there is considerable variation in the average dimensions of the people in different classes and in different parts of the country, it is not so great as to make it difficult to get a homogeneous population in a limited district. It is considered that, if the country were divided into four hundred districts, the population in each of these districts might be regarded as practically homogeneous. All that is necessary in a homogeneous population is to measure a sample of about 1,000 of each sex. This would mean the measurement every ten years of $400 \times 2,000 = 800,000$ adults. A much larger number of children, however, must be measured, because only children of the same age can be considered homogeneous. If we divide the children into ten age groups of one year, we should have to measure about 8,000,000 school-children every ten years. This means that the whole of the school-children in primary schools would have to be measured once every ten years.

Now there is no necessity for carrying out this physical survey in one day, as the census is carried out. If carried out in that way, it would be enormously expensive. The work of measurement may be spread uniformly over the ten-year period. In that case a small number of specially trained surveyors (about thirty), if constantly employed, could carry out the survey, provided they got assistance from school teachers and others in matters not requiring expert skill.

The scheme recommended by the Physical Deterioration Committee included, in addition to the Anthropometric Survey, a Register of Sickness, and an Advisory Council.

The Register of Sickness would be of great value, since it would supply us with reliable statistics of the health of the community. It was proposed that the information should be collected by Poor Law medical officers. If the proposed scheme of medical inspection of school-children should be carried out, a great mass of valuable information could be obtained in this way, and the results could be easily correlated with the physical data obtained by the Survey.

The Advisory Council is intended to serve as the brain of the scheme to digest and analyze the data supplied by the Anthropometric Survey and the Register of Sickness. It would also advise the Government on all legislative and administrative

points concerning public health in respect of which State interference might be expedient. The Advisory Council would consist of members representing the Departments of State within whose province questions touching the physical well-being of the people fall, with the addition of members nominated by the medical corporations and others.

The cost of an Anthropometric Survey has been estimated to be about the same as that of the Geological Survey at present financed and carried out by the Government.

Can any one reasonably believe that a survey of the geology of the country is of greater value to the State than a survey of the physique of the people? If challenged, one might find it difficult to prove that the Geological Survey had added anything to the material wealth of the country. The coal and metal miners would have found their coal and their ores about as well without it. It has occasionally indicated the existence of coal in unexpected places, often to the subsequent regret of the unfortunate shareholders.

I do not make these hypercritical remarks with the object of condemning the Geological Survey. Every self-respecting civilized nation ought to have a Geological Survey for the sake of adding to knowledge, if not to wealth.

I have no hesitation in saying that a national Anthropometric Survey would add to the wealth of the nation as well as to knowledge. One immensely powerful factor in the evolution of a people is the moral environment, or public opinion. This public opinion, as Mr. Galton recently explained at the Sociological Society, has a powerful influence on marriages, and thereby on the elimination of the unfit and the more rapid multiplication of the fit. In many other ways public opinion is powerful: for example, in ameliorating the material conditions of life, and in removing the less fortunate part of the population from such conditions as exist in the slums of our great cities.

Now nothing influences public opinion so strongly as trustworthy statistics; and such trustworthy statistics of the condition of the people and of the influence which their environment exerts upon them can only be obtained from a continuous anthropometric record.

The crying need of the nation at the present time is not fiscal reform, but physical reform; and the statesman who recognizes this and initiates the movement by establishing a well organized system of collecting anthropometric statistics will long be remembered with gratitude by his countrymen.

OPEN COURT.

They say . . .

Quhat say thay?—Lat thame say!

A PLACE FOR PHYSIOLOGY IN THE CURRICULA OF PRIMARY AND SECONDARY SCHOOLS.

By DAVID SOMMERVILLE, M.D., M.R.C.P. Lond.,
Senior Demonstrator of State Medicine, King's College, London.

It is universally admitted that Germany's devotion to science has made that country what she is. America, through the application of the latest achievements of science to the everyday work of life, is carving for herself a course which, at every point, commands success. To the unbiassed, educated, and travelled observer, it is patent that both these countries are, in many respects, ahead of England, and that yearly the distance in the race between them and England increases.

There is no intention in this paper to criticize English methods of education further than briefly to remark that, like many other institutions which have served their day and generation, these methods for the most part are old and out of date. Competition in every department of life, and especially in the race for commercial supremacy, necessitates our looking well to the foundations on which we build our hopes of holding an honourable position amongst the nations of civilization in the future. The real foundation in question is education—education in its widest sense.

It is being demonstrated year by year that in every corner of commercial industry success is obtained exactly in proportion to the extent to which accurate scientific knowledge is applied to such industry. The great aim of the country, therefore, ought to be to put the rising generation, as it appears on the scene, in the best possible position for obtaining accurate scientific knowledge, such knowledge as will enable us to hold our own with all

foreign countries in every department of national activity. It is high time that the national conscience thoroughly awoke to this duty.

On looking abroad in any sphere of life it is very evident that an important cause of failure is lack of good health; numbers of truly first-rate men and women go under because of inability to fight their way through want of physical force.

Of late, much has been accomplished for the amelioration of the health of the people by applied sanitary science; much remains to be done; and preventive medicine (or sanitary science, as you please), perhaps the highest department of medicine, has a great future before it. But better things will appear when the masses are so educated that they will individually do for themselves what sanitary science is now doing for them *en masse*. Infinitely better is it that a man should wash himself than that he should be washed by the State.

The early detection of abnormal and pathological conditions in children should be an important consideration with all educational authorities—so important that every school should have a medical officer attached to it. That attention has lately been drawn to feeble-minded children, and that efforts are being made to educate these on lines differing from those employed in ordinary cases, is a step in the right direction. All these mental derelicts are physically deficient, and the best results to be hoped for in connexion with their training will be obtained by directing the necessary remedial agencies to the physical deficiencies. It is obvious that the initial detection of such children presupposes on the part of teachers a knowledge of the normal—a knowledge of physiology. The great gulf between body and mind that formerly existed in the ideas of men is gradually narrowing under a constantly increasing knowledge of tissue structure and function; and eventually it will doubtless be admitted that every phase of mental energy, however intricate, is but the correlated functional expression of certain definite portions of brain tissue undergoing stimulation. Our only hope of producing sound minds is first to produce sound bodies. A moment's reflection on the teacher's work from this point of view will enforce the conviction that physiology should play a large part in his training.

In the past, education dealt only with the purely mental aspect of man's life. To-day it is recognized (and in America to a much larger degree than in England) that education must include a great deal more—that, in fact, the body must be physically educated, and fitted for endurance—at times even to the point of strain, if necessary—otherwise mental developments, even of a high order, may be utterly useless. More than ten years ago I listened with enchantment to lectures on physiology delivered to the upper forms of certain American secondary schools in that fluent, attractive, and persuasive manner which is characteristic of many American lecturers. These interesting "talks," as they were called, embodied the soundest philosophy, and there is not a shadow of doubt that they were of the highest practical benefit to the eager youths who gave them an intelligent and attentive hearing. That the attention in one particular school at least was intelligent, and that the full import of the lectures was grasped, was abundantly demonstrated by the excellent criticisms of the lectures which appeared in the school magazine, conducted by the lads of the leaving class. At another institution, which acted as a feeder for certain eastern Universities, I lectured for a time periodically on physiology, and was struck with the intelligence and enthusiasm displayed by the students.

It may be mentioned, in passing, that, if any one needs to be convinced of the value of leading a physiological life—that is, the life that Nature intends—sufficient proof will be found in the work carried on by Mr. W. M. F. Round, in New York State, in connexion with the Guild of St. Christopher. There, on a large farm, a number of boys rescued from the cities just as they have commenced the downward course of the criminal are trained on purely natural lines—an outdoor life sustained by simple, wholesome food, to which is added a small amount of sound moral advice. The results of this work are beyond the expectations of the most sanguine, and are well seen in the excellent letters which come to the Superintendent and his wife from all parts of the United States and Canada from past inmates of the home. Frequently the old boys, now excellent specimens of men, call in person on their past benefactors. Of the value of a physiological life, even when applied to physical and moral wrecks, this work is to me a most cogent argument.

In a paper that must of necessity deal generally with the subject, it would be absurd to attempt to discuss at length the various departments of physiology from the teaching of which

advantages are likely to accrue. It is manifest that a large portion of the subject lies wholly outside the wants of the lay public, and accordingly only portions bearing directly on the essentials of human life and health may be mentioned as suitable for the schoolmaster and his pupils.

Is it necessary, for example, to present a plea for introducing the study of the principles of respiration to any boy or girl? Life depends for its very existence on a constant supply of oxygen taken in at the lungs and passed on to the cells of the various tissues: the instant this supply ceases life becomes extinct. Does it not appear a matter of the most pressing import that every human being should be taught something of how he breathes, and what he breathes? It is impossible to overestimate the value of an elementary, but sound, knowledge of the principles of respiration in their bearing on the prevention of pulmonary consumption, on the necessity for free ventilation in all living rooms, and, in short, on a multitude of burning hygienic questions of the day. Our large cities are growing rapidly in population at the expense of the country, and with this growth there appear as inseparable appendages a host of insanitary influences, which, even in a single generation, produce alarming results. No efforts of a general type emanating from public bodies are ever likely to stem the tide of evil or save these degenerate populations. If any of them ever should obtain salvation by returning to the country, it will be effected through an educated, intelligent conviction working from within. What a boon it would be to thousands if they could only see (and act upon the knowledge) that on the land, in the open, with abundance of fresh air, sunlight, and simple food, Nature has provided an environment for man where he may lead a healthy and happy life!

Or, to take another example: Can it be imagined that the ware-room girl, or any other individual selected from a more elevated station in society, who ekes out a miserable existence on four meals of bread and tea a day, would continue this destructive bill of fare if once she had explained to her a few fundamental principles connected with foodstuffs and their digestion? The tea she drinks contains little or no real nutriment, but, on the contrary, supplies—in the form in which she generally uses it—a certain quantity of tannic acid, whose physiological action is to put an end to the digestion of the most important foodstuff contained in the bread she eats. It is quite unnecessary to multiply instances.

That the teaching profession is not made to hold a much higher position socially and financially is much to be regretted, for it needs for its work the best men and women the country can produce.

Mr. Kipling, in his "Black Sheep," has well illustrated the contention that a teacher destitute of all knowledge of physiology is an unsafe guide of youth. The child depicted in the tale is allowed slowly to lose his sight through the crass ignorance of his teachers and guardians, and during the process these benighted individuals—who, by the way, are representative of a large class—make his life for him a continuous misery.

Individuals and boards of educationalists feign to consider at uncertain intervals what they are pleased to call a "delicate subject." Were it not that much disaster is inseparably connected with this subject, such proceedings would be highly amusing. Sometimes the question is discussed, but always laid aside in the most supine manner. The truth is that often young people, far from vicious, fall in the darkness of their ignorance of the great forces that are within them. No parent, no teacher, ever spoke of such forces throughout the whole period of their educational career.

The question naturally now arises: How are schoolmasters to be prepared for this important work, and what type of individual is likely to succeed? This question leads directly to a consideration of the qualities which constitute any successful teacher of science; and these, in a word, appear to be the possession of a keenly observing and sympathetic bent of mind, a love of the work for its own sake, and, where available, the especial gift (possessed by Faraday and others) of being able to draw from the most commonplace object in Nature—*e.g.*, a shell, a piece of coal, &c.—unlimited stores of the most interesting information, in the most engaging and instructive manner. This faculty, unfortunately, does not always accompany medals and degrees. Too many pedagogues bedizened with parchments prove lamentable failures. The teacher, then, should obtain during his training such an "ennobling glimpse of the glory of his subject" from some such master as will set on fire his own soul so thoroughly that his followers must catch the flame.

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CURRENT EVENTS.

THE next Evening Meeting of the members of the College of Preceptors will take place on Wednesday, March 15, when Prof. L. W. Lyde, M.A., F.R.G.S., will read a paper on "The Teaching of Geography to Higher Classes," illustrated by a lesson on the Geography of Japan.

THE following lectures and discussion have been arranged by the Childhood Society and the British Child-Study Association at the Parkes Museum (Margaret Street, W.) on Thursdays, at 8 p.m.:—March 2, "Mental Faculty of the Child: its Growth and Culture," by Francis Warner, M.D., F.R.C.P., F.R.C.S.; March 16, "Fatigue in Children," by Miss Margaret McMillan; March 23, "Method of Training Froebelian Teachers," by Miss Lawrence, of the Froebel Institute; and, March 30, Discussion on Provision made under the Elementary Education Act, 1899, for training of Defective Children.

LECTURES under the auspices of the Ambidextral Culture Society will be delivered at the Royal Statistical Society's rooms (9 Adelphi Terrace, Strand) on "Ambidexterity from some points of view of a Physician," by Sir James Sawyer, M.D., F.R.C.P., on March 2, at 8.15 p.m.; and on "Ambidexterity in Art" (with illustrations), by Sir W. Blake Richmond, K.C.B., on March 16, at 8 p.m.

THE first Herbert Spencer Lecture, established by Pandit Shyamaji Krishnavarma, M.A. of Balliol College, will be given in the Examination Schools, Oxford, on March 9, at 3 p.m., by Mr. Frederic Harrison, M.A., Hon. Fellow of Wadham College.

INFORMATION about the Modern Languages Holiday Courses arranged by the Teachers' Guild for this year at Tours, Honfleur, Neuweid, and Santander may now be obtained from the Secretary to the Guild (74 Gower Street, W.C.).

A SPECIAL course of tuition in French for foreign students has been arranged by the University of Rennes, March to June. Particulars as to lectures, lodgings, &c., from M. Feuillerat, 31 Rue de Fougères, Rennes.

THE French Congress of School Hygiene will hold its second meeting in Paris at Whitsuntide. The programme of discussions includes (1) the medical inspection of primary schools; (2) the education of families in school hygiene; (3) vacations and holidays; (4) tuberculosis and teachers; (5) the overloading of school courses and competitions for admission to large schools. Communications to Dr. I. Ch. Roux, 46 Rue de Grenelle, Paris.

THE Senatus of the University of Edinburgh Honours. propose to confer the following honorary degrees:—

D.D.: on the Rev. J. A. Kerr Bain, M.A., United Free Church, Livingston; the Rev. Robert H. Fisher, M.A., B.D., minister at Morningside; the Rev. Alexander Lawson, M.A.,

B.D., Professor of English Literature, St. Andrews; and the Rev. Giovanni Luzzi, Waldensian College, Florence.

LL.D.: on Augusto Pierantoni, Professor of International Law in the University of Rome, formerly President of the Institute of International Law; Baron Edouard Eugène François Descamps, Professor of International Law in the University of Louvain, formerly President and now Secretary General of the Institute of International Law; Francisco Antonio da Veiga Beirão, Professor of International Law in the Commercial and Industrial Institute of Lisbon; Alexander Graham Bell, Washington, U.S.A.; William Watson Cheyne, M.B., C.M. (Edin.), C.B., F.R.S., Professor of Surgery at King's College, London; Sir Arthur Conan Doyle, M.D. Edin.; Prof. George A. Gibson, West of Scotland Technical College; John Hughlings Jackson, F.R.S., LL.D.; William Keen, M.D., LL.D., Professor of Surgery at Jefferson Medical College, Philadelphia; Lord Kincairney; John Horace Round, M.A.; Augustus Waller, M.D., F.R.S., Director of the Physiological Laboratory, University of London; and Colonel Sir Frank Edward Younghusband.

* * *

THE University of Glasgow proposes to confer the honorary degree of D.D. on the Rev. W. Holman, Baptist missionary, Congo State, and author of Congo Grammar and Dictionary and translator of the New Testament into Congo, and on five local clergymen; and the honorary degree of LL.D. on Alexander Crum Brown, M.A., M.D., Professor of Chemistry, Edinburgh; John A. Craigie, Clerk to Govan School Board; Thomas S. Cree, merchant, Glasgow; Alfred Edward Housman, M.A., Professor of Latin, University College, London; Sir A. Campbell Lawrie, advocate, sometime Judge in Ceylon, and editor of "Early Scottish Charters"; Richard Lodge, M.A., Professor of History, Edinburgh; George Macdonald, M.A., Assistant Secretary of Scotch Education Department; and Sir William Whitla, Professor of Materia Medica, Belfast.

* * *

THE University of St. Andrews proposes to confer the honorary degree of LL.D. on Prof. S. Alexander, M.A., Victoria University, Manchester; Mr. George A. Gibson, M.D., D.Sc., F.R.C.P., F.R.S.E.; Mr. Leonard Gow, Hayston, Kelvinside, Glasgow; Prof. Josef Kral, Ph.D., University of Prag, Bohemia; Mr. Charles Stuart Loch, B.A., Professor of Economics in King's College, London; and Mr. Charles Kincaid Mackenzie, K.C., Sheriff of Fife and Kinross.

* * *

PRESIDENT ROOSEVELT has received the honorary degree of LL.D. from the University of Pennsylvania.

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Endowments and Benefactions. MR. SHYAMÁJI KRISHNAVARMAN, the founder of the Herbert Spencer Lectureship at Oxford, proposes to found 6 Travelling Fellowships, Rs. 2,000 each, "for enabling Indian graduates, and, failing them, other qualified persons, to finish their education in England and to fit themselves for an independent profession." Five of them are to be called "The Herbert Spencer Indian Fellowships." Candidates to be eighteen years of age.

Each candidate "shall solemnly declare that, after his return to India, he shall not accept any post, office, emoluments, or service under the British Government; and shall enter into a written agreement to repay the Rs. 2,000 with interest at 4 per cent. within ten years—the repayments to form part of a fund for the endowment of additional Fellowships. If the scheme works well, Mr. Shyamáji will make a permanent endowment yielding the requisite sum."

* * *

MR. EDWARD WHITLEY, B.A. Trinity College, has given £1,000 towards the permanent endowment of the Chair of Physiology in the University of Oxford.

THE Fishmongers' Company have given £1,000 towards the funds necessary for the incorporation of University College in the University of London. £17,000 is still needed.

* * *

MRS. JAMES BARROW has given £10,000 to endow a Chair of French in Liverpool University in memory of her late husband.

* * *

AN anonymous local donor offers £10,000 to the Sheffield University Endowment Fund, provided four other equal sums are contributed. Alternatively, he will give £5,000, provided nine equal donations are promised. Under either condition, the sum necessary to complete the fund (£170,000) would be substantially provided.

* * *

AMONG the bequests of the late Mr. J. Holmes Lucking, Streatham, are £5,000 to Mansfield College, Oxford, and £1,000 to Hackney Theological College.

* * *

A COMMITTEE has been formed, with Lady Battersea (Surrey House, 7 Marble Arch, W.) as honorary secretary and treasurer, to found an annual prize, open to all students and members under six years' standing in the colleges for women connected with the Universities of Oxford and Cambridge, and Trinity College, Dublin, for the best essay on any subject—ethical, psychological, or philosophical—bearing on the evidence of natural religion.

* * *

THE Committee for the Promotion of Advanced Historical Teaching appeal for £250 a year for three years to develop their objects.

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Scholarships and Prizes. TRINITY COLLEGE, Cambridge, offers major scholarships (about nine), exhibitions (number not limited), and sizarships (number uncertain). Examination begins March 20.

* * *

DOWNING COLLEGE offers minor scholarships in Law, History, and Natural Science. Examination begins March 7.

* * *

SELWYN COLLEGE offers entrance scholarships and exhibitions for Mathematics, Classics, and Natural Science. Examination begins March 23.

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Appointments and Vacancies.

THE Hon. Maude Lawrence has been appointed to the new post of Chief Woman Inspector under the Board of Education.

Miss Lawrence was for many years Chairman of a Committee of Managers under the London School Board, and was a member of the Board 1899-1904, serving on the Committees for School Management, for Works, for Domestic Subjects, and for School Accommodation, being Chairman of the Special Schools Sub-Committee. In May, 1904, she was placed by the London County Council upon their Education Committee.

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MR. A. L. SMITH, M.A., Fellow and Tutor in Modern History of Balliol College, has been appointed Ford's Lecturer in English History for 1905.

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AT University College, London, Prof. F. T. Roberts has resigned his offices of Holme Professor of Medicine and Clinical Medicine and Physician to the Hospital; and Prof. L. F. Vernon Harcourt, the Professorship of Civil Engineering and Surveying; and

Dr. A. R. Cushing, of the University of Michigan, has been appointed Professor of Pharmacology and Materia Medica.

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AT Birmingham University, Mr. R. P. Cowl, M.A., has

been appointed Special Lecturer in Middle English Language and Literature; and Dr. A. J. Ewart, Special Lecturer in Vegetable Physiology.

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DR. JOHN MALCOLM, Lecturer on Chemical Physiology, Edinburgh University, has been appointed to the Chair of Physiology, Otago University.

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FIVE Professorships are open at Rhodes University College, Grahamstown. Applications to be lodged by March 15. Particulars from the Agent General for the Cape of Good Hope, 100 Victoria Street, Westminster.

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MR. JAMES C. IRVINE, Ph.D., D.Sc., has been appointed to the new Lectureship in Organic Chemistry in St. Andrews University.

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MR. FABIAN WARE, Director of Education in the Transvaal, has been appointed editor of the *Morning Post*.

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THE Senior Science Mastership at Watford Grammar School is vacant by the premature death of Ernest Crosland, B.Sc. Lond., who has held the post since 1896.

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MR. JAMES A. SHAWYER, B.A. Oxon., has gone from St. Paul's School to Clifton College.

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THE REV. JOHN A. C. LANE, M.A. Cantab., B.A. Lond., Senior Mathematical Master, Berkhamsted School, has been appointed Mathematical Master at Uppingham.

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MR. JAMES H. HOWGATE, B.A. Lond., assistant master, Bakewell Grammar School, has been appointed Head Master of Huntingdon Grammar School.

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MR. RALPH H. PINHORN, M.A. Oxon., assistant master and house master, Royal Masonic School, Bushey, has been appointed Head Master of the Free School, Penang.

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MR. J. C. ENGLISH, M.A. Dubl., assistant master, Pontypridd County School, has been appointed Chief Modern Language Master, Bootle Municipal Intermediate School.

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Literary Items. WE are very glad to learn that the Syndics of the Cambridge University Press have decided to publish a Mediæval History on the same general lines as "The Cambridge Modern History," on a plan in preparation by Prof. Bury—probably in six volumes, with maps and tables. The first volume will appear shortly after the completion of the "Modern History."

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THE Oxford University Press promises immediately "Jowett's Translation of Aristotle's Politics," and two volumes of "Select Documents illustrative of the History of the French Revolution (May, 1789, to September, 1791)."

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MESSRS. METHUEN announce a new and cheaper edition of Mr. L. T. Hobhouse's able work, "The Theory of Knowledge," and of the second volume of Prof. Oman's "History of the Art of War" (fourth to fourteenth century).

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MR. FISHER UNWIN is including in his series of half-crown reprints of standard biographical and historical works "The First Two Centuries of Florentine History," by Prof. Villari. The book should be of special interest to students of Dante.

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THE Walter Scott Publishing Company will shortly issue "Science and Hypothesis," a translation of a very important critical work by the famous French mathematician M.

Poincaré. Prof. Larmor, Secretary of the Royal Society, will furnish a preface.

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A NEW Swedish-English Dictionary, by Walter E. Harlock, M.A., has just been published by Messrs. Norstedt & Sons, of Stockholm.

HENCEFORTH the administration of the Board General. of Education in respect of secondary schools under the Board's Regulations for Secondary Schools, as also of charitable trusts and endowments connected therewith, will be conducted in the Board's Offices at Whitehall, and not at South Kensington. The Board's administration under the Regulations for Evening Schools, Technical Institutions, and Schools of Art and Art Classes will remain, for the present, at South Kensington.

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THE Board of Education have issued a circular to Local Education Authorities, again calling attention to the importance of the encouragement of thrift amongst school-children, and to the practical assistance given to this aim by the establishment of Penny Banks.

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THE Board of Education has issued the Regulations for the Competition for Royal Exhibitions (Science), National Scholarships (Science), and Free Studentships (Science), 1905; and the Regulations for the Competitions for Royal Exhibitions (Art) and Local Scholarships (Art), and for National Scholarships (Art) and Free Studentships (Art), 1905. Also a new edition of the Regulations and Syllabus "for persons not being students in a Training College" for the Certificate Examination, 1905.

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NOTTINGHAM CITY COUNCIL has adopted the report of the Estates Committee in favour of purchasing Mapperley Hall for £3,400, to serve as a hostel in connexion with the University College.

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A LATIN address of congratulation was presented to Prof. J. E. B. Mayor on his eightieth birthday (January 28) by some 70 prominent residents of Cambridge University, Sir Richard Jebb, M.P., in the chair.

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THE memorial tablet at Manchester University in commemoration of the educational services of the late Prof. Withers was unveiled in the Whitworth Hall (February 9) by Mr. P. A. Barnett, Mr. Withers's predecessor in the Principalship of the Borough Road Training College, Isleworth.

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ST. AIDAN'S Theological College, Birkenhead, has been affiliated to the University of Liverpool.

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THE Regulations for the Cambridge Examinations for School Certificates and Army Leaving Certificates in the current year are now available.

THE SUNNY SIDE OF EGOTISM.

AN EXAMINATION OF THE EDUCATIONAL APPLICATIONS OF SELF-REFERENCE.

At the Monthly Meeting of the College of Preceptors on February 15, Mr. FRANCIS STORR in the chair, Prof. J. ADAMS, M.A., B.Sc., F.C.P., read a paper on "The Sunny Side of Egotism: an Examination of the Educational Applications of Self-reference."

THE YOUTHFUL EGOTIST.

There are few characters so little lovable and so little likely to have a sunny side as is that of the egotist. We are all unpleasantly familiar with him, but in ordinary experience he is always approached and estimated from the moral side. We regard egotism as a very disagreeable form of disease—in which view we are quite justified, so long as we keep to moral stand-

points and to mature human beings. For what is a disease among adults may be a natural and proper attitude of mind among children. In a certain sense, indeed, education may be said to consist in the working out of the egotism of youth; or, as it may be still better expressed, the changing of the character of the egotism which necessarily marks the immature mind, and cannot be eliminated even from the mature. In the earliest years egotism is not only justifiable; it is desirable. It is Nature's provision for the proper development of the individual consciousness. Even in youth and early manhood a certain amount of egotism, even of the objectionable kind, must be pardoned on account of its educational value—though it is well to keep it within bounds at this stage, and, if possible, to have it thoroughly under control before the young person reaches his majority.

THE ADULT EGOTIST.

In the case of the middle-aged, egotism, as usually understood, is a disease. The middle-aged egotist is really an example of arrested development; he is not quite grown up. We could all, I have no doubt, point to one or two at least among our circle of acquaintances who exemplify this stage of arrested development. To them the interesting thing in conversation is not the fact, but how the fact strikes *them*. The lowest kind of egotist can never get beyond this stage. If any remark is addressed to him, he simply takes out of it something that can be tacked on to his own experience, and proceeds to talk of that. A case in point:—A visitor made the statement, in connexion with a scheme in which he sought to interest the egotist: "The present success of our scheme is the result of nothing but the most dogged perseverance." To this, all the egotist found to reply was: "Our left-hand neighbour keeps a little yelping dog that is most annoying at nights." Egotists at this stage treat every remark merely as a suggestion to call up something in their own personal experience. Their minds are of that class known to psychologists as *associative*, and all their associations are self-referent. Among children, one of the most common causes of dispute is *which person saw it first*. The thing seen is regarded as of little importance; the essential point is—who saw it first? A rather useful test in determining who belong to the somewhat large class of adults who have not yet grown up is the interest they show in the question of who knew a particular thing first.

At a somewhat higher level is the egotist whose remarks are, indeed, generalized, but generalized immediately from the individual cases in his own experience. Every such general statement may be immediately translated into its concrete equivalent by any one who happens to be acquainted with the details of the egotist's affairs.

THE INTERESTING EGOTIST.

On the other hand, it cannot be denied that there are interesting egotists; but these are at their best in their books. There they have the matter all their own way, and can arrange their facts so as to be interesting both to themselves and to their readers. The world as seen from my standpoint may be quite interesting to other people; there may even be the added interest of its being my standpoint. But all this implies that the centre of interest for the time being is the personality of the individual speaking or writing. Authors like A. K. H. B. owe most of their charm to this personal interest. But it is quite a different thing when the centre of interest is in a subject. There the personal opinion of a speaker or writer has a strictly limited importance. It has its place in the whole view of the subject, but beyond that it must not go. If the only response one can get from another person is a reiteration of the particular associations in that person's mind, one gets bored with his facts and irritated with his personality.

THE PSYCHOLOGY OF EGOTISM.

From the psychological point of view, the development of the individual may be regarded as nothing more than the scientific training of egotism. Psychologically, the most unselfish, humble, and retiring of men is essentially an egotist. We are not to be misled by the evil repute of misdirected egotism. In order to become unselfish we must understand our own self—we must repress it in many ways—but we neither can nor ought to eliminate it. We are apt to overlook the fact that egotism is a necessity of our intellectual life. Whether he will or not, the human being must regard himself as the centre of the universe. He "can none other." The world is intelligible to him only in terms of his own states of consciousness. The individual is for

ever insulated, and by no possibility can he ever come into direct contact with his fellows. There is no such thing as interpenetration of consciousness; we can never be conscious of the consciousness of another. By a process of inference we are able to come to certain conclusions with regard to what is passing in the minds of our neighbours, but it must never be forgotten that this *is* a process of inference—an inference based upon the results of our own experience. Even the raw materials upon which this inference is based are obtainable only through our senses, and these senses are absolutely limited to the consciousness of the individual concerned.

However willing, therefore, we may be to regard matters from the point of view of another, we find it beyond our power to do this *directly*. It is true that we do seem to acquire the power of putting ourselves in the place of another; but all that this means is that we project our whole personality into the circumstances of another and try to realize how the world must look to him. This implies a very vigorous exercise of the imagination—so vigorous, indeed, as to prevent a very large number of otherwise estimable people from ever making the attempt. Fortunately, the effort required is less the more nearly our circumstances approach those of the persons whose point of view we wish to discover; so that, within certain narrow limits, it is quite possible for the ordinary individual to acquire a working knowledge of the view-points of his neighbours and associates. It requires special training or special endowments to extend the sphere of sympathetic comprehension far beyond the limitations of our own circle.

As a matter of fact, however, in ordinary life the egotist is blamed not so much for not knowing what his neighbour's point of view is as for not caring. It is not so much a matter of intellectual effort as of moral responsibility.

IS THE TEACHER AN EGOTIST?

By a strange perversion of the truth, it has come to be a popular belief that the teacher is a specially egotistical person. Now, if any of you have come here buoyed up by the hope that the sunny side of egotism is the teacher's side, it will be well to abandon that hope at once. Whoever is egotistical, it must not be the teacher. The schoolmaster of the popular imagination is, no doubt, a loud-talking, pompous, dogmatic man, pre-eminently sure of all his facts and deplorably self-referent. There are, it has to be admitted, schoolmasters of this stamp; but they are certainly not typical of the really successful teacher. If there is any need for a motto for teachers, it is impossible to find a better than the French *S'effacer*. The teacher who hopes to produce the best results on his pupils must begin by starting from the pupils' point of view. This does not, of course, mean that the teacher is to be a man of no character, but that he must know how to handle his own character so as to produce the best results on his pupils. The enthusiastic, but unthinking, teacher is very apt to assume that it is his place to mould the character of his pupils from without—to impress his own character upon them as a seal impresses itself upon wax. On the contrary, the influence upon character must work from within the pupil outwards.

MASTER AND PUPIL.

In manuals of school method there is frequently found a saying that is so generally accepted as to be regarded as axiomatic: "As is the master so is the school"—but this is not quite the same thing as to maintain: "As is the master so is the pupil." We are apt to think that, if we get a particularly fine character in a schoolmaster—"a man who could have been a Prime Minister"—the pupils will naturally resemble him. No doubt there is a strong tendency for the pupils to imitate the master, and in externals at least there is likely to be a considerable amount of resemblance between the two; but, important as it is, imitation is not the only force at work in the process of education. The teacher-character certainly reacts upon the pupil-character, and sometimes the result is that the pupil-character becomes the opposite to, or at any rate the counterpart of, the teacher-character. Remember what John Stuart Mill says about the influence of strong-willed parents on their children. Speaking from his own experience, he maintains that the exercise of parental will leaves no room for the development of the will of the child, and that strong-willed parents have weak-willed children. In the intercourse of life it is often found that the unselfishness of one person trains up another person in selfishness. It is sometimes said, for example, that the unselfishness of sisters has a great deal to do with the alleged selfishness of

brothers. "Active mothers make dolly daughters." Cromwell trained his Ironsides to resemble himself in many ways, but in some directions his training produced an attitude of mind that was opposed to, because complementary to, his own. The power of command on the one side, for example, was balanced by the facility of obedience on the other. The educator must try to discover the ideal character possible to each pupil, and so apply his forces as to produce that character. The educational principle underlying the contemptuous saying, "Don't do as I do: do as I tell you," has, at least, the saving grace of modesty. Were it of practical application, it would be one of the most valuable principles in the science of education. Unfortunately, the power of imitation is so great that the educator cannot divest himself of the responsibility involved in the mere process of living in constant contact with his pupils. He is a model to his class whether he will or not, and accordingly must walk circumspectly.

SELF-RESTRAINT OF THE TEACHER.

He must further modify his conduct so as to suppress certain of his tendencies that are harmless and even meritorious in themselves, but are unwholesome for his pupils. There is no real harm in being a fluent talker, for example; yet the educator must suppress this gift lest his pupils should not have sufficient opportunity for exercising theirs. These are instances of the cases in which the teacher's first duty is to efface himself. The man of vigorous personality and strong motor temperament is very apt to think that he is doing capital work when he is letting off his force in strenuous teaching, while, as a matter of fact, he is repressing the energies of his pupils, who ought to be doing their share, but are not permitted. Even intellectual work may be so conducted as to weaken where it should strengthen. Listen to this public eulogy of a distinguished American teacher: "His students had such implicit confidence in his knowledge and such reverence for his opinion that, after leaving him, they no longer cared to think for themselves. They were satisfied by conclusions reached by a mind so much superior to their own, possessing a grasp and insight which they realized was so far in advance of anything they could ever hope to attain." Meant as a panegyric, this is really an indictment of the teacher in question. It is a proclamation of disastrous professional failure. The very merits of the teacher may prove professional disqualifications. In the actual process of education what the teacher is or knows or does is of relatively small importance when compared with what the pupils think and do. In education the thing that matters is what the pupil thinks or does. We are too apt to forget that teaching and learning are correlative terms. However attractive the teacher may be, he cannot learn for his pupils, and, if they do not learn, his teaching has been in vain. It is not enough that the teacher teaches and the pupils learn. Unless the pupils learn *because of* the teaching, there has been no genuine teaching done. It is quite possible, and probably much more common than outsiders would imagine, that the teacher may go through a process that he calls teaching, and the pupils may go through a process that is really learning, and yet the two processes have no causal relation.

RESTRAINT OF THE YOUTHFUL "EGO."

In view of these considerations of the relation between the educator's qualities and those of the educated, it would almost seem as if the teacher ought to give full rein to his own egotism in order to repress that of his pupils. But we have seen that what is objectionable on the moral side and in adults may be laudable on the intellectual side and with children. The egotism of immaturity is a beneficial force acting in a natural way. It is the manifestation of the *ego's* efforts to discover its place in the world in which it finds itself. The *ego* can come to itself only by asserting itself against its surroundings. The sunnier side of egotism is shown in that process that the Froebelians call "making the inner outer." At the earlier stages the *ego* should rather be encouraged than repressed. To a later stage belong inhibition and the problems of the moral evaluation. Even at the earliest stages, however, there is no lack of correctives leading to the gradual development of the powers of inhibition. All the developing young *egos* have the same claim to free exercise; but the freedom of each is limited by the freedom of all the others. This restraint is as inevitable as it is wholesome. The private tutor, no doubt, has to introduce his own egotism, to some extent at least, as a restraining influence on that of his pupil; but in all probability the limitations of the pupil's equals is the best preparation for the limitations of adult life.

"THE MANAGING PERSON."

The insulation of consciousness, of which we have already spoken, is not infrequently regarded by the teacher as a serious drawback. He feels that, if he could only enter into the consciousness of his pupils, he would be able to modify their characters much more effectively than he can as a mere outside influence. He is right in his belief that he must work from within outwards, but he is mistaken when he believes that an actual mingling of consciousness would be an advantage. Archimedes, you remember, maintained that he could move the Earth if only he could find a fulcrum for his lever. What the Greek mechanic vainly longed for is within the reach of the teacher. If we seek to apply the lessons of psychology to the further development of our own character, we find that we are met by the great difficulties caused by the presence of that troublesome thing known as consciousness. We cannot take our own character in hand with any degree of satisfaction, because it is a matter of one part of ourselves turning back upon another part of ourselves, while both parts are conscious of the process. We can never escape from our own consciousness. If we could only step outside of ourselves, how much more powerfully could we influence ourselves! But in relation to our pupils this difficulty no longer appears. We are really in relation to our pupils in the position that Archimedes longed to be in with regard to the Earth. We stand quite clearly outside of the consciousness of the pupil, and have, therefore, a fulcrum on which to work our lever.

We are unable, indeed, to enter the consciousness of our pupil, but we are able from our own experience to form a pretty good idea of what is going on within the mind of that pupil. We have ourselves lived through the experience that he is now having. We have been in our time children. Partly then by introspective memory, and partly by careful external observation, we are able to come to certain conclusions with regard to the methods in which the child mind reacts upon certain stimuli. So that by acting towards the child in a given way we know that he will react in a way that we can calculate upon. The teacher, in fact, has to play the part that is not very popular in ordinary life, the part of "the managing person." Now it is well known that the "managing person" rather likes the egotist. In the art of managing people the first requisite is a clear knowledge of the way in which the managed person responds to stimulus. Now the egotist is pre-eminently a man of constant reactions. There is a uniformity about his way of thinking and acting that is very gratifying to the managing person. What clever people in society do for their own interest, and against the interest of the adult egotist, may be done in school by the teacher for the benefit of the immature egotist.

UTILIZE THE SELF-REFERENT TENDENCY.

The difference between childish and adult egotism may be represented by the difference between self-interest and interest in self. We are at all times no doubt interesting to ourselves, but in our earlier years this interest is more keen and vivid. As we advance in years the interest becomes dulled. We get to know ourselves too well: we realize our limitations. This is well seen in our attitude towards the characters in history and in fiction. The younger we are, the more inclined we find ourselves to throw ourselves into the personalities of those in the narrative who rouse our admiration. Mature people realize only too clearly the absurdity of putting themselves in the place of the distinguished persons of whom they read. To the young, on the other hand, all things seem possible. They refer all the incidents of their book to their own experience, and live over again in their own persons the lives that they admire. In the second book of the "Emile," Rousseau has a very striking passage dealing with this self-referent tendency in relation to the study of fables:

Observe children learning their fables, and you will see that, when they are in a position to apply them, they almost always do it in a way contrary to the intention of the author: and that instead of guarding themselves against the vice of which we wish to cure them, or from which we wish to protect them, they are inclined to love the vice by means of which one makes profit out of the failings of others. In the preceding [Fox and the Crow] fable children laugh at the crow, but they have all a warm side towards the fox. In the following fable you think you are giving them the grasshopper as an example: not at all, it is the ant they will choose. One does not like to eat humble pie: one will always play the grand part—it is the choice of self-love, a most natural choice. But what a ghastly lesson for childhood! The most hateful of all monsters would be a hard and miserly child, knowing what was asked of him, yet refusing. The ant does more: she teaches the child to mock while refusing.

Knowing this self-referent tendency, the teacher should always be ready to make use of it. It is quite a legitimate force to appeal to, and the matter can be so arranged that the effect the teacher desires can be readily obtained. The process, of course, is not by any means limited to moral instruction. Knowing that every new fact will be examined and tested by the law of all the previously acquired facts, the teacher can calculate with some degree of certainty on the way in which any new presentation will be received. That class of school joke known as the "howler" illustrates very clearly the connexion of self-reference to intellectual processes. Every example of this form of blunder can be resolved into a case of the treating of new matter in the light of the matter already acquired by the pupil-*ego*. For it must not be forgotten that the development of the *ego* takes the form of building up a series of elements related to one another in such a way as to form a harmonious whole. Whatever view we may take of the origin of knowledge, or of the nature of the *ego* in itself, it has to be admitted that in some form or other the nurture of the *ego* must be recognized as well as its nature. The acquiring of experience is really the acquiring of matter upon which the *ego* is exercised. It is necessary to avoid the unscientific separation of the mind from the contents of the mind. They are really one and the same, though each is viewed from a different aspect. The *ego* really falls upon the outer world and assimilates as much of that world as its nature will allow. The matter thus assimilated does not remain as something apart from the mind, but is incorporated with it. In Herbert Spencer's happy phrase: "Fact has become Faculty." The wider the range of facts that are thus assimilated, the less the tendency to egotism on its objectionable side. This does not, of course, mean that your man of high culture and wide interests is free from selfishness, but selfishness is not quite the same thing as egotism. Many of your literary and artistic dilettantes are selfish enough in all conscience, and yet they are not egotists of the dull and uninteresting type. The many-sided interest of the Herbartian theory is the cure for the aggressive, and, at the same time, dull, egotism that is so irritating in ordinary life.

HOW TO OVERCOME EGOTISM.

It may be not unfairly said that the proper way to overcome egotism is by cultivating egotism—a sort of psychological homœopathy. In a certain sense, the development of the individual consciousness may be said to be the extending of the borders of the *ego* in such a way as to enable it to take all knowledge to be its province. At the earliest stages the *ego* may be regarded as mainly subjective. Having no content, it can have only the meaning that it derives from its own nature. By the mere process of living the *ego* acquires content, is brought more directly into relation with the outer world, makes itself (to a certain extent) master of a great deal of that outer world, and in this way greatly enlarges the area within which it can act. In the Herbartian psychology of the will we have, you may remember, the subjective and the objective elements. At a certain stage in the course of development the will becomes, as it were, conscious of itself, and finds that its previous actions now become the subject of its own activity. The will is, as it were, turned inwards upon itself, and that aspect of the will which deals with its previous history may be called the subjective aspect—the previous history itself forming the objective. This clearly corresponds to what is usually spoken of in the idealist philosophy as the coming to self-consciousness—a phenomenon that is sometimes called intellectual conversion. Just as the Idealists extend the figure beyond the range of the mere will, so we may extend the range to include the whole of that mental activity which corresponds to the *ego*.

At the earliest stages the *ego* is very active and aggressive, while it has comparatively few points of contact with other *egos*. As it acquires content it touches other *egos* at an increasing number of points, and as a consequence more frequently acts in conjunction with those *egos*, and thus its general attitude of antagonism to those other *egos* disappears. The person is as egotistical as ever, but the *ego* is a wider *ego*—an *ego* that includes a greater range of interests. So wide, indeed, does the fully developed *ego* become that in many respects it is indistinguishable from the *alter ego* against which it reacts. The elements common to the two *egos* are so numerous that there seems to be rather fusion than opposition between them. It has to be admitted, of course, that, however wide the range within which the *ego* works, it still is confined to its own zone of influence; it can never pass beyond itself—

Dich kannst du nicht entfliehen.

But the disagreeable element can be, to a great extent, eliminated by the wider culture that education and life can supply. Egotism ceases to be disagreeable when it takes full account of, and absorbs, the egotisms with which it is brought into contact.

Mr. ORCHARD said that one of the most important points raised by the lecturer was that of making the pupil think and act for himself. In order to do this it was necessary to have an insight into the secret springs of the pupil's mind and to teach accordingly. The remembrance of one's own difficulties in learning was no doubt a help, but the teacher must remember that minds differed, and should be careful not to read the ideas and experience of the adult into the ideas and experience of the child.

Mr. RICHARDS agreed with the lecturer that it was better that the child's egotism should be modified by the natural action of the egotism of his schoolfellows than that it should be forcibly controlled by the teacher. At the same time the teacher's ordinary conduct, like that of other adults with whom the child came into contact, might justly come into play as a modifying influence, and might be beneficial.

The CHAIRMAN thought the moral of the lecture was that teachers should do more to encourage egotism, which had been shown to be an admirable quality, not only in the young, but also conditionally in adults. The general tendency of school life, especially in modern schools, was to suppress egotism, and, although collectivism, which might be regarded as an enlarged egotism, was fostered, individual tasks and pursuits received little encouragement. It was significant that schools in which the teaching and discipline were not of a high order, and in which individuality was allowed free play, produced a disproportionate number of original characters and men of mark. He ventured to question the wisdom of the motto, "S'effacer, s'éblottir." This attitude had certainly not been characteristic of the teaching of the best masters he had known. On the contrary, they had been men of strong personality. He was of opinion that the most successful teachers had been men who intellectually were in the second rank. Geniuses had been distinct failures as teachers for the reason that the distance between them and their pupils was too great.

Prof. ADAMS having replied to the various speakers, a vote of thanks to the lecturer concluded the proceedings.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on February 18. Present: Dr. Wormell, Vice-President, in the Chair; Prof. Adams, Mr. Barlet, Rev. Canon Bell, Rev. J. O. Bevan, Rev. A. W. Boulden, Mr. E. A. Butler, Mr. Charles, Mr. Eve, Mr. Hawe, Miss Jebb, Miss Lawford, Rev. R. Lee, Mr. Millar Inglis, Mr. Morgan, Mr. Pinches, Miss Punnett, Mr. Rule, Rev. Dr. Scott, Mr. Starbuck, Mr. Storr, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported an increase in the number of entries for the Professional Preliminary Examination to take place on March 7-9.

Diplomas were granted to the successful candidates at the Christmas Examination of Teachers. (See list, page 152.) The Diploma of Licentiate was also granted to the Rev. F. G. Powell, who had completed his examination. The Prize of £5 for Mathematics was awarded to Mr. G. F. T. Phillips, and the Prize of £5 for Natural Sciences to Mr. G. H. Green.

The Council received with deep regret the announcement of the death of one of their members, the Rev. Dr. Hiron.

The Report of the Finance Committee was adopted.

Dr. R. Wormell was elected President of the Council, and Sir Philip Magnus, Mr. E. A. Butler, and the Rev. Canon Bell, Vice-Presidents. Mr. H. W. Eve was re-elected Dean, and Mr. E. E. Pinches Treasurer of the College.

The following persons were elected members of the College:—

Mr. W. H. Allen, Leicester House School, Carshalton.

Miss E. Eales, The Red Cottage, Bexhill-on-Sea.

Miss A. F. Partington, A.C.P., Rhampore House School, Wembley, Middlesex.

Mr. C. E. Williams, M.A. Camb., 15 Ranelagh Avenue, Barnes, S.W.

The following books have been presented to the library since the last meeting of the Council:—

By the AUTHORS.—Allchin's Account of the Reconstruction of the University of London; Aveling's Who was Jesus Christ?; Breul's Greek and its Humanistic Alternatives in the "Little-Go"; Hall's Practical Projection; Marks's Principles of Planning; Miss Stevens's Education among the Mahomedans in the Middle Ages.

By E. ARNOLD.—Wolff's Les Français du dix-huitième Siècle.

By G. BELL & SONS.—Baker and Bourne's Elementary Algebra; Bell's York Readers, Book I.; Candler's Paraphrase of Poetry; Pendlebury's Arithmetical Scheme B Test Cards, Standards V. and VI.

By A. & C. BLACK.—Black's Elementary Geography Reader, No. Vc. (The Americas); Ellery's Council Arithmetic, Parts I., II., and IV.

By BLACKIE & SON.—Blackie's Coloured Picture Story Readers for Infants

(6 Parts); Recitations for Infant Schools, Books I.-V.; German Poems for Recitation; Book of German Songs; Selections from Henry IV.; Survey of the British Empire; British History in Periods, Books IV. and V.; Complete History Readers, Nos. I. and II.; Decimals and the Metric System; The Teacher's Black-board Arithmetic, Part I.; Handy Book of Logarithms; Aytoun's Edinburgh after Flodden; Baker's Lamartine's Graziella; Bedford's Sainte-Beuve's Portrait of Molière; Blakeney's Eight Essays of Bacon; Brandin and Hartog's Book of French Prosody; Brighouse's Philippics of Cicero, V.-VII.; Brown's French Composition by Imitation; Chayton's Schiller's Der Nefte als Onkel; Conway's Cicero's De Amicitia; Cotterill's Quintus Curtius Rufus, Book IX., 1-5; Mrs. D'Arcy Collyer's Scenes from Molière's Les Fâcheux; Defoe's Journal of the Plague; Dickens's Christmas Carol; Edmonds and Austen's Characters of Theophrastus; Frazer's Dumas's Jacomo; Grose and Webber's Practice in Conversational French; Hall's Hertfordshire; a Realising Book of the County; Hartog's Selections from Madame de Staël, and Labiche's La Poudre aux Yeux; C. Hawkins's Elementary Geometry, Parts I. and II.; Richard Hawkins's Voyage into the South Sea; Heath's German Strong Verbs; Hill's Rapid Revision Exercises in French Syntax; Washington Irving's Companions of Columbus; Kerr's Constructive Geometry (First Year); Layng's Selections from Longfellow; Leask's Scott's Kenilworth; Le François Laboulaye's Le Château de la Vie; M'Dougall's Landmarks of European History; Meyer's Conversational German Grammar (First Year); Moorman's Shakespeare's Henry IV., Part I.; Morgan's Exercises in Theoretical and Practical Geometry; Nall's Xenophon's Anabasis, IV.; Nicol's Brush-Drawing Cards, Sets I.-III.; Perman's English Passages for French Prose, and Michelet's Jeanne d'Arc; Phillips's Milton's Comus; Preston's Angier and Sandeau's La Pierre de Touche; Prior's de Musset's Fantasio; Rankin's Science of Laundry Work; Roberts's Preliminary Geometry, and New Geometry for Beginners; Schilling's Scenes from Goethe's Hermann und Dorothea; Tate's Euripides' Alcestis; Timpany's Arithmetic of Physics and Chemistry; Turnbull's Elementary Plane Geometry; Warner's Geography of British South Africa; Weckley's Exercises on the French Subjunctive; Wells's Cicero de Senectute, and Ovid's Tristia, Book I.; Winbolt's English Poetry for the Young; Wolff's Français pour les Commencants, and Teacher's Hand-book to the same; Wynne-Willson's Hand-book of French Dictation; Yorke's Note-book of French Literature, Vol. II.

By W. B. CLIVE.—The University Correspondent, 1904; Matriculation Directory, Jan. 1905.

By GINN & Co.—Allen's Goethe's Hermann und Dorothea; Beckmann's Storm's In St. Jürgen; Gregor's Freytag's Die Journalisten.

By HACHETTE & Co.—Barrère's Ereckmann-Chatrian's L'Invasion, ou le Fou Yégo, De Gorsse and Jacquain's La Jeunesse de Cyrano de Bergerac, Gozlan's Polydore Marasquin, and Monton's Le Supplice du Ballon.

By MACMILLAN & Co.—Frazer's Emile et Hélène; Gibson's Introduction to the Calculus; Hall and Stevens's Lessons in Experimental and Practical Geometry; Scott's Fortunes of Nigel, Ivanhoe, and Woodstock; Siepmann's Primary French Course, Part II.; Hugon's David's Le Serment; Smith's Thierry's Les Normands en Angleterre et en France.

Calendars of Trinity College of Music and the Pharmaceutical Society of Great Britain.

REVIEWS.

SOCIOLOGY.

Sociological Papers. By Francis Galton, E. Westermarck, P. Geddes, E. Durkheim, Harold H. Manu, and V. V. Branford. (10s. 6d. Macmillan.)

Here is the first volume of the proceedings of the Sociological Society, consisting principally of the papers read in its first session during the spring and summer of last year, together with a report of the discussions upon some of them. Prof. Karl Pearson's doubts as to the power of the Society to do effective work without the initiative of some one great thinker capable of setting bounds to the science and prescribing its functions may wait the solution of experience; and, as the Society goes on its way meantime, we need not now consider closely Mr. Branford's polemic against him. Mr. Bryce, the President, who gave an introductory address on "The Use and Purpose of a Sociological Society," kept to very general terms and shrank both from defining Sociology and from describing "the full scope" of the Society. He thought, however, that such a Society was needed for a variety of useful purposes: to "survey with the eye of science the whole field of human activity," and so to orient and give a hand to incipient branches of social study (say Eugenics); to co-ordinate in profitable relations special developed departments of the so-called social sciences; to develop more creditably the theoretical side of systematic inquiry into the sciences connected with human progress; to urge better provision for the teaching of the theory of all branches of social inquiry, and the multiplication and organization of bibliographical resources; and, in general, to endeavour to interpenetrate every department of human investigation with the scientific idea. The field is ample, if the boundaries be somewhat shadowy. Mr. Branford, again, set forth the business of Sociology, and thereby, presumably, the scope of the activities of the Sociological Society. Thus:

Let us assume that the professed Sociologist—whether or not he be a sectional investigator—yet, as Sociologist, is faithful to the general conception of the science and seeks some higher ultra-sectional standpoint from which all available knowledge of Man and his action and reaction with environment may be drawn together and focussed for two purposes. The first of these two purposes is a speculative one—the understanding and interpreting of that unfolding process or drama of social evolution in which we are all interested as spectators and as participants. The second purpose is practical—the utilization of our

knowledge, gathered and unified from its manifold sources, for the directing, as far as may be, and in part controlling, of this evolutionary process. The first task of Sociology—as pure science—is thus the deliberate, systematic, and ever-continuing attempt to construct a more and more fully reasoned social theory—a theory of the origin and growth, of the structures and functions, of the ideals and destiny of human society. The second task of Sociology—applied science—is the construction of principles applicable to the ordering of social life, in so far as concrete problems can be shown to come within the range of verifiable knowledge.

An elevated and laudable aspiration; but, after all, that sceptical warning of Prof. Karl Pearson's will persist in ringing in one's ears.

At the same time, the Society will be doing good work in compiling, sifting, and co-ordinating materials, and in formulating such laws or rules as may seem to emerge in the course of their studies. At first, naturally, each ardent member will push his own subjects and views, and it may not appear easy to discern any particular general trend in the business; but eventually some definite co-ordination is bound to manifest itself. The editors usefully group for us the contents of the papers now issued. "The History and Methodology of Sociology" is represented by the papers of Prof. Durkheim and Mr. Branford; "Pioneer Researches in Borderland Problems," by the papers of Dr. Westermarck (on the position of woman in early civilization) and Mr. Mann (on life in an agricultural village in England); and "Applied Sociology," by Mr. Francis Galton's paper on "Eugenics" and Prof. Geddes's paper on "Civics." It may be said that all this is but analogous to the transfer of the proceedings of the Social Science Section of the British Association to another venue. It may be said that some haze hangs over one paper, and that the matter of another is substantially available elsewhere. Let us gratefully accept the present collection as at least convenient and stimulative; and we ought not to forget to note the special value of the appended discussions, oral and written. The utility of the Society for the furtherance of social inquiry, one way or another, cannot be doubted; and the more it keeps in view its high ideals the more likely it is to produce effective results. We wish it the fullest success. The present volume is handsomely printed and most pleasant to read. It should be widely perused and considered.

THE ENGLISHMAN'S BURDENS.

(1) *Labour Legislation, Labour Movements, and Labour Leaders.* By George Howell, F.S.S., ex-M.P. In two volumes. (3s. 6d. each. Fisher Unwin.)

(2) *The Burden of Armaments: a Plea for Retrenchment.* By the Cobden Club. (3s. 6d. Fisher Unwin.)

(1). Mr. Howell's book is a second edition, the first having been issued some three years back; but the changes are of no great moment, owing to the scrupulous accuracy of the original edition. The work "is an attempt to trace progressive legislation from the date of the first repeal of the Combination Laws in 1824 to the present time," with a preliminary account of "the nature of the laws adverse to labour as they existed at the close of the eighteenth century and during the first quarter of the nineteenth century." It is unquestionably, as it was meant to be, "a truthful record in the realm of industrial history," and consequently it is a very valuable companion to the ordinary political histories of the period, illustrating most important movements that do not usually figure in brief historical summaries in proportion to their intrinsic significance. There are early episodes of a spirit that people nowadays will have difficulty in understanding, and will scarcely read without indignation. There are later episodes marked by perversity of intelligence rather than by truculent feeling. But in no case does Mr. Howell permit himself to deviate from the sober and calm temper of the historian, nor in exciting events where he personally took a leading part does he anywhere overstep the bounds of a proper modesty. The volumes are most instructive—an historically valuable record; and, while they will, of course, be primarily interesting to the labouring classes, they are none the less important to all that wish to understand in reasonable fullness the social and political developments of the past century in the sphere of labour in England.

(2) The Cobden Club's "plea for retrenchment" has been prepared by a committee consisting of Mr. Shaw-Lefevre as Chairman, Lord Welby, Sir Algernon West, Sir Spencer Walpole, and half a dozen other economic specialists. The first part is a condensed restatement, with elucidations, of Cobden's argu-

ments in "The Three Panics," exposing the senseless and expensive scares of the twenty years preceding 1863. The second part deals with the economic reaction from 1863 to 1884, when successive Governments, irrespective of party, vied with each other in husbanding the resources of the country, in remitting taxation, and in reducing debt, so as to leave as much money as possible to fructify in the hands of the people. The third part gives "an account of the gradual, and of late years speedy, relapse into extravagances which have deprived us of many of the advantages of peace." Finally, there is the question how it may be possible to reduce the enormously increased expenditure, and to "return at least to the point at which it stood, and was considered amply sufficient, immediately before the late war in South Africa." The exposition is perfectly sober and business-like, and the facts are scarcely open to dispute. Everything, or nearly everything, in the long run turns upon questions of policy. Anyhow, it is clear enough that the huge burden of military and naval expenditure requires ruthless examination. It almost doubled in the fifteen years from 1884 to 1899, and now it is all but threefold the amount of 1884. The figures are:—1884, £27,979,000; 1894, £37,326,000; 1899, £40,897,000 (not including the expenditure on the war in South Africa incurred later in 1899); 1904, £76,367,000. The increase of pressure is serious; it means a corresponding drag on the peaceful industries and social betterment. The case is very ably and temperately presented from the point of view of the Cobden Club. No doubt the other side will join issue. In any case, the raising of the question in explicit and detailed form cannot but be reckoned a public service.

QUADRATIC PARTITIONS.

Quadratic Partitions. By Lieut.-Colonel Allan Cunningham, R.E. (12s. net. Francis Hodgson.)

By the publication of Cunningham's tables, mathematicians obtain access to the results of investigations extending over several years. In certain respects the new volume may be regarded as a companion to a work on residues entitled "A Binary Canon," and produced some years since by the same author. As in the case of its predecessor, the circulation of the present work will necessarily be limited; but investigators in the field of the theory of numbers will at once recognize its value as a book of reference. Colonel Cunningham has greatly added to the results previously published in connexion with this subject. The arrangement of his tables is excellent, presenting in clear and compact form, and in successive columns, the *prime* numbers p , the *prime* factors of the immediately preceding integers, and the *quadratic* parts of each prime when considered in its relation to various important types of quadratic partitions. In his main table the author deals with nine such types. For four of them he has extended his researches to all primes $\geq 100,000$; in the case of a fifth the limit reached is $p \geq 25,000$; whilst in the remaining four $p \geq 10,000$ gives the range of investigation. The main table is followed by shorter ones devoted to quadratic partitions of other special types, and the reader is referred to the author's introduction to his work for details as to the nature of each. It will be seen from the above that the present tables leave far behind those compiled by earlier mathematicians pursuing the same subject. Colonel Cunningham states, however, that he has taken advantage of the work already accomplished by Barlow, Jacobi, Reuschle, and others, incorporating in his own compilation results due to some, and employing those obtained by others to aid him in the task of checking the accuracy of the calculations. He has been enabled in the course of preparing his own work to correct many errors which had crept into the older tables. We must not be understood to underrate in any way the importance of Colonel Cunningham's achievement when we say that obviously the materials which he found ready to his hand helped to prepare the way for his more extended inquiry.

Besides those already mentioned, the new volume includes *Pellian* tables furnishing the solutions of several fundamental *Pellian* equations, and a study of these will show that in this direction also the author has contributed a large number of fresh results. The introduction to the work gives much useful information touching the volume, and considers briefly some of the leading properties of quadratic forms. Though limiting as far as possible his discussion of the theory, the author gives all that he deems requisite in order that his tables may be readily consulted. While it was still far from complete, Colonel Cunningham's work was recognized as one of great worth by the

Mathematical and Physical Section of the British Association, and how favourably it was received by the Royal Society may be judged from the fact that the expense of its preparation and publication has been in part defrayed by grants from funds at the disposal of that body. Any notice of this very valuable work would be incomplete without some reference to the great care which has so evidently been bestowed on it in order to ensure accuracy. Not a single error revealed itself as the result of a series of tests, primes being taken at random from various parts of the volume for the purpose of verifying the computations to which each prime in turn gave rise.

A LITERARY AND HISTORICAL MISCELLANY.

An English Garner. In 12 vols. 4s. net each. (Constable.)

Messrs. Constable deserve the lively gratitude of all students that work in the Tudor and Stuart periods of English history and literature by this scholarly and handsome publication. From time to time we have briefly noticed the volumes as they were issued in pairs, and recently the whole series has been completed by a couple of volumes of "Elizabethan Sonnets," with an elaborate and illuminating introduction by Mr. Sidney Lee. The texts have been reprinted, with very slight alterations, from the well known and highly appreciated "English Garner" issued in eight volumes between 1877 and 1900 by Prof. Arber, who carefully collated his texts with the originals. The old spelling has been modernized, so that general readers will not be deterred from perusal of the vast and varied mass of prose and verse illustrative of the times, much of which makes curious and entertaining reading, apart altogether from its historical or literary value. The original "Garner," however, is not simply reprinted—the materials have been rearranged and, for the first time, classified under the general editorial supervision of Mr. Thomas Seecombe, whose good work in Elizabethan literature we have had occasion to applaud in connexion with Messrs. George Bell & Sons' "Handbooks of English Literature" (February, 1904), and additional fresh matter has been inserted in order to supply a more continuous representation. A specially valuable feature of the new edition is the series of "Introductions," all of which have been written by recognized specialists, and will be exceedingly helpful to students of the various volumes.

HISTORICAL METHOD IN MECHANICS.

Mechanics. By John Cox, M.A., F.R.S.C., LL.D., Macdonald Professor of Physics in McGill University, Montreal. (9s. net. Cambridge University Press.—Cambridge Physical Series.)

There is much truth, we suspect, in the allegation that, though the principles of mechanics are the simplest and the earliest to be discovered in the whole range of science—and, moreover, are directly illustrated in almost every act of our lives—"more difficulty is found in giving beginners a real grip of them than with any other branch of physics." Why should this be the case? Prof. Cox attributes it largely to the ordinary text-book methods of treatment. His own experience led him to break away from the traditional system, and to recast the subject in his own mind; and now he presents it in its historical development, following the path struck out by Prof. Mach in his "Die Mechanik in ihre Entwicklung." The historical exposition certainly invests the subject with special interest; the gradual unfolding of the progress of discovery introduces a personal element of powerful attraction, and emphasizes practical applications. Prof. Cox has his eye specially upon mechanical principles, avoiding merely mathematical difficulties so far as that is fairly possible; he "starts from real problems, as the subject started, showing how the great investigators attacked these problems, and introducing the leading concepts only as they arise necessarily and naturally in the course of solving them"; he "brings out incidentally the points of philosophic interest and the methods of science"; he appeals constantly to experiment for verification, "leading up to an experimental course limited to the most important practical applications," and eventually embodying a good deal of matter not usually found in the elementary text-books; and he adds limited sets of carefully selected examples for exercise. Students that will not learn mechanics from this work, and be fired with interest in the subject, must be hopeless. Students that must work through an ordinary text-book for examinational or other reasons ought to have this volume by their side for its interest and stimulus, and for its fruitful co-ordination of theory and practice.

SIR HUDIBRAS.

Hudibras. By Samuel Butler. The Text edited by A. R. Waller. (4s. 6d. net. Cambridge University Press. Cambridge English Classics.)

The basis of the present edition of Parts I. and II. is the issue of the year 1678, the first editions of these Parts not containing either the "Annotations" or "An Heroical Epistle of Hudibras to Sidrophel," and both Parts having been "corrected and amended, with several additions and annotations," in 1674. The Third Part is taken from a copy of 1679, itself a reprint of the original issue of 1768. The variations between the issues now followed and the first editions are given in the Appendix: they are interesting in a literary point of view rather than essentially important. In his prefatory "Note" Mr. Waller furnishes useful hints to collectors on the spurious or pirated issues, and indicates collateral sources of information on various editions, &c. The editorial method is the same as in the previous volumes of the series: the original text is reproduced with all its inconsistencies of spelling and eccentricities of pointing, excepting only evident misprints in punctuation, which are registered in appendix. This, as the editor says, "gives to the general reader an added sense of nearness to the actual form in which the author made his appearance," and it occasions no difficulty to the intelligent student. The form is convenient and the get-up is agreeable and substantial.

GENERAL NOTICES.

CLASSICS.

Florilegium Tironis Graecum. By Ronald M. Burrows, Professor of Greek in University College, Cardiff, and W. C. Flamstead Walters, Professor of Classical Literature in King's College, London. (4s. 6d. Macmillan.)

An attractive volume of over 400 "simple passages for Greek Unseen Translation, chosen with a view to their literary interest," so as to widen the range of the reading of the average boy or man, and to exercise his taste and appreciation. The passages are fairly characteristic of the great writers—Homer, Aeschylus, Sophocles, Euripides, and Aristophanes in poetry; and Herodotus, Thucydides, Xenophon, Plato, Demosthenes, Aeschines, and Lucian in prose—although the proportions of space assigned to each writer may easily enough be disputed. The editors have not hesitated to adapt the originals to their purpose, omitting lines and phrases, simplifying slightly (as an alternative to omission), and generally avoiding difficulties and irregularities. Such concessions would be a small price to pay for the attraction of readers to a wider field than the ordinary college or pass university course affords. The experiment is at once bold and interesting, and, if it do not succeed, the fault will not lie with the editors, who have performed with great discrimination a task that is really very much more difficult than it looks.

Horace. Vol. I.: *The Odes, Carmen Saeculare, and Epodes*. With a Commentary. By E. C. Wickham, D.D. (6s. Clarendon Press.)

Some months back we noticed the second volume of Dean Wickham's most careful and scholarly work. While following the lines of the school edition of 1891, the present edition brings the notes into substantial harmony with the later octavo edition. The general introduction deals adequately with the text (MSS., scholiasts, and editions), and summarizes what is known of Horace from his own works or from other sources. The notes are very full and helpful, and suggestive even if not in all cases convincing. An appendix deals with metres and other special matters. Altogether an excellent edition, beautifully got up and convenient in form.

A Second Latin Course. By E. H. Scott, B.A., and Frank Jones, B.A. (2s. 6d. Blackie.)

The materials for Part I.—Caesar's account of the Helvetian War (B.G. I. 1-29)—are worked up in three separate versions of increasing difficulty (*praeparatio, lectio*, and Caesar's own words); and intermixed are grammatical exercises leading to "a gradual assimilation of inflectional forms in a systematic manner." Part II. consists of exercises on various inflectional forms, mainly supplementary to the preceding. Parts III. and IV. provide miscellaneous passages for translation and composition. Part V. gives Caesar's text, vocabularies, and a great variety of helpful apparatus. The work has been well planned and very assiduously worked out. There is plenty of room for the exercise of judgment on the part of the teacher, so as not to overwhelm the pupils with details. Judiciously used, the book ought to be interesting as well as effective.

MATHEMATICS.

Geometry on Modern Lines. By E. S. Boulton, M.A. (2s. Methuen.)

The volume deals principally with the demonstration of theorems, the corresponding constructional course being evidently assumed as

taken in advance. In some respects the book is really good. Thus, for example, the plan of proving many of the propositions first practically and immediately afterwards by theoretical methods is one that will recommend itself to teachers; and, again, the author's explanation of parallelism is superior to that found in many of the modern text-books. In certain essentials, however, the work is far from satisfactory. Naturally we must suppose that it is to be regarded as a class-book, and not merely as a teachers' manual. On the basis of this assumption, the frequent introduction into the text of what are little more than skeleton proofs is to be deplored; the average pupil will not stay to clothe the skeleton, although the teacher may subconsciously fill in the details of the argument for himself, and would, it is to be hoped, supply to and require from his class the *why* and the *wherefore* of every step. There were many evils, doubtless, in the old system of teaching, which reckoned among its requirements the citing of references as well as the furnishing of a reason for every statement; yet this was far preferable to any tendency to dispense with both, and, after all, we are disposed to claim that there was a certain value in knowing just where to find the authoritative justification of an assertion. The constant repetition of the *why* and the *wherefore* plays an important part both in strengthening the individual argument and in producing familiarity with principles of wide application. In the present volume, too, much of the text which discusses the rudiments of trigonometry is imperfect, and would gain very considerably if entirely re-written. In conclusion, it would appear to the reader that these and other unsatisfactory features are due in no small degree to an attempt to deal with a range of theory too wide to be considered within the prescribed limits of the work. This, we may note, is a fruitful source of danger to the writers on elementary mathematics at the present time.

Worked Problems in Higher Arithmetic. By W. P. Workman, M.A., B.Sc., and R. H. Chope, B.A. (2s. Clive.)

A large and varied collection of difficult problems, many of which are derived from sources of the highest authority. The full solutions are furnished, and the results appear to be, in general, thoroughly reliable. A considerable proportion of the questions—more especially, perhaps, those of a practical nature—will be acceptable to students preparing for advanced examinations; others may be regarded as arithmetical curiosities and puzzles; whilst there is still a third class, consisting of problems which are above the level and beyond the requirements even of the advanced general student, but which will attract the specialist in higher arithmetic, affording him interesting material for original work, and at the same time providing him with the means of comparing individual methods and results with those of the published solutions.

Studies in Graphic Arithmetic. By Rev. J. Lightfoot, M.A., D.Sc. (1s. 6d. net. Normal Press.)

The advantages of graphical methods for the solution of many arithmetical problems are well illustrated by the series of interesting worked examples of which this small volume mainly consists. Students will find it a valuable and helpful little book. The matter contained in it is worthy of being brought out in a more finished form.

The January issue of *L'Enseignement Mathématique* opens with an appreciative biographical sketch of the late Prof. P. G. Tait by Dr. J. S. Mackay.

SCIENCE.

The Analytical Theory of Light. By James Walker, M.A., Demonstrator of Physics in the Clarendon Laboratory, Oxford. (Cambridge University Press.)

A spacious work signally creditable to both the Universities participating in its production. Mr. Walker's object is "to give an account of physical optics without having recourse to any hypothesis regarding the nature of the influence that constitutes light, or the character of the medium in which it is propagated." A few simple experimental facts show that "a stream of light may be represented by a periodically varying vector transverse to the direction of the beam," and on this result Mr. Walker bases his treatment of the subject, appealing to experimental methods and results only in case of necessity. The historical method lends fresh interest to the study, and forms a valuable preparative for further progress towards a conclusive solution of the theoretical problem, and for the deeper investigation of higher optics. The work is fluently and clearly written, with ample command of the literature of the subject, and with very competent technical ability.

Animals, Our Country's, and how to know them. By W. J. Gordon. (6s. Simpkin, Marshall, & Co. Our Country's Series.)

The book is "a guide to the Mammals, Reptiles, and Amphibians of Great Britain," on the same plan as the former four volumes of the series, with 33 full-page coloured plates and 43 original diagrams, by R. E. Holding, all effectively reproduced. The object is "the easy identification of our native species by means mainly of external characters and concise descriptions of such habits and peculiarities as help in distinguishing them." The descriptive matter is well selected and forcibly presented, and the application of it to "identification" is

specially businesslike and vivid. A glossary of technical terms is appended. A very instructive and attractive volume.

The New Matriculation Chemistry, by G. H. Bailey, D.Sc. (Lond.), Ph.D. (Hcid.), appears in second edition (third impression) rewritten and enlarged, under the editorship of Dr. Briggs (4s., Clive). The experimental treatment is developed still further, an Introductory Course being specially planned as a training in method. The work is specially adapted to the London University Matriculation syllabus. It well deserves its popularity.—*Building Construction (First Stage)*, by Brysson Cunningham, B.E., A.M.I.C.E. (2s. 6d., Clive), also appears in a second edition, revised and enlarged. It is systematic and practical, with 554 figures—an excellent guide to the South Kensington examinations.

A carefully revised edition of the *Physical Laboratory Manual*, by H. N. Chute, M.S., in "Heath's Modern Science Series," deserves attention (2s. 6d.). The explanations and directions are lucid; all the problems have been rewritten from experience; the tables of constants have been extended; a short table of logarithms has been added; and there are 117 illustrations.

A new and revised edition of *Elementary Biology (Nature Knowledge)*, by J. H. Wimms, B.A. (2s. 6d. net), has been issued by the Normal Press—simple, clear, and practical, with 192 illustrations.

A "popular edition" of *Astronomy for General Readers*, by George F. Chambers, F.R.A.S. (1s. net, Whittaker), will be cordially welcomed. It is attractively written, as well as scientifically sound, and it is well calculated to stimulate a taste for the subject.

MODERN LANGUAGES.

A Book of French Prosody, with Specimens of French Verse from the Twelfth Century to the Present Day. By Louis M. Brandin, L.-ès-L., Ph.D., Fielden Professor of French and Professor of Romance Philology at University College, London; and W. G. Hartog, B.A. (Lond.), Lecturer in French at University College, London. (3s. 6d. Blackie.)

The book is primarily intended as a text-book for advanced students of French, but "it is addressed also to the larger public of those who take an interest in reading the French poets"—"to train the reader's ear and to quicken his powers of observation." In Part I. of the Prosody exposition, the authors deal with the phonetics of French verse, caesura and enjambement, hiatus, assonance and rhyme, alliteration, and poetical peculiarities of orthography and syntax. The explanation is considerably detailed, amply illustrated, and often illuminated by indication of historical stages of development. The only difficulty for most students will be met in the treatment of the caesura: the attitude of the authors might have been more detached, and the expression sometimes more precise or more full. Part II. illustrates and explains the specialties of the various forms of verse: *vers libres*, strophes, stanzas, couplets, *terza-rima*, *villanelle*, *rondel*, *ballade*, *lai*, *virelai*, *sestina*, sonnet; with an appendix on metrical innovations—blank verse, metrical verse, and decadent (or free) verse. All the forms are quite lucidly set forth, and many interesting historical connexions are briefly indicated. There is no pretension to supply a complete treatise on French versification, but probably everything really essential to the general reader's understanding of the technique of French verse is effectively presented. The larger half of the volume is occupied by the illustrative specimens.

Whittaker's Modern Method of learning German. By C. W. Whitaker, B.A. (Oxon.), and H. G. Braun, Ph.D. (Leip.). (3s. net. Whitaker.)

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- Peach, E.
- Pennells, F.
- Phillips, Miss E.
- Phillips, E. T.
- Pither, Miss K. L.
- Pochard, Miss L. E.
- Radcliffe, J. T.
- Raisbeck, G.
- Richardson, H. E.
- Salter, Miss A. M.
- Shaw, A. E.
- Shottou, A. E.
- Simcoe, Miss G. E.
- Simmons, R. H.
- Slater, Miss E.
- Slee, T. J.
- Smith, Miss A.

- Smith, W. J.
- Stedman, J.
- Stroud, J. E. C.
- Sudds, Miss E. G.
- Sutcliffe, J. W.
- Syner, H.
- Talbot, E. A.
- Taylor, Miss E. M.
- Teakle, S. G.
- Tedstone, J. L.
- Thomas, Miss D.
- Thomas, Mrs. F. J.
- Thompson, E. F.
- Thompson, H.
- Till, Miss F. J.
- Timbers, H. M.
- Tipper, H. J.
- Toley, E. E.
- Tomlins, C. J.
- Townsend, E.
- Trotter, Miss C. L.
- Walker, A.
- Walton, Miss M.
- Warner, P. E.
- Warner, S. F.
- Watson, P. O. S.
- Webb, H.
- Westwood, Miss E. A.
- Whale, E.
- White, Miss A.
- Wickers, Miss E. E.
- Wigg, F. S.
- Wigglesworth, G.
- Wilkins, Miss M.
- Williams, A. A.
- Williams, F. B.
- Worsfold, Miss J. S.
- Wyatt, H. G.

English.

(Subject No. 1.)

- Adames, F. H.
- Addis, A. J.
- Anslow, A. S.
- Bachelor, G. C.
- Bickley, J. T. W.
- Bowtell, Miss A. M.
- Brewin, Miss E. S.
- Broadbent, J. H. (*hon.*)
- Brooksbank, W. L.
- Budd, H. H.
- Bullock, Miss E. M.
- Burd, F. W.
- Burgess, Miss F. (*hon.*)
- Chamberlain, Miss E. K.
- Chapman, E. F. G.
- Cock, H.
- Comber-Taylor, Miss I. M.
- Coole, J. R. S.
- Coombes, Miss E. B.
- Cording, G. E.
- Dalton, Miss F. S.
- Dalton, Miss Jessie M.
- Dalton, Miss Lucy M.
- Dennison, Miss A. K.
- Dixon, J.
- Dixon, M. H.
- Done, A. B. (*hon.*)
- Dovey, Miss E. J.
- Dungey, Miss A. M.
- Dye, J. H.
- Elliott, Miss F. G.
- Farrar, A. A.
- Fay, Miss M. J.
- Felton, Miss M. M.
- Fisher, W.
- Forrest, T.
- Goddard, Miss A. E.
- Grimes, C. W.
- Grounds, A.
- Haffner, Miss T.
- Harrison, Miss E.
- Harriss, H.
- Hodgson, Miss A.
- Hopkins, S. R.
- Hosking, L. T.
- Innes, W. A.
- Jenkins, A. J.

English.—(contd.)

- Jump, W.
- Kingston, H. W. F.
- Kirk, J. J.
- Knight, G. H.
- Knowles, T. A.
- Lambert, Miss M.
- Lavery, J.
- Lawther, T.
- Leicester-Hulk, F. W.
- Liverpool, J. B.
- Lord, G.
- Luckett, J. T.
- McCarthy, W.
- McDermott, Miss M. J.
- Mole, H.
- Morris, A.
- Morris, H. E.
- Moses, Miss M. E.
- Moss, H. S.
- Murray, Miss J.
- Neal, Arthur B.
- Newman, B. E.
- Nicholson, Miss I. J.
- Oultram, H.
- Pape, J.
- Pennells, F.
- Perkins, B. M. N.
- Perry, Miss F. A.
- Pickles, J. W.
- Pither, Miss B. M.
- Priest, S.
- Puddephatt, Miss O.
- Radcliffe, J. T.
- Richards, H.
- Roberts, E. J.
- Satchwill, Mrs. M.
- Schofield, J.
- Senyard, Miss M.
- Shotton, A. E.
- Simpson, Miss A.
- Slee, T. J.
- Smith, Miss M. A.
- Speares, J.
- Spencer, W.
- Stapleton, A. F. St. C.
- Stenning, Miss E.
- Stephens, Miss W.
- Stroud, J. E. C.
- Tedstone, J. L. (*hon.*)
- Thompson, E. F. (*hon.*)
- Thompson, H.
- Tilley, Miss A. R.
- Wake, R.
- Wanstall, Miss E. G.
- Ware, Miss M. K.
- Wayman, Miss A.
- Whitehouse, W. E. (*hon.*)
- Whittingham, J. F.
- Wilkin, G. F.
- Williams, Miss M. H.

English History.

- Adames, F. H.
- Anslow, A. S.
- Bailey, Miss M. A. M.
- Baunister, S.
- Bickley, J. T. W.
- Brassill, Miss A. T.
- Broadbent, J. H.
- Budd, H. H.
- Buist, Miss E. E.
- Chapman, E. F. G.
- Cock, H.
- Coole, J. R. S.
- Cracknell, Miss E.
- Dalton, Miss Jessie M.
- Dixon, M. H.
- Dobson, J. C.
- Elliott, Miss F. G.
- Farrar, A. A.
- Fassam, D.
- Felton, Miss M. M.
- Ffennell-Keating, Miss N.
- Fisher, W.
- Floch, Miss A. J.
- Giddens, Miss L. E.
- Greenough, Miss E. M.
- Grimes, C. W.
- Grounds, A.
- Dovey, Miss E. J.
- Harriss, H.
- Hopkins, S. R.
- Horton, Miss A.
- Hosking, L. T.
- Huntley, R. W.
- Husband, A. W. L.
- Jenkins, A. J.
- Jones, W. H.
- Jump, W.
- Kingston, H. W. F.
- Kirkham, Miss L.
- Lambert, Miss M.
- Lavery, J.
- Lawson, G. D.
- Lawther, T.
- Leal, A.
- Liverpool, J. B.
- Livesey, Miss A. E.
- Lord, G.

- McCarthy, W.
- Mole, H.
- Morris, A.
- Moses, Miss M. E.
- Moss, H. S.
- Murray, Miss J.
- Nash, C. W. B.
- Neal, Charles B.
- Newington, G. C.
- Nicholson, Miss I. J.
- Oultram, H.
- Pape, J.
- Partridge, F.
- Payne, H. M. C.
- Pentney, Miss M. E.
- Pochard, Miss L. E. (*hon.*)
- Radcliffe, J. T.
- Schofield, J.
- Senyard, Miss M.
- Sharp, Miss M. E.
- Shotton, A. E.
- Simpson, Miss A. (*hon.*)
- Slee, T. J.
- Smith, Miss M. A.
- Speares, J.
- Spencer, W.
- Stapleton, A. F. St. C.
- Stenning, Miss E.
- Stephens, Miss W.
- Stroud, J. E. C.
- Tedstone, J. L. (*hon.*)
- Thompson, E. F. (*hon.*)
- Thompson, H.
- Tilley, Miss A. R.
- Wake, R.
- Wanstall, Miss E. G.
- Ware, Miss M. K.
- Wayman, Miss A.
- Whitehouse, W. E. (*hon.*)
- Whittingham, J. F.
- Wilkin, G. F.
- Williams, Miss M. H.

Geography.

- Adames, F. H.
- Anslow, A. S.
- Bickley, J. T. W.
- Broadbent, J. H.
- Buckwell, A.
- Budd, H. H.
- Buist, Miss E. E.
- Burd, F. W.
- Chadwick, J.
- Chapman, E. F. G.
- Cobbold, P. J.
- Cock, H.
- Coole, J. R. S.
- Cording, G. E.
- Cuthbert, J.
- Dalton, Miss Jessie M.
- Dennison, Miss A. K.
- Dixon, M. H.
- Dobson, J. C.
- Done, A. B.
- Dye, J. H.
- Farrar, A. A.
- Felton, Miss M. M.
- Fisher, W.
- Forrest, T.
- Forster, Miss M. A.
- Giddens, Miss L. E.
- Greenough, Miss E. M.
- Grounds, A.
- Harrison, Miss E.
- Higginbottom, J.
- Huntley, R. W.
- Jenkins, A. J.
- Jones, O. R.
- Jones, W. H.
- Jump, W.
- Kirk, J. J.
- Kirkham, Miss L.
- Lavery, J.
- Lawther, T.
- Leicester-Hulk, F. W.
- Lord, G.
- Mathew, M.
- McCarthy, W.
- Mole, H.
- Morris, A.
- Morris, H. E.
- Moses, Miss M. E.
- Moss, H. S.
- Nash, C. W. B.
- Neal, Charles B.
- Nicholson, Miss I. J.
- Oultram, H.
- Pape, J.
- Payne, H. M. C.
- Pennells, F.
- Perkins, B. M. N.
- Perry, Miss F. A.
- Pickles, J. W.
- Pochard, Miss L. E.
- Radcliffe, J. T.
- Richards, H.
- Robinson, A. (*hon.*)
- Schofield, J.
- Sharp, Miss M. E.
- Shotton, A. E.
- Simpson, Miss A.
- Slee, T. J.
- Smith, Miss M. A.

- Smith, W. F.
- Speares, J.
- Spencer, W.
- Stroud, J. E. C.
- Talbot, E. A.
- Teare, Miss M. R. S. B.
- Tedstone, J. L.
- Thompson, E. F.
- Thompson, H.
- Tipper, H. J.
- Trevor, T. G.
- Turton, Miss C. E.
- Unwin, H. J.
- Vyle, Miss L. E.
- Wake, R.
- Walker, Miss A. L.
- Walton, Miss M.
- Ware, Miss M. K.
- Warne, Miss A. J.
- Wayman, Miss A.
- Wenlock, R.
- Whitehouse, W. E. (*hon.*)
- Whittingham, J. F.
- Willcocks, T.
- Yates, Miss E. M.

Arithmetic.

- Adames, F. H.
- Atkinson, W. J.
- Bannister, S.
- Biss, Miss H. H.
- Bowtell, Miss A. M.
- Broadbent, J. H.
- Brooksbank, W. L.
- Buckwell, A.
- Budd, H. H.
- Burd, F. W.
- Burgess, Miss F.
- Cassere, Miss M. N.
- Charnock, E.
- Chote, A. H.
- Clarke, Miss S. M. E.
- Cock, H.
- Cole, Miss A. M.
- Comber-Taylor, Miss I. M.
- Coole, J. R. S.
- Cording, G. E.
- Cuthbert, J.
- Dalton, Miss Jessie M.
- Dennison, Miss A. K.
- Dixon, M. H.
- Dobson, J. C.
- Drake, Miss N. E.
- Dye, J. H.
- Earlam, Miss J. B.
- Elderkin, Miss A. L.
- Farrar, A. A.
- Fassam, D.
- Felton, Miss M. M.
- Forrest, T.
- Forster, Miss M. A.
- Friedrichs, Miss M.
- Gardner, Miss C. A.
- Gouldthorpe, Miss R. M.
- Gowers, E. A.
- Grimes, C. W.
- Grounds, A.
- Groves, G. H.
- Grundy, Miss M. B.
- Harrison, Miss E.
- Harriss, H.
- Haskew, F.
- Hellyer, Miss B. S.
- Hopkins, S. R.
- Hosking, L. T.
- Jenkins, A. J.
- Jones, O. R.
- Jump, W.
- Kent, Miss E. F.
- Kirby, J. P.
- Kirk, J. J.
- Kingston, H. W. F.
- Knowles, T. A.
- Lambert, Miss M.
- Lavery, J.
- Lawson, G. D.
- Lawther, T.
- Leicester-Hulk, F. W.
- Livesey, Miss A. E.
- Lord, G.
- Major, E. H. R.
- Mole, H.
- Morris, A.
- Morris, H. E.
- Moss, H. S.
- Nash, C. W. B.
- Neal, Arthur B.
- Oultram, H.
- Pape, J.
- Pennells, F.
- Pentney, Miss M. E.
- Perkins, B. M. N.
- Perry, Miss F. A.
- Pickles, J. W.
- Priest, S.
- Puddephatt, Miss O.
- Radcliffe, J. T.
- Richards, H.
- Roberts, E. J.
- Savage, Miss H. C.
- Schofield, J.
- Schwenner, Miss E. M.

Arithmetic.—(contd.)

- Shotton, A. E.
Slee, T. J.
Smith, G.
Smith, Miss M. A.
Speares, J. (hon.)
Spencer, W.
Stapleton, A. F. St. C.
Stedman, P. H.
Steel, Miss A. C.
Stroud, J. E. C.
Teare, Miss M. R. S. B.
Tedstone, J. L.
Thompson, E. F. (hon.)
Thompson, H.
Tipper, H. J.
Tourle, B. L.
Voy, Miss H.
Wake, R.
Waldron, E.
Ware, Miss M. K.
Wayman, Miss A.
Whitehouse, W. E.
Whittingham, J. F.
Willcocks, T.
Winkless, F. E.

Mathematics.

- FELLOWSHIP.**
Phillips, G. F. T. (hon. geometry, conics, and calculus).
Pinnington, J.

LICENTIATESHIP.

- Budd, H. H.
Clark, P.
Cole, Miss A. K.
Dungey, E.
Green, G. H.
Hobday, L. H. B.
Hodges, A.
Jarvis, B. E.
Larrett, W. G. T.
Murphy, W. S.
Sainsbury, C. W.
Stokes, W. J.
Thoruton, H.

ASSOCIATESHIP.

- Collins, W. J.
Cording, G. E.
Harvey, A.
Jenkins, A. J.
Lavery, J.
Lawther, T.
Lord, G.
McCarthy, W.
Mole, H.
Radeliffe, J. T.
Richards, H.
Stroud, J. E. C.
Thompson, E. F. (hon. algebra).
Thompson H. (hon. algebra).
Tipper, H. J.

Algebra.*

LICENTIATESHIP.

- Ellison, T. W.
Gordon, T. W.
Parlett, Miss L. E.
Twigg, T. L.

ASSOCIATESHIP.

- Standing, R. S.
Wenlock, R.

Geometry.*

LICENTIATESHIP.

- Ellison, T. W.
Ferguson, R.
Gray, Miss M. E.
Hardy, F.
James, T. E.
Mahony, Miss H.
Sporue, A. C.
Yates, Miss E. M.

ASSOCIATESHIP.

- Thomas, W. A.

Trigonometry.*

LICENTIATESHIP.

- Mahony, Miss H.

Conics.*

- Kingston, W. W.
Twigg, T. L.

Languages.

- e. = Higher English,
f. = French, g. = German,
gr. = Greek, l. = Latin.

FELLOWSHIP.

- Michell, S. H. l.gr.

LICENTIATESHIP.

- Athey, J. W. f.l.
Black, Miss T. B. f.l.
Buist, Miss E. E. f. (hon.) g.
Castle, Miss C. J. f.g.
Cole, W. J. e.l.
Coole, J. R. S. f. (hon.) l.
d'Arcy, T. A. e.l.
Knight, G. H. f. (hon.) g.
Lambert, E. A. f.l.
Norris, Miss F. L. e.f.
Oppermann, C. J. A. e.f.
Scott, Miss M. A.
f. (hon.) g. (hon.)
Smith, Miss E. M. f. (hon.) g.
Staubli, M. f. (hon.) g.
Wake, R. f. (hon.) g. (hon.)
Weeks, Miss E. M. A.
f. (hon.) l.
Winterton, S. C. e.f.

ASSOCIATESHIP.

- Boucher, Miss J. f. (hon.)
Bowtell, Miss A. M. f.
Clarke, Miss S. M. E. f.
Dixon, Miss A. E. M. f.
Doherty, Miss E. f.
Dungey, Miss A. M. f.
Earlam, Miss J. B. f. (hon.)
Elliott, Miss F. G. f.
Holzapfel, Miss C. J. A.
f. (hon.)
Hopkins, S. R. f.
Kingston, H. W. F. l.
McAuliffe, Miss C. f. (hon.)
Moses, Miss M. E. f.
Perkins, B. M. N. f. (hon.)
Pither, Miss B. M. f.
Stapleton, A. F. St. C. l.
Steel, Miss A. C. f. (hon.)
Whitworth Smith, H. l.

* Under Old Regulations.

Higher English.*

LICENTIATESHIP.

- Gottlieb, J. M.

French.*

LICENTIATESHIP.

- Butcher, F. E.

German.*

LICENTIATESHIP.

- Power, Miss E. M.

Latin.*

LICENTIATESHIP.

- Miller, E. A.
Wicks, Miss A.

Science.

- a. = Astronomy.
b. = Botany.
ch. = Chemistry.
g. = Geology.
m. = Mechanics.
p. = Experimental Physics.
ph. = Animal Physiology.
z. = Zoology.

FELLOWSHIP.

- Phillips, G. F. T. p.ph.

LICENTIATESHIP.

- Cliff, S. a.ph.
Dixon, J. a.ph.
Dodd, Miss J. A. ph.b.
Dungey, E. p.ch.
Ellison, T. W. m.ph.
Green, G. H. p.ch.
Heape, Miss M. ph.b.
Jarvis, B. E. p.ph.
Keeler, Miss E. C. J. ph.b.
Norton, A. C. p.ch.
Rigby, E. p. (hon.) ph.
Sainsbury, C. W. p.ph.
Shaw, F. A. a.ph.
Smith, Miss E. M. ph.b.
Smith, Miss M. A. ph.b.
Staples, F. L. ph.z.
Thomas, E. H. ph.z.
Tottman, Miss A. ph.b.

ASSOCIATESHIP.

- Addis, A. J. ch.ph.
Angier, Miss E. L. ph.b.
Anslow, A. S. ch.ph.
Bickley, J. T. W. ph.b. (hon.)
Bodger, Miss E. V. ph.b.
Brooksbank, W. L. ch.ph.
Cole, Miss A. M. ph.b. (hon.)
Daniel, H. p.ph.
Dobson, J. C. ch.ph.
Donnelly, Miss M. C. ch.ph.
Dye, J. H. ch.ph.
Forster, Miss M. A. ph.b.
Gouldthorpe, Miss R. M. ph.b.
Grounds, A. ch.ph.
Harrison, Miss E. ph.b.
Horton, Miss A. ph.b.
Hosking, L. T. ch.ph.

Science.—(contd.)

- Jones, W. H. ch. (hon.) g.
Kane, Miss M. ph. g.
Kirkham, Miss L. ph. b.
Kirkman, J. p. ch.
Laming, C. ph. b.
Leicester-Hulk, F. W. ch. ph.
Luckett, J. T. ph. b.
Moorman, Miss E. M. ph. b.
Morris, A. ch. ph.
Nicholson, Miss I. J. ph. b.
Senyard, Miss M. ph. b.

The following obtained Diplomas:—

LICENTIATESHIP.

- Armes, Miss J. P.
Athley, J. W.
Backhouse, J.
Baker, W.
Bennett, F. E.
Burness, G. F.
Butcher, F. E.
Carss, J.
d'Arcy, T. A.
Ferguson, R.
Gomersall, E. E.
Green, G. H.
Hart, G. L.
Hobday, L. H. B.
Hodges, A.
Ibbett, Miss D.
James, T. E.
Jarvis, B. E.
Jones, B.
Lambert, W.
Macleod, A.
Miller, E. A.
Murphy, W. S.
Norton, A. C.
Power, Miss E. M.
Rayner, H. E.
Sainsbury, C. W.
Schwemmer, Miss E. M.
Slefrig, S.
Sporne, A. C.
Stokes, W. J.
Thornton, H.
Weeks, Miss E. M. A.
Whittaker, H.
Wicks, Miss A.

ASSOCIATESHIP.

- Addis, A. J.
Allison, Miss E. B.
Almond, Miss M. C.
Angier, Miss E. L.
Bachelor, G. C.
Bailey, Miss M. A. M.
Barker, A. J.
Barralet, Miss E. G.
Bcnsky, A.
Bird, R. T.
Biss, Miss H. H.
Bodger, Miss E. V.
Branch, F. R.
Brent, Miss G. E.
Brown, F.
Browne, Mrs. M. A.
Bullock, Miss E. M.
Burdett, H. P.
Burnett, J. M. C.
Cassere, Miss M. N.
Cavalier, F. J.
Chapple, E.
Charnock, E.
Clarke, Miss F. M. E.
Clarke, Miss S. M. E.
Collier, G. E.

- Sharp, Miss M. E. ph. b.
Simcoe, Miss G. E. ph. b.
Tedstone, J. L. p. ph.
Tilley, Miss A. R. ch. ph.
Whitehouse, W. E.
p. (hon.) ph.

Botany.*

LICENTIATESHIP.

- Unsworth, Miss A. M.

- Collins, W. J.
Comber-Taylor, Miss I. M.
Corbishley, Miss S. E.
Cowling, W. J.
Critchley, Miss T. E.
Davies, E. P.
Davies, G. T.
Dennison, Miss A. K.
Dixon, Miss A. E. M.
Done, A. B.
Donnelly, Miss M. C.
Eley, E. J.
Evans, E. O.
Evans, H. T.
Evans, J. E.
Field, S. E.
Fielding, Miss C. L.
Fisher, W. H.
Fowler, Miss A.
Gatehouse, Miss E. M.
Gawthorpe, Miss M. E.
Glover, H. J.
Gouldthorpe, Miss R. M.
Green, H. W.
Griffiths, W.
Grounds, A.
Hamnett, R.
Hampshire, D. W.
Hampson, Miss E.
Handley, Miss A. F.
Handover, Miss K. L.
Hansford, Miss A. G.
Hardy, J. W.
Harris, H. W.
Hindmarsh, W. R.
Hodges, C. M.
Horton, Miss A.
Hosking, L. T.
Hughes, H.
Hurst, W. H.
Husband, A. W. L.
James, Miss E.
Jenkins, A. J.
Johnson, Miss A. E.
Johnson, H.
Johnsou, Miss L. B.
Jones, D.
Kirby, J. P.
Kirk, E. F. E.
Knowles, Miss M.
Lawther, T.
Leicester-Hulk, F. W.
Le Richeux, C. E.
Liddell, Miss B. M.
Lord, G.
Lovell, Ll. G.
Lunnon, Miss E. J.
Maddams, Miss A.
Martin, Miss Charlotte M.
Martin, Miss Margaret C.
Massey, J. H.
Matheson, Miss H.

Experimental Physics.*

ASSOCIATESHIP.

- Williams, E. H.

Animal Physiology.*

ASSOCIATESHIP.

- Mellor, H.

- McAuliffe, Miss C.
Mellowes, Miss F. V.
Mole, H.
Morris, A.
Naylor, Miss E.
Neal, Arthur B.
Neal, Miss E. L.
Newland, A. E.
Newman, B. E.
Odgers, J. R.
Peach, E.
Phillips, Miss E.
Phillips, E. T.
Pither, Miss K. L.
Pochard, Miss L. E.
Radcliffe, J. T.
Raisbeck, G.
Richardson, H. E.
Robinson, A.
Savage, Miss H. C.
Shaw, A. E.
Simmons, R. H.
Slater, Miss E.
Smith, Miss A.
Smith, W. J.
Stedman, J.
Stroud, J. E. C.
Sudds, Miss E. G.
Sutcliffe, J. W.
Syner, H.
Taylor, Miss E. M.
Teakle, S. G.
Tedstone, J. L.
Thomas, Miss D.
Thomas, Mrs. F. J.
Thomas, W. A.
Thompson, E. F.
Thompson, H.
Till, Miss F. J.
Tilley, Miss A. R.
Timbers, H. M.
Toley, E. E.
Tomlins, C. J.
Tourle, B. L.
Townsend, E.
Trotter, Miss C. L.
Voy, Miss H.
Walker, A.
Warner, P. E.
Warner, S. F.
Webb, H.
Westwood, Miss E. A.
Whale, E.
Whitworth Smith, H.
Wickers, Miss C. E.
Wigg, F. S.
Wigglesworth, G.
Williams, A. A.
Williams, E. H.
Williams, F. B.
Worsfold, Miss J. S.
Wyatt, H. G.

The following obtained Prizes:—

Mathematics.

- Phillips, G. F. T.

Science.

- Green, G. H.

COLLEGE OF PRECEPTORS.

CERTIFICATE EXAMINATION,

DECEMBER, 1904.

The following is the list of the successful candidates at the Colonial and Foreign Centres.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

- a. = Arithmetic. g. = Geography.
al. = Algebra. ge. = German.
bk. = Book-keeping. gm. = Geometry.
ch. = Chemistry. he. = Hebrew.
d. = Drawing. s. = Scripture.
du. = Dutch. sh. = Shorthand.
e. = English. sp. = Spanish.
f. = French.

The small figures 1 and 2 prefixed to names in the

Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively. Bracketing of names denotes equality.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, End. = Endowed, Found. = Foundation, H. = House, Inst. = Institute, Int. = International, Inter. = Intermediate, Prep. = Preparatory, S. = School, Tech. = Technical, Univ. = University.

Boys.

FIRST CLASS [OR SENIOR].—HONOURS DIVISION.

- Bach, H. C. Private tuition

FIRST CLASS [OR SENIOR].—PASS DIVISION.

- Flynn, A. f. Private tuition
Gairy, E. J. Private tuition
Henry, J. R. Middle S., Georgetown, B. Guiana

SECOND CLASS [OR JUNIOR].—HONOURS DIVISION.

- Godlieb, E. A. S. Central College, Colombo
Nurse, S. D. al. f. Middle S., Georgetown, B. Guiana
De Heer, S. J. H. L. al. d. Private tuition

- Mahon, H. f. Private tuition
Meintjes, O. J. a. du. Private tuition
Perchard, C. f. Private tuition

SECOND CLASS [OR JUNIOR].—PASS DIVISION.

- Sausenthaler, A. H. H. a. ge. du. Private tuition
Benjamin, B. F. a. f. Marist Bros. S., Johannesburg
Galgut, E. L. Diocesan College S., Pretoria
Van Coller, C. s. du. Private tuition
Goldberg, B. Marist Bros. S., Johannesburg
Andrew, H. M. f. du. Private tuition
Perera, D. P. f. City College, Colombo
Fernando, M. J. City College, Colombo
Van Wijk, S. J. du. Private tuition
Rosettenstein, J. W. Private tuition
Tucker, E. F. K. Marist Bros. S., Johannesburg
Hansen, J. M. du. Private tuition
Taylor, C. L. Private tuition
Cohen, A. S. sh. Private tuition
Freundlich, S. Private tuition
Euba, G. H. O. Wesleyan High S., Marina, Lagos
Fernando, J. G. Central College, Colombo
Candiah, C. Central College, Colombo
De Beer, T. H. du. Private tuition
Krummeck, P. J. sh. Private tuition
Lewis, C. Private tuition

Theodore, G. Private tuition
Hodgson, J. A. Marist Bros. Coll., Uitenhage
Durham, L. a. Private tuition
Bell, C. H. Private tuition
Hendry, A. J. K. sh. Private tuition
Myburgh, P. A. a. Private tuition
Vanadeva, R. Central College, Colombo
Cranko, J. J. a. al. Marist Bros. S., Johannesburg
Murugasu, M. S. Central College, Colombo
Ponniah, K. Wesleyan Central Inst., Batticaloa
Holliday, A. R. Private tuition
Cottrill, H. F. F. Private tuition
Haynes, R. P. Middle S., Georgetown, B. Guiana
Rabinowitz, N. P. he. Private tuition
Hayes, S. C. ch. Marist Bros. Coll., Uitenhage
Ring, A. Private tuition
De Beer, J. de V. Diocesan College S., Pretoria
Rood, M. Private tuition
Perera, J. H. City College, Colombo
Adams, V. E. Diocesan College S., Pretoria
Figur, D. Private tuition
Pooley, B. ch. Marist Bros. Coll., Uitenhage
Sessel, S. J. s. Private tuition
Roberts, O. O. Wesleyan High S., Marina, Lagos
Shirley, W. Private tuition
Curlew, R. G. du. Private tuition
Strange, D. T. F. Private tuition
Kotze, G. P. C. du. Private tuition
Morgan, A. S. Private tuition
Raaff, O. N. G. B. Private tuition
Turton, G. K. Marist Bros. Coll., Uitenhage
Vyramuthu, D. R. Wesleyan Central Inst., Batticaloa
Mendis, R. A. Private tuition
Osmond, H. D. Private tuition
Emmett, E. Private tuition
Byard, G. Diocesan Coll. S., Pretoria
Huneberg, N. f. Private tuition
Schikkerling, R. W. Private tuition
Brown, P. H. Marist Bros. S., Johannesburg
Wilson, D. J. Private tuition
Cozier, R. N. Middle S., Georgetown, B. Guiana
Hill, F. A. Private tuition

THIRD CLASS.—HONOURS DIVISION.

Konschel, C. e. a. gm. ge. Marist Bros. S., Uitenhage
Bouden, C. H. e. a. gm. St. Alban's, Brockville, Ontario
George, L. L. e. a. bk. f. Private tuition
Thunemann, A. B. e. a. gm. f. Marist Bros. S., Uitenhage
McHardy, W. e. a. gm. f. Marist Bros. S., Uitenhage
Gibbs, J. W. e. f. Private tuition
Mackey, C. N. a. gm. f. Marist Bros. S., Uitenhage
Hayes, A. e. a. gm. f. Marist Bros. S., Uitenhage
Wanklyn, A. A. St. Alban's, Brockville, Ontario
Van Straaten, T. A. a. al. Marist Bros. S., Uitenhage
Rose-Innes, A. A. e. a. gm. Marist Bros. S., Uitenhage
Penberthy, L. H. e. a. gm. f. Marist Bros. S., Uitenhage
Weinbren, B. a. he. Marist Bros. S., Johannesburg
Cotman, R. A. bk. d. Lomas Acad., Lomas de Zamora

THIRD CLASS.—PASS DIVISION.

Mottram, F. C. e. f. sh. Private tuition
Jansz, N. C. City College, Colombo
Rabie, J. B. du. Private tuition
Samaraweera, E. E. Central College, Colombo
Gnanamuthu, K. Wesleyan Central Inst., Batticaloa
Buckland, F. E. Lomas Acad., Lomas de Zamora
Perera, C. A. S. Central College, Colombo
Norburn, W. e. Diocesan College S., Pretoria
Boswell, W. W. a. al. Marist Bros. Coll., Uitenhage
Perry, A. P. Private tuition
Heydenrych, V. C. e. a. Marist Bros. Coll., Uitenhage
Prescod, C. W. s. e. h. Private tuition
Denny, A. D. Middle S., Georgetown, B. Guiana
Durr, A. W. du. Private tuition
Krishnapillai, V. R. Private tuition
Mahon, S. a. Private tuition
Meyer, I. J. Private tuition
Brereton, R. M. e. Brighton Wesleyan S., St. Vincent, W. Indies
Sacke, D. M. Private tuition
Tennant, W. D. du. Private tuition
Pollard, J. M. e. a. al. Marist Bros. Coll., Uitenhage
Rajaratnam, S. Wesleyan Central Inst., Batticaloa
Thomson, S. a. al. gm. Marist Bros. Coll., Uitenhage
Yawitch, E. a. al. Marist Bros. S., Johannesburg
Brasch, A. e. Marist Bros. S., Johannesburg
Birke, M. A. a. al. Marist Bros. Coll., Uitenhage
D'Oliveira, J. A. a. al. gm. Marist Bros. Coll., Uitenhage
St. John, G. P. A. a. Private tuition
Scaife, R. W. Private tuition
Boyton, R. a. Marist Bros. S., Johannesburg
Cardno, L. T. a. B. Marist Bros. S., Johannesburg
Celestine, D. Private tuition
Cohen, J. a. Marist Bros. S., Johannesburg
Perera, H. M. Private tuition
Tillampalam, C. T. City College, Colombo
Dauel, M. I. e. Middle S., Georgetown, B. Guiana
Simons, M. al. Marist Bros. S., Johannesburg
Maxwell, W. a. Marist Bros. S., Johannesburg
Davis, E. B. Lomas Acad., Lomas de Zamora
Jensen, A. E. e. a. al. Marist Bros. S., Johannesburg
McCormack, J. J. T. A. J. Private tuition
Phillips, E. G. Private tuition
Feinberg, D. Diocesan College S., Pretoria
Grenberg, H. du. Private tuition
Lewison, S. Private tuition
Ratnasabapathy, T. Central College, Colombo
Morgan, O. W. a. al. gm. Marist Bros. Coll., Uitenhage
Whitcombe, F. Marist Bros. S., Johannesburg

Carr, W. V. Private tuition
Pullen, J. A. Private tuition
Cherry, L. E. Private tuition
Lightbourn, P. M. Queens' College, Nassau
McMaster, H. G. St. Alban's, Brockville, Ontario
Spaan, J. a. Marist Bros. S., Johannesburg
Walker, J. C. Lomas Acad., Lomas de Zamora
Jaffee, H. Marist Bros. S., Johannesburg
Mitchell, V. e. Private tuition
Rathouse, A. Marist Bros. S., Johannesburg
Rosairo, C. Central College, Colombo
Solomon, E. Marist Bros. S., Johannesburg
Barker, E. F. A. Middle S., Georgetown, B. Guiana
Coetsee, A. J. du. Private tuition
Goldrick, A. C. a. Marist Bros. Coll., Uitenhage
Kathiravetpillai, P. al. Wesleyan Central Inst., Batticaloa
St. Bernard, H. H. e. Private tuition
Curlew, L. Diocesan College S., Pretoria
De Villiers, C. J. Private tuition
Lewis, J. E. L. Middle S., Georgetown, B. Guiana
Bantjes, H. Marist Bros. Coll., Uitenhage
Bate, A. C. St. Alban's, Brockville, Ontario
Bosscher, A. Diocesan College S., Pretoria
Crosbie, W. T. Marist Bros. Coll., Uitenhage
Henricus, A. City College, Colombo
Hutchinson, C. W. O. Private tuition
Noreen, R. W. gm. Marist Bros. Coll., Uitenhage
DeZulva, L. M. City College, Colombo
AbdulMajeed, K. M. L. Wesleyan Central Inst., Batticaloa
Burgus, T. F. Private tuition
Clarke, E. D. Middle S., Georgetown, B. Guiana
DeVilliers, R. J. Marist Bros. School, Johannesburg
Pickard, A. B. de V. Diocesan College S., Pretoria
Seenyntamby, N. St. Andrew's S., Batticaloa
Booth, F. J. a. Diocesan College S., Pretoria
Davidoff, H. Marist Bros. S., Johannesburg
Erskine, M. W. City College, Colombo
Fernando, K. S. City College, Colombo
Lovell, R. W. St. Alban's, Brockville, Ontario
Geddes, J. Marist Bros. S., Johannesburg
Gibbs, J. a. Private tuition
Petyt, M. a. Marist Bros. S., Johannesburg
Wolpert, W. Marist Bros. S., Johannesburg
Gunasekara, A. H. Private tuition
Ponnuthurai, V. C. Wesleyan Central Inst., Batticaloa
Rathouse, A. he. Marist Bros. S., Johannesburg
Saunders, M. Marist Bros. Coll., Uitenhage
Smulian, H. R. a. Marist Bros. S., Johannesburg
Allpass, T. Marist Bros. S., Johannesburg
Cranko, F. I. Marist Bros. S., Johannesburg
Munroe, J. Marist Bros. S., Johannesburg
Craggs, R. e. Diocesan College S., Pretoria
Rintoul, T. F. R. e. a. Marist Bros. Coll., Uitenhage
Burrage, R. Marist Bros. S., Johannesburg
Canagasabay, A. S. Wesleyan Central Inst., Batticaloa
Clulu, L. Diocesan College S., Pretoria
Gairy, J. a. Private tuition
Gattens, C. Marist Bros. S., Johannesburg
Newton, G. F. a. Private tuition
Nurse, R. J. Middle S., Georgetown, B. Guiana
Perry, G. W. Private tuition
Rassiah, N. S. a. Wesleyan Central Inst., Batticaloa
Donovan, B. E. Marist Bros. S., Johannesburg
Eyhianghert, C. G. J. a. City College, Colombo
Levy, F. gm. Marist Bros. Coll., Uitenhage
Wolf, B. E. a. Marist Bros. S., Johannesburg
Dempers, P. H. Private tuition
Pencharz, B. Marist Bros. S., Johannesburg
Smith, W. B. a. Marist Bros. S., Johannesburg
Sprawson, H. R. Diocesan College S., Pretoria
Dyer, J. a. Gram. School, New Amsterdam, Berbice
Impett, H. W. Wesleyan Central Inst., Batticaloa
Pepple, A. O. Merriman's High S., Abonema, N. Calabar
Sabatino, A. Marist Bros. Coll., Uitenhage
Toopagai, D. P. City College, Colombo
Wylie, A. H. St. Alban's, Brockville, Ontario
Freedman, J. a. Marist Bros. S., Johannesburg
John, S. A. Private tuition
Morris, J. W. H. Marist Bros. Coll., Uitenhage
Supremanium, P. City College, Colombo
Pritchard, A. H. Queen's College, Nassau
Soosaipillai, J. St. Michael's High S., Batticaloa
Wasserzug, H. Marist Bros. S., Johannesburg
Marcus, S. M. Marist Bros. S., Johannesburg
Arumugan, S. Central College, Colombo
Deans, C. L. Marist Bros. S., Johannesburg
Edensor, F. Marist Bros. Coll., Uitenhage
Wibhuthiratne, D. P. City College, Colombo
Krishna Pillai, A. M. Wesleyan Central Inst., Batticaloa
Lipschitz, J. Marist Bros. S., Johannesburg
Scherpa, C. M. Lomas Acad., Lomas de Zamora
Emanuel, J. D. s. Merriman's High S., Abonema, N. Calabar
Marais, C. Diocesan College S., Pretoria
Bonaparte, A. e. Private tuition
Reeders, W. J. Private tuition
Duke, W. A. Gram. S., New Amsterdam, Berbice
Frazer, S. B. Wesleyan High S., Marina, Lagos
Stull, A. E. Middle S., Georgetown, B. Guiana
Colling, G. Marist Bros. Coll., Uitenhage
Darge, R. J. Marist Bros. Coll., Uitenhage
Raja-Ratnam, A. Central College, Colombo
Chandler, P. Marist Bros. Coll., Uitenhage
Wolf, S. Marist Bros. S., Johannesburg
Coves, A. A. Lomas Acad., Lomas de Zamora
O'Meagher, G. E. Marist Bros. Coll., Uitenhage
Pakeerall, A. L. City College, Colombo

Carney, A. e. Marist Bros. Coll., Uitenhage
Gibson, H. L. Lomas Acad., Lomas de Zamora
Lawless, C. Marist Bros. Coll., Uitenhage
Marais, T. Diocesan College S., Pretoria
DeSouza, M. G. a. Gram. S., New Amsterdam, Berbice
Emanuel, M. D. Merriman's High S., Abonema, N. Calabar
Shepherd, N. Middle S., Georgetown, B. Guiana
Struys, H. B. Wesleyan Central Inst., Batticaloa
Simpson, J. Diocesan College S., Pretoria
VanderHoven, C. B. A. Private tuition

GIRLS.

FIRST CLASS [OR SENIOR].—PASS DIVISION.

Puech, I. H. Hampton Court Coll., Mussooree
Anderson, C. B. d. Hampton Court Coll., Mussooree
Sharpe, I. Hampton Court Coll., Mussooree

SECOND CLASS [OR JUNIOR].—HONOURS DIVISION.

Currie, L. High S., Convent of the Holy Family, Johannesburg
Wiggins, E. S. e. al. sp. Private tuition
duBoulay, E. g. f. d. St. Joseph's Convent, Castries, St. Lucia
Morrison, A. f. St. Joseph's Convent, Port of Spain, Trinidad
Rothschild, M. a. al. f. High S., Convent of the Holy Family, Johannesburg
Ulrich, A. f. St. Joseph's Convent, Port of Spain, Trinidad

SECOND CLASS [OR JUNIOR].—PASS DIVISION.

Bovet, C. H. E. f. sp. Private tuition
Neser, I. e. Sacred Heart Convent, Klerksdorp
Bertrand, G. Victoria Girls' High S., St. George's, Grenada
Mathieson, A. V. f. Hampton Court Coll., Mussooree
Street, S. M. Hampton Court Coll., Mussooree
Smith, D. f. Victoria Girls' High S., St. Georges, Grenada
Smith, G. M. f. Hampton Court Coll., Mussooree
Ballantyne, M. C. Private tuition
Donovan, B. e. High S., Convent of the Holy Family, Johannesburg
Browne, G. High S., Convent of the Holy Family, Johannesburg
Salder, A. M. Hampton Court Coll., Mussooree
Heinekey, A. f. High S., Convent of the Holy Family, Johannesburg
Bethel, E. M. Queen's College, Nassau
Bogle, I. A. Westwood Girls' S., Stewart Town, Jamaica
Chevannes, V. A. Westwood Girls' S., Stewart Town, Jamaica
Jooste, W. Sacred Heart Convent, Klerksdorp
Pearlmann, E. Loreto Convent, Pretoria
Rademeyer, M. Convent, Greenhill, Bloemfontein
Andresen, K. Convent, Greenhill, Bloemfontein

THIRD CLASS.—HONOURS DIVISION.

Belmar, M. s. e. h. g. al. f. d. St. Joseph's Convent, Castries, St. Lucia
Nivet, E. s. e. h. g. a. f. d. St. Joseph's Convent, Port of Spain, Trinidad
Sellier, L. s. e. f. d. St. Joseph's Convent, Port of Spain, Trinidad
Green, W. D. e. d. High S., Convent of the Holy Family, Johannesburg
Lafitte, L. s. f. St. Joseph's Convent, Castries, St. Lucia
Herrera, M. h. d. St. Joseph's Convent, Port of Spain, Trinidad
Weeks, I. e. f. d. St. Joseph's Convent, Castries, St. Lucia
Nunez, E. G. a. St. Joseph's Convent High S., St. Georges, Grenada
Mansfield, M. T. e. a. Middle S., Georgetown, B. Guiana
English, G. Loreto Convent, Pretoria
Nathan, H. e. f. Loreto Convent, Pretoria
Wight, W. f. d. St. Joseph's Convent, Port of Spain, Trinidad

THIRD CLASS.—PASS DIVISION.

Alexander, E. f. Victoria Girls' High S., St. Georges, Grenada
Kernahan, A. h. f. St. Joseph's Convent, Port of Spain, Trinidad
Kernahan, T. f. St. Joseph's Convent, Port of Spain, Trinidad
Blake, R. e. a. d. Sacred Heart Convent, Klerksdorp
Desmontils, M. St. Joseph's Convent, Port of Spain, Trinidad
Herrera, L. St. Joseph's Convent, Port of Spain, Trinidad
Hobson, A. e. St. Joseph's Convent, Port of Spain, Trinidad
Landeau, B. e. St. Joseph's Convent, Port of Spain, Trinidad
Morrison, F. e. d. St. Joseph's Convent, Port of Spain, Trinidad
Currie, A. High S., Convent of the Holy Family, Johannesburg
Isaacs, J. g. Convent of the Sacred Heart, Potchefstroom, Transvaal
Bollers, V. E. Middle S., Georgetown, B. Guiana
Hall, M. V. High S., Convent of the Holy Family, Johannesburg
Schapiro, B. e. High S., Convent of the Holy Family, Johannesburg
Tross, L. E. Middle S., Georgetown, B. Guiana
Rabinowitz, F. e. he. Loreto Convent, Pretoria
DaCosta, E. M. a. Hampton Court Coll. Mussooree
Gladwin, M. F. Hampton Court Coll., Mussooree
Abrahams, A. c. High S., Convent of the Holy Family, Johannesburg
Clarke, A. Loreto Convent, Pretoria
Friedmann, J. e. Loreto Convent, Pretoria
Maisels, M. High S., Convent of the Holy Family, Johannesburg
Smith, E. Victoria Girls' High S., St. Georges, Grenada
Maingot, A. f. d. St. Joseph's Convent, Port of Spain, Trinidad
Sellier, B. St. Joseph's Convent, Port of Spain, Trinidad
Ballantyne, J. C. Private tuition
Gerry, M. a. High S., Convent of the Holy Family, Johannesburg

MATHEMATICS.

15481. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Factorize completely
 $N = 96^{18} + 1$.

Additional Solution by Professor SANJANA, M.A.

I have not seen Lucas's work referred to by the Proposer, but the following is a simple method of getting the result:—

Let $6x$ be of the form y^2 ; then

$$x^6 + 1 = (x^2 + 1)(x^4 - x^2 + 1) = (x^2 + 1) \{ (x^2 + 3x + 1)^2 - 6x(x + 1)^2 \}$$

$$= (x^2 + 1) \{ x^2 + 3x + 1 - y(x + 1) \} \{ x^2 + 3x + 1 + y(x + 1) \},$$

and
 $x^{18} + 1 = (x^6 + 1)(x^{12} - x^6 + 1) = (\text{product of factors above})$
 $\times \{ x^6 + 3x^3 + 1 - xy(x^3 + 1) \} \{ x^6 + 3x^3 + 1 + xy(x^3 + 1) \}.$

In the present case, $x = 96$ and $y = 24$; so that we have the following factors of N :—

$$96^2 + 1 = 9217; \quad 96^2 + 3 \cdot 96 + 1 - 24 \cdot 97 = 7177;$$

$$96^2 + 3 \cdot 96 + 1 + 24 \cdot 97 = 11833;$$

$$96^6 + 3 \cdot 96^3 + 1 - 2304(96^3 + 1) = 780,722,009,857;$$

$$96^6 + 3 \cdot 96^3 + 1 + 2304(96^3 + 1) = 784,798,877,953.$$

Now $9217 = 13 \cdot 709$, and $7177, 11833$ are primes. It therefore remains to test the last two numbers, and this the Proposer has done (*Reprint, New Series, Vol. vi., p. 63*). We thus finally obtain

$$96^{18} + 1 = 13 \cdot 709 \cdot 7177 \cdot 11833 \cdot 37 \cdot 397 \cdot 53150113 \cdot 73 \cdot 613 \cdot 17537797.$$

I cannot offer any opinion on the primeness of the two large factors.

N.B.—The Proposer remarks that this factorization is practically the same as Lucas's.

Note.—For the Proposer's Solution see *Reprint, New Series, Vol. vi., p. 62*.

15582. (W. SCRIMGEOUR, M.A., B.Sc.)— QSQ' is a focal chord of a conic. PG , the normal at a point P on the curve, is perpendicular to QSQ' , and meets the axis in G . Prove that $QS \cdot Q'S = PG^2$.

Solutions (I.) by F. W. REEVES, B.A., and others; (II.) by C. M. ROSS and C. A. B. GARRETT; (III.) by R. F. DAVIS, M.A.; (IV.) by R. TUCKER, M.A.

(I.) Fig. 1 (*Parabola*).—The figures explain themselves. Because QSQ' is the focal chord, and $QT, Q'T$ are tangents, the angles QTQ', QST are right angles. Also PG is perpendicular to the tangent at P and also to QSQ' , i.e., parallel to ST , and PT is parallel to SG ; therefore

$$PG^2 = ST^2 = VT^2 - SV^2 = QV^2 - SV^2 = QS \cdot SQ'.$$

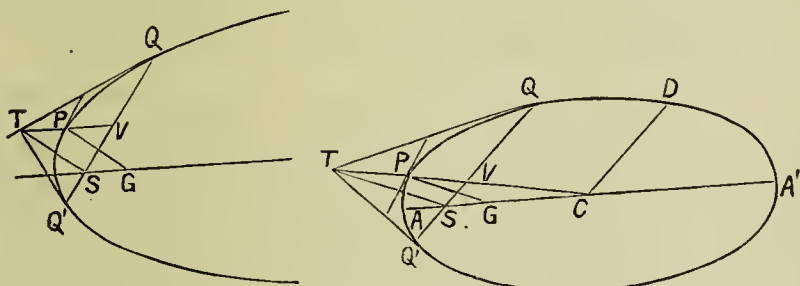


FIG. 1.

FIG. 2.

Fig. 2 (*Central Conic*).—Because QQ', AA' intersect in S ,
 $QS \cdot Q'S : AS \cdot A'S = CD^2 : CA^2 = PG^2 : CB^2$.

But $AS \cdot A'S = CB^2$; therefore $QS \cdot Q'S = PG^2$.

(II.) Using polar co-ordinates and denoting the points Q, Q', P by $(r_1, \alpha_1), (r_2, 180^\circ + \alpha), (r_3, \beta)$,

$$r_1 = l/(1 - \epsilon \cos \alpha), \quad r_2 = l/(1 + \epsilon \cos \alpha),$$

$$r_3 = l/(1 - \epsilon \cos \beta);$$

therefore $QS \cdot Q'S = r_1 r_2 = l^2/(1 - \epsilon^2 \cos^2 \alpha)$.

The equation of the normal at P in Cartesian is

$$\frac{1 - \epsilon \cos \beta}{\epsilon} x + \frac{(1 - \epsilon \cos \beta)(\epsilon - \cos \beta)}{\epsilon \sin \beta} y = \frac{l}{r} \dots (1).$$

The equation of the focal chord is

$$y = x \tan \alpha \dots \dots \dots (2).$$

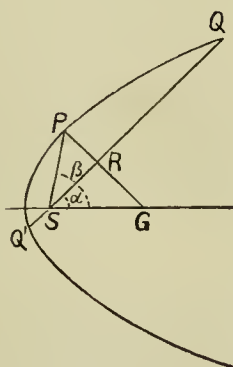
(1) and (2) are perpendicular by hypothesis; therefore $\tan \alpha \sin \beta = \cos \beta - \epsilon$; therefore

$$\cos^2 \beta - 2\epsilon \cos^2 \alpha \cos \beta + \epsilon^2 \cos^2 \alpha - \sin^2 \alpha = 0;$$

therefore $\cos \beta = \epsilon \cos^2 \alpha \pm \sin \alpha (1 - \epsilon^2 \cos^2 \alpha)^{1/2}$.

Now $SG = SR \sec \alpha = r_3 \cos(\beta - \alpha) \sec \alpha$;

therefore $PG^2 = SG^2 + SP^2 - 2SG \cdot SP \cos \beta = l^2 \sin^2 \beta / \cos^2 \alpha (1 - \epsilon \cos \beta)^2$



(on simplification). Again

$$\sin^2 \beta = \cos^2 \alpha [(1 - \epsilon^2 \cos^2 \alpha)^{1/2} - \epsilon \sin \alpha]^2$$

and $(1 - \epsilon \cos \beta)^2 = (1 - \epsilon^2 \cos^2 \alpha) [(1 - \epsilon^2 \cos^2 \alpha)^{1/2} - \epsilon \sin \alpha]^2$;

therefore $PG^2 = l^2/(1 - \epsilon^2 \cos^2 \alpha) = QS \cdot Q'S$.

(III.) Draw SZ at right angles to QSQ' to meet the S directrix in Z ; then CZ passes through P and bisects QQ' in V , say. Draw VE parallel to PG . Since

$$CP^2 = CV \cdot CZ,$$

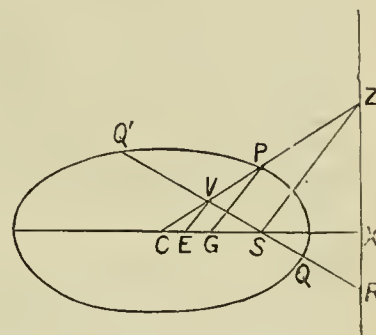
therefore

$$PG^2 = VE \cdot ZS = VS \cdot SR$$

(for $VE : VS = SR : ZS$)

$$= VS \cdot VR - VS^2 = VQ^2 - VS^2$$

$$= QS \cdot Q'S.$$



(IV.) Let $\angle QSG = \theta$; then $SQ \cdot SQ' = l^2/(1 - e^2 \cos^2 \theta) \dots \dots \dots (i).$

Now $\tan \theta = b \cot \phi/a$, where ϕ is the eccentric angle of P ,

$$\sec^2 \theta = (a^2 \sin^2 \phi + b^2 \cos^2 \phi)/(a^2 \sin^2 \phi),$$

and $PG^2 = b^2 (b^2 \cos^2 \phi + a^2 \sin^2 \phi)/a^2 = b^2 (1 - e^2 \cos^2 \phi) \dots \dots \dots (ii).$

Now (i.) is $l^2 \{ 1 - [e^2 a^2 \sin^2 \phi / (a^2 \sin^2 \phi + b^2 \cos^2 \phi)] \}$
 $= l^2 a^2 (1 - e^2 \cos^2 \phi) / b^2 = b^2 (1 - e^2 \cos^2 \phi) = PG^2.$

15703. (Communicated by A. V. KUTTI KRISHNA MENON, B.A.)—Prove that

$$\cos ax = 1 - ax \sin bx - [a(a-2b)/2!] x^2 \cos 2bx + [a(a-3b)^2/3!] x^3 \sin 3bx$$

$$+ [a(a-4b)^3/4!] x^4 \cos 4bx - \dots$$

[Note.—The Proposer desires to obtain an elegant solution.]

Solution by K. S. PATRACHAN.

Burmans's theorem gives us for the expansion of any function $f(z)$ in terms of any other function $F(z)$

$$f(z) = f(c) + \sum_{r=1}^{\infty} \frac{B_r \{F(z)\}^r}{r!},$$

where

$$B_r = \left[\frac{d^{r-1}}{dz^{r-1}} \left\{ \left(\frac{z-c}{F(z)} \right)^r f'(z) \right\} \right]_{z=c}$$

and c is a root of the equation $F(z) = 0$. (See Edwards's *Differential Calculus*.) Putting $f(z) = e^{az}$ and $F(z) = ze^{bz}$, we have $c = 0$, and

$$\left\{ (z-c)/F(z) \right\}^r f'(z) = a e^{(a-br)z};$$

therefore

$$B_r = \left\{ d^{r-1}/dz^{r-1} [a e^{(a-br)z}] \right\}_{z=0} = [a(a-br)^{r-1} e^{(a-br)z}]_{z=0} = a(a-br)^{r-1}$$

and

$$f(c) = e^0 = 1.$$

Therefore

$$e^{az} = 1 + \sum_{r=1}^{\infty} \frac{a(a-br)^{r-1} (ze^{bz})^r}{r!}$$

$$= 1 + \frac{a}{1!} z e^{bz} + \frac{a(a-2b)}{2!} (ze^{bz})^2 + \frac{a(a-3b)^2}{3!} (ze^{bz})^3 + \frac{a(a-4b)^3}{4!} (ze^{bz})^4 + \dots$$

In this result substitute successively for z, ix and $-ix$ ($i = \sqrt{-1}$); we have

$$e^{iax} = 1 + \frac{a}{1!} ix e^{ibx} + \frac{a(a-2b)}{2!} i^2 x^2 e^{2ibx} + \frac{a(a-3b)^2}{3!} i^3 x^3 e^{3ibx}$$

$$+ \frac{a(a-4b)^3}{4!} i^4 x^4 e^{4ibx} + \dots$$

and

$$e^{-iax} = 1 + \frac{a}{1!} (-ix) e^{-ibx} + \frac{a(a-2b)}{2!} (-ix)^2 e^{-2ibx} + \frac{a(a-3b)^2}{3!} (-ix)^3 e^{-3ibx}$$

$$+ \frac{a(a-4b)^3}{4!} (-ix)^4 e^{-4ibx} + \dots$$

Therefore, adding these two results, we have

$$2 \cos ax = 2 - 2 \frac{a}{1!} x \sin bx - 2 \frac{a(a-2b)}{2!} x^2 \cos 2bx + 2 \frac{a(a-3b)^2}{3!} x^3 \sin 3bx + \dots,$$

since $e^{i\theta} + e^{-i\theta} = 2 \cos \theta$ and $e^{i\theta} - e^{-i\theta} = 2i \sin \theta$, and on division by 2, we get the required result.

14907. (Professor A. DROZ-FARNY.)—Soit Σ une conique inscrite dans un triangle ABC . La tangente à Σ parallèle au côté BC et la tangente issue du milieu de BC se coupent en α . On obtient de même deux points analogues β et γ . Démontrer que les trois points α, β et γ sont en ligne droite.

Solution by Professor NANSON.

Consider the more general problem in which the tangents from α, \dots cut BC, \dots in points X, X', \dots , such that X, Y, Z are collinear and X, X' are harmonic conjugates to B, C ; ...

Expressing that the intersections X, X' of the tangents

$$l/(yz' - y'z) + m/(zx' - z'x) + n/(xy' - x'y) = 0$$

from xyz to an in-conic are harmonic to B, C, we have

$$-lx + my + nz = 0 \dots\dots\dots (1),$$

and expressing that X or X' is on $\lambda x' + \mu y' + \nu z' = 0$, we have

$$\mu^2 ny + \nu^2 mz = 0 \dots\dots\dots (2).$$

(1) and (2) determine a , and hence α, β, γ lie on the line

$$\frac{l^2}{\lambda^2} \{-lx + my + nz\} + \frac{m^2}{\mu^2} \{lx - my + nz\} + \frac{n^2}{\nu^2} \{lx + my - nz\} = 0.$$

Note.—For another solution, see *Reprint*, New Series, Vol. 1., p. 75.

7879. (D. EDWARDS.)—In any spherical triangle, prove that

$$2 \sin s \sec^2 r = \sin c \cos (s-c) + \sin b \cos (s-b) + \sin a \cos (s-a),$$

r being the inscribed radius and $2s$ the perimeter.

Solution by Professor SANJANA, M.A., J. WEIR, and others.

Since $\tan r = n/\sin s = \sqrt{[\sin (s-a) \sin (s-b) \sin (s-c)]/\sqrt{(\sin s)}}$, we get the sinister

$$\begin{aligned} &= 2 \sin s + 2 \sin (s-a) \sin (s-b) \sin (s-c) \\ &= 2 \sin s + \sin (s-c) [\cos (a-b) - \cos c] \\ &= 2 \sin s + \frac{1}{2} \sin (s-c+a-b) + \frac{1}{2} \sin (s-c-a+b) - \frac{1}{2} \sin s + \frac{1}{2} \sin (2c-s) \\ &= \frac{3}{2} \sin s + \frac{1}{2} \sin (2a-s) + \frac{1}{2} \sin (2b-s) + \frac{1}{2} \sin (2c-s) \\ &= \Sigma \frac{1}{2} [\sin s + \sin (2a-s)] = \Sigma \sin a \cos (s-a), \end{aligned}$$

which is the dexter.

15667. (Professor NEUBERG.)—Chercher la condition pour que les équations $\tan x = a \tan (y-z)$, $\tan y = b \tan (z-x)$, $\tan z = c \tan (x-y)$ soient compatibles.

Additional Solution by the PROPOSER.

La première équation peut s'écrire

$$\frac{\tan x}{\tan (y-z)} = a, \quad \frac{\tan x + \tan (y-z)}{\tan x - \tan (y-z)} = \frac{a+1}{a-1}, \quad \frac{\sin (x+y-z)}{\sin (x-y+z)} = \frac{a+1}{a-1}.$$

De même $\frac{\sin (y+z-x)}{\sin (y-z+x)} = \frac{b+1}{b-1}, \quad \frac{\sin (z+x-y)}{\sin (z-x+y)} = \frac{c+1}{c-1}.$

d'où l'on déduit la condition cherchée

$$\frac{a+1}{a-1} \frac{b+1}{b-1} \frac{c+1}{c-1} = 1 \quad \text{ou} \quad \frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{abc} = 0.$$

15692. (Professor SANJANA, M.A.)—At every point P of a parabola the radius of curvature, PO, is taken, and from O the remaining normal, OP', is drawn to the curve. Prove that the envelope of the chord PP' is a parabola with the same vertex and with its concavity in the opposite direction.

Solution by A. S. TOMBE, M.A., and P. V. SESHU.

Let the point P be $(am^2, 2am)$ and P' be (x_1, y_1) . Since the sum of the ordinates of the feet of the normals from a point = 0, therefore

$$4am + y_1 = 0,$$

whence P' given by $(4am^2, -4am)$. The equation of PP' is therefore

$$4am^2 - my - 2x = 0;$$

therefore the envelope is $y^2 = -32ax$.

15697. (Professor E. B. ESCOTT.)—Find all the integral solutions, if possible, of the equation $x^2 - 17 = y^3$.

Solutions (I.) by R. F. DAVIS, M.A.; (II.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.

(I.) In other words, we require to find integral values of y such that $y^3 + 17 = \square$. Let $y = t - 1$; then $t^3 - 3t^2 + 3t + 16 = \square = (\lambda t + 4)^2$, say; whence $t^2 - (\lambda^2 + 3)t + 3 - 8\lambda = 0$. This equation is a quadratic in t , if λ be known; or it is a quadratic in λ , if t be known. Now, if one root of a quadratic with rational coefficients be rational, so also is the other root. Supposing $t = a$, $\lambda = \beta$ satisfy the above equation, if we substitute a for t , we get (solving for λ) $\lambda = \beta$ or $\lambda = \gamma$; then, substituting γ for λ , we get (solving for t) $t = a$ and $t = \delta$; and so on. Hence any single solution leads to an interminable chain of other solutions. (See my note in *Proc. Edin. Math. Soc.*, Vol. XIII., p. 179.) It will be found that $t = -1, 0, 3, 5, 9, 53, 5235$. Thus $y = -2, -1, 2, 4, 8, 52, 5234, \dots$

$$[5234^3 + 17 = 14,33841,52921 = 378661^2].$$

[Rest in *Reprint*.]

8874. (Professor GENESE, M.A.)—The locus of the centres of sections of the conicoid $f(xyz) = 0$ by planes containing the axis of z is the conic determined by $df/dz = 0$, $x(df/dx) + y(df/dy) = 0$.

Additional Solution by Professor NANSON.

The plane section whose centre is the point α, β, γ is

$$(x-\alpha)f_\alpha + (y-\beta)f_\beta + (z-\gamma)f_\gamma = 0,$$

and, if this passes through the axis of z , then $f_\gamma = 0$ and $\alpha f_\alpha + \beta f_\beta = 0$, whence the result stated. (Cf. *Reprint*, New Series, Vol. II., p. 36.)

15705. (S. C. BAGCHI, B.A.)—Four pairs of inverse points are taken on a cubic which is its own inverse in normal co-ordinates. The joins of corresponding points cut a series of straight lines in points rP_s ($r = 1, s = 1, 2, 3, 4$ for the first line of the series; $r = 2, s = 1, 2, 3, 4$ for the second; and so on). These points are mapped into curves in another part of the plane. The scheme of transformation

$$rP_s = \phi(x, y, r\lambda_s)$$

gives that the range formed by the points where a parallel to the y -axis in the transformed figure cuts a group of four curves is equi-cross with any of the ranges in the first figure. Show that $\phi = u$ (u being a solution of Riccati's equation) is a possible form.

[Note.—The word "inverse" is to be taken in the general sense given by Salmon; see *Higher Plane Curves*.]

Solution by the PROPOSER.

The equation to the cubic (taking the general sense of "inverse," see Salmon, *Higher Plane Curves*, p. 157, French Edition) may be written $\Delta = 0$, where $\Delta = \begin{vmatrix} a & b & c \\ x & y & z \\ x^{-1} & y^{-1} & z^{-1} \end{vmatrix}$. Any line II' , where I, I' are corre-

sponding points on $\Delta = 0$, is given by $\Delta_1 = 0$ where

$$\Delta_1 = \begin{vmatrix} x & y & z \\ \alpha & \beta & \gamma \\ \alpha^{-1} & \beta^{-1} & \gamma^{-1} \end{vmatrix}$$

[because if I be (α, β, γ) , I' must be $(\alpha^{-1}, \beta^{-1}, \gamma^{-1})$]. Therefore any line such as II' passes through a fixed point, viz., (a, b, c) . Therefore the range rP_s has a constant cross-ratio. Now it is easily seen that u , the solution of Riccati's equation, satisfies $\lambda(Du - B) = (A - Cu)$, where A, B, C, D are functions of x and λ is a constant, and u satisfies

$$p + \psi_1 + y\chi_1 + y^2\phi_1 = 0,$$

where $p = dy/dx$ and ψ_1, χ_1, ϕ_1 are functions of x . Therefore, taking four particular solutions corresponding to four values of λ , we see that, if a parallel to y -axis cuts this family of curves, viz.,

$$\phi(x, y, r\lambda_s) = 0, \quad r = 1, 2, 3, 4,$$

in P, Q, R, S, (PQRS) = $rP_s = \text{constant}$.

15691. (JAMES BLAIKIE, M.A.)—BAC is an angle in a circle, and AB, AC meet a diameter in D and E; D' and E' are the images in O of D and E. Prove that BE', CD' meet (in A') on the circumference.

Solution by Professor SANJANA, M.A., and the late R. TUCKER, M.A.

Let X, Y be the extremities of the diameter passing through the centre O; then $XD = YD'$ and $XD' = YD$; also $XE = YE'$ and $YE = XE'$. Hence $XD \cdot YE : XE \cdot YD = XE' \cdot YD' : XD' \cdot YE'$, i.e., $(XY, DE) = (XY, E'D')$ and $A(XY, DE) = A'(XY, E'D')$. Therefore $A(XBCY) = A'(XBCY)$; also X, B, C, Y are four points on the circle and A is on the circle; therefore, finally, A' is also on the circle.

Note.—Let BC meet XY in F, and let F' be isotomically conjugate to F in XY; then BE', CD', AF' meet in a point. (See Question 14233, Vol. LXXV.) We have thus the following theorem:—XY is a diameter of the circum-circle of ABC; A', B', C' are the isotomic conjugates with regard to XY of the intersections of BC, CA, AB with XY: then AA', BB', CC' are concurrent on the circumference.

15624. (D. BIDDLE.)—In a cubic equation of form $x^3 - qx - r = 0$, r is the product of two primes. Show what numerical value to attach to q in order that the smaller factor of r may be one of the roots; also find the remaining roots, and prove that Cardan's method does not enable us to solve any given equation of the particular sort, unless the larger factor of r exceed the square of half the smaller one.

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

x_1, x_2, x_3 the three roots; $r = p_1 p_2$ (two primes and $p_1 < p_2$). Let $x_1 = p_1$. Then $p_1 p_2 = r = x_1 x_2 x_3$, whence $x_2 x_3 = p_2$ and $x_1 + x_2 + x_3 = 0$, and $x_2^2 + x_3^2 + x_1 x_2 = -q$. Hence $p_2 + x_1(x_2 + x_3) = -q$, and $p_2 - p_1^2 = -q$ (which gives the value of q).

To find the other roots x_2, x_3 : here, since p_1 is a root, $x^3 - qx - r = 0$, and $p_1^3 - qp_1 - r = 0$; therefore $x^3 - p_1^3 - q(x - p_1) = 0$, whence

$$x^2 + p_1 x + p_1^2 - q = 0 \quad \text{or} \quad x^2 + p_1 x + p_2 = 0,$$

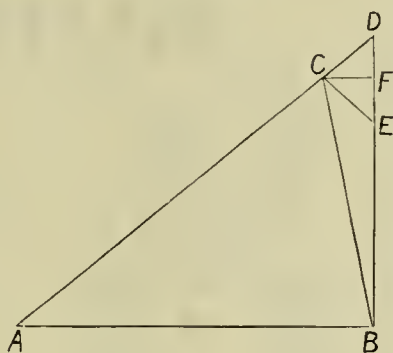
which gives $x = -\frac{1}{2}p_1 \pm \sqrt{(\frac{1}{4}p_1^2 - p_2)}$ (the required roots).

These two roots will be both real if $p_2 < \frac{1}{4}p_1^2$, and both imaginary if $p_2 > \frac{1}{4}p_1^2$. And Cardan's rule is known to be applicable only when two roots are imaginary, i.e., in the present case when $p_2 > \frac{1}{4}p_1^2$.

15509. (C. M. ROSS.)—Having given the base and the altitude of a triangle, and that one of the angles at the base is double the other, show how to construct the triangle.

Another Solution by GEORGE SCOTT, M.A.

Suppose ABC to be the triangle so constructed. Through C draw a parallel to the base. At B, the greater base angle, erect the altitude BF and produce it to meet AC produced in D. Bisect BCF by CE. The angle DCF will be equal to the angle ECF. Call DF = EF = z and BF = h; let CF = x; let AB = c. Then



$$(h-z)/z = \sqrt{(x^2 + h^2)}/x.$$

Again, $c/x = (h+z)/z$; therefore

$$h/z = [\sqrt{(x^2 + h^2)} + x]/x.$$

Also $h/z = (c-x)/x$, whence

$$\sqrt{(x^2 + h^2)} = c - 2x;$$

therefore $3x^2 - 4cx + c^2 - h^2 = 0$, $x = \frac{1}{3}[2c \pm \sqrt{(c^2 + 3h^2)}]$.

Mr. SCOTT discusses in the following manner a problem (suggested by Question 15509) :—

Given the base and vertical angle of a triangle, to construct it so as to have one base angle double the other.

It is evident that in such a triangle a parallel to the base drawn through the vertex would trisect the external vertical angle. Therefore proceed thus:—Lay down the angle supplemental to the given one. Then, by means of the Slide Trammel invented by me, and which I have described in *The Educational Times*, April 1, 1903, trace the curve there mentioned. The instrument should be so adjusted that the fixed pivot A should be in the line from which the laid down angle is measured, while the slot LM should be perpendicular to this line. Moreover, the distance of A from the vertex of the angle should be double its distance from the slot LM. The point where the curve cuts the second side of the angle should be joined to A. The angle thus formed will be one-third of that laid down. At one end of the given base make an angle equal this third, at the other an angle double it.

9807. (Professor G. B. M. ZERR.)—The perpendiculars from the vertices of a triangle upon the central axis (the line which passes through the circum-centre, the orthocentre, the nine-point centre, and the centroid) are proportional to

$$\cos A \sin(B-C), \cos B \sin(C-A), \cos C \sin(A-B),$$

those on one side of the line being reckoned positive, and those on the other negative.

Solution by the PROPOSER.

Since the line passes through the centroid and orthocentre, its equation in trilinear co-ordinates is

$$(\sec B \operatorname{cosec} C - \sec C \operatorname{cosec} B) \alpha + (\sec C \operatorname{cosec} A - \sec A \operatorname{cosec} C) \beta + (\sec A \operatorname{cosec} B - \sec B \operatorname{cosec} A) \gamma = 0.$$

This equation immediately follows when we remember that the co-ordinates of centroid and orthocentre are respectively $\operatorname{cosec} A, \operatorname{cosec} B, \operatorname{cosec} C$, and $\sec A, \sec B, \sec C$. The co-ordinates of the vertices are respectively $\Delta/(r \sin A), 0, 0; 0, \Delta/(r \sin B), 0; 0, 0, \Delta/(r \sin C)$. The perpendicular distances are given by $(l\alpha' + m\beta' + n\gamma')/\sqrt{(A^2 + B^2)}$, where α', β', γ' represent in turn the co-ordinates of the vertices, and l, m, n the coefficients of α, β, γ in the given equation. Therefore the distances are proportional (since Δ/r and $\sqrt{(A^2 + B^2)}$ are constant) to

$$\frac{\sin B \cos C - \cos B \sin C}{\sin A \sin B \cos B \sin C \cos C}, \frac{\sin C \cos A - \cos C \sin A}{\sin A \sin B \sin C \cos A \cos C}, \frac{\sin A \cos B - \cos A \sin B}{\sin A \sin B \sin C \cos A \cos B}.$$

Multiply the numerator and denominator of the first fraction by $\cos A$, of the second by $\cos B$, of the third by $\cos C$; then the denominators of the three fractions are the same and equal to

$$\sin A \sin B \sin C \cos A \cos B \cos C.$$

Hence the perpendiculars are proportional to

$$\cos A \sin(B-C), \cos B \sin(C-A), \cos C \sin(A-B).$$

15664. (R. CHARTRES.)—Express $1/(r^n + 1)^2$ as a radix fraction in the scale radix = r .

Solution by the PROPOSER.

Let $x = \cdot 0000, (r-1)(r-2) 02, (r-1)(r-4) 04, \dots, 01 (r-1)(r-1) 00$; then

$r^2x = \cdot 00 (r-1)(r-2), 02 (r-1)(r-4), 04 (r-1)(r-6), \dots, (r-1)(r-1) 00$;

therefore $(r^2 + 1)x = \cdot 00 (r-1)(r-1) = 1/(r^2 + 1)$;

therefore $x = 1/(r^2 + 1)^2$.

This supposes r to be odd, but, if r be even, the middle term of the above would be $00 (r-1)(r-1)$, and the result the same. Similarly for any other value of n .

QUESTIONS FOR SOLUTION.

15732. (D. BIDDLE.)—Two trains leave Waterloo (Central Station) at the same time. A does 30 miles in the first hour, and goes on at a uniform speed of 10 miles every 20 minutes. B takes 20 minutes to do the first mile, but in every succeeding period of 20 minutes doubles the distance covered in that preceding. Prove that, if B's speed be uniform during each such "period," B will overtake A 58 miles 1120 yards down the line. But also give the time and distance on the supposition that the speed of B is smoothly accelerated from the start.

15733. (Professor M. W. CROFTON, F.R.S.)—An urn contains two balls, A and B. The probability that A is black is p ; that B is black, q . One ball is now drawn, and found to be black :—(1) What is the chance that this is A or B? (2) What is now the probability that A is black or B? (3) If the ball drawn is replaced in the urn, and a fresh drawing made, what is the chance it gives a black ball?

[The balls A, B may be supposed to have been taken from two bags containing black and white balls in given proportions.]

15734. (S. C. GOULD.)—Give all the different square numbers that can be formed by the ten digits. The Proposer has developed eighty-seven such numbers. Are there any more?

15735. (Professor E. B. ESCOTT.)—In Question 15715, if we denote by D_n the partial divisors, i.e.,

$$\sqrt{N} = a_0 + 1/u_1, \quad u_1 = (\sqrt{N} + A_1)/D_1 = a_1 + 1/u_2, \quad \dots,$$

and by a_n the middle quotient, $A_n = A_{n+1} = a^n$ and $D_n = 2$.

15736. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—(i.) Factorize into prime factors $N = (70,600,734^2 + 1)$. Here $N = q \cdot p^2$, where p is a large prime. (ii.) Show how to find very large numbers ($> 10^{50}$) of form

$$N = y^2 + 1 = q \cdot m^2,$$

wherein m is very large ($> 10^{25}$). Give examples.

15737. (J. J. BARNIVILLE, B.A., I.C.S.)—Having $u_n + u_{n+1} = u_{n+3}$, prove that

$$\frac{3.3.4}{1.2.2.7} - \frac{3.5.5}{1.2.3.9} + \frac{4.6.7}{2.3.4.12} - \frac{6.8.9}{2.4.5.16} + \dots = \frac{1}{15},$$

$$\frac{2.3.9}{1.2.4.5} + \frac{3.3.11}{1.2.5.7} + \frac{4.5.15}{1.3.7.9} + \frac{5.6.20}{2.4.9.12} + \dots = \frac{47}{6}.$$

15738. (Professor NANSON.)—Eliminate λ from $\sum [a_r/(c_r + \lambda)] = 0$, $\sum [b_r/(c_r + \lambda)] = 0$, where $r = 1, 2, \dots, n$.

15739. (Professor SANJANA, M.A.)—Evaluate

$$[(\tanh ax)^{-2} - (ax - \frac{1}{3}a^3x^3)^{-2}]/x^2$$

when $x = 0$.

15740. (S. C. BAGCHI, B.A.)—Supposing that $\phi(\xi_1, \xi_2, \dots, \xi_n)$ gives the most probable value of a magnitude which is observed to have values $\xi_1, \xi_2, \dots, \xi_n$ for n different observations successively such that $\xi_2 - \xi_1 = \delta_2, \xi_3 - \xi_2 = \delta_3, \dots, \xi_n - \xi_{n-1} = \delta_n$, show that a particular solution of the general differential equation for ϕ satisfies

$$n(\phi - \xi_1) = (n+1) \sum_{r=2}^n \delta_r.$$

15741. (R. CHARTRES.)—From a point within a triangle straight lines parallel to the sides are drawn to the base. Find the mean value of the n -th power of the area of the triangle thus formed. (Elementary proof wanted.)

15742. (Professor NEUBERG.)—On enlève les angles solides A, B, C, D d'un tétraèdre ABCD en menant des plans respectivement parallèles aux faces opposées, de manière qu'il reste un octaèdre à quatre faces triangulaires et à quatre faces qui sont des hexagones à côtés opposés parallèles. Ces dernières faces peuvent-elles être équivalentes?

15743. (Professor COCHEZ.)—Construire un triangle, connaissant la hauteur h_a , le rayon r du cercle inscrit et la somme $m_b + m_c = l$ des médianes issues de B et de C.

15744. (Professor LAUVERNAY.)—Construire deux grandeurs, connaissant la différence de leurs inverses et la somme des carrés de leurs inverses.

15745. (ALEXANDER HOLM, M.A.)—Given a, b, c the radii of three circles, and d, e, f the distances between the centres of the second and third, the third and first, and the first and second, prove that the radius of a circle which touches the given circles all externally is

$$\frac{a^2 + bm^2 + cn^2 - (b+c)mn - (c+a)nl - (a+b)lm \pm 4\Delta \sqrt{(lmn)}}{2mn + 2nl + 2lm - l^2 - m^2 - n^2},$$

where $l = d^2 - (b-c)^2$, $m = e^2 - (c-a)^2$, $n = f^2 - (a-b)^2$, and Δ = the area of the triangle whose sides are d, e, f . Deduce the radii of the other tangent circles; and, if $a = 5, b = 4, c = 6, d = 14, e = 13, f = 15$, find the radii of the eight tangent circles.

15746. (The late R. TUCKER, M.A.)—PQ is a chord of an ellipse, subtending a right angle at the vertex. Find the locus of the S.-point of the triangle PAQ.

15747. (J. L. S. HATTON.)—If

$$ax^2 + by^2 + cz^2 + 2hxy + 2gzx + 2fyz = 0$$

be the general equation of the second degree in trilinear co-ordinates, show that the necessary and sufficient condition that it should represent a circle is

$$(a + b + c - 2h \cos C - 2g \cos B - 2f \cos A)^2 + 4 \begin{vmatrix} a & h & g & \sin A \\ h & b & f & \sin B \\ g & f & c & \sin C \\ \sin A & \sin B & \sin C & 0 \end{vmatrix} = 0.$$

15748. (A. M. NESBITT, M.A.)—A, B, K are three fixed points on a tangent to a conic, and the other tangents from A and B meet in C. Any straight line through K cuts the conic in P and Q, and AQ, BP meet in R. Prove that the locus of R is a conic inscribed in the triangle ABC.

15749. (W. F. BEARD, M.A. Suggested by Question 15599.)—With the figure of Question 15599, if the tangent at P meets TQ, TQ' at K, K' and FK', F'K meet at R, prove that TR is parallel to FF'.

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9717. (R. W. D. CHRISTIE.)—Show that these two series are equal:—
 $1^n + 2^n + 3^n + \dots + n^n, \quad An + B(n-1) + C(n-2) + \dots + [n^n - (n-1)]^n.$

9743. (Professor HUDSON.)—A particle, mass m , is made to move against a frictional resistance with uniform velocity u in a circle of radius a by means of a force inclined at a constant angle α to the direction of motion. Determine the force, the resistance, the work done against resistance in any time, and the least horse power of an engine that can keep the mass moving thus.

9749. (Professor CATALAN.)—ABC étant un triangle donné, soit D le point de contact avec BC du cercle inscrit I. On projette les sommets B, C en E, F sur la bissectrice AO; puis l'on construit les parallélogrammes DEBG, DFCH. Cela posé (1) les points B, G, C, H appartiennent à une circonférence; (2) le centre de cette circonférence et le centre I du cercle inscrit sont également distants du côté BC.

10114. (Professor DÉPREZ.)—On considère toutes les coniques inscrites au triangle ABC et dont les axes ont des directions données. (1) Les foyers et les sommets décrivent des cubiques; (2) le lieu d'un point situé sur un axe de l'une des coniques à une distance constante du centre est une conique.

10133. (F. MORLEY.)—In two confocal circular cubics the point where either is cut by its asymptote is the double focus of the other.

10540. (D. BIDDLE. Suggested by Question 10488.)—A says that B and C said that ace was thrown at a single cast of a die. D and E say that F denied the occurrence. What is the probability that ace was thrown, the *a priori* probability being k and the veracity of A, ..., F being denoted by p_1, \dots, p_6 respectively?

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,
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Vol. VI. (New Series) of the "Mathematical Reprint" is now ready, and may be had of the Publisher, FRANCIS HODGSON, 89 Farringdon Street, E.C. Price to Subscribers, 5s.; Non-Subscribers, 6s. 6d.

THE LONDON MATHEMATICAL SOCIETY.

Thursday, February 9th, 1905.—Prof. A. R. Forsyth, President, in the Chair.

Mr. E. Cunningham was elected a member.

Dr. I. N. G. Filon was admitted into the Society.

The President referred to the loss sustained by the Society by the death of Mr. R. Tucker, who was Honorary Secretary for thirty-five years, and moved a resolution of condolence with Mr. Tucker's surviving relatives. This was seconded by Dr. Glaisher and carried unanimously.

The following papers were communicated:—

"On the general Theory of Transfinite Numbers and Order-Types," by Dr. E. W. Hobson.

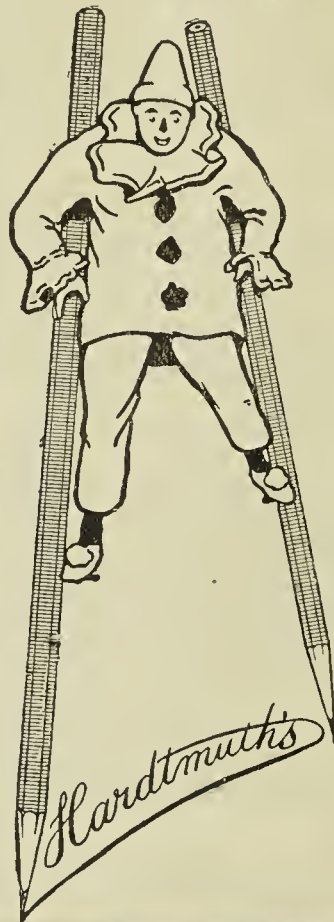
"On the Function $\sum_{n=1}^{\infty} x^n/n^s$," by Mr. G. H. Hardy.

"On the Reducibility of Covariants of Binary Quantics of Infinite Order, Part II.," by Mr. P. W. Wood.

"The Maclaurin Sum-Formula" and "The Asymptotic Expansion of Integral Functions of Finite Non-zero Order," by the Rev. E. W. Barnes.

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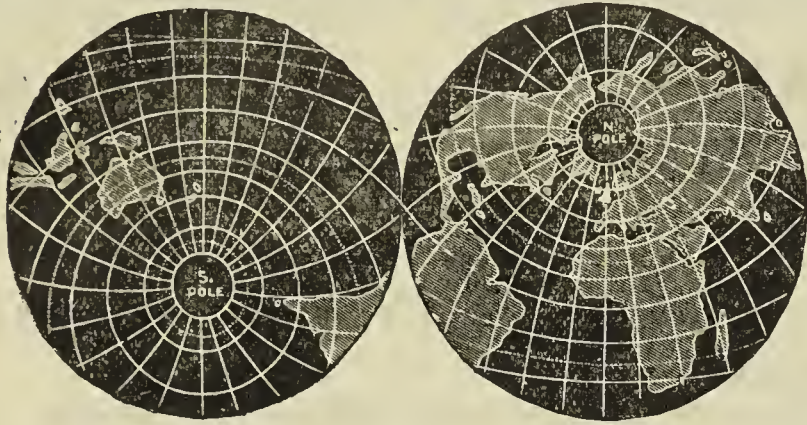
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The Educational Times.

Notes on History. THERE is probably no more troublesome subject in the curriculum than history. From time to time we have had occasion to indicate, in studiously restrained terms, our dissatisfaction with historical presentations in current literature of one form or another; and during the past month there has been a concurrence of half a dozen events pressing upon attention various aspects of the subject. History is opposed to fiction: it is meant to be a narrative of facts, not of imaginary incidents. History is a practical thing: it has direct bearings on the conduct of current affairs. In his general preface to "The Cambridge Historical Series," which is "intended for the use of all persons anxious to understand the nature of existing political conditions," Dr. Prothero points out most justly that "the roots of the present lie deep in the past," and the real significance of contemporary events cannot be grasped unless the historical causes which have led to them are known. The necessity for accurate statement of facts, and of all the essential facts in due relation, requires no argument. A no less urgent necessity is intimately connected with this—the necessity for just inference and explanation; and this implies the exclusion of bias, as far as may be—a difficulty of the most insidious, formidable, and fatal nature. We are not looking for perfection. "Ultimate history cannot be obtained in this generation," the editors of "The Cambridge Modern History" frankly and necessarily admit, "but," they go on to say, "so far as documentary evidence is at command, conventional history can be discarded, and the point can be shown that has been reached on the road from the one to the other." While it is unreasonable and unjust to make impracticable demands, it is a matter of duty to censure the persistence of "conventional history" in the face of established and notorious facts.

The disturbing element of bias is most commonly due to patriotic feeling or hero-worship, and appears mostly in the narrative of more recent events. We put it aside with mere mention, because it is waste of time to reason where there is no chance that reason will be heard, and we wish to keep clear of political discussion. In the earlier parts of British history, where the authorities are chroniclers, there

is the constant danger of failing to discriminate between fact and inference, so that the uninstructed inferences of a monkish scribe may readily enough be perpetuated as positive facts. Examples might easily be given, but we wish in the meantime to confine ourselves to the very simplest order of considerations, as illustrated in common text-books issued by publishers of high rank. Elsewhere we comment on the treatment of the earlier British relations with China, and of the modern conflicts between Norway and Sweden, by writers of eminence in a first-class series of historical manuals. Lower down in the educational scale, still more surprising things are only too much in evidence. One reputable historical "reader" states that King John "signed" the Charter, and impresses the information by a picture showing John seated at a table with the Charter before him and turning to a baron to receive a quill, which the baron is holding out to him—a venerable blunder exhibited also in a popular history of far higher pretensions. The figures of old chroniclers are always to be distrusted, as of course; yet, in the face of Mr. Joseph Bain's analysis, the same "reader" repeats the ancient extravagant numbers of the armies at Bannockburn. A collateral book of biographies, generally illustrative and stimulating, records: "and now Sir Frederick Roberts set out on the great march which made his name famous—the wonderful march from Cabul to Candahar." This is not blank ignorance, however; the statement may pass as a glowing account of the particular achievement by itself. But it will create a false historical impression if the pupil knows nothing of the still greater and more wonderful march of Sir Donald M. Stewart, immediately before, from Candahar to Cabul, and of the very special assistance that Stewart rendered to Roberts (as Lord Roberts himself properly acknowledges). The same writer, however, is capable of describing the Carnatic as "the western part of India"; nay, he even informs his readers that Delhi is "at the point where the Jumna joins the Ganges." It seems impracticable to tell the story of the Black Hole of Calcutta in historical terms. Different "readers" give different versions of the last words of Nelson. And so on. Of course, one cannot expect that the writers of elementary or popular histories should be abreast of historical research, much less that they should know the original authorities, and still less that they should abstain

from picturesque embroideries; but, after all, they ought to be familiar with the best secondary guides, and it is time that gross blunders should be excluded from books prepared for use in colleges and schools.

History is just as difficult, and as instructive, as the teacher chooses, and is able, to make it. Beginning with biography and episodes, it passes eventually into the region of political science. The "drum and trumpet" variety—by no means unimportant, so far as it went—may be said to have passed away with the advent of Green's wider exposition of the elements of the social side of the life of a people; and now Prof. Wrong, of Toronto, comes forward to explain that Green's work was too narrow in scope, and to exemplify a wider basis of national development. Meantime the gradation of teaching material has been undergoing definition (especially in America)—a most important matter indeed, for not only is the subject wide, but the history of a nation involves so many ideas that take just shape in the pupil's mind only very slowly and with widening experience of the things around him, and it requires alert self-questioning on the part of the teacher to keep his explanations within the capacity of his pupil's mind at the moment. Dynasties and kings and rows of dates are sometimes denounced as severe trials to young learners. Much depends upon how they are taught: in any case, without such definite landmarks there can be no history. So with the relations of cause and effect: these are mostly difficult to explore, and they are often dry and possibly far removed from anything in the experience of the pupil; but they are the very essence of history. In the higher forms, where the physical conditions and the various activities of a community can be intelligently grasped—geographical peculiarities, the social texture, the industry and commerce, the political and administrative systems, &c.—the subject may expand into an instrument of training of the most valuable character, both theoretical and practical. But the best results imply much forethought in graduation and co-ordination.

If we may venture into the higher spheres where a student may achieve a university degree in History—an Honours degree too—we may express our gratification that the Oxford tutors and lecturers in modern history have begun to reason with Prof. Firth on the caustic criticisms of his inaugural lecture, and in a spirit of cordial sympathy with his aims. The acquisition of a certain amount of historical knowledge is one thing, indeed, and the training of the professional historian is a very different thing. The first is the object of the majority of the students, but we hardly expect that Prof. Firth will admit that it is sufficient for an "education" in history, or for an Honours degree. Not merely the few that attempt the Stanhope or other prize essays, but also such as aspire to a First or a Second Class, ought to have the experience of tracking out the history of a short period, or of an episode, in the more important at least of the original authorities. A term's work at this sort of exploration would be worth more than all their other terms together spent upon the assimilation of results ready to hand in text-books and lectures. Without such experience, it is absurd to fancy that one has begun to understand the meaning of history, or to be competent to teach it to good purpose in the higher grades.

NOTES.

THE attack on Little-Go Greek for science candidates has been repulsed by 3 to 2. Cambridge still keeps step with Oxford, and the champions of Greek for everybody again breathe freely—for a time. There can be no doubt whatever that the campaign will go on, and that the combatants will have to try conclusions again. Meantime the Grecians have a further opportunity of promoting more economical and attractive methods of teaching elementary Greek—the sole expedient that can save the situation. The strength and character of the minority are sufficiently significant.

WE are not surprised at the widely illogical principles of the defence that has proved successful: in such cases, elastic logic is of course. Nor do we think it fair to gird at the country contingent that turned the tide of battle: graduates living in the country need not be any more inappreciative of the merits of the case than dons in active academic service. The exaggerated Greek bias, conscious or unconscious, has got to be reasoned and voted down into practical innocuousness. What but the ballot-box can deal with such a view as the Rev. W. C. Green—an excellent Greek scholar—sets out in a delightful (one-sided) dialogue between Sir Henry Savile and Sir Henry Wotton in the interesting March issue of the *Preparatory Schools Review*? The underlying assumption is that the world has actually stood still since the days of these worthy scholars and gentlemen. "A grave danger," says Wotton, "threatens all theology, nay, all religion, if its oracles, written in Greek, come to be understood by fewer and fewer." If Mr. Green really thinks that the compulsion of science students to plod through some elementary Greek is an indispensable prop of religion, we would recommend him to read Prof. Osler's recent Ingersoll Lecture. Greekless students, forsooth, "can have honourable colleges or universities of their own." They can, indeed; and we hope Oxford and Cambridge will appreciate the practical side of the argument. We are all for as wide and general a training as can be exacted; but that the greatest Universities of the country, bound in duty to foster all subjects to the utmost, should exclude aspirants in any one subject because of even the blindest ignorance in any other (or any other dozen) distantly related subjects does seem to us an amazing proposition. It opens out an argument that is enough to ensure the catastrophe that it is piously intended to avert.

ONE fortunate result of the stirring of the Greek waters has been the opportune republication, in pamphlet form (David Nutt), of the paper on "The Teaching of Modern Languages" by Mr. H. W. Eve which originally appeared some three or four years ago in "National Education—a Symposium" (John Murray). The article naturally attracted much attention at the time; and, after all the controversial columns of the *Times* and the disputatious exercises of academic circles have spent their force, it stands out as the most complete, candid, fruitful discussion of the relative value of classics and modern languages in the school and

college curriculum, as well as a permanently valuable exposition and criticism of methods of modern language teaching. Mr. Eve, who has a universally acknowledged claim to speak authoritatively on both sides of the present dispute, concludes "that in modern languages there is an instrument available for securing to the majority of boys and girls in secondary schools intellectual discipline and culture, inferior, no doubt, to what the few derive from their classical training, but real and complete so far as it goes." The concessions and the limitations of statement may cause disappointment or delight to enthusiasts in the opposite camps; but the proposition meets the case amply, and the supporting details are set out with steady allegiance to the facts. Teachers of modern languages will find the criticism of methods rewarding. The remarks on the training of teachers of modern languages properly demand a high standard of culture. We trust the essay will be widely read and pondered.

THE presentation of a testimonial to Dr. R. P. Scott on his appointment to a staff inspectorship of the Board of Education was a just recognition of the important and unwearied services he has rendered to educational progress and organization, especially in secondary schools, in connexion with numerous educational societies and agencies, from which his new position formally cuts him off. How wide was the professional interest in the occasion is certified by the fact that the Committee of promoters included members (in some cases formally appointed representatives) of the Head Masters' Association, the College of Preceptors, the Head Mistresses' Association, the Assistant Masters' Association, the Assistant Mistresses' Association, the Private Schools Association, the Association of Head Masters of Preparatory Schools, the Association of Technical Institutions, and the Joint Scholarships Board, while letters of sympathy came from the Association of Directors and Secretaries for Education and from the Conference of Catholic Schools. Practically it was a national demonstration. Canon Bell, the Chairman of the Committee, wrote:

The work of Dr. Scott on behalf of secondary education has been for many years past of exceptional range, importance, and value. He has been Head Master of Parmiter's School, Chairman of the Teachers' Registration Council, the virtual founder of the Incorporated Association of Head Masters, and its honorary secretary from its inception, the originator of the Joint Scholarships Board, and a member of the Council of the College of Preceptors. He has further contributed by his counsel and sympathy to the work of associations other than those with which he has been officially connected; and the improved position of secondary education is due in no small measure to his able advocacy of its claims on the attention of the Government and the public.

Behind these summary indications lies a long and devoted spell of work, the best possible preparation for Dr. Scott's new duties. We hope that Dr. Scott will long be enabled to continue his beneficent labours for the wise progress of secondary education.

THE Committee of the Classical Association of England and Wales appointed to consider the spelling and printing of Latin texts has circulated a series of inquiries for the opinion of teachers. The inquiries appeal partly to personal experience, partly to personal judgment. The question of the marking of long vowels in Latin texts for beginners

has received an impulse here from the consistent usage of American editors in grammars, texts, and vocabularies. The practice may help to guard against a bad form of blunder likely enough to occur in the first year or two of study, but it raises the question of crutches. At any rate, the value of it seems a reasonable subject of inquiry on grounds of actual experience. The writing of the consonants or semi-vowels *i* (*j*) and *u* (*v*), however, is more doubtful. Is it a proper question to submit to a plebiscite? "Do you wish to see *j* restored for use in school books? or Would you prefer to see an italic *i* or the like (e.g., *i*) employed instead"? Surely the introduction of such symbols as *i*, *u*, or italic letters, is intolerable; and, if they are considered necessary, the proper place for them is in a phonetic section, and not in the text. The question appears to be, not a matter of preference at all, but a matter of scholarship purely. The better teaching of Latin does not depend upon mechanical devices of this sort.

THE new Scotch Education Bill is substantially the same as last year's Bill, with modifications mainly due to the debate on the first thirty clauses in Committee, partly to outside criticism. The Local Education Authority is a School Board, elected *ad hoc*, the unit of administrative area being the county district. Boards may pay scholars' travelling expenses in outlying places, provide books, &c., and institute bursaries tenable at more advanced schools or at universities. Rate aid to voluntary schools is again placed at their option; and the *Catholic Observer* (Glasgow) says that "a reasonable and sensible *modus operandi* would be to authorize or direct the School Boards to pay an adequate subvention from the rates to all schools which give efficient teaching in secular subjects by properly qualified teachers in premises and under conditions satisfactory to the Education Department." One of the chief alterations is in the rating clauses: expenditure on maintenance is spread over the whole district area; so is capital expenditure on the "Higher Class Schools"; but capital expenditure already incurred on provision and equipment of ordinary public (including higher-grade) schools remains a charge on the parish that incurred it, and future capital expenditure on such schools will be borne by such parish or parishes of the educational district as share in the school accommodation provided. The rate is assessed, not on the population, but on the valuation. Four Provincial Councils are established in connexion with the four universities:

Each Provincial Council shall include members of the *Senatus Academicus* of one or more of the Universities aforesaid, and representatives of the School Boards, and of the governing bodies of the central institutions other than Universities within the province, and the more important schools within the province which are not under the charge of a School Board and in which efficient higher education is given, and shall also include persons actively engaged in teaching in schools within the province.

The provision that these Councils may form a Joint Committee for deliberation and consultation will ensure co-ordination and smooth working; the *Educational News* says "it offers the nucleus of a National Education Council."

At the first annual meeting of the Association of London Secondary, Art, and Technological Teachers (March 11), the title of the body was altered to "The Federation of London Teachers," the previous title remaining as sub-title.

SUMMARY OF THE MONTH.

THE *Church Family Newspaper* (March 3) reports an interview with Dr. Gow. The following points may be usefully considered:—

I don't believe in compulsory Greek, but neither do I believe in any of the substitutes that are proposed for it. The whole system of modern education wants altering from top to bottom. Changing one subject at the time, as educators have been doing, merely has the effect of knocking all the hard subjects out. Thus, in the London Matriculation Examination, German has been nearly extinguished by having been made optional with French. Latin is now taken by only half of the candidates, and on the Army side of public schools it is being dropped out altogether. It is likely that, under present conditions, if Greek ceased to be compulsory, it would fall out of the curriculum of most schools. Analogous instances show this. In the Oxford and Cambridge Local Examinations only 9 per cent. of the candidates (more than half of them girls) take German. And remember that the Oxford and Cambridge Locals comprise about 20,000 scholars between the ages of fourteen and eighteen. In the Oxford Locals (Juniors) for 1905 out of 5,938 candidates only 524—less than 9 per cent.—took German. In the Cambridge Locals in 1896 out of 8,321 candidates 3,791 (45 per cent.) took Latin. In 1903 out of 8,327 candidates only 2,848 took up this subject. In the Cambridge Senior Locals in 1896 out of 2,168 candidates German was taken by 477; but in 1903, out of 2,823 only 340 took it. At the London Matriculation in 1902 only 162 took German out of a total of 5,050. You see that these single options tend to kill hard subjects.

My point, then, is that the universities ought to take care, as the Germans do, that a boy has had a proper all-round training before he goes to the university. And they don't take this care. There is scarcely a subject offered at the preliminary examination which cannot be crammed in precisely the same way as Greek is crammed in many schools. The universities should be divided into faculties, as the German universities are, and each of these faculties should have its appropriate preliminary training. At school boys are differentiated right enough, but the university entrance examination is of a trumpery character for a lad of nineteen. It does not represent, and cannot be made to represent under present conditions, a liberal education of any kind.

It may be useful to put on record the conclusions of Principal Griffiths on compulsory subjects:

Compulsion is, undoubtedly, a necessary portion of school education; for it is not only in his studies that the boy has to be kept under control. When he passes to the university, however, he should find that the atmosphere has changed and that the object aimed at by a university curriculum is the development of his natural gifts rather than the infliction of what may possibly be distasteful studies. As one who has been not only a student, but also a teacher, of natural science, I should be extremely unwilling to advocate the inclusion of natural science as a compulsory subject in a university course. Whatever harm may be inflicted by the study of compulsory Greek would, to my mind, also be inflicted by the study of compulsory science. Absolute freedom of choice is, I suppose, an impossibility under present conditions. Nevertheless, I trust that the University of Cambridge, instead of riveting the bonds which retard the progress of education in this country, will refuse to continue or impose any restriction upon intellectual activity unless the evidence in favour of such restriction is so decisive, so overwhelming, as to more than compensate for the evils which are inevitably attendant on any system of mental compulsion.

THE first Herbert Spencer Lecture, established by Pandit Shyamaji Krishnavarma, of Balliol College, was delivered at Oxford (March 9) by Mr. Frederic Harrison. There was a large attendance, including many leading members of the University. Mr. Harrison said it was the business of philosophy to compare and to reconcile different points of view. They could all admire the tenacious devotion to duty, the patience and courage with which Spencer for forty years carried on his vast undertaking, in spite of ill-health, many obstacles, and much discouragement. But at last, at his death, the civilized world, the East and the West, Europe and America, looked up to him as the most eminent thinker of this country. Whether his system were ever accepted or not, the attempt to frame a synthesis of the sciences so as to arrest the attention of the world was a task so very rare, so supremely difficult, that it was deserving of honour. A co-ordination of knowledge might prove to be abortive, and yet might be a landmark of thought and a monument of genius. Philosophy, like poetry itself, could do nothing abiding without the synthetic imagination. Philosophy implied ultimate generalization. There was an insatiable craving in the human mind for some coherent system of thought. And this accounted for

the reverberation through the civilized world of the name of Spencer, whose books were read and translated in every European country, in India, in China, and in Japan. It was a different question if Spencer's system would endure and command assent in the future. That there underlay the "Synthetic Philosophy" dominant conceptions of vast scope and power was undoubted. But, in attempting an absolute generalization of all the phenomena of the Universe, it was usually held that the scheme was too ambitious. It was a disaster that Spencer was unable to complete his scheme for the inorganic sciences. His system leapt from First Principles and Laws of Evolution to Biology, Psychology, and Sociology. He did not explain how evolution could be applied to astronomy, physics, and chemistry. A systematic treatment of these sciences would probably have compelled him to supplement his theory of evolution by other laws. Every science had its statics, as well as its dynamics, and especially the sciences relating to society, to ethics, and to religion. Science was not limited to the study and theory of origins only. A still more singular *lacuna* in the synthetic system was the omission of any theory of general history. For all these reasons, the synthetic system still awaited development and correction before it could conquer general assent. But its conception was so grand, its learning so wide, its suggestions so fertile, its lofty moral aim so noble that it would long do honour to our nation and our age.

PROF. SIR EDWARD ELGAR delivered his inaugural lecture (March 15) on "A Future for English Music." He said that the living art of music consisted not only of composers, but also of executants; and, he would dare to add, critics. Those three factors should have a definite action one upon another for an advance of music. During the twenty years following 1880 the whole atmosphere of English music had changed owing to the spread of musical education. It was saddening to find that after all the endeavour to excite enthusiasm for English music—big music—they had inherited an art which had no hold upon the affections of the people, and was held in no respect abroad. He ascribed the want of vitality in the works produced during that period to the fact that English composers too frequently wrote their works as if for an audience of musicians only. Therefore those works had been correct, and necessarily cold. The young England school was against mere imitation, and no one who lived in the world of music in England to-day could help feeling that something was moving. This movement, he believed, at last came from within. It was no longer necessary for the young man of the present day to pose: he only needed to be himself; and, if his personality was worth anything, he would be accepted, and his work. Discussing possible developments in musical education in Birmingham, he foreshadowed the teaching of harmony in almost the earliest stages horizontally, and not perpendicularly. A system was being formulated by which the student should at once learn the value of one chord in relation to what followed it or what preceded it, instead of learning simply from a catalogue and knowing its constituent notes. That system might revolutionize the teaching of harmony. He warned exuberant young spirits not to expect any sympathy from him in anything that savoured of disrespect to any of the older institutions to which in the past the country had owed so much and to which in future it looked for further help and enlightenment. Speaking of some weaknesses of the juvenile composers of to-day, he described as pitiful the anæmic flowers of the modern French school. He held that the younger men should draw their inspiration more from their own country, from their own literature, and, in spite of what many would say, from their own climate: only by drawing from real English inspiration would they ever arrive at an English art. He did not intend to recommend at present that degrees should be given in the University. That might come later. To obtain a degree, residence in the University would be absolutely necessary; a good library was needed, and something must be done to make the orchestral concerts a permanent institution. The future of music which he wanted to see coming into being was something that should grow out of English soil—something broad, noble, chivalrous, healthy, and, above all, an out-of-door sort of spirit. To arrive at that it would be necessary to throw over all imitation.

At a general meeting of the Classical Association of Scotland, held at Aberdeen (March 11), Prof. G. G. Ramsay, Glasgow, advocated the teaching of classics in all country schools which had no higher school within reach, so that pupils might have the

chance of beginning long before twelve years of age the higher university subjects. We give the substance of his address elsewhere. Prof. A. W. Mair, Edinburgh, dealing with the teaching of Greek, said that the attack on compulsory Greek at Cambridge had been triumphantly repelled, but no one knew when the attack would be renewed. If reform was to come, as come it must, it was from the universities that it must come. Examination papers ought to encourage more practical and interesting methods. Nothing was to be gained by cast-iron methods of teaching. The rigidity of the present system was its greatest bane. He strongly pleaded for originality in the teachers, even although the originality might tremble on the brink of eccentricity. Prof. Mair showed how valuable time was wasted in teaching useless rules and exceptions to rules in the Greek grammar. Prof. Harrower, Aberdeen, and Prof. Burnett, St. Andrews, among others, expressed sympathy with Prof. Mair's views.

THE annual meeting of the Private Schools Association was held at the College of Preceptors (March 3 and 4). The report stated that there were fifty Branches, with 1,360 members. Sir Henry Kimber, M.P., who was elected President, said in his inaugural address that the private schools were very much underrated, and had not received anything like adequate recognition at the hands of the Legislature. The Association had a serious problem before them. The Authorities had told them that the only way to obtain their ends was by legislation. He did not believe that further legislation was necessary if the County Council on the one hand, and the Board of Education on the other hand, would carry out the relative clause of the Bill. The duty of the Local Authorities was to take into consideration those who had done so well for the people in the past. He had not ceased to impress upon Sir William Anson the case of the private schools. Importunity was what was required. They should sit at the doors of the Local Authorities until they not only listened but acted. It was a long and wearying business, but it must be done. It should be put clearly before Parliament that over ten thousand institutions were being thrown out of existence by the competition now going on. A petition, giving full particulars, should be prepared on the subject. He had often tried to get out of Sir William Anson what was the reason that no grants were given to private schools, but he had failed. Legislation was a very poor look-out.

On the question of a Secondary Teachers' College, Mr. W. W. Kelland moved: "That no scheme could be held to be satisfactory that does not place all efficient schools alike, whether public or private, on terms of perfect equality." There was no question of amalgamation; it was a matter of confederation. They should be equally independent bodies; they should meet together on a common ground, and bring their united influence to bear on public bodies. Dr. Sibly seconded, and the motion was carried. Mr. Kelland next moved, "that the administration of the proposed college should be carried on by a Council consisting of an equal number of representatives of each confederate body, and of a number of members co-opted by the whole college." He said that it was suggested that the Council should consist of six trustees appointed by the college. Each confederate body would have three representatives, and twelve would be elected members. The College of Preceptors would come under the federation. Negotiations were going on with the Head Masters' Conference, the Incorporated Association of Head Masters, the Association of Head Mistresses, the Private Schools Association, the Proprietary Schools Association, the Incorporated Association of Assistant Masters, and the Assistant Mistresses' Association. The Teachers' Guild was approached, but had declined to join. Dr. Reddie, of Abbotsholme, strongly opposed the proposal. In the course of discussion it was suggested that the association should be more numerously represented on the proposed Council; but, on the other hand, it was pointed out that the College of Preceptors and other associations represented private schools, and that this would add considerably to the private school representation. An amendment proposing that an "agreed" number of representatives should be appointed, instead of an "equal" number, was accepted, and the motion as thus altered was carried. It was also decided that the annual payment of all persons not members of a confederate body should be not less than one guinea; that, whatever the educational qualifications imposed by the proposed college might be, a sufficient time should be allowed for the admission of teachers not possessing these qualifications; and that such educational qualifications should not be imposed unless unanimously accepted by representatives of the

federating associations. Mr. H. R. Beasley read a paper discussing the relations of private schools and the Local Education Authorities.

At a meeting of the London Teachers' Association at the Memorial Hall (March 11), Mr. Bunting (Vice-President) moved the adoption of a report by the General Committee on the subject of higher education. The Committee recommended that higher schools, as distinct from the usual type of secondary school, should form an integral part of the primary system of education; that these schools should be organized to give a complete four years' course of instruction on an extended curriculum; that selection for the higher schools should be considered equivalent to obtaining a scholarship; and that the maintenance allowance as laid down in the new L.C.C. scholarship scheme be granted to scholars at higher schools. Mr. Bunting said the Committee were not yet prepared with a detailed scheme—they simply asked the Association to affirm the principle. The recommendations were adopted.

THE Committee appointed to consider the allocation of the increased grant in aid of education of a University standard in arts and science has finished its inquiry. Excluding £9,000 to be allotted later in the financial year, the Committee proposes that the sum of £45,000 (making a total grant of £54,000) be allotted as follows:—Manchester, £6,000; University College, London, £5,000; Liverpool, £5,000; Birmingham, £4,500; Leeds, £4,000; King's College, London, £3,900; Newcastle-on-Tyne, £3,000; Nottingham, £2,900; Sheffield, £2,300; Bedford College, London, £2,000; Bristol, £2,000; Reading, £1,700; Southampton, £1,700; Dundee, £1,000. The Committee expresses the view that the time has come for making a new departure in the principle on which State assistance is to be given to the highest education. It is recommended that a moderate sum should be set aside for distribution by way of payment to post-graduate students from the university colleges who devote themselves for one, two, or three years to special problems; and that to ensure the money being applied most efficiently to the stimulation of individual study, as distinguished from the general purposes of the college, to the development of which other sums out of the grant are directed, the distribution should assume the form of a grant made directly to the student on the advice of some impartial authority. Another portion of the money might, the Committee thinks, be very well devoted to remedying equipment in books and scientific apparatus; while a third head, under which the Committee recommends that Treasury assistance should be given, is the increase of the salaries of certain of the existing teachers. The Committee are impressed with the inadequacy of the remuneration of the professors and teachers in some of the colleges. This is especially the case with the assistants. It is also suggested that the grant in aid should in future be made to a committee, instead of to the colleges direct, and that this committee should make an annual report to the Treasury, to be laid before Parliament. In conclusion, the Committee urges the necessity of leaving to the advisory committee discretion to deal with particular circumstances as they arise.

OXFORD CONVOCATION has passed a statute (March 14) amending an old statute so that henceforth it will not be necessary for the University to be represented on the governing body of any affiliated college. The Rev. Dr. Dangar, Principal of the Exeter Diocesan Training College for School Masters, raised the question about a year ago. Mr. Gerrans readily lent him a hand, and the Archbishop of Canterbury exerted his influence in favour of the proposal. The result will no doubt bring a very large number of secondary institutions into closer touch with Oxford.

THE fourth annual report of the Executive Committee of the Carnegie Trust states that the operations of the Committee have been directed mainly to administering the schemes. Under the scheme of allocation for five years of an annual grant of £40,000 among the four Scottish Universities, which became operative on January 1, 1903, sums amounting to £38,114. 12s. 4d. have been claimed and handed over during the year. The grants for library purposes and for provisional assistance in teaching, amounting to £6,400, have been paid. The grants for buildings and permanent equipment available for 1904, including a balance of £12,635 unexpended in 1903, amount to £33,035. Of these, the sum of £20,146. 8s. 6d. has been claimed. Claims for grants towards teaching endowments amount for the year to

£11,568. 3s. 10d. These include contributions to the foundation of two Chairs—that of History in the University of Aberdeen, and that of Geology in the University of Glasgow. In the present quinquennial scheme of grants the claims of the following extra-mural schools have been considered and included:—The Medical School of the Royal Colleges of Edinburgh, the Edinburgh Medical College for Women, Anderson's College Medical School, Glasgow, and West of Scotland Technical College, Heriot-Watt College, West of Scotland Agricultural College, Edinburgh and East of Scotland Agricultural College. Under the head of buildings and permanent equipment, grants of capital sums, to be drawn upon as required and approved during the period up till December 31, 1907, have been allocated to these institutions, amounting in all to £9,000; and, under the head of provisional assistance in teaching, grants amounting to £635 have been offered for the academic year 1904-5. The scheme of endowment of post-graduate study and research has now entered upon its second year. The total expenditure for 1903-4 under the scheme was £3,386. 8s. The estimated outlay for the current academic year is £5,177. 10s. Applications for Fellowships, scholarships, and grants for 1905-6 must be lodged on or before May 1 with the Secretary to the Trust, from whom application forms and regulations can be obtained. In the research laboratory of the Royal College of Physicians, the purchase of which was announced in the previous annual report, the past year has been one of steady and satisfactory work in all departments: 35 workers have held places in the laboratory, and have been engaged in 47 investigations. The payment of the class fees of beneficiaries under Clause B of the constitution has been carried out as in previous years. The number of beneficiaries for winter session 1904-5 is 3,075—an increase of 43 over the number for the previous winter session. The Committee record that during the year 1904 six graduates have refunded the class fees paid for them by the Trust, to the amount of £84. 2s.

Past and present members of Prof. Paul Barbier's French classes at the University College, Cardiff, assembled in force (March 14) to congratulate him on the academic distinction conferred upon him by the French President in appointing him an Officer of Public Instruction in recognition of his services to French literature and of his skill in teaching the French language. The students presented him with the decorative emblem of the order—two sprays of laurel in gold with a purple ribbon. Congratulatory speeches were made by representatives of the old students, the senior classes, the juniors, and the College staff, and by the Hon. Secretary. Prof. Barbier has been a member of the staff of the College since its establishment.

A COMMISSION was appointed a few years ago to inquire into the condition of manual and practical instruction in Irish primary schools, and, as the result of the recommendations made by this Commission, instruction in elementary experimental science was introduced into the primary schools of Ireland. The results of this teaching have, in the opinion of competent authorities, been in every way satisfactory. Not only has the educational value of experimental science again been demonstrated, but its beneficial effects on the progress of Ireland's industries and agriculture have been made clear. Notwithstanding the success which naturally has followed the introduction of practical instruction in scientific principles into Irish elementary schools, the Treasury has refused to renew the small grant required to meet the necessary expenditure; and the work of organizing science instruction in the schools—after four years—is being stopped. It is difficult indeed to understand so retrograde a policy. The incompleteness of all schemes of education which ignore the claims of practical instruction in the fundamental facts of science has been demonstrated repeatedly; the connexion between American and German industrial success and the scientific systems of education established in these countries has become familiar to all interested in their country's welfare; so that no excuse—not even the urgent need of economy in national expenditure—can justify this action of the Treasury. It is to be hoped earnestly that steps may yet be taken to avert what would be nothing short of a calamity to Ireland, and that the work, which has begun so auspiciously under the present organizers of science instruction, instead of being stopped, may be broadened and extended.

THE Lenten pastorals read in the Roman Catholic churches of Ulster (March 5) dealt at considerable length with the University

question. The Bishop of Down and Connor said it was an intolerable state of things that, while the gifted Catholic youth of the country were debarred, from conscientious motives, from entering the Queen's Colleges and Dublin University, they were excluded from the advantages of higher education through the clamorous opposition of an intolerant minority, who, though they themselves were in full enjoyment of those advantages, were allowed to veto every rational attempt to solve the University question. The reluctance or impotence of those charged with the government of the country to remove that long-standing grievance accentuated and added renewed force to the national demand for self-government, for, in a self-governed country, with a majority of the people Catholic, it was morally certain that such a flagrant violation of the primary rights of citizens would not be permitted to take place. The Bishop of Dromore said it was difficult to be patient when they talked of the monstrous injustice with which they had been so long treated in a matter of such surpassing importance, and still more so when they consider the lessons for which their claims had been so persistently denied. It was time for them to realize that, if they were to see the end of this cruel injustice, they must press their rightful claims with more vigour, with more earnestness, and with more determination than they had hitherto done. Their people must be taught to take an active and an intelligent interest in this question, which was absolutely one of national importance.

A PRAISEWORTHY attempt is being made, says the *New Age*, to establish in London an institution on the lines of the famous *universités populaires*, which have met with so much success in France and other Continental countries. The Université Populaire de Londres, which has been recently opened at 4 Euston Buildings, Euston Road, N.W., offers to its members and visitors a most attractive lecture list. At present the lectures are being carried on in French, that being the language chiefly spoken in the foreign quarter of London, but the Committee hope before long to arrange for lectures and discussions in German, Italian, Spanish, and English. There is no charge for admission to these lectures, but a subscription of 3d per week is levied for the use of the classes. This subscription includes admission to the reading-room, library, &c. An international circulating library of a thousand volumes is already in existence.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

OXFORD is now practically empty. It has become almost a creed now that the Easter Vacation is the proper time to take a holiday, free from the London mist and the indefatigable schoolmaster. Consequently term was only in its last gasps when some of the bolder spirits departed for Greece, and, as soon as "Collections" were over, there was a second great exodus—this time to Italy; while, a little later on, various more or less distinguished persons are starting (at reduced fares) to take part in the Oriental Congress in Algiers.

The time for the tourist and the American is not yet, and consequently the streets are refreshingly empty, and there is an air of quiet about the High to which it is a stranger even in the depths of "the Long." In the last Oxford letter attention was called to the fact that the Honour Moderators had a considerably smaller number of candidates to deal with this year. Consequently we may expect to see the results before next term. At the same time inferences, based on the numbers, that the examination is unpopular, and therefore (according to the critics) bad, seem rather hasty. It is, of course, possible that men who want an Honour degree in three years find that their easiest line of attack is to take Pass Moderations at the end of their second term, and then have seven terms to take History or Law. Certainly the new Pass Moderations at Easter, the original plan of which met with bitter opposition at first, seem to be successful if numbers spell success. For the term there were nearly three hundred candidates, and there is an agitation on foot to increase the payment of the Pass Moderators (who have, in addition, to look over the Divinity papers). It certainly seems as if Pass Moderations is the worst paid examination, as it means a good deal of work and a quite considerable time devoted to *viva*. On the other hand, the "Smalls" examiners, even including their work on "additional subjects," get off with about a week's work for £25 an examination (as against £15 for Moderations).

A note in the *Oxford Magazine* has—with or without acknowledgment—been going the usual round of the London and

provincial Press. The note in the original state was an appendage to a notice of the Temperance Conference under Mr. Rowntree's presidency: the suggestion in it that drunkenness in Oxford was at once habitual and venial seems an entire exaggeration of the truth. The writer seems to imply that it is almost a *sine qua non* of a so-called convivial evening or a bump supper that those present should drink too much. It would be interesting to know how many such meetings the writer can have attended. That among some two thousand young men there should be occasional cases of drunkenness can perhaps hardly be denied, and, if denied, would scarcely be believed; but that the undergraduate habitually gets drunk at a bump supper or a similar entertainment, or that it is considered the correct thing to do so, many of us who have had many years of experience both of the undergraduate and of the bump supper would flatly contradict. It does not follow that a man is drunk because he dances round a bonfire or fires off squibs and crackers or shouts at the top of his voice. If noise means drunkenness, then most public-school boys should be accused of the offence.

"The Clouds," as produced by the O.U.D.S., under distinguished patronage and assistance, may be pronounced a decided success. Certainly the stage settings, dresses, and general production do great credit to the promoters, while it is not often that an amateur society can command the services of such a versatile musical composer as Sir Hubert Parry. The difficulty with which Mr. Godby and Mr. Cyril Bailey had to contend was apparently whether they were to attempt to reproduce the spirit in which Aristophanes conceivably wrote the comedy, or the farce to which most probably Athenian actors transformed it, and, again, how far it might be modernized. Plainly speaking, the play as represented here was a farce, both Socrates and Strepsiadés being low "comedians." We confess that there was no hint of the pathetic in Strepsiadés nor of dignity in the pot-bellied, underdressed philosopher. The chorus was excellent and attractive, and the *coryphaeus* declaimed with vigour and sincerity. The play drew excellent houses, but the profits were hardly as large as were expected, mainly owing to the elaborate and expensive orchestra.

Of the events of the month we must record first the annual meeting (at Balliol) in connexion with Toynbee Hall. We had two excellent speeches—one from Mr. Lansburg, the other from Bishop Lang—then *in dispari materia* the performance of "Hamlet" (without scenery) by Mr. Tree and other distinguished actors.

The later vacation is the great time for Inter-University contests, and before these lines appear, or just when they appear, the Sports and the Boat Race will be over, and, soon after, the Golf Match. If the experts are to be believed, we shall lose all three this year, though lately some find unexpected excellence in our crew, and, indeed, after all Mr. Fletcher's energy, it would be remarkable if there were none.

The Sports ought to reach a high level in amateur performances: the Mile alone, in which there are four competitors any one of whom ought win easily in an ordinary year, ought to attract the enthusiasts. Cornwallis, our President, ought this year to win both the Quarter and the Mile, but, as Cambridge will win all the field events, probably we shall lose by 6 to 4. The Golfers have no great champions, but have done well at Sunningdale (where the match is to be played this year) in a contest against the local club, but Cambridge are probably better. However, let us hope for better things than our prophecies.

(From our own Correspondent.)

THE great Greek question has been answered, Cambridge, and academic calm once more is reigning. Never has more feeling been displayed in a university contest; never have the antagonists fought so bitterly or so strenuously. But there were many pleasing incidents. Cambridge was once more peopled with the returned exiles of bygone times, and the sight was a cheering one. Country parsons, barristers, doctors, politicians beamed benevolently upon the passers by, and looked for all the world like happy schoolboys out for a holiday. The actual result was pretty much what was expected: the majority of 500 was not a surprise, but the largeness of the poll on both sides was remarkable, over 2,600 voters handing in their cards. Now that the great struggle is over many of the winning side are sorry that no opportunity was given them of approving some of the suggested alterations—for example, the relegation of English composition to the third part of the Little-Go, and the addition of Chemistry as an optional

or compulsory subject in that part. The next difficulty will arise with respect to the General, and there seems to be a feeling that it would be wise to rearrange the subjects of the two parts so as to prevent a weakness in Classics being supplemented by strength in Mathematics, and *vice versa*, as at present is possible. This question will be of purely academic interest; whereas the Little-Go, being practically an entrance examination, affects the schools.

The colleges quite rose to the occasion on March 3 and 4: free lunches and dinners were provided for all members of the Senate irrespective of party, and the hospitality was most thoroughly appreciated. The "Cambridge Hoax" seems to have puzzled the London papers; it was ingeniously carried out, and the local authorities have, like thorough sportsmen, not made too zealous inquiries as to the perpetrators of the jest. Rumour, doubtless a lying jade, has it that the Sultan himself would not need much persuasion from his numerous friends and old school-fellows in Cambridge to come down and pay a genuine surprise visit *in propria persona* to the Mayor and Corporation.

The little fuss about removing some of the law books from the University Library to the new Squire building has been amicably settled. The lawyers will now be able to have a little laboratory of their own, and will be able to conduct their work under conditions more suitable for effectiveness.

An unobtrusive institution has existed among us for some time, and is now beginning to attract attention by solid results rather than by promiscuous advertisement: the Cambridge Day Training College now can boast of a membership of fifty-five primary and nine secondary students. The staff consists of Mr. Oscar Browning, the Principal; Mr. S. S. F. Fletcher, master of method; Mr. Blandford, assistant master of method; and Mr. R. L. Archer, Assistant Lecturer on Education. Mr. T. Wallis, Head Master of the Higher-Grade School in Paradise Street, also takes a leading part in the work of the college. In no department can the University make its influence more widely or more usefully felt than in bridging over the gap between primary and secondary education and by strengthening the rungs of the ladder which leads the promising student from the Board school to the University.

During the recent debate on the Greek question the Vice-Chancellor, Mr. Beck, who throughout conducted the whole of the proceedings with a genial courtesy which won admiration from both sides, introduced a new departure in admitting reporters to the floor of the Senate House. It is now proposed to give powers to the Vice-Chancellor to perpetuate the practice. Objection has been raised that a full-dress debate often proves worthless, and results in the reading of essays to the exclusion of free, spontaneous, and informal discussion. Those who were present at the late debate would be the first to acknowledge that very many essays were read to the Senate and to the reporters, but for all that hardly a point was taken by any speaker which was not fully discussed or controverted by one or more speakers on the other side.

Some of your readers may be interested to learn that the appointment of Assistant Secretary to the Syndicate for Local Lectures is now vacant. The salary—small as it is, £150 a year—might well tempt a man who values the opportunities given by residence in Cambridge; while to serve under the genial Secretary, Mr. Cranage is, in itself, a privilege. May 8 is the last date for applications.

Through the generosity of the late Mr. Maccoll, a Lectureship in the Language and Literature of Spain and Portugal is to be founded. A course of five lectures will be delivered every four years; this will doubtless lead to really good work being given to us by people who know something about their subject.

The following personal items may be of interest:—Sir Frank Younghusband, K.C.I.E., has been appointed Rede Lecturer for 1905; Mr. T. S. P. Strangeways, Huddersfield Lecturer in Special Pathology; Mr. R. P. Gregory, Senior Demonstrator in Botany.

At the time of writing the Boat Race promises to be full of interest; both crews have considerably improved, and there is every chance of a close race, Cambridge having perhaps a slightly better chance of winning. But the struggle should be a good one. The Sports should also fall to us by a bare majority of events.

At the annual meeting of University College, London, on February 22, the following resolution, moved by Lord Reay, on behalf of the Council, was unanimously adopted:—"That the Bill now submitted, entitled

A Bill for transferring University College, London, to the University of London and for other matters connected therewith, and for amending the University of London Act, 1898, be and the same is hereby approved subject to such additions, alterations, and variations as Parliament may think fit to make therein."

The Senate have informed the London County Council that they have made arrangements for opening the training college at the Goldsmiths' College in September next, and that it will be carried on under the regulations of the Board of Education as a college providing a two years' course for men and women students who have passed the King's Scholarship or other equivalent examinations. The management of the college will be entrusted to a delegacy in which the London County Council, as well as the Councils of neighbouring counties and county boroughs, will be represented. The college will be entirely unsectarian, and no religious test will be required from members of the delegacy, members of the staff, or students. The college will probably be recognized by the Board of Education as providing accommodation for five hundred students, although it may be restricted to four hundred. Applications have been received for 540 places from various Councils, and, as this number is in excess of the maximum accommodation, the number to be assigned to each Council will be reduced *pro rata*. The London County Council will have allotted to them 74 or 93 places, according to the total number recognized, provided that the Council undertake to pay the University a sum calculated at £16 per student—namely, £1,488 or £1,184, as the case may be—together with a contribution towards the initial maintenance expenses. The University propose to spend a considerable sum in adapting the premises for training-college purposes, in providing the establishment expenses, and in paying a portion of the salaries of the educational staff. They ask the contributing Councils to assist in meeting the cost of maintenance on the educational side, and the amount which the London County Council will be asked to pay for the session will be either £1,500 or £1,200, the amount depending upon the number of students for which the college is recognized. This payment, which will be for one year only, is necessitated by the initial maintenance expenses, incidental to the opening of a large educational institution; and in future years, when the full number of students has been reached, the Council's contribution will be confined to a payment calculated at £16 per student.

The London School of Tropical Medicine has been admitted as a school of the University of London in the Faculty of Medicine in tropical medicine only.

The Senate have agreed to provide the Sociological Society with accommodation in the University Building for the purpose of entertaining the International Institute of Sociology during the Congress which will be held in London under its auspices in July, 1906, and themselves to invite the members of the Congress to a reception.

A REPORT on the work of the session 1904-5 in Manchester. the Faculty of Commerce, presented to the Advisory Committee, states that the Faculty is now completely organized and in full operation. The students entered for the degree number fourteen. The number of those attending two or more courses in the University, some in the day and some in the evening, but not entered for the degree, is also fourteen. Some of the latter will be candidates for the Higher Commercial Certificate. There is also a considerable body of students attending single courses of lectures. Particular reference is made to the specialized courses bearing on different businesses. At present there are three such courses—Railway Economics, Banking, and Accounting—the scheme of classes for each course covering two years. At some of these classes the attendances have been large; and most of the railway companies connected with Manchester have encouraged attendance at the lectures on Railway Economics by making agreements with the University whereby the fees of the members of their staffs are provided for. The Manchester Bankers' Institute has established ten scholarships for competition among its members, which cover the cost of the two years' course on Currency and Banking. The report adds that it is highly desirable that steps should be taken to accelerate the development of the Faculty, and the first and most obvious need is that its work should be made more generally known. The Bolton Education Committee has instituted three scholarships in connexion with the classes held in the evening for competition among those students who have attended the classes under the scheme of commercial education

at Bolton. This system the authorities would like to see extended.

Wales. THE question of appointing a salaried official as the executive head of the University of Wales is again being discussed in academical circles, though there is little probability of immediate action being taken in the matter. It had been hoped that arrangements could have been made to secure the services of Sir Isambard Owen, the Senior Deputy Chancellor, but it is feared that the recent acceptance by Sir Isambard of the Principalship of the Durham College of Science has made this impossible, at least for the present. It is felt that there is much inconvenience in the present arrangement, the Senior Deputy Chancellor being away at Newcastle-upon-Tyne, the Junior Deputy Chancellor for two years out of every three away at Bangor or Aberystwyth, and the University offices and the Registrar at Cardiff. In the current issue of the *Welsh Leader*, Sir T. Marchant Williams, in a vigorous article, pleads for reform. "The work at the Registry," he writes, "needs to be overhauled and rearranged; the constitution of the Standing Executive Committee needs to be reconsidered; the duties of the Vice-Chancellor need to be more clearly and accurately defined; but, I maintain, the one great need of our University at this moment is an active, efficient working head. This need outweighs all other needs in urgency and importance."

Reading. LORD GOSCHEN, Chancellor of the University of Oxford, has consented, at the invitation of the Council of University College, to lay the foundation stone of the buildings about to be erected on the new college site in London Road. The ceremony will take place in June next.

St. Andrews. A COMMITTEE has been appointed to communicate with the other Scottish universities and with others interested, with a view of arranging for ceremonies to take place at St. Andrews about the end of winter session, 1905-6, in celebration of the four-hundredth anniversary of the birthday of George Buchanan, the celebrated Scottish humanist and tutor of James VI., who was a student of the University, and later Principal of St. Leonard's College. Mr. J. P. Steele, M.D., LL.D., Florence, proposes to give a prize of a hundred guineas for the best essay on "Sixteenth Century Humanism as illustrated by the Life and Work of George Buchanan," to be open to competition from the four Scottish universities; a prize of £21 for the best translation by a St. Andrews student of "Baptistes" or "Jephthes," tragedies written by Buchanan, and other prizes for translation by St. Andrews students of selected passages from Buchanan's other works.

THE REV. PREBENDARY WHITWORTH.

WE announce with deep regret the death of the Rev. William Allen Whitworth, M.A., Vicar of All Saints, Margaret Street, and a Prebendary of St. Paul's Cathedral, at the age of sixty-five. Others will pay ample tribute to the services the late Prebendary rendered to the Church: it is for us to regard more especially his relation to mathematical science, for as a mathematician he was for many years intimately known to our readers. Like the late Mr. Tucker, he was one of the earliest contributors to the mathematical columns of *The Educational Times*: the names of both occur in the list of contributors prefixed to the very first volume of the *Reprint*. Of that list the only working survivor now is Prof. Hudson, unless we mention the Rev. Dr. Taylor, Master of St. John's College, Cambridge, and Archdeacon Wilson, both of whom have diverted their energies to other lines of work. Prebendary Whitworth was an authority in the region of pure probability, as Prof. Crofton has long been, and still is, in that of "local" probability. There is no book better fitted to enlighten the student of this subject than "Choice and Chance," a work that is now in its fourth edition, and which, in conjunction with the author's "DCC Exercises," affords a source of information as convenient as it is reliable. A hard-worked vicar of a fashionable church, Prebendary Whitworth found recreation in his favourite branch of mathematics to the last. He took lively pleasure in his work as Gresham Professor on the philosophy of chance; and our mathematical columns bear abundant testimony to the keenness of his intellect. In the great sorrow that has befallen them, his relatives may rest assured of the profound sympathy of our readers and ourselves.

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CURRENT EVENTS.

A JOINT MEETING of members of the College Fixtures. and of the Assistant Masters' Association will take place at the College of Preceptors on Wednesday, April 12, when Mr. T. P. Nunn, M.A., B.Sc., will read a paper on “Science Teaching and the Theory of Science.”

THE School Nature-Study Union will hold a meeting at the College of Preceptors on April 7 at 7.30 p.m.

DR. RABAGLIATI, of Bradford, will lecture on “The Health of Children *qua* Food and Management” to a joint meeting of the British Child-Study Association and the Childhood Society at the Parkes Museum, Margaret Street, W., on April 6, at 8 p.m.

THE annual conference of the British Child-Study Association will be held at Derby on May 11–13, Prof. Muirhead, LL.D., of Birmingham University, President. The local Hon. Sec. is Miss D. Dyer, 17 Hartington Street, Derby.

THE first Adamson Lecture at Manchester University will be delivered by Prof. Ward, of Cambridge, on June 2.

THE sixth annual examination of candidates for the National Diploma in the Science and Practice of Agriculture will begin at Leeds University on May 8.

THE 21st annual competition in French Language and Literature, arranged by the National Society of French Teachers in England, will take place on November 4.

MR. E. NOBLE SMITH, F.R.C.S., President of the Ambidextral Culture Society, will address the Society on “Ambidexterity in Surgery” (with demonstrations) at the rooms of the Royal Statistical Society (9 Adelphi Terrace, Adam Street, Strand) on April 13 at 5 p.m.

THE Universal Cookery and Food Association is organizing a sixteenth exhibition, to be held at the Royal Agricultural Hall in May.

THE Board of Education examination of candidates for admission as pupil-teachers (Article 2 (b) and Appendix C of 1904 Regulations) will be held on April 15.

THE Board of Education announce that candidates for the Certificate Examination will not be examined in Drawing on the Blackboard at the Drawing Examinations in April, May, or June, but at the Certificate Examination in July.

THE Edinburgh Vacation Courses Council has organized vacation courses in French, German, and English, to be held in the University of Edinburgh in August. Apply to Prof. Kirkpatrick.

A SUMMER meeting, not confined to teachers, will be held in Amsterdam in August next. Lectures in English. Particulars from Miss Scriven, Northwold Road, Clapton, N.E.

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THE fifth International Congress of Psychology will be held in Rome from April 16 to 30.

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THE University of Dijon offers this year (for the third time) Summer Courses for foreign students, July 1 to October 31. M. C. Cestre, A.M. (Harv.), general secretary.

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IN connexion with the reopening of the Honours. Aberdeen Art Gallery, the University of Aberdeen will confer the honorary degree of LL.D. (April 7) upon John B. Bury, M.A., D.Litt., LL.D., Professor of Modern History in the University of Cambridge; Alberto Galli, Professor of Fine Art and Director-General of the Museums and Galleries of the Vatican; Francis John Haverfield, M.A., Tutor and Lecturer in Christ Church, Oxford; Lord Reay; Edward Robinson, B.A. (Harvard), Keeper of Greek and Roman Antiquities in the Museum of Fine Arts, Boston; Joost M. W. Van der Poorten-Schwartz ("Maarten Martens").

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THE University of Aberdeen will also confer the honorary degree of D.D. upon Enrico Bosio, Principal of the Waldensian College, Florence; the Rev. William Ralph Inge, Fellow and Classical Tutor of Hertford College, Oxford; and two local clergymen; and the honorary degree of LL.D. upon Mr. Thomas Hardy, the novelist; Mr. Duncan MacGregor, M.A., M.B., C.M., Inspector General of Asylums and Hospitals, New Zealand; Mr. John Theodore Merz, Ph.D., D.C.L. Durham; Mr. John Struthers, C.B., Secretary of the Scotch Education Department; and Sir James Thomson, K.C.S.I., recently Acting Governor of the Presidency of Madras.

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PROF. OSLER, the new Regius Professor of Medicine at Oxford, has received the honorary degree of LL.D. from Johns Hopkins University on his resignation of the Professorship of Medicine at Baltimore.

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THE University of Oxford has conferred the honorary degree of D.Litt. upon Mr. Edward Arber, F.S.A., Emeritus Professor of English at Birmingham University, and Fellow of King's College, London; and the honorary degree of D.Sc. upon Prof. E. B. Tylor.

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A COMMITTEE representative of the Royal Scottish Geographical Society, the Royal Society (Edinburgh), the Edinburgh Merchant Company, and other bodies, has been formed to raise at least £15,000 to endow a Chair of Geography in the University of Edinburgh.

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MR. ALFRED BEIT has increased his donation to the Institute of Medical Sciences Fund (University of London) from £5,000 to £25,000.

* * *

MANCHESTER UNIVERSITY has received a legacy of £1,000 under the will of the late Mrs. Mary Worthington, of Sale Lodge, a generous benefactor (particularly to the Women's Department) in her lifetime; and £500 from Dr. Ludwig Mond for extension of the chemical laboratories. The Vulcan Boiler Insurance Company has founded a Fellowship in Engineering.

PART of the fund raised to commemorate the late Sir William Mitchell Banks is to be devoted to a Memorial Lectureship in Medical Science at Liverpool University.

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MR. E. R. MUSPRATT, President of the Council of Liverpool University, has offered £10,500 to provide for an extension of the chemical laboratories of the University.

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THE Cardiff Corporation has offered a site, worth £20,000, for the erection of a national museum for Wales, and has voted £2,000 for the maintenance of the museum and £1,000 a year towards the expenses of a library.

The Mackintosh of Mackintosh has promised £2,000 towards the Welsh National Museum and Library, provided Cardiff is selected as the locality of those institutions. Mr. John Cory (Cory Brothers), Cardiff, has also promised £2,000 on like terms.

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WESTERN COLLEGE, Bristol, wants £12,000 for buildings. It has fair hopes of raising two-thirds of the sum in Bristol, and Congregationalists elsewhere will surely provide the other third without delay.

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SIR WILLIAM MACDONALD proposes to endow an Agricultural College, with a Normal School for agricultural teachers and an extensive experimental farm, in Canada. The scheme will cost several million dollars.

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MR. CARNEGIE is reported to have offered £100,000 to the University of Virginia on condition that a like amount be raised from other sources. The late Mr. James C. Carter, an eminent New York lawyer, has left £40,000 to Harvard. A gift of some £20,000 has been made to George Washington University for a Chair and course of graduate study of the History of Civilization, while some £55,000 is announced to have been raised by the trustees and the Alumni Association.

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IN his last report, President Eliot recommends (says *Science*) the collection of £500,000 as an endowment for the College of Harvard University, and it said that the alumni are making efforts to collect this sum before the next commencement day. The class of 1880 expects to contribute £20,000 on the occasion of its twentieth-fifth anniversary.

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By the death of Mrs. Stanford, the Leland Stanford Junior University of San Francisco, which was founded in memory of her son and has been liberally supported by her, is expected to benefit to the extent of three or four millions sterling.

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THE Amir of Afghanistan has given Rs. 30,000 (about £2,000) to the special fund formed to bring the Islamia College, Lahore, up to the statutory standard, in addition to his permanent annual contribution of Rs. 8,000.

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Scholarships
and Prizes.

SEVEN Cambridge colleges will hold a combined examination for 62 entrance scholarships and various exhibitions on December 5 and following days. Pembroke offers 2 scholarships of £80, 3 of £60, and 4 of £40. Gonville and Caius: 2 scholarships of £80, 3 of £60, and 5 of £40; also special scholarships for Mathematics and History. King's: 2 scholarships of £50, 2 of £60, 3 exhibitions of £40 (limited), and 5 Eton Entrance Scholarships. Jesus: 2 scholarships of £80, 2 of £60, 4 of £40. Christ's: 1 of £80, 3 of £60, 4 of £40. St. John's: 3 of £80, 5 of £60, 3 of £40.

Emmanuel: 1 of £80, 3 of £60, 4 of £40, and (perhaps) 2 sub-sizarships. All the colleges (except King's) may also award exhibitions (not over £30 for two years) to deserving candidates that do not obtain scholarships. Candidates must be under nineteen on October 1. Detailed information and application forms from the Masters of Gonville and Caius and Emmanuel, Mr. W. S. Hadley (Pembroke), Mr. W. H. Macaulay (King's), Mr. A. Gray (Jesus), Rev. J. W. Cartmell (Christ's), and Dr. D. MacAlister (St. John's).

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WORCESTER COLLEGE, Oxford, offers 1 open Classical scholarship of £80, and 3 open Classical exhibitions (no age limit) of £35 or £21, to candidates under nineteen. Examination begins June 29. Send usual certificates to the Provost by June 24.

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THE Taylorian Scholarships in Modern Languages at Oxford are to be discontinued, and the money is to be applied to the provision of additional instruction in modern languages.

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THE London County Council offers probationer scholarships (free education for two years at approved secondary schools, with maintenance grant of £15 a year, open only to candidates resident in the County of London), and pupil-teacherships, to boys and girls attending elementary (public or private) or secondary schools. Apply to the Executive Officer of the Education Department, Victoria Embankment.

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THE Anglo-French Association, "L'Entente Cordiale," offers two travelling scholarships of £10 each, on the lines of the Circular of the Board of Education. Competition at City of London School for Boys on November 4, at 10 a.m. Apply to J. Belfond, Esq., Broglence Villa, Melrose Terrace, West Kensington Park, W. (enclosing registration fee, 2s. 6d., P.O. crossed) by November 1.

* * *

THE Education Committee of the Victoria League offers to the boys' preparatory schools of the country a prize of a complete set of Mafeking stamps (valued at £20 to £30) for the best essay on "How the Union Jack came to be the National Flag." Particulars from the Secretary, Education Committee, Victoria League, Dacre House, Victoria Street, S.W.

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THE Committee of the National Temperance League, as trustees of the "Robert Rae Memorial Fund," offer to students in training colleges thirteen prizes (£25 in aggregate) for a written Model Lesson based on a special syllabus.

* * *

FORMER pupils of the Misses Fletcher, who for many years carried on a school at West Coombe House, Upper Hornsey Rise, have given £150 to the Cambridge Local Examinations and Lectures Syndicate to found an annual prize for the woman that stands highest in Greek of those that are successful in both Greek and Latin at the Cambridge Higher Local Examination.

Appointments and Vacancies.

MR. F. W. WALKER, High Master of St. Paul's (since 1876), it is understood, has sent in his resignation, to take effect at the

end of the Midsummer term.

* * *

THE REV. CANON GLAZEBROOK has resigned the Head Mastership of Clifton, which he has held for fifteen years.

DR. LUCAS WHITE KING, C.S.I., Commissioner of the Rawal Pindi Division and Fellow of the Punjab University, has been appointed to the Chair of Arabic, Persian, and Hindustani in Trinity College, Dublin, Lieut.-Colonel Ranking, who was appointed so recently as February 11, having resigned on appointment to Oxford.

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THE REV. DR. FAIRBAIRN, Principal of Mansfield College, Oxford, has accepted the Deems Lectureship at New York University this year.

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SIR FRANK E. YOUNGHUSBAND, K.C.I.E., LL.D., has been appointed Rede Lecturer for this year.

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IN the University of London, Dr. E. R. Edwards has resigned his post as Secretary to the University Extension Registrar upon his appointment as Inspector of Secondary Schools under the Board of Education.

Mr. Robin Roscoe, B.A., and Miss Jessie D. Whyte have been appointed respectively Secretary and Assistant Secretary to the University Extension Registrar.

Prof. Walter Rippmann, M.A., has been appointed a Staff Inspector under the University Extension Board in connexion with their conduct of the inspection and examination of schools.

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MR. W. M. GLOAG, advocate, has been appointed Professor of Law in the University of Glasgow, in room of Mr. A. Moody Stuart, resigned.

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MR. W. A. J. ARCHBOLD, M.A., LL.B., Secretary to the Board of Indian Civil Service Studies, Cambridge, has been appointed Principal of the Mahomedan Anglo-Oriental College, Aligarh, in succession to Mr. Theodore Morison.

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THE Registrarship of University College, Aberystwyth, is vacant by the death of the Rev. T. Mortimer Green.

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MR. CHARLES GODFREY, M.A., assistant master, Winchester College, has been appointed Head Master of the Royal Naval College, Osborne, in room of Mr. C. E. Ashford, M.A., who is transferred to the Royal Naval College, Dartmouth.

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MR. G. C. SIMPSON, B.Sc., has been appointed Lecturer in Meteorology and Assistant Lecturer in the Department of Physics in Manchester University.

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MR. FRANK E. A. TRAYES, M.A. Cantab., assistant master, St. Paul's School, London, has been appointed an Inspector of Secondary Schools under the Board of Education.

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THE Head Mastership of Stourbridge Grammar School will be vacant at the end of July next.

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THE Head Mastership of High Wycombe Royal Grammar School is vacant through the sudden death of Mr. G. J. Peachell, M.A.

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MR. VERE COLLINS, B.A. Oxon., assistant master, Mercers' School, London, has been appointed Organizing Secretary of the National Home-Reading Union.

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MR. JOHN PEILE, B.A. Cantab., assistant master, Mercers' School, London, has been appointed assistant master at Aske's School, Cricklewood.

Literary Items. MESSRS. LONGMANS are just commencing the publication of a new "History of England" in twelve volumes, under the editorship of the Rev. William Hunt and Mr. R. L. Poole. Vol. X. (1760-1801), by Mr. Hunt, is promised immediately; Vol. I. (to 1066), by Dr. Hodgkin, and Vol. II. (1066-1216), by Prof. G. B. Adams, will probably follow next month; and among the authors of the other volumes are Prof. Tout, Prof. Oman, Mr. H. A. L. Fisher, and Mr. Sidney Low.

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THE "Harmsworth Encyclopædia," prepared and printed by Messrs. Thomas Nelson & Sons and published by arrangement with the Amalgamated Press, will appear in 40 fortnightly parts of 160 pages each, liberally illustrated (7d. a part). The first three parts show plainly that the compilation is thoroughly fresh and first-hand work, and likely to be most valuable for reference.

* * *

MR. FISHER UNWIN is publishing "Studies in General Physiology" in two volumes, by Prof. Loeb of California University, whose biological discoveries have recently made some stir in the scientific world.

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MR. FISHER UNWIN is also publishing a translation of the famous farce "L'Avocat Patelin," by Mr. S. F. G. Whitaker, from the version prepared by the Abbé Brueys for the Comédie Française in 1706.

* * *

MESSRS. SAMPSON, LOW, MARSTON, & Co. announce a work of nearly 400 illustrations of Old Testament history, reproduced mostly in colour, and partly in monochrome and black and white, from original drawings by M. Tissot—a companion work to M. Tissot's "The Life of our Lord Jesus Christ."

* * *

MESSRS. WILLIAMS & NORGATE will presently publish "School Teaching and School Reform"—a course of four lectures delivered by Sir Oliver Lodge in February to secondary teachers and teachers in training.

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THE Walter Scott Publishing Company are publishing Mr. Walter Macfarren's "Memories: an Autobiography," profusely illustrated with reproductions from his album of autographs of famous musicians.

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THE *Modern Language Quarterly* has completed its seventh volume, with distinction and usefulness. It is indispensable to all that wish to keep abreast of current criticism within its sphere of operations. The complementary review, *Modern Language Teaching* (6d.), makes an excellent start (March) under the editorship of Prof. Rippmann. Messrs. A. & C. Black are the publishers.

* * *

THE new number of the *Paidologist* (February) has several substantial articles, including an elaborate paper on "Nature and the Laws of Fatigue" (with illustrations) by Miss Margaret Drummond, M.A., and the substance of Prof. Findlay's recent address to the Manchester Branch of the Teachers' Guild on "The Personal Influence of the Teacher."

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THE *Zeitschrift für Lehrmittelwesen und pädagogische Literatur*, edited by Dr. F. Frisch, Direktor des Landes-Lehrerinnen-Bildungsanstalt und K.K. Bezirksschulinspektor in Marburg (Steiermark), and published by A. Pichlers Witwe & Sohn, Vienna, makes a very creditable first appearance (January), with able articles and good illustrations (M. 4.20 yearly).

THE Board of Education has issued three fresh volumes of Special Reports on Educational Subjects—Vols. XII., XIII., and XV. (2s., 1s. 8d., 1s. 8d., Wymans)—describing the educational systems of the chief Crown Colonies and Possessions of the British Empire, including Reports on the Training of the Native Races, from the West Indies and Central America to Hongkong.

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THE *World's Work* for March gives a sufficiently optimistic sketch of "London's Great Teaching University," with portrait of Sir Arthur Rücker.

IN consequence of a munificent gift of General. £20,000 for the maintenance and education in the Girls' School of Christ's Hospital of an additional number of girls, the Council of Almoners are prepared to consider applications on behalf of orphan daughters of commissioned officers in the naval or military services of the Crown, Civil servants, clergymen of the Church of England, and members of the legal and medical professions. Candidates can only be admitted between nine and eleven years of age, must be of good character and in sufficient bodily health, and the guardians must be in need of assistance. Forms of application may be had from the Clerk of Christ's Hospital, London, E.C.

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THE General Committee of the Temple Memorial Fund have decided in favour of the erection of a new schoolroom at Rugby "as the best form of a memorial of the late Archbishop Temple." From £10,000 to £12,000 is needed; and fully £6,000 is in hand, £2,300 of which has been contributed by the Rugby masters.

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MR. BROCK'S medallion of the Archbishop will be unveiled in Rugby Chapel on June 24.

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It is proposed to place a window in Radley College Chapel in memory of the late Rev. H. L. Thompson, Vicar of St. Mary's, Oxford, and formerly Warden of Radley. Some £200 is needed. The Rev. the Warden of Radley will receive subscriptions.

* * *

DR. R. P. SCOTT was presented with a solid silver salver and a cheque at the College of Preceptors (March 18) in recognition of his services to educational organization and progress. Canon Bell, who made the presentation, and Sir Philip Magnus, paid high tributes to Dr. Scott's work.

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THE principals of the Normal Correspondence College have awarded gold medals to their five pupils that were bracketed at the top of the list at the last King's Scholarship Examination.

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A COMPANY has been formed to take over Clayesmore School, so as to establish it on a more permanent basis and on a more public footing.

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ADDITIONAL grants for pupil-teachers are announced by the Board of Education: (1) £3 to the rate payable under Art. 24 of 1903 Regulations for each pupil-teacher; (2) £2 to the rate payable under Art. 28 (iii.) of the same Regulations; and (3) £1. 10s. to the rate payable under Art. 28 (b) of the 1904 Regulations.

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A NEW Technical College and Secondary School, accommodating 250 pupils, has been opened at East Ham (March 18).

TEACHING OF GEOGRAPHY IN HIGHER CLASSES.

AT the Evening Meeting of the members of the College of Preceptors on March 15, Mr. J. R. LANGLEY in the chair, Prof. LYDE, of University College, London, gave the following lecture:—

In addressing a meeting of teachers on this subject I should like to dissociate myself from a number of persons who, without having had one hour's experience of ordinary school work, presume to criticize school teaching with all the confidence of ignorance. And, in putting before you what is in the nature of a specimen lesson, I wish to apologize to all except any very young teachers who may be present. There has been a very great improvement in recent years in the school teaching of geography, and it has come almost entirely from inside the profession—not from outside. Official ignorance of this improvement is characteristic, because it owes nothing to official inspiration. It is part of the notable effort made by teachers in recent years to improve their own methods. It began long before the various societies for the improvement of geographical teaching existed at all, and therefore could owe nothing in the first place to them. And I am not aware that it received any valuable encouragement even from the Royal Geographical Society.

As a schoolmaster, a public examiner, and an occasional inspector, I have followed the course of the improvement very closely since the year 1886 or 1887, and I know of only two, or possibly three, outside influences. As far as my knowledge goes, all the teachers who began the movement were using Mr. Chisholm's admirable "School Geography," and owed to it the improved lines on which they taught. In recent times I believe, too, that Mr. Mackinder's brilliant personal work has been inspiring. I have also seen some very good work done by teachers who had been through the Oxford School of Education—I do not mean the Oxford School of Geography.

Otherwise the improvement has come from inside the profession; but I think that it has been greater in junior than in senior teaching, except in the case of teachers who use no text-book. I am, as I have said before in this hall, a firm believer in books—for all classes except the very youngest and the highest—and I am an equally firm opponent of the various modern mechanical "aids" to geography teaching, except in the highest classes. I never used such aids myself; but they have a great attraction for many teachers, and at least they cannot do the harm to the imagination of senior pupils which they undoubtedly do to the imagination of juniors. Further, the seniors can grasp "lectures," and can take the requisite notes without an undue demand on one's forty-five to sixty minutes a week. At the same time, one assumes that the seniors have text-books, brought up from the junior classes, for reference; and one can frame the lecture to suit the corresponding pages of the text-book.

One's general scheme is drawn up, not for casual refugees who come to the school for a few terms to be "finished," but for those pupils whose parents have been wise enough to send them to you young and mean them to stay with you for some years. With all but the very youngest of these little people, when they first come, I assume that you have used a reader—I tried for five or six years to do without a reader, but gave up the attempt—and, if the reader is good, they have read and been taught correct simple ideas of great geographical areas and phenomena. Then, as they come into middle forms, they will have worked at fuller and more complex text-books; so that we may assume they have a considerable body of correct geographical knowledge, which has been acquired in such a way that it has been a perpetual training of the imagination and the reason.

What do you want to do with higher classes? The mental training must still be the same—if for no other reason than that righteousness is always the best policy. So we will continue to work on what we believe to be the most truly educational lines—not only because it is righteous, but also because it pays. A little less information—I don't call it knowledge—is a cheap price to pay for much more mental power. But, with your righteous eye on educational method, you may have the unrighteous one on the immediate future of the pupils, whose school-time is coming to a close. And, while your first aim is to turn out citizens with well balanced imaginations and well developed reasoning powers, you want also—subordinate to that—to turn them out with a good comprehensive grip on the geographical control of economic, historic, and political phenomena: in itself amongst the most interesting and most useful kinds of knowledge.

Now, your senior classes have all the necessary materials, even if latent; they may have forgotten details—and this forgetfulness is such a terrible source of worry, perfectly unnecessary worry, to many teachers, especially to women—but their minds cannot have lost the impress of the educational process gone through in acquiring those details, and the details themselves are easily revived. What you want, therefore, is to focus their knowledge—to help them to get clear, comprehensive ideas of natural geographic units as units, and of these units in relation to other units and the world in general.

For this reason, and with this object, I came to the conclusion that, whatever had to be omitted—a hard saying for over-conscientious teachers, again mainly women, who cannot bear to omit anything—I would not give more than one lesson, or lecture, on each area, and yet would make each area—unless flagrantly wanting in natural geographical unity—co-extensive with an important political country. Even, for instance, in the case of the Balkan Peninsula, it is feasible to treat, say, Serbia as controlling all the great river-valley railway routes, and Bulgaria as controlling all the important military roads across the "buffer" range of the Balkans. That is to say, you will emphasize the personal identity and the international relations of each area.

I do not believe at all in specializing in the geography of higher classes, and I don't believe greatly in introducing much new material. No amount of special knowledge, *e.g.*, of meteorology or cartography or geology or natural products, is as valuable as sound generalizations, in which the previous knowledge of the pupils is revived and brought to a focus. Nor do I think that the class-room is the place for the methodical reading and elucidation of some geographical author, even if he were twice as discursive as "Satan" Montgomery, and if your pupils could afford to buy all his works. I would not go on stuffing pupils with new matter up to their last day at school, any more than I would prepare them for examination without full revision for two or three months before the examination. You do not want to send them out into the world with a mass of undigested facts, which may or may not be digested eventually. You do want to round off their knowledge and unify it—to bring out its greatest possible utility—to make it not knowledge, but power, the power to interpret and use the known and to find out the unknown.

But I need not elaborate this. I feel sure that, whatever differences of method we may have, our aim is the same. And, therefore, it only remains for me to put before you, for your criticism and approval or disapproval, an example of the sort of generalization which I used to give. I choose Japan as the area, partly because of its political importance just now, but mainly because of its geographical position and character. I have no political views to express, even if I wished to express any.

It has been said that Europe, in its present form, is geographically a peninsula of Asia, and that Asia, in its present political condition, is a dependency of Europe; and the curious resemblance of Europe to Asia in some of its most significant features is at least as obvious as the political relations of the various parts of Asia are important. Amongst many other instances of resemblance, one has been specially noted recently—that between the two island kingdoms of Britain and Japan, to windward of their respective continents, in temperate latitudes, with a vast length of coast well provided with good ports, and with large supplies of coal behind these ports. These two Powers between them control the "sea mobility" of Asia, as Russia and Turkey control the "land mobility"; and they administer important agricultural areas, the general tone of which, as judged by the most characteristic creed, is antagonistic to that of the more pastoral areas administered by the Russian and Turkish Powers.

Russian Asia is almost entirely an area of Arctic and inland drainage, in which attempts to develop mobility by water are foredoomed to failure, and the conditions of which favour the rapid spread of climatic phenomena and thus involve great uniformity of climate; its characteristic tone is the Shamanism of its cold deserts.

The hot deserts of the Turkish and Persian area are, on the contrary, distinctively Muhammedan in "tone," and the peninsular and isthmian sites which they occupy abut on border seas, so that their inhabitants become naturally "buffers" between land and sea, continental and oceanic, influences.

The British control of the Indian Ocean rests on a base of agricultural wealth and typical Brahman "tone" in an area the rivers of which rise behind the edge of the great continental tableland, and therefore give access (more or less difficult) from

the oceanic to the continental domain. Eastward the Malay-Polynesian area represents purely oceanic influences; but the indentation of that area by a French territory, in the present state of political alliances, represents practically continental influences.

The fourth great division is typically that of the Yellow man, with a typically Buddhist "tone," and involving both oceanic and continental control, divided between the two most important representatives of the two great branches of the Yellow race; but in the meantime, owing mainly to the civilizing influence of oceanic environment and the political importance of oceanic control, the "lowlanders" have become a real power in Japan, while the Tibeto-Chinese "highlanders" are still stagnating.

By a rough classification, the yellow "lowlanders" may be divided into hunters and shepherds, and in past ages the occupations of the original Japanese, as of all the kindred peoples whose home was in the central lowlands of Northern Asia, would be hunting, fishing, and stock-raising—the typical industries still amongst their "cousins" in Lapland and Finland and in Eastern Siberia. Under conditions equally favourable to hunting and fishing, much more favourable to agriculture, and exceedingly unfavourable to pasture, the Japanese were almost bound to maintain their old skill in hunting and fishing, but to substitute agriculture for pastoral habits. This change, in itself a great one, was the natural result of the much greater change—from the heart of a continent to the isolation of an island home, from a vast extent of lowland to one of the most hilly areas of the Earth; and it was followed by a further change of "tone," by which Buddhism was imposed on Shintoism—the gorgeous on the simple, colour on form.

The islands are a portion of an old shore of Asia, and are formed mainly of very old rock rising to a considerable height out of very deep water. The oldness of the rock suggests a poor soil, but a probability of mineral wealth; and the immense difference of level between the mountain peaks and the neighbouring ocean floor suggests, in such a climate, distinct liability to seismic and volcanic phenomena. The great mass of this old rock is of igneous origin, but of two very different types. The base consists of rock which was cooled very slowly at great depths below the surface of the Earth, and afterwards upheaved by side-pressure due to the cooling of the Earth's crust; such rock so upheaved in such a climate is bound to become very rich in china-clay, and will probably be rich in copper and tin. The superstructure is volcanic, cooled very quickly above the surface of the Earth, and deficient in minerals except sulphur and kindred substances. The relation between the granite base and the volcanic cones makes the passes across the country comparatively low, and affords very picturesque scenic effects—common objects in Japanese art.

It must not be inferred, however, that the volcanic area in Japan is very extensive; the contrary is the case. But the volcanic districts are very distinct, and in the most natural places, e.g., at the two ends of the islands, where mountainous spurs descend into very deep water, and along a curious "broken back" in the centre of the main island. The only volcano of the former class that is particularly interesting is Aso-san, which has the largest crater known in the world; but the latter class contains, between Tokyo (Yedo) and Toyama ("Little Yedo")—so called because of the resemblance of the Noto peninsula to that of Kadsusa—the best known peaks in Japan.

The "Great Ditch," which marks the line of activity, runs from Fuji-Yama ("Heaven"), past Asama-yama, to Tateyama ("Hell"). The precise point on Tateyama from which the most devilish noises and vapours come is called definitely Figoku ("Hell"); like Fuji-yama, it is the objective of countless pilgrimages, and *on dit* that "the view from Hell is as fine as that from Heaven, but 200 feet lower."

Volcanic eruptions seldom occur, but are destructive; earthquakes are daily occurrences, but usually slight. But there are exceptions to both statements. The famous series of earthquakes which in 1891-2 formed a "Little Ditch" parallel to the "Great Ditch," between Mia Ura and Wakasa Bay, included 1,495 distinct shocks at Nagoya and the appalling number of 2,588 at Gifu, every house along the twenty-mile road between the two towns being overturned! And the resultant "Little Ditch" curiously confirmed the local superstition that "Earthquakes are caused by the burrowing of a huge caterpillar."

The latitude of the chief islands and their sea environment work strongly in favour of an even temperate climate, but the position between the huge land mass of Eurasia and the equally

huge ocean expanse of the Pacific involves very marked contrasts: and, though the actual extremes are not great, the islands are cooler and damper than other islands in the same latitude, e.g., the Azores.

The high humidity is due to the narrowness of the islands compared with their length, the position of the mountains so near the coast and at right angles to the two prevailing winds—the N.W. wind outflowing from the Siberian "Pole of Cold" in winter, and the S.E. "Monsoon" reaction in summer—and the warmth of the Kuro Siwo, or "Dark (Blue) Stream." The low average temperature is due partly to the pale (green) Kurile Current, or Chishima Siwo, "Current of the Thousand Isles," and partly to the fact that their land-wind, unlike our warming Sou'-Westers, blows in winter and is icy cold, while their sea-wind in summer tends to lower rather than raise the temperature.

From the position, physical character, and climate of the islands, the lecturer went on to deduce the typical products and scenery, laying special stress on the extent to which dense undergrowth crowds out pastoral grasses—the suitability of the climate and the river water for various textile operations—and the highly developed artistic sense of the people.

Prof. Lyde having replied to questions put to him by members of the audience, a vote of thanks to the lecturer concluded the proceedings.

THE EDUCATIONAL LADDER IN SCOTLAND.

SOME OF THE RUNGS MISSING.

A REMARKABLE address was delivered by Prof. Ramsay, of Glasgow, President of the Classical Association of Scotland, at the general meeting of the Association held in Marischal College, Aberdeen, on March 11. Reserving for another occasion the question of compulsory Greek at Oxford and Cambridge, which "he thought had been put very badly, very falsely, very illogically before the country," he proceeded to speak of "the banishment of the vital secondary subjects—especially classics and mathematics, and to some extent modern languages also—from many of those country schools which had been for generations the pride of Scotland, and especially of the northern counties"; or, if banishment were too strong a word, yet "the discouragement of those subjects, or, at least, the half-hearted and side-door encouragement meted out to them in consequence of the Code of 1903."

THE EDUCATIONAL BÂTON.

Prof. Ramsay, however, acknowledged with satisfaction that in the working out of the Code there had been shown, on the part of those in whose hands their educational destiny lay, a desire to abate somewhat from the extreme rigidity of the terms in which it was set forth, and to recognize somewhat the cardinal principle on which all statesmanlike reform must proceed, viz., that in establishing any new system, with new ends, many of which must be problematical and might prove of doubtful utility, true wisdom consists in preserving, not in wiping away, what has proved itself admirable in the old. Now, he ventured to say that there had been nothing more admirable in the Scottish system of education, nothing so nationally beneficial, nothing so unique, as the fact that every lad of parts, in any part of the country, might have at his own door the opportunity of having his intellectual powers awakened and developed by entering upon the study of those severer subjects, and laying the foundation of that kind of mental discipline, through which alone a man could make the most of the powers within him and rise to positions of usefulness and honour, whether in public or private life. Not every one of Napoleon's private soldiers rose to be a marshal; but, as every one of them was said to have a *bâton* in his knapsack, so he would like to make every young scholar in Scotland feel that he carried an educational *bâton* in the bag that hung upon his back.

Prof. Ramsay recalled the fight against Mr. Lowe's Revised Code, "which knew nothing of higher education, and which recognized no claim for State education at all except for the children of the *bona fide* labouring poor." The Senate of Glasgow University took up the question in 1868-69, pointing out how largely the universities were recruited from parish and other elementary schools, and how widely higher education had hitherto been diffused in Scotland, and making strong protest against the reactionary proposals.

HIGHER EDUCATION IN ELEMENTARY SCHOOLS.

Year by year up to 1872 they agitated against this view; the other universities joined them in deputation upon deputation to headquarters; they quoted, even then, the admirable results produced under the Dick and Milne bequests [in certain north-eastern counties], as showing that the existence of a higher education in a school raised its whole tone and

character; and, more important still, that, as a rule, the schools that were best in their higher work were best in their elementary work also. Well, in the end they succeeded in obtaining the famous words included in Section 67 of the Act of 1872: "that the standard hitherto maintained in the elementary schools of Scotland should not be lowered; and, as far as possible, as high a standard should be maintained in all the new schools to be provided under the new Act." That section had ever since been regarded as the educational Palladium of every Scots boy or girl, giving every one of them the right to have the chance of a higher education in the ordinary schools of the country. There was many a hard tussle to get these words inserted; they should never have gained them at all but through the sympathy of Sir Francis Sandford, who was at that time head of the English Department, and who never failed in sympathy for Scottish education in all its branches.

Prof. Ramsay reproduced some of the striking facts then exhibited by Glasgow University to demonstrate the connexion between the University and the elementary schools.

GLASGOW UNIVERSITY AND ELEMENTARY SCHOOLS.

In the year 1868 they ascertained that out of 568 students in the Arts Faculty no less than 235 had been educated entirely at elementary schools; 130 more had been partially so educated—not counting 49 educated privately or outside Scotland—and only 130 had been entirely educated at secondary schools. Taking the results of all the faculties combined, the proportions were almost the same. Excluding foreigners and those privately educated, 45 per cent. of their students had gained the whole, and 25 per cent. more than half, of their previous education at elementary schools. Not more than 20 per cent. came from secondary schools. Of the whole number of Arts students in that same year nearly one-fourth—22 per cent.—were teachers, many of them already engaged in school work, and nearly the whole of these had been trained at elementary schools. It would be interesting to see how things stood now. He had always carefully noted the school antecedents of his students, and he found that the above proportions remained pretty constant until the passing of the Universities Act of 1889. . . . Thus, taking the period of twenty-five years before the passing of the late Universities Act, students educated entirely at elementary schools distinctly outnumbered those from secondary schools, and, if those educated privately or outside Scotland were omitted, formed nearly one-half of the entire number. What was the state of things now? The state of things now, from causes which they all understood, was that, apart from those who were teachers, the scholar wholly educated at an elementary school had practically been wiped out of existence. In the present session, 1904-5, leaving women students out of account, there were 206 students in the Latin class. Of this number 190 had passed the Higher Preliminary in Latin: the remaining 16 had failed to pass that examination and were attending as private students not qualified for the degree course. Of the 190 students qualified for the M.A. course, 112 had a full course of three years or more at a secondary school, including a few higher-grade schools among the number. Of the remainder, no less than 65 had been pupil-teachers (one an assistant teacher) mostly at elementary, some at higher-grade, schools; 12 students who were not teachers had a mixed education, and only 5 in all, not being teachers, had received their education at public elementary schools. Thus a revolution had been accomplished, and he would like the public to realize its extent.

THE CAUSE OF THE REVOLUTION.

They all knew the main cause of it: it was that the Universities, in the interests of higher education, had imposed a severe test for entrance to the degree course; that the numbers attending the Universities had in consequence been greatly diminished: that schools which were wont to prepare scholars for the Universities could prepare them no more, and that a large class who used to find their way open to the University found it no longer open to them. Meanwhile, the State had done nothing to repair this particular deficiency, except for the benefit of those whom it had thirled to the teaching profession. Instead of that, it seemed willing to withdraw opportunities of instruction in university subjects from schools and districts which enjoyed them before. It was ready to impose on clever boys and girls of twelve, as a condition of higher knowledge, the penalty of exile from their homes; and, instead of building upon the experience of the past and strengthening the teaching of the subjects which had heretofore been found the most fruitful, was giving way to that craze for novelties which was the besetting foible of our time, substituting for the old tried courses new courses of untried educational utility—courses which, as had lately been well said, had been "born of industrial panic."

In order to show how the time-honoured system might have been maintained, Prof. Ramsay referred to "the remarkable and extraordinarily interesting" Report by Prof. Laurie on the working of the Dick Bequest Trust from 1890 to 1904.

THE EXAMPLE OF THE DICK BEQUEST TRUST.

This report was an abiding monument to Prof. Laurie; and he (Prof. Ramsay) could not express too strongly his agreement with all the educational aims and principles set forth in it. How excellent and how simple was the system of the bequest that he had administered! First, a modest

payment for good qualifications on the part of the teacher; second, a modest capitation grant upon the whole number receiving efficient education in higher subjects; third, a further modest capitation grant for passing certain definite examinations; fourth, a satisfactory report upon the work of the school as a whole. And how admirable the results! During the ten years ended December, 1888, an average of 86 boys and girls annually were passed on from the rural schools in the three counties to the more skilled occupations and professions. In 1903 the proportion was the same, except that more scholars went on to the training colleges. In that year the total number of scholars attending advanced classes in the schools of the trust (all qualified by Merit Certificate or equivalent) was 2,609, and these earned between them 1,358 Leaving Certificates of all grades, whether Lower, Higher, or Honours. This report afforded most stimulating, and at the same time most melancholy, reading—most stimulating, because it showed how much could be done in the way of developing the brains of a whole countryside, and of lifting up Nature's *élite* into the higher paths of life, by a very moderate expenditure of money, if only it was expended on wise principles; most melancholy, because it was sad to reflect that in a generation which was all agog for education, which had added millions to our educational budget, no precedent had been taken, no lesson learnt from the administration of a scheme which had stood forth on a small scale as a beacon light to educational enthusiasts for three-quarters of a century; and that at the present moment when the educational age had been extended to fourteen, when thousands of new scholars were, in consequence, being taken into our schools, when there was actually no limit to what the country was ready to pay for educational objects—that at such a moment the latest improvements in our educational laws threatened seriously to turn out of country schools—or of some of them—the very subjects which had given them their pre-eminence. Nay, more: these same studies, on which Scottish brain had been so largely fed and Scottish prosperity so largely promoted, were not even given a definitely acknowledged place as one of the supplementary courses; were not even allowed to rank on an equality with the various subjects—many of them excellent subjects, some of them fancy subjects, and as yet quite untested subjects—which had been introduced into the new system.

"Now what were the reasons for this apparently retrograde movement, for this cutting down of the opportunities of the higher learning open to the country school? How far was it a necessary condition of that better organization and consolidation of our educational system as a whole which we all desired?"

CRITICISM OF SIR HENRY CRAIK.

He read Sir Henry Craik's remarks [made on February 18, at Aberdeen] with great interest. Sir Henry proclaimed himself a believer in classical education; but when he (Prof. Ramsay) read that men who had worked early and late, probably before hours and after hours, to help on a few promising scholars to higher things, and to keep up the reputation of their school, met with no encouragement, but were twitted with having so poor an aim as that of bringing in £6, or £8, or £10 to the income of the school, he felt, he confessed, that the power of official ebilliness had sunk to its zero. Sir Henry further laid great stress on the difficulties in the way of the Department, and he explained the difficulties in the way of the Department created by the sudden influx of new scholars up to the age of fourteen. Now he (Prof. Ramsay) took it that they were all in favour of a better grouping, a better correlation of schools. They had all desired to see secondary schools of every kind better equipped, better differentiated, and drawing to themselves under natural conditions as many scholars as could conveniently attend them. They also fully realized the difficulties created by the sudden influx of new scholars up to the age of fourteen, the great majority of whom must be educated with a view to the lives they would have to lead, and not to any other. But, if many new scholars had to be provided for, was that any reason why scholars of the old class should be worse off than they were before? And might not many of these new scholars be themselves of superior parts, with the ability to rise in life like so many a scholar of old? Did that argument not savour somewhat of the grand old Tory principle that a boy should be educated suitably to his station in life, and not so as to help him to rise above it? And, if so many more were left on till fourteen, was not that a reason why a greater proportion, not a smaller proportion, of the whole number—all who showed early any decided ability—should be given a chance at a sufficiently early age of beginning the higher subjects, so as to have made some good progress in them by the age of thirteen or fourteen? To gather into secondary schools, or into higher-grade schools, as many scholars as possible, and at as early an age as possible, was excellent; but many districts, many homes, had no such school within reach.

PROF. RAMSAY'S SUGGESTIONS.

If, then, promising children could not, and ought not to, be removed from their homes too soon, provision ought to be made in all country districts which had no higher school within reach, to let such pupils have the chance of beginning, before twelve years of age, the higher University subjects—languages, ancient or modern, mathematics, English, and history. Let intelligent Nature study form a part of all courses, but let the special and extra prominence and extra time now given to science, whose educational value has yet to be appraised, be departed from; let

every higher-grade school be allowed to have the option of a language and mathematical course to rank upon an equality with the present commercial science courses; let science be removed as a necessary condition from the course required for the Intermediate Certificate: in short, let the different sets of subjects, the old and the new, be put upon an equality, and treated in the same way financially and otherwise, and he had no doubt whatever which of them would turn out the best men, which would be found to provide the finer intellectual discipline and to supply what was most needed to maintain the intellectual stamina of the nation.

COLLEGE OF PRECEPTORS.

PROFESSIONAL PRELIMINARY EXAMINATION—CLASS LIST.

MARCH, 1905.

THE Supplementary Examination by the College of Preceptors for Certificates was held on the 7th, 8th, and 9th of March, in London, and at seven other local centres, viz., Birmingham, Bristol, Cardiff, Inverness, Leeds, Liverpool, and Manchester. The following candidates obtained Certificates:—

FIRST CLASS [OR SENIOR].

Pass Division.

- | | |
|---------------|------------------|
| Biscoe, V. F. | Pascoe, C. A. L. |
| Corke, D. T. | Pugh, A. F. |
| James, H. G. | Slocombe, B. A. |
| Lewis, R. M. | Thompson, J. P. |

SECOND CLASS [OR JUNIOR].

Honours Division.

- | | |
|------------------------|----------------------------|
| Furse, F. L. a. | Marle, S. h.f. |
| Harrison, H. | Moillicet, A. K. l.gr. |
| Hill, R. G. a.gm. | Phillips, T. H. |
| Kemball, C. H. h.a.al. | Tilling, H. W. a.f. |
| Linton, E. C. h.l. | Wickham, F. St. B. f.l.gr. |

Pass Division.

- | | | |
|-------------------------|-----------------------|---------------------|
| Alexander, E. S. | Gilbertson, H. M. | McNabb, C. E. |
| Alexander, H. G. | Gillett, A. S. | McRae, D. f. |
| Bates, H. J. | Gould, E. F. | Norton, W. J. |
| Bennett, G. R. | Green, Alfred | Pern, A. S. |
| Berne, V. A. f. | Green, Aylmer | Pochin, C. H. G. |
| Birtwell, H. E. C. | Grellier, N. | Pomeroy, J. M. |
| Bowen, T. R. | Haggarty, R. G. al. | Pratt, R. C. |
| Bower, H. E. | Hall, E. W. | Pritchard, F. W. R. |
| Brown, B. J. | Hallinan, W. E. | Pywell, C. H. |
| Brown, H. | Herbert, A. H. | Ruben, E. |
| Brown, J. P. | Hill, J. H. | Rycroft, A. T. |
| Burch, H. J. | Hughes, G. T. D. | Saffer, T. a. |
| Burton, T. A. | Hughes, R. C. | Salter, P. H. |
| Brockelbank, Miss M. f. | Hume, T. C. | Saxton, S. |
| Butterfield, A. | Jackson, R. B. | Scales, W. H. |
| Cline, E. C. | Johnson, B. S. | Scholfield, A. J. |
| Cregan, T. C. | Jones, F. J. | Shaw Crisp, C. |
| Crowther, E. C. | Jordan, J. B. | Shaw Cross, C. F. |
| Dainty, J. E. | Kent, H. T. | Smith, S. H. |
| Donston, J. A. | Killard-Leavey, T. J. | Spill, A. E. V. |
| Dunn, S. S. | Laidler, P. W. | Taylor, H. A. |
| Dymott, G. V. | Laing, C. Y. | Thomas, W. H. |
| Falkner, S. | Lang, L. W. | Thornton, H. |
| Faraday, W. B. M. | Langdon, W. M. | Toombs, E. |
| Faulkner, C. R. | Leatherby, L. H. | Webb, J. D. |
| Fripp, J. T. | Lethbridge, P. L. | Wells, F. |
| Fullerton, W. F. H. | Llewellyn, G. | West, T. R. |
| Gardner, S. M. | Mackenzie, I. F. | Wild, H. W. |
| Garner, J. K. | May, G. M. | Yood, R. |
| Gibson, J. T. S. | Maywhort, J. H. | |

N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively:—

- | | |
|-----------------|----------------------|
| a = Arithmetic. | gr = Greek. |
| al = Algebra. | h = English History. |
| f = French. | l = Latin. |
| gm = Geometry. | |

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on March 18. Present: Sir Philip Magnus, Vice-President, in the Chair; Prof. Adams, Mr. Armitage Smith, Mr. Barlet, Rev. Canon Bell, Rev. J. B. Blomfield, Mr. Bowen, Mr. E. A. Butler, Mr. Charles, Mr. Easterbrook, Mr. Eve, Mr. Hawe, Miss Jebb, Mr. Kelland, Mr. Ladell, Miss Lawford, Dr. McClure, Rev. G. E. Mackie, Mr. Millar

Inglis, Mr. Morgan, Mr. Pinches, Miss Punnett, Mr. Rule, Rev. Dr. Scott, Mr. Starbuck, and Mr. Storr.

The minutes of the last meeting were read and confirmed.

The Secretary reported the cases of a number of persons to whom the privileges of membership of the College had been accorded under Section II., Clause 5, of the By-Laws, but who were found not to be at present engaged in teaching in secondary schools. The names of these were directed to be transferred to the list of holders of diplomas who are not members of the College.

The Report of the Examination Committee was adopted, and the following appointments to examinerships were made:—Prof. J. W. Adamson, B.A., in Theory and Practice of Education; Mr. F. Ritchie, M.A., in Latin; Dr. S. Hirsch, in Hebrew; and Mr. B. Proper, in Dutch.

The report of the Special Committee appointed to consider the operation of the Education Act of 1902 in the case of private and proprietary schools was adopted.—The report stated that, on the whole, the evidence received seemed to indicate that many of the new Authorities misapprehended the nature of the duties laid upon them by the Act so far as concerned secondary education. They appeared to consider it their duty to provide such education within their area, rather than to survey the existing supply and then to protect and link together all existing efficient schools, only providing additional schools where an actual lack of them existed. The latter policy was evidently that contemplated by Parliament, and must appear, on grounds both of equity and economy, the right course for Local Authorities to follow. It was resolved that this point of view should be urged upon Local Authorities whenever opportunity should arise.

An interim report of the representatives of the College on the Joint Federation Conference Committee was received.

Mr. J. Lawrence, M.A., D.Lit., and Mr. G. T. Moody, D.Sc., F.I.C., F.C.S., were elected members of the Council.

The following persons were elected members of the College:—

- Mr. T. A. D'Arcy, L.C.P., 21 Clyde Road, Redland, Bristol.
- Mr. C. H. Edley-Morton, Lytham College, Lytham, Lancs.
- Mr. A. Howes, A.C.P., 63 Bath Road, Cinderhill, Bilston, Staffs.
- Mr. F. E. Pierpoint, 65 Tufnell Park, N.
- Mr. C. Taylor, 32 Langdon Park Road, Highgate, N.
- Mr. B. L. Tourle, A.C.P., 66 Ranelagh Road, Tottenham, N.

The following books have been presented to the Library since the last meeting of the Council:—

- By EDWARD ARNOLD.—Steps to Literature, Books I.–VI.; Nettell's Introduction to Elementary Statics.
- By the CLARENDON PRESS.—Chessex's De la Landelle's Une Haine à Bord; Goodridge's Gautier's Voyage en Espagne.
- By METHUEN & CO.—Austen's Sense and Sensibility; Bacon's Essays and The New Atlantis; Bunyan's Pilgrim's Progress; Gibbon's Decline and Fall of the Roman Empire, Vol. I.; Graves's Translation of the Meditations of Marcus Aurelius; Shakespeare's Works, Vol. I.
- By RELFE BROS.—Walker and Carter's Local Examination History of England.
- By RIVINGTONS.—Hartog's Anecdotes et Récits; Longland's French Unseens (Junior, Book II., and Senior, Book II.).
- Calendar of the University of Liverpool.

FOUR-FIGURE LOGARITHMS.

By R. F. DAVIS, M.A.

THE advantage of the use of these tables is very strikingly illustrated by the following question, which is taken from actual business experience. A comparison of the two methods of calculation leads to the conclusion that the first is more compact and less liable to error than the second, which is that adopted by the ordinary business clerk:—

“Find the cost of a Turkey carpet measuring 13 ft. 7 in. by 10 ft. 3 in. at 16s. 6d. the square yard.”

Solution I. (worked by logarithms).

$$\begin{aligned} \log 163 \text{ (inches)} &= 2.2122 \\ \log 123 \text{ (inches)} &= 2.0899 \\ \log 198 \text{ (pence)} &= 2.2967 \\ &A = 6.5072 \\ &1.1060 = \log 12.76 \end{aligned}$$

Answer £12. 15s. 2d.

A is the log of $1/(36 \times 36 \times 240)$, and is kept tabulated for all calculations of this type.

Solution II. (worked by duodecimals).

13	7				
10	3				
135	10			15 at 16s.	= 12 0 0
				15 at 6d.	= 0 7 6
		3	4	5 at 1s. 4½d.	= 0 6 10½
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REVIEWS.

FROM SCANDINAVIA TO JAPAN.

"Cambridge Historical Series."—(1) *Scandinavia*. By R. Nisbet Bain. (2) *Europe and the Far East*. By Sir Robert K. Douglas, Keeper of Oriental Printed Books and MSS. at the British Museum, and Professor of Chinese in King's College, London. (7s. 6d. each. Cambridge University Press.)

(1) A very short chapter sketches the course of events down to the accession of Christian II. of Denmark in 1513, at which point Mr. Nisbet Bain expands the treatment, furnishing a reasonably ample account of the political history of the three kingdoms down to 1900. He has already traversed considerable parts of the subject in other esteemed works, the promise of which is most creditably fulfilled in the matter and the form of the present volume—the last nine pages excepted. He shows himself quite competent to deal with the authoritative documents in Russian and Polish as well as in the languages of Denmark, Norway, and Sweden, and to set forth the significance of the movements in plain and agreeable narrative. The interest is extremely varied—political, constitutional, and personal: "the whole story has its own peculiar dramatic interest, for it is a chronicle of the ambitions and the achievements of a long series of exceptionally great men, master magicians of statecraft, who wrought marvels with the feeblest material resources"; and there are incidental flashes of romance. Yet, in spite of the extraordinary qualities and achievements of leading men, the book appears to Mr. Nisbet Bain but "the history of the frustration of a great Baltic Empire." The Stockholm Massacre (1520) drove a fatal wedge of national hatred between Sweden and Denmark at a time when political divergences seemed capable of friendly adjustment, and eleven fierce wars through a couple of centuries wasted the strength of both nations while the Baltic lands from the Weser to the Vistula lay open to incorporation in a united Scandinavian State. Still, we must stop to ask what the people of the Baltic lands would have thought of the matter? At the same time, "What might not have been effected by Sweden and Denmark together—two sister kingdoms with the same religion, similar institutions, and practically the same language—when, notwithstanding their mutually obstructive and destructive rivalry, one of them (Sweden) actually succeeded in establishing for a time an Empire of the first rank—an Empire only destroyed by the banded might of Eastern and Central Europe after a twenty years' struggle?" It is amusing to be reminded of a declaration of war by Sweden against Great Britain on November 13, 1810.

It is only at a late period that Norway comes into the foreground. At the accession of the heroic and unfortunate Christian IV. of Denmark (1588), Mr. Nisbet Bain tells us, "the detachment of Sweden had been more than compensated for by the absorption of Norway"; and some three-quarters of a century later, at the Revolution of 1660, "Norway ceased to be a subject principality," and "constitutionally was placed on an equality with Denmark, united with but not subordinate to it." True enough, Christian's (or rather his Rigsraad's) Charter (1536) pronounced Norway "a dependency of the Danish realm and Crown for all time"; but Mr. Nisbet Bain himself points out that "nevertheless this provision remained a dead letter." The "absorption," then, and even the "subjection," of Norway need to be taken with substantial qualification—if, indeed, the terms ought to be used at all. The administration, however, was common, and in Danish hands, and the Danish obstruction of the far-seeing plans of Governor-General Gyldenlöve (1664–79) is significant for the later course of national aspirations, which were not formally realized till 1814. It is at this point (1814) that we begin to distrust the guidance of Mr. Nisbet Bain. He seems here to lose sight of the fundamentally important intention of the series: Dr. Prothero says that "the series is intended for the use of persons anxious to understand the nature of existing political conditions." Now when Mr. Nisbet Bain speaks of "a semi-foreign dynasty imposed upon Norway by force" we quite recognize that Karl Johan (Bernadotte) had bigger battalions in the background at the Convention of Moss, but at the same time his acceptance of the essential provisions of the Eidsvold Constitution shows a full Norwegian counterpoise, and the preamble of the Act of Union expressly states that the union was accomplished "not by force of arms, but by free conviction." Mr. Nisbet Bain says that ever since the Union Norway has

"persistently endeavoured to obtain absolute political equality with Sweden, even at the risk of a rupture." But we are not aware that Norway has claimed anything that she is not entitled to claim, or that, in making claims, she has ever departed from constitutional procedure. Both the Constitution and the Act of Union recognize Norway as "a free, independent, indivisible, and inalienable kingdom, united with Sweden under one king." What have been the bones of contention? Take the diplomatic and consular services. Mr. Nisbet Bain speaks of the "perfectly legitimate declaration" of the Swedish Government "that the consular and diplomatic unity of both countries must be regarded as a condition precedent to any reform of the Act of Union." But the Norwegians do not want to "reform" the Act of Union; and the opposite declaration on the part of the Norwegian Government would be no less "legitimate." There is nothing about consular and diplomatic unity in the Act of Union, and the demand for consular and diplomatic separation is perfectly constitutional. At first the consular and diplomatic affairs of Norway were tacitly left in charge of the Swedish Foreign Office (just as they might have been entrusted to any other foreigners for convenience), no difficulty appearing at the time likely to arise; but Norway has never renounced her right to a separate system. On the contrary, she has steadily asserted it, and Sweden could not deny it. Mr. Nisbet Bain, writing for the instruction of readers as to "existing political conditions," actually tells us that "a separate consular service for Norway has (1903) been conceded." But how "conceded"? The two Governments came to an agreement, and made an arrangement for carrying it out; but the scheme was wrecked by Swedish hands on the details of execution, and now the position "conceded" in 1903 is the burning question of the day. Again, there is the "flag" question. This is much too complicated for adequate discussion here, and perhaps limits of space prevented Mr. Nisbet Bain from making the meaning of the statute of 1844 as clear as the late Prof. Getz has done. But how the statute of 1898, which took the symbol of union out of the commercial flag, can be described as "the unconstitutional decree of the Storthing" is beyond our understanding; and the King's sanction of its promulgation, though he disagreed with it, was entirely constitutional (Clause 79). Mr. Nisbet Bain touches very closely the real cause of all the trouble between the two countries when he speaks of "the strong Conservative element in the [Swedish] Rigsdag," which "has led it to regard with disfavour every liberal project of constitutional and electoral reform" at home, and, he might have added, fostered an aggressive desire to lord it over the "free and independent" kingdom of Norway. The obscurantists of the Rigsdag naturally enough fulminate offensively about "the Norwegian rebels," but Mr. Nisbet Bain, if he must quote them, should at least have pointed out that the expression is wholly at variance with the facts. It is very unfortunate, at the present juncture, that he should not have seized the opportunity of presenting to the British public—what is so much needed—a really satisfactory account of the relations between Norway and Sweden. Let him rewrite his last nine pages, not in the light of deceptive party representations, but on the basis of constitutional facts, and then our approval of his volume will be very cordial. The five maps are most useful.

(2) Unhappily we must also join issue with Sir Robert Douglas on a portion of his volume. The work is substantially an account of Far Eastern history, especially in relation to Europe, during the past three-quarters of a century, a brief sketch bringing events down to the beginnings of continuous Western intercourse with China and Japan. Sir Robert's narrative is fluent and vivid. What we regret is that he should not have revised his earlier views of certain very important episodes in the British dealings with the Chinese in the second generation of last century. The events that led up to and landed Great Britain in the first and second Chinese Wars may fairly be said to influence even now the relations of Great Britain and China; and, as Dr. Prothero, the editor of this excellent historical series, admonishes us that "the real significance of contemporary events cannot be grasped unless the historical causes which led to them are known," we are compelled to look more closely at the treatment of such episodes of living influence.

The handling of the miserable mission of Lord Napier (1833–4) first brings us to an obstinate stand. Lord Napier was sent out as a specially impressive British Superintendent of Trade at Canton—the only Chinese port then open to British commerce—with instructions to see whether British trade might not be extended

to other Chinese ports, for which object "the establishment of direct communication with the Imperial Court of Peking would be desirable." Sir Robert Douglas tells how the Chinese Governor of Canton "contemptuously rejected" Lord Napier's letter announcing his arrival, issued notices denouncing him as "a barbarian eye" and otherwise, and published a shockingly derogatory proclamation styling him "a lawless foreign slave," "a dog barbarian of an outside nation," and so forth; and how the Chinese, after gaining their main contention, "inflicted every possible annoyance upon him, and so harassed him, mentally and bodily, that he reached Macao only to die" (October 11, 1834). This is lamentable enough, certainly; and we at once look for the Chinese version of affairs. But Sir Robert merely quotes part of the Governor's proclamation (without the events that led up to it). Well, here is the essential part of Sir Robert's quotation:

Being an outside savage superintendent and a person in an official situation, you should have some knowledge of propriety and law. . . . Can you not obey the regulations of the Empire? You presume to break through the barrier passes, going out and in at your pleasure, a great infringement of the rules and prohibitions. . . .

Now, is this true, or is it not true? Sir Robert, unfortunately, does not examine into the truth of these allegations; but he does not deny them: they cannot be denied. Is it, then, to be said in history that even a British officer—a British lord—trampling upon "the rules and prohibitions" of a foreign State in one of its principal towns, does not deserve to be handled with scant ceremony? What did Lord Napier himself say, in a letter to the Home Government? This:

Four edicts have been let off against me for landing without a red chop, or permit. . . . Suppose a Chinaman, or any other man, were to land under similar circumstances at Whitehall, your Lordship would not allow him to loiter as they have permitted me.

Sir Robert Douglas represents the Chinese as oppressive; Lord Napier himself acknowledges that they have treated him with laughable forbearance. Moreover, did not Lord Napier urge the Government to "an undertaking" that would be "worthy of the greatness and power of England"—an undertaking that "presupposed all the horrors of a bloody war against a defenceless people"? Sir Robert, we must frankly say, wastes pity upon an officer of this temper. We have no space to set out the successive steps of this disgraceful episode, but we invite Sir Robert and (with more hope) his editor to consult the public records on the matter, and do historical justice, at whatever cost of patriotic feeling.

As to the real cause of the first Chinese War, Sir Robert is indistinct. While he admits that "the Chinese Government was evidently sincere in its desire to put an end to the opium traffic," and cannot question the rightness of their policy or the propriety of the action of Lin in seizing the 20,283 chests of opium, one cannot but feel that his narrative diverts attention from opium as the real cause of the war, by putting forward miscellaneous acts of violence, "the obstinate pride of Lin" (with tactical mistakes that have had curious parallel since), and the natural determination of the Chinese to keep out the British, or to control their licence of action. A "history" ought to set out very explicitly the origins of such a far-reaching event.

Again, as to the second Chinese War, the real facts of origin are not distinctly and pointedly presented; and the occasion of hostilities is not historically stated. "A British lorcha named the 'Arrow' . . . How 'British'?" There was nothing British about her, except the master, who was not aboard at the time of the Chinese visit, and the flag, which she had no right to hoist. The lorcha was properly overhauled as a Chinese piratical craft. Commissioner Yeh acted entirely within his rights. The occasion of this war was contemptible and unjust; and the cause is not far to seek in the Correspondence relative to Lord Elgin's mission.

We deplore the strangely perverse—mistakenly "patriotic"—treatment of so important a section of the volume, and we cannot doubt that it will be remedied in a second edition. The bibliography is extensive and serviceable, and there are four very welcome maps.

SIX GREAT ENGLISHMEN.

Great Englishmen of the Sixteenth Century. By Sidney Lee, Litt.D. (7s. 6d. net. Constable.)

The contents of the volume are based on a series of eight lectures delivered by Dr. Lee at the Lowell Institute, Boston, in the spring of 1903; and, although they embody fuller details and the fruits of much original research, they are specially fitted "to

interest the cultivated reader of general intelligence rather than the expert." No doubt the book will soon be put into a popular edition, which will spread its influence much more widely, and attract very general attention to the extraordinary achievements of the men selected for portrayal; but even in its present liberal outfit it will make a great impression. The introductory chapter, which is practically new, sketches comprehensively and firmly the intellectual spirit that characterized the sixteenth century, with an analysis of the causes of the awakening and an indication of the ethical paradox of the era. The six representative men are More, Sidney, Raleigh, Spenser, Bacon, and Shakespeare—very nearly in the order of ascending greatness. Shakespeare obtains an additional chapter, treating of the foreign influences on his work, direct and diffused. There is no need to go into details: the biographies are based on the most recent knowledge and worked out with a steadily cautious intellectual restraint, which is nowhere more conspicuous, as it is nowhere more necessary, than in the treatment of Shakespeare's career and of the foreign influences on him. Dr. Lee gives up the paradox of More's life: "that the man who, by an airy effort of the imagination, devised the new and revolutionary ideal of 'Utopia' should end his days on the scaffold as a martyr to ancient beliefs which shackled man's intellect and denied freedom to man's thought is one of history's perplexing ironies." Yet his function of biographer should have impelled him to an attempt at analysis: the case of More's friend, Erasmus, would suggest a tolerably fair parallel; and, indeed, the basis of some hopeful inquiry may be found in Dr. Lee's account of More's experiences at Oxford and during his first years at the Bar. Sidney and Raleigh, with all their literary interest, engage us on the practical side of the activities of the time, exhibiting the potency of the chivalrous and the daring, in spite of no great direct permanent achievement, and, in the case of the latter, in spite of rebellious impulses against the barriers of legality and morality. Spenser's work, of course, "is an inexhaustible fountain of poetic inspiration, and none can define the limits of its influence." "The intellect of both Shakespeare and Bacon may well be termed miraculous," but that both intellects "were housed in a single brain" Dr. Lee pronounces "an irresponsibly fantastic dream, which lies outside the limits of reason." Highest of all he places Shakespeare's "mighty and unique achievement," illustrating it on the lines of his separate study of the poet's life, with fresh additional points of suggestion. If not always penetrating in criticism, the volume shows very careful, industrious, discriminating, and to some extent original work; and it is written in a simple and quietly interesting style. The six portraits are excellently reproduced, and are very welcome.

GENERAL NOTICES.

MATHEMATICS.

First Lessons in Observational Geometry. By Mrs. W. N. Shaw. (2s. Longmans.)

In a series of lessons supposed to be given to a class of children of eleven or more years of age, Mrs. Shaw has shown admirably the kind of instruction suitable for the preliminary course in geometry about which we have so often heard of late. Much of the want of success which has marked the past teaching of the subject is traced by the writer to the persistent attempt to dissociate geometry from all other known sciences by considering it from the beginner's standpoint, as if purely deductive in its process, whereas, in reality, inductive methods should be allowed to play, as elsewhere, an important part. Even if it be admitted that an untaught child is certain to become acquainted with numerous geometrical truths, such knowledge does not, and cannot, constitute a sufficient preparation for deductive research; no desultory acquirement of isolated facts can properly take the place of a more or less continuous series of observations directed so that the results may lead to the formulation of important principles. The writer shows in her lessons how fully she realizes the truth that in ideal education there is an imperative demand for consistent and constant effort to obtain from the pupil the raw material out of which knowledge in finished form is to be fashioned. Teachers of geometry—and other teachers also—will find the pages of Mrs. Shaw's little book very interesting and very suggestive, especially if they will remember that the writer's aim is to indicate useful methods rather than to prescribe a definite course of study. A most valuable hint is conveyed in the advice that instruction such as that exemplified should not be allowed to progress too rapidly. The facts of geometry, we are reminded, are wont to present themselves in quick succession, and there is a great risk of their being but imperfectly understood, unless care is taken to dwell sufficiently long on each.

The Theory of Determinants. By Robert Forsyth Scott, M.A. Second Edition, revised by G. B. Mathews, M.A., F.R.S. (9s. net. Cambridge University Press.)

The new and revised edition contains some interesting additions to the text. The reviser, Prof. G. B. Mathews, has been very successful in his attempt to accomplish his task and at the same time to preserve the essential character and scope of the original work. Besides several preliminary pages, written with a view to lessening the difficulty of a first approach to the subject, the fresh matter includes important chapters devoted to the discussion of the arithmetical properties of determinants, to the consideration of determinants of infinite order, and to the elementary investigation of the theory of bilinear forms. The substitution of the early history for the bibliography of the subject is also noteworthy, for, with the reviser's desire not to increase materially the size of the work, space for both history and bibliography could not have been found; and the bibliography may be readily obtained by consulting Dr. Muir's excellent and widely circulated text-book.

The Teacher's Blackboard Arithmetic, Part I. By "Tact." (1s. 6d. Blackie.)

The little book will probably be of considerable use to many teachers, and more especially to those as yet inexperienced in the art of imparting to young pupils the first principles of number and arithmetic. The author has evidently given very careful thought to his subject, and makes a number of valuable suggestions.

ENGLISH READERS.

Messrs. Horace Marshall & Son issue the *Temple Infant Readers*—a series of three books (4d., 4d., and 6d.), constructed mainly on the principle of exercise on the various vowels successively, graduated with care, and tastefully got up.—Their *Preparatory Temple Reader*, edited by Miss C. L. Thomson (1s. 6d.), is intended for children of seven to nine, and consists mainly of folk-lore stories and other prose and verse passages more or less tinged with mystery and romance—very attractive reading. The numerous original illustrations are in delicate style, the type is bold and round, and the binding is flexible.

The New Temple Reader, edited by E. E. Speight, B.A. (1s. 6d. net, Horace Marshall), is meant to form "an introduction to the comparative study of literature." The passages are chosen from countries wide apart, in order "to illustrate the progress of the main stream of literature down the centuries." They will widen the outlook, and attract by their freshness and power.—*Hakluyt's English Voyages*, selected and edited (with introduction, notes, and glossary) by E. E. Speight, B.A., F.R.G.S. (2s. 6d., Horace Marshall), a book of stirring adventure, is sure to be read with avidity. Sir Clements Markham, in an appreciative preface, says: "No one has ever told these stories so well as Richard Hakluyt"; and "for Britons his narratives are the fitting and best introduction to the study of geography." The illustrations (mostly ships and animals) and maps, by R. Morton Nance, are curious, interesting, and appropriate.

Macmillan's *The New Globe Readers, Primers I. and II.* (4d., 5d.), *Infant Readers, I. and II.* (6d., 8d.), and *Book I.* (10d.)—the first volumes of a fresh series—are all nicely and substantially got up. In the Primers and Infant Readers the uses of the vowels are very slowly followed; good coloured pictures are abundant; and special attention is drawn to letters and words by the device of coloured ink—the advantage of which has been found, in American experience (as we have seen), to be doubtful. Book I. is in common form, with illustrations uncoloured. The volumes are all very good of their class, and offer a fresh variety of material.

Messrs. George Bell & Sons publish *The York Readers*. First there are *The York Primers, Nos. 1 and 2* (3d., 4d.), with lessons closely adjusted to the vowel scheme, and well graduated, though somewhat rapid. Next an *Infant Reader* (6d.), which seems difficult enough, but the matter may lighten the difficulties. Then an *Introductory Reader* (8d.), and *Book I.* (9d.), both of which are well conceived and very satisfactory. All the volumes are effectively illustrated, the Primers wholly, the others partly, in colour. The series is a very promising one.

Messrs. Jack add three more volumes to their very interesting "Round the World" series of Geographical Readers: (1) *The British Isles* (1s. 4d.), (2) *Africa* (1s. 6d.), and (3) *Asia* (1s. 6d.). The selection of matter is very good, the text is fluently written, and maps and illustrations are abundant and generally serviceable. Occasionally the lack of special knowledge grates on one. For example: "Delhi was recovered by General Nicholson" (a popular blunder); the first Chinese War did not break out in 1841, nor did it arise because "English merchants were subjected to very bad treatment"; and it is very questionable indeed whether the Red Comyn was Bruce's "betrayed." The geographical detail makes the text of (1) read somewhat disconnectedly. But they are excellent readers.—The first of "Jack's Concentric Histories" is *Our Island's Story—Step I.: Simple Tales simply told* (1s.). The subjects are either important or attractive to the imagination, and they are suitably presented. There are numerous illustrations, some of them rather poor.

ANNOTATED ENGLISH CLASSICS.

Dent's "Temple Series of English Texts for Schools."—(1) *Ivanhoe* (Scott). Edited by George L. Turnbull, M.A. (2) *The Faery Queene, Book I.* Edited by Prof. W. H. Hudson. 2s. (3) *Samson Agonistes* (Milton), and (4) *The Princess* (Tennyson). Edited by A. J. Grieve, M.A. 1s. 4d. each. (5) *The Lay of the Last Minstrel* (Scott), edited by J. W. Young; and (6) *The Lady of the Lake* (Scott), edited by Flora Masson.

All these volumes are tastefully got up, and attractive in form; and (1), (5), and (6) have a number of good illustrations. The introductions and notes furnish every necessary assistance, and their literary character is generally of a superior kind. The volumes are welcome additions to a useful and agreeable series.

(1) *Helps to the Study of Milton's Areopagitica and English Sonnets.* By C. W. Crook, B.A., B.Sc. (Ralph, Holland, & Co.) (2) *Helps to the Study of Milton's Paradise Lost (Book VI.) and Milton's Lycidas.* By Alfred L. Cann, B.A. (2s. Ralph, Holland, & Co.) (3) *Milton's Paradise Lost, Book VI.* Edited by A. E. Roberts, M.A. (1s. Blackie. Junior School Milton.) (4) *Milton's Areopagitica.* Edited by H. B. Cotterill, M.A. (2s. Macmillan.) (5–8) Normal Press issues: (5) *Milton's Paradise Lost, Book VI.*, edited by A. E. Ikin, B.Sc. (Lond.), L.C.P. (1s. net); (6) *Milton's Sonnets*, edited by the Rev. E. A. Phillips, M.A. (6d. net); (7) *Milton's L'Allegro and Il Penseroso*, edited by J. H. Boardman, B.A. (Lond.), L.C.P. (1s. net); and (8) *Milton's Lycidas*, edited by the Rev. E. A. Phillips, M.A. (1s. net).

(1) and (2) are especially thoroughgoing editions; between introductions, footnotes, and appendixes, they explain everything that can possibly require explanation, and tabulate points that ought to be taken in connexion. We should have been content with less, but the work is really very well done. Both books are interleaved.—(3) is also sufficiently exhaustive, with a superior literary touch.—(4) Mr. Cotterill's introduction amply and agreeably places the reader in position to grasp Milton's position and purpose, and his notes serve to bring out the meaning of the text, while he "gives a wide berth to philological and grammatical disquisitions." A useful chronological summary for the period of Milton's life is appended. A practical and sensible edition.—(5–8) have the usual characters of the Normal Press publications. The introductions and notes are full, and likely to be helpful.

Macmillan's "English Classics."—(1) *Selections from Tennyson.* With Introduction and Notes by F. J. Rowe, M.A., and W. T. Webb, M.A., Professors of English Literature, Presidency College, Calcutta. (3s. 6d.) (2) *The Cup* (Tennyson). With Introduction and Notes by H. B. Cotterill, M.A. (2s. 6d.) (3–6) Scott's *Fortunes of Nigel, Ivanhoe, The Talisman, and Woodstock.* (2s. 6d. each.)

The notes of (1) are very full, but, at the same time, interesting; and we should hesitate to curtail them. They imply assiduous study, and, even where not exactly necessary, will repay reading. Mr. Cotterill imposes on himself (2) more restraint, but gives adequate explanations of classical terms and allusions, and of unusual modes of expression, and generally satisfies all reasonable expectations in scholarly form. The Scott volumes are very attractively printed, and contain the author's notes, as well as useful introductions and editorial notes; and 3, 5, 6 have also some pertinent notes by Mr. Andrew Lang. The series is an excellent one in all respects.

Two pretty volumes, handsomely printed and strongly bound, usher in the new series of "Longmans' Class-Books of English Literature": (1) *The Man born to be King*, and (2) *The Story of the Glittering Plain*, both by William Morris (1s. 4d. and 1s. 6d.). Such modern works afford a very welcome refreshment in school literature, in spite of artificial prose and facile and rough verse. The introductions are partly biographical, partly summary accounts of the text. Very brief notes are appended.

HISTORY.

The British Nation: a History. By George M. Wrong, M.A., Professor of History in the University of Toronto. (5s. ro. Appletons. Twentieth Century Text-Books.)

Prof. Wrong has a large outlook: he thinks that "Mr. Green's phrase, the English People, hardly covers the whole range of the history of the British nation." He presents the salient features in remarkable fullness, considering his space. This he accomplishes by judicious selection of the points emphasized. While keeping political development prominent, he gives about one-third of his chapters to social life in multifarious aspects. The biographical element is skilfully used. Here and there an old false note is struck, or the expression is insufficiently distinct, but, on the whole, the narrative is well up to date, and it is interestingly and effectively written. There are 291 illustrations, including numerous portraits; some, but a very small proportion, are scarcely satisfactory; generally, they are good and useful. There are also genealogical tables (seven), full-page maps (six), and maps and plans in the text (seventeen). Altogether, the work is extremely good, and it is furnished forth liberally and substantially.

The Early History and Growth of Calcutta. By Raja Binaya Krishna Deb. (Rs. 5; or 7s. 6d. Calcutta: R. C. Ghose, 106/1 Grey Street.)

The historical interest awakened in the collection of materials for the recent biography of Raja Binaya Krishna's famous ancestor, Maharaja Nubkisen (Navakrishna) the friend of Warren Hastings, has led to the present work. The Raja narrates vividly and in much detail the original conditions of the place, the early growth of the city, the social institutions, the civil and criminal judicature, trade and commerce, the Press, and so forth; and in various chapters he carries the story a considerable way down, sometimes to the present day. He has evidently laboured with a diligence that is not popularly associated with Rajas, and has forged yet another enduring link of honourable service between his family and the city. The volume is handsomely furnished forth.

Cities of India, by G. W. Forrest, C.I.E., ex-Director of Records to the Government of India (5s. net, Constable), is a reissue, substantially and chastely got up, with some sixty excellent illustrations. The description is most attractive, Mr. Forrest weaving into it a great deal of very interesting lore, historical, archæological, social, romantic, &c., gathered from wide reading and experience. We do not remember any book that will bring the principal Indian cities more vividly before the mind of the home-staying public. We wish Mr. Forrest had spared half-a-dozen lines from his glorification of Nicholson to simple mention of a no less heroic soldier, who had very much more to do with the taking of Delli; that he had omitted some ill-advised remarks about "a seditious press" and the mortal danger of "Liberal ideas"; and that he had struck out such banal irrelevances as that "there is a good deal to be seen in Madras." But, withal, it is a very able and agreeable book.

Messrs. Constable also reissue in a handy and attractive form *The Fight with France for North America*, by A. G. Bradley (3s. 6d. net), with ten illustrations (half of them portraits) and six very useful maps. There is much original work of excellent quality in this volume, and it is written in an easy and agreeable style. It should be placed in all school libraries. The general reader, too, should not overlook it.

MODERN LANGUAGES.

Dictionnaire Complet Illustré de la Langue Française. By Pierre Larousse. (2s. 6d. net. Dent.)

This is the first part (comprising the actual dictionary) of the celebrated work of Larousse, and it bears on the title-page "142e édition." It is all in French, of course, and that is just why Messrs. Dent publish it in this country—to meet the want felt by Reform teachers. Though we do not think the dangers of a bilingual dictionary so very "appalling," we have no doubt that this particular work may be used with great advantage, and we give it our warmest commendations. It is very clearly printed, and, though it extends to some eight hundred pages, it is handy enough for the pocket. There are a number of full-page illustrations, some of them in colour, and the text illustrations are multitudinous.

Material for Practical German Conversation. By Laurence Fossler, Professor of the Germanic Languages and Literatures, University of Nebraska. (3s. Ginn. International Modern Language Series.)

This "is not a book for beginners, nor even for second-year students"; yet second-year students should be about ready to tackle it. There are *Sprachübungen*, the matter being of wider scope and more varied than usual in such exercises, with notes on points of grammar and idiom, and exercises for translation from the German. The book offers a course that should familiarize the pupil with the language in a pleasant way and in no great time.

NEW EDITIONS AND REPRINTS.—GENERAL.

Messrs. Archibald Constable & Co. issue a second edition of *Dante's Ten Heavens, a Study of the Paradiso*, by Edmund G. Gardner, M.A. (5s. net). Some portions of the work have been largely revised. It is a masterly investigation and exposition, most helpful to the student of Dante, and fascinating to the general reader.

Mr. A. M. S. Methuen's trenchant discussion of projected changes of fiscal policy in sixteen letters addressed to Mr. Chamberlain—*England's Ruin* (3d. net, Methuen)—is in a second edition. The matter is ample and lucidly disposed, the reasoning vigorous, and the style eminently popular. It is really a book thrown into pamphlet form.

Three of Them, by Maxim Gorky, translated by A. Linden, is brought out in a "popular edition" by Mr. Fisher Unwin (1s. net). Marked by wide observation and deep sincerity, it is the strongest work of Gorky's that we have yet seen in English. At points Gorky would have done better to observe the injunction of Kirik Nikodimich in similar circumstances. "That's most likely," said Kirik (chapter xxxii.); "but take care; don't be too talkative upon the subject." The price is astonishing.

Messrs. Jarrold publish an eighth edition (28th thousand) of *The Comic Side of School Life*, by Henry J. Barker, B.A., F.R.S.L. If the examples of compositions exhibited in the book be typical, there must be an excellent basis for good English writing in the elementary schools. What can become of it? Mr. Barker also throws sidelights on aspects of school life that are anything but comic. A clever, though very simple, series of sketches.

FIRST GLANCES.

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MATHEMATICS.

10872. (Professor HUDSON, M.A.)—A paraboloid of revolution floats with the lowest point of its base in the surface of a fluid, and its axis inclined at an angle θ to the horizon. Find its height and specific gravity.

Note by the EDITOR.

This problem is identical with Question 6361, which was solved by the Proposer in the *Reprint*, Vol. LXXIII., p. 73. We insert as interesting the alternative solution just furnished by him.

Solution by the PROPOSER.

Consider a section of the paraboloid by a plane through the axis and the lowest point of the base. Let A be the vertex, G the centre of gravity, H the centre of gravity of the fluid displaced, Q the lowest point of the base.

Let TARN be the axis, PT the horizontal tangent. Draw QVR parallel to PT, PV parallel to AN, HK perpendicular to AN.

Now $NR = 2 \cot \theta \sqrt{ah}$,

$AT = a \cot^2 \theta$;

therefore

$PV = TR = h + a \cot^2 \theta - 2 \cot \theta \sqrt{ah} = (\sqrt{h} - \cot \theta \sqrt{a})^2$;

also $AG = \frac{2}{3}AN$, $PH = \frac{2}{3}PV$, GH is vertical; therefore

$KG = KH \tan \theta$;

therefore $\frac{2}{3}h - a \cot^2 \theta - \frac{2}{3}[h + a \cot^2 \theta - 2 \cot \theta \sqrt{ah}] = 2a \cot \theta - \tan \theta$;

whence

$h = a \left[\frac{1}{4} (5 \cot \theta + 6 \tan \theta) \right]^2$.

Specific gravity = $\frac{2aPV^2}{2ah^2} = \frac{(1 - \cot \theta \sqrt{a/h})^4}{[(1 + 5 \sin^2 \theta)/(5 + \sin^2 \theta)]^4}$.

15711. (I. ARNOLD.)—The sides of a plane triangle are in arithmetical progression. It is required to construct it when the common difference and vertical angle are given.

Solution by the late R. TUCKER, M.A., and C. M. ROSS.

(1) When the vertical angle is opposite the mean side c and δ and A are given, $\cos A = \frac{(c-\delta)^2 + (c+\delta)^2 - c^2}{2(c^2 - \delta^2)}$;

therefore $c^2 = 2(1 + \cos A) \delta^2 / (2 \cos A - 1)$;

therefore, &c.

(2) When the vertical angle is opposite the shortest side. With the same notation,

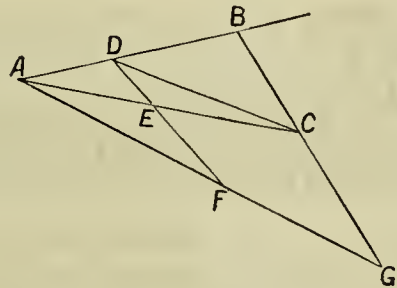
$\cos A = \frac{(c+\delta)^2 + c^2 - (c-\delta)^2}{2c(c+\delta)} = \frac{c+4\delta}{2(c+\delta)}$;

therefore $c = 2\delta(2 - \cos A) / (2 \cos A - 1)$.

(3) The case where the vertical angle is opposite the greatest side may be similarly considered.

The PROPOSER gives the following interesting geometrical solution of case (3):—

Let the longest side be the base of the triangle. In the indefinite line AB take AD = the common difference. Make the angle ADF equal to the given vertical angle, and take DF = 2AD. Join AF and make $\angle EAF = \angle AFE$. Bisect the angle BDF by DC, meeting AE produced in C. Through C draw CB parallel to DF; then is ABC the required triangle. Produce AF and BC to meet in G. Then the triangles ADF, ABG are similar, and $DF = 2AD$; therefore $BG = 2AB$. Because $\angle FAE = \angle AFE = \angle AGC$, then $AC = CG$, and $AC + CB = BG = 2AB$, or AB is an arithmetic mean between AC and CB. Again, since $\angle BDC = \angle CDE = \angle DCB$, therefore $BD = BC$ and AD is the common difference. Also $\angle ABC = \angle ADF$, the given angle. Therefore, &c.

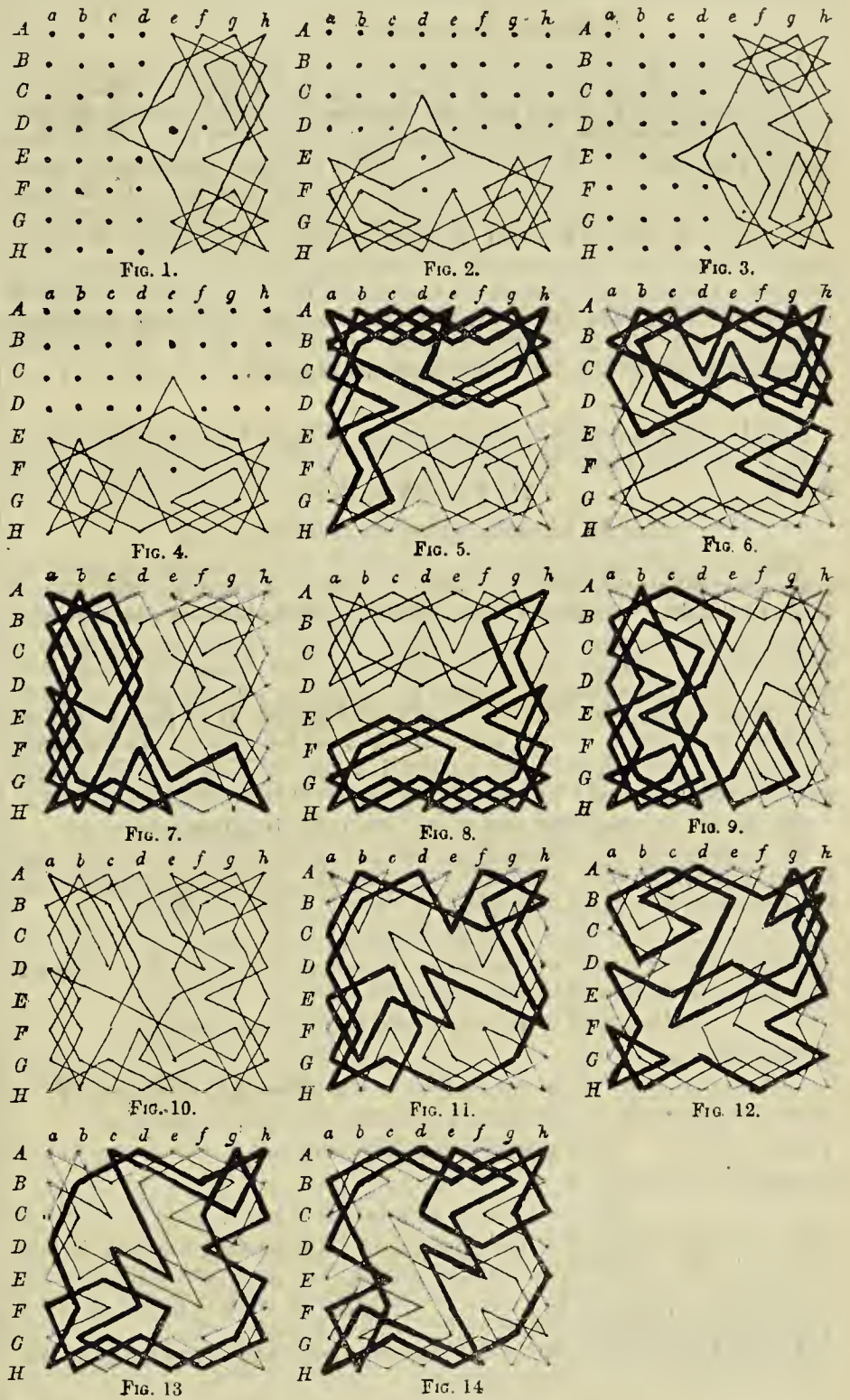


8108. (B. HANUMANTA RAU, M.A.)—Two knights being placed on two squares of a chess-board, required to move each 31 times so that no square may be used more than once.

Solution by T. DENNIS.

Let P and Q be the two knights. The method of solution will be as follows:—When P and Q are given in any arbitrary positions, we shall endeavour to find two closed paths made up of knights' moves, one path passing through P and not Q and the other passing through Q and not P.

If each of these paths consists of 32 squares and no square is common to the two paths, then we have found a solution for the position considered. Also, since we shall only consider closed paths, this solution also applies if P and Q are initially anywhere on their respective paths. If initially P and Q are a knight's move off one another, then a single path com-



pleting the whole board will solve. We use this in Fig. 10. Figs. 1, 5, 10, and 11 are fundamental; the others are derived from these by reflexion in a diagonal or by twisting the board round. Since Fig. 1 is symmetrical about a line bisecting the board and parallel to the edge ABC...H, we need not draw in the other path in this case.

Now place P on the board; then turn the board round so that P is on the lower right quarter of the board (for brevity we shall call this quarter X).

(a) Consider Figs. 1 and 2: the only squares that are on the P path (shown by a fine line) in both figures are those in X and the square Dd; and Dd is not on the P path in Fig. 3. Hence one of these three figures solves the problem, unless P and Q are both on X.

(b) Let Q be on Ee. Fig. 3 solves unless P is on Ef. So we want a figure in which Ee and Ef are on different paths; Fig. 4 is such, and hence it solves this case.

(c) Similarly, if Q be on Ef, Fig. 3 solves unless P is on Ee, in which case Fig. 4 solves.

(d) Now let Q be on Eg: Fig. 8 solves.

(e) Now let Q be on Eh: Fig. 6 solves unless P is on Eg, Fe, or Gg: these cases are solved by Figs. 8, 4, and 9 respectively.

(f) Next let Q be on Ff: Fig. 12 solves unless P is on Ee, Eg, Eh, Gh, Hf. We have just considered the first three of these cases (with P and Q interchanged); the other two are solved by Fig. 13.

[Rest in *Reprint*.]

15715. (Professor E. B. ESCORR.)—In Fermat's (Pell's) equation $x^2 - Ny^2 = 1$, where N is a prime of the form $4n + 3$, prove that the middle partial quotient of \sqrt{N} expressed as a continued fraction is always odd and equal to a or $a - 1$ according as a is odd or even (a being the integral part of \sqrt{N}). In the last case the quotient immediately preceding the middle quotient is unity.

Solution by ALEXANDER HOLM, M.A.

If the number of terms in the cycle of partial quotients were odd, then the number N would be the sum of two integral squares; vide:—*The Expression of a Quadratic Surd as a Continued Fraction*, by Thomas Muir, Glasgow (Maclehose), 1874, § 51. But a number of the form $4n + 3$ cannot be the sum of two squares. Therefore the number of terms in the cycle must be even. Now "when the number N is a prime and there is an even number of terms in the cycle of partial quotients then the middle term is a or $a - 1$ according as a is odd or even" (Muir, *op. cit.*, § 47). The properties of continued fractions of this kind are very fully investigated in a paper "On the Phenomenon of Greatest Middle in the Cycle of a Class of Periodic Continued Fractions," by Thomas Muir, *Proc. Roy. Soc. Edin.*, 1883-84. In § 18 it is proved that when a is even the quotient immediately preceding the middle quotient is unity.

15717. (R. CHARTRES.)—Find integral values of x , and n ($n > 3$), so that $x^n - 1$ shall equal the product of two consecutive integers. When $n = 3$, $7^3 - 1 = 342 = 18 \cdot 19$.

Note by Lt.-Col. ALLAN CUNNINGHAM, R.E.

This seems a difficult problem. If $a(a + 1)$ be the product in question, then $x^n = a^2 + a + 1 = (a^3 - 1)/(a - 1)$; therefore x must be odd, and of form $(A^2 + 3B^2)$. Hence x must be either a prime of form $(6\omega + 1)$, or a power of such a prime; or else a product of such primes, or of powers of such primes. Again, $\frac{1}{2}(x^n - 1) = \frac{1}{2}a(a + 1)$, the triangular number of base a . On comparing the values of $\frac{1}{2}(x^n - 1)$, for the possible forms of x , with Joncourt's *Table of Triangular Numbers*, it is found that no solution exists when $x^n < 2 \cdot 10^3$, and $n > 3$ (as required). Note that the solution of $(a^3 - 1)/(a - 1) \equiv 0 \pmod{x^n}$ is in itself a difficult enough problem (when $n > 3$); but the present problem is much more difficult.

Mr. R. W. D. CHRISTIE contributes the following discussion:—

In attempting to solve Question 15717 I came to the conclusion that integral solutions were impossible from the general solution except for the one value $a = 2$, *e.g.*, let $x^n - 1 = a(a + 1) = a^2 + a$. Thus

$$x^n = a^2 + a + 1.$$

It follows that x is of the same form: therefore $(A^2 + A + 1)^n = a^2 + a + 1$. For $n = 1$ the solution is obvious, $a = A$. For $n = 2$ we have

$$(A^2 + A + 1)^2 = (a^2 - 1)^2 + (a^2 - 1)(2a + 1) + (2a + 1)^2.$$

For $n = 3$

$$(A^2 + A + 1)^3 = (a^3 - 3a - 1)^2 + (a^3 - 3a - 1)(3a - a + 1) + [3a(a + 1)]^2$$

where $a^3 - 3a - 1 = 1$ necessarily; thus $a = 2$, a unique solution.

For $n = 4$

$$(A^2 + A + 1)^4 = a^4 - 6a^2 - 4a = 1,$$

impossible. For $n = 5$

$$(a^2 + a + 1)^5 = a^5 - 10a^3 - 10a^2 + 1 + \dots$$

Here $a^5 - 10a^3 - 10a^2 + 1 = 1$, impossible. The general solution is now obvious. We must take on the dexter the alternate coefficients of $(a + b)^n$, giving form $(A^2 + AB + B^2)$, and then equate either A or B to unity in order to secure $A^2 + A + 1$ or $B^2 + B + 1$.

I should like to know whether other integral values than 2 can be got, and so am interested in the Question.

15707. (Professor NEUBERG.)—On joint le sommet A d'une ellipse à un point quelconque M de cette courbe; la perpendiculaire en M sur AM rencontre l'ellipse en un second point N; enfin on achève le rectangle AMNP. Trouver le lieu du point P.

Solution by the late R. TUCKER, M.A., and R. F. DAVIS, M.A.

$$\angle NAM = \phi, \quad \angle PAA' = \theta.$$

$$AN = l, \quad r = AP = l \sin \phi;$$

co-ordinates of M are

$$l \cos \phi \sin \theta, \quad -l \cos \phi \cos \theta;$$

co-ordinates of N are

$$l \sin(\phi + \theta), \quad -l \cos(\phi + \theta).$$

The equation to the ellipse is

$$a^2 y^2 = b^2 (2ax - x^2).$$

Therefore, since N is on the

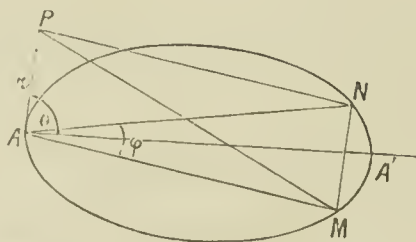
$$\text{curve,} \quad l^2 [a^2 \cos^2(\phi + \theta) + b^2 \sin^2(\phi + \theta)] = 2ab^2 \sin(\phi + \theta),$$

i.e., in co-ordinates $x = r \cos \theta, y = r \sin \theta$ of the point P,

$$l^2 [(a^2 x^2 + b^2 y^2) \cos^2 \phi + (a^2 y^2 + b^2 x^2) \sin^2 \phi - 2(a^2 - b^2)xy \sin \phi \cos \phi]$$

i.e., using the relation $r/l = \sin \phi$,

$$(a^2 x^2 + b^2 y^2) \cos^2 \phi - 2y [(a^2 - b^2)x + ab^2] \sin \phi \cos \phi + (a^2 y^2 + b^2 x^2 - 2ab^2 x) \sin^2 \phi = 0 \dots (i).$$



Since M is on the the curve, therefore

$$a^2 l \cos \phi \cos^2 \theta = b^2 \sin \theta (2a - l \cos \phi \sin \theta),$$

$$\text{i.e.,} \quad l \cos \phi [a^2 \cos^2 \theta + b^2 \sin^2 \theta] = 2a l^2 \sin \theta,$$

$$\text{i.e.,} \quad (a^2 x^2 + b^2 y^2) \cos \phi = 2ab^2 y \sin \phi \dots (ii).$$

From (i.) and (ii.), by eliminating ϕ , we get

$$4a^2 b^4 y^2 - 4ab^2 y^2 [(a^2 - b^2)x + ab^2] + (a^2 y^2 + b^2 x^2 - 2ab^2 x) (a^2 x^2 + b^2 y^2) = 0,$$

$$\text{i.e.,} \quad -4ab^2 [(a^2 - b^2) y^2 x] + (a^4 + b^4) x^2 y^2 + a^2 b^2 (x^4 + y^4)$$

$$- 2ab^2 x (a^2 x^2 + b^2 y^2) = 0,$$

$$\text{i.e.,} \quad (a^4 + b^4) x^2 y^2 + a^2 b^2 (x^4 + y^4) - 2ab^2 x [2y^2 (a^2 - b^2) + a^2 x^2 + b^2 y^2] = 0,$$

$$\text{i.e.,} \quad (a^4 + b^4) x^2 y^2 + a^2 b^2 (x^4 + y^4) - 2ab^2 x [a^2 x^2 + (2a^2 - b^2) y^2] = 0,$$

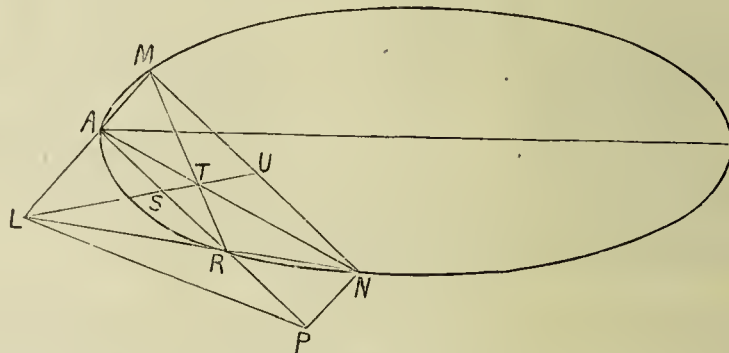
$$\text{i.e.,} \quad a^2 b^2 (x^2 + y^2)^2 + (a^2 - b^2)^2 x^2 y^2 = 2ab^2 x [a^2 (x^2 + y^2) + (a^2 - b^2) y^2],$$

i.e., in polar co-ordinates

$$r = 2ab^2 \cos \theta \frac{[a^2 + (a^2 - b^2) \sin^2 \theta]}{a^2 b^2 + (a^2 - b^2) \sin^2 \theta \cos^2 \theta}.$$

[Mr. DAVIS remarks that this is an oval curve lying outside the ellipse and touching it at the extremities of the major axis; also that when $a = b$ it reduces to $x^2 + y^2 = 2ax$ as might, *a priori*, be expected.]

Note by CONSTANCE I. MARKS, B.A.



In connexion with this problem, the following geometrical discussion will perhaps be found interesting, as showing how to determine any number of points on the same locus by means of pairs of perpendicular chords through the vertex A, the rectangles not being completed as in the question.

Let AMNP be the rectangle in the question in any one of its positions, so that P is a point on the locus. Join NA, NR and let MA and NR produced meet in L. Join MR, LP and draw LSTU through T, the intersection of NA and MR. From the harmonic property of the complete quadrilateral formed by the straight lines LM, LN, AN, MR, we have its diagonals AR, MN bisected at S and U; for AR and MN are parallel by hypothesis; therefore the directions AR and LU are conjugate in the ellipse, and LU produced is a diameter. Again, because LA and PN are parallel, therefore the triangles LNA and LPA are equal, whence the triangles ANR, LPR are equal, and have their angles at R equal; therefore $AR : RP = LR : RN = LA : AM$ (because AR is parallel to MN).

We have now the following general method for finding positions of P:—Let any perpendicular chords through A (AM, AR, say) be produced through A and R respectively, the former to meet the diameter conjugate to AR in L; then, if on AR produced RP be taken a fourth proportional to LA, AM, and AR, the point P is on the required locus.

10376. (Professor SYLVESTER.)—If ϕ, ψ, ω are three algebraic functions of x, y, y', y'' such that ϕ', ψ', ω' contain a common factor $\theta(x, y, y', y'', y''')$, show that the complete primitive of $F(\phi, \psi, \omega) = 0$, where F is any function form, may be found algebraically.

[Professor Sylvester remarks that this question is an extension of a well known principle of Lagrange, and that it may itself be indefinitely extended in more than one direction.]

Solution by J. A. H. JOHNSTON, M.A.

From the mode of formation of $\theta(x, y, y', y'', y''')$, it follows that $\phi = a, \psi = b$, and $\omega = c$ are three first integrals of $\theta = 0$, where a, b , and c are arbitrary constants.

The stated conditions imply that ϕ, ψ , and ω are independent functions, and, since they involve x, y, y' , and y'' algebraically, we may eliminate y' and y'' between $\phi = a, \psi = b$, and $\omega = c$.

The result is the complete primitive of $\theta = 0$ or $\chi(x, y, a, b, c) = 0$.

Now, if we differentiate any conceivable functional form $F(\phi, \psi, \omega) = 0$, $(\partial F/\partial \phi) \phi' + (\partial F/\partial \psi) \psi' + (\partial F/\partial \omega) \omega' = 0$ leads again to $\theta = 0$, since it is common to ϕ', ψ' , and ω' , and so $F(\phi, \psi, \omega) = 0$ is a first integral of $\theta = 0$, but of course non-independently of ϕ, ψ , and ω , which are its three independent first integrals. In fact $F(a, b, c) = 0$. It follows that the complete primitive of $F(\phi, \psi, \omega) = 0$ is $\chi(x, y, a, b, c) = 0$, subject to the condition $F(a, b, c) = 0$, and this reduces the arbitrary constants to two—the proper number.

The solution has thus been found algebraically.

Note.—The multipliers of θ in ϕ', ψ' , and ω' may be regarded as integra-

ting factors, and the whole process may be illustrated by the simple case

$$\phi = xy + x^2y' + \frac{1}{3}x^3y'' = a, \quad \psi = x^2y + \frac{5}{3}x^3y' + \frac{1}{3}x^4y'' = b,$$

$$\omega = x^3y + 2x^4y' + \frac{1}{2}x^5y'' = c,$$

all leading to a common factor for ϕ' , ψ' , and ω' , viz.,

$$\theta = y + 3xy' + \frac{5}{3}x^2y'' + \frac{1}{6}x^3y''' = 0.$$

The eliminant of ϕ , ψ , and ω leads to $y = (3ax - 3bx + c)/x^3$ as the complete primitive, and this is easily identified as the complete primitive of $\theta = 0$.

It is to be noted that cases of particular integrals arise from the combined use of $F(\phi, \psi, \omega) = 0$ and the part of its differentiated result that is independent of $\theta = 0$.

The theorem may now be generalized as follows:—Let $\phi_1, \phi_2, \dots, \phi_n$ be n algebraical functions of $x, y, y', y'', \dots, y^{(n-1)}$, such that $\phi'_1, \phi'_2, \dots, \phi'_n$ contains a common factor $\theta(x, y, y', y'', \dots, y^{(n)})$. Then the complete primitive of $F(\phi_1, \phi_2, \dots, \phi_n) = 0$, where F is any function form, is $\chi(x, y, a_1, a_2, \dots, a_n) = 0$, subject to the condition

$$F(a_1, a_2, \dots, a_n) = 0,$$

where χ is the eliminant of $\phi_1 = a_1, \phi_2 = a_2, \dots, \phi_n = a_n$.

15712. (Professor SANJANA, M.A.)—In the triangle ABC, AD is the median to the side BC and GQ is the perpendicular to BC from G, the median point; also AD₁ is the symmedian, and KQ₁ the perpendicular from K, the symmedian point; segments ER, E₁R₁ and FS, F₁S₁ are similarly taken on CA and AB. Prove that

$$(D_1Q_1/DQ)(b^2 + c^2) + (E_1R_1/ER)(c^2 + a^2) + (F_1S_1/FS)(a^2 + b^2) = 12S \tan \omega.$$

Solution by the late R. TUCKER, M.A., and others.

If L is the foot of the perpendicular from A on BC, then DQ/DL = $\frac{1}{3}$; therefore $DQ = \frac{1}{3}(\frac{1}{2}a - b \cos C) = \frac{1}{6}(c \cos B - b \cos C) \dots \dots \dots$ (i.),

$$D_1Q_1/D_1L = \frac{1}{2}a \tan \omega / b \sin C \text{ and } D_1L = [bc/(b^2 + c^2)](b \cos B - c \cos C);$$

$$\text{therefore } D_1Q_1 = \frac{1}{2}a \tan \omega \frac{bc(b \cos B - c \cos C)}{(b^2 + c^2)b \sin C};$$

therefore

$$\frac{D_1Q_1}{DQ} (b^2 + c^2) = \frac{abc \tan \omega (b \cos B - c \cos C)}{2b \sin C (c \cos B - b \cos C)} \cdot 6 = \frac{3abc \tan \omega R (\sin 2B - \sin 2C)}{bc \sin (C - B)}$$

$$= \frac{3a \tan \omega 2R \cos A \sin (C - B)}{\sin (C - B)} = 6aR \tan \omega \cos A;$$

$$\text{therefore } \Sigma (D_1Q_1/DQ)(b^2 + c^2) = 6R^2 \tan \omega \Sigma \sin 2A = 12S \tan \omega.$$

15699. (JAMES BLAIKIE, M.A.)—Prove that $m^{2n+1} + (m-1)^{n+2}$ is a multiple of $m^2 - m + 1$ [e.g., $1000^{15} + 999^9 = M(999001)$].

Solutions (I.) by Lt.-Col. ALLAN CUNNINGHAM, R.E., and the late R. TUCKER, M.A.; (II.) by the PROPOSER; (III.) by R. F. DAVIS, M.A.; (IV.) by Professor SANJANA, M.A.

(I.) Let $N = m^{2n+1} + (m-1)^{n+2}$, and $q = m^2 - m + 1$. Then $N = m(m^2)^n + (m-1)^2(m-1)^n = m(q + m - 1)^n + (m-1)^2(m-1)^n$
 $\equiv m(m-1)^n + (m-1)^2(m-1)^n \pmod{q}, \equiv (m-1)^n [m + (m-1)^2] \pmod{q}$
 $\equiv (m-1)^n \cdot q \equiv 0 \pmod{q}.$

(II.) $m^{2n+1} + (m-1)^{n+2} = m^{2n-1}(m^2 - m + 1) + (m-1)[m^{2n-1} + (m-1)^{n+1}]$.
 If, then, $m^{2n-1} + (m-1)^{n+1}$ be a multiple of $m^2 - m + 1$, then

$$m^{2n+1} + (m-1)^{n+2}$$

is also a multiple, that is, if the proposition be true for one value of n , it is true for all higher values. But it is true when $n = 0$; therefore it is always true.

(III.) Let $u_n = m^{2n+1} + (m-1)^{n+2}$. Then by multiplication it is easily found that $(m^2 + m - 1)u_n = u_{n+1} + m^2(m-1)u_{n-1}$. Hence any factor that is contained in both u_{n-1} and u_n will also be contained in u_{n+1} . But

$$u_0 = m + (m-1)^2 = m^2 - m + 1;$$

$$\text{and } u_1 = m^3 + (m-1)^3 = (2m-1)(m^2 - m + 1).$$

Therefore u_2 be a multiple of $m^2 - m + 1$; and, since u_1, u_2 are both multiples of $m^2 - m + 1$, so also is u_3 ; and so on.

(IV.) When $m^2 - m + 1 = 0$, or m be an imaginary cube root of -1 , we can readily show the expression to be zero; hence its divisibility. By the following method, however, we can get an expression for the quotient. Let $m^2 - m + 1 = k$, so that $m - 1 = m^2 - k$; then the given expression

$$= m^{2n+1} + (m^2 - k)^{n+2} = m^{2n+1} + m^{2n+4} - C_1 m^{2n+2} k + C_2 m^{2n} k^2 - \dots$$

$$+ (-1)^{n+2} k^{n+2}$$

$$= m^{2n+1}(m+1)k - C_1 m^{2n+2} k + C_2 m^{2n} k^2 - \dots$$

$$= k [m^{2n+2} + m^{2n+1} - C_1 m^{2n+2} + C_2 m^{2n} k - \dots],$$

where C_1, C_2, \dots are the numbers of 1, 2, ... combinations of $n + 2$ things.

QUESTIONS FOR SOLUTION.

15750. (Professor STEGGALL.)—A uniform string of length l is placed, in a straight line perpendicular to the quadrantal curved edge of radius c , on a smooth table with a piece hanging over to the lowest point of the quadrant. Prove that the string will begin to leave the edge when a length $\frac{1}{2}(l - 3c)$ has run out.

15751. (Communicated by J. A. H. JOHNSTON, M.A.)—Two light rods OA, OB, of equal length l , are hinged at a fixed point O, and carry heavy rings of equal mass m at the ends A and B. A third light smooth rod runs through the two rings and is hinged at a point P, vertically above O, at a distance l' from it ($l' > l$). The whole is started from the configuration in which A and B are vertically above and below O respectively, by impressing an angular velocity ω upon the rod PAB. Show that when the angle AOB between the rods is 2θ the reaction at P is

$$[2ml'(\omega^2 - g/l)(l^4 - l'^4) \cos \theta] / [l^2 - l'^2 \cos 2\theta]^2.$$

15752. (Professor M. W. CROFTON, F.R.S.)—Show that $n^n - 1$ is divisible by $4n + 1$ if the latter is a prime number.

15753. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Solve in integers $\frac{1}{2}(q^2 + 1) = p^4$.

15754. (Professor NEUBERG.)—Pour qu'une substitution $x = (az + \beta)/(\gamma z + \delta)$

ramène l'équation

$$a_0 x^n + \frac{n}{1} a_1 x^{n-1} + \frac{n(n-1)}{1.2} a_2 x^{n-2} + \dots + a_n = 0$$

à la forme binôme $z^m - p = 0$, il faut et il suffit que les déterminants formés avec trois colonnes quelconques du tableau

a_0	a_1	a_2	...	a_{n-2}
a_1	a_2	a_3	...	a_{n-1}
a_2	a_3	a_4	...	a_n

soient nuls.

15755. (Professor SANJANA, M.A.)—Prove that the expansion of $\text{sech}^{-1} x^{\frac{1}{2}} + \log x^{\frac{1}{2}}$ is

$$\log 2 - \left(\frac{1}{2} \frac{x}{2} + \frac{1.3}{2.4} \frac{x^2}{4} + \frac{1.3.5}{2.4.6} \frac{x^3}{6} + \dots \right),$$

x lying between zero and unity.

15756. (Professor NEUBERG.)—Trouver $\int_0^1 \cos x \cos 2x \cos 3x \cos 4x dx$.

15757. (ROBT. W. D. CHRISTIE.)—Prove the following theorem:—

$$(\tan^{-1} 1/r^m + \tan^{-1} 1/r^{3m}) [(p^2 - r^{2m} - r^{6m} - 2)/2p] = \tan^{-1} \frac{1}{4}\pi$$

where r is a root and p a prime of form $4x + 1$. E.g., let $p = 2a^2 + 2a + 1, r^m = 2a + 1, r^{3m} = 2a^2$; then

$$[\tan^{-1} 1/(2a + 1) + \tan^{-1} 1/(2a^2)](2a - 1) = \tan^{-1} \frac{1}{4}\pi$$

for all values of a . ($a = 1$ gives Euler series.)

15758. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Show that the product of the two series

$$1^3 + 2^3 + 3^3 + 4^3 + 5^3 + \dots + n^3, \quad 1^5 + 2^5 + 3^5 + 4^5 + 5^5 + \dots + n^5$$

may be represented as a single series.

15759. (R. CHARTRES.)—Find the mean value of the $(2n)$ -th power of the area, the perimeter ($2s$) being constant, (1) of a triangle, (2) of a cyclic quadrilateral. Elementary proof wanted.

15760. (C. E. YOUNGMAN, M.A.)—Four points A, B, C, D, not concyclic, are inverse to the corners of a symmetrical figure, and P, Q, R, S are the centres from which A, B, C, D invert into an orthocentric group. If ABC be a fixed triangle, show that D, P, Q move on one or other of its Apollonian circles, and R, S on a corresponding bicircular quartic (inverse to a rectangular hyperbola) which is its own inverse for the circles ABC and DPQ.

15761. (Professor GENESE.)—Prove that there always exists one point which has the same tetrahedral co-ordinates with respect to any two given tetrahedra.

15762. (Professor NANSON.)—If two pairs of opposite edges of a tetrahedron are conjugate with respect to a quadric, then the third pair is so also.

15763. (Professor SANJANA, M.A.)—If P, Q be any two points isogonally conjugate with regard to the triangle ABC, then

$$(AP.AQ)/(AB.AC) + (BP.BQ)/(BC.BA) + (CP.CQ)/(CA.CB) = 1.$$

Hence prove that

$$(i.) a.m_1.AK + b.m_2.BK + c.m_3.CK = \frac{3}{2}abc,$$

where m_1, m_2, m_3 are the medians and K is the symmedian point;

$$(ii.) a.AI^2 + b.BI^2 + c.CI^2 = a.AI_1^2 - b.BI_1^2 - c.CI_1^2 = abc,$$

where I is the in-centre and I₁ the first ex-centre;

$$(iii.) a.AP + b.BP + c.CP = abc/R,$$

where P is the orthocentre.

15764. (R. F. DAVIS, M.A.)—The tangent at A to the circum-circle of the triangle ABC meets the base BC produced in T. From T perpendiculars are drawn upon AB, AC, meeting the circum-diameter through A in P, Q respectively. Prove (geometrically) that P, Q are equidistant from the circum-centre.

15765. (Professor COCHEZ.)—Construire un triangle connaissant la bissectrice de A, la médiane issue de B et la hauteur issue de C. Calcul des côtés.

15766. (A. M. NESBITT, M.A.)—The locus of the intersection of normals at the extremities of conjugate diameters of $x^2/a^2 + y^2/b^2 = 1$ is the curve $2(b^2y^2 + a^2x^2)^3 = (a^2 - b^2)^2(a^2x^2 - b^2y^2)^2$.

15767. (The late R. TUCKER, M.A.)—In Question 15638 find the position of H when $HP = HP' =$ (i.) latus rectum, (ii.) $\frac{1}{2}$ latus rectum.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10712. (J. GRIFFITHS, M.A.)—If I be a seminvariant (of a binary quantic) of weight w and order θ as regards the coefficients, prove that the following operator, when applied to I, will form a seminvariant, viz.,

$$2wa_1 \frac{d}{da_0} + (2w - \theta) a_2 \frac{d}{da_1} + (2w - 2\theta) a_3 \frac{d}{da_2} + (2w - 3\theta) a_4 \frac{d}{da_3} + \dots$$

10730. (Professor DÉPREZ.)—Trouver l'enveloppe des axes des coniques touchant les côtés AB, AC d'un triangle, et ayant pour asymptote le troisième côté BC.

10790. (Corrected. H. W. SEGAR, B.A.)—Show that

$$\frac{1}{4\pi} \int_0^{2\pi} \log(1 + \cos \theta \cos x) \frac{dx}{\cos x} = \frac{\cos \theta}{1^3} - \frac{\cos 3\theta}{3^3} + \frac{\cos 5\theta}{5^3} - \dots$$

10841. (The late Professor CLIFFORD, F.R.S.)—If, in regard to a system of n quadric surfaces, the two systems of n polar planes in regard to any two points of space are projective to one another, either the quadrics have a common Jacobian or each of them is a double plane.

10968. (Professor ORCHARD, M.A., B.Sc.)—A uniform rod AB, with its upper end A against a rough vertical wall, is just resting in equilibrium, when a string, passing from B over a smooth pulley vertically above A, supports a weight of 9 pounds. If the weight of the rod be 10 pounds, find hence the coefficient of friction.

11039. (Professor SYLVESTER.)—Let x_1, x_2, \dots, x_n represent $x + a_1, x + a_2, \dots, x + a_n$, where a_1, a_2, \dots, a_n are any real quantities. Also let b_1, b_2, \dots, b_n be any positive quantities. Prove that the continued fraction

$$x_1 - \frac{b_1}{x_2 - \frac{b_2}{x_3 - \dots - \frac{b_{n-1}}{x_n}}}$$

changes sign exactly $2n - 1$ times as x passes from one end of infinity to the other.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, March 9th, 1905.—Prof. A. R. Forsyth, President, and temporarily Dr. E. W. Hobson, in the Chair.

Dr. W. H. Eccles and Mr. J. F. Cameron were elected members. Dr. W. H. Eccles and Mr. H. Bateman were admitted into the Society.

The following papers were communicated:—

"On the Projection of Two Triangles on to the same Triangle," by Prof. M. J. M. Hill, Dr. L. N. G. Filon, and Mr. H. W. Chapman.

"The Weddle Quartic Surface," by Mr. H. Bateman.

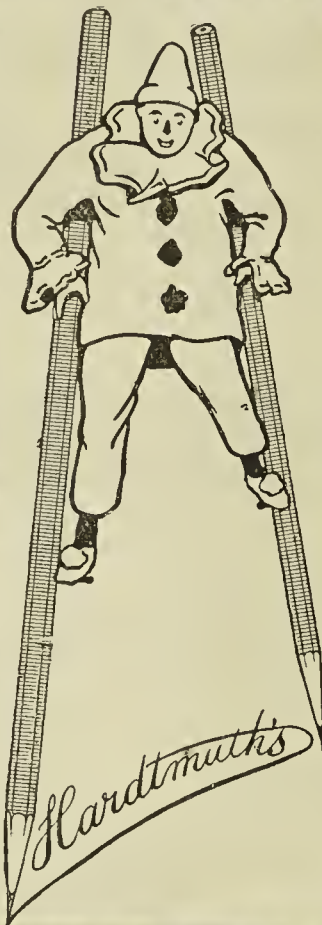
"On the Complete Reduction of any Transitive Permutation Group, and on the Arithmetical Nature of the Coefficients in its Irreducible Components," by Prof. W. Burnside.

"On the Theory of the Logarithmic Potential," by Prof. T. J. P.A. Bromwich.

"Alternative Expressions for Perpetuant Types," by Mr. P. W. Wood.

Prof. Forsyth made an informal communication "On the Theory of Geodesics."

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The Educational Times.

Continuation Schools. So long ago as 1888 the Rev. Dr. Paton laid before the Royal Commission on Primary Education much extremely cogent evidence on the subject of Continuation Schools—schools to be held in the evening, or in other free time of young people that had passed from the day schools to work, in order to conserve and extend the information and training of the day school, and to confirm a habit of study and thoughtfulness. Since then not a little has been done in the establishment and organization of such schools. Still, however, there remains an urgent necessity that further steps be taken to reduce the evils yet rampant and to secure the benefits that are so desirable. To this end the Bishop of Hereford moved the second reading of his Bill in the House of Lords on April 7, and, though the attendance scarcely indicated enthusiasm for an amelioration of existing conditions, the brief discussion at any rate elicited expressions of opinion partly weighty on the merits, partly important as tactical indications. The motion was lost by 2 votes—16 to 14. The lack of interest in the question as shown by the scanty attendance is of grave import from the national point of view, when continuation schools have been for some twenty years almost universal in Germany, Switzerland, and Austria, and have been very rapidly extending in other Continental countries.

"There is enormous waste," said the Bishop, "in our present elementary system." Assuming the education to be good for the little way it goes, and admitting that some elements of information and training remain permanently in effective operation, yet one cannot but recognize that much is lost that might and ought to be preserved. Vast sums of money are sunk in foundations—better, no doubt, than in earlier times, but still, it must be granted, not so extensive and secure as they ought to be—and insufficient care is taken for the erection of a satisfactory, or indeed any, structure upon them. The need of the poor to avail themselves of the earning powers of their children at an early age is not to be denied. "It is right," Dr. Paton acknowledges, that such children "should be allowed to become half-timers at twelve, or to become full-time workers in factories at

thirteen." But then he goes on to emphasize the educational side of the matter: "it is necessary, if the very objects of a State education are to be fulfilled, that such a standard of attainment be enforced as would at once confer on a child an education that would make it of real service in life, and, if that standard of attainment is not reached at the age of thirteen—as it very rarely will be—then it must be worked for in the continuation school until he is sixteen, beyond which time the State is not likely to enforce school attendance." Where there is an interval between school and regular work, there is for boys the mischief that "evil associations and habits are formed by their loafing about the streets, trying to pick up odd jobs," or at any rate the mischief of laxness and indefiniteness of aim. Where regular work is entered on, there is a sense of emancipation from school and school work, powerfully reinforced by the counter attractions of athletic or other games, or of vacuous idling. Dr. Percival said that "his own experience had very strongly impressed him with the needs of the vast number of growing lads to be found in country villages who were allowed to grow up in ignorance and the monotony of whose lives to a great extent destroyed their manliness." The Archbishop of Canterbury, who expressed his deepest sympathy with the object and purpose of the Bill, adduced confirmatory evidence. "The extent to which a boy who left school at fourteen might lose all the education he had acquired," said the Archbishop, "was really appalling. By an investigation made some years ago in the Eastern counties into the educational status of a hundred boys taken at haphazard from the ranks of the agricultural labourers, it was found that of boys between sixteen and eighteen one quarter could write fairly, one quarter moderately, and quite one half could only write in the most disgraceful manner; while in arithmetic 75 per cent. could not answer a single one of the simple questions set. Yet many of these boys had been in the elementary schools a few years before, and some of them had attained the sixth standard." He concluded, therefore, that "something must be done, in one way or another, to keep alive the learning that was acquired by these children during their years at school. The exact process was a subject of discussion in which difference of opinion might reasonably exist; but there could be no doubt that to allow to go to waste the education which had

been given to the young, at much labour and expense, must be most injurious to the country." The mischief is beyond dispute: the thing is to devise the right remedy.

The remedy provided by the Bishop's Bill was framed on the lines drawn by Dr. Paton in his evidence seventeen years ago: fix thirteen as the minimum age for total exemption, and, where the required standard of attainment has not been reached, make total or partial exemption conditional on attendance at a recognized evening continuation school till sixteen, or till the standard is achieved; but fix the minimum total exemption age at twelve "in the case of boys who have definite agricultural or horticultural employment, and whose parents desire that they shall be so employed," provided they attend evening continuation school up to sixteen. The twelve-year limit was a new concession to conciliate the various phases of agricultural interest; and another novel feature was the provision that, "if the parent of the boy or girl so requires, attendances at a Sunday school or Bible class not exceeding in the aggregate thirty hours' duration in any one year shall be reckoned for the purpose of calculating the required number of attendances as if they were attendances at an evening continuation school"—a provision inviting the support of all classes of the clergy and of all persons desirous of keeping growing lads on Sundays within the circle of good moral and spiritual influences. The Bill was merely permissive, enabling Local Education Authorities to adopt these measure in by-laws made by them under the Elementary Education Acts. The proposals appear to be very modest, as well as thoughtfully adapted to the end in view.

Lord Londonderry, while admitting that the Bill "dealt with a question of great interest and great importance in the educational training of children," and regretting that what was very expensively learned in the schools was so quickly forgotten, advanced official objections to the particular remedy proposed. He could not advise assent to a new principle he found in the Bill—the application of compulsion to secure attendance at other than elementary schools. Surely it is a very technical view to call such schools "other than elementary schools," and to bring them under Part II. of the Education Act of 1902 as giving "secondary" education. The Bill, says the *Morning Post* (which now, under the editorship of Mr. Fabian Ware, is doing excellent service by extended discussion of educational affairs), "would have been workable with School Attendance Committees; but minute local variations in the by-laws are now no longer possible. The uniformity of the county by-law would be spoilt and its enforcement rendered more difficult if attendance at evening schools were made compulsory in those country districts where there was a good school of that type." It is difficult to treat this criticism either as serious or as humorous. But our contemporary frankly meets Lord Londonderry's argument from additional expense to the ratepayer by pointing out that the Bill was "purely permissive," and, moreover, that "many more evening schools are, and will be, required, compulsion or no compulsion." The minor arguments that the Bill would operate most unfairly on parents whose children had shown special talent and might not have the same need as others to remain at school till sixteen, and that the Sunday school provision

would entail the formidable undertaking of State inspection, need only be mentioned. These lions in the path will scarcely daunt the "prophet or leader" desiderated by the Archbishop to show the country how to reach the right solution: "he was perfectly clear that some measure of this kind was urgently needed." Dr. Percival may well be satisfied with the sympathy he has evoked, and encouraged by the weakness of the arguments that have temporarily defeated him.

Ways and Means.

IN no department of public activity is the unexampled vigour of the energies of the country more marked than in the sphere of education. Primary education has been set in a fresh framework in England; it is on the point of being readjusted in Scotland; and a constant cry for reform is coming over from Ireland. Secondary education already requires a liberal expansion of recent provisions, and all the Universities are hampered for lack of means to their ends. Institutions like Reading and Hartley have risen to be University Colleges. The University Colleges at Liverpool, Manchester, and Leeds have developed into Universities; Sheffield has got promise of its charter; and elsewhere local ambitions have been stirred to emulation. In all these cases the public spirit of the citizens has been conspicuous and discerning, and in due time they will reap a manifold reward. In other cases—where there is less concentration of interest, or where (as in London) the public spirit is so diffused and distracted that it is apt to be inapproachable, inefficient, or even dormant, or where the means of contribution to admittedly desirable ends are less abundant—the cause of the higher education is more difficult to sustain. During the past month the plaint of the sturdy educational beggar has been resounding from all quarters. The Welsh University has issued an appeal on behalf of its Fellowship Fund, which was opened in 1897 as a memorial to Queen Victoria on a basis of voluntary support. The fellowships are for research students, and the results of the existing endowments "are regarded as quite satisfactory." Newnham College also has issued an appeal for funds in aid of the endowment of research fellowships, to be held during extended residence in college after completion of the ordinary university course. There is, no doubt, sympathy enough and money enough ready to meet the Welsh and Newnham requirements of the moment, and we should hesitate to discourage generosity in this direction in view of the records of good work accomplished and experience gained; yet, on general grounds, one cannot but incidentally hint a doubt whether it is not possible to advance research more effectively at less expenditure by a different application of funds.

But the Welsh and the Newnham needs are thrown into the shade by the bold appeal of the Bedford College for Women, endorsed by the authorities of the University of London, for £150,000 to provide a new site and a new building, and for £100,000 to increase the endowment fund. The lease of part of the premises expires in 1909 and the lease of the rest of the building expires in 1928, and the landlord declines to sell the freehold; so, altogether, a fresh building elsewhere is considered necessary for the continued existence of the institution. The claims of Bedford College on the

generosity of all that value education, and especially on all that appreciate what the college has done, and is doing, for the promotion of the education of women, are multiplied and great. Unhappily, the difficulties of an educational quest for money in six figures in London are also great: it is only exceptional energy and insistence that can bring possible London benefactors to understand the nature of the want or even to know of its existence. University College has succeeded wonderfully in its recent appeal, and yet how very far have results fallen short alike of its needs and of its deserts! We trust Bedford College will be still more successful; for its deserts also entitle it to satisfaction of its present needs.

The Chancellor of the Exchequer deserves much credit for his expansion of the University Colleges grant to double its former amount; but, after all, it is only £54,000, and what is that among so many as fourteen? Even when it rises to £100,000 next year it will be far from adequate to the needs of the fourteen institutions, after all supplementary sources have been drained. The Committee of Allocation, it will be remembered, stated in their third report that they were particularly impressed by the absence of provision for post-graduate scholarships and fellowships, the lack of equipment in books and scientific apparatus, and the insufficiency of remuneration of many of the teachers. The meaning of these deficiencies has yet to come home to the minds of our statesmen. Even the University of London itself is starved in most important departments for sheer lack of funds. What might it not do for the nation if it were endowed by the State on the same scale as the University of Berlin, or even as the smallest of the German universities? In 1903 the State allowance of Berlin University was 2,904,745 Marks (say £145,000); that of Münster University, 370,508 Marks (say £18,500); and the German figures are not fixed, but advance boldly in response to the national requirements.

NOTES.

THE selection of a new Head Master of Eton has occasioned more journalistic excitement than the appointment of a new Cabinet Minister. Perhaps rightly, for the salary is said to be much higher, and the post is a permanency. Moreover, as the *Manchester Guardian* says, "it is really a matter of somewhat exceptional consequence to the public who the Head Master of Eton is: he has in some degree in his hands the training of an extraordinarily large proportion of those men on whom our old-fashioned public life still showers disproportionate opportunities of prominence and influence—the men who, like Gladstone, Lord Rosebery, and Mr. Balfour, are offered gratis on coming of age what men like Mr. Morley and Mr. Chamberlain only achieve by the labour of half a lifetime." Opinions naturally differ on the question whether the appointment of the Rev. the Hon. Canon Lyttelton was the best available: so much depends upon the standard of judgment. It may be that neither scholarly attainment nor educational achievement was the determining consideration; it may be that "a brilliant athletic past, an interesting pedigree, and many friends" had not a little weight; high character

is a common matter of course. Not one of the candidates could pretend to fill the shoes of Dr. Warre; but, comparisons apart, we have no doubt that Canon Lyttelton will justify the choice of the electors. The *Morning Post*, whose opinion on an educational point is now esoteric, believes him "to be a strong man," and "knows that his judgment on educational matters has been matured by experience and deepened by enthusiastic study." So far good, certainly; but it may be doubted whether his purely educational qualities have been, or will be, among the most prominent elements of his success. He has other qualities, however, that will secure for him the confidence of Eton and of the parents that look to Eton. As for reforms—modern subjects, hygiene, beagles, and so forth—we shall see.

THE report of the Education Committee of the London County Council on the non-provided schools within the London area is a document of serious and far-reaching import. It sets out details of the survey of 438 schools. For various defects of structure some 25 per cent. of these schools are "considered unsuitable"—so entirely unsuitable that "it has been found impossible to make suggestions for improving them so as to meet the Council's requirements." The drains are generally bad. "No fewer than 342, or 78 per cent., of the school drains tested have been declared unsatisfactory; 89 failed under the water test, 30 under the smoke test, and 218 under both." "In 26 cases the managers have refused to allow tests of any kind to be made"—a strangely futile proceeding, and calculated meantime to cast suspicion on the drains. If the Committee's recommendations are adopted, there will be a total deficiency of 68,824 school places—41,884 on account of the closure of schools or departments, and 26,940 on account of the reduction of accommodation in existing schools due to the operation of the resolution in reference to the ten square feet basis; and the total annual additional cost to the Council will amount to £224,000. "Further, it appears that the total cost to the Council of the transfer to it of the duty of providing for the elementary education of children now accommodated in non-provided schools will amount to £523,495 a year." An additional rate of nearly 4d. in the pound is not a cheerful prospect for the London ratepayer—especially in eastern suburbs. The displacement of many hundred teachers, too, if only temporary, is no light matter.

THE presumption is that the demands of the Council are neither oppressive nor unreasonable, but simply in accordance with their own standards. Any severer requirements would certainly not be supported by the Board of Education. All reasonable requirements the managers will no doubt make efforts to carry out; but, in view of the difficulties of maintaining the schools in the past even at their inferior standard, and assuming a certain latitude of time, and even a certain relaxation of some of the Council's demands, it is impossible not to anticipate a serious crisis in more ways than one. Grave as are the facts presented by the Committee, it is a crude judgment to regard them in the mere mechanical aspect; for, whether one sympathize with the

conscientious aims of the managers and supporters of these unfortunate schools or not, the fair—not to say the generous—mind will recognize both an arduous and a noble struggle under untoward conditions. How far, if at all, the Education Department itself is chargeable with “neglect and inefficiency,” as was urged in the House of Commons, depends upon facts that do not as yet appear: the conditions of the case may fairly be held to have justified a safe and reasonable indulgence. It is especially gratifying to learn that “in spite of the unsatisfactory conditions under which the majority of the teachers have been working, the teaching was reported as being ‘unsatisfactory’ in only 9 per cent. of the schools”; and “the inspectors have also been very favourably impressed by the tone and discipline in a large proportion of the non-provided schools.” Meantime we must await developments.

THE educational troubles of East Ham have also taken a disquieting form. The Town Council has decided to close the schools from the first of June next, and has sent the teachers—nearly seven hundred—notice terminating their engagements. This startling step is in no way political: it is purely financial—the strain of the rate is intolerable. The rate is 3s., and the erection of three new schools to meet the admitted needs of the population would bring it to the unparalleled figure of 3s. 9d.; moreover, the due administration of the Education Act necessarily implies further increase. The burden is not made easier by the contemplation of rates of a few pence in some other suburbs of London. It would not be surprising if several neighbouring districts under similar pressure followed the example of East Ham. At a conference of representatives of twenty-five Education Authorities, recently held in London, it was unanimously resolved that “the time has now arrived, pending the settlement of the whole question of local taxation, when immediate relief should be granted to those bodies which are inequitably treated in the demands made upon them for educational purposes.” Neither the Prime Minister nor the Chancellor of the Exchequer would receive a deputation to ask for relief in the Budget; and the Budget, when it came, brought no relief. So East Ham strikes for a grant in aid, and other districts of the 25 at least regard their action with sympathy.

It was time to apply some critical tests to Educational Exhibitions. The conclusions drawn by Mr. Edson from a study of the recent St. Louis exhibits, which we reproduce elsewhere, may be usefully applied to other exhibitions, of whatever magnitude. In connexion with Mr. Edson’s article, we quote from an early page of Mr. W. H. Winch’s admirable “Notes on German Schools”:

It is of little use to pile up work in educational exhibitions, or to show samples of great excellence, unless we know the conditions of their production, the age of the pupils, their length of school attendance, the regularity of that attendance, the number in class, and the time devoted to the particular subject of instruction. In fact, much of the excellent work thus shown inspires in experienced teachers very grave doubts as to the fairness of its production. It is not difficult to get such work done if other subjects and other pupils are comparatively neglected; and there is a direct temptation to this neglect if schools are to be estimated by the special work in special subjects

of a few picked scholars. I am not arguing for the abolition of Exhibitions—far from it; I am pleading only that they should be scientific in the best sense of that much-abused word. Moreover, even opinions formed by the inspection of work done under normal conditions may be very misleading, unless these impressions are carefully checked by actual tests.

Clearly, apart from definite and full details, an exhibition can produce only a general impression of positively attainable results. The true significance of the results, however, can be revealed only by analysis. The essential educational value of the exhibits will not be reached without an examination of the whole of the relevant conditions under which they originated and developed. As Messrs. Edson and Winch indicate, a general view, without the detail of circumstances, may readily enough lead to wholly wrong impressions, and to consequent mis-distribution of praise and blame, and to deceptive lines of work.

THE Spring Graduation ceremony at Glasgow University appears to have been about as lively as usual. Both the Latin prayer and the announcement of the qualifications of the honorary graduands were blurred into unintelligibility “by catcalls and other ebullitions of undergraduate humour,” and Principal Story abandoned his address rather than “give the opportunity for renewal of the howling disturbances and gross discourtesies” of the day. Dr. Story seems hopelessly unable to come to an understanding with his young barbarians, all at play. Yet, if he were as much philosopher as he is historian, he would perceive that they are really improving. Has not his philosophic countryman, Lord Kames, left on record the observation that “when a people begin to emerge out of barbarity, loud mirth and rough jokes come in place of rancour and resentment”? And Lord Kames gives an illustration, with a practical hint annexed. “About a century ago”—that is, well over two centuries now—“it was usual for servants and retainers of the Court of Session in Scotland to break out into riotous mirth and uproar the last day of every term, throwing bags, dust, sand, or stones all around”—just as students make “all around” hideous with riotous mirth and uproar, and the contents of pease-meal bags on occasion of Rectorial elections and inaugural addresses. This particular “disorderly practice,” he tells us, was “prohibited under a severe penalty [Act of Sederunt, February 21, 1663] as dishonourable to the Court and unbecoming the civility requisite in such a place.” If Scottish principals cannot exercise a few more centuries of patience, is there not open to them some proceeding analogous to an Act of Sederunt, such as may effectually protect the honour of the Senate and secure “the civility requisite in such a place”? Still, it may be somewhat difficult for Glasgow to take a hint from Edinburgh, particularly a hint some two centuries and a half in advance.

THE Bishop of London will define the action which he thinks best to take with regard to the report of the County Council Education Committee (if adopted by the Council), in his Diocesan Conference address on May 17, in the Great Hall of the Church House. A conference of the managers of the schools chiefly affected by the report will be called before the Diocesan Conference.

SUMMARY OF THE MONTH.

THE President of the Board of Education has appointed, with the concurrence of the President of the Local Government Board, the following an Inter-Departmental Committee (1) to ascertain and report on what is now being done, and with what result, in respect of medical inspection of children in public elementary schools; and, further, (2) to inquire into the methods employed, the sums expended, and the relief given by various voluntary agencies for the provision of meals for children at public elementary schools, and to report whether relief of this character could be better organized, without any charge upon public funds, both generally and with special regard to children who, though not defective, are, from malnutrition, below the normal standard:—Mr. H. W. Simpkinson, C.B., Assistant Secretary of the Board of Education, Chairman; Mr. H. Franklin Parsons, M.D., Assistant Medical Officer under the Local Government Board; Mr. C. Jackson, Chief Inspector of Elementary Schools under the Board of Education; the Hon. Maude Lawrence, Chief Woman Inspector of the Board of Education; Mr. R. Walrond, Senior Examiner of the Board of Education; with Mr. E. H. Pelham, Junior Examiner of the Board of Education, as Secretary.

A VIGOROUS address on the aims and progress of the Froebel system was delivered at the annual meeting of the Froebel Society (March 29) at the College of Preceptors by the President, Mr. J. H. Badley, M.A., Head Master of Bedales School. Mr. Badley pointed out the marked difference in the training of a young child under the Froebel methods now as compared with the processes of some years ago. Froebel compared a child to a garden, and all Froebelian teachers are taught to believe in the individuality of each child and his right to think for himself. "As educators," said Mr. Badley, "it is our business to impress our will upon the child, but it is also our duty to respect his individuality, to allow him to follow out his own interests, and develop his powers in his own way. The aim of education old and new is the same, and it is only the method which differs. Whereas it used to be quantity, it is now quality, and therefore the means by which knowledge is to be acquired becomes most important. In the old days receptivity was everything, now it is initiative. Froebel started from the study of child nature, and it is this which makes his system so far reaching and applicable at all stages. We followers of Froebel believe it responds to Nature, and makes a child able to make the most of life. It is a revolution, and we are tempted to pull down everything in order to build new foundations." Mr. Badley then went on to show that there is a real danger that the new methods may be confused with the spoiling of a child. Mr. Badley thinks that there are three main objects for the teacher to remember. First, to see that the child has a proper motive and interest; second, to see that the child is able to realize this purpose to a satisfactory conclusion; and third, that he is made responsible for what he does. The test of teachers is their power of inspiration. A child's obstacles must be met, but he must not be lifted over them. A very important point to remember is that all manual work should be really constructive and useful, so that mind and muscles may be fully exercised. To think out ways by which the work can be made more real should be a great object of all Froebelian teachers, whilst they must have a wide range of interest and knowledge, so that they may give each individuality an equal opportunity for work. The value of drill—not only physical but mental—must also be remembered as the means of developing self-control and the power of expression.

At the second session of the Teachers' National Union Conference at Llandudno (April 25), Mr. Tudor Walters (Leicester), President of the Association of Education Committees, delivered an address on "Secondary Education." The Education Act of 1902 would, he said, give the Local Authorities an opportunity of dealing on a comprehensive scale with secondary education. In a great commercial community like ours classical education appealed only to a limited number of people. He did not think it right and proper that the "dead hand" of the past should always control the methods of our secondary education, or that the traditional adherence to these methods of secondary education was best calculated to promote the highest interests of the country. It was conceivable that the pious donors of these charities would have their wishes better carried out by the

adaptation of educational institutions to the needs of the present day, and it was not good that those ancient charities, vast endowments, and splendid equipments should be controlled by cliques, however learned they might be. Many of these benefactions were intended for the children of the poor, and that they should have been so entirely appropriated to the benefit of the wealthy classes was a breach of faith and a departure from the intentions of the original founders. They were all aware of the good work the higher-grade schools had done before they were overwhelmed by the famous, or infamous, Cockerton judgment. Now, under the Education Act of 1902, they wanted to establish genuine municipal technical schools all over the country. He laid emphasis first on the absolute municipal control of these schools, which must be worked without the intervention of bodies of governors. The Local Authority must have the entire administration of the internal machinery of the schools. Then as to fees and free places, they must have absolute local option, because the fees to be charged and the proportion of free places varied in the different towns, and varied also enormously in different districts of the same town. Then he insisted that these schools must be recognized by the Board of Education, and receive a liberal scale of grant without respect to these questions of fees and free places, but only dependent on suitable buildings, adequate staffing, and a proper curriculum.

M. CANIVET delivered an extremely interesting lecture to a large gathering of the Société Nationale des Professeurs de Français en Angleterre (March 25) on "The Old Mother," the *harn-goz*, as all true Bretons call "La Bretagne" (Brittany). After a rapid review of the history of the old French province, he described its inhabitants of the present day—an ancient superstitious population, Christian to all outer seeming, but still retaining the old druidic belief at the bottom of their hearts; a poor hard-working people, among whom linger the practices and customs of five hundred years ago. M. Canivet concluded his lecture with an enumeration of the qualities, good, bad, and indifferent, of his countrymen; and we fear he was not at all partial to them. A hearty vote of thanks, moved by M. Le Pasteur Dégremont, who presided, and seconded by M. Miussen, was accorded to the lecturer.

THE School Nature-Study Union held its second public discussion meeting at the College of Preceptors (April 7), Mr. C. B. Gutteridge in the chair. Mr. Cross, Science Master at Addison Gardens School, read a paper on "How to teach Nature Study in a London School." Common objects continually before the notice of young people were shown to be the right subjects for profitable study that would lead them on to think and then to do something for themselves, thus getting at the production of their own self-activity. An interesting discussion followed. Mr. Cross in his reply illustrated his remarks by a specimen lesson with the use of the blackboard, and showed some of the papers written by his young students. It may be mentioned that two very useful pamphlets (1d. each) have been drawn up by the Executive Committee of the Union: (1) "A List of Books on Nature Study," (2) "Facilities for Nature Study offered by Museums and Gardens in and near London." Miss Holmes (Bedford College, York Place, Baker Street, W.) is the London Secretary, and Miss K. M. Hall (Borough Museum, Stepney) Hon. Treasurer.

THE Carnegie Dunfermline Trust have under consideration a proposal to form a College of Hygiene and Physical Culture in the town. A recent report of the Baths and Gymnasium Committee recommended the institution of such a college, with a two years' course: (1) anatomy, physiology (practical and theoretical), hygiene, theory of movement and elementary mechanics, child study, first-aid ambulance; and (2) gymnastics in all its branches (including remedial gymnastics), games, dancing, swimming, teaching, student's lesson, and singing and voice culture. It would be necessary that students at the time of entering be at least eighteen years of age, that they give evidence of having had a good secondary education, and that they present a medical certificate of health and of ability to undertake the course of study and of training. School-children suffering from bodily defects should be placed under medical supervision, and their physical training adapted to their needs. These considerations point to the conclusion that there ought to be (1) a reliable medical examination of all school-children. In order to avoid difficulties, this examination might in the first instance have

reference to such things as eyesight, hearing, and other matters that would not excite prejudice or raise opposition. (2) Medical advice ought to be at the call of physical training teachers, to guide them in dealing with special cases. The trustees expressed general approval of the report in respect of the following three proposals:—(1) the scheme for the institution of the college, including the provision of a residence for students; (2) the recommendation as to the medical examination of school-children and the provision of remedial treatment in special cases; and (3) the appointment of one or more pupil-teachers. The Committee was authorized to consider and further mature the proposals, and with that view to enter into negotiations with lecturers, medical advisers, and others, and to report to a subsequent meeting of the Trustees.

THE following resolutions have been adopted by the General Committee of the Secondary Teachers' Association of Scotland on the Training of Secondary Teachers:—“(1) that the training of secondary teachers, after the stage of the Leaving Certificate, should be given at the university; (2) that teachers of the higher branches should, as a rule, have specialized in their particular subject or subjects; (3) that, after a qualifying examination, recognized by the State, candidates should undergo a course of professional training, either in connexion with a Faculty of Education in the university or in a training college or in a secondary school recognized for that purpose; (4) that, after the conclusion of their professional training, candidates should undergo a period of probation in a secondary school under the supervision of the school authorities.”

At the Grocers' Company's School at Hackney Downs on the occasion of the last distribution of prizes under the existing régime (April 15) the Rev. C. G. Gull, who has been Head Master twenty-four years, said he hoped the name of the school might be continued without change, and he was quite sure that the London County Council were not anxious to cut the school off from its association with the past. There was no danger, he believed, of the County Council interfering with the details of the institution. He took it that, while the governing body would be changed, the spirit of the school would remain. During the time he (Mr. Gull) had been Head Master from one-third to one-half of the boys attending the school were the children of Non-conformists; and he desired to mention that at no time had any boy been withdrawn from the school owing to the nature or measure of the daily religious instruction.

At Girton College, Cambridge entrance scholarships have been awarded on the result of the recent examination in the following order of merit:—the Clothworkers' Exhibition of £60 a year for three years and one additional term to Miss A. Shillington (Queen's College, Belfast) for classics and Anglo-Saxon; the Skinners' Scholarship of £50 for three years to Miss M. Long (North London Collegiate School for Girls) for mathematics; College Scholarships of £30 for three years to Miss M. G. Tonkin (North London Collegiate School for Girls) for French and German; and to Miss C. Green (City of London School for Girls) for natural sciences; a Pfeiffer Scholarship of £20 for three years to Miss A. Woodward (University College, Nottingham) for classics; College Exhibitions of £15 for three years to Miss I. M. Mathews (Sheffield High School) for mathematics, Miss E. H. Pratt for French and German, Miss N. B. Drummond (St. Leonard's School, St. Andrews) for history, Miss M. Davies (King Edward's High School, Birmingham) for classics, Miss E. J. Ewart (Liverpool University) for classics, Miss L. Warren Jones (Blackheath High School) for mathematics, Miss M. G. Calthrop (Blackheath High School) for French, bracketed with Miss I. M. Massey (Tottenham High School) for German. The Gibson and Gamble Prizes, open to certificated students of the College, have been awarded as follows:—The Gibson Prize for an essay on some subject connected with the Greek Testament to Mrs. T. Kilpin Higgs; an essay by Mrs. J. H. E. Brock was highly commended. The Gamble Prize to Miss L. F. Waring for an essay entitled “Nature in Poetry”; an essay on “Samuel Daniel” by Miss E. M. Aldis was commended.

THE following elections have been made to scholarships and exhibitions at Somerville College, Oxford:—To a Clothworkers' Scholarship of £50 for three years Helen F. Miller, Oxford High School and private study (mathematics); to the Gilchrist

Scholarship of £50 for three years Dorothée de Zouche, Liverpool High School (classics); to the Coombs Scholarship of £50 for three years Matilda Snow, Oxford High School and private study (classics). To exhibitions of £20 for three years: Margaret C. Berry, private study (French); Violet Burton, Cheltenham Ladies' College (English); Arminella Hansell, private study (English); Annie M. Payne, South Hampstead High School (classics); Effie Ryle, Roedean School, Brighton (classics). Commended: Amber Reeves, Kensington High School (history); Anne P. Sumner, Columbia University (classics).

AT Lady Margaret Hall, Oxford, the following scholarship awards have been made:—To Olive W. Sinclair, High School, Clifton, the Jephson Scholarship of £50 for three years (mathematics); to Annie C. Heath, Ladies' College, Cheltenham, the Mary Talbot Scholarship of £40 (English literature); to Helen Gifford, Allenswood, Wimbledon Park, a scholarship of £30 (modern languages); to Dorothy K. G. Watkins, Durham University, bracketed equal with Miss Gifford, an honorary scholarship (classics).

AT St. Hugh's Hall the Clara Evelyn Mordan Scholarship of £40 a year for three years has been awarded to Frances M. Knipe, St. Stephen's High School, Clewer, and Edgbaston High School (English Literature), and a Hall Scholarship of £25 to Emily M. Duggan, St. Margaret's School, Bushey (mathematics).

AN “EX-SOLDIER” writes to the *Daily News* (April 13):

I arrived from India a month ago, after serving my country for eight years and a quarter, leaving with a very good character, and a First Class Certificate of Education, also an Acting Schoolmaster's Certificate, having had over six years in charge of children's and adults' schools in India, with invariably “V.G.” or “Excellent” reports at each examination of the school. Notwithstanding the cry of “No teachers,” I have been to London, Birmingham, Worcester, Brighton, and Portsmouth, and no one will have me as a teacher, labourer, or as anything else, evidently for the sole reason that I have been a soldier. There are hundreds of us in a similar predicament, having faithfully served our country, without a stain on our characters for a number of years, and now returned to the land of our birth to face starvation and destitution, and to die for the want of bread.

THE articles of agreement under which it is proposed to combine the Massachusetts Institute of Technology and Harvard University have been made public. Provision is made for a joint school of industrial science, to be known under the present name of the Institute of Technology, to be governed by an executive board of nine members, of whom three shall represent Harvard, and to be maintained by present Institute funds, augmented by the income of all funds of the Lawrence Scientific School, by three-fifths of the net income which may accrue from the Gordon McKay bequest, amounting to several millions, and by the income of all property which Harvard may hereafter acquire for the promotion of instruction in industrial science.

UNIVERSITIES AND COLLEGES.

THE negotiations have now been completed by which, London. under certain conditions, the Higher Examination of the Oxford and Cambridge Schools Examination Board and the Oxford Senior Local Examination will be accepted in lieu of the London Matriculation Examination and the London Matriculation Examination will give exemption from Oxford Responsions. A similar arrangement for the mutual recognition of certificates was concluded with Cambridge a short time ago.

MESSRS. DAVID ROLLO & SONS have offered to take Liverpool. two students into their engineering works every year, allowing them to count the time spent at the University towards their apprenticeship, provided that the students have graduated as Bachelors of Engineering, preferably in Honours. Thus a full apprenticeship can be served by three years at the University and two years with Messrs. David Rollo & Sons. This arrangement will also satisfy the Board of Trade requirements, the Board having undertaken to recognize the time spent at the University under the Faculty of Engineering in the proportion of two years for every three years: but a total of four years' apprenticeship only is required by the Board. A student, therefore, taking advantage of Messrs. Rollo's offer, and

spending his vacations in the manner recently suggested by Sir Alfred Jones, would obtain an excellent training. It is hoped that other firms will follow Messrs. Rollo's example.

The Institution of Civil Engineers has resolved to recognize the ordinary degree of Bachelor of Engineering of the University of Liverpool as exempting candidates from the Associate Membership Examination of the Institution.

THE Army Council has been in communication with Manchester University as to the scheme submitted to the military authorities recommending certain amendments to the regulations under which commissions in the Army may be obtained by university candidates on the nomination of recognized universities. In the list of recognized universities arranged as units for purposes of nomination Manchester is grouped with Liverpool, the University of Wales, and the Royal University of Ireland. It is understood that the Committee of Manchester University have stated to the Army Council their opinion that the grouping of universities so far removed from each other cannot but lead to an unsatisfactory working of the regulations. The Nomination Board under such a scheme would be composed of representatives of each of the universities named, and it is felt that a Board so constituted cannot be wholly responsible for recommending candidates for commissions, especially when it is considered that perhaps one-half, or even three-quarters, of the members of the Board could have no personal knowledge of the candidates recommended. Further, it is contended that the number of commissions open to the recommendation of the universities so grouped are too few in number to justify the adoption of the Army Council scheme. The appointment of a fully qualified instructor in tactics, military law, &c., and considerations of a financial character were also dealt with in the communication of the Manchester University Committee.

The Advisory Committee for University Extension, in consultation with representatives of various educational committees of the district, has unanimously passed the following resolutions:—(1) that the Committee considers that the present system of university extension lectures to pupil-teacher centres produces valuable results, and would deprecate any radical change in that system; (2) that a system of instruction similar to that given by the universities to pupil-teachers might with advantage be used as a part of the preparation of acting teachers.

With the object of diminishing the number of different examinations for which schools are required to prepare scholars, and also to secure that successful candidates for university scholarships may be able to devote the whole of their years of study to work of a true University character, the Joint Matriculation Board of the Universities of Manchester, Liverpool, and Leeds have decided to offer the use of the Matriculation Examination for the purpose of the award of scholarships tenable in any of the three universities. In accordance with this policy the Matriculation Examination is made use of by the Education Committees of the counties of Lancashire and Cheshire and of the boroughs of Manchester, Liverpool, and Salford for the award of numerous university scholarships which these Committees offer. In the case of Lancashire and Liverpool, papers of a more advanced character are combined with the papers of the Matriculation Examination for other scholarships. The Gilchrist Trustees, by whom a scholarship has hitherto been given on the results of the Matriculation Examination, have given scholarships to the three universities under different conditions, and the Gilchrist Scholarship is now discontinued. The University of Manchester has accordingly determined to award a scholarship on the results of the July Matriculation Examination. The Gee Scholarships for medical students at the University of Liverpool and the medical entrance Scholarship to the University of Leeds are also awarded on the same examination. The scholarship examinations of each university are held separately in the month of May.

THE *Irish Times* states that a change in the method of election of Provost of Trinity College will shortly take place. By a Charter of Queen Elizabeth the Provost was elected by the Fellows, but by a Charter of Charles I. the right of naming the Provost was given to, and has since remained in, the Crown. The authorities are now considering the question of recovering for the Fellows the right of election.

The question of university education continues to be warmly discussed. A lecture by Dr. H. Brougham Leech, Regius Professor of Laws in the University of Dublin, delivered at Clontarf (March 23) and published in the *Belfast News Letter* (March 24), deals with the subject historically, and briefly comments on the recently proposed solutions.

AT a recent meeting of the Glasgow University Glasgow. Court Prof. Jones submitted a motion calling attention to the difficulty of bringing about changes in the curricula and other matters, arising from the fact that such changes could be carried out only if the four Scotch universities acted together. The Scotch universities, he said, were really very powerless to reform themselves except in insignificant ways. There were two particular reasons for this helplessness. One was that the Commissioners had unfortunately taken in hand to regulate details, and another was that, while the regulations permitted movement by each university, the machinery was so cumbersome as to make that movement extraordinarily difficult. In Manchester, Liverpool, Birmingham, or other University cities, such changes as he had indicated could be effected by the bodies themselves. These universities had a distinction in their charter which enabled them to decide for themselves. He thought the Scotch universities should have the same privilege. They enjoyed less liberty than any universities in England, France, Germany, or America. Prof. Stewart sympathized with the motion, but pointed out that, as a set off to the way the universities were tied hand and foot to the Commissioners, they gave extraordinary liberty to the students. The number of options they had in the Arts curriculum was fast becoming a scandal in educational circles, because it was impossible to tell what M.A. meant nowadays. He thought the Committee might consider that point also. The motion was adopted.

THE Prince of Wales will visit Cardiff for the Cardiff. purpose of laying the foundation-stone of the new University College on June 28, but much regret is felt that his Royal Highness will not be accompanied by the Princess of Wales. During his visit the Prince will be the guest of Lord and Lady Windsor at St. Fagan's Castle. The Mayor and Corporation propose to ask the Prince to accept the freedom of the borough.

CURRENT EVENTS.

A PAPER on "Chaos and Contradiction in Present-day Educational Thought" will be read by Mr. F. H. H. Hayward, D.Lit., M.A., at the meeting of members of the College of Preceptors to be held on May 17.

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SIR HUBERT E. H. JERNINGHAM, K.C.M.G., Officier d'Académie, will address the Société Nationale des Professeurs de Français en Angleterre on "Quelques Souvenirs du Second Empire" at the College of Preceptors on May 27 at 4 p.m.

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A SUMMER Holiday Course for teachers of young children, organized by Miss M. E. Findlay, with the assistance of Miss McMillan, Miss Lawrence (Principal of the Froebel Institute), and Prof. Findlay of Manchester, will be held at the Froebel Institute during the first half of August.

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AT University College, London, Prof. Lyde's course on Regional Geography will be continued on May 4; and his course on Economic Geography on May 8.

The Jevons Memorial Lectures will be delivered by Mr. P. H. Wicksteed, M.A., on Mondays, at 6 p.m., beginning May 8. Subject: The Significance of Jevons's Work as an Economist. Open without payment or ticket.

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PROF. LLOYD MORGAN, Principal of University College, Bristol, will lecture on "Imitation" to the Childhood

Society and the British Child-Study Association at Parkes Museum, Margaret Street, W., on May 12, at 8 p.m.

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THE Ninth Annual Conference of the Parents' National Educational Union will be held in the Portman Rooms, Baker Street, W., on May 16-19.

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THE Annual General Meeting of the National Educational Association will be held at the Westminster Palace Hotel on May 4 at 4 p.m.

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EXCURSIONS of the London Geological Field Class, conducted by Prof. H. G. Seeley—this is the twentieth season—will be made on May 6 (Oxford), 13 (Northfleet), 20 (Uxbridge to Harefield), 27 (Guildford). Particulars from Mr. J. W. Jarvis, F.G.S., St. Mark's College, Chelsea, S.W.

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PROF. ADAMS, University of London, is to deliver a course of lectures in the School of Education of the University of Chicago during the summer quarter.

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THE Board of Education have just issued a list of twenty-four Holiday Courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Six of the courses are in Germany—viz., Greifswald, Jena, Königsberg, Marburg, Neuwied, and Salzburg; four in Switzerland—viz., Geneva, Lausanne, Neuchâtel, and Basle; one in Spain—viz., Santander; and the rest are in France—viz., Besançon, Tours, Honfleur, Paris, Grenoble, Nancy, St. Servan, St. Malo, Villerville-sur-Mer, Boulogne, Caen, Bayeux, Lisieux, and Dijon. The paper issued by the Board of Education gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of local secretary, and other details of importance to intending students. Copies of the paper can be obtained free on application to the Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, London, S.W.

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PRINCIPAL DONALDSON of St. Andrews has been presented with his portrait in oils, painted by Sir George Reid. The presentation was made by Lord Balfour of Burleigh, the Chancellor of the University.

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THE RIGHT HON. R. B. HALDANE, K.C., M.P., LL.D., has been elected Visitor of Bedford College, London.

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THE Glasgow and West of Scotland Technical College will receive £20,000 under the will of the late Mr. Donald (subject to Mrs. Donald's life interest), as well as the residuary estate.

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BIRMINGHAM UNIVERSITY has received £20,000 under the will of the late Mr. Thomas Best.

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MR. RICHARD PEYTON, who recently gave £10,000 to found the Chair of Music at Birmingham University, has now made a donation of £500 towards the foundation of a library of musical works. Mr. Francis W. V. Mitchell has also given £500, and Mr. John Feeney £25, to the same object.

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THE Cardiff and District Teachers' Association has resolved to guarantee £500 towards the Mayor's Fund for

the location of the Welsh National Museum and Library in Cardiff.

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Scholarships
and Prizes.

Two exhibitions, £50 and £30, will be offered by Trinity College, Cambridge, to candidates selected for admission to the Indian Civil Service at the August competitive examination. Apply in writing to the Senior Tutor (with two years' certificate of character) by September 1.

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CHRIST'S COLLEGE, Cambridge, offers a choral exhibition, £25 for 3 years. Examination June 15. Apply to the Dean.

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EMMANUEL COLLEGE, Cambridge, offers an exhibition, £50 for 2 years, to an advanced student. Apply to the Master.

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PEMBROKE COLLEGE, Oxford, offers 3 classical scholarships, £80 each. Examination, May 16. Apply for entry form to the Master or Senior Tutor, and return it by May 13.

* * *

Two scholarships, £50 each for 3 years, will be awarded to candidates (under 21, in need of assistance) intending to study Theology, in July. Examination, June 29. Apply to Rev. R. W. M. Pope, D.D., 4 Keble Road, Oxford, after May 22 and before June 6.

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THE Lindley research studentship in Physiology in the University of London, £100 for one year, will be awarded every third year, commencing 1905.

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AT University College, London, the Andrews Entrance Scholarships, the Campbell Clarke Scholarship, the West Scholarship, and the Clothworkers' Company's Exhibitions (Chemistry and Physics) are open. Notice of intention to compete by May 30. Examinations begin June 27.

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AT Bedford College, London, the Reid Fellowship, £50 for 2 years, is open this session. Applicants must be graduates of the University of London and Associates of Bedford College. Apply to the Hon. Secretary of the Reid Trust by May 30.

Two entrance scholarships—one in Arts for 3 years (£31. 10s., £28, £28), and one in Science, £48 for 3 years, will be awarded on an examination to be held June 28-30. Entrance forms to be returned to the Principal by June 12.

Two scholarships for the course of Secondary Training beginning in October next will be awarded to the best candidate holding a degree (or equivalent) in Arts or Science. Apply to the Head of the Training Department by July 7.

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THE Council of Manchester University has instituted a scholarship of £30 for 3 years, to be awarded on the results of the July Matriculation Examination.

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LADY MARGARET HALL, Oxford, offers four scholarships (£50, £40, £35, £25), and St. Hugh's Hall, one scholarship (£25 for 3 years), for competition in March, 1906.

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THE League of the Empire (Caxton Hall, Westminster) offers (1) a Lord Meath Empire Day Prize for Secondary Schools (Silver Challenge Cup, value £10. 10s., to be held by the successful competitor's school, with a personal prize of £5. 5s.) for essay (not more than 2,000 words); and (2) a similar Challenge Cup, with personal prize of £3. 3s. for primary schools, for essay of 1,000 words. Subject: "Empire Day: its foundation, purpose, and modes of celebration."

Appointments and Vacancies.

THE Principalship of the United Free Church College, Aberdeen, is vacant by the lamented death of the Rev. S. D. F. Salmond, D.D.

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THE electors to the Beit Professorship of Colonial History at Oxford will proceed to an election in October. Applications to be sent to the Registrar of the University by October 1.

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AT King's College, London, Mr. Peter Thompson, M.D., Ch.B. (Vict.), has been elected Professor of Anatomy; and Prof. Arthur Dendy, D.Sc., South African College, Cape Town, has been elected Professor of Zoology.

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MR. STANLEY DUNKERLEY, M.Sc. (Vict.), Head of the Department of Applied Mathematics in the Royal Naval College, Greenwich, has been appointed Professor of Engineering in the University of Manchester.

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DR. STRACHAN, Professor of Greek in Manchester University, has been appointed also Lecturer in Celtic.

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THE Council of the University of Birmingham has decided to establish a Professorship of Civil Engineering, and an Assistant Professorship of History.

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DR. A. R. FERGUSON, senior assistant to the Professor of Pathology in Glasgow University, has been appointed Professor of Pathology in the Medical School, Cairo.

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MR. P. A. BARNETT has been appointed to the new post of Chief Inspector of the Board for the Training of Teachers.

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APPLICATIONS for the Head Mastership of the City of London School are to be lodged with the Secretary by May 20.

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MR. T. RAYMONT, M.A., Professor of Education in University College, Cardiff, has been appointed Vice-Principal of, and Master of Method in the Training Department of, the Goldsmiths' College, New Cross.

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MISS CAROLINE GRAVESON, B.A., Mistress of Method and Lecturer on Education in the University of Liverpool, has been appointed Vice-Principal and Mistress of Method in the Day Training College, New Cross.

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MR. J. H. HICHENS, M.A., Head Master of Wolverhampton Grammar School and formerly assistant and house master at Cheltenham College, has been appointed Head Master of the new King Edward VII. School at Sheffield.

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MR. THOMAS M. MORRISON, M.A., acting Rector of Glasgow United Free Church Training College, has been appointed Rector. His father, the late Dr. Thomas Morrison, held the post for a long period.

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Literary Items.

THE volume on "Ireland" in Messrs. Blackie's colour series is promised immediately. The illustrations are from paintings by Mr. Francis S. Walker, R.H.A., and the letterpress is by Mr. Frank Mathew—both Irishmen.

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MESSRS. GEORGE PHILIP & SON have purchased from Messrs. George Routledge & Sons the following series of

reading-books:—Ludgate Story Readers, Ludgate Standard-Author Readers, Ludgate Nature-Study Readers, Ludgate Supplementary Readers, and Magnus's English Course.

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MR. FISHER UNWIN has been awarded a silver medal for his exhibits in culinary literature at the International Cookery Exhibition, Leipzig.

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MESSRS. WILLIAMS & NORGATE do well to draw fresh attention to the "Beiträge zur alten Geschichte," edited by Profs. Lehmann (Berlin) and Kornemann (Tübingen), in co-operation with an eminent international staff of contributors. The journal treats all aspects of ancient history, and accepts articles in English, French, Italian, and Latin, as well as in German.

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Saint George for April is an exceptionally strong number. The Rev. Prof. Masterman writes on "Wordsworth as a Social Teacher," Prof. J. A. Thomson gives "Suggestions on Sociology," and Mr. J. A. Dale describes "Some Functions of a University."

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Occasional Papers for April maintains its high ideal with vigour. "Stories, gossip, and the things upon which the popularity of the greater part of modern journalism is based have been ignored."

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Child Life for April gives a sketch of the life and work of the late Mme. Michaelis (with photograph), and several substantial articles on Froebel and Froebel's principles.

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THE Supplement to the *Lady's Pictorial* for April 8 gives a description of Girton and Newnham, with charming illustrations and interesting portraits.

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A STRIKING sketch of "The People's University—Ruskin Hall, Oxford—with illustrations, appears in the *Young Man* for March.



It is proposed to raise funds for a testimonial to the Rev. Dr. Warre on his retirement from the Head Mastership of Eton, in commemoration of his long service to the college. Mr. H. W. Hoare, 96 Ebury Street, Chester Square, is honorary secretary.

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THE University of London has issued a pamphlet containing the regulations for the selection of University candidates for commissions in the Army and details of the Courses of Instruction in Military Subjects to be held at the University. Communications relating to these regulations to be addressed to the Academic Registrar.

EDUCATIONAL EXHIBITS AT ST. LOUIS.

A COMPARATIVE ESTIMATE, WITH LESSONS.

IN the February number of *Education* (Boston), Mr. Andrew W. Edson, Associate City Superintendent, New York City, presents a careful review of the exhibits displayed on the seven acres of "the palace of education" at the St. Louis Exposition last summer. New York City and St. Louis naturally claim special prominence, and the contributions of the several States of the Union can only be treated summarily. What specially interests ourselves is Mr. Edson's review of the exhibits from foreign countries, and, in particular, the comparative position of those from Great Britain. Mr. Edson writes:—

GERMANY.

First among the educational exhibits from foreign countries was the one from Germany. This was noticeable in its completeness and excel-

lence, and especially in its perfect organization and in lines of illustrative apparatus. From the teacher's standpoint this exhibit was easily first of any in the educational building. A comparatively small portion of the exhibit was the work of pupils. Each enclosure had at its entrance a detailed statement of what was on exhibition within. In the elementary and secondary school sections, the exhibit of geographical models, relief maps, globes, atlases, and other illustrative apparatus was very complete. The apparatus for science teaching in the elementary grades, appliances for teaching zoology, anatomy, botany, mineralogy, geology, and mathematics were of unusual excellence. A large phonic chart of photographs of the face, giving the position of the lips in making the elementary sounds, was of special interest to visitors. The literature on all subjects, especially of books strictly professional, was very abundant.

In the University section there were large photographs of buildings, models, statues, articles from the excavations of the Roman citadel, Saalberg, and copies of the Babylonian flagstone pictures in colour. The display of scientific instruments for the teaching of astronomy, geodesy, optics, electricity, meteorology, thermometry, was very complete. The most extensive exhibit, however, was in the apparatus used in teaching medicine, surgery, pathological anatomy, bacteriology, and a Roentgen cabinet of the latest patterns.

SWEDEN.

The exhibit from Sweden was unusually good, in that it presented a carefully graded progressive exhibit of sloyd cardboard models, models in wood accompanied by drawings intended as a guide in executing the work, and models in metal, exhibits in knitting, darning, plain needle-work, and dress-making. The model of a school kitchen, or "cookery school," made to a scale of one-eighth, gave a very clear idea of the equipment for work in domestic science. The display consisted of samples for science teaching, as animal and vegetable products, samples illustrating processes of transformation from the raw material to the finished product, stuffed animals, preserved specimens, large darning and sewing frames for illustrating stitches, an adjustable combination desk for mechanical and freehand drawing, chemical equipment, and art work from the technical schools. School journeys and organized games were made a striking feature. This entire exhibit was intensely interesting and instructive to common-school teachers.

FRANCE.

The exhibit from France, although poorly arranged and widely scattered, had more of pupils' written work of interest to visitors than had that of any other foreign country. This exhibit consisted of sets of compositions on all possible subjects continued through a school year and bound into volumes. These papers were first drafts by pupils with teachers' frank comments on the margin. These volumes were well worth careful study, especially those on school excursions, and temperance teaching. On the latter subject, the compositions, profusely illustrated, described grape culture, wine making, the various steps in wine drinking, and the effects thereof. The work of pupils in paper cutting, pattern making, drafting, cutting, and designing were well worth careful study, as also were the recipes in domestic science and the school herbariums. The industrial and technical schools presented large and excellent exhibits in their several lines.

GREAT BRITAIN.

The exhibit from Great Britain was especially strong in its contribution from secondary schools and universities, and from art schools and special schools. The drawing, painting, statuary, photographs, and statistical tables made the enclosure a very attractive one. The actual amount of school work from the elementary schools was quite limited, and what there was was under lock and key, inaccessible except when the one in charge could be found. To any one interested in the education of mentally and physically defective children, the charts and statistical information from the Bristol and London schools were of absorbing interest.

Mr. Edson then makes important summary observations, holding that "from every point of view the educational exhibit at St. Louis was far ahead of any ever before made."

It showed clearly the advance in educational methods and results during recent years. It disclosed some defects in our work and pointed out wherein foreign countries excel, and at the same time it inspired in us confidence that, on the whole, our schools are well managed, and that our educational leaders are sane and safe. To any visitor who was sufficiently interested in education to make a careful inspection of the exhibits such an inspection could not but prove gratifying, while to those actively engaged in teaching it could not fail to be an inspiration to better directed effort. No matter how good work one may have accomplished, he found something in some line better than anything he had ever done. Such exhibits are a test of accomplishments, and tests always clarify one's views. This exchange of ideas must bear fruit in a quickening of interest in education and must give a fresh impulse to educational workers in every field.

OBSERVATIONS.

The following after-thoughts bearing upon educational ex-

hibits may usefully be borne in mind on occasions of less magnitude:—

1. Any educational exposition should give more attention to the organization of schools, and to aids, appliances, and devices, than to the work of pupils; that is, the exposition should be prepared from the teachers' point of view rather than from the pupils'. In this connexion statistical and graphic charts, photographs, and models may well form an even more prominent feature.

2. All exhibits from special and private schools should be in separate alcoves and be clearly marked as such, in order that it may be definitely understood whether the work presented is from public or private institutions.

3. There should be a more careful grading of exhibits, showing clearly the successive steps through the course of study. As a result of this careful grading there will be naturally a wise selection, less in quantity, but of better quality. And in this connexion a uniform system of grouping—by subjects or by grades instead of by towns and cities—should be insisted upon.

4. Large bound volumes are of little value. They are too bulky to be handled easily, and but few have time to examine them thoroughly. Small pamphlets giving the work of a class or of an individual for a year or a half-year are of much more value.

5. The written materials should show by consecutive lessons through a term or year the successive steps taken in the subject studied. Isolated exercises, however excellent, do not satisfy the close observer.

6. Each set of papers by pupils should have the first drafts, or, better still, first drafts with second drafts attached, accompanied by a definite and complete statement by teacher in reference to the conditions observed by pupils, the nature of the preparation, and the method of work. Visitors can then study the written work of classes with greater profit.

7. Courses of study, time schedules, and daily programmes should form a prominent feature of every exhibit.

8. School excursions to local industries afford material of great interest to visitors, in that the photographs and compositions show the life of the people. The subjects treated interest pupils and incite them to the best form of expression. Foreign countries, especially Germany, Sweden, and France, emphasized, and very properly so, the educational value of school excursions.

9. Each exhibit should have a printed pamphlet for distribution, giving a description of the contents of the enclosure and a brief explanation of the scope of the work attempted, the methods employed, and the results attained.

10. School exhibits are of little value without a competent attendant present, one who understands thoroughly local conditions, to explain the leading features to visitors.

In connexion with Observation 6, we may note that elsewhere Mr. Edson remarks: "The mistakes of pupils accompanied by frank criticism of teachers were a striking feature of the papers from the German and French schools. There was an air of genuineness about the papers that spoke even louder than teachers' statements."

THE EFFICIENT SECONDARY-SCHOOL TEACHER.

AN AMERICAN VIEW OF OUTSTANDING CHARACTERISTICS.

[Adapted from a recent article in the *School Review* (Chicago) by WALTER BALLOU JACOBS, of Brown University, Providence, R.I.]

1. RIPE SCHOLARSHIP.

First, the efficient teacher in a secondary school should be a man of broad learning. He should be respected for his learning, not only by his pupils, but by the community. Good text-books have improved teaching, but they have tended to demoralize the teacher. Too often the man is not to be found for the text-books that are piled upon his desk. Such a man is likely to infuse into his pupils respect for text-books rather than a love of learning. Learning comes to be an impersonal dead thing, rather than a warm breathing thing of grace and dignity. Too many of our teachers are good at school management merely. Their reputation rests upon that rather than upon the fullness of their learning. The externals of school-teaching are emphasized at the expense of the learning which is its heart and core.

There are a number of conditions which tend to discourage broad scholarship in our secondary-school teachers. Our school programmes are unstable. The enormous increase in pupils, the multiplicity of studies, the love of novelty, the lack of any recognized type which might act as a fly-wheel, make our programmes a seething pot. Teachers boil up one year with one group of studies, and must teach these. The next year they boil up with another group, and with these their lot is cast for another year. The most valuable teacher in a corps of teachers comes to

be the one who can teach anything—the jack of all trades who is good at none. Scholarship is a slow product. It needs time and quiet for growth. One cannot pull it up every year and transplant it to new soil. And, further, this confusion and lack of uniformity in the programmes of our schools discourage thorough preparation on the part of those who intend to become teachers. The most willing and the most competent are confused by the kaleidoscopic changes, in opportunities and requirements. Depth of scholarship seems less valued than superficial variety. This is unfortunate for the schools, dishonourable for the teaching guild, and suicidal to progress in scholarship. If scholarship is to be nurtured anywhere, it should be nurtured among teachers. It is the teachers' crown. No amount of sympathy, no amount of method, can compensate for its absence. Our education has too much a tendency to display itself in brick and mortar, in high-sounding names, in a multiplication of offices and official machinery. All this is very well in its place, but its place is strictly a place of subordination. How long will it be before we shall learn that, after all, that which is intangible is of more value than the tangible; that the unseen scholarship of the teacher is the gem for which brick and mortar—yes, marble and granite—are but a coarse and vulgar setting?

This attainment of ripe scholarship is something which the teacher must often work out alone. Our universities with their summer schools are doing something to foster it. The general public is giving it scant thought and small reward. To them a place is a place and a salary a salary. Executive ability seems far more valuable than learning or wisdom; but rest assured the time will come when this shall no longer be so. Our people will some time have done with the husks of externals and value the kernel more than the waving beard. But, if the people be blind, yet we the teachers must not see darkly. The teachers are the leaders of thought, and must not only satisfy the future, but make that future. We cannot be content with mere seemings or mere forms. In our hands has been placed the torch of learning. . . . The torch of learning must be held high by human hands, if it is to be seen of men.

To aid the scholarship of our teachers we must foster the large central high school, as opposed to the small and weak local school. Local pride that each little community may have a high school must not hide the advantages of larger and better equipped schools. High-school teachers must be sought for who are teachers of something, and not just teachers of anything. More uniform and better planned courses of study must be adopted. Wild experimentation must be bridled. Teachers must not be required to teach many subjects nor to change their subjects at the principal's whim. These are indeed externals, but they are like climate and atmosphere. They make it possible for the tender plant of scholarship to put forth buds, blossom, and bear fruit. The keeping of marks, the ringing of programme bells, even the correcting of papers, must not stand before the attainment of a rich and accurate scholarship.

2. PASSION TO MOULD MEN.

Learning is by no means the only characteristic of a good teacher. He must have a yearning for the souls of men; to mould them and shape them for good. This yearning may not necessarily be religious, but it must be missionary in its spirit. The true teacher is very close akin to the true missionary. . . . When teaching comes to be merely a means of getting a living, the trade by which one earns his daily bread, then come weary hours, then come stupid classes, then come weariness and ennui. . . . Let not a man think that because he loves learning he is called to teach. Let him also ask himself: "Do I love the souls of men and the souls of little children?" There was no error in those early colonial days when the preacher and the teacher stood side by side as men near of kin.

The roots of this spirit are found in the conception of education as a transforming and moulding. To educate is not simply to load with learning—the individual's self still remaining the same. To educate is to create: it is more than to convert. And it is not a creation which comes into birth at the fiat of might, but it is the product of the patient, fostering care of love and sympathy; of the brooding of the soul of the teacher over the soul of the pupil.

3. SYMPATHETIC POWER.

Every teacher who is an efficient teacher must be a patriot, but patriotism may not sleep from war to war. The patriotism of the teacher is the patriotism of peace rather than of war. The true patriot is the man who recognizes the needs of his people,

whatever those needs may be, and makes haste to serve them. Hence the teacher must not be a man apart from men, beetle-browed and stern; but he must feel the pulsing life of other men and of the community which he serves. Once education was an affair of the Church; then it came to be the work of the State. Now more and more it is coming to be the deed of society rather than the deed of the State, and Society merely uses the State to execute its will. The true teacher of to-day must be a student of social science, as the true teacher of the earlier days was a student of theology. He must study . . . the complex relations which make up our social and industrial life. He must in thought unravel thread from thread. He must see how to complete the unfinished pattern, and in his school with his scholars he must begin to weave them into what shall be a more beautiful pattern than the past has promised. This is patriotism in its noblest sense. The secondary-school teacher must be the uncompromising foe of selfish greed, whether it be the petty sin of the individual or whether as a vast impersonal corporation it grinds the poor in the dust; and he must be the friend and defender of charity and brotherly love. He must be the foe of careless and wasteful living, and he must be the friend of industry and high ideals. He must be the foe of a schooling which is not a true preparation for living, and he must be the friend and champion of a wise preparation for living.

The teacher stands face to face with the most ambitious problem the human race has ever set about to solve in a practical way—the uplifting and advancement of the race itself. The secondary-school teacher has the important place in this great undertaking—to him it belongs to select the future leaders and inspire them to leadership. In this work there is but one guide—the experience of the past. The teacher must make this experience his own. He must master the history of education, and the history of the onward progress of civilization itself. Else he is a blind leader of the blind. He must know the actual part which education has performed in race-advancement, that he may apply the great power of education wisely and rationally. It is true that the way which education has pursued in its onward march is strewn with stupid blunders and lost causes. These mistakes have been repeated again and again. It is one of the saddest facts of the history of education that even great teachers have been so completely ignorant of the past, and so unable to profit by the teachings of the past. In the future this must not be. . . .

The recent study of the meaning and promise of adolescence has opened another vast field of which the secondary teacher of the past has been in self-satisfied ignorance. The hopeful sign is that we are just knowing enough to know how totally ignorant we are. We are dealing with vast forces of human uplifting or degradation—forces which have their roots deep in the prehistoric history of the race. They are the very texture of human nature itself. They are like threads for long undershoot which at last appear above the surface and begin to trace a pattern, as if guided by an unseen hand. How we have been snarling these threads and cutting them, and how often we have been unable even to see them at all, or denied them when we did see them! As well may a physician be an efficient physician and be ignorant of physiology, as a secondary-school teacher be an efficient teacher and be ignorant of the problems of adolescence. This study of adolescence has upset, and will still more upset, the traditional psychology of the schools. . . .

Shall the secondary-school teacher, then, be a student of psychology! Yes and No! He shall know what other men have thought about the mind, its growth and development. He shall study the minds of his pupils. He shall know and wonder at the marvels of their unfolding; but he shall know them, not for the sake of the knowledge, but for the sake of the boy and for the sake of the girl. He shall study his pupils, not as things, as objects of scientific knowledge, but as beings like himself, as sons and daughters. He shall know his pupils rather sympathetically and instinctively than simply intellectually. . . . The greatest teachers have often lacked method, but they have never lacked heart. They have been *men*—men of sympathetic power, of magnetic influence—but never mere cold, intellectual methodizers.

4. MASTERY OF METHOD.

And yet method and professional skill have an important part in the efficient secondary-school teacher. He is not a mere hearer of lessons, nor yet a mere entertainer. He arouses the interest of his pupils and inspires their earnest effort. He is an inspirer and not a taskmaster. He is not ashamed to have a method and to employ it, but he is a master of method, and method is not a

master of him. The true teacher is an artist. His work delights him. This does not mean that he has not been a student of technique, but rather that he has spent weary hours in its mastery. This does not mean that he is ignorant of the history of his art, but rather that this history has fascinated and enchained him. The artist seeks in every field the means of improving his art, but he uses these with the hand of the master and not with the hand of the slave. Some men are brave because they are too ignorant to know fear. Some men think themselves wise because they never have studied the mysteries of the world. Ostrich-like they hide their heads in the sand. Some teachers think themselves above method because they have never studied method. The only way to be a master of method is to know it and rise upon it, as upon stepping-stones, to the master's seat. To be a student of method means that the teacher has reached the stage of self-consciousness. There are three stages by which the race of men grows. Lowest of all is the instinctive. Like blind men, they grope upward in the dark, not even knowing that it is upward. Then there is the imitative stage, where the good attracts by its goodness, and we imitate because it is good; but the ways and means are unknown to us. And last comes the self-conscious stage, where we construct our own ideals, and, through self-criticism, strive to attain them. So there are three grades of growth in the development of the teacher. First, there is the instinctive teacher, who teaches well because he was born with happy instincts; for the most part he does not know the why, and he surely does not know the how. Then there is the imitative teacher, who is fortunate if he has had good models and unchanged conditions. And last there is the teacher who consciously sets himself ideals and consciously seeks the means of realizing them, who is thoughtful when he succeeds and who learns by failure; whose difficulties are problems to be solved; whose problems are challenges to victory. The efficient teacher is wise, hopeful, courageous. He inquires often what are the characteristics of an efficient teacher, and seeks to realize them. The method of the secondary-school teacher must be a more skilful method than that of the grammar-school teacher. It must be more hidden, more self-effacing; hence it is more difficult to acquire, and needs more painstaking labour and penetrating comprehension.

LONDON SECONDARY SCHOOLS:

The report of the Education Committee of the London County Council on the provision of additional secondary schools (April 4) states that the secondary schools in the county, though for the most part good in quality, are admittedly far from being adequate in quantity, and the Committee are addressing themselves to the problem of what steps the Council should be advised to take on the subject. According to the best information in their possession, there are within the administrative county about eighty-eight secondary schools for boys or girls which are usually recognized as more or less of a public character. About half of these receive grants from the Board of Education and the Council. The Council's scholars have at present the choice of seventy-nine of them, but only about sixty contain any large number of these scholars. They appear to provide accommodation in the aggregate for about thirty thousand pupils. There are about two thousand of the Council's scholars in attendance. The school buildings—in most cases built or rebuilt within the last twenty years—stand almost invariably on freehold sites, which probably represent a capital value approaching a million sterling, and the total value of their property and endowments must exceed five millions sterling. The total revenue of these schools from all sources seems to reach £100,000 a year, of which £120,000 is derived from endowments—the bulk of which is enjoyed by the richer half of the schools, few of which receive grants, £220,000 from fees and miscellaneous items, £20,000 from Government grants, and £40,000 from the grants and payments for scholars made by the London County Council.

The Committee point out that it is difficult to estimate with any precision the secondary-school accommodation that ought to exist in London, there being no statistics available as to (a) the extent to which London boys and girls are sent to the numerous secondary day schools just over the border, or to boarding schools; (b) the extent to which London secondary schools are used by children belonging to other counties; and (c) the accommodation provided by private venture schools, of which there are many, but as to the efficiency of which little is known. But they compare the estimated aggregate accommodation in the eighty-

eight schools which are more or less public in character—namely, 30,000—with the figure of 12 per 1,000 of the population (which is that usually adopted as a normal standard), or, say, 55,000. They think there can be no doubt that a large extension of the supply of public secondary schools within the next few years (and by the Council) is inevitable. Many of the existing schools are habitually full, and some have regularly to refuse pupils (apart from the Council's scholars) every term. The Committee bring this matter forward at the present stage because of the necessity of making provision for the Council's scholars. In the last session 1,900 scholars were appointed, and for these (about 600 boys and 1,300 girls) suitable vacant places have been found, though with some difficulty in the case of girls in certain districts. In July next the Council will probably award 4,100 scholarships. Additional places in excess of those found last year will, therefore, have to be found in September or October next for about 650 boys and 1,550 girls.

The best estimate that the Committee can frame at the present moment indicates that there will probably be sufficient and suitable accommodation for all the boys so far as the requirements for the year 1905 are concerned, but that additional accommodation for girls should be provided by September or October to the extent of about 1,000 school places. The estimates in regard to the new scholarship system included the cost of maintenance of such new school places. The districts as to which the Committee are convinced that the need for accommodation is clear are the South-Eastern (notably Woolwich, but also Lewisham), the Western (notably Fulham), and the North-Eastern.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on April 15. Present: Dr. Wormell, President, in the Chair; Mr. Barlet, Mr. Baumann, Mr. Bidlake, Mr. E. A. Butler, Mr. J. L. Butler, Mr. Charles, Mr. Eve, Dr. Lawrence, Sir Philip Magnus, Dr. Moody, Mr. Morgan, Miss Punnett, Mr. Starbuck, Rev. J. Stewart, Mr. Storr, Rev. J. Twentyman, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

A communication was received from the Board of Education announcing that, by a Supplementary Order in Council, the term of office of the Teachers' Registration Council had been continued for one year beyond the three years specified in paragraph 2 of the Principal Order—viz., to March 6, 1906.

The report of the Finance Committee was adopted, and direction was given to remove from the Members' List the names of five members of the College, on account of non-payment of subscriptions.

The following persons were elected members of the College:—

- Mr. G. C. Bachelor, A.C.P., Royal Orphanage, Wolverhampton.
- Miss E. Coy, Lynton House School, Kingston Crescent, Portsmouth.
- Mr. L. R. M. Feltham, A.C.P., 9 Westgate Terrace, South Kensington, S.W.
- Miss D. Ibbett, L.C.P., Convent of the Ladies of Mary, Coloma, Croydon.
- Mr. F. W. Leicester-Hulk, A.C.P., Hartmann's Skole, Hvalstad, by Kristiania, Norway.
- Mr. J. Oliphant, M.A., 7 Broadhurst Gardens, South Hampstead, N.W.
- Mr. H. E. Richardson, B.A., B.Sc., A.C.P., 103 Pemberton Road, Harringay, N.
- Mr. S. J. Walters, A.C.P., 29 Park Road, Abingdon.

The following books had been presented to the Library since the last meeting of the Council:—

- By the AUTHOR.—De Saint Joseph's Cours Complet de Langue et de Littérature Française (4 vols.).
- By the AGENT-GENERAL FOR NEW SOUTH WALES.—Coghlan's Statistical Account of Australia and New Zealand, 1903-4.
- By ALLMAN & SON.—Belcher's Practical Electricity; Blonnet's Excerpts from French Authors; Christian and Pratt's Modern Geometry; Du Pré's Sketch of English Literature; Laurie's Text-Book of Elementary Botany; Laurie's Flowering Plants; Lee's English Grammar on Historical Principles; Reeve's Easy Excerpts from French Authors; Reid's Physical Geography; Sharp's 3,500 Examples in Arithmetic; Varley's Algebra; Varley's Graphs; Williams and Warwick's English History.
- By G. BELL & SONS.—The York Readers, Book II.; Pendlebury's Arithmetical Scheme B Test Cards, Standard II.
- By A. & C. BLACK.—Finnemore's Story of the English People.
- By the CLARENDON PRESS.—The Dream of the Rood; Jowett's Translation of Aristotle's Politics.
- By HACHETTE & Co.—The Public School French Grammar, Part II., Syntax.
- By MACMILLAN & Co.—Deighton's Shakespeare's Two Gentlemen of Verona.
- By J. MURRAY.—Tucker's History of England.
- By the GENERAL MEDICAL COUNCIL.—The Medical Register, 1905; The Dentists' Register, 1905.
- By the INSTITUTE OF CHARTERED ACCOUNTANTS—List of Members, &c., 1904.
- By the JOINT SCHOLARSHIPS BOARD.—Year-Book, 1904-5.
- Calendars of the Royal University of Ireland, 1905, and Supplement; University College of Wales, Aberystwyth, 1904-5; Victoria University of Manchester, 1904-5.

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SCIENCE TEACHING

AND THE THEORY OF SCIENCE.

ADDRESS BY T. PERCY NUNN, M.A., B.Sc., LECTURER ON METHODS OF SCIENCE TEACHING IN THE LONDON DAY TRAINING COLLEGE.

At a joint meeting of the members of the College of Preceptors and the Assistant Masters' Association, held at the College of Preceptors on April 12, Mr. R. BLAIR, M.A., B.Sc., Chief Executive Officer of the L.C.C. Education Committee, in the chair, Mr. T. PERCY NUNN, M.A., B.Sc., read a paper on "Science Teaching and the Theory of Science." After preliminary remarks, Mr. Nunn proceeded as follows:—

THE BASIS OF FACT.

There is no doubt that every science rests upon a basis of certain fact. No one questions that statement as a principle, although in practice the distinction is not always made between this "solid ground of Nature" and the superstructures which man's toils and genius have erected upon it. It must be admitted that the distinction is sometimes a little difficult to maintain—especially since psychology has taught us that in a sense "the whole furniture of earth and choir of heaven" may be claimed as products of man's constructive activity. If you have penetrated no farther into psychology than, say, the opening pages of Mr. Stout's "Manual," you will be in no doubt as to what I mean. You will no longer be able—at least in your reflective moments—to regard the cigar which Mr. Stout places between your fingers with quite the same ingenuous objectivity as before. It is no longer simply an "object"—a bit of the flotsam and jetsam of time to be welcomed for the sake of the admirable "properties" and "qualities" with which beneficent Nature has endowed it. You can hardly avoid seeing the working of the mental machinery which with wonderful art-concealing art builds up the "cigar" from a mass of present and past "impressions of the senses." At such times you may be tempted to assert that in these impressions pouring in through the traditional Five Gateways of Knowledge—and the less obvious entrances which modern research has distinguished—we must recognize the real bed-rock of fact upon which science seeks to build.

PREJUDICES OF COMMON SENSE.

But this, I think you will find, is not the case. Science starts, at any rate, with the healthy and serviceable prejudices of common sense. It assumes that the world we live in consists for the most part of *things*, each tight in its own skin, secure in the possession of its properties and attributes, even if it is doomed for ever to waste them upon the desert air. The point of departure of the special line of inquiry which we call the science of heat is the fact that some of these things are hot, some cold, and that changes in this condition of hotness or coldness incessantly occur—the water in the pot on the fire getting hotter, the pudding on the plate colder, and so forth. Doubtless your class will start with what I have called the common-sense attitude towards these facts; that is, they will regard this hotness and coldness as states of the bodies of which contact or proximity simply makes us aware. The scientific treatment of the facts must begin with a disturbance of the *naïveté* of this attitude. You make a boy place his hand for some time in a bowl of hot water, while another places his hand in cold water. Then you mix the water in a third bowl, and invite statements about the condition of the mixture from the two boys. "It is cold water," says the one; "no—hot water," maintains the other. This contradiction—instances of which can, of course, be multiplied quite easily—leads to important consequences. It leads the children to see that their verdicts on the subject of the hotness and coldness depend partly upon subjective or personal conditions which vary from one person to another, and in the same person at different times. But cross-examination will reveal that it has not destroyed their conviction of the existence of an *objective*

condition—an actual state of the body itself which is the same for everybody, and is, after all, the most important condition, for in its absence there would be no motive for saying anything about the hotness or coldness of the body at all. Recognizing clearly the distinction between this state and their own varying verdicts about it, your children are ready to admit the propriety of distinguishing it by a new name—*temperature*. Thus the temperature of a body is conceived as that “real,” or objective, state of the body which our verdicts as to its hotness and coldness aim at expressing, but only with imperfect success. But, unless we are resigned to despair of ever knowing anything certain about this state, we shall look about for some index of it that shall be free from the contradictions of our senses.

INDEX OF OBJECTIVE CONDITION.

To satisfy this demand you will, of course, introduce the thermometer. You will need no hints from me on that topic, but it will be interesting to see precisely how the thermometer does meet the demand for a trustworthy index of that objective condition which your pupils now think of as the temperature of the body. You plunge your first rude thermometer—a flask of coloured water, perhaps, provided with a long stem—into a beaker of water, which you cause to become hotter and hotter. As it does so, the liquid in the thermometer is observed to expand. Questions addressed to your class will now elicit a result which you will doubtless anticipate, although I think it is possible that you have never quite appreciated its significance. The children will admit without any hesitation and without any evidence that to every position of the rising liquid in the stem there corresponds one precise temperature of the water in the beaker. Let us be sure that we understand the exact meaning of this admission. Mark the height of the liquid in the stem and repeat the heating of the water on another occasion. When the liquid once more reaches the old mark, your class will affirm with confidence that, whether it feels as hot or not, the water is *really* just as hot as it was on the first occasion. . . .

THE POSTULATE OF OBJECTIVITY.

In our hypothetical first lesson on heat two indubitable postulates have come to light. The first showed itself when the children maintained that, although their several verdicts about the hotness or coldness of water were not concordant, yet there was one real objective state or temperature of the body, which their perceptions aimed at, so to speak, but did not, or did not all of them, hit. This postulate, this demand for a state of everything that shall be independent of each of us and the same for all, has not, I think, received sufficiently definite and widespread recognition. We are thus free to give it a name, and I suggest the name Postulate of Objectivity. Examination will reveal this postulate at the base of all scientific work. It is well known that separate measurements of a physical quantity, whether made by one observer or by many, are practically never identical. When mechanical difficulties have been overcome, and instrumental devices of the highest perfection provided, the measurements—whether they be of the time when a star passes the cross wire of the telescope, of the weight of a cubic centimetre of water, of the determination of an electrical resistance, or of any other quantity—always show the same ineradicable inconsistencies, yet it is always assumed that the quantity in question has a definite objective value, and we boldly seek by means of our theory of errors to determine what that value is.

We shall find the real significance of this postulate, I think, in some such considerations as the following. So long as we sit in our arm-chairs, comfortably aloof from the stress of life, we can afford to recognize that the ancient thesis of Protagoras: “Man is the measure of all things”—even if we remember that man here means “individual man”—is one of those “arguments that admit of no answer.” When, however, we take our place side by side with our fellows in the world of action we recognize that the other half of Hume’s remark applies to it also. It “carries no conviction.” Social co-operation would be out of the question if each man had his own world and insisted upon sticking to it regardless of its discrepancies from the worlds of others. Common action is possible only if we can grow up in the secure belief that in our several lives we deal with identical things in a common world. So clearly is this recognized that we do not scruple to remove from society, as “mentally deranged,” those who are unfortunate enough not to be able to bring their individual worlds into practical agreement with the worlds of others. In the case of those of us who are deemed sane the divergencies from the assumed objective standard are only great

enough to remind our friends that our souls are still our own. Will you not agree with me that the recognition of the connexion between the Postulate of Objectivity and the fellowship which affords to human life at once its indispensable basis and its highest ideals will bring the science teacher appreciably nearer to the humanistic point of view?

THE POSTULATE OF UNIFORMITY.

The second of our two postulates was reached when the children maintained that the reappearance of the liquid at the same height in the stem of the thermometer meant the recurrence of the same temperature in the water. Here they were applying, instinctively and unconsciously, the well known principle of the uniformity of Nature. The events of the world do not come to us at haphazard, like gifts from Pandora’s box; they arrive in accordance with unbroken customs of sequence and coexistence. John Stuart Mill and the logicians of his school got sadly befogged in their theories of science by regarding this principle as a great induction—that is, a conclusion drawn from experience. Its true significance for the logician and its interest for the teacher become visible only when it is regarded as a postulate, as a demand of the human spirit anterior to its experience, an innate prejudice in favour of experience of a certain type.

Perhaps the most convincing argument that the principle of uniformity is a postulate is to be derived from the study of its aberrations. In a striking passage in “The Golden Bough” Dr. Frazer shows that the fantastic “magic” of savage races consists of a logically connected body of beliefs that only differ from our science by the unfortunate accident of being based upon erroneous premisses. It is founded, as science is, upon the conviction that events follow one another according to unbroken rules of sequence: the only difference is that the magician has attempted to settle out of his own head what the sequences ought to be, instead of patiently interrogating Nature upon the subject. Popular literature has made us all familiar with instances of this science-gone-wrong. There is the device practised in all ages and in all climes for compassing the destruction of your foe by making a waxen image of him and submitting it to a slow roasting or other “humorous but lingering” treatment. If we may trust to a passage in Emily Brontë’s “Wuthering Heights,” the method was still practised on the Yorkshire moors early in the last century. Another well known instance is the belief in the connexion between the “ebbing” of men’s lives and the turn of the tide. Aristotle mentions it; Mistress Quickly testifies to it in her account of the death of Sir John Falstaff—“’a parted even just between twelve and one, even at the turning o’ the tide”; and no lover of Dickens will forget how “it being low water,” the willin’ soul of Barkis “went out with the tide.” In all such cases we have, as I have said, simply the aberrations of that instinctive demand for uniformity in the world’s happenings which, when properly directed, generates science.

Here again it is not difficult to find an interpretation of our postulate. . . . It will be sufficient to draw the conclusion that the Postulate of Uniformity has primarily the same reference to the needs of individual life that the Postulate of Objectivity has to the needs of social life. It is, I repeat, an optimistic assumption expressive of the fact that what we call growth and development—nay, life and experience itself—are dependent upon our ability to find in the material environment upon which in the last resort we are dependent “the army of unalterable law.”

I venture to repeat my suggestion that the teacher who looks upon this Postulate of Uniformity not as a mere property of dead matter, but as a deeply significant activity of the living souls whose development he is privileged to guide, is at a point of view which is not far from the humanistic.

THE DANGEROUS NOTION OF “CAUSE.”

The next step that will interest us will be taken when the class comes to recognize that, if a hot body is placed in contact with, or in the neighbourhood of, colder bodies, its temperature falls and their temperature rises, until a sensibly identical temperature exists in them all. How shall we advise the teacher to view these facts? Shall he say that one body has got colder and the others hotter *because* heat has left the former and entered the latter? I submit that he will never correctly understand the nature of the subject-matter of his teaching—and therefore, we must fear, never teach it to the best advantage—unless he is able to see that the truth (in Carlyle’s phrase) is “quite curiously the reverse” of this. Because the one body has cooled and the others have become hotter we almost inevitably conceive that something has passed from the former to the latter. I say “almost inevitably”

because there are persons who have emancipated themselves from the necessity. Such persons have taught themselves to do altogether without that dangerous and slippery notion of *cause*. To them the hot body always does get colder and the cold body hotter, and there is an end of the matter. And, after all, these facts are the only facts accessible to observation—that is, the only facts that can be *verified*. No one has ever pretended to observe heat apart from the phenomena of heating and cooling. What then is the significance of this apparently superfluous notion? Our answer to this question will bring us to what I take to be the central position of the theory of science.

THE SIGNIFICANCE OF FACTS.

Facts which I have earlier in this paper described as facts for the common-sense attitude—such facts as that this body A is cooling, that body B is getting warmer—have been called by a recent French writer *des faits bruts*—brute facts, plain facts, facts that as mere facts must be accepted by every one in the same sense. Adopting M. Le Roy's term, we may say that the immediate object of science is to make these brute facts intelligible, to give them meaning. The signification of that word "meaning" is somewhat elusive, but I think you will grant that it always implies a system of units of some sort in relation. Consider the meaning of a word—for example, the word "button." Standing alone, it cannot be said, strictly, to have any meaning at all. It may be either a verb or a noun. When I say: "Pray you, undo this button," the fact that the word is now brought into relation with other words in a definite system gives it a meaning, although the meaning is incomplete: I may mean a coat button or a door button. The doubt can, of course, be resolved only by the context—that is, by the position of the sentence in a still wider system. In this way the request "Pray you, undo this button" may have all manner of meanings, from the trivial one which a common domestic context would give it to the profound and pathetic significance it has on the dying lips of King Lear.

Consider next a human unit—for example, a sergeant-major. No one who confined his observations strictly to the performances of that officer could say that he understood them. They would only be intelligible, they could have *meaning* only, to one who considered the sergeant-major in relation with the other units which compose the company, the battalion, the regiment, the army—the significance of the sergeant-major being more completely apprehended the wider the system of which he is conceived as a part.

Turn for a moment, now, to another system of living units—for example, a colony of ants. How does our attitude towards one of the individuals of this system differ from our attitude towards the sergeant-major? How can the single ant become intelligible to us? The answers to these questions may be given together. The sergeant-major and the other units of the army are bone of our bone, flesh of our flesh. We can understand their relations, so to speak, from the inside; we can always metaphorically, and sometimes literally, put ourselves in their places. But with ants this is not the case. We can interpret their performances only by their analogy with those of human beings. Externally their relations to one another resemble ours, and we complete the external likeness by assuming an internal likeness, the extent of which it is impossible for us to verify. We can never know with certainty how far the movements of ants are guided by communication with one another in the same sense as the movements of soldiers are guided by the orders of their superiors.

Finally, let us return to our material units—the hot body A getting cooler, the cool bodies B, C, D, &c., getting warmer. We are now in a position to see that to make their performances intelligible we must conceive them as a system—that is, a larger unity composed of smaller units in relation. The obvious difference between this case and the others which we have studied lies in the fact that here we are quite unable to conceive, even by analogy, what the relations are like from within. Indeed, it would seem that the view that the relations of material things have an internal aspect analogous to the conscious relations which we have with one another can never be more than an attractive speculation. In the crude form called "animism" it plays a conspicuous part in the attempts of savage races to understand the connexions of phenomena, but science has long ago abandoned the use of it—at any rate, professedly.

How, then, can we make the relations of material units intelligible to ourselves? No answer universally applicable can, I think, be given: it seems largely a question of individual temperament and training. In the case of most people, however—and probably in the case of all children—the answer is, by

means of material analogies. The opposite and simultaneous changes in the temperature of the bodies we are considering easily suggest a loss on the one hand, a gain on the other. The changes would become intelligible *if* something were conceived as passing from one to the others. Something accordingly *is* conceived as passing, and that something is *heat*. Heat, then, is not a real thing existing in matter and transferred from one piece of it to another, regardless of our interest in the transaction: it is a unifying conception which we import into the real phenomena with the object of making them intelligible. In the terminology of MM. Le Roy and Poincaré, it is not a "brute fact": it is a "scientific fact."

FURTHER ILLUSTRATIONS.

Has this analysis failed to convince you? Then I would ask for your attention to some further considerations. If it is natural to regard a hot body as emitting heat, it is equally natural to regard a cold body as emitting *cold*. Uninstructed thought and common language employ both ideas according to the occasion, and early science endeavoured to make the action of cold bodies intelligible by the conception of "spicula frigoris," minute icy darts concealed among the particles of the cold emitting body. Boyle, again, in his tracts on cold discusses in a sceptical spirit the view that there is a "primum frigidum," an original cold substance which makes things cold, just as the admixture of heat or "fire" makes them hot. Why do we no longer—at any rate, when we are talking scientifically—thus think of "cold" as a positive entity coordinate with "heat"? Obviously because the phenomena are intelligible without it: we can give a perfectly satisfactory meaning to a cold body by thinking of it as one which suffers from a defect of heat. Why, then, do we adopt heat, not cold, as our "scientific fact," our unifying conception? Simply, I reply, because the accidents of our environment have always made hot things, such as fire and the sun, more impressive and more relevant to our daily needs than cold ones. A race of intelligent beings who inhabited a perpetually frozen desert where they get nothing to drink but liquid air would doubtless interpret all phenomena of temperature change by the aid of the conception of cold.

If you are still loth to admit that heat is not a fact coordinate with the brute facts of hotness and coldness, cooling and heating, but merely an idea by the use of which we seek to make those facts intelligible, let me remind you how often in the history of science, while the brute facts to be understood—that is, to be systematized—have for the greater part remained the same, the "scientific fact" invented to make them intelligible has almost entirely changed its form. Take as an example the electric current—surely a solid enough fact; for millions have been invested in it, and many of us keep an anxious eye on a meter which records our consumption of it so remorselessly. I trust that none of you will abandon an intention to go home by the Twopenny Tube if I suggest that the electric current upon which you are relying is merely a conception invented to make your arrival at Shepherd's Bush intelligible. In view of the remarkable changes which the conception has undergone, I feel bound to maintain that this is the correct way to regard it. In the epoch-making work of Ohm, and to this day in common thought, the electric current *is* a current, an actual flow of the "electric fluid" closely analogous to the flow of water in a pipe. But when theories of electrolysis had to be devised, with their double processions of electrified ions, it became necessary to think of the "current" as being really two simultaneous movements in opposite directions. Later there came a time—about the date of the publication of Sir Oliver Lodge's "Modern Views"—when interest was largely concentrated on the phenomena of the ether. At this time it may be said that physicists were most interested in a conception of the current which regarded it as occurring everywhere *except* in the wire. Lastly, the wonderful new conception of "electrons," by the aid of which Prof. J. J. Thomson and others are revolutionizing our most fundamental ideas about matter—to say nothing of electricity—have probably caused the events going on in the wire once more to occupy the focus of the physicist's attention when he thinks of the electric current. Meanwhile the plain man has stuck, and will continue to stick, to his notion of the "flow" through the wire, which is quite enough to unify the scanty stock of relevant "brute facts" which lie within his ken.

JOSEPH BLACK'S CONCEPTION OF HEAT.

The same point might have been illustrated from the history of heat; but it must suffice to note that the teacher will probably find it best to employ the notion of heat which, in the hands of that

great man Joseph Black, led to all the most important advances in the science down to the era which we in England associate so firmly with the name of Joule. Black, as is well known, thought of heat as a substance whose particles surrounded and entered into relations with the particles of the hot body, much as water particles surround and enter into relations with the particles of salt which they hold in solution. If you read the wise and cautious passage in which Black declines to advance any hypothesis as to the precise connexion between the heat and the particles of the hot body, on the ground that there are no phenomena to be rendered intelligible by such a hypothesis, you will feel, I think, that he would have subscribed to, and actually came very near to expressing, a view of the import of his conception scarcely to be distinguished from the view which I have been maintaining. And here I venture to anticipate an important question—the question as to how far the teacher should inoculate his children with these subversive ideas—ideas which to many persons seem to threaten the very inviolability of the Equator. I reply that the difficulty does not exist. Children in whom our remarkable system of education has not yet destroyed the native confidence in their power to draw from clear premisses the legitimate conclusion adopt easily a point of view which to them is subversive of nothing. Guided by a teacher who constantly bears in mind the real position of affairs, who constantly impresses upon his pupils that the facts, the “brute facts,” are the *data*, and a means of regarding them as an intelligible system the *quaesitum*, the class enters readily and with enthusiasm into the game. Particularly is this the case if the teacher is able to recreate something of the historical atmosphere in which the problems before his class were first wrestled with and solved. Then it is that the children feel their solidarity with the great “ministers and interpreters of Nature”; then it is that they feel, dimly perhaps, but really and justifiably, that they, too, are playing a small part in the essentially human and social task of reducing the everlasting sequences of events to intelligibility.

The secret of the success of Black's conception lies in its power to suggest a method of measuring heat. A pint pot and a quart pot, each full of water, are placed in succession over a steady gas burner. I am, of course, modernizing the unessential details of the problem. In three minutes the temperature in the quart pot rises 5°, in the pint pot practically 10°. These are the “brute facts.” If we think of heat as a substance emitted by the hot body, we can hardly avoid supposing that practically equal amounts of it are given by the gas flame in the same time to each of the pots. The water in these pots must then be thought of as undergoing a process of “filling” with heat, just as the vessels themselves were filled with water, the rise of temperature being regarded, of course, as analogous to the change of level produced by pouring water into the vessels. Finally, it is only necessary to think of the two masses of water as analogous to vessels one of which has a bottom containing twice as many square inches of area as the other to see that the same quantity of heat would make the temperature “level” in the vessel of larger “capacity” rise only half as much as the temperature level in the other. However, we extend the number of the original observations—the “brute facts”—we shall always find that they become intelligible if we conceive the amount of heat received by any quantity of water to be measured by the product of the mass of the water and its rise in temperature. For example, if, under certain conditions, 10 lb. of water rise 6° in temperature, then, under the same conditions, 12 lb. would rise 5°, 15 lb. 4°, 30 lb. 2°, and so on, the products 10×6, 12×5, 15×4, &c., always giving the same result—60—which is taken as the quantity of heat.

RESULTS SO FAR.

Once more let us be sure that we appreciate the real significance of our achievement. As before, we must maintain that this significance is missed if we suppose that we have discovered the correct way in which to measure the amount of heat that actually enters a quantity of water. Rather must we say that, having conceived heat as a substance, we have been able to hit upon a conception of its behaviour when imparted to different quantities of water which brings a number of otherwise independent “brute facts” into intelligible relations. We have not found that the quantity of heat actually imparted to the water is measured by the product of the mass and the rise of temperature: we have decided that this product shall be regarded as the quantity of heat, because by so doing we bring order and intelligibility into an indefinite number of facts of observation.

TWO DIFFICULTIES.

Our conception of heat as a substance thus enriched and strengthened has now to encounter two difficulties. The first is the fact which so astonished Black's immediate predecessors and contemporaries—the fact that, if we substitute for the quart of water a pint of mercury, or, better still, a quantity of mercury equal in weight to a pint of water, the temperature of the metal will rise very much more quickly than the temperature of the water. Are we thus to abandon the conception of quantity of heat which we have just adopted? By no means, for by conceiving equal masses of different substances to have each a special property towards heat—a specific “capacity” for heat—we can not only save the situation, but also bring an indefinite number of new facts into our intelligible system.

The second obstacle is a much more serious one. Up to Black's time it was supposed that when water is heated a continuous rise of temperature takes place, punctuated—not broken—at the boiling point by the passage of the water into steam. Water could not exist above that temperature, but was simply replaced by steam—just as there are houses all along the Edgware Road till we are four miles from the Marble Arch, when they are suddenly replaced by open fields. It is chiefly owing to Black's own researches that the inadequacy of this statement of the facts was revealed. He showed clearly that the matter was much more complicated; that the change from water to steam was, in fact, attended by no rise of temperature at all, but—in spite of this fact—by a very large disappearance of heat. Surely this is a “brute fact” that can hardly be made intelligible upon the assumption that heat is a substance? Well, we know that Black did attempt to make it intelligible by the bold conception with which, under the name of “latent heat,” we are all familiar—so familiar, perhaps, that we do not always recognize its audacity. The particles of the substance heat enter into a special combination with the particles of the substance water, which, instead of expressing itself in a further rise of temperature, results in the appearance of a new substance—steam.

These two cases illustrate the application of a maxim that is to be found universally latent in scientific method—the maxim that a conception which has proved capable of rendering a number of facts intelligible is not to be hastily abandoned because new facts come to light which are at first refractory. Thus, when the known *data* of the solar system, interpreted by the aid of Newton's hypothesis of universal gravitation, failed to make the observed movements of the planet Uranus intelligible, Adams and Leverrier boldly assumed that there were other determining *data* up to that time unknown, and were rewarded by the discovery of Neptune. More often, however, we endeavour by expansion or modification of the original conception to make it capable of interpreting the new facts. Thus, when we mix hot water and cold mercury together, the weight of the mercury multiplied by its rise of temperature is about thirty times as great as the weight of the water multiplied by its fall in temperature. If the latter product is to be regarded as the measure of a definite quantity of a substance that passes from the water to the mercury, it is obvious that the former product cannot also be its measure. To obtain a consistent measure—that is, to obtain the same number throughout—the product in the case of mercury must always be multiplied by the factor $\frac{1}{30}$. This factor, which we call the “specific heat” of mercury, is simply an expression of our determination that the phenomena of heating and cooling of mercury and water when brought into contact shall be regarded as due to the passage of a definite quantity of a definite substance—heat—from one to the other. The conception of “latent heat” is another expression, more striking because more violent, of the same determination not to abandon a useful unifying conception except upon absolute compulsion.

Of course, such compulsion may arise. Facts may come to light which obstinately refuse to be unified by the original conception. Then the old friend must regretfully be abandoned and intelligibility sought by the aid of another. It is a matter of familiar knowledge that the time came when the conception of heat as a substance broke down. It was unable, without preposterous modifications which destroyed its plausibility, to render intelligible the phenomena which we speak of as the conversion of heat into work, and the new and essentially modern conception of heat as a form of “energy” took its place.

SUMMARY RETROSPECT.

At this point we may close our analysis and attempt an estimate of the results of our discussion. I must admit that

that discussion has failed if you will not allow me to draw at least one conclusion. Science is not a process of passive reception; it is a process of active construction. It is essentially not an attempt to find out the real facts of the universe, but an attempt to make those facts intelligible. Moreover, science rests upon two principles which must be regarded not as conclusions drawn from experience, but as postulates, as demands for certain forms of experience, as assumptions that these forms characterize the actual warp and woof of Nature. These are the postulates of Objectivity and Uniformity—the postulate that there is an objective world common to all and the same for all, and the postulate that the contents of this world are connected with one another in accordance with definite and unbroken rules of sequence and coexistence.

OBJECTIONS ANTICIPATED.

NOW I can well believe that the arguments by which I have attempted to establish these views have caused you a good deal of irritation—irritation of which I should probably feel the effects in the discussion which is to follow if I did not anticipate and endeavour to remove it. You might well urge, and urge with indignation, that to regard the objectivity and uniformity of Nature—to say nothing of the other “truths of science”—not as facts of Nature herself, but as inventions of the human soul, is an outrageous paradox. The magnificent successes of science—its convincing unravelling of the past, its extraordinary command of the performances of dead matter, its astonishing and never-failing predictions of the future—surely (you might say) only to mention these is to produce overwhelming evidence that the objectivity and uniformity of Nature, so far from being assumptions, are the most solid and fundamental of facts. And (you might continue) as for what I have been pleased to call the unifying conceptions of science, if founded upon a sufficiently wide basis of observations, surely they are as objectively valid as the observations themselves, for they are capable of predicting an endless succession of facts for subsequent verification. Did I not myself remind you that when Newton's law appeared unable to explain the facts of the planetary system the watcher of the skies appealed to Newton's law itself to account for the defect—and the new planet Neptune swam into his ken?

To this hypothetical attack I should reply that it would, indeed, be paradoxical to maintain that the principles of objectivity and uniformity and the conceptions of science are *only* assumptions and inventions of the investigator. It would be impossible to deny that Nature gives us evidence of her objectivity and uniformity at every moment and at every turn. It would be equally impossible to deny that widely successful conceptions, like that of gravitation or the conservation of energy, in some way represent the real relations between the elements of the universe. But you must remember that I am counsel for the defendant, and in that capacity may be pardoned for a little special pleading. My client—the science teacher—is in danger of exclusion from the ranks of reputable schoolmasters on the ground that he is not a humanist. It has, therefore, been one of my aims to show that the fabric of science which the science teacher seeks to recreate in the minds of his pupils is essentially and primarily a human construction, built up in answer to demands based upon the necessities of individual and social life. To urge that science is more than this does not destroy the argument that it is primarily this, that, if our pupils did not bring to their investigations a *demand* for objectivity and uniformity, they would not discover these properties in Nature any more than a dog who had the most extensive opportunities of acquaintance with the perceivable facts of London life would discover the existence and functions of the London County Council. We may perhaps best represent the true state of the case by borrowing Lotze's comparison of ideas with tools which must fit the hand and also fit the thing, but are themselves obviously shaped by the hand, not by the thing.

And it may be worth while to point out that the comparison applies equally to the ideas which are the stock in trade of the humanist. After all the poet starts with the same data as the scientist—the “brute facts” of the world of perception—and, like the scientist, constructs from these data in response to an internal demand of his nature—the one aiming at an *æsthetic* construction, the other at an *intelligible* construction. Moreover, in the case of the poet no less than in the case of the scientist, the construction could not be made if the conditions of its possibility did not in some form lie in the “brute facts” themselves.

PRACTICAL CONCLUSIONS.

If I cannot get you to admit that my attempt to whitenwash the

science teacher into a passable humanist has been successful, I may perhaps hope that the considerations that have failed to effect that object have yet been seen to have an important bearing upon the question of the method in which he should exercise his deplorable, but perhaps necessary, functions. If anything has emerged clearly from our discussion, it is that the fabric of science is built up of facts of widely different orders—the “brute facts” which form the foundation of the structure, and are for all time unalterably the same, though as generations pass more and more of them are accumulated; and the “scientific facts” which are of a secondary character, owing their existence and position absolutely to the former, and subject, like all the other human institutions, to the law of growth and decay. The practical corollary is obvious. Sound science teaching *must* be based upon a genuine accumulation of primary facts by the pupil, if the secondary facts whose only function is to render the others intelligible are to be appreciated by him at their proper value. It is because the investigation method naturally fulfils the condition which criticism seems to prescribe that it occupies, in my opinion, a position which is theoretically unassailable. Considerations upon the lines that we have followed this evening are also, I believe, necessary to the perfection of the practice of the method and are capable of removing misconceptions of its nature from which many of its most zealous friends are not altogether free.

To indicate these at this hour would be to exceed my mandate palpably, and I hasten to conclude my argument. I will do so with a thought that should serve to bring humanists and—well, science teachers—nearer to mutual comprehension and unity. We have found that to make any piece of experience intelligible we must view it in relation with others, and that only as the context grows does the meaning of the original experience become revealed. There is no limit to the application of this principle. Ultimately neither the kind of experience in which the humanist is chiefly interested, nor the kind which specially draws the scientist, is intelligible unless complemented by the other. To understand any part of life, we must, to use Matthew Arnold's phrases, not only “see it steadily,” but also “see it as a whole.” The thought is familiar to philosophy, and by no means unknown to literature, but I rejoice to think that it has obtained perhaps its most perfect expression from the lips of a great artist who had not failed also to grasp much of the true significance of science:

Flower in the crannied wall
 . . . if I could understand
 What you are, root and all, and all in all,
 I should know what God and man is.

The CHAIRMAN, in opening the discussion, said that science teaching was one of the most powerful factors in the moral training of children, as it afforded unrivalled opportunities for the cultivation of truthfulness. Science teaching in schools had hitherto followed too closely the lines that were suitable for languages and mathematics.

Mr. BROCK thought that science could hardly be regarded as a humanistic study. It was true, as the lecturer had pointed out, that much of the investigation of science depended upon the action of the mind, but it must be remembered that it depended on uniformities within the human mind, and that humanistic study was concerned rather with the differences between individual minds.

Mr. SINCLAIR thought it was useless to attempt to teach the theory of science to young children, and that their attention should be confined to practical work.

Mr. PHILPOTTS thought that science possessed great advantages over other subjects, as it afforded many more opportunities for training the pupil in thinking in a logical way.

Mr. PIGGOTT considered that the lecture was a valuable contribution to the discussion of the lines on which science should be taught in schools. The lecturer had made it quite clear that the collection of data by observation and experiment was not the sum and substance of science, and that it was of paramount importance that the pupil should be led to discover some sort of principle which would bring facts into relation with one another and make them intelligible. He did not think that a comparison could usefully be instituted between the values of science and the humanities, as the objects of the two studies were different.

Mr. NUNN having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

THE hundred-and-fifth anniversary of the death of the poet William Cowper was celebrated at East Dereham on April 25, when the Cowper Society held a meeting, and a memorial window was unveiled in the church where his remains rest.

OPEN COURT.

*They say . . .**Quhat say thay?—Lat thame say!*

IRISH EDUCATION.

AN INDEPENDENT EDUCATIONAL VIEW.

[From the "Statist."]

THERE is one portion of the Prime Minister's otherwise excellent speech upon the Irish education question last week in which he did not preserve the candour which characterized all other parts of it. We refer to the passage in which he says it is natural for Englishmen and Scotchmen to resent the tone in which Irishmen make the demand for funds to establish university education, because Parliament has never founded universities either in England or Scotland any more than in Ireland. Now, we venture to say that this is a most unfortunate line of argument, quite unworthy of Mr. Balfour. In the first place, the question is not one respecting the proper distribution of the funds of the United Kingdom between the three kingdoms constituting it; neither is it whether Ireland is asking as a right and in an objectionable tone what England and Scotland do not ask and never have obtained; it is whether Ireland is so circumstanced that she urgently needs a good university system and is herself unable to provide it. In the second place, the circumstances of Ireland are altogether different from those of either England or Scotland. During the long wars of conquest in Ireland we deliberately destroyed the educational provision which Irish Catholics had made for themselves. We also confiscated practically all the property of the Catholics. And, finally, we imposed a system of penal laws which prevented the Catholics from acquiring the wealth that would enable them to build up a new educational system.

Nothing of the kind has been done by any one part of the United Kingdom to either England or Scotland. England and Scotland have old universities and schools which have come down with a great prestige from the past. Ireland has nothing of the kind except the Protestant University and Protestant schools, which have been steadfastly rejected by the Catholics. No doubt English and Scotch education needs much improvement. No doubt, also, much more money is required to make the universities, the colleges, and the schools thoroughly efficient. But, when all that is admitted, it still is true that there is a very large fund devoted to education in Great Britain, while there is practically no provision made for the education of Irish Catholics except the grants to the Queen's Colleges and the Royal University. We venture to think, then, that the Prime Minister would have done much better if he had extended his rebuke to English and Scotch members as well as to Irish, and reminded all that the question before the House was not one for the display of national passions, but rather one for calm and careful consideration. However, the result of Ireland's unfortunate history is that the Catholic population is without any proper system of education in any grade. It is, moreover, exceedingly poor, far poorer than the Protestant population of Ireland, and still poorer than the populations of England and Scotland. Therefore, it clearly is not in a position to supply itself with the educational machinery it so sorely needs. There are, moreover, no great Irish Catholic capitalists who could out of their own superfluity found a university. And the number of rich men among the Catholics is too small to make it probable that the deficiencies of Catholic education in Ireland could be made good by their co-operation. The final result is that, if Ireland is to be raised out of the slough of despondency in which she is sunk, it must be done by Parliamentary action.

In these days of keen competition in education, as well as in armaments and commerce, the nation which does not take pains to develop all its faculties is sure to go down. Even in Great Britain the system of education is extremely bad. It is antiquated, and it needs much larger funds than are now devoted to it. Even without funds, however, much could be done by enlightened reform. But in Ireland the whole system of education needs to be remodelled from the very bottom. And, as we have been pointing out above, it needs to be done, moreover, by means of State funds. What is called the National system, as if by irony, is controlled by a number of Commissioners, individually distinguished, no doubt, but actually without experience in education. They are totally independent of the Irish people. And, strange to say, they are largely independent even of the Government. Whereas elected bodies control elementary education in Great Britain, there is no elective element in the Irish elementary system. The secondary

system is just as bad. And the university system is equally faulty. The University of Dublin was founded in the reign of Elizabeth to anglicize and protestantize the country. Practically it has been shunned ever since by the Catholics. A few Catholics during the past century have been educated in it. But to all intents and purposes it is as useless to the Catholic majority of Ireland as if it existed in another planet. The Royal University is a mere examining body, not a university in any true sense of the word. And the Queen's Colleges suffer, firstly, from the non-existence throughout Ireland of adequate preparatory schools; and, secondly, from the distrust of Catholic parents, who fear for the religion of their children because the colleges are non-sectarian.

The upshot of all this is that there is not in all Ireland a good school or a university to which the Catholic laity will go in any numbers. Is it necessary to say that, as a consequence, Ireland is far behind England and Scotland; that every class in the country is less well educated than the corresponding class in other advanced countries, and as a result is less efficient in every department of life? Look at the countries which are really making progress—such, for example, as the United States and Germany. See the immense numbers of educational institutions of every kind that are springing up day by day at the other side of the Atlantic. Note the immense sums that are being given for the furtherance of education in the United States by the Federal Government, by the State Governments, by the municipalities, and by private munificence. And for a whole century Germany has not been less active in the same field. Can any one doubt that it is to this spread of enlightened and scientific education that the progress of the United States and Germany is mainly due? On the other hand, can there be a question in the mind of any unprejudiced man that the want of a sound system of education in Ireland is one of the main reasons of its continued wretchedness?

We all profess to be most anxious to do everything for the benefit of Ireland which she would do for herself if she had control of her own affairs. Yet this university question has been before us for fully a century, and it is apparently no nearer a solution now than it was at the beginning. The younger Pitt intended to deal with it, just as he intended to deal with the penal laws. But he failed to do so. Mr. Gladstone actually brought in a Bill a generation ago, but was unable to make it law. Mr. Balfour tells us that he has long been persuaded of the justice of the Irish case, and yet he has been unable to convert either the country, or Parliament, or the Cabinet of which he is the chief. Doggedly the majority of both great parties refuse to yield an inch. And then they complain because Irishmen clamour for Home Rule. As Mr. Balfour pointed out last week, the reason is that Englishmen and Scotchmen look on the question as one of religion, not as one of education. They fear, if they were to found a Catholic university, that they would be strengthening the priests; and, rather than risk doing that, they condemn the whole Catholic population of Ireland to remain in ignorance and poverty. If they would only rid themselves of bigotry and approach the question from the purely educational point of view, they would see at once the reasonableness of the Catholic demand that they should be given a place for the education of their children the spirit of which should not be hostile to their religion. And they would recognize, further, that Ireland, being as poor as she is, has not the means of founding a university for herself, and, consequently, there is a good case for doing for her what has never needed to be done either for England or for Scotland.

In these days, when we are all Imperialists, we profess to be very eager to strengthen the Empire in every way possible. Is it not clear that one of the surest ways of strengthening the Empire is to increase the well-being of the United Kingdom—not of this part or that part only of the United Kingdom, but of every part? If, for example, we had a larger population in Ireland, and a population as devoted to the Empire as, let us say, that of Scotland, is it not manifest that the Empire would be materially strengthened; especially as Ireland is, and long will be, an agricultural country; and her young men, therefore, would be calculated to make better soldiers than youths drawn from the slums of our great towns? We do not ourselves believe that it is impossible to make the majority of Englishmen and Scotchmen see all this. But we fear that Mr. Balfour, like Mr. Gladstone before him, has gone the wrong way to work. He has tried to act through his own party alone. Is it not worth while to invite the co-operation of the Opposition, and to arrive at a settlement by an appeal to the reasonable men of all parties?

REVIEWS.

A FAMOUS ATTIC ORATOR.

The Speeches of Isaeus. With Critical and Explanatory Notes. By William Wyse, M.A., Late Fellow and Lecturer of Trinity College, Cambridge, and sometime Professor of Greek in University College, London. (18s. net. Cambridge University Press.)

Mr. Wyse's work does very high credit to himself, to his University, and to the University Press. The undertaking, most laborious and difficult as it has been, stands completed with remarkable success. Mr. Wyse thus expresses the scope of his intentions:

The leading purpose of this edition is to show by analysis of the extant speeches that ancient scholars had a juster appreciation of the orator's art than is shown by modern writers on Greek Law, for some of whom his unsupported statements appear to carry the authority of decisions of a Supreme Court, and that to extract truth from the arguments of an advocate bent on winning a verdict from an ignorant tribunal is a more delicate operation than many people seem to suppose. At the same time, though the matter has claimed more of my attention than the manner, I have done my best to meet fairly all textual and grammatical difficulties.

The chances of being misled both as to fact and as to law by an adroit and experienced advocate, not only by what he says and how he says it, but still more by what he takes care not to say and by what he more or less suggests, require a constant critical alertness on the part of the hearer or the commentator. The nature of the difficulties may be appreciated from our own jury cases (in spite of the presence of a trained judge), or, better still, from our political discussions on party platforms or even in Parliament. The position is familiar enough to students of Cicero's judicial speeches, and Isaeus is more intractable than Cicero: "Isaeus is *capable de tout*" (page 204). One must also stand clear of modern ideas and take up, as far as may be, the Athenian attitude within the Athenian atmosphere of the times; and then "our knowledge of Athenian law is exceedingly scanty" (page 634). Such a work as this requires not only mature scholarship, but also technical knowledge of law (comparative, and not Greek only) and adequate practical experience of juries and other public bodies exercising functions of a judicial character. Mr. Wyse, we infer, is not armed altogether *cap-à-pie*: he does not always handle conflicting opinion with the decisive force of an experienced judge, though he shows much of the acuteness of a practised counsel. At the same time the marshalling of opinion on important points is always eminently useful, and the examination of the orator's argument is extremely able.

If the manner has claimed less of Mr. Wyse's attention than the matter, this is probably because he is better equipped for textual and grammatical criticism. The critical introduction (some sixty pages) exhibits a vigorous handling of the manuscripts on all points of real importance, and, together with the grammatical element of the 550 pages of notes, implies quite as appalling a labour as the criticism of the matter of the orations. Apart from the immediate purpose of the introduction, the discussion offers a most instructive illustration of manuscript criticism. The grammatical notes invite little remark; they are, of course, conspicuously competent, and by no means overdone, except sometimes perhaps on the right side of fullness of illustration. We are inclined to remark on a peculiar case in Or. I., § 44. Isaeus says: *εἰ τοίνυν συνέβη Κλεωνόμῳ μὲν ζῆν, ἐξερημωθῆναι δὲ τὸν ἡμέτερον οἶκον ἢ τὸν τούτων, σκέψασθε ποτέρων ἐκείνος ἐγίγνετο κληρονόμος.* The stumbling-block is *ἐγίγνετο*. At first blush it seems that the sense requires not "became," but "would become" or "would have become"; and so Naber proposes to add *ἂν* (which is indeed liable enough to be dropped out by copyists), and Mr. Wyse, in order to avoid this emendation, discusses through a whole page Isaeus's use of *κληρονόμος* and the applications of the imperfect tense. Naber's proposal is obviously out of the question: it would involve the similar insertion of *ἂν* twice in § 45. The solution rests on no question of usage, whether of *κληρονόμος* or of the imperfect, but on the mental attitude of the orator. This is what Buermann means ("Hermes" 19, page 334): "Es ist in diesen und ähnlichen Fällen gar nicht das Verhältniss der Irrealität bezeichnet, die Handlung wird vielmehr als wirklich in der Vergangenheit gesetzt." Mr. Wyse quotes Buermann, but does not indicate that he grasps his meaning—a meaning that would be instantly taken by a lawyer familiar with practice. This misapprehension

seems also responsible for Mr. Wyse's expectation of *εἰσὶ* (§ 45, 5) instead of *ἦσαν*, and perhaps for his "improvement" of § 46, 2, by insertion of *ἂν* (again in face of Buermann). The whole of this discussion emphasizes in the strongest manner the danger of even very deliberate emendation. Such occasional points of difference are inevitable in the treatment of a dozen quirky orations of an astute practitioner, and count but as dust in the balance in view of the ability and scholarship that Mr. Wyse has placed at the service of students of Isaeus. The volume is printed and got up in admirable style.

RELIGIOUS WARS OF MODERN EUROPE.

"The Cambridge Modern History." Vol. III.: *The Wars of Religion.* (16s. net. Cambridge University Press.)

With the great religious schism of the Reformation, whether as origin or as pretext, are to be connected, in the main, the complicated series of conflicts forming the central and substantial subject of the present volume. But there was also a varied secular leaven of great importance mixed up with the religious incitements, though not always openly acknowledged: "the cause of the restoration of Catholic unity in the West was, in the minds of both the supporters and the opponents of that cause, inextricably interwoven with the purposes of dynastic ambition, and powerfully affected by influences traceable to the rapid advance of the monarchical principle and to the gradual growth of the conception of the modern national State." The intermixture and conflict of interests, religious and intellectual, dynastic and national, markedly intensify the difficulties of clear presentment without overlapping. Repetition, indeed, is inevitable, but the effect is minimized by difference of aspect. Generally speaking, the materials are disposed in reasonably adequate co-ordination, so as to establish a fairly good unity in the volume; but, after all, it is the unity of the particular episodes that is practically the more important. Besides the wars, there is a considerable variety of supplementary matters filling out the history of the period. The high character of the work, historical and literary, is fully maintained.

First come the wars of religion in France, eight in a row, scattered over some thirty years, from the Massacre of Vassy in 1562 to the absolution of Henry IV. in 1593. These "furnish the most complete instance of the constant intersection of native and foreign influence"—foreign influence literally from all sides. In a late chapter the French story is carried forward to the death of Henry IV.—one of the most discriminating studies in the volume. But beside the first chapter is placed an admirable complimentary sketch of French humanism, with particular notices of some of the more prominent and distinctive scholars, followed by a tolerably full and very appreciative account of Montaigne. Next Poland, then the foremost of the Slavonic States, the second Catholic Power in Europe, and the one permanent barrier against the rising tide of Ottoman aggression—an extremely fresh and interesting section. The Catholic reaction is described and the Valois and Báthory elections, the latter especially dramatic. How many of us could tell off-hand how Stephen Báthory "approved himself one of the foremost statesmen and soldiers of his age"? The Ottoman danger pressed on Hungary and Venice, and was urged by Solyman "the Magnificent" (as he was miscalled in the West) and by his degenerate successor, Selim II. A Hungarian episode of the time is embalmed in Körner's "Zriny," and a Venetian is adumbrated in "Othello." On the side of the Empire the narrative opens with a broad and acute survey of the conditions surrounding the Religious Peace of Augsburg, and traces developments, first through the reigns of Ferdinand I. and Maximilian II., and at a later point through the reign of Rudolf II. The internal and external difficulties of the Empire, under continuously increasing misrule, are compendiously and effectively set forth. While the Turk was a constant thorn in the Imperial flesh, the storm was gathering blacker and blacker in the Netherlands. The Revolt in the Netherlands is forcibly narrated in two chapters down to the assassination of William the Silent, and continued in a later chapter to the death of Maurice—a narrative that should attract readers to the larger histories of that remarkable struggle of fanaticism and heroism. From time to time England has been putting a finger in the Continental pie, and now she comes to the foreground in successive chapters on Mary Stewart (Queen of Scots), the Elizabethan Naval War with Spain, and the last years of Elizabeth, with a comprehensive but somewhat compressed sketch of the Elizabethan Age of English Literature; the history

of Britain under James I., and of Ireland to the Settlement of Ulster, being treated in later chapters. Italy is represented by the minor, yet not unimportant, fortunes of Tuscany and Savoy, and by a very appreciative sketch of Rome under Sixtus V., supplemented by a brief account of the end of the Italian Renaissance. Spain, which has necessarily obtruded itself throughout the preceding events, is described, both politics and literature, under Philip II. and Philip III. The concluding chapter, most appropriately and very effectively, sketches political thought in the sixteenth century. The contributors, though not all their names are known to fame, are all manifestly well grounded in their subjects. The bibliography usefully extends to a hundred pages; the chronological table gives a large and convenient selection of the more important events; and the index is judiciously full, running to thirty-four double-column pages.

SHAKESPEARE AND SHAKESPEARE'S STAGE.

- (1) *Von den ältesten Drucken der Dramen Shakespeares, und dem Einflusse, den die damaligen Londoner Theater und ihre Einrichtungen auf diese Dramen ausgeübt haben. Eine Untersuchung von literarischen und dramaturgischen Standpunkte.* Von Robert Prölss. (Mk. 2,25. Leipzig: F. A. Berger.)
 - (2) "The Arden Shakespeare."—*Titus Andronicus.* Edited by H. Bellyse Baildon. (3s. 6d. Methuen.)
- (1) The author has already written the history of German dramatic art with broad outlook and with acknowledged ability, and offered to his countrymen a couple of volumes of shrewd "Erläuterungen" to eight of the principal plays of Shakespeare. The present considerable *brochure* is intended to clear away difficulties of approach to the actual conditions of the composition and production of Shakespeare's plays. The poet wrote, not for the printing-press and readers, but for the stage and audiences; and so Herr Prölss makes inquiry "in betreff der Einrichtungen, Hilfsmittel, Konventionen, und Gepflogenheiten der Bühnen, für die Shakespeare seine Stücke geschrieben, und über die Art und den Umfang, in denen er sie darin zur Anwendung gebracht hat," as well as into the contents and history of the various editions of the plays, separate and collected, and into the pertinent literature. Incidentally, too, he draws inferences as to particular points in Shakespeare's career.
- A discussion of the separate editions, or Quartos, leads Herr Prölss to the conclusion that not one of them was in any respect illegitimate, or based on surreptitious transcripts or on imperfect copies taken down during representation in the theatre, but that every one of them (like the plays of the First Folio) rests upon the stage texts. A sketch of the public and private houses is interesting; but the inference that the contrast between the two classes of representations exercised "einen bedeutenden Einfluss auf Shakespeares dramatische Entwicklung, auf seine Kompositions- und Darstellungsweise," if not far-fetched, at least seems much overdriven. The argument from necessity, and from the inconceivable, for throwing back the poet's dramatic career beyond 1591 seems somewhat unsafe, and the speculation on title-pages that leads up to the opinion that Shakespeare was a member of the Earl of Pembroke's company before he entered the Lord Chamberlain's is not weighed against the most obvious difficulties. There is much patient work and acute suggestion in the latter and larger half of the pamphlet, which deals in liberal detail with the stage arrangements and appurtenances and their bearings upon the poet's activities, together with the stage directions of the various editions. The work shows wide familiarity with the literature of the subject, keen and independent thought, much ingenuity, and immense diligence. Though perhaps primarily addressed to specialists, it will be most interesting to general readers that are willing to pursue the particular aspects of Shakespearean study into argumentative details.
- (2) Mr. Baildon's introduction runs to seventy-six pages—room and verge enough to discuss pretty fully even the complicated and difficult questions raised by "Titus Andronicus." In fact, the author is very discursive, and little concerned to control an eager pen in point of quantity, or of quality either; but the reader will soon yield him forgiveness for divagations on the Baconian theory, the Higher Criticism, &c., by reason of his breezy vigour and sturdy good sense. He does not fix the date of the play with closer precision than "between 1589 and 1593": he might have profitably discussed the points, not at more length, but more fully and definitely. We think he is right in refusing to accept Mr. Crawford's argument from parallels with

Peele's "Honour of the Garter." As to Shakespeare's authorship he sensibly stands by the testimony of Francis Meres, and rejects with entirely justifiable scorn the "private author" of Ravenscroft and everything dependent thereon. Mr. Sidney Lee, accepting Ravenscroft's assertion, says the tragedy "contains powerful lines and situations, but is far too repulsive in plot and treatment, and too ostentatious in classical allusions, to take rank with Shakespeare's acknowledged work." Such an argument from the supposed squeamishness of Shakespeare and his artistic abhorrence of the gaudiness of cheap classical tags is amazingly unhistorical, and Mr. Baildon does good service in repudiating it in any and every form. We have no doubt whatever that Mr. Baildon's position is right: he holds that the play is "essentially Shakespearean in its general outlines and conception"—"not that every word and line, not even every scene, is the *original* work of Shakespeare, but that his genius and character is impressed in immature but unmistakable manner on the drama as a whole." The critical examination of the play—the analysis of the various characters, versification tests, &c.—is extremely suggestive, and in many points bears a value beyond the particular drama. The notes are not quite so technical as usual, but they are useful for interpretation. A very interesting and able addition to the series.

FIRST STEPS.

The Preparation of the Child for Science. By M. E. Boole. (Clarendon Press.)

Lofty ideals may be difficult to realize; to attain to them may even prove to be impossible; yet it is invaluable to recognize a high standard of excellence and to strive to approach it. This is the prevailing impression created by the interesting pages of Miss Boole's latest work, where, as the preface tells us, we find not the ideas of the authoress alone, but those of a whole group of psychologists. The purpose of the volume is very clearly indicated by its title, and the writer discusses at considerable length the mental environment which forms for the child of tender years a fitting preparation for the subsequent study of science, and which tends to establish an intellectual attitude favourable to personal discovery and the extension by the mature mind of the field of scientific knowledge. It must be clearly understood that a distinction is to be made between a training whose ultimate object is the endowment with ability to grasp scientific truth, and to prosecute scientific research, and one whose aim is rather to produce students likely to be successful under examination. Success in the examination room depends largely on acquiring a sufficient knowledge of cut and dried facts, whilst for the equipment of the scientific discoverer such accurate information, however important, is, after all, secondary to an intimate acquaintance with scientific method: what is chiefly desirable is the wisdom resulting from digested knowledge. Again, we are told that the fitting attitude of the teacher of scientific method is essentially different from that to be maintained by one superintending the mastering of the grammar, the quantitative pronunciation, and the vocabulary of a dead language. In the latter case every detail is fixed, and no mistake can be tolerated for a moment, to the benefit of the pupil. In the former, the desideratum is the power of finally abstracting the truth from a series of partial impressions, neither of which conveys the whole truth, but each of which may bear a certain relation to it, and the competent teacher refrains from correcting as soon as formed each imperfect impression, taking care, however, to prevent persistence in what constitutes at any particular stage the equivalent of a grammatical blunder.

The writer is aware, and we fully endorse her opinion, that under the existing conditions of society and education—and, indeed, under the conditions likely to subsist anywhere but in an ideal community—very serious difficulties present themselves when we attempt to secure for the average child the desired training in scientific method. How are we to ensure that mothers and nursery governesses and junior teachers as a body may possess the knowledge both of science and of scientific method which is essential if they are to give the children the advantages of what becomes in effect a kindergarten college of science. Miss Boole's delightful ideal involves the study of the natural bias of the infant mind, the selection of the playthings and pets which are best adapted to its development, the encouragement of original observation supplemented by instruction at the right time and in the right place, and the exercise of judicious supervision, so that the young mind may be induced to bring to bear on any point that amount of concentration which is requisite for evolving the truth from any particular series of varied and im-

perfect impressions. Yet, unattainable though the ideal training may be in general, Miss Boole has done well in formulating its principles. Her small volume lies within easy reach of the mothers and teachers of the rising generation and will probably be an inspiration and a guide to many who are striving to learn how best to train the little ones. It may well be that some of the great scientists of the future will owe their power in part at least to these pages.

GENERAL NOTICES.

CLASSICS.

The Euthydemus of Plato. By Edwin Hamilton Gifford, D.D. (3s. 6d. Clarendon Press.)

A very agreeable and stimulating edition for university and higher form work. Dr. Gifford forms his text on Schanz's critical apparatus and Prof. Burnet's revision of it, "except as to a few readings for which I have carefully inspected the phototype of the Codex Clarkianus in the Bodleian Library." This is good enough for a school edition, but scarcely good enough for Dr. Gifford's scholarship. We are inclined to think that questions of text, where so numerous as here, should be discussed in a separate section and not included in the notes. The introduction is full and markedly careful, and interesting as well as instructive; and the notes offer a gymnastic rather than an encouragement to idleness. The print is so good that we must draw attention to "Burnet" (Notes, page 13) and the abbreviation of Dionysodorus into "Diodorus" at least three times in the "Introduction."

The controversy over Greek has induced Prof. John E. B. Mayor to reprint his charming *Preface to First Greek Reader* (1s. net., Macmillan & Bowes). Charming; but only broadly pertinent to the conflict. Nobody questions the intrinsic value of Greek, or of the more excellent ways of teaching Greek.

Mr. T. Werner Laurie publishes a "popular edition" of "*The Works of Virgil* translated into English prose by C. Davidson, with copious Notes and an Introduction," as the first volume of a "Classical Library" series (2s. 6d. net, with photogravure frontispiece).

MATHEMATICS.

An Introduction to the Study of Geometry. By A. J. Pressland, M.A., F.R.S.E. (1s. Rivingtons.)

The work provides an interesting and valuable preliminary course in geometry. As an inspector of schools in the Canton of Zürich, the author has had opportunities of noting the success which there attends the preparatory teaching of the subject. Much that is introduced into his work owes its origin to the experience thus gained. The instruction is adapted to the needs of the absolute beginner, who commences by learning how to fashion out of ruled paper his own graduated ruler sufficiently serviceable for rough constructions and calculations. He is taught to use it to great advantage, and he acquires, entirely as the result of experiment, familiarity with a considerable number of fundamental geometrical facts. In due course more accurate measurements are demanded and the necessary instruments are called into requisition. By the time the thirty pages of text have been fully considered, the average pupil is in possession of an excellent groundwork of geometrical knowledge calculated to lessen materially the difficulty of the formal study for which the course is intended to be a preparation.

Solutions of Examples in Hall's Graphical Algebra. By H. S. Hall, M.A., assisted by H. C. Beaven, B.A. (Macmillan.)

The first edition of "Graphical Algebra," which was published in pamphlet form, and which served the purpose of bringing up to date Hall and Knight's excellent work on elementary algebra, was rapidly exhausted, and a new revised and enlarged edition was issued. The present volume forms a very valuable and useful key to the latter little book, and in its preparation Mr. Hall has been ably assisted by Mr. H. C. Beaven, of Clifton College. The deserved popularity of Mr. Hall's long series of text-books will insure for the fresh publication a ready welcome among teachers. A word of praise is merited by the diagrams. These have been very clearly reproduced, and naturally constitute an important feature in a work of this kind.

Beginner's Trigonometry. By M. S. David, B.A. (2s. Black.)

A most useful book for beginners, which fully maintains the standard of the author's previous work on elementary algebra. The writer possesses just the qualifications required for the production of elementary text-books on mathematics—a thorough knowledge of the subject, the power of clearly imparting what he wishes to explain, and an evident appreciation of the necessity for rigid accuracy within the limits he prescribes to himself.

MODERN LANGUAGES.

A Note-Book of French Literature. By Philip C. Yorke, M.A. (Oxon.), L.-ès-L. (Paris). Vol. II.: *Nineteenth Century.* (4s. 6d. net. Blackie.)

There is no need to apologize for giving a volume of some five hundred pages to an account of the literature of France during last century, with brief extracts in illustration. Mr. Yorke first deals with Romanticism and Naturalism, from Joseph de Maistre to Vigny; next he interposes a concise Note on the Great Thinkers—eight of them only; and then proceeds from Victor Hugo down to Maeterlinck and Rostand. The critical accounts of the writers are well informed, reasonably discriminating, and compactly expressed; the full lists of their works will be a great convenience; and the illustrative extracts are judiciously chosen and fresh. Allowances must be made for the prohibitions of copyright, but altogether the volume furnishes a very fair representation; and any one that reads it with diligence will have a good knowledge of the subject. The type, if small in the extracts, is very clear and agreeable.

Pascual Lopez. Par Doña Emilia Pardo Bazán. Edited by Prof. W. L. Knapp, Ph.D., LL.D. (3s. 6d. Ginn.)

Madame Pardo Bazán, we learn, "is a great favourite at the Spanish Court and a particular friend of the Queen-mother." At any rate, she is a tolerably prolific and vivacious writer. The principal charm of this story—an "autobiografía de un estudiante de medicina"—lies in the dialogue. The notes are not very numerous, but they are all to the point; and the vocabulary, which is supplementary to the dictionary (and, accordingly, apt to be aggravating), is full and helpful. The volume is a very welcome addition to the student's library of Spanish. Both print and get-up are very agreeable.

The Albright Publishing Company of New York have issued an "abridged edition" of Max Straube's *Manual of German Etymology in its relation to English.* The object of the book is "to facilitate the study of the German language by enabling the student to memorize German vocables with comparative ease." The method is "by inquiring into the affinities of the word and by finding its kindred in our vernacular." To a certain extent the principle works usefully, but in general it is a strangely roundabout process. We should rather accept the volume simply as a dictionary of etymological affinities—an interesting, instructive, and often curious book of reference. We daresay it is open to cavil on particular philological points, like all its kindred; but, on a pretty wide test, we should judge it to be generally sound. Pupils should have access to it in the school library.

ENGLISH LITERATURE.

Classical Echoes in Tennyson. By Wilfred P. Mustard, Ph.D., Professor of Latin in Haverford College. (\$1.25; say 5s. Macmillan.)

The third volume of the series of "Columbia University Studies in English." The subject has been worked out considerably on this side of the water by various editors of Tennyson and by Prof. Churton Collins in his "Illustrations of Tennyson"; and the literary interest is always fresh and keen. Prof. Mustard traces parallels from Homer down to St. Augustine in ten chapters of systematic investigation, with an appendix of three classes of minor matters. Incidentally, too, he makes many references to collateral illustrations from other writers. He is careful to steer a middle course, neither "hunting after remote resemblances and far-fetched analogies" nor "understating the great poet's debt to the great classical poets whom he studied all his life long." The parallels are diligently collected and pointedly presented, but there is not much in the way of argumentative commentary. However, each reader can use his own judgment: "de gustibus non est disputandum." It is a scholarly and judicious work.

Messrs. Methuen & Co. have started a new series of large interest—"Methuen's Standard Library," edited by Mr. Sidney Lee. The object is to furnish sound and complete texts of the classics of all nations in an agreeable form at a very low price. "All the great masters of Poetry, Drama, Fiction, History, Biography, and Philosophy will be represented." Each volume will contain from 100 to 300 pages (crown 8vo), except that very long books will be issued as double numbers. The price is remarkably modest: 6d. a volume in tasteful paper cover, or 1s. net in cloth (with ornamental back); double volumes, 1s. net paper, 1s. 6d. net cloth. We have (1) Vol. I. of *Shakespeare's Works* (to be completed in 10 volumes), (2) *The Pilgrim's Progress* (both parts), and (3) *The Meditations of Marcus Aurelius*, translated by R. Graves, M.A.—all in attractive binding; and (4) *Sense and Sensibility*, Vol. I. of Jane Austen's novels (to be completed in 5 volumes), (5) Vol. I. of *Gibbon's Decline and Fall of the Roman Empire* (double volume, pages xxviii+442; to be completed in 7 double volumes), the notes revised by Prof. Bury, and (6) Vol. I. of the English Works of Lord Bacon, containing the *Essays* and *The New Atlantis*—all in nice paper covers. The volumes are printed in clear type on good paper, and are very agreeably got up. The series is bound to give a powerful impulse to the popularization of the best literature, and does very high credit to the enterprise of the publishers.

Mr. Heinemann's "Favourite Classics" series passes from Shakespeare to Tennyson. There are seven volumes of Tennyson

(6d. net each): (1) *Early Poems*, (2) *The Princess*, (3) *English Idyls*, (4) *Maud*, (5) *In Memoriam*, (6) and (7) *Idyls of the King*. Each of the first two volumes has a portrait of Tennyson as frontispiece; the first is dated 1838 and the second is from the well known Mayall photograph. The first volume of the *Idyls of the King* has a portrait of Tennyson from a photograph (by F. Hollyer) of the picture by G. F. Watts. And each of the other volumes has a characteristic illustration as frontispiece, all admirably reproduced. Mr. Arthur Waugh furnishes well considered introductions.

Messrs. Blackie have just added to their excellent "Library of Great Novelists" *The Mill on the Floss*, with six illustrations by T. H. Robinson, and *Tom Burke of "Ours"*, with six illustrations by William Rainey, R.I. (2s. 6d. each). The paper and type are good, and the get-up is tasteful.—They offer also an attractive edition of *The Swiss Family Robinson*, with four good illustrations by A. A. Dixon (2s.).

New volumes in the reissue of "Cassell's National Library" are (1) Shakespeare's *King Richard II.* and (2) Burke's *Thoughts on the Present Discontents* and four *Speeches* (in one volume), both edited by Prof. Henry Morley, LL.D. They will be handy for the Certificate Examination, 1905, and will be welcomed generally. Each has a portrait of the author as frontispiece.

SUPPLEMENTARY ENGLISH READERS.

"Supplementary" readers are numerous and varied. Messrs. Blackie offer "Little Tales for Little Folk" (1d. each): (1) *Fred's Run*, (2) *Patty's Walk*, (3) *Ella's Fall*, (4) *Norah's Dark Look*, and (5) *Honest Dolly*—all nicely printed and got up, and liberally illustrated. They belong to the infant stage.—From the junior classes upwards *Birmingham and the Midlands* (8d.), in "The English Counties Series," will be welcome, not merely as pleasant geography, but for its comprehensive interest. The illustrations and maps are very good.—Of higher scope are some new volumes of "Blackie's English School Texts" (8d. each): (1) *Tales from the Decameron* (Boccaccio), (2) *The Praise of Folly* (Erasmus), (3) *Lamb's Schooldays, and other Essays*, and (4) *Macaulay's First Chapter*—good and varied reading in agreeable get-up.—Messrs. Nelson also commence an attractive series of "Junior Supplementary Readers," liberally illustrated (partly in colour) and strongly bound: (1) *Stories from Grimm, Books I. and II.* (6d. each); (2) *All the Year Round in our Village, Book I.* (January to June), *Book II.* (July to December) (6d. each).—Fresh additions to "McDougall's Supplementary Series" (2d. each) are (1) No. 3, *Robinson Crusoe* (abridged); (2) No. 4, four of Lamb's *Tales from Shakespeare* ("Lear," "Macbeth," "Hamlet," "As you like it"); and (3) No. 5, *A Tale of Two Cities* (abridged).—"Chambers's Supplementary Readers" include (1) *From Fancy's Realm*, two stories by Mrs. Alfred Baldwin (5d.); (2) *Gallant Deeds*, five stories by G. A. Henty (1s.); and (3) *Children of the Empire, Part I.*, three sketches (Indian, Canadian, Australian), by John Finemore (1s.)—all illustrated and well got up.

Messrs. Jack offer a pleasant variety for younger readers. There is *Rip Van Winkle* (3d.), with short notes and four full-page illustrations in colour; *Rab and his Friends* and *Our Dogs* together (3d.), with short notes and the original illustrations by Sir George Harvey and Sir Noel Paton; *The Book of Notable Days*, by H. R. Beasley (8d.), with eight full-page illustrations, brilliantly coloured—a patriotic reader; and *Lamb's Tales from Shakespeare*—first and second series (four tales each; 6d. each). In all these little volumes the type is clear and strong, and the binding is for wear.

HISTORY.

The History of France. By Arthur Hassall, M.A. 1s. net. Dent ("The Temple Primers").

The necessary compression is materially relieved by judicious selection of points, lucid disposition of the matter, and plain businesslike narrative. One would like some expansion of the later history—if need be, at the expense of the earlier. But the work is a very able and useful summary.

Messrs. George Bell & Sons have placed in "The York Library" *A History of the Intellectual Development of Europe*, by John William Draper, LL.D., formerly Professor in the University of New York, in two handy and tasteful volumes (2s. net each). In this new and cheap form, the able and instructive work should reach a very wide circle of fresh students.

Colonies and Colonial Federations, by the late E. J. Payne, is substantially a new book, replacing the eighty pages devoted to the subject in the volume on "Colonies and Dependencies" in "The English Citizen" series (3s. 6d., Macmillan). This is quite right, in view of the extraordinary development of colonial questions since the publication of the original book. The treatment is successively geographical, historical, economic, and political. It is very instructive, and it ought to be widely read and studied, although on many points in the last three phases it requires to be read critically. There are four excellent and useful maps, and a welcome statistical table of the British Empire, 1902-03. It is to be hoped that the other half of the original volume will be similarly brought down to date, for events have been proceeding as fast in India as in the Colonies.

Messrs. Cassell publish at an opportune season two handy little volumes on the two empires in conflict in the Far East: (1) *Russia, the Land of the Great White Czar*, by E. C. Phillips (Mrs. Horace B. Locker), and (2) *Japan, the Eastern Wonderland*, by D. C. Angus (2s. 6d. each). Each volume is written in the form of a simple story, which gradually unfolds the life, manners, customs, and history of the particular country and people; and each has about fifty full-page illustrations. The books give a good general notion of the two peoples and their countries, and they are very nicely got up.—The same publishers also issue *Canada, Britain's Largest Colony*, by A. L. Haydon, in "Our Empire Series" (2s. 6d.). The history, the natural features, the industrial and commercial enterprises, the life of the people, and so forth—all this is sketched in simple language and lucid arrangement, and pictured in four coloured plates and about fifty illustrations. Lord Strathcona contributes an introduction, and commends the volume to favourable consideration.

EDUCATION.

The Evolution of the Elementary Schools of Great Britain. By James C. Greenough, A.M., LL.D., Principal of Massachusetts Normal School, Westfield. (\$1.20 net. Appleton. International Education Series, No. 56.)

Dr. W. T. Harris, the general editor of the Series, who contributes a considerable preface, certifies the volume "as a competent study of one of the most important national educational systems in the world, written from the standpoint of an American director of schools for the training of teachers." Dr. Greenough certainly took special pains to understand what he writes about. "During my recent residence in London and Oxford for the greater part of a year," he says, "I gave my time mainly to visiting schools, conferring with teachers and others interested in education, and in availing myself of the abundant facilities for studying the origin and progress of the elementary schools of England furnished by the Library of the British Museum." He sketches generally the origin and development of the schools, considers the religious question, reviews the training colleges, and sets forth a chapter of conclusions (with a full print of the Education Act, 1902), adding a final chapter on the elementary schools of Scotland. The summary is very good, but the main interest lies in the incidental commentary, which is independent and, on the whole, very fair (as undoubtedly it is meant to be). Thus:—"Some of the teachers of the practising schools connected with the training colleges furnished some of the best examples of good teaching that I have seen, whether in England or America. . . . It is the great misfortune of very many of the training colleges of England that they lack adequate practising schools in organic and sympathetic connexion with the normal college. Where a suitable practising school is found . . . the superior quality of the training is always evident. . . . There are many things that tend to check the aspirations of one who would teach in an elementary school in England. Socially his rank is quite inferior to that of the teacher of an elementary school in the United States. . . . The uniformity of standard secured by the Code does not allow of the same liberty of adapting courses of study to local needs as is enjoyed in the schools of the United States, though the improved methods of inspection give the English teacher much more liberty than was possible under the method of inspection by individual examinations. The inventive genius of teachers has less opportunity in England than in the United States. . . . The English system of elementary schools is superior to ours in that it is organized under one Central Authority." But points like these need to be taken in their connexion. The book is well balanced and very instructive.

(1) *A General View of the History and Organization of Public Education in the German Empire.* By W. Lexis, Ph.D., Professor of Political Economy in the University of Göttingen. Translated by G. J. Tamson, Ph.D., M.A., Professor and Lecturer of English in the University of Göttingen. (3s. 6d. net. Asher.)—(2) *German Universities.* By Mabel Bode, Ph.D. (1s. net. King.)—(3) *Notes on German Schools.* By William H. Winch, M.A., Inspector of Schools. (6s. Longmans.)

(1) Prof. Lexis edited a comprehensive work on German education in four volumes ("Das Unterrichtswesen im Deutschen Reich," published by Messrs. Asher last year) for the International Exhibition in St. Louis "at the suggestion and with the support of the Prussian Minister of Education." The present volume is extracted from these semi-official volumes, the different sections of which were written by different German specialists. It contains a concise account of the historical development and of the present organization, with statistical summaries, of the universities and other academical institutions, the secondary schools, girls' schools, elementary schools, training colleges, technical high schools, high schools for special subjects (mining, forestry, agriculture, &c.), and middle and lower professional schools. It is a handy and authoritative conspectus of the main facts.—(2) Miss Bode's pamphlet is a lucid "Review of Prof. Paulsen's work on the German University System," emphasizing the chief points and throwing in an occasional criticism. It may be recommended to those that have not got Prof. Paulsen's book. The writer of the preface expresses surprise that this has not been translated into English.

Why, for ten years past we have been acquainted with the "authorized translation by Edward Delavan Perry, Professor in Columbia College, New York, with an introduction by Nicholas Murray Butler," published by Messrs. Macmillan. In this connexion it is interesting to note that the title-page of the original two volumes, of which "the German Universities" forms the introductory part, states that they were "für die Universitätsausstellung in Chicago 1893 unter Mitwirkung zahlreicher Universitätslehrer herausgegeben von W. Lexis." It will thus be seen that Prof. Lexis is an old hand at this subject.—(3) Mr. Winch does not offer "a treatise on German education as a whole," but only some personal observations in "the primary, middle, and that section of secondary schools in which modern languages and science take a prominent part," and that "with special relation to Curriculum and Methods of Teaching." Part I. (pages 1-66) is a narrative of facts, interspersed with impressions and criticisms, as to school authorities, fees, hours and holidays, buildings, teachers (with their training and salaries), methods, curricula, examination and promotion, and discipline. Part II. (pages 69-264) exhibits reports of lessons in the various subjects actually heard by the author in the different classes of schools mentioned, in Frankfort, Leipzig, Hamburg, and Berlin. Mr. Winch is careful to record all the essential circumstances in each case, and his criticisms are scrupulously fair. We do not know any book that conveys a more definite, vivid, or just impression of the work actually done in the class of German schools reviewed in Mr. Winch's unpretentious volume.

MORAL AND RELIGIOUS.

Science and Immortality. By William Osler, M.D., F.R.S., Regius Professor of Medicine at Oxford University. (2s. 6d. Constable.)

This is an "Ingersoll Lecture" at Harvard, setting out a "simple objective statement of some of the existing conditions of thought." Dr. Osler divides mankind into three classes—Laodiceans, Gallionians, and Teresians—according to their interest or lack of interest in a future life. His diagnosis, based mainly on observation of American life, is gloomy enough; how far it holds good elsewhere is a question for inquirers elsewhere, and especially for the religious guides of the various communities. There is no depth of analysis, and one lays down the lecture with the feeling that Dr. Osler has declined to handle the essential elements of the subject. It is an ornately descriptive outside sketch.

Shakespeare's Chart of Life. By William Miller, LL.D., D.D., C.I.E., Principal of the Madras Christian College and Vice-Chancellor of the University of Madras. (Rs. 4. Natesan.)

This volume is a collection of four fresh and vigorous studies on "King Lear," "Macbeth," "Hamlet," and "Othello," which have already been published separately. The reader must not look for annotations: the purpose of the work is ethical. All four tragedies "are presentations of the deepest truths which any poet has hitherto been able to grasp and to embody concerning the social and individual life of man"; and Dr. Miller addresses himself to expound the significance of life as thus displayed. Not that he pins himself to the belief that Shakespeare had definitely present to his mind all that his expounder sees in the tragedies: he is "convinced that the tragedies embody mighty truths which in their practical bearing are of inestimable value," and that is enough for him. The expositions have grown out of class-work, but they are well worth the attention of students of life as well as of students of literature. They are really very able criticisms, with thoughtful practical applications, and to many readers they will open out far-reaching vistas of ideas. Pupils studying any of the plays ought to have ready access to this book for collateral reading on their own account.

Practical Morals: a Treatise on Universal Education.

By John K. Ingram, LL.D. (3s. 6d. Black.)

The sub-title is borrowed from Comte, and the work follows closely the arrangement set forth in the plan of the practical portion of "A System of Positive Morals, or Treatise on Universal Education," which Comte had projected, but never executed—"that, namely, of accompanying in thought the adherent of the Religion of Humanity through the successive stages of his existence, and indicating the duties proper to each, as they will be, and have already in some degree been, laid down by the Positivist priests or apostles on the appropriate occasions in the lives of believers, marked by the several Social Sacraments." The volume may be regarded as a sequel to the author's "Human Law and Morals according to Auguste Comte" (1901), which essayed "to exhibit, in accordance with the Positivist doctrine, the foundations of morals in the nature and situation of our race." Dr. Ingram now concerns himself with education, in the wide sense of the improvement of human nature. Apart altogether from Comte and Comtism, the work presents the fruits of much thought and experience, and deserves to be carefully perused by non-Comtists as well as by Comtists. Dr. Ingram always thinks for himself, even though the result be to place him at issue with "the Master" on occasional points of detail.

Messrs. Watts & Co. issue for the Rationalist Association (1) *Christianity and Rationalism on Trial* (6d.)—a series of articles by nine different writers, originally contributed to the *Clarion*, "in

criticism of the more important papers written by the Christian apologists" in the same paper (and since published by Messrs. Macmillan in sixpenny form); and (2) *Do we Believe?* by John Allan Hedderwick (6d.)—an analysis of an extended correspondence on the subject in the columns of the *Daily Telegraph*. Mr. Hedderwick is constructive also.

Messrs. Longmans issue a popular edition of *Religion for all Mankind*, "based on facts which are never in dispute," by the Rev. Charles Voysey, B.A. (1s. net). The volume is intended "chiefly for those who have doubted and discarded the Christian religion, and, in consequence, have become Agnostics and Pessimists," but also "for the help and comfort of all."

NEW EDITIONS AND REPRINTS—GENERAL.

Messrs. Smith, Elder, & Co. announce a new series, comprising some of the best works of modern authors, under the title of "The Waterloo Library" (3s. 6d. each). The first volume is *The Cruise of the "Cachalot" round the World after Sperm Whales*, by Frank T. Bullen, F.R.G.S., First Mate—the twelfth impression (second edition) of a fascinating story, with eight illustrations and a chart. Paper and type are excellent, and the binding is strong and tasteful.

Mr. Fisher Unwin has issued a "People's Edition" of *The Hungry Forties* (6d.)—a book of painful interest, economic and historical as well as political.

Messrs. Archibald Constable & Co. publish a new edition of *Bartholomew Sastrou, the Memoirs of a German Burgomaster of the Sixteenth Century*, translated by Albert D. Vandam (3s. 6d. net). Mr. Herbert A. L. Fisher furnishes an interesting introduction. There are eight illustrations and the print and get-up are good.

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MATHEMATICS.

15686. (G. H. HARDY, M.A.)—The area Δ and semi-perimeter s of a triangle are fixed. Show that the maximum and minimum values of one of the sides are roots of the equation $sx^2(x-s) + 4\Delta^2 = 0$. Discuss the existence of real maximum and minimum values.

Solution by the Proposer.

If a is stationary, and $a + b + c = 2s = \text{const.}$ (i.),

$s(s-a)(s-b)(s-c) = \Delta^2 = \text{const.}$ (ii.),

then $da = 0$, $db + dc = 0$ and $(s-c)db + (s-b)dc = 0$,

or $b = c$, $s - b = \frac{1}{2}(a + c - b) = \frac{1}{2}a$,

and so (ii.) takes the form $sa^2(a-s) + 4\Delta^2 = 0$. It is worth while to note the fact that a and R attain stationary values simultaneously; hence we cannot satisfy $da/dR = 0$. For R is stationary if abc is so, and this gives

$$bc da + ca db + ab dc = 0, \quad da + db + dc = 0,$$

$$(s-b)(s-c)da + (s-c)(s-a)db + (s-a)(s-b)dc = 0;$$

so that

$$\begin{vmatrix} (s-b)(s-c) & bc & 1 \\ (s-c)(s-a) & ca & 1 \\ (s-a)(s-b) & ab & 1 \end{vmatrix} = 0,$$

or $(b-c)(c-a)(a-b)s = 0$. If $b = c$, we have the case already discussed. If $a = b$ (say), then $s - c = 2a - s$, and so (ii.) gives

$$s(s-2a)(s-a)^2 + \Delta^2 = 0.$$

Let us consider the equation $sx^3 - s^2x^2 + 4\Delta^2 = 0$. If $x = 1/y$,

$$y^3 - s^2y/(4\Delta^2) + s/(4\Delta^2) = 0.$$

The condition that all the roots should be real is that

$$s^2/(16\Delta^4) - s^6/(432\Delta^6) < 0, \quad s^4 > 27\Delta^2.$$

If this condition is not satisfied, the values of s and Δ are impossible for a real triangle. If it is satisfied, two roots of $sx^2(x-s) + 4\Delta^2 = 0$ are positive, and there is one real maximum and one real minimum, as is geometrically obvious.

10114. (Professor DÉPREZ.)—On considère toutes les coniques inscrites au triangle ABC et dont les axes ont des directions données. (1) Les foyers et les sommets décrivent des cubiques; (2) le lieu d'un point situé sur un axe de l'une des coniques à une distance constante du centre est une conique.

Solution by J. A. H. JOHNSTON, M.A.

This Question is well adapted for solution in oblique co-ordinates. Let the variable conic touch the axes and the line $ax + by + 1 = 0$. Its equation is then

$$(px + qy + 1)^2 + 2\lambda xy = 0 \dots\dots\dots(i.),$$

and, if $ax + by + 1 = 0$ be a tangent, then $-\lambda = 2(a-p)(b-q)$, and

$$(2pq + \lambda) = 2bp + 2aq - 2ab \dots\dots\dots(ii.).$$

Let $lx + my = 0$ give the assigned direction for a principal axis. Such directions are the bisectors of the line pair $p^2x^2 + q^2y^2 + 2(pq + \lambda)xy = 0$, and therefore $lx + my$ is a factor of

$$(pq + \lambda - p^2 \cos \omega) x^2 - (p^2 - q^2) xy - (pq + \lambda - q^2 \cos \omega) y^2.$$

It follows that

$$(pq + \lambda - p^2 \cos \omega) m^2 + (p^2 - q^2) lm - (pq + \lambda - q^2 \cos \omega) l^2 = 0 \dots\dots\dots(iii.).$$

Equations (i.), with (ii.) and (iii.), completely define the conic and reduce its constants to one arbitrary constant.

The required loci are best investigated by the aid of the locus of the centres. If (x', y') be the centre,

$$\left. \begin{aligned} x' &= \frac{-q}{2pq + \lambda} = \frac{-q}{2(bp + aq - ab)}, & y' &= \frac{-p}{2pq + \lambda} = \frac{-p}{2(bp + aq - ab)} \\ \text{and therefore } p &= \frac{2aby'}{2ax' + 2by' + 1}, & q &= \frac{2abx'}{2ax' + 2by' + 1} \end{aligned} \right\} \dots\dots\dots(iv.).$$

If these values for p and q in (iv.) be substituted in (iii.), the locus of the centres appears as a conic, viz.,

$$2ab(l^2 \cos \omega - lm)x'^2 - 2ab(m^2 \cos \omega - lm)y'^2 + 2(l^2 - m^2)abx'y' + (l^2 - m^2)(2ax' + 2by' + 1) = 0 \dots\dots\dots(v.).$$

(a) *Locus of a Point on a Principal Axis at a Constant Distance from the Centre.*—Let (x, y) be the point. Then

$$\left. \begin{aligned} l(x-x') + m(y-y') &= 0 \\ (x-x')^2 + (y-y')^2 + 2(x-x')(y-y') \cos \omega &= k^2 \end{aligned} \right\} \dots\dots\dots(vi.).$$

Equations (vi.) show that both $(x-x')$ and $(y-y')$ have constant values, and, if $x = x' + a'$ and $y = y' + b'$, since (x', y') lies on a conic, it follows that (x, y) also describes a conic.

(b) *Locus of a Focus.*—If x, y be a focus, by well-known equations, (x, y) lies on the conic $4(a-b)\phi = \phi_x^2 - \phi_y^2$, or, in our case, $(p^2 - q^2)[p^2x^2 + q^2y^2 + 2(pq + \lambda)xy + 2px + 2qy + 1] = [p^2x + (pq + \lambda)y + p]^2 - [(pq + \lambda)x + q^2y + q]^2,$

and, if this be reduced, it assumes the following simple form:—

$$0 = -(2pq\lambda + \lambda^2)x^2 + (2pq\lambda + \lambda^2)y^2 - 2q\lambda x + 2p\lambda y$$

or $x^2 - y^2 - 2x'x + 2y'y = 0 \dots\dots\dots(vii.);$

therefore (x, y) satisfies

$$l(x-x') + m(y-y') = 0 \quad \text{and} \quad x^2 - y^2 - 2x'x + 2y'y = 0.$$

Solving for x' and y' , we find that

$$x' = \frac{m(x^2 + y^2) + 2lxy}{2(mx + ly)}, \quad y' = \frac{l(x^2 + y^2) + 2mxy}{2(mx + ly)} \dots\dots\dots(viii.).$$

If these values of x' and y' be now substituted in (v.), we shall find that

$$2ab(l^2 - m^2) \{ lm(x^4 + y^4) + 2[(l^2 + m^2) \cos \omega + lm]x^2y^2 + (l^2 + m^2 + 2lm \cos \omega)(x^3y + xy^3) \} + 2a(l^2 - m^2)(mx + ly)(mx^2 + my^2 + 2lxy) + 2b(l^2 - m^2)(mx + ly)(lx^2 + ly^2 + 2mxy) + 2(l^2 - m^2)(mx + ly)^2 = 0.$$

By testing the terms of the fourth degree, it is easily seen that $mx + ly$ is an irrelevant factor, and the locus appears as

$$ab[lx^3 + my^3 + (m + 2l \cos \omega)x^2y + (l + 2m \cos \omega)xy^2] + (am + bl)(x^2 + y^2) + 2(al + bm)xy + mx + ly = 0,$$

i.e., a cubic which may easily be shown to pass through the vertices of the given triangle of tangents, through the circular points at infinity, and to have a real asymptote parallel to $lx + my = 0$.

[Rest in Reprint.]

15734. (S. C. GOULD.)—Give all the different square numbers that can be formed by all the ten digits, each taken once and once only. The Proposer has developed eighty-seven such numbers. Are there any more?

Solution by the Proposer.

No.	Root.	Digital Square.	No.	Root.	Digital Square.
1	32043 ²	= 1026753849	45	66276 ²	= 4392508176
2	32286 ²	= 1042385796	46	67677 ²	= 4580176329
3	33144 ²	= 1098524736	47	68763 ²	= 4728350169
4	35172 ²	= 1237069584	48	68781 ²	= 4730825961
5	35337 ²	= 1248703569	49	69513 ²	= 4832057169
6	35757 ²	= 1278563049	50	71433 ²	= 5102673489
7	35853 ²	= 1285437609	51	72621 ²	= 5273809641
8	37176 ²	= 1382054976	52	75759 ²	= 5739426081
9	37905 ²	= 1436789025	53	76047 ²	= 5783146209
10	38772 ²	= 1503267984	54	76182 ²	= 5803697124
11	39147 ²	= 1532487609	55	77246 ²	= 5982403716
12	39336 ²	= 1547320896	56	78072 ²	= 6095237184
13	40545 ²	= 1643897025	57	78453 ²	= 6154873209
14	42744 ²	= 1827049536	58	80361 ²	= 6457890321
15	43902 ²	= 1927385604	59	80445 ²	= 6471398025
16	44016 ²	= 1937408256	60	81122 ²	= 6597013284
17	45567 ²	= 2076351489	61	81945 ²	= 6714983025
18	45624 ²	= 2081549376	62	83919 ²	= 7042398561
19	46587 ²	= 2170348569	63	84648 ²	= 7165283904
20	48852 ²	= 2386517904	64	85353 ²	= 7285134609
21	49314 ²	= 2431870596	65	85743 ²	= 7351862049
22	49353 ²	= 2435718609	66	85803 ²	= 7362154809
23	50706 ²	= 2571098436	67	86073 ²	= 7408561329
24	53976 ²	= 2913408576	68	86704 ²	= 7518029436
25	54918 ²	= 3015986724	69	87639 ²	= 7680594321
26	55446 ²	= 3074258916	70	88623 ²	= 7854036129
27	55524 ²	= 3082914576	71	89079 ²	= 7935068241
28	55581 ²	= 3089247561	72	89145 ²	= 7946831025
29	55626 ²	= 3094251876	73	89355 ²	= 7984316025
30	56532 ²	= 3195867024	74	89523 ²	= 8014367529
31	57321 ²	= 3285697041	75	90144 ²	= 8125940736
32	58413 ²	= 3412078569	76	90153 ²	= 8127563409
33	58455 ²	= 3416987025	77	90198 ²	= 8135679204
34	58554 ²	= 3428570916	78	91248 ²	= 8326197504
35	59403 ²	= 3528716409	79	91605 ²	= 8391476025
36	60984 ²	= 3719048256	80	92214 ²	= 8503421796
37	61575 ²	= 3791480625	81	94695 ²	= 8967143025
38	61866 ²	= 3827401956	82	95154 ²	= 9054283716
39	62679 ²	= 3928657041	83	96702 ²	= 9351276804
40	62961 ²	= 3964087521	84	97779 ²	= 9560732841
41	63051 ²	= 3974528601	85	98055 ²	= 9614783025
42	65634 ²	= 4307821956	86	98802 ²	= 9761835204
43	65637 ²	= 4308215769	87	99066 ²	= 9814072356
44	66105 ²	= 4369871025			

[Complete article in Reprint.]

15695. (H. A. WEBB, B.A.)—A spider and a fly are a feet apart. The fly starts moving in a direction at right angles to the line joining the animals, and continues moving with uniform velocity v feet per second in a straight line. At the same moment the spider starts moving towards the fly, and continues moving with uniform speed u feet per

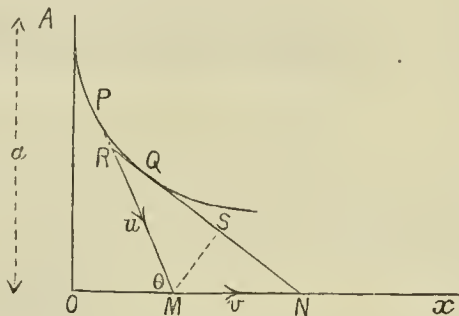
second ($u > v$), along the "curve of pursuit," i.e., at any moment the spider is moving directly towards the fly. Show that the spider will catch the fly after $au/(u^2 - v^2)$ seconds.

Solutions (I.) by J. BLAICKIE, M.A.; (II.) by C. SEARLE;
(III.) by E. F. TITTLE and C. BICKERDIKE.

[Solutions too numerous to allow of nearly all being published.—Ed.]

(I.) Tait and Steele, p. 26, give $x = ae/(1 - c^2)$ where $c = v/u$. Thus $x = auv/(u^2 - v^2)$. But $v = x/t$; therefore time $= x/v = au/(u^2 - v^2)$.

(II.) Let P, Q be the positions of the spider at times t and $(t + \delta t)$ respectively. Draw PM, QN tangents to the "curve of pursuit." M, N are positions of fly at times t and $(t + \delta t)$. Distance of spider from fly $= PM = l$. Rejecting negligible small quantities, we have



$$\delta l = QN - PM$$

$$= (QN + QR) - (PM + QR)$$

$$= SN - (PR + RQ)$$

$$= SN - \delta s = v \delta t \cos \theta - \delta s = v \delta t \frac{dx}{ds} - \delta s / \delta t \frac{dt}{dt} = v/u \frac{dx}{dt} - u \frac{dt}{dt};$$

therefore $l = v/u x - ut + C$. When $t = 0$, $x = 0$, $l = a$; therefore $l = v/u x - ut + a$. When the spider catches the fly $l = 0$, $t = T$, $x = vT$; therefore $0 = v/u vT - uT + a$; therefore $T = ua/(u^2 - v^2)$.

(III.) Taking the initial directions of motion as axes, we have

$$u^2 = \left(\frac{dx}{dt}\right)^2 \left\{1 + \left(\frac{dy}{dx}\right)^2\right\}; \quad -\frac{v}{x} = \frac{d}{dt} \left(\frac{dy}{dx}\right) = \frac{dx}{dt} \frac{d^2y}{dx^2}$$

whence path traversed by spider is given by

$$(d^2y/dx^2)/[1 + (dy/dx)^2]^{\frac{3}{2}} = v/(ux);$$

therefore, if $z = dy/dx$, $[z + \sqrt{z^2 + 1}]^u a^v = x^v$ or $2z = (x/a)^k - (a/x)^k$, where $k = v/u$ and is < 1 ; therefore

$$2y = (x/a)^k x/(k+1) - (a/x)^k x/(1-k) - a/(k+1) + a/(1-k).$$

Thus, when $x = 0$, $y = ak/(1 - k^2)$, and time taken by fly to arrive at this point $= au/(u^2 - v^2)$. Time taken by spider to reach same point

$$= \int \frac{ds}{u} = \frac{1}{2u} \left\{ \left(\frac{x}{a}\right)^k \frac{x}{1+k} + \left(\frac{a}{x}\right)^k \frac{x}{1-k} \right\}_0^a = \frac{au}{u^2 - v^2}.$$

15075. (II. L. TRACHTENBERG.)—The straight line joining the centres of the two rectangular hyperbolas that touch four fixed straight lines is bisected at right angles by the directrix of the parabola which touches these straight lines.

Solutions (I.) by the PROPOSER, (II.) by Professor SANJANA, M.A.,
(III.) by W. H. BLYTHE, M.A.

(I.) The director circles of all the conics touching the four fixed straight lines form a coaxial system. But the centres of the two rectangular hyperbolas are their director circles and are therefore the limiting points of the system. Also the directrix of the parabola is its director circle and is therefore the radical axis of the system, and, since the join of the limiting points is bisected at right angles by the radical axis, it follows that the join of the centres of the two rectangular hyperbolas is bisected at right angles by the directrix of the parabola.

(II.) Of the four triangles formed by the fixed straight lines taken three and three, two must be obtuse-angled. Draw the two circles for which these two triangles are severally self-conjugate: then either point of intersection of the circles is the centre of a rectangular hyperbola touching the given lines. Thus the line of centres of the hyperbolas is bisected at right angles by the line of centres of the circles, i.e., by the line joining the orthocentres of the two triangles. But, since the parabola touches the four given lines, the orthocentres of the four triangles lie all on its directrix; hence this directrix bisects at right angles the line of centres of the hyperbolas.

(III.) The following may be interesting, as it gives the analytical solution of the problem. A geometrical proof based on Cremona, *Projective Geometry*, 2nd ed., pp. 271 et seq., is intrinsically superior, however. It is shown in Salmon's *Conic Sections*, p. 254, that the conic

$$ua^2 + b\beta^2 + c\gamma^2 = 0$$

touches the four straight lines $la \pm m\beta \pm n\gamma = 0$ if $l^2/a + m^2/b + n^2/c = 0$, and that the locus of the centres of the conics is $l^2a + m^2\beta + n^2\gamma = 0$. Taking areal co-ordinates and expressing the condition that the conic may be a rectangular hyperbola, we have $a + b + c = 0$. If x, y, z are the co-ordinates of the centre, then $ax = by = cz$, for it is the pole of the line at infinity. Using these equations with those given above to find the co-ordinates of the centre, we find, in addition to the fact that x, y, z lies on the line of centres, that $xy + yz + zx = 0$. Therefore there are but two rectangular hyperbolas the centres of which lie at the intersection of the line of centres with the circle circumscribing the triangle of reference. Taking the condition that the conic should be a parabola, namely,

$ab + bc + ca = 0$, the two tangents drawn from the centre of the circle circumscribing circle $a = \beta = \gamma$ and given by the equation

$$(aa^2 + b\beta^2 + c\gamma^2)(a + b + c) = (ua + b\beta + c\gamma)^2$$

prove to be at right angles when the above condition is satisfied. Therefore the directrix of the parabola passes through the centre of the circle, and, being evidently at right angles to the line of centres, it bisects the chord of the circle made by this line, that is, the line joining the centres of the rectangular hyperbolas.

15736. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—(i.) Factorize into prime factors $N = (70,600,734^2 + 1)$. Here $N = q \cdot p^2$, where p is a large prime. (ii.) Show how to find very large numbers ($> 10^{50}$) of form

$$N = y^2 + 1 = q \cdot m^2,$$

wherein m is very large ($> 10^{25}$). Give examples.

Solution by the PROPOSER.

The published solutions of the Pellian equation $y^2 - Dx^2 = -1$ give the minimum integer solution (x, y) for all values of D , which admit of solution in integers, up to $D = 1500$. Each of these gives a factorization of $N = y^2 + 1 = D \cdot x^2$. In many of the cases the values of x, y given are very large. Thus Bickmore's table (*Brit. Assoc. Report*, 1893, pp. 73-120) gives

$$D = 1213; \quad N = 70600734^2 + 1 = 1213 \cdot 2027117^2,$$

$$D = 1381; \quad y > 2 \cdot 10^{32}, \quad x > 5 \cdot 10^{30},$$

$$D = 1453; \quad y > 2 \cdot 10^{38}, \quad x > 3 \cdot 10^{26}.$$

Again, taking any such solution of $y^2 - Dx^2 = -1$, this gives

$$(y^2 + Dx^2)^2 - D(2xy)^2 \equiv +1.$$

Multiplying these together by conformal multiplication gives a new solution $y^2 - Dx^2 = -1$; whence the new number $N_1 = y^2 + 1 = Dx_1^2$, where $y_1 = y(y^2 + 3Dx^2)$, $x_1 = x(3y^2 + Dx^2)$: here the new numbers N_1, y_1, x_1 are much higher than the previous N, x, y . And, by repeated conformal multiplication by the above unit form, the numbers can be raised indefinitely.

12952. (W. BOOTH.)—If Q stands for

$$ax^2 + 2hxy + by^2 + 2gzx + 2fyz + cz^2 + 2lxw + 2myw + 2nzw + dw^2,$$

then the determinant $\begin{vmatrix} aQ - L^2 & hQ - LM & gQ - LN \\ hQ - ML & bQ - M^2 & fQ - MN \\ gQ - LN & fQ - MN & cQ - N^2 \end{vmatrix}$ is equal to

$\Delta Q^2 \omega^2$, where $L = \frac{1}{2}(dQ/dx)$, $M = \frac{1}{2}(dQ/dy)$, $N = \frac{1}{2}(dQ/dz)$. Give a geometrical interpretation.

Solution by Professor NANSON.

The condition that the tangent cone from the point x to the conicoid

$$u \equiv \sum a_{pq} x_p x_q = 0 \quad (p, q = 1, 2, 3, 4)$$

may intersect the plane $a \equiv \sum a_p x_p = 0$

in a line pair is, if $u_p = \frac{1}{2}(du/dx_p)$,

$$\begin{vmatrix} (ua_{pq} - u_p u_q) & a_p \\ (a_q) & 0 \end{vmatrix} = 0 \quad \text{or} \quad \begin{vmatrix} (ua_{pq} - u_p u_q) & (a_p) & (0) \\ (a_q) & 0 & 0 \\ (u_q) & 0 & 1 \end{vmatrix} = 0,$$

and by simple combinations of rows and columns this reduces to

$$\frac{1}{u^2} \begin{vmatrix} (ua_{pq}) & (a_p) & (0) \\ (a_q) & 0 & -a \\ (0) & -a & 0 \end{vmatrix} = 0 \quad \text{or} \quad \Delta u^2 a^2 = 0,$$

i.e., either the conicoid is a cone or the vertex of the tangent cone lies on u or on a . By taking $a \equiv x_4$, we get the result in the Question.

[N.B.—The notation of the Question has not been entirely followed.]

15720. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Find the coefficient of n^6 in the product of the two series

$$1^7 + 2^7 + 3^7 + 4^7 + \dots + (n-1)^7 + n^7, \quad 1^8 + 2^8 + 3^8 + 4^8 + \dots + (n-1)^8 + n^8.$$

Solution by C. M. ROSS.

$$\begin{aligned} 1^7 + 2^7 + 3^7 + \dots + n^7 &= \frac{1}{8}n^8 + \frac{1}{2}n^7 + B_1 \frac{7}{2!} n^6 - B_3 \frac{7 \cdot 6 \cdot 5}{4!} n^4 + B_5 \frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3}{6!} n^2 + C \\ &= \frac{1}{8}n^8 + \frac{1}{2}n^7 + \frac{7}{24}n^6 - \frac{7}{24}n^4 + \frac{1}{12}n^2, \end{aligned}$$

the constant being zero. Also

$$\begin{aligned} 1^8 + 2^8 + 3^8 + \dots + n^8 &= \frac{1}{9}n^9 + \frac{1}{2}n^8 + B_1 \frac{8}{2!} n^7 - B_3 \frac{8 \cdot 7 \cdot 6}{4!} n^5 + B_5 \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4}{6!} n^3 \\ &\quad - B_7 \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{8!} n + C \\ &= \frac{1}{9}n^9 + \frac{1}{2}n^8 + \frac{2}{3}n^7 - \frac{7}{15}n^5 + \frac{2}{9}n^3 - \frac{1}{15}n, \end{aligned}$$

the constant being zero. Therefore the coefficient of n^6 in the product of the two series is zero.

N.B.— B_1, B_3, B_5 , and B_7 are Bernoulli's numbers.

15741. (R. CHARTRES.)—From a point within a triangle straight

lines parallel to the sides are drawn to the base. Find the mean value of the n -th power of the area of the triangle thus formed. (Elementary proof wanted.)

Solution by the Proposer.

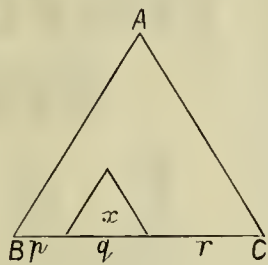
$$a^{2n} = (p + q + r)^{2n},$$

having $(n + 1)(2n + 1)$ terms; therefore

$$M(q^{2n}) = \frac{a^{2n}}{(n + 1)(2n + 1)},$$

or
$$M(x^n) = \frac{\Delta^n}{(n + 1)(2n + 1)}.$$

If $n = 1$, then $M(x) = \frac{1}{6}\Delta$.



15704. (R. F. WHITEHEAD, B.A.)—Expand $\theta/\sin \theta$ in ascending powers of $\cos \theta$.

Solutions (I.) by Professor SANJANA, M.A.; (II.) by R. F. DAVIS, M.A.

It is well known that $\frac{\sin^{-1} x}{\sqrt{1-x^2}} = x + \frac{2}{3}x^3 + \frac{2.4}{3.5}x^5 + \dots$

Putting $x = \cos \theta$, $\frac{\frac{1}{2}\pi - \theta}{\sin \theta} = \cos \theta + \frac{2}{3}\cos^3 \theta + \frac{2.4}{3.5}\cos^5 \theta \dots$; also

$$\frac{\frac{1}{2}\pi}{\sin \theta} = \frac{1}{2}\pi(1-x^2)^{-\frac{1}{2}} = \frac{1}{2}\pi \left(1 + \frac{1}{2}\cos^2 \theta + \frac{1.3}{2.4}\cos^4 \theta \dots \right).$$

Hence, by subtraction,

$$\frac{\theta}{\sin \theta} = \frac{1}{2}\pi - \cos \theta + \frac{1}{2}\pi \frac{1}{2}\cos^2 \theta - \frac{2}{3}\cos^3 \theta + \frac{1}{2}\pi \frac{1.3}{2.4}\cos^4 \theta - \frac{2.4}{3.5}\cos^5 \theta \dots$$

(II.) Assume $\theta/\sin \theta = A_0 + A_1 \cos \theta + A_2 \cos^2 \theta + \dots$. Then, if θ and ϕ be complementary, $\frac{1}{2}\pi - \phi = \cos \phi (A_0 + A_1 \sin \phi + A_2 \sin^2 \phi + \dots)$ and $A_0 = \frac{1}{2}\pi$. Differentiating,

$$-1 = -\sin \phi (A_0 + A_1 \sin \phi + A_2 \sin^2 \phi + \dots) + (1 - \sin^2 \phi) (A_1 + 2A_2 \sin \phi + 3A_3 \sin^2 \phi + \dots).$$

Equating coefficient of $\sin^{n-1} \phi$ to zero, $-\Lambda_{n-2} + n\Lambda_n - (n-2)\Lambda_{n-2} = 0$, or $n\Lambda_n = (n-1)\Lambda_{n-2}$. Thus

$$\theta/\sin \theta = \frac{1}{2}\pi \left(1 + \frac{1}{2}\cos^2 \theta + \frac{1.3}{2.4}\cos^4 \theta + \dots \right) - \left(\cos \theta + \frac{2}{3}\cos^3 \theta + \frac{2.4}{3.5}\cos^5 \theta + \dots \right).$$

2361. (Rev. R. TOWNSEND, F.R.S.)—(1) Show that the three chords of intersection of the circumscribed with the three escribed circles of a plane triangle intersect collinearly with the three corresponding sides of the triangle. (2) Prove the corresponding property for a spherical triangle.

Solution by Professor SANJANA, M.A.

(1) Let the common chord with the A-escribed circle meet BC in X, and let D be the point of contact in that side. Then, as X is on the radical axis,

$$XB \cdot XC = XD^2;$$

therefore

$$\begin{aligned} XC/XD &= XD/XB \\ &= (XC - XD)/(XD - XB) \\ &= CD/DB, \end{aligned}$$

and hence

$$CD^2/DB^2 = XC/XB.$$

Similar results hold for the other sides. Therefore

$$\frac{XC}{XB} \frac{YA}{YC} \frac{ZB}{ZA} = \frac{CD^2}{DB^2} \frac{AE^2}{EC^2} \frac{BF^2}{FA^2} = \frac{(s-b)^2 (s-c)^2 (s-a)^2}{(s-c)^2 (s-a)^2 (s-b)^2} = 1;$$

so that X, Y, Z are collinear.

(2) If the triangle is spherical, X is the intersection with BC of the great circle through K_1 and K_2 , and $\tan^2 \frac{1}{2}XD = \tan \frac{1}{2}XB \tan \frac{1}{2}XC$; therefore

$$\frac{\tan \frac{1}{2}XC}{\tan \frac{1}{2}XD} = \frac{\tan \frac{1}{2}XD}{\tan \frac{1}{2}XB} = \frac{\tan \frac{1}{2}XC - \tan \frac{1}{2}XD}{\tan \frac{1}{2}XD - \tan \frac{1}{2}XB} = \frac{\sin \frac{1}{2}CD \cos \frac{1}{2}XB}{\sin \frac{1}{2}BD \cos \frac{1}{2}XC'}$$

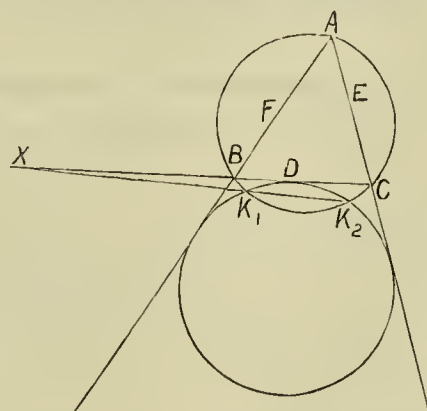
and hence
$$\frac{\sin^2 \frac{1}{2}CD \cos^2 \frac{1}{2}XB}{\sin^2 \frac{1}{2}BD \cos^2 \frac{1}{2}XC} = \frac{\sin \frac{1}{2}XC \cos \frac{1}{2}XB}{\sin \frac{1}{2}XB \cos \frac{1}{2}XC'}$$

i.e.,
$$\frac{\sin^2 \frac{1}{2}CD}{\sin^2 \frac{1}{2}BD} = \frac{\sin XC}{\sin XB};$$

and similar results hold for the other sides. Therefore

$$\frac{\sin XC}{\sin XB} \frac{\sin YA}{\sin YC} \frac{\sin ZB}{\sin ZA} = \frac{\sin^2 \frac{1}{2}(s-b)}{\sin^2 \frac{1}{2}(s-c)} \frac{\sin^2 \frac{1}{2}(s-c)}{\sin^2 \frac{1}{2}(s-a)} \frac{\sin^2 \frac{1}{2}(s-a)}{\sin^2 \frac{1}{2}(s-b)} = 1;$$

so that X, Y, Z lie on a great circle.

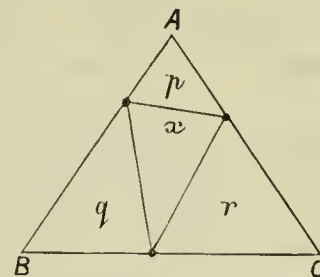


QUESTIONS FOR SOLUTION.

15751. *Erratum.*—In Question 15751 (v. *Educational Times* for April, 1905) interchange l and l' in the expression for the reaction at P.

15768. (S. C. BAGCHI, B.A.)—The rate of change of the Massieu-characteristic of a homogeneous mixture due to a small amount of one of its constituents being allowed to diffuse in it is invariative with regard to the proportional increase in the molecular weight of each constituent. (Massieu-characteristic is called by Duhem the “thermodynamic potential at constant pressure.”)

15769. (R. CHARTRES.)—A random point being taken in each side of the triangle ABC, find the mean value of $p^h q^k r^l$, x^n , and $\log x$. Elementary proof required.



15770. (C. E. YOUNGMAN, M.A.)—A sum of money is made up of ordinary coins of the realm, each of as large value and as little frequency as may be consistent with the money being shared as follows by A., B., and C.:—first A. takes a penny and one-third of the rest, then B. a penny and one-third of the rest, then C. likewise, and the remainder they share equally. Then one of them discovers that his coins are worth a shilling each on the average. Find (without algebra) who this is.

15771. (A. HOLM, M.A.)—Find r rational numbers such that, if a given number is added to their sum or to the sum of any $r-1$ of them the results may all be squares.

15772. (R. W. D. CHRISTIE.)—Prove $A^2 = B^2 + C^2$ (integers) when $A = \sum_0^n \{ (m+n)! / [2n!(m-n)!] \} (m \nabla n)$.

E.g., $m = 5, n = 5, 4, 3, 2, 1, 0$; then

$$A = \sum_0^5 (1 + 9 + 28 + 35 + 15 + 1) = 8^2 + 5^2.$$

15773. (Rev. F. H. JACKSON.)—Show that

$$\begin{aligned} \left(1 - \frac{x}{1^3} + \frac{x^2}{1^3 \cdot 2^3} - \frac{x^3}{1^3 \cdot 2^3 \cdot 3^3} + \dots \right) \left(1 + \frac{x}{1^3} + \frac{x^2}{1^3 \cdot 2^3 \cdot 3^3} + \dots \right) \\ = 1 - \frac{3!}{1^3 \cdot 2^3 \cdot 1^3} x^2 + \frac{6!}{1^3 \cdot 2^3 \cdot 3^3 \cdot 4^3 \cdot 1^3 \cdot 2^3} x^4 - \dots \end{aligned}$$

15774. (Professor NANSON.)—If

$$a/(bc - a^2) + b/(ca - b^2) + c/(ab - c^2) = 0,$$

then

$$a/(bc - a^2)^2 + b/(ca - b^2)^2 + c/(ab - c^2)^2 = 0.$$

15775. (J. J. BARNIVILLE, B.A., I.C.S.)—Having

$$u_n + 2u_{n+2} = u_{n+1} + u_{n+3},$$

prove that

$$\begin{aligned} \frac{1 \cdot 2 \cdot 5}{1 \cdot 2 \cdot 3 \cdot 4} - \frac{2 \cdot 4 \cdot 8}{1 \cdot 3 \cdot 5 \cdot 7} + \frac{3 \cdot 7 \cdot 14}{2 \cdot 5 \cdot 9 \cdot 12} - \frac{5 \cdot 12 \cdot 25}{4 \cdot 9 \cdot 16 \cdot 21} + \dots = 0; \\ \frac{1 \cdot 3 \cdot 6}{1 \cdot 2 \cdot 4 \cdot 5} - \frac{2 \cdot 5 \cdot 11}{2 \cdot 4 \cdot 7 \cdot 9} + \frac{4 \cdot 9 \cdot 19}{3 \cdot 7 \cdot 12 \cdot 16} - \frac{7 \cdot 16 \cdot 33}{5 \cdot 12 \cdot 21 \cdot 28} + \dots = \frac{1}{3}. \end{aligned}$$

15776. (Professor HUDSON, M.A.)—Prove that the cusps of the evolute of the focus-roulette of a hyperbola on a straight line are at the same distance from that line.

15777. (Professor COCHEZ.)—On donne $y^2 = z^3$. On demande le lieu des sommets des angles droits circonscrits à cet cubique.

15778. (The late R. TUCKER, M.A.)—AP, AQ are vertical vectors of a parabola. Find the envelope of the circle APQ (1) when AP, AQ are at right angles, (2) when AP, AQ contain any given angle; and find the locus of the centre of the circle in each case.

15779. (Professor SANJANA, M.A.)—Prove, by the elementary geometry of the conic sections, that the sum of the reciprocals of two perpendicular focal chords of a conic is of constant magnitude.

15780. (D. BIDDLE.)—PQ is a chord of a given circle; LOM is an intercept of the ellipse which, having P, Q as its foci, passes through O, the centre of the circle, L, M being on the circumference. (1) Find the position of PQ when the equal triangles PQL, PQM are maxima; and their area, as such. (2) Consider similarly the cases in which the ellipse cuts the circumference in S, T as well, on the opposite side of P, Q, and in which (for the limited range) PQS, PQT exceed in area PQL, PQM, the corresponding triangles previously considered.

15781. (Professor NEUBERG.)—Soit A le sommet d'une parabole. En un point quelconque M de cette courbe on mène une corde MN perpendiculaire à MA. Trouver le lieu du milieu de cette courbe.

15782. (A. M. NESBITT, M.A.)—The inscribed circle of a triangle ABC touches the sides AC, AB in E and F, and an escribed circle touches the same sides produced in E' and F'. If the median AK cut EF in G and E'F' in G', prove that BGCG' is a parallelogram.

15783. (Professor LAUVERNAY.)—Démontrer qu'il existe un triangle

et un seul de forme déterminée, tel que l'orthocentre et le centre de gravité de ce triangle soient sur la circonférence inscrite à celui-ci.

15784. (R. F. DAVIS, M.A. Suggested by Question 15748.)—If ABCD be a quadrilateral whose opposite sides BA, CD meet in E, and any variable transversal EPQ meet AD, BC in P, Q respectively, then $AP \cdot PD/EP^2 : BQ \cdot QC/EQ^2$ is constant.

15785. (Professor NANSON.)—Given the quadric equation of a pair of planes or points, determine the six co-ordinates of their meet or join.

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10341. (Professor WOLSTENHOLME, M.A., Sc.D.)—The curve

$$(y^2 + 4ax - 4a^2)^2 = 64a(x + 2a)(x^2 + y^2)$$

is of the fourth degree and sixth class, and has three nodes ($x = -a, y = 0$; $x = -6a, y^2 + 100a^2 = 0$); hence Plucker's equations give us six inflexions and four bitangents (no cusp). Investigate the position and nature of these. [$x \pm iy = 0$ gives $(x - 2a)^4 = 0$, or meets the curve in four coincident points; such a point is equivalent to two inflexions and one bitangent; $a = 0$ gives a similar point at infinity, and $x + 2a = 0$ has real double contact when $y^2 = 12a^2$.]

10423. (D. BIDDLE.)—As a wheel, of radius r , proceeds in a straight line on a level road, at a uniform velocity v , on a still day, a particle of mud is detached from the tire by centrifugal force, and again impinges upon it under the influence of gravity. Disregarding the resistance of the air, find (1) the arc of revolution within which the said particle leaves the wheel in the first instance, (2) the maximum time occupied in the flight, (3) the maximum distance actually traversed (in a terrestrial sense).

10573. (H. W. SEGAR.)—If $z = f_1(y + a_1x) + f_2(y + a_2x)$, prove that the equation $f(c) \cdot r + c \cdot s + t = 0$ cannot have a tac-locus.

10596. (Professor DÉPREZ.)—Soient a, b, c les côtés d'un triangle sphérique ABC; r le rayon du cercle inscrit; x, y, z les distances d'un point de ce cercle aux côtés de ABC. Démontrer la formule

$$\cos \frac{1}{2}A (\sin y \sin z)^{\frac{1}{2}} + \dots = 2hgr \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C.$$

10825. (W. J. C. SHARP, M.A.)—Prove (1), (2), and therefrom deduce (3), (4), where

$$(-1)^m (2 \sin A)^m \sin(mA + B + \frac{1}{2}m\pi) = \sin B - \frac{m}{1} \sin(2A + B) + \frac{m(m-1)}{1 \cdot 2} \sin(4A + B) - \dots \dots (1);$$

$$(-1)^m (2 \sin A)^m \cos(mA + B + \frac{1}{2}m\pi) = \cos B - \frac{m}{1} \cos(2A + B) + \frac{m(m-1)}{1 \cdot 2} \cos(4A + B) - \dots \dots (2);$$

$$\int \sin^m x \sin(m+n)x \cdot dx, \int \sin^m x \cos(m+n)x \cdot dx \dots \dots (3, 4).$$

11843. (J. GRIFFITHS, M.A.)—Let O denote the centre of gravity of a triangle ABC (obtuse-angled, suppose); P_1, P_2 the points of intersection of its circumscribing and nine-point circles; C', C'', C''' the conics which pass through the points $GBCP_1P_2, GCAP_1P_2, GABP_1P_2$; and C'_s, C''_s, C'''_s those which pass through P_1, P_2 and are self-conjugate with respect to the triangles GBC, GCA, GAB respectively. It is required to prove that the nine-point circle in question passes through the other points of intersection of (C', C'_s) ; (C'', C''_s) ; (C''', C'''_s) .

NOTICES TO CORRESPONDENTS.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, April 13th, 1905.—Dr. E. W. Hobson in the Chair.

The following papers were communicated:—

"On Irreducible Jacobians of Degree Six," by Mr. P. W. Wood.

"Ordinary Inner Limiting Sets in the Plane or Higher Space," by Dr. W. H. Young.

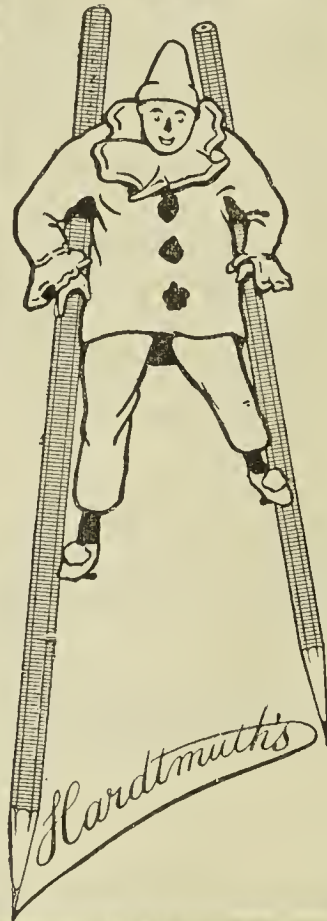
"Note on a Case of $F(\alpha, \beta, \gamma, \delta, \epsilon, 1)$," by Rev. F. H. Jackson.

Informal communications were made as follows:—

"Fermat's Numbers and the Converse of Fermat's Theorem," by Mr. A. E. Western.

"On the Strains that accompany Bending," by Prof. A. E. H. Love.

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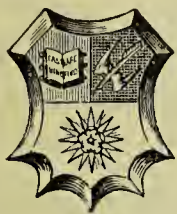
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The Educational Times.

The Grooves of Change.

THE bewilderment of educational opinion depicted by Dr. Hayward in his lecture at the College of Preceptors, which we print

elsewhere in our present issue, can scarcely be regarded with surprise. After a period of somnolence or listlessness, one is apt to find things in arrear and in confusion, and the educational slumber in this country has been both prolonged and deep. Even when one excludes opinions that have no substantial claim to serious consideration, opinions formed on an inadequate basis or under patent bias, opinions expressed in lax or misleading terms, there will still remain contradictions and divergences of fundamental import. Indeed, Prof. Sadler tells us frankly that "there is no single educational formula in which at present we can implicitly believe." This cannot but be somewhat disquieting, however natural it may be as a penalty for long neglect, or, let us say, for easy acquiescence in the traditions of the elders. The only course is to set about recovering lost ground. The bounds of knowledge have been made wider and wider yet; the extension of human knowledge has deeply impressed the habits of mind of the people and the social interrelations of the community; and educational methods and traditions accordingly call for readjustment to the new conditions. The new order, material and intellectual, demands a suitable educational response. The movement is a continuing one; and so it is useless to look for finality in the educational system. "It is impossible," says Prof. Sadler, "to foresee what will be a generation hence the normal course of secondary education in our English schools." Unquestionably so. And, after all, is an absolute unification of educational theory either possible or probable? The facts of life and society do not encourage a favourable anticipation. Granting the claims of Herbart on Dr. Hayward's fullest statement, one cannot hope that even then the last word has been said. Education is of the nature of an inexact science, and there will always be room for honest and substantial differences. The practical man will utilize the current agreements in relation to the current materials and surroundings.

The foregoing quotations from Prof. Sadler are taken from his "Report on Secondary and Higher Education in

Derbyshire," a very thorough-going document—or rather volume—just issued by the Education Committee of the county of Derby, and fully rivalling his great Liverpool report. On a detailed inquiry at a couple of dozen centres, he sets forth "the best mode of developing a complete and satisfactory system" for the particular county. So far as local matters are concerned, we leave the Report to the wisdom of the Education Committee, congratulating them on its painstaking, penetrating, lucid, and suggestive character. But Prof. Sadler always works on principle, and his references of details to principles throughout the investigation ought to be extremely instructive to other educational bodies and interesting to educationists generally. We have just seen how uncertain in his view are the bases and the lines of educational advance, and how little disposed he is to legislate out of hand for any but the nearest years. He follows the wise practical course of "retaining every educational instrument of tested value," while watching for the time when we shall "reach the point at which we can say that the courses of study in secondary schools have successfully adjusted themselves to the new needs of modern life." The practical inference he draws from the situation is this:

That, instead of hurriedly multiplying secondary schools with more regard to the number of pupils to be attracted to them than to the quality of the training and instruction which modern needs make it expedient to devise and provide, the more prudent course will be to concentrate effort on getting a sufficient number of secondary schools into a high state of efficiency (developing existing schools where circumstances allow, but establishing new ones when necessity requires), on staffing these schools with very competent teachers, and on encouraging them to make various experiments in curricula and in methods of teaching.

Prof. Sadler expressly says that he has "endeavoured to bear constantly in mind the importance of bringing education into close touch with the real needs of life"—a modern view that colours deeply the whole of his statement and recommendations, and peremptorily bars the possibility of finality. Needs differ in different places, even in the same county; and the educational arrangements must be adjusted to them in the ways most suitable in the several cases at the particular time. All this points to the urgent necessity of variety and flexibility of system. The same idea is involved in the stress laid upon the making of "various experiments in curricula and in methods of teaching." But, Prof. Sadler insists, "the essential thing in all educa-

tion is not the quickening of the wits, but the strengthening of the character; its benefits depend on the quality of its moral and intellectual influence, not simply on the quantity of its provision"; and, accordingly, "the most indispensable factor in it is the personality of the teacher." While a complete, consistent, and universally accepted theory of education is being worked out, "we are bound to act"; and, given able, instructed, trained, and sensible teachers, the practical results will not be amiss, and very probably experience will aid the formation and acceptance of the theory of the future.

In brief, Prof. Sadler advises a great improvement of the elementary schools in the industrial districts, a liberal provision of higher-grade schools of a new type, and an adequate supply of secondary education at a limited number of centres, accessible (by means of scholarships) to boys and girls of exceptional promise throughout the county. Here, in the very nature of the circumstances, emerges an unfortunate limitation on secondary education: the children must go to a centre. In the north-eastern counties of Scotland, under the old parish school system, it used to be the pride of the schoolmaster to send his best boys direct to the University; and, even under the more exacting conditions prevalent during the past generation, many a schoolmaster does so still. But then the achievement depends upon the exceptional ability and the professional pride of the schoolmasters specially encouraged by the Dick and Milne Bequests. This is a striking testimony to the richness of the returns from a fairly liberal treatment of teachers. However, Prof. Sadler goes across the Border for one important suggestion. For certain districts of Derbyshire—as well as for "many other parts of England"—he recommends strongly "a new type of higher-grade school, organized on lines not unlike those which have proved successful in Scotland," and providing a course extending over the three years from twelve to fifteen. The details of the course are very well worth study. In the first two years it would be general; in the third year it would be divided into two, three, or four branches, according to the needs of the district—a general course, an industrial course (for boys only), a commercial course, and a domestic course (for girls only)—all the courses, however, including hygiene, class singing, and physical training. The general course of the first two years has for its central factor "thoroughly good teaching in English," with a view to develop clear thought and expression, and "to give the children a love of good literature, and to encourage private reading, and, through the teaching of history, to develop in them a sense of civic and national duty." With the usual subjects are included handicraft exercises, Nature study, and French "taught on the best modern methods, e.g., as far as possible in the language itself, though with careful regard to grammatical accuracy." The education would not be cheap indeed: "from £8 to £10 a head," apart from interest on expenditure on sites and building; and "towards this outlay the Government grants offer but a meagre contribution"—"wholly insufficient to provide instruction of the quality required in good schools of the higher-grade type." But Prof. Sadler reasonably hopes "that the Board of Education may see its way to extend its present Higher Elementary

School Minute on the more liberal lines already adopted in Scotland." Meantime, the thing is for Local Education Committees to find out exactly what their real needs in different districts are, and to work in these directions as best they may. The Board of Education must move cautiously; but it does move. The particulars of the suggested type of school will reward study in the Report itself: what we are more specially concerned to note is the effort to adapt the education to the conditions of the locality, to secure excellence of quality, and to give a large freedom both to Authorities and to teachers.

One other point. "In the spring term, 1904, nearly one-third of the pupils receiving secondary education within the area of the Administrative County of Derby were in schools under private management." More than half the girls were in private schools. Hence, obviously, "it seems desirable that the County Education Committee should consider how far it is in their power to encourage and recognize efficiency in the private schools." Prof. Sadler suggests the formation of a county directory of secondary schools of recognized efficiency, guaranteed by inspection (two-thirds or three-quarters of the cost to be paid by the Education Committee); full details of the organization, equipment, &c., of each school being set forth. He thinks that county scholarships should be open to pupils from recognized private schools; and that "in some cases county scholarships might be tenable at suitable private schools." Moreover, "it would be advisable for the County Education Committee to make loans of small reference libraries, of educational apparatus, and of maps and pictures for school use, to recognized private schools."

The general aim would be to help all the deserving schools in the county to rise to a high level of educational efficiency. Competent private effort is a valuable supplementary factor in national education. It can give much which parents rightly value. It is a safeguard against undue uniformity in educational organization. It gives scope to many excellent teachers, who work better on their own responsibility than within the framework of an organized system. It provides an opportunity for educational experiment—an opportunity which, though by no means always used, is taken advantage of by many teachers to whom we owe salutary innovations in educational methods.

"It is desirable," of course, "to take steps to differentiate efficient private schools from the inefficient, and to enable parents to discriminate between them." Here, then, is a weighty testimony to the value of well conducted private schools, to which not only the Derbyshire but all other Education Committees will do wisely to give heed.

NOTES.

PROF. CHURTON COLLINS, in the most elaborate and energetic article in the new *University Review*, is also concerned that educational matters are cut of joint. "We want now direction, consolidation, system." But "we shall not get them from Academic legislators"—"from the upholders of a narrow esotericism": of that he is thoroughly persuaded. "With our Academic legislators, the chief aim is to impart knowledge, to cram the mind with facts, without reference either to the practical value of the information acquired, or the educational value of the system and methods employed in imparting it." What could be "more ridiculous," for

example, than the present regulations of London University for instruction on the side of Literature? "If they had been drawn up with the special intention of reducing cramming to a science, they could not have attained their object more effectually." What then? This:

What we want now is a clear conception of what ought to constitute civil liberal education, of the ends at which we should aim, of the means by which those ends may be best attained. And can there be any doubt about either? That the ends are æsthetic, moral, and political instruction and culture, the means Literature, Philosophy, and History, rationally and intelligently defined and interpreted? That by Literature should be understood the best poetry, the best rhetoric, the best criticism, the best of what is comprised in *belles lettres*, to be found in the world; by Philosophy, not those departments of it which are polemical or esoteric and abstrusely technical, but where it bears directly on conduct and life; by History, neither mere antiquities nor mere chronicles, but philosophy, as Dionysius has so finely described it, teaching by example:

In a word, a glorified, but limited, Extension Lecture system; or, in other words, "education in the sense in which it was understood by Plato, by More, by Matthew Arnold, and by Jowett." We should not be surprised if this solution, too, were set down as "Academic legislation," and "narrow esotericism." How many of Dr. Hayward's difficulties will it remove or relieve?

THE rise of salaries in "the London Service" will be very welcome to the large number of elementary teachers under the London County Council. Very properly the conditions are to apply equally in all the schools, provided and non-provided. The encouragement of academic qualifications is a wise inspiration: an additional £10 a year for every teacher entering the service with a University degree or obtaining one within four years. The rise may not be very great in detail, but on a narrow margin every little helps, and helps considerably. The aggregate looks sufficiently formidable to the ratepayer, but the individual burden is insignificant, and it will not be grudged by any intelligent person. How far the movement is due to appreciation of the work of the teachers, and how far to the increased competition of country places, need not be particularly examined. Better salary means better work, and that is the essential matter. The pecuniary distinction between men and women doing substantially the same service is naturally a sore point with the women, or with some of them, and with champions of women's interests. It is a complex question, which does not seem to be squarely faced on grounds of principle, but to be decided on a more or less liberal treatment of traditional opinion.

No doubt the town of Bradford, under the enlightened guidance of the Mayor, Mr. Alderman Priestley, will give the other Yorkshire towns an excellent example in supporting the University of Leeds. The Conference at Bradford, attended by Lord Ripon, Mr. A. G. Lupton (Pro-Vice-Chancellor), and other representatives of Leeds University, was of the most harmonious, and even enthusiastic, character. If not numerically large, it was widely representative and influential. Yorkshire cannot fail to be moved, not only by the solid merits of the case, but also by the splendid challenge of the neighbouring county of Lancaster; and Bradford, which gave valuable support to the Yorkshire College in its early days, may be counted on to stand by the institution in

its new development. "One thing," said Lord Ripon, "would be fatal to the objects of higher education, to the interests of this great district, and to the honour of Yorkshire: that you should be contented with having a starved institution calling itself the Yorkshire University." The cordial response of the Mayor indicates that such a fatality is not likely to be in store for Yorkshire. Mr. Lupton stated that less than one-fourth of the 842 registered day students of the university belong to Leeds—a fact that should appeal with decisive effect to the people of the university area, and first and foremost to Bradford.

ALTHOUGH the Provost scouts his figures as "absolutely inaccurate," Mr. Swift MacNeill, M.P., persists in declaring that "a full and searching investigation into the administration and distribution of the revenues of Trinity College, Dublin, is urgently required." He thinks that such an investigation should lead to legislation providing that the revenues of the College, "one-third of which is absorbed by eight individuals"—the Provost and Senior Fellows—"should no longer remain a State prize for a small exclusive class of the community, but should be made available for the higher education of the nation at large, and more especially for the education of youths from districts that for three hundred years have been paying away enormous sums to Trinity College, Dublin, without any return whatever." The language seems somewhat loose: the Senior Fellowships, we believe, are open to Irish intellect without restriction, and the return is not so blank as stated. Still, it is a very serious point that one-third of the revenues of the College—say £18,000 a year—should be "absorbed by eight individuals," however accomplished, unless their scholarship, or other academic activity, be signally productive—which, notwithstanding the conspicuous distinction of certain of the Senior Fellows, it can hardly be said to be. The calculation, indeed, includes in the £18,000 "the cost of administration." The Registrar and the Bursar, at any rate, must be so far worthy of their hire, and probably the Provost exercises some not unimportant functions. But, even so, the figures do seem to invite criticism and inquiry. They may be to some extent inaccurate, but "absolutely" is a strong word; and an average of at least £2,000 a year to each of the fortunate Eight is big enough to call for justification, or else (if possible) rectification.

In his Review of General Legislation in the United States for 1904 (published by the New York State Education Department), Dr. Andrew S. Draper, Commissioner of Education of the State of New York, remarks that "nearly all—perhaps all"—of the 126 different enactments of the year "manifest a disposition to bring to the people the advantages of the educational system where it has reached its best development, and many show popular determination and legislative grasp which are breaking out the highways of educational progress." "One can hardly examine the subject without being surprised and gratified at the extent of legislation which proves a decisive and a widening advance of educational purpose and confidence in the Southern

States." Appropriations made to education elsewhere than in Bills with educational titles "were large beyond precedent."

Casting a glance over the general field, one may safely say that the legislation of the year indicates not only a new measure of quickened and intelligent popular interest in education, but also a determination to exercise the political power of the masses for educational upbuilding. This is relating education to the industries, and, happily, it is being done with a better recognition of the telling influence of the higher learning upon the mechanical and agricultural vocations. There is clearly a universal movement in the country towards a comprehensive educational system which shall recognize every condition in life, every form of intellectual activity, every phase of labour depending upon skill, which shall assure every one his fair chance, and which shall perceive that the true greatness of the nation depends upon public policies which make all that can be made, industrially, intellectually, and so morally, of every individual unit.

MR. CARNEGIE is still labouring to avoid the calamity of dying a rich man. His £100,000 to the University of Virginia is but an incidental mite. He has established a fund of the princely amount of two millions sterling to provide retiring allowances for professors overtaken by old age or other physical disability incapacitating them for work. The benefits of the fund are open to all universities, colleges, and technical schools in the United States, Canada, and Newfoundland, without distinction of race, colour, or creed, except that State, Colonial, and purely sectarian institutions are on principle excluded. This seems to us one of the wisest of all Mr. Carnegie's educational endowments. The project has, of course, been subjected to genial criticism. "Is it altogether wise, in this money-grubbing age," asks a contemporary, "to dangle such rewards before the eyes of men who, to do them justice, have hitherto shown remarkable indifference to money, and have worked with infinite devotion in the cause of science and scholarship for honour and distinction only?" Our contemporary should have figured out the probable amount of the dangled rewards, and reflected whether men that have spent their strength, not in money-grubbing, but in single-minded devotion to science and scholarship, we will not say for "honour and distinction," but for the cause of truth and progress, should be left in their disablement to the generosity of friends or to public charity. What of the whole system of official pensions on the top of "honours and distinctions"?

SUMMARY OF THE MONTH.

THE East Ham "revolt" is at an end, the Council having rescinded the refractory resolution. There was no discussion, out of respect for Mr. Effingham, who died suddenly in the corridor of the Council Chamber immediately after moving the rescission. An amendment that a town's meeting should be called on the subject was lost by 17 votes to 4, and the motion was carried by 12 votes to 7.

THE education motion at the Newcastle meeting of the National Liberal Federation was submitted by Dr. John Massie:

That this Council, reaffirming its previous declarations on the education question, declares that no settlement can be permanent or satisfactory which does not secure a national system of education based on effective popular control and management, and freed from religious tests and sectarian influences.

Dr. Massie said he did not think a policy of secular education could be carried at the present time, though he was in sympathy with it. He doubted too, whether secular education, though it was just, would become a final settlement: it was not final in

the colonies, nor in the United States. The objection to simple Bible teaching was begotten out of the schismatic contention that there was no common religious ground between the Church of England and the Nonconformists. Sir Henry Campbell-Bannerman said the Liberal party would never rest until the country had an education system that deserved to be called national, and that would have no exclusive effect upon those engaged in the noble profession of teaching.

THE London County Council is raising the salaries of teachers in "the London Service." The head teachers in schools of the first grade, containing accommodation up to 200 scholars, are to receive salaries not exceeding £210 (men) and £160 (women). In the second grade, with accommodation ranging from 201 to 400, the salaries of the male head teachers begin at £200 and increase by £10 instalments to £300. The women start at £150, and increase by £8 a year to £225. In schools of the third grade, where the accommodation is above 400, the commencing salary is £300, and the maximum £400 for men, while for women it is £225 and £300. Where there is a combined or mixed school under one head the salary may go up to £500. Additional sums will be given in certain specified cases. In the case of the non-provided schools there will be an additional expenditure in the year 1905-6 of £19,000, and in 1909-10 of £69,000. In the London County Council schools the increase this year will be £39,500, and five years hence £146,000.

Much discontent exists among the teachers. It is recognized that the commencing salaries are considerably in advance of those paid under the School Board régime, but they are not to come into full operation until August 1, 1907, and the increments are considered unreasonably small. The women teachers have held a conference, and were unanimous in protesting against their salaries being based on a lower scale than those of men of the same qualifications.

WRITING to the *Times* (April 25) to endorse, and to a certain extent to supplement, a letter from Sir G. Bartley, Sir H. Kimber, and other public men, Mr. H. W. Eve remarked:

Not only do their objections to the policy of giving secondary education to all comers below cost price appear convincing, but such a policy is economically unsound. A few figures will show this. The minimum cost of efficient secondary education is estimated at about £15 per head per annum. If the fee charged is £10, there remains £5 to be made up from some other source. If there be a small endowment of, say, £500 a year net, this will suffice for 100 pupils. Every additional pupil will involve a loss or a reduction of efficiency in the shape of inadequate staff or underpaid teachers. If the deficiency is made up out of the rates, it will be difficult to convince the public that a thriving school involves a greater drain on their purse than a stagnant one. It would be interesting to investigate the experience of some of the revived grammar schools, in which the Charity Commission has fixed an unremunerative fee—often, no doubt, in place of an infinitesimal one or of no fee at all.

Again, the policy against which your correspondents protest involves the grave question whether the continued existence of private schools for day scholars should be possible or not. Boarding schools stand on another footing. The recent Regulations of the Board of Education exclude private schools, as has always been the case, from participation in any grant, and it is at least likely that Local Authorities will follow suit. If, therefore, they are also to be undersold by municipal schools, their case is a hard one. They have long formed a useful part of our educational machinery, and it does not seem to be beyond the reach of statesmanship to find a place for them in a reorganized system. Judicious inspection and control can secure efficiency, unsectarianism, and the adequate payment of assistants as easily in a private school as in one under public management, at least if it has the power of the purse behind it, and the head masters of private schools welcome inspection and are mostly glad to learn.

The Council of the College of Preceptors has lately been making inquiries about the local working of the Education Acts and their probable effects on private schools. They find at present but little complaint of injury suffered, but a good deal of apprehension as to the future. Local Authorities, it seems, do not in all cases make a "preliminary survey" of the educational resources of their district, nor do they, except in a very few cases, show much disposition to look upon private schools as forming part of those resources. One Borough Council, in its scheme, makes a point of not underselling existing schools, but this appears to be quite an exception.

THE Scotch Education Department has issued the following Memorandum:—In view of the probable early conclusion of an arrangement with Prussia similar to that now subsisting with

France, the assistant secretary, Scotch Education Department, will be glad to receive before June 15, applications from suitable candidates for employment in schools in Prussia, and, before July 15, applications from managers for duly qualified German-speaking assistants on the footing described in their lordships' circular letter dated February 1, 1905, with reference to the employment of French-speaking assistants.

THE *Morning Post's* special correspondent, discussing (May 19) the Treasury grants for university education, would like to see the Board of Education (and not a permanent advisory body, as proposed by the University Colleges Committee) entrusted with the allocation, "because the Board of Education would in the nature of things regard university education as part of the whole national system."

The country will never get intelligent and effective national control over its expenditure on university education until the Board of Education is entrusted with powers to determine the conditions of these grants in aid. What other body is competent to determine the minimum age of admission to a university course? It is mainly upon that point that the control exercised over the £100,000, whether by an *ad hoc* advisory body or by the Board of Education, should be concentrated. Moreover, we believe that the older universities will before long find it necessary to appeal to the nation for funds in aid. Some of those who were most disappointed by the recent decision of the Senate at Cambridge to maintain compulsory Greek feel that their only remedy against the forces of obstruction which are periodically recruited from the whole country to defeat reforms which many of them are not capable of understanding lies in some measure of Government interference to be purchased by financial aid. It is an obvious anomaly that the two most important universities in the country should get no portion of the £100,000 a year which the nation will probably devote to the assistance of university education, and equally, if less obviously, an anomaly that national control should direct the education system as far as the higher technical or higher secondary school, but no farther. Control over the standards of matriculation at Oxford and at Cambridge would be purchased cheaply by the Government at a price of £20,000 a year to each of them. For what is needed for the development of university education in this country is a standard of admission to that grade of education which shall be at once uniform and elastic. Only a central authority like the Board of Education can determine and enforce such a standard.

The *Morning Post* editorially agrees that the State contribution should be largely increased, and that Oxford and Cambridge should share; but it "doubts the wisdom of putting the universities under State control, whatever be the Department that might be authorized to deal with them."

SIR J. RANKIN asked the Secretary of State for the Colonies (May 18) whether, with a view to facilitate the interchange of students between the universities in the United Kingdom and in the colonies, he would take into his consideration the desirability of issuing from time to time a circular letter to the British colonies somewhat after the manner of the letter of December 27, 1902, sent out by Lord Onslow, enclosing memoranda from any of the universities in the United Kingdom, stating their rules and regulations for the reception of colonial students, and inviting the colonies, on their part, to inform the universities of the United Kingdom and the Colonial Office what rules and regulations were laid down by their universities and technical schools for the reception of students from the universities of the United Kingdom. Mr. Lyttelton replied that the circular despatch of December 27, 1902, was sent in consequence of a communication received from the Vice-Chancellor of the University of Oxford, followed by a conference between the representatives of the universities and representatives of the colonies. He will be glad to give all possible assistance in the direction indicated to any university the authorities of which may express a desire for such action.

At the conference of the Parents' National Educational Union (May 19), Mrs. Husband, speaking on "Right and Wrong Kinds of Play," said the fault in children's play to-day was its lack of naturalness. This lack was taught them by their elders. The little ones in the "smart set" were made to be frankly artificial. They should be taught how best to amuse themselves for the development of good character. Dr. Blake Odgers, K.C., LL.D., who presided, was of opinion that when children returned home for their holidays they should be allowed to amuse themselves free from all restraint or guidance by adults. Speaking on "The Education of Citizens," Mr. W. Temple, Fellow of Queen's

College, Oxford, said that we were in a day of class warfare. There was hatred between worker and employer (in large combinations at least), and the duty of the teacher and the publicist was to educate this hatred out of existence. The Chairman dealt with the great political ignorance of the day. He did not believe that one man or woman in each thousand could give any idea of the difference between a Parish, a District, and a County Council. The same might be said about local government generally and about Great Britain's relations with her Colonies.

At the annual meeting of the Childhood Society for the Scientific Study of the Mental and Physical Conditions of Children (May 10), Prof. Armstrong, speaking on "Teaching Common Sense in the School of the Future," delivered another diatribe against the school of the present. Common sense, he said, was in reality, uncommon. More often than not school and college were destructive of common sense. The cry of the suffering child was only beginning to make itself heard. The worship of the academic had existed too long. Teaching had had no connexion with things outside the school. It was the games, rather than the lessons, which promoted alertness, individuality, and common sense under the present unfortunate system of education. He strongly approved Sir John Fisher's scheme of education for cadets—one-third of the time being given to literary study, one to scientific, and one to practical work.

LORD LONDONDERRY, speaking at the annual dinner of the Institution of Mining and Metallurgy (May 10), announced that the Government, with certain provisos, were willing to entrust to a committee the management of the Royal College of Science and School of Mines and other centres of higher technical education. This would have the effect of bringing the various colleges into very close connexion with each other, and would bring about much greater efficiency in this department of national education. He was further able to state that the Treasury would be willing to contribute some of the necessary funds in the shape of a substantial annual grant. It was the opinion of his lordship that pecuniary assistance should also be given by the various mining and metallurgical societies which would benefit so largely from the better training of the men on whom they depended for their expert work.

ARRANGEMENTS are approaching completion for an interesting orchestral performance at the Crystal Palace on the 10th of next month. Over seven hundred girls and boys, drawn exclusively from elementary schools within the metropolitan area—a large majority being under the jurisdiction of the Education Committee of the London County Council—have been chosen and are being organized in several centres with a view to presenting at the Crystal Palace on June 10 a programme of nearly a dozen pieces representing some of the best known composers, and requiring considerable technical skill for anything like acceptable execution. The undertaking is the outcome of a movement commenced about three years ago in a boys' school in Maidstone for teaching the violin. The progress achieved is sufficiently demonstrated by the fact that there are now over two thousand similar classes at work throughout the kingdom, and of that number the London schools are credited with some four hundred. The juveniles will be backed up by some thirty instruments of the Crystal Palace orchestra and the great organ, and Mr. W. W. Hedgcock has consented to conduct.

THE German colony in London, led by the London branch of the German Language Association, under the direction of its founder, Dr. Aloys Weiss, held festival at the Holborn Viaduct Hotel in commemoration of the centenary of Schiller. Prof. Günther Saalfeld, of Berlin, delivered an oration, emphasizing the debt the cause of freedom owes to Schiller, as well as the love and honour borne by his compatriots to his memory. He compared Schiller's fame to Shakespeare's and Goethe's, commented in cordial terms on English appreciation of Schiller, paid a graceful testimony to English friendship for Germany, and concluded with a spirited declamation of Freiligrath's poem on Schiller. There was a varied programme of music and recitations, including part-songs by the Forest Hill Choir, under the direction of Herr Otto Sondermann, German ballads by Frä. Magda Böttcher, dramatic recitations by Frä. von Driller and Herr Paul Wind, and brilliant pianoforte solos by Mlle. Janotha.

The "Hymn to Joy," sung by the whole assembly, concluded the proceedings.

THE jubilee of the Cheltenham Ladies' College was celebrated (May 12 and 13) by a concert, a commemoration service (conducted by the Bishop of Bristol), the presentation to the College of a marble bust of Miss Beale, and the opening (by Lord Londonderry) of a new wing of the buildings for science teaching. A few striking figures (says the *Cheltenham Examiner*) will assist the imagination to grasp how phenomenal has been the success of the Ladies' College. It began with a capital of £2,000. It now owns property which has cost upwards of £160,000, of which £100,000 is represented by College buildings and £60,000 by boarding houses, sanatorium, and playground. The annual income from tuition and boarding fees and from rents of property is £60,000, or nearly double that of twenty years ago, the great increase being chiefly under the head of rents. In contrast with the 100 pupils who assembled on that February morning 51 years since, the last annual report records an average of 390 boarders in the 12 college boarding houses, 200 in non-college houses, and, including kindergarten and by-students, a total under instruction of 1,000. There were in all 65 English teachers; 9 foreign teachers for French, German, and Italian, besides those engaged for the boarding houses; 840 pupils and 30 teachers in the musical department; 302 pupils and 9 teachers in the art and technical department; teachers for dancing, 2 for physical education, and many pupils for special gymnastics, swimming, and dancing. Of the educational results of the College system it is unnecessary to speak. Brilliant successes are obtained yearly in London University and other examinations. Among old pupils are noted names in literature and medicine; while a large number are scattered over the world as teachers and missionaries. Some twenty-five have become head mistresses of important schools.

PROF. RIDGEWAY writes to the *Times* (April 27) on "some points of paramount importance in the relations of the two old universities to secondary education which have not been touched in the recent discussion" on the Greek question. It is plain, he says, "that neither the abolition of compulsory Greek nor the introduction of the principle of bifurcation in studies would of itself effect any genuine improvement in the schools." He sums up thus:

What is wanted is a broad course of study, comprising both literature and science. But it is imperative that the whole method of teaching languages (both ancient and modern) should be changed. Let boys be set to read easy portions of the best authors as soon as possible, and let the grammar be learned *pari passu* with the translation. The present system of keeping boys for many months learning by rote grammatical exceptions (many of which they will never meet in their reading) before they are put to read an author has resulted, and must always result, in creating a hatred for such subjects, not merely in the boy with a special turn for science, or in the average or dull boy, but in many who have a real talent for literary and historical studies. By an improved method of teaching languages a couple of years might easily be saved in the school life of an average boy, and the time thus saved would be available for other subjects, such as English and natural science. Such a reform would render it possible to bring all boys of average ability (and it is the average boys that we must think of) up to a common standard of proficiency in the subjects which the universities may reasonably require in an entrance examination—classics (including Greek Testament), English, mathematics, and natural science—and at the same time would check the premature specialization of the boys of superior powers.

MRS. SOPHIE BRYANT, D.Sc., lectured in Dublin (May 1) on "The Future of Irish University Education and the Part of Irish Women in it." Though belonging herself to the Protestant minority, she regarded the justice of the Catholic argument—the claim of the Catholics of Ireland, not as Catholics, but as three-fourths of the people of Ireland, for a self-governing, democratic university—as irresistible. Whatever the solution, any new or reformed university must provide education and open up prizes and emoluments irrespectively of sex or of creed. She suggested that steps might be taken in Ireland itself without waiting for Parliament. Why should not that association take a lead in organizing a representative movement containing lay and clerical elements? If this could be done and the nucleus of a fund collected, she thought it would be hard for the Liberal party when it came into power to refuse to Ireland what it had granted to Manchester, Birmingham, and Liverpool.

ON Conference Day (April 29) at the Alexandra College, Dublin, Mrs. Bryant spoke on "The Training of Teachers." She dwelt on the fundamental fact that every one teaches, more or less, and every one is taught; the instinct to communicate one's ideas and feelings to another is very urgent, both the teaching and the learning instinct being strong. "The mind of a child," said Mrs. Bryant, "is like a delicate sea anemone; strike it, or breathe hard on it, and it closes against you." Ideas could not be got into it from the outside; it must grow of its own action. It had to be remembered that, while some were born teachers, there were many that were not, and when so many teachers were wanted in the world, some of the latter class were required to go on with the teaching work of the time, and these, if left to themselves, would not develop that knowledge, insight, and tact which is natural to the more gifted. In order to bring the education of the country up to its proper level, the rank and file of the teachers stood urgently in need of preliminary professional training.

MR. A. C. BENSON has contributed to the *National Review* an interesting article on an Eton education—its weak side and its strong side. Describing the average boy who leaves Eton, he says: "The basis of his education has been, as a rule, the classical basis; that is to say, the greater part of his working hours have been devoted to Latin and Greek. A small percentage of fair classical scholars, and a still smaller sprinkling of distinguished classicists, is the result. But the average boy leaves Eton with no mastery of either of these languages. He cannot, as a rule, construe at sight an easy passage in either or turn a piece of English into either language without a large crop of mistakes." The boy "never reaches the stage at which classics become literature." He urges that for the large class of boys not intended for the university the strictly classical programme might be with advantage modified. He believes that a boy who left the school with a thorough knowledge of French, "who knew the elements of science, so as to be able to understand something of what was going on in the world around him, in heaven and earth and sea, in field and wood," who knew arithmetic and had a reasonable knowledge of geography and history, would leave school a fairly educated man. Mr. Benson would have a very simple core of education on the lines just indicated, and then any evidence of special capacity—linguistic, mathematical, scientific, or historical—should be carefully observed, and at a certain age of a boy's studies should converge more closely upon a special subject, care being taken at the same time that the general education should not be neglected.

ARCHDEACON GIFFORD, whose scholarly edition of Plato's "Euthydemus" we noticed only last month, has died at the age of eighty-four. A favourite pupil of Dr. Kennedy, he returned from his Cambridge successes to be second master at Shrewsbury for half a dozen years; and at twenty-seven he succeeded Prince Lee as Head Master of King Edward's School, Birmingham, which he administered for fourteen years with conspicuous success. At forty-one he retired from teaching, and became successively Rector of Walgrave and of Much Hadham, and Archdeacon of London and Canon Residentiary of St. Paul's. From 1889 he lived in retirement at Oxford. He was more distinguished as a classical scholar than as a theologian or a preacher.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

CAMBRIDGE. THE May term is upon us with unusual vigour; not content with dust and east wind, it has given us a real scarlet fever scare. As the danger is now over, and the epidemic stamped out, it may be advisable to give the bare facts to prevent exaggerated reports gaining currency. At the end of last term, when all but the belated ones had gone down, a considerable number of cases broke out in the town and among the few undergraduates left in residence. The medical authorities quickly traced the outbreak to a definite milk supply, and even were able to discover the actual and precise cause of the infection. The authorities at Trinity (to which college the infected milk had been supplied) promptly communicated with all their men, and as a result several cases were detected which would otherwise have escaped detection. Although the total number of cases was very large, there have been prac-

tically no secondary cases, and we are now revelling in a clean bill of health in pleasant anticipation of the usual post-terminal festivities.

The long-deferred election to the vacant Provostship of King's has resulted in Dr. James being appointed. Rumour has it that a junior member of the college, on being informed of the fact that Dr. James was now Provost, remarked sympathetically that his friends would be sorry, as they all hoped "Monty" would get the post. Dr. Montague James is a strong man, popular with all classes, who knows what he wants, and generally gets it. He will be a success.

There has been a very pretty debate in the Senate on a matter of vast importance, whether the new University buildings in Downing Street shall be fenced off from the highway, and, if so, whether the necessary line of demarcation shall take the form of chains and posts or of vertical rails. The Master of Christ's led the Posters, while Profs. Hughes and Clark marshalled the forces of the Railers. Before these notes see the light the momentous question will be decided by the Senate, the Council having given us two alternative graces so that we may back our fancy in the usual way.

A propos of discussions in the Senate, there has been a proposal made by the Senate that reporters should be allowed to attend, but by 38 votes to 31 the Senate rejected the suggestion. It is perfectly possible that the great London dailies consider university news hardly worth reporting, though it is equally true that, if any great personages come to inspect or open a new institution, we get a splendid advertisement for our wares at a comparatively infinitesimal expenditure of time and trouble.

A curious little point of university procedure has recently arisen, the decision of which may lead to important results. Politicians and constitutional lawyers know the far-reaching effects due to the absence of the King from the Cabinet meetings and the increase of power due to the secrecy of Cabinet deliberations. A similar process of evolution is going on with regard to our Boards of Studies. Some of the Boards, in presenting their reports, have appended the signatures of those only who concur; but the Special Board for Biology and Geology has struck out a new line by sending in reports signed by the Chairman on behalf of the Board. To this the Vice-Chancellor took objection; but the Chancellor, on a reference, has given his decision in favour of the Board.

The University has just published its official guide to the various examinations, Tripos and Poll, which are coming upon us thick and fast. The Guildhall, Corn Exchange, various assembly-rooms, holes and corners in various places, are utilized to accommodate the examined crowds. A wise idea has suddenly struck the Council—that it might, perhaps, be cheaper to build examination-rooms than to incur large sums annually for hire. Another suggestion has irreverently been made by an irresponsible outsider that there is a lack of convenient rooms for dancing in Cambridge, and the Council's proposition may be supported for what may be called extraneous reasons.

We are still without news as to the name of the new Bishop of Ely; but a Cambridge Head, who is also a professor, would fill the office to perfection. Dr. Cunningham, the Vicar of St. Mary's, is still without preferment, probably because a wise Prime Minister fears to confine so many-sided a man in the narrow limits of an episcopal palace.

A movement has recently been started with a view to making the Little-go a University entrance examination, and it is desired by the promoters of the idea that the two older Universities should continue to have a conjoint test. The plan, if adopted, would rid us of the reproach that the University is engaged in the education of a large number of fourth-form boys. There are many colleges which take men who know little Latin and less Greek, and to deprive these of the fee-paying and game-playing undergraduates would, indeed, be a cruel blow. The scheme will not pass; but it will be interesting to see what valid arguments can be urged against it.

The break of the Coopers Hill institution has led to the University of Oxford making a bold bid for the remains, but Cambridge follows where the sister University leads. We are going to establish a Diploma in Forestry, with a man to show people how to get it, and doubtless we shall soon have an incursion of students able and willing to make a practical study of forestry in our glorious Backs.

There is a strong opposition to the continuance of the Studies Syndicate after its elaborate report has received so crushing a defeat. It would be perfectly easy to appoint a syndicate of impartial men which would remedy the admitted defects in many of

our examinations. Men with a mission will not condescend to details; details are the death of the unhappy victims.

The examinations are well upon us. By the time these notes are in print the place will be getting gay for the final flutter before the Long. If the weather continues as in May, the ladies will have to bring up their furs for the festivities.

SIR ARTHUR RÜCKER'S annual report (May 10) dealt London. in detail with the operations of the University. Some of the preliminary work done since the reorganization of the University had begun to bear fruit in the academic year now approaching its termination, and the activity of the University had been extended in several directions. The question of the conditions of entrance to universities had been prominently before the public during the year, and it was satisfactory to be able to state that there had been no falling off in the number of candidates for the London Matriculation. A very important step had been taken by the Universities of Oxford, Cambridge, and London, which had agreed upon a scheme for the mutual recognition of the certificates given for their respective entrance examinations. Already twenty-five persons had been matriculated as students of London University under this agreement. Considerable progress had been made with the project for the concentration of the teaching of the preliminary and intermediate medical studies in a few centres under the control of the University. Arrangements were in progress under the auspices of the University for establishing centres at University and King's Colleges, and Mr. Alfred Beit had given a munificent donation of £25,000 in aid of the scheme for the establishment of a third centre on the South Kensington site. It was much to be hoped that this generous gift would be supported by other large subscriptions. It was a matter of vital interest to the public that the unique opportunities for medical education afforded by the great metropolitan hospitals should not be wasted; and, if they were to be utilized, it was essential that the whole curriculum of medical education should be easily accessible to London students. No doubt it was undesirable that this end should be attained by mingling the resources of the hospitals and the medical schools; but, if the two were to be separated, it was necessary that medical education should receive the same public help that was ungrudgingly given to engineering. It was not too much to say that medical men did more unpaid work for the public than did the members of any other profession, and that, in return, less help had been given by the public to medical education, in London, at all events, than to any other of the principal branches of applied science. Large as the gifts to the University were, it was unfortunately true that much money was needed to make up for the neglect of University teaching in London in the past. Though the increase in the Government grant to university colleges would be of great value, the equipment of both University and King's Colleges needed improvement, and the salaries of the professors were quite inadequate. The whole question of retiring pensions, to which a private donor had just devoted £2,000,000 in America, was untouched in London. Public confidence in the University was proved by the fact that the Goldsmiths' Institute and upwards of £80,000 had been given to the University in the course of the year, and the gathering of the various colleges around the University as a centre was being followed by the beginnings of a corporate life among the students, for whose benefit the University existed.

THE transfer of the Civil and Mechanical Birmingham. Engineering Departments from the old University buildings in the centre of the city to Bournbrook was effected during the Easter holidays. The premises for the students in Electrical and Mining Engineering and Metallurgy will be ready for occupation by October, but the great halls completing the first block of new buildings will not be ready for another twelve or eighteen months. The experimental mine is practically complete. The power station, the electric light equipment, and the plant for the production of Mond gas for heating purposes are also ready.

In October the new clubhouse for the undergraduates will be opened, with accommodation for 500 members. The University Council gave the site and £2,000 towards the cost of building and furnishing, which is between £6,000 and £7,000. The remainder has been raised through the liberality and energy of the Vice-Chancellor (Lord Mayor Beale) and a number of friends.

THE University Court has approved a fresh Manchester. statute on the subject of the Matriculation Examination. There is to be a Joint Board of eighteen members—five from each of the Universities of Liverpool, Manchester, and Leeds, and (unless otherwise determined by the agreement between all the four universities) three from Sheffield University—with power to co-opt not more than three persons of educational experience. Also it was resolved that “any Committee to be constituted for considering objections made by the Universities of Manchester, Liverpool, or Leeds to proposed statutes and ordinances of the University of Sheffield should consist of twelve members—three to be appointed by each of the said universities.” The Vice-Chancellor remarked that after some years the representation of Sheffield on the Joint Board might be increased. He also intimated that it was advisable that the examination should not be affected before the next academic year, and it was left with the Council to fix the date when the substituted statute should come into operation.

It was decided to alter the ordinance as to the second examination for the Mus.B. degree, so as to provide that the following diplomas be accepted as exempting from the examination in proficiency in playing a musical instrument:—Associateship of the Royal College of Music, Associateship of the Royal College of Organists, Associateship of the Royal Manchester College of Music, Licentiateship of the Incorporated Society of Musicians, Licentiateship of the Royal Academy of Music.

THE matriculated students for the past year Edinburgh. number just over 3,000, a figure not reached since 1893-4. In Arts there is a slight falling off, which is more than counterbalanced by the increase in Science. Divinity, Medicine, and Music all show satisfactory increase. In Law there has been a sharp decrease from 399 and 388 in the two previous years to 344 in 1903-4, a figure lower than any since 1876-7. This suggests, the Finance Committee of the General Council of the University state in a report, the urgent need for the new regulations for the degree of B.L., which have been for some time under consideration by the Courts of the four Scottish universities. In addition to the 1,487 matriculated medical male students, there are 105 non-matriculated female students of Medicine in attendance at classes in Edinburgh and qualifying for graduation.

At the half-yearly meeting of the General Council of the University the Business Committee presented a report dealing with the place of modern languages in bursary competitions. Delegates from the Councils of the Scottish universities had had a conference on the subject, and the feeling was that, in view of the changes made by the Carnegie system and otherwise, the bursaries should be given for excellence in a number of subjects, varied to suit the bent of the student's mind. The Conference did not wish specialization to take place too early. The report was approved, and it was decided to send the recommendations to the University Court. The Council unanimously approved the Scottish Education Bill, and expressed the sincerest wish that it would be passed in this Session of Parliament.

PROF. A. PEDLER, F.R.S., Vice-Chancellor of the Calcutta. University of Calcutta, and Director of Public Instruction, Bengal, at the recent convocation of the Senate of the University for conferring degrees, said that fifty years ago university education in Bengal had no existence, the doors of western learning had not been opened, and the knowledge of western science was absolutely beyond the reach of any one in the country. During the last half-century the possibilities of obtaining western knowledge and western culture, and the facilities for higher education, have been rapidly developed, until a whole network of educational institutions has been spread over Bengal. The form of education being given to the people is not, however, affecting them in the most satisfactory way: there is a want of concentration of effort, of thoroughness of method, and of the intelligent appreciation of means to ends. After a comparison between what has been accomplished in Japan and in Bengal, Prof. Pedler came to the conclusion that the secret of the brilliant success of university education in Japan is to be found in the observance of certain cardinal principles: patience in obtaining results; thoroughness in work; concentration of university work in a few really well equipped and strongly staffed colleges, each institution being devoted to one special section of learning, which is taught thoroughly; adaptation of the courses to the practical wants of life and of modern civilization, as ex-

emplified by the large proportion of graduates who elect the practical rather than literary courses of study; originality as shown by the large number of young men who undertake research work, and by the large number of original contributions to science. In the future, Prof. Pedler remarked, it will be necessary in Bengal to adopt all these principles and to adhere to them with uncompromising tenacity, if university work is to be placed on a really satisfactory footing.

BIRMINGHAM AND UNIVERSITY IDEALS.

ADDRESS BY THE LORD CHANCELLOR.

THE Earl of Halsbury (Lord Chancellor) addressed the undergraduates of Birmingham University (May 13), in his capacity of Warden of the University Guild, on University Ideals. After preliminary compliments to Mr. Chamberlain (Chancellor) and Sir Oliver Lodge (Principal), he said:

UNIVERSITIES OLD AND NEW.

He would touch first on the history of some of the great universities which had existed in the history of the world. In these days the ideal of a university which their Chancellor was responsible for was a collection of persons who were capable of teaching everything, and an invitation to those who came within the influence of the place to come and learn everything: that was the reverse of what a university was formerly. He remembered very well the observation made by a very dear friend of his, the late Sir Frederick Bramwell, that the thing that made him most melancholy in the world was to go into a large library, because he thought when he saw all the books that, if he should live the longest life that a man could, and be the most diligent student that the world had ever seen, how little would he know of what they contained! If that were true of a library, what could be said of a place where they were expected to learn all that could be learned in the world? The prominent idea that must occur to everybody's mind when they contemplated this subject was what an abyss of ignorance must remain in the most diligent and most able, even at the end of our lives. But that pessimistic view, although he was afraid it was a true one, was no justification for not trying to do what they could. They could and ought to do something to make themselves better for the place they had to fill in the world. William Cobbett used to say that a man had no excuse for not making himself a more valuable machine; he would sell for more. He thought it would be an injustice to say that Cobbett meant that for more than a figure. But it was meant, possibly, to put the proposition that the animal, as he started in the world, had to acquire, improve, and exalt the faculties that he found within himself, and, if he did not do it, he was responsible for remaining the dull and earthly thing that he was when he began.

UNIVERSITIES AND THE WORLD'S WORK.

Having referred to the treatise of Cornelius Agrippa on the uselessness of the arts and sciences, the Lord Chancellor said that one of the advantages of looking back was to observe the vague and useless wandering after the right direction in which to seek for knowledge. Their Chancellor had given expression to his idea of what a university should be—a great school of universal learning which would provide for the cultivation of the mind in the broadest sense, and maintain in that city the highest standard of intellectual attainment. The university which the ideal of their Chancellor presented had a new feature—he did not mean absolutely new, but new in its ideal, in the foundation of a university—namely, to have as subjects of investigation all sorts of human knowledge. A university, like everything else, must have its growth and development. We were now forty millions of people, and, besides the mere question of population, the exigencies of modern life had increased. He would take one of the familiar examples—what had been called the “bread and butter philosophy.” We had wealth of scientific knowledge in the world. It was there, and, if they would co-ordinate the different modes by which it could be cultivated, they might look forward with great hopes to the future. Birmingham had risen to the occasion, and he was told that the new University was designed with a degree of munificence, and with the contemplation of producing such a university as Mr. Chamberlain desired.

A CHAIR OF GREEK.

Might he say he thought there was a grievous omission? There was no Chair of Greek. The one thing by which a university would live and thrive would be its reputation. Did they think it would be good for the reputation of the University of Birmingham in the eyes of the other universities that it had no Chair of Greek? But, in truth, it had no Chair of Latin either, because, although he knew a distinguished scholar taught Latin and Greek too, he thought it could hardly be said that the university which had no Chair, except one in which these two studies were rolled into one, was adequately representing the needs of the occasion. He asked any one who looked back on the history of the world's literature, was it possible to take the highest line of individual development and cultivation if one had never read any Homer, or if those who had studied philosophy could regard their studies as complete without knowing any Plato and Aristotle? There should be an oppor-

tunity, at all events, presented to those who desired to cultivate a higher study. He hoped his constituents would clamour for a Chair—in the decorous way, of course, in which the undergraduates of Birmingham University, he was sure, clamour—and the munificence which had characterized the benefactors of Birmingham hitherto would be effectual in procuring it.

ANOTHER ESSENTIAL STUDY.

There was another study which he thought must be treated with a very tender hand. No word of his must be directed against any school of thought, moral or religious. The Principal had called attention to the embarrassment arising from the differences of the Churches, but apart from those differences the course of such study was one which no university could neglect, and, might he say, as an old man speaking to young men, there was one aspect of the study which no man ought to omit? Whatever the differences might be, let them seek for that light which was to lighten every man in his own conscience, and direct his own faiths in himself. Men ought not, like the great apostate spirit, to turn their backs upon the sun, and because of that attitude refuse to recognize the illumination which was filling the whole of the atmosphere around. What he thought they ought to do was to seek for more and more light, from whatever source it came—light, light, more light—the dawning of the greater light which we saw surrounding the world's atmosphere, and when that light did come we might, at all events, hope that we had done nothing to darken, but had aided and assisted, its dawning, until it burst into the full blaze of meridian glory, into the light-like life without period in duration, without measure in capacity for ever and ever.

Mr. Chamberlain (Chancellor), moving a vote of thanks to Lord Halsbury, said they had listened to the address with interest, and with general agreement. He proceeded:

EDUCATION, GENERAL AND SPECIAL.

It had given him some information, because he had supposed that the idea of a university was that of a place of universal learning and teaching, instead of being merely an index of the variety of the sources from which it obtained its students. But he gave a defence of the whole scheme of these new modern universities which had been growing up recently in this country. Here, in the course of the last few years, Birmingham, Manchester, Liverpool, and Sheffield had obtained charters, and for himself he would not be satisfied until similar universities were placed in every great and populous district. The Lord Chancellor had not only defended them, but had made some criticisms for which they were grateful. On the other hand, he (Mr. Chamberlain) would honestly claim that they had done a great deal in a short time; and even Rome was not built in a day. The sympathy of all the authorities was entirely with the advice which his Lordship had urged upon them, and all that they were waiting for at that moment was the very factor which might be amongst those whom he was addressing—one who would find them £20,000 for the endowment of a chair. He took it that the idea of the Lord Chancellor—as it was certainly their own idea—was that what they called general education—what was called in old days the education of a gentleman—must still be the foundation of every special study, and that in spite of the enormous increase of knowledge, and of the fact that, in the complexity of subjects with which it dealt, it was necessary to specialize if they were to do anything thoroughly. Yet, however deeply they might go into particular questions, their education was incomplete if they did not know something else of others. In fact, in these modern times, we seemed to be between two dangers—in the first place, of gaining a smattering of everything and a knowledge of none, and, in the second place, of getting a knowledge of one and of being apathetic with regard to all the others. They hoped; however, to avoid the extreme. . . . He hoped that their University, new as it was, would find favour in the Lord Chancellor's sight, especially because it was a continuation and not a condemnation of the old. It was intended to meet new needs and growing necessities, and not to put aside as if it were useless and worthless all that had been done by their ancestors in the past.

THE OBJECTS OF THE UNIVERSITY.

In the new University they had two main objects. On the side of Arts they had no idea of rivalling or competing with the great, venerable Universities of Oxford and Cambridge. They could not, if they would, equal the opportunities, the privileges which they provided, and they would not, if they could, deprive them of one single scholar who would otherwise enjoy those privileges. But it was perfectly clear that in the great towns there were hundreds and thousands of people who desired a liberal education, and for whom it would be impossible to obtain it in connexion with the older universities. Therefore the Birmingham University supplemented and extended their work in directions which they could not possibly reach. To bring home to the people at large these opportunities—or as great opportunities as they could—was one of the objects of the new University. But no doubt their great feature, their special *raison d'être*, was to teach science as it had never been taught before, and also to proceed with the work of scientific research. The buildings which they would visit in the afternoon would constitute a university which was unequalled by any university in America or on the Continent. If this country was to hold its own in the strenuous competition to which it was submitted, our commercial and industrial education must be reformed, and, if they were to elicit the interest of the

enormous population of which they were the centre in the work they were doing, and to secure their local patriotism, they must, in the education they provided, pay some regard to the special needs of those for whom they catered. Towards the £1,000,000 that they required they had obtained £450,000; but, if they went back to the foundation of Mason's College, considerably over £1,000,000, almost entirely from local sources, had already been expended. They had been well treated by the authorities of Birmingham, but not so well by the governing bodies of the district. But he could not think that the latter would continue to receive the benefits of the institution without making adequate contribution in return. They had done so well that he was justified in being sanguine as to the future, and he hoped that the work which they would accomplish would be such that the Lord Chancellor would not be ashamed of his wards.

CURRENT EVENTS.

A PAPER on "Sir Joshua Reynolds's Contributions to Principles of Method" will be read by Prof. Findlay, M.A., Ph.D., at the meeting of the members of the College of Preceptors to be held on June 16.

* * *

EXCURSIONS of the London Geological Field Class conducted by Prof. Seeley will be made on June 3 (Leighton), 10 or 12 (Barrington), 17 (Sheerness), and 24 (Cuckfield).

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A COURSE of Nature Study for mistresses in primary and secondary schools will be held at the Horticultural College, Swanley, July 31–August 12. Introductory address by Mr. T. S. Dymond, F.I.C., H.M.'s Inspector for Rural Education, on July 31, at 4 p.m. The course will include (1) Studies in Plant Life and Plant Geography, (2) Studies in Pond Life and Birds, and (3) Garden Lectures and demonstrations. Valedictory address by Mr. S. G. Rawson, D.Sc., Director of Education, Worcestershire, on August 11, at 8 p.m. Particulars from the Principal.

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THE Rede Lecture at Cambridge University will be delivered by Sir Francis Younghusband on June 10, at 11.30. Subject: "Our True Relationship with India."

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A VACATION term for Biblical study for women will be held at Girton College, July 31 to August 19.

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BANGOR University College will celebrate its twenty-first anniversary on July 1.

* * *

AN International Congress of Childhood will be held at Liège (in connexion with the International Exhibition) on September 17–20. Membership fee, 10 francs. Secretary: M. Louis Pien, Rue Reubens 44, Brussels.

The purpose of the Congress is to consider the best means of promoting the physical, intellectual, and moral development of the young in the home, the school, and society. The Congress will be organized in four sections—(1) Education of Children; (2) Study of Children; (3) Care and Training of Abnormal Children; (4) Parents' Associations, Mothers' Clubs, and other Supplementary Agencies for the Improvement of Youth.

* * *

THE International Ornithological Congress will meet at the Imperial Institute, June 12–17, under the presidency of Dr. R. B. Sharpe. Particulars from Mr. E. C. Fagan, Natural History Museum.

There will be five sections—(1) Systematic Ornithology, Geographical Distribution, Anatomy, and Palæontology; (2) Migration; (3) Biology, Nidification, Oölogy; (4) Economic Ornithology and Bird Protection; (5) Aviculture—to receive special attention in order to lay stress on the importance of making observations on wild species in captivity.

* * *

AN International Exhibition of Pedagogy, under royal

patronage, will be held in Barcelona from May to October, 1905. A limited number of copies of the official programme can be obtained on application to the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, S.W.

THE University of Manchester has conferred Honours. the honorary degree of LL.D. on Dr. Nicholas Murray Butler, President of Columbia University, New York; and the degree of M.A. on Mr. Sydney Chaffers (Bursar), Miss C. I. Dodd (Lecturer on Education and Mistress of Method), Mr. Edward Fiddes (Registrar), and Miss Edith C. Wilson (Tutor for Women Students).

CAMBRIDGE UNIVERSITY has resolved to confer (June 14) the honorary degree of LL.D. upon M. Paul Cambon (French Ambassador), Sir Edmund J. Monson, G.C.B. (late Ambassador at Paris), Sir Robert B. Finlay, M.D., LL.D., K.C., M.P. (Attorney-General), Dr. Paul Vinogradoff, D.C.L. (Professor of Jurisprudence, Oxford); the honorary degree of Litt.D. upon Lord Reay, Father Denifle (Vatican Archivist), the Rev. Dr. Driver (Regius Professor of Hebrew, Oxford), Father Ehrle (Prefect of the Vatican Library), Mr. Basil L. Gildersleeve (Professor of Greek, Johns Hopkins University), and Mr. Frederic Harrison; and the honorary degree of Se.D. upon Commander R. F. Scott and Sir Francis E. Younghusband, K.C.I.E., LL.D.

Cambridge University has conferred the honorary degree of M.A. upon Mr. Robert Stephenson (late Chairman of the Cambridgeshire County Council) and Mr. H. G. Aldis (Secretary of the University Library).

OXFORD UNIVERSITY proposes to confer the honorary degree of D.Litt. upon M. Émile Senart, Member of the Institute of France (L'Académie des Inscriptions et Belles-Lettres).

THE University of Wales has resolved to confer the honorary degree of LL.D. upon Lord Tredegar (formerly President of Cardiff University College) and Lord Rendel (President of the University College of Wales); the honorary degree of D.Sc. upon Sir John Williams, Bart., K.C.V.O., M.D., LL.D., F.R.C.P.; and the honorary degree of D.Litt. upon Prof. Henry Jones, M.A., LL.D. (of Glasgow University), and Mr. J. Gwenogfryn Evans, M.A.

THE University of Toronto will confer the honorary degree of LL.D. on Earl Grey at the June Convocation.

THE freedom of the City of Edinburgh has been conferred upon Lord Reay (as having been Chairman of the London School Board), Lord Young (as framer of the Scottish Education Act of 1872), and Miss Flora Stevenson, LL.D. (as member of the Edinburgh School Board from its commencement, and, latterly, its Chairman).

MR. FREDERICK WILKIN, of Lower Causley Wood, Wadhurst, Sussex, has founded a scholarship for ethnological and archaeological research at King's College, Cambridge, in memory of his son, Mr. Anthony Wilkin, late of King's. The estimated income, some £40 a year (tithe rent charge on Wadhurst Parish), is to be accumulated for five years, and the first studentship (about £200) will be offered in 1910.

CAMBRIDGE UNIVERSITY has accepted £630, subscribed by friends of the late Sir Leslie Stephen, for the endowment of

a memorial lectureship in literature, and the Senate has approved regulations for the appointment of a lecturer.

THE Drapers' Company have offered £5,000 towards the cost of the new buildings for the Department of Agriculture at Cambridge University, provided an equal amount be raised by voluntary contributions before the end of the year.

UNDER a decision of the Court of Session, some £9,000 has been confirmed to the University of Aberdeen—a bequest by the late Mr. Alexander Milne, C.I.E., sometime of Assam.

EPSOM COLLEGE appeals for some £16,000 to clear up its finances on occasion of its jubilee year. It was opened in 1855, and has maintained steadily 50 foundation scholars and 50 pensioners. Past Epsomians should promptly respond.

THE Ontario Government announces a provisional grant of £100,000 towards the proposed new buildings of the University of Toronto, which are estimated to cost £320,000.

AT the recent installation of Dr. Edwin A. Alderman as President of the University of Virginia it was announced (says *Science*) that, in addition to the conditional gift of £100,000 from Mr. Carnegie, Mr. Rockefeller had given £20,000, Mr. Jefferson Coolidge £10,000, and *alumni* and friends £10,000 towards the endowment fund.

Scholarships and Prizes. AT Caius College, Cambridge, there will henceforward be several post-graduate research studentships, subject in general to the condition that the student elected must have kept not less than nine, nor more than fifteen, terms of residence at the college. These studentships are: (1) the Frank Smart Studentship, restricted to Botany, £100 a year for one, two, or three years; (2) the Shuttleworth Studentship, given by preference for Zoology or Physiology, at present £110 a year, for one, two, or three years; (3) the Ramadge Studentship, for Legal History (or, failing qualified candidates in that subject, then for Theology, Languages, Archaeology, or other literary study), £100 for one year in alternate years; (4) and (5) two studentships of £120 a year, tenable for one, two, or three years, which are not restricted as to subject, and may be given either for literary or for scientific research; (6) a studentship, at present of £80, for one, two, or three years, given by preference for research in some branch of Literature or Arts.

A Choral Exhibition, £40 for 3 years, will be awarded in the course of this term to candidates coming into residence in October. Apply to the Master.

Appointments and Vacancies. DR. M. R. JAMES, Fellow and Tutor of King's College, Cambridge, has been appointed Provost of the college, in succession to the late Rev. A. Austen Leigh.

SIR EDWARD M. THOMPSON, K.C.B., Director and Principal Librarian of the British Museum, has been appointed Sanders Reader in Bibliography at Cambridge University for 1905-06.

MR. EDWARD P. CULVERWELL, M.A., Fellow of Trinity College, Dublin, has been appointed to the new Chair of Education in the University.

PROF. SANJANA, M.A., whose name is well known in our mathematical columns, has been appointed Principal of Samaldas College, Bhavnagar.

MR. A. R. LORD, B.A. Oxon., Assistant to the Professor of Moral Philosophy and Lecturer on Political Science in Aberdeen University, has been appointed Professor of Philosophy and History in the Rhodes University College, Grahamstown, Cape Colony.

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MR. JAMES GILCHRIST, B.Sc. Edin., has been appointed Lecturer in Civil Engineering in the University of Leeds, in succession to the late Dr. George Wilson.

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MR. E. PROVAN CATHCART, M.D., Assistant Bacteriologist at the Lister Institute of Preventive Medicine, has been appointed Grieve Lecturer in Physiological Chemistry in the University of Glasgow.

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MR. HAROLD LAWSON MURPHY, B.A., has been appointed Assistant to the Professor of Modern History in the University of Dublin.

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THE REV. A. A. DAVID, M.A., Dean and Assistant Tutor of Queen's College, Oxford, has been appointed Head Master of Clifton College, in succession to Canon Glazebrook. He was an assistant master at Bradfield (1890-92) and at Rugby (1892-98).

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THE REV. ALBERT ERNEST HILLARD, M.A. Oxon., Head Master of Durham School (since 1899), has been appointed Head Master of St. Paul's School, London.

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MISS HARRIETT A. MARTIN, Head Mistress of the Cork High School, has been appointed Lecturer in Education (Post-Graduate Course) in Queen's College, Cork.

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Literary Items. THE Lektors in English, French, and German at Lund University have started a monthly trilingual review, the *Skandinavisk Månadsrevy*, "for the guidance of teachers and learners of these three languages and of persons interested in the corresponding literatures." We wish the project all success.

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MESSRS. P. S. KING & SON announce the early publication of Dr. Reich's "Select Documents illustrating the History of Mediæval and Modern Times" in a volume of some 800 pages.

* * *

THE "History of Literary Criticism in the Renaissance," by Prof. J. E. Spingarn, of Columbia University (Macmillan Company), has received the rare honour (for an American literary work) of being brought out in an Italian version (G. Laterza & Figli, of Bari). The translator is Dr. Antonio Fusco; the author has made many additions and corrections; and there is a preface by the distinguished critic, Benedetto Croce, editor of *La Critica* of Naples.

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MESSRS. SAMPSON LOW, MARSTON, & Co. announce that the third volume of the "Times History of the War in South Africa" is ready.

* * *

A "MILITARY Geography of the Balkan Peninsula," by Lieut.-Colonel A. F. Mockler-Ferryman, F.R.G.S., F.Z.S., and Prof. L. W. Lyde, is the first volume of a series which is "to classify and analyze the geography of probable and possible theatres of war in such a way as to give full information about each area on strictly educational lines." Messrs. A. & C. Black are the publishers.

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In view of the Trafalgar centenary, a new "Life of Nelson," profusely illustrated, and containing the recently discovered portraits of the great admiral and Lady Hamilton, has just

been published at a popular price by the Walter Scott Publishing Co.

The Walter Scott Publishing Company are offering a cheapened issue of the "Scott Library," containing over one hundred and twenty of the world's best books. The price will be one shilling a volume, and the size and quality of the paper and printing will remain as heretofore.

* * *

THE first number (May) of the *University Review* (6d. net, Sherratt & Hughes), "published for the benefit of the Students' Representative Organizations of the Universities of Great Britain and Ireland," appears in handy form and generous get-up, with half a dozen fresh articles by distinguished educationists, a great variety of educational news, and three full-page illustrations. We give it a cordial welcome.

General. LORD BALFOUR OF BURLEIGH, the Earl of Jersey, and Lord Justice Cozens-Hardy are the members of the Privy Council Committee appointed to select the site or sites for the National Museum and National Library for Wales. Aberystwyth is asking for the National Library alone; Swansea, Carnarvon, and Llangollen are each claiming the National Museum alone; Cardiff wants both the Museum and the Library.

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THE Charter forming the University College of Sheffield into a University has been signed.

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It has been decided to transfer the Cheshunt Congregational College to Cambridge.

MEMORIAL OF JOHN HARVARD.

GIFT FROM THE UNITED STATES AMBASSADOR.

A MEMORIAL of John Harvard, the founder of the Harvard University, which has been given to St. Saviour's Collegiate Church, Southwark, by Mr. Choate, the retiring United States Ambassador, was unveiled by his Excellency, in the presence of a distinguished company (May 22). The memorial takes the form of a handsome three-light window, with a representation of the Baptism of Christ by John the Baptist as the central figure, and the arms of Emmanuel College, Cambridge, and Harvard College shown. At the base of the window is the inscription: "In memory of John Harvard, founder of Harvard University in America. Baptised in this church November 29th, 1607."

Mr. Choate said he had presented the memorial from a desire to signalize his long residence in London by an appropriate gift, which should be in itself emblematical of the deep-seated and abiding relations of friendship which united England and the United States. As a loyal son of Harvard, he thought nothing could be more fitting than a permanent memorial of the principal founder of Harvard University. John Harvard was born in that borough, close to the end of London Bridge, and was baptized in that venerable church in 1607. He was educated at Emmanuel College, Cambridge, where he spent eight years. Seeking larger freedom of thought than could be found in the London of that day, he emigrated to Massachusetts, where he died within two years of his arrival, prematurely, as it seemed, but in the fullness and perfection of time, as was now manifest. Finding the infant colony without means to establish a college in the wilderness in the first decade of their settlement, he bequeathed to its foundation his library and the half of his fortune, which amounted in all to about £1,700. Now, after the lapse of three centuries, that little college in the pathless wilderness had become a great and splendid university—great in prestige and renown, rich in endowment, and richer still in the loyal fidelity of its sons. Unknown and of little account when he sailed from England, John Harvard had been a benefactor to the New World, and his generous and timely gift had borne fruit a million fold. He hoped that memorial would long remain, in order that Americans might come to see the very spot where one of their proudest institutions had its origin, and that it might remind Englishmen who visited it how inseparable were the two nations in their history and in their destiny. He trusted also that it might tend to keep alive a kindred spirit between the universities of the two countries, for

Harvard was just as surely the offspring of Oxford and Cambridge and the own daughter of Emmanuel as Old England was the mother of New England. So long as ideas ruled the world, let the Universities of both countries stand together for truth, and with one voice let them say to the youth of both lands: "Take fast hold of Instruction, let her not go, for she is thy life."

The Archbishop of Canterbury, acknowledging the gift on behalf on the Church, said that when the story of the present epoch was written it would be found that none had done more to cement the friendship between England and America than Mr. Choate.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

INEXACT SCIENCES IN THE SCHOOL-ROOM.

To the Editor of "The Educational Times."

SIR,—One special difficulty of school teaching—not a religious difficulty, either—was somewhat humorously illustrated the other day in the London County Council. Lord Welby complained that an elementary-school mistress had been dictating what "he could not describe in any other way than as being a Jingo lecture," inculcating the principles of the Tariff Reform Association. Mr. Edward Collins thereupon complained about a similar lesson on "Free Trade, and a eulogy of Cobden and of Bright." Sir William Collins happily found some means of filing down the proportions of both enormities, and pacifically admitted that "it certainly would be undesirable that political matters should be introduced into public schools." Well, but every book of English history that comes down to the death of Victoria raises quite a crop of such questions; and, if the children are not taught recent history, the complaint is that the school is out of touch with current life. The same chances of distortion occur in earlier periods, but then—strangely enough—they are not held to matter particularly. Is it not just possible that both sides of political and economic opinion would do well to assume the same broad outlook and tolerance on questions of recent date? The really important matter probably is to present the solid facts, and, at the same time, to keep the proselytizing impulse under firm control. Then an incidental opinion, whether in favour of Tariff Reform or of Free Trade or of whatever else, would in due course get rectified in the only proper way, by the pupil's own thinking. Any temporary school opinion—of a little Liberal or of a little Conservative—is of vastly less importance than adult partisans seem generally to imagine. The inculcation of mere opinion is, of course, intolerable; but teachers are, it is to be hoped, very rarely indeed so perverse or so thoughtless as to attempt that. Would not a generous toleration of divergent views be amply compensated by instruction in the broad facts of the questions at issue?—I am, &c.,

ELEMENTARIUS OLIM.

London, May 18, 1905.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on May 17. Present: The Rev. J. O. Bevan in the Chair; Prof. Adams, Rev. J. B. Blomfield, Mr. Bowen, Mr. Charles, Miss Day, Mr. Eve, Mr. Hawe, Miss Jebb, Mr. Ladell, Miss Lawford, Dr. Moody, Mr. Morgan, Mr. Rule, Rev. Dr. Scott, Mr. Starbuck, and Mr. Storr.

The minutes of the last meeting were read and confirmed.

The thanks of the Council were voted to heads of schools who had afforded facilities for holding the College examination of teachers for certificates of ability to teach.

The following persons were elected members of the College:—

Mr. J. H. Blunt, L.C.P., 51 Ordnance Road, St. John's Wood, N.W.
Mr. T. M. Thirlby, B.A. Lond., L.C.P., 2 Berwyn Road, Herne Hill, S.E.

Mr. H. A. Waldegrave, 144 Parrock Street, Gravesend.

The following books had been presented to the Library since the last meeting of the Council:—

By A. & C. BLACK.—Nicklin's Old Testament History, Part III.
By the CLARENDON PRESS.—Péchinot's Balzac's Une Ténébreuse Affaire; Robertson's Taine's Voyage aux Pyrénées.
By HACHETTE & Co.—Barrère's Eckmann-Chatrion's L'Invasion; ou le Fou Yéof; Gerothwohl's Hugo's Ruy Blas; Nagel's Storm's Immensee.
By J. MURRAY.—Hall's School Manual of English Grammar; Russell & Bell's Notes on Volumetric Analysis.
Calendar of Queen's College, Galway.

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- Scott—The Lay of the Last Minstrel.** With Introduction and Notes. By G. H. STUART, M.A., and E. H. ELLIOT, B.A. 2s. [Preliminary and Junior.]
- **The Lay of the Last Minstrel.** Edited by F. T. PALGRAVE. 1s. [Preliminary and Junior.]
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- **The Holy Grail.** With Introduction and Notes. By G. C. MACAULAY, M.A. 2s. 6d. [Senior.]
- **The Coming of Arthur and The Passing of Arthur.** With Introduction and Notes. By F. J. ROWE, M.A. 2s. 6d. [Senior.]
- Outline of English Grammar.** By J. C. NESFIELD, M.A. 1s. 6d. KEY, 2s. 6d. net.
- Manual of English Grammar and Composition.** By J. C. NESFIELD, M.A. 2s. 6d. KEY, 2s. 6d. net.
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LATIN.

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GREEK.

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CHAOS AND CONTRADICTION

IN PRESENT-DAY EDUCATIONAL THOUGHT.

At the Evening Meeting of the members of the College of Preceptors on May 17, Mr. JAMES WILSON, M.A., in the Chair, Mr. F. H. HAYWARD, D.Lit., M.A., B.Sc., F.C.P., read a paper on "Chaos and Contradiction in Present-Day Educational Thought." He said:

NO RECOGNIZED AUTHORITY.

The main point which I would enforce and illustrate in this paper is that there is in Britain no such thing existent as recognized *authority* on matters of educational doctrine. That chaos and conflict which, prevailing among Protestant sects, is regarded by themselves as a sign of energy and vitality, and by Catholics as a sign of fundamental error, certainly flourishes in the rankest luxuriance among educationists. It seems to resolve itself not always into mere difference of emphasis, but quite frequently into absolute difference of standpoint.

I shall have but little time in the present paper for general reflections. But I venture on the remark, here and now, that the way out of our difficulty is not "less theory," but "more theory." At present our teachers distrust the name, and with very good reason. But ultimately theory will unify—or, at least, help to unify—educational thought. It will not make good teachers out of hopeless teachers; but it will help all teachers to see a new significance in their work.

MEDICAL PETITION.—COMMERCIAL PRESCRIPTION.

I now proceed to the first on my list of present-day contradictions. It is taken from an episode which is, doubtless, within the recollection of you all. Fifteen thousand medical men petitioned the Board of Education to introduce the teaching of hygiene and temperance into primary schools. So far, so good; though there is something a little surprising—if surprise is permissible in educational affairs—in the fact of such a recommendation coming from outside the school itself. But surprise gives way to amazement when we hear of the supplementary suggestion.

Coming fresh from their vivisectional failures, the doctors proceed to tell *us*, the teachers and masters of this country, what subjects we should leave out in order to make room for hygiene and temperance. For some occult reason they decided on the omission or subordination of history and geography; or perhaps one may more correctly say the lot fell upon those hapless subjects, which, accordingly, were cast overboard like Jonah. But history and geography, like Jonah, were not yet done with; a great and benevolent fish appeared in the form of the Associated Chambers of Commerce. Sir Albert Rollit, within a few weeks of the presentation of the medical petition, had to prescribe for English schools; and his prescription was—*a more careful teaching of history and geography*. Thus medical men were recommending for schools the omission of the very subjects which commercial men were strongly urging. Surely, if we teachers had clear views on educational matters, some definite sense of educational values, and, above all, some show of authority with regard to the educational affairs of the nation, we should have the right to tell medical men, commercial men, military men, and all other non-educators, to mind their own business before minding ours.

PROF. ARMSTRONG v. PRESIDENT STANLEY HALL.

Unfortunately, however, chaos and contradiction prevail among professional educationists themselves. Take two distinguished men like Prof. Armstrong of England and Prof. Stanley Hall of America. The former is closely identified with the proposals for the teaching of elementary science issued by the British Association. What is the sum and substance of those proposals? To make our teaching *exact and quantitative*;

to base it on measurement. But there comes Dr. Stanley Hall, the great leader of the American "child-study" movement, an educator who says equally hard things with Dr. Armstrong about the inefficiency of science teaching, but prescribes a precisely opposite remedy. Listen to his words, and remember that he is condemning in America the very thing that Prof. Armstrong is advocating in England. "The half-score of text-books in physics I have glanced over," says Dr. Hall, "seem essentially quantitative, require great exactness, and are largely devoted to precise measurements, with too much and too early insistence on mathematics. . . . The normal boy in the teens is essentially in the popular science age. He wants and needs great wholes, facts in profusion, but few formulæ."

FOR AND AGAINST "FACTS."

Dr. Stanley Hall, in the great work on "Adolescence" from which I have just been quoting, has suggested other contradictions. "Boys," he tells us, need "facts in profusion." Now this is a very interesting confession, because there is a dead set against the giving of "facts," "information," or "mere knowledge" made by sundry gentlemen, who, seeing clearly enough that the time is educationally out of joint, esteem themselves, like Hamlet, born to set it right. For example, there is Mr. Harold Gorst, who possesses the double distinction of being the son of Sir John Gorst and the father of a book called "The Curse of Education." Now this book, which is appearing on railway bookstalls, along with "Dr. Nikola" and "Sherlock Holmes," at the modest figure of sixpence, is simply a kind of Rousseau's "Emile," minus all the sparkle and plus a few additional fallacies. It represents educational reaction dressed in the garb of educational radicalism. Of course, the author runs down "facts" as vigorously as Mr. Gradgrind ran them up. On the first page he speaks of the British child being "stuffed"—a favourite and fine word, "stuffed"—with "six pounds of facts," the German and French child with "seven pounds"; and he recurs again and again to the expression. Mr. Gorst will therefore be interested—though, perhaps, also pained—to hear that Dr. Stanley Hall believes the normal boy to need "facts in profusion." What, too, will he think of the introduction of an examination paper on "general information" in connexion with sundry examinations? The situation is ludicrous. Here, on the one side, are teachers and examining bodies discovering that pupils are frequently grossly ignorant of common necessary "facts," and, to remedy the evil, prescribing a paper on "general information"; here, on the other side, are platform orators and writers of books with sensational bookstall titles telling us that there is a surfeit of "facts" and "information."

The contrast is really sharply marked. I find it, for example, in two gentlemen with whom I have been brought into slight personal contact. Sir Thomas Acland, whose name is known and honoured in the West Country, says that "the great purpose of education is not to accumulate facts, but to cultivate the powers of observation"; while ex-Prof. Laurie brings it as a complaint against mediæval education that the minds of the pupils did not receive "the nourishment of facts." Edward Thring, I need scarcely say, was another "fact" iconoclast, and so, I think, is his disciple, Prof. Armstrong. "Drawing out the powers of the mind," says the former, "is different from packing in dead facts, even when the packing is neatly done." Now it seems to me generally an extremely difficult task to discover what Edward Thring was really driving at; so, with regard to the words just quoted, I hesitate to express any amazement and disapproval, and venture merely to claim that the "neat packing in" of facts—in other words, the conferring of knowledge in accordance with the psychological laws of the mind—is surely a supremely important thing. Nay, I feel constrained to quote a fellow-Herbartian, if he will allow me to call him so—I mean Prof. Adams. On page 131 of his wonderfully lucid book, compared with which Edward Thring's three books seem a London fog variegated with fireworks, he says: "Since each new fact is acted upon by the facts which form part of the apperceiving soul, it follows that, the more facts that have been organized into faculty, the more readily will the mind act." This, of course, is the invariable attitude of Herbartians, who, though they may differ among themselves upon many things, are not in the habit of joining the hue and cry against knowledge and instruction.

I could find other pairs of writers whose views upon the "fact" question are in conflict. The late Mr. Quick's attitude was, on the whole, wise and moderate, and showed a striking

absence of that one-sidedness and partisanship which are so often identified with the work of our present-day "educational reformers." But in one place he has a tilt at what he calls "storing the pupils' memory with facts—facts about language, about history, about geography." On the other side may be adduced a quotation from the well known work, "Essays on a Liberal Education," which represented, forty years ago, all that was radical and progressive in secondary education. In this work we find Mr. Wilson, now Archdeacon Wilson, urging, in connexion with the teaching of natural science, that "a certain broad array of facts must pre-exist before scientific methods can be applied."

DEFINE YOUR TERMS.

Of course, I do not mean to suggest that these contrasts of view are necessarily absolute and irreconcilable. Possibly the word "facts" varies somewhat in its meaning and use. But I do claim that such real or apparent contradictions as those I have adduced reveal something unsatisfactory in present-day educational thought. They show that we have not yet succeeded in hammering out any clear educational categories. Education appears to be in a state similar to that which, theologians tell us, preceded the formulation of dogma—a state in which orthodoxy and heterodoxy, apostolical tradition and wild heresy existed side by side undifferentiated. It is because, as it seems to me, Herbart is pre-eminently *clear* that he is so valuable to us at the present time. If only men of Thring's calibre or of Dr. Laurie's calibre possessed both the definiteness of standpoint and the categorical lucidity of Herbart, educational thought in this country would be in a different state from what it is. However, this is not the moment for such general reflections. I hasten to add that certain educationists use precisely similar language about "knowledge" and "information" that others use about "facts." This is not surprising, as "facts," "knowledge," and "information" mean, I suppose, much the same thing. Prof. Armstrong tells us that "mere knowledge counts for very little," as if there were any "mere" knowledge, as if all knowledge did not possess, as the Herbartians contend, the possibilities of apperceptive energy, and as if Spencer himself had not declared: "Knowledge is turned into faculty as soon as it is taken in." In contrast to Prof. Armstrong's contention, I will again quote from "Essays on a Liberal Education." "In the education of the upper classes," says Mr. Wilson, "there is too little of positive and exact knowledge and too much of mere training and drill. We have too much distrusted the virtue of knowledge." Again, De Morgan's educational ideal, "to know everything about something and something about everything," goes quite counter to the somewhat absurd attacks upon "knowledge" and "information," to which I have referred; while Sir Oliver Lodge's retort to Mr. Benson is in the same sense. "A master's business," Mr. Benson had said, "is to try to see that there is mental effort." "Not a bit of it," replied the Principal of Birmingham University. "A master's business is to supply proper pabulum."

"PROPER PABULUM."

It is plain from such quotations as these that the Herbartian objections to a purely formal or gymnastic ideal of education—objections put into a classical and, I venture to think, almost an immortal form in the fifth chapter of Prof. Adams's book—are very living and pertinent objections, aimed at real dangers. Many of our educationists, in their theoretical disquisitions, seem to forget the need for what Sir Oliver Lodge calls "proper pabulum." Time was when the mind was compared to a sheet of paper on which the teacher had to impress certain marks; when societies were formed for the "diffusion of information" among the "working" or other classes; when men spoke of knowledge being "power"; when ideas were supposed to come from without and to enter the mind and give it a content and a fullness; when Disraeli's words, "The duty of education is to give ideas," would have been regarded as sound sense and not dangerous heresy. Now all is changed. On every side is heard the voice of the educational prophet (if not the educational cheap-jack) assuring us that knowledge is of little worth; that education is a process of drawing out and not of putting in; that training is more important than instruction; that the mind is not a *tabula rasa*, but a perpetual-motion machine. Educational philosophy is daily stressing more and more the efferent at the expense of the afferent, forgetting that the afferent may become the efferent, or that, in Spencer's words, "knowledge" may become "faculty." True, there are voices on the other side, but they do not so catch the popular ear—the ear of the Educa-

tion Committee-man for example—as the voices depreciatory of knowledge.

FROEBEL *v.* HERBART.

And here I have a bone to pick with the followers of Froebel. It seems to me that the stress they lay upon the efferent side of mental life very easily lends itself to error and perversion. When Froebel said, "What can be put into a man is, properly speaking, *there* already," he uttered words which fill me with such amazement that, if I did not know how great Froebel really was, I should put him down for an educational madman in virtue of a declaration such as this. One remembers the words of Prof. James: "An adult man's interests are almost every one of them intensely artificial; they have slowly been built up." One remembers, too, that the Catholic Church and other Churches have always, rightly or wrongly, insisted on the early creation in the child's mind of certain apperception masses; and I know, from personal contact with people, how this factor profoundly modifies the whole mental structure.

We Herbartians are sometimes supposed to be educational revolutionists; at any rate, a Board of Education not usually regarded as violently republican or radical prescribes for teachers the study of Froebel in preference to the study of Herbart. But, ladies and gentlemen, if you will look into the question, you will find that Herbartianism is moderation, conservatism, even reaction, compared with the red, wild revolutionism patent or latent in the words of Froebel just quoted: "What can be put into a man is, properly speaking, *there* already." The child, for Froebel as for Wordsworth, is "father of the man," an "eye among the blind," a "mighty prophet," a "seer blest," on whom surely, then, no sacramental hands need to be laid, and still less the nerveless or leprous hands of modern education.

Now I venture to say that, if the child is all this, and if doctrines such as these are sound educational truth, no Board of Education has the right to administer an Education Act whose essential principle seems to go wholly counter to Froebel's view. Priests—and even, in a sense, teachers—must alike stand aside, put off the shoes from off their feet, and (in a new sense) worship on holy ground at the shrine of a divine child. The Herbartian view—so conformable with the common and orthodox views of men—that the teacher is called upon to build *into* the mind of the child a structure which, though not foreign to that mind, is at least new to it—is a view which, though it must ultimately be brought into harmony with the view of Froebel, confronts it at present in seemingly sharp contrast. "Seemingly," I say; for I cannot believe that the contrast is to be suffered to exist much longer. In Germany the Herbartians, according to the hostile words of an educational freethinker, have become "the most distinguished coadjutors in Church teaching, for their system gives religion the widest scope for bringing everything into her service." How little, in England, do the various parties recognize their true friends and their true enemies! It was not so very long ago that, with a shiver, I awakened to the consciousness that Herbartianism was a conservative force; and I fancy that many of the orthodox ladies who wax enthusiastic over Froebel will some day awaken, with a shiver, to the consciousness that Froebelianism is a foe to much that they regard as specially vital.

Some one will reply that Froebel never meant what he said when he used the words I have quoted—just as some one else will presently tell me that one of Froebel's most eminent followers, Mr. W. H. Herford, does not really mean the words which I shall quote from him about "Nature." Somehow or other the Froebelians have a lax and easy-going way of using language, but it seems necessary to remind them that fallacies cannot be transformed into facts by gushing over them or by quoting Wordsworth's "Ode." The late Mr. Quick tells us about a German teacher who, faced by the circumstance that his pupils were *gedankenlos*, found it necessary, before calling upon them to write an essay on a given subject, to present them with a large amount of material to write about; he found it necessary, in short, *vieles einzupumpen*. For my own part, I sympathize sincerely with the German teacher, and am daily engaged in the same conscientious practice, despite the horrible things said by Edward Thring about "pumping" and the rest. I mention the point because, as it seems to me, Froebelians and others wholly ignore it; in fact, the question of the relation between the receptive and the active sides of mental life has never yet in England been seriously grappled with at all.

I have spent far more time than I wished in discussing—and discussing, I fear, in a very airy and inadequate fashion—this

question of the relation between the innate and the receptive, the efferent and the afferent, the Froebelian and the Herbartian factor. The want of clear ideas upon this question seems to me at the root of many of our present-day contradictions. I will adduce a few more examples.

A CASE OF OPPOSITE INFERENCES.

I have already mentioned both Prof. Adams and Prof. Armstrong. In reading over their works I came across a reference in each to Sherlock Holmes, and was struck by the fact that the two educationists drew exactly opposite inferences from the skill and efficiency of the famous detective. Prof. Armstrong seems—I speak with caution—to trace that skill and efficiency to a process of mental discipline rather than to knowledge and apperceptive power; while Prof. Adams traces it to these latter. "Holmes's apperception mass," he says, "contained the German word *Rache*, which means 'revenge.' Holmes was right. Lestrade was wrong. But it was not a matter of reasoning backwards or forwards: it was a matter of knowledge." And here let me say that any one who wishes to realize how enormous (superficially, at any rate) is the contrast between the only two orthodoxies that arouse any real educational enthusiasm—I mean Froebelianism and Herbartianism—had better read a chapter or two of Prof. Adams's book after imbibing a dose of "self-activity" and "drawing out" doctrine. He will then read such sentences as the following:—"We seem to find ideas exercising a power that is independent of the mind. . . . The kind of apperception masses in the mind really determines what kind of mind it is. . . . Ideas enter our minds in spite of us." It is no good mincing matters. The two standpoints are unreconciled by the educational thought of to-day, though I am far from thinking that they are irreconcilable.

MAKE CHILDREN THINK FOR THEMSELVES?

I pass on to another contradiction, though one that is, perhaps, ultimately traceable to the fluctuating views on the knowledge question to which reference has been made. Our pseudo-reformers assure us that the great thing necessary is to make children "think for themselves." Educationists, in fact, seem to be slowly, and perhaps unconsciously, separating into two camps—those who lay stress on power, skill, sharpness, efficiency, independence (including this capacity of "thinking for oneself"), and those who lay stress mainly on goodness, and, in consequence, on giving to children what Mathew Arnold called an acquaintance with "the best that has been thought and said in the world." Education will never begin to progress in earnest until these views have been synthesized. However, waiving this wide question, I would quote, in reply to the much-in-evidence maxim that teachers must make their pupils "think for themselves," the words of Mrs. Shelley relative to her own son: "Teach him to think for himself? O my God! Teach him to think like other people!"

BOOKS *v.* NATURE.

I have a second ground of controversy with the followers of Froebel; though in point of fact, my complaint is mainly against some of the unguarded expressions which they and others let fall. Mr. Gorst, and the educational crusaders who draw their inspiration from Froebelian and Pestalozzian sources, or rather, perhaps, in the long run from Rousseau, assure us that schools should be less "bookish." Now I need not give or discuss the reasons for the onslaughts of these men upon books; there is always a reason for an onslaught, and I would be the last to deny that premature devotion to literary work in schools has been a great evil, and that the realities of Nature have a prior claim, though not a final claim, over the invented symbols, and even the recorded thoughts, of man. But I live in a county which, however attractive in many ways, stands in no need of any anti-book movement, and I therefore universal the words of Mr. H. G. Wells: "The first and most universal function of the school is to initiate into the ampler world and the more efficient methods of the reading and writing man."

Froebelians may reply that they do not disparage books, they only object to their premature introduction into school. Well, Mr. W. H. Herford—a neighbour of mine on the shores of Tor Bay—is an exponent of Froebel. He assures us in a work which he edited two years ago that "one day we shall believe that *all* we truly know, the stuff of all real knowledge, we learn from Nature; *all the rest*—hearsay, rote knowledge—being "vox et praeterea nihil." That is pretty strong, surely! Are, then, the rhapsodies of the Hebrew prophets, the "Republic" of Plato,

and the "Utopia" of Sir Thomas More products of "Nature" in any real sense? Strange to hear the voice of Rousseau sounding in our ears after half a century of Darwin! Strange, I remark once again, that excellent and orthodox ladies do not see, what the theologians saw at the time, that Froebel's standpoint, when divested of gush and delusion, is revolutionary in the highest degree! My own views on "Nature" are far from definite, and, therefore, I do not wish dogmatically to assert that Froebel's mystical and symbolical way of contemplating her is wholly wrong; but I would urge that, in the course of evolution, latest developments are often the highest developments, and that books, in the words of Milton, "are not absolutely dead things, but do contain a progeny of life in them; . . . they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them. . . . A good book is the precious life blood of a master-spirit, embalmed and treasured up on purpose to a life beyond life." I prefer this to Wordsworth's stanza:

Books! 'tis a dull and endless strife:
Come, hear the woodland linnet,
How sweet his music! on my life,
There's more of wisdom in it.

Tastes differ, I suppose. I am certain, for my own part, that, if listening to the woodland linnet is an act of greater wisdom than the reading of certain books, the reason must be that the books in question contain trash unsurpassable anywhere except in the "Lyrical Ballads."

THOROUGHNESS?

Another interesting case of chaos and contradiction is concerned with the question of "thoroughness." Some writers make a great point of this. I heard a prominent West Country educationist, who had noted the comparative ineffectiveness of much of our present-day teaching, say that the multiplication of subjects was a grave peril, and urge the need of "thoroughness." But I turn to the pages of Edward Thring and I come across these words: "There is something so wise, so unanswerable, in the modest yet firm requirement that the lessons must be done 'thoroughly,' and a boy not advance till he has mastered what he is doing, that the request commands assent at once. The fallacy is—it cannot be done." I do not attempt to adjudicate in this case; I merely point out that, while one earnest educationist urges the need of "thoroughness," another urges its impossibility.

THREE R'S—NAY, FOUR.

Another controversy rages over the "three R's." From the one side come complaints that we no longer teach the "three R's" so efficiently as in the good old times of forty or seventy years ago, when the curriculum was limited and unambitious, and troublesome "theorists" had not invaded our shores. But from another side comes, with the complaint that the teaching of the "three R's" is necessarily a very mechanical business to a considerable extent, an exhortation to apply ourselves to a "fourth R"—namely, reasoning. Our pupils have not only to read, write, and reckon, but also to reason; this, in the opinion of Prof. Armstrong and of Sir William Collins, Chairman of the London Education Committee, is the "fourth R" which is so infinitely more important than the other three. To all which it may be replied that education will have to find a place both for the mechanical and for the rational, in the same way that it will have to find a place both for the receptive and the active factors to which reference has been previously made. All these exhortations to apply ourselves to a "fourth R" and the like are mere testimonies to the fact that we have at present no philosophy of education that possesses any authority.

CONFLICTING TEXT-BOOKS.

The next on my list of present-day contradictions is taken from a Board of Education syllabus. It is, no doubt, quite right to prescribe for teachers who have to take the Certificate Examination a number of famous educational books for study; but in the present state of educational theory—or, rather, in the present absence of educational theory—there is some danger of teachers losing all respect for educational books. "How 'much,'" they say, "have we to accept, and how much to reject? How much of Herbert Spencer's book on Education is established truth, and how much is error?" Nobody, apparently, can say. I was struck, therefore, by the fact that for the Certificate Examination of 1906 Spencer and the two Arnolds were given as alternative subjects. Now, Spencer despised history and the classics, and laid chief stress on science; while the Arnolds despised

science, and laid chief stress on history and the classics: at any rate, this statement is approximately true. Thus those teachers who study Spencer will imbibe exactly opposite principles from those imbibed by teachers who study the Arnolds.

"MERE MEMORY."

Certain of our reformers, not content with attacking "mere knowledge," "mere facts," "mere information," and the like, have some hard things to say against "mere memory." I remember a passage—a ludicrous passage, when you consider the question from all sides—in which Edward Thring spoke of how "secondary" a thing memory is. Could there have been a more unsuitable expression? Is not memory the most primary and indispensable of all mental functions? However, if you attend long enough to the utterances of educational cheap-jacks, you will be certain to come across an attack upon "memory," and then, perhaps, for change, you will look at the daily paper for January 7, 1905, and read, in the report of a teachers' conference, that Mr. Phene Spier laid stress on the importance of "cultivating the memory."

THEORIES OF ART TEACHING.

In the same report you will read that the Principal of the Birmingham Municipal School of Art spoke of the "great danger in the present system of trying to teach design in elementary schools." I speak with deference, because art is a department of work with which I am not very familiar, but I do know that, if the encouragement of design is a wrong thing, then Froebel and all his followers are utterly mistaken, and another great educational delusion must be added to the historic list. I am told by art teachers that on the whole subject of art teaching there is complete chaos of view among Government examiners and others; some, in the spirit of Froebel, laying stress upon a kind of free and easy creativeness, others upon exact reproduction of objects and copies.

GRAMMAR v. HYGIENE.

For an unusually kaleidoscopic example of educational chaos I would refer you to the two dates February 15, 1905, and February 17, 1905. It is not often that, in my exciting researches on educational chaos, I have come across an instance of one voice of authority unconsciously contradicting another within the space of three days. Such, however, is the present instance. Sir John E. Gorst, speaking on the King's Speech three months ago in the House of Commons, urged that, if the young mothers of the nation had less grammar and geography and a little more knowledge of hygienic questions, it would be better for the nation. Two days later I opened a West Country newspaper, and read how His Majesty's Inspectors were urging that, "in view of the difficulty experienced in secondary schools, pupil-teacher centres, and evening classes, owing to the lack of knowledge of English grammar on the part of many of the pupils coming from elementary schools, all children in the standards should receive instruction in the elementary principles of grammar, and a certain minimum standard knowledge in this subject be expected of pupils in the higher standards."

CORPORAL PUNISHMENT.

I could add considerably to the list of contradictions already presented to you. Take, for example, the striking subject of corporal punishment, upon which much difference of opinion makes itself felt. I do not propose to argue the case for or against prohibition; but I would point out that defenders of the practice—and I am one of them—are gravely divided as to the class of offences to which it is most suitably applied. Most Education Committees representing popular and empirical opinion seem to regard corporal punishment as legitimate only in the case of "grave moral offences." I could quote many rules issued upon this basis. But Edward Thring, in one of the wisest parts of his suggestive, though often perplexing, writings, argues at considerable length—and, I think, with success—that corporal punishment is specially *unsuitable* for moral offences, and should be used for purposes of external discipline only. Teachers who follow Edward Thring will have to disobey their rulers, and those who obey their rulers will have to go counter to the views of Edward Thring.

Again, I could quote both from Thring and from Dr. Laurie, as well as from other authorities, the recommendation that when corporal punishment is administered at all it should be administered in private. The Bristol Authorities, however, are

of a different opinion, and say expressly that it should be administered "in front of the class or school."

CO-EDUCATION.

Again, questions like co-education are still absolutely unsettled, Dr. Stanley Hall, in his great work on "Adolescence," having pronounced an unfavourable verdict where a favourable one was expected.

ADMINISTRATIVE CONTRADICTIONS.

Of administrative contradictions there is legion. A distinguished educational administrator said to me that once on a time a candidate for an educational post presented himself before his Committee with fifteen advanced science certificates. "Needless to say," remarked the administrator, "he was not appointed." Yet I might call attention to the fact that at Bristol the unfortunate applicant would get £10 extra for every five such certificates, and I fancy that under the London Committee the more you have the better. Again, practical experience of a very definite kind counts for much in certain educational walks of life, and its absence is fatal to an applicant; yet Arnold was appointed to Rugby, and many public-school masters and many of His Majesty's Inspectors are appointed to their posts, with little or no such experience. Contrariwise, a knowledge of "theory" is supposed to be of priceless value in certain kinds of educational work; but woe to the man who doesn't know how to bottle up his stock of theory at the right moment!

THE REIGN OF CHAOS.

I must now begin to bring my remarks to an end. They have been numerous enough, I hope, to show that the testimony of Prof. Findlay and of Mr. H. G. Wells to the chaotic state of educational thought in England is true. The former says: "Our study of education is in its infancy"; the latter says: "There is nothing having any authority higher than individual opinion; nothing threshed out and permanently established. From one lecturer in education comes one assertion, and from another another, and the algebraic result is scarcely a matter for boasting."

HERBART TO THE FRONT.

Even on the question of the aim of education there is fundamental divergence of opinion, though there are a few signs that the Herbartian formula is coming increasingly into favour. I am by no means absolutely convinced that Herbart's "character-forming" formula and its implications are a perfectly and ultimately adequate solution to our difficulties, but I do claim that they are illuminating and unifying; they bring together so much; they link instruction with apperception, apperception with interest, interest with character; they put everything in a new, or at least a vivid, light; they knock on the head hoary old fallacies—such as that "virtue cannot be taught," that the mind can be exercised *in vacuo*, that training is distinct from instruction, that ideas are dead things, and that education is merely a process of drawing-out similar to the conjurer's method of drawing eggs out of his own forehead. I believe, in short, that Herbart was the clearest and most constructive—though I do not say the most original—of all educationists, and that his way of regarding education would do much to remove the chaos that prevails both as to aims and as to methods. How great is that chaos! "The aim of education is to give ideas," says one authority, in language that would shock the Froebelians, who talk sometimes as if the educator can "give" nothing and must draw out everything. "The aim of education is to develop the powers of observation," says a second. There are scores of other formulæ ranging from "the harmonious development of all human powers"—Pestalozzi's favourite, though by no means his only one—to "efficiency," which appears to be Mr. H. G. Wells's.

Surrounded by chaos such as this I turn, not with blind devotion or with unreasoning depreciation of other writers, but nevertheless with some confidence, to the great work published just a hundred years ago. In the "Allgemeine Pädagogik," Herbart says: "We know our aim"; and the work itself is a sufficient proof that the boast was no idle one.

The Rev. J. O. BEVAN thought that the contradiction in the theories of educationists was startling if the opinions quoted by the lecturer were intended to have universal application. But it was probable that the contradiction was apparent rather than real, for every teacher knew that the essential differences between the sexes and between children of various grades of life demanded differential treatment, and

it was hardly likely that all these differences were present to the minds of educationists when they gave expression to their theories. In practice the teacher's work was determined not by one or another extreme theory, but by the actual requirements of the pupils under his care, with due regard to their sex, to the length of their school career, and to their future station in life; and even methods which might be considered ideal, although they might serve to inspire the teacher, were not always found capable of adoption in their entirety. The objection to teaching facts seemed to apply to the memorizing of isolated facts rather than to the study of facts brought into proper relation with one another.

Mr. ORCHARD considered that the lecturer had proved his point that there was much confusion in educational thought, and he suggested that the College of Preceptors might usefully convene a conference to consider the basis of a sound theory of education.

Miss FINDLAY said those present were indebted to Dr. Hayward for putting before them so clearly the present chaotic state of educational theory in England, since the first step towards improvement was to see plainly the existing situation. Teachers could not rest where Dr. Hayward had left them; they must sift the doctrines of the authorities quoted, in the hope of finding some principles that could be accepted as guides for their own work. To this end she would like to speak on one or two points raised by the lecturer. First, as to Dr. Stanley Hall's position regarding giving children masses of facts. She had attended a vacation course at Clark University, presided over by Dr. Stanley Hall, in the summer of 1897; and in one or more lectures Dr. Hall had certainly spoken in the sense of the passage quoted by the lecturer. On the other hand, at that very course the chief place was assigned to Nature study, conducted by Dr. Hodge, of whose work Dr. Hall had again and again spoken in very high terms. The dominating feature of the method advocated by Dr. Hodge in natural science was that nothing should be received on authority; the student should be trained rigidly in first-hand observation and experiment. She had the greatest admiration for Dr. Hall as a scientific student of child-life, but in this and other matters she had been unable to understand his views on practical education. Next, as to the contradictions in the doctrines of Froebel on the one hand and Herbart on the other, she thought these were to a great extent reconcilable; they seemed to disappear on a deeper study of their writings. For instance, Herbart's doctrine of apperception gave a partial and a specially intellectual phase of Froebel's doctrine of self-activity. Some differences in their theories might have arisen from the fact that Herbart's practical work in education was limited to children above ten years of age; while Froebel was greatly interested in the beginnings of child life. In the Herbartian Practice School at Jena, and in a similar school in America, in which she had observed the work for a long period, she had formed the opinion that strict Herbartian method tended in young children to mental overstrain. It aimed mainly at directly developing reasoning power and abstract ideas, whereas Froebelian teachers aimed rather at training through motor and sense experiences. It was misleading to represent Froebel as too one-sided in regard to his doctrine of the unfolding of the child mind. Every kindergarten student was aware of the minute detail characterizing the courses of "gifts," "occupations," &c., which Froebel himself planned. Indeed, it was on this side of the work that Dr. Stanley Hall and other great modern students of infants condemned much of the kindergarten practice; they said that it left not too much, but too little, freedom for the development of the mind. Great men should be judged from their work as a whole; and a truer conception of the schools Froebel desired to see was derived from the account of the school established by him at Keilhau, contained in the autobiography of George Ebers, the great German novelist and Egyptologist, than from any English kindergarten. Ebers' description of life at Keilhau (he spent four years there) suggested a school like Bedales. Why should any slur be attached to Froebel's educational theory on the ground that he was a mystic? He was a mystic only in the sense that all great idealist philosophers are mystics. As to his advocacy of symbolism, she had understood better reasons for the value he placed on the use of symbols in abstract thinking from listening to Professor Geddes's lecture. Professor Geddes seemed to find symbols of as great service in thinking as did Froebel; and he too said that teachers would do well to adopt them more widely in the school-room. She knew that many people looked upon the doctrines of Herbart and Froebel as antagonistic; and the task of reconciling them at all adequately would be long. Yet she believed that would one day be satisfactorily done, and it would then be found that much sound work had been accomplished by these two great educators in the way of laying firm foundations for a science of education.

The CHAIRMAN remarked that, whatever might be the "chaos and contradiction in present-day educational thought," they were not allowed to have any very injurious influence on practice. The schoolmaster as autocrat in his school either ignored altogether the conflicting theories that the lecturer had just described or, if open minded, sifted them, rejecting what he thought hurtful, and adopting for trial such as seemed likely to prove helpful. Thus order and congruity ruled in the class-room, whilst "chaos and contradiction" prevailed

amidst outside educational theorists. Diverse opinions seemed to him inevitable except in societies where the yoke of authority had crushed out all tendencies to change. The history of thought in every progressive community was the record of the displacement of old ideals by new ones, more conformable to contemporary facts, the supersession of old methods in favour of others of greater convenience or greater fruitfulness. Ideals and methods, it was true, had changed very slowly in the development of English systems of education. For three and a half out of the past four centuries, in spite of the creation of four great modern literatures, great discoveries in mathematics and in the physical and natural sciences and great advance in economic and mental science, hardly any modification was made in school practice. It had only been in our own time that recognition had been given to modern literatures and science as suitable subjects for training, developing, and equipping the minds of pupils in secondary schools. The tardy recognition of other subjects than Latin, Greek, and mathematics was mainly responsible, he thought, for present-day difficulties. Our great problem now was to determine the subjects best fitted for training, development, and knowledge, and in what proportion they should be dealt with at school, remembering always that school life is only a preparatory stage. For a satisfactory solution he looked to the experience of teachers guided by the light obtainable from psychology and biology.

Dr. HAYWARD having replied to the remarks of the several speakers, a vote of thanks to the lecturer concluded the proceedings.

VISIT TO A MOHAMMEDAN UNIVERSITY.

By M. PIERRE ARMINJON.

[From the *Revue de Paris*.]

["The mosque El Azhar [at Cairo] contains a school to which Mussulmans resort from all parts of the world for instruction in the law and religion of Islam. There are special apartments and libraries appropriated to all the Mohammedan nations. The instruction is gratuitous, and, besides Mohammedan law and religion, embraces Logic, Grammar, Rhetoric, Versification, Algebra, &c. The whole number of students is over 9,000, of the teachers 300."—"Blackie's Popular Cyclopædia" (Art. "Cairo").]

... ENFONÇONS nos bottines dans les énormes chaussons de paille que nous tend le portier. Ainsi équipés, nous traversons un vestibule et laissant à droite les bureaux de l'Administration et, à gauche, les locaux de la bibliothèque commune, fondée en 1897 et riche de 12,700 ouvrages, nous débouchons dans une vaste cour carrée entourée de portiques. Quel spectacle! Accroupis sur les dalles de marbre que chauffe le soleil ou étendus sous leur manteau à l'ombre du péristyle, plusieurs milliers d'enfants, d'adolescents, d'hommes faits et même de vieillards, causent, discutent, dorment, rêvent tout éveillés, lisent en balançant leur buste, selon un rythme lent et régulier, mangent de compagnie des galettes de pain assaisonnées d'une salade multicolore à demi-liquide. À travers les groupes circulent touristes aux kodaks braqués, marchands de victuailles, un large éventaire assujéti sur leur torse cambré, porteurs d'eau au tablier bariolé, l'échine courbée sous une énorme jarre fermée d'un bouchon de glace et entrechoquant avec fracas des gobelets de cuivre, matous affamés quêtant sournoisement une pitance que leur disputent des bandes bruyantes de moineaux. Tout à coup, un silence relatif se fait. Aux appels sonores des *mouezzins*, les corps se redressent, les yeux deviennent fixes et la prière commence. L'heure qui suit est consacrée aux cours. Laissons-nous entraîner par le flot des étudiants.

Nous voici au milieu d'une immense salle de 3,000 mètres carrés et dont 126 colonnes soutiennent le plafond de bois noirci, très bas. C'est le *liouan* ou la partie de la mosquée réservée à la prière. Quatre *kiblehs*, une par rite, niches creusées dans le mur du fond, permettent aux fidèles s'orienter vers La Mecque. Adossée à ce mur, une chaire de bois précieux délicatement fouillé et incrustée sert le vendredi au prône du *khatib* (prédicateur). Chaque professeur s'accote à l'un de ces piliers, le visage tourné vers le *kibleh*, ses étudiants groupés autour de sa chaise, les jambes croisées sur la natte de paille qui recouvre le dallage, les babouches soigneusement rangées en festons ou en spirales à l'intérieur du cercle. Il récite l'invocation qui ouvre tous les chapitres du Coran: "Au nom de Dieu clément, miséricordieux..." et commence sa leçon.

Quel qu'en soit le sujet, celle-ci consiste toujours dans l'explication du commentaire classique d'un ancien ouvrage ou même du commentaire de ce commentaire. Un des élèves lit le texte à expliquer et le professeur se borne le plus souvent à en reproduire avec moins de concision et plus clairement l'idée que l'auteur a

ordinairement exprimée en termes archaïques. Les auditeurs ne prennent pas de notes, mais ont tous entre les mains un exemplaire du livre sur lequel porte la leçon; ils interrompent souvent, parfois avec insistance (le règlement les autorise à le faire seulement trois fois) pour réclamer, en langue vulgaire, des éclaircissements toujours donnés de bonne grâce.

Le maître traite de la nature de Dieu et de ses attributs, parmi lesquels il place naturellement la prescience.

"Dieu savait donc de toute éternité," interroge un des étudiants, "que l'oncle du Prophète et son protecteur, Abou Taleb, refuseraient toujours obstinément d'adopter la vraie foi?"

"Oui."

"Abou Taleb ne pouvait donc faire autrement que de rester dans l'erreur, puisque telle était la volonté éternelle de Dieu. Alors, comment est-il puni pour ne pas avoir accompli un acte impossible?"

"Impossible, non; il n'y avait aucune impossibilité à ce qu'Abou Taleb se convertit; mais Dieu savait qu'il ne se convertirait pas."

"Je ne vois pas la différence," réplique le questionneur.

Sans rien ajouter, le professeur reprend son commentaire.

Laissons-le, en nous promettant de revenir l'entendre à la première occasion.

Pour sortir, nous passons au milieu d'une troupe d'enfants des deux sexes, rangés le long de la cloison de bois délicatement ajourée qui sépare le *liouan* du portique. Sous l'œil sévère et la baguette menaçante du maître, ils tiennent à la main une tablette d'argile vernissée et s'efforcent d'y transcrire un verset du Coran, qu'ils déchiffreront et apprendront par cœur. Non loin d'eux, contraste piquant, sur lequel j'attire l'attention du cheikh qui me guide, cinq hommes à barbe blanche forment le cercle et causent amicalement:

"Qui sont ces bons vieillards?"

"Des étudiants; voilà cinquante ans qu'ils étudient."

"Pourquoi étudient-ils si longtemps?"

Mon guide sourit et lève le doigt au ciel:

"Pour profiter là-haut de la science qu'ils auront acquise sur cette terre."

Nous voici de nouveau dans la grande cour. En face de nous, s'ouvre un passage voûté. Au moment de nous y engager, nous remarquons des avis épinglés au mur: "O étudiants, ô mes frères," dit l'un d'eux, "je prie celui de vous qui a trouvé dans la cour un encrier de cuivre finement ciselé de demander Ali el Saoui du *riouak* (section) Ibn Mâmer, qui suit les leçons du cheikh el Nechaoui, et Dieu le récompensera." Pénétrons dans le passage; il débouche dans une salle qui communique avec la *medah*, cour d'ablutions disposée, depuis les récentes restaurations, suivant toutes les règles de l'hygiène moderne. De vigoureux gaillards se douchent au jet des robinets. Un escalier nous conduit à un étroit couloir sur lequel s'ouvrent des chambrettes exiguës sommairement meublées de trois ou quatre lits bas et étroits faits en forme de cages à pigeons avec des branches de palmier. Nous sommes au milieu d'un *riouak*, c'est-à-dire d'un appartement d'étudiants construit et entretenu à l'aide d'un *ouakf*. On compte vingt-neuf de ces logements, la plupart situés en dehors de la mosquée, quelques-uns pourvus d'une riche bibliothèque dont profitent seuls leurs habitants. Un cheikh spécial préside à chaque *riouak* et y maintient l'ordre et la discipline.

Nous sortons d'El Azhar par une porte latérale qui ouvre sur une ruelle de l'autre côté de laquelle se trouve la section des aveugles (*Zaouiah el Emiyan*). Une vingtaine de ces malheureux suivent une leçon que leur fait un professeur également aveugle. Celui-ci commente un livre tenu par un lecteur charitable et clairvoyant.

Dans presque toutes les mosquées situées au centre du quartier arabe, des cours sont faits aux étudiants de l'Université, trop nombreux pour pouvoir trouver place dans El Azhar. D'autres, et ceux-ci méritent de nous retenir un instant, furent institués en 1895 sur les sciences jusque-là négligées, telles que les mathématiques, la géographie, l'histoire, et sont restés facultatifs, n'étant pas sanctionnés par un examen. Ils sont professés par des maîtres étrangers au corps professoral ordinaire d'El Azhar et que secondent des répétiteurs choisis parmi les étudiants. Plusieurs de ces derniers cours se donnent dans la petite mosquée de Mohammed Bey, située en face de la principale façade d'El Azhar. Un répétiteur, garçon de 18 ans, vient de poser le problème suivant: "Une moutré retarde de 35 minutes toutes les douze heures: de combien retarde-t-elle au bout d'une demi-heure?" L'auditoire reste muet. Avec une bonhomie souriante, le jeune répétiteur résout le problème et en fait la démonstra-

tion. Un peu plus loin, un effendi en vêtements européens couvre le tableau d'équations du second degré. Dans une des salles les plus retirées de la mosquée du Sultan Moayad, un autre effendi, professeur à l'École normale indigène, enseigne l'histoire islamique; il parle d'abondance, sans commenter aucun livre, et ses auditeurs prennent des notes.

REVIEWS.

THE GRACCHI—AND MARIUS.

A History of Rome during the Later Republic and Early Principate. By A. H. J. Greenidge, M.A., D.Litt. Vol. I.: *From the Tribunate of Tiberius Gracchus to the Second Consulship of Marius, B.C. 133-104.* With two Maps. (10s. 6d. net. Methuen.)

Dr. Greenidge presents the first fruits of a prolonged and minute study of the very important period of Roman history extending from the rise of the Gracchi to the accession of Vespasian. The work will be comprised in six volumes of considerable magnitude: the present volume runs to five hundred demy octavo pages. The period and the scale alike recall George Long's "Decline of the Roman Republic," and the first volumes of both histories cover practically the same years. The dry and trenchant style of Long is far removed from the easy, if sometimes rather full, style of Dr. Greenidge; but the new historian is not less alive to the duty of scholarly precision than his able and accomplished predecessor. Dr. Greenidge also takes up a standpoint of wider outlook: he handles with impartial interest not only politics, military history, and legal technicalities, but also social life in the broadest acceptation. While he has steeped his mind in the original authorities, he has brought to the interpretation of the ascertained facts a large breadth of culture and a power of vivid representation in terms that are capable of seizing the modern educated mind. The first instalment assures us that the complete work will be a most valuable contribution to the fuller understanding of the decline of the Roman Republic and the rise and early progress of the Imperial system.

The first chapter reviews at great length (one hundred pages) the social and economic conditions preceding and determining the conflict of interests in the Gracchan period—a very able study, placing systematically and comprehensively before the reader a varied mass of considerations pertinent to the struggle and not elsewhere readily accessible in compact form: the decline of colonization in Italy, the grounds of social discontent, the growth of luxury and the search for means of supporting it or of checking it, the business life of Rome (finance and banking, and the difficulties of the small trader), the economics of agriculture (the newly imported agricultural ideal of the large plantation, or *latifundium*, worked by slave gangs), pastoral brigandage, slave revolts, and the leaven of Hellenic culture working variously throughout a perplexed society. "The men who measured happiness by wealth and empire might still have retained their unshaken confidence in the Fortune of Rome." But—

But there were men in Rome who measured human life by other canons: who believed that the State existed for the individual at least as much as the individual for the State: who, even when they were imperialists, saw with terror the rotten foundations on which the Empire rested, or with indignation the miserable returns that had been made to the men who had bought it with their blood. To them the brilliant present and the glorious future were veiled by a screen that showed the ghastly spectres of commercial imperialism. It showed luxury running riot amongst a nobility already impoverished and ever more thievishly inclined, a colossal capitalism clutching at the land and stretching out its tentacles for every source of profitable trade, the middle class fleeing from the country districts and ousted from their living in the towns, and the fair island that was almost a part of their Italian home, its garden and its granary, in the throes of a great slave war.

Inevitably there occur particular points that are difficult to fit into the general sketch, and even readers that know the period well will hesitate here and there to accept the full scope of Dr. Greenidge's speculations: causes and motives, and economic causes not least of all, unless definitely known, cannot but appeal differently to different minds. But Dr. Greenidge is always suggestive and stimulating, never negligible.

The materials for the period of the Gracchan reforms are incomplete and often refractory, affording scope to the faculty

of historical divination. Dr. Greenidge has surveyed them with indefatigable care, and formed his conclusions patiently and loyally, without straining after any preconceived theory of adjustment. The whole story is worked out in an extremely satisfactory way. In like manner the Jugurthian war is narrated with conspicuous ability. The running footnotes are very useful for reference to the authorities. The contrasts with Mommsen are instructively marked; and, though Dr. Greenidge will not supersede either Mommsen or Long, yet his treatment is so carefully founded on thorough examination of the authorities and so ably and distinctively conducted as to entitle him to independent rank side by side with them. Scholars will pick out occasional oversights, misapprehensions, and speculative adventures; but these are only details, all but inevitable, and perhaps never of essential significance. The volume must find room on the scholar's shelf, as well as in the school library, and all readers will look forward to its successors with expectant interest.

"THE GOLDEN AGE OF HIGHLAND POETRY."

The Literature of the Highlands. By Magnus Maclean, M.A., D.Sc. (7s. 6d. net. Blackie.)

Having treated generally the literature of the Celts in a previous volume that pleased us well, Dr. Maclean now devotes a special volume to "the Gaelic literature of the Highlands after the Forty-Five—the golden age of Highland poetry." The field has been but little cultivated, and naturally invites the labours of the enthusiastic literary Celt. But the Southron, as well as the clansman, and, indeed, all the lovers of poetry and poets, will be much beholden to Dr. Maclean for opening up to readers of English such fresh and interesting vistas of distinctive literary achievement. Very welcome is his lucid and simple presentation of "information from the best available sources regarding the lives of the bards, their choice poems, the charming heritage of hymn and song and proverb peculiar to the Celts of Scotland, translations and translators, travellers and historians." The compilation implies prolonged and insistent labour, and the critical comment is marked by literary as well as by ethnic appreciation. Does the work certify a fresh impulse to the serious study of Gaelic, like the new movement in Irish and Irish literature?

The Gaelic literature appears to have sprung up and developed through centuries in oral tradition without the aid of print, and with but the slightest aid of writing. When Drumossie Moor put an end to the active domestic use of the claymore, and the clansmen had time to bethink them of the arts of peace, the Highlands "had not a single original production of their own in print, if we except a vocabulary compiled by Alexander Macdonald," and "the Gaelic volumes in circulation did not exceed half-a-dozen," consisting of translations of popular religious works—"Knox's Liturgy, the Psalter, Calvin's and the Shorter Catechism, and the Confession of Faith." "Yet, like the winged thing that it actually was," Highland literature "flitted about from glen to strath and strath to island by oral transmission, invading the memory and imagination of the people and stirring their hearts, so that, besides the productions of the popular poets, there was at the time of the last Stuart Rising a large residuum of ancient Ossianic ballads and prose romances circulating freely throughout the Highlands without the intervention of pen or paper, pencil or printing-press."

The themes of the bards, some of the most prominent of whom could neither read nor write, extended quickly beyond the old range of elegies and eulogies and war songs, and the prevalent lyric treatment was applied to every congenial subject. Devotion to the Chief was transmuted into devotion to the Prince, with an independent strain corresponding to the increased distance of the object of loyalty. By the middle of the eighteenth century the bards sang of Nature both in its objective aspects and in its relation to their subjective moods. Ewen Mac-lachlan, as well as James Thomson, celebrated the praises of the circling Seasons. Ardent feeling found vent in love songs, and, touched by religion, passed into hymns. It is indeed singular that the poems of fancy and imagination are but few; less striking is the poverty in philosophic poetry, and the destitution in drama. Prose is of late development: "the most outstanding classical Gaelic prose" is the work of the Rev. Dr. Norman Macleod, father of the more famous Norman of *Good Words*, the Queen's Chaplain. The Ossianic compositions of Macpherson proved a greater source of Celtic inspiration than even the romance of Prince Charlie. There is special interest in Dr. Maclean's brief notice of Jerome Stone, Rector of Dunkeld

Grammar School, who was cut off by fever at the early age of twenty-nine, but had first anticipated Macpherson in drawing attention to the ancient survivals of the Gaelic muse: indeed, "it is almost certain that it was to his initiative that the renowned Badenoch bard owed the knowledge he had, four years later" than the publication of Stone's first translation in the *Scots' Magazine* of 1756, "of the Ossianic fragments." Stone's collection of ancient ballads is preserved in the library of the University of Edinburgh, which has the only Professorship of Gaelic in the three kingdoms—the creation of the enthusiasm of the late Prof. Blackie.

For the detailed handling of the various bards and prose writers we must refer to the volume itself. The chapter on Macpherson shows Dr. Maclean at his best in literary and psychological analysis. The discussion of English renderings of Gaelic poetry tends to excite fresh emulation: "few would ever divine that in the tuneful Gaelic these poems are of the most exquisite order"; and only a small fraction of the whole has been translated. Undoubtedly Dr. Maclean's work will stir interest in the remarkable development of Gaelic literature since the fateful Forty-Five.

FRENCH DRAMA IN ENGLISH DRESS.

Corneille and Racine in England. By Dorothea Frances Canfield. (6s. net. Columbia University Press; Macmillan.)

The volume belongs to the interesting and opportune series of "Studies in Romance Philology and Literature" issued under the auspices of Columbia University. It is "a study of the English translations of the two Corneilles and Racine, with especial reference to their presentation on the English stage"—"an attempt to bring to light a forgotten movement in the literary history of our own language, and a forgotten phase of the renown of Racine and Corneille." The author confines herself rigidly within the limits prescribed, neither digressing into general influences of French drama upon the English stage nor discussing translations that were merely literary exercises. The work bears marks of a post-graduate exercitation: laborious diligence of research, ready and confident (if not always and altogether consistent) delivery of judgment, a certain superior manner of treatment, freedom of style, and sustained briskness of interest. There is considerable scope for difference of opinion, but that is really a very small matter in the circumstances—a piquant incident: the important thing is that the investigation has been carried out with fullness and sincerity, so as to present the subject in an adequate concrete form within manageable compass. We should hardly have ventured to call the movement a "forgotten" one; but the extent to which it may have been forgotten is the measure of Miss Canfield's service in bringing it to mind, and a large expansion of such service is the definite tracing and systematizing of the leading facts, with unwearyed attempts at verification in detail. Students of the period will find the work an attractive and instructive collateral aid, with "considerable of the atmosphere" of the time; and the bibliography appended will guide them to deeper inquiry. When Miss Canfield says that "the severe simplicity of Racine's diction is often replaced by what would be bombast if any one but Otway had written it," we are not to infer that one must know the author before formulating a characterization of his style, but rather to note an ingenuous indication of her kindly appreciation of Otway's genius. An aspiring translator on line-for-line principle may drink in courage from the apparent approval of such enterprising fidelity as a "feat of linguistic ability"; but, when he passes from Rutter's "Cid" to Carlell's "Heracles," he may be daunted to find reference to "rule of thumb," and that, while "every line is complete and every couplet ends a sentence," yet the result is "dryness and jerkiness quite remarkable." Reconciliation may, however, lie in the idiosyncrasies of the particular translator. There are many points of valuable rectification in detail, and many suggestive inquiries, but there is one that we cannot but stickle at. It is a date; and dates are capable of such troublesomeness as nobody but a researcher could ever dream of. Miss Canfield tells us that the date of Rutter's translation of the "Cid" "is given clearly in the British Museum copies as January 26, 1637 (O.S.)"—which seems to accord with Prof. Saintsbury's 1636 (though truly Prof. Saintsbury, albeit a historian of French literature, does not pride himself on such matters). "Now," proceeds Miss Canfield, "the date of the French privilege is given as the 21 Janvier, 1637 (N.S.), while the play was not actually printed until March 23, 1637 (N.S.)." These dates establish the curious

and significant fact that Corneille's epoch-making play was printed in English as soon as in French." Whereupon she develops a very interesting speculation as to the Earl of Dorset's alacrity of attention to theatrical matters in Paris. But, on the contrary, do not the dates plainly show that the English translation appeared in print no less than nine months after the French original, and that "the curious and significant fact" is not a fact at all? However, such occasional points are of no moment in comparison with the substantial investigation worked out with indefatigable labour and invincible geniality. The result does indeed "clearly illustrate the futility of attempts to establish, permanently, artificial standards of beauty." But that result is incidental: so far the investigation is a work of supererogation; its merits lie elsewhere.

ALTERNATING CURRENTS.

A Treatise on the Theory of Alternating Currents. By Alexander Russell, M.A., M.I.E.E. Vol. I. (12s. Cambridge University Press. Cambridge Physical Series.)

The practical electrician of the present day requires to be equipped with a considerable amount of mathematical knowledge. In the early days, when he had to deal only with direct currents, a few simple formulæ representing the laws of Ohm, Joule, &c., were sufficient to carry him through his day's work. But now, when the alternating current occupies so large a part of the field of electrical industry, he can no longer afford to remain ignorant of the far more complicated formulæ upon which calculations of alternating current plant depend. In the present volume Mr. Russell supplies the student with a clear and complete exposition of the mathematical theory of the alternating current and of many of its industrial applications. His methods of treating many of the problems are decidedly novel, and are explained when possible without having recourse to the most general and abstruse equations. The reader is supposed to be familiar with the elementary theory of electricity and magnetism, and to have a working knowledge of trigonometry and of the elements of the calculus. The important magnitudes of inductance and capacity are discussed and explained in the early chapters of the book. The capacities of cables, the theory of the power factor, electric meters and methods of measurement as carried out in the test room, and the problems of two-phase and polyphase currents are all discussed in considerable detail. The method of duality explained in chapter xvii. is a very ingenious and novel application of the mathematical theory of reciprocals to the solution of electrical problems.

In the second volume it is proposed to discuss the theory of alternators, motors, transformers, converters, and the transmission of power by polyphase currents. The treatise, when complete, will be a valuable and creditable addition to the Cambridge Physical Series.

GENERAL NOTICES.

CLASSICS.

Sexti Properti Opera Omnia. With a Commentary. By H. E. Butler, M.A. (8s. 6d. net. Constable.)

Mr. Butler's aim has been "to provide a commentary which should take into account the more recent results of Propertian criticism, and should afford English readers a somewhat fuller guide to this difficult author than has hitherto been available." He has bettered his profession very considerably: the notes are extensive and well considered, and cannot but be extremely serviceable to students. The enterprise is beset with difficulties, and occasional divergence of view should not be allowed to minimize recognition of Mr. Butler's patient and thoughtful labours. The text has been submitted to careful examination, and the critical footnotes are based on the works of Baehrens and Postgate, Mr. Butler agreeing entirely with Prof. Postgate on the question of the relative values of the MSS., but suggesting the greatest caution in the application of the Professor's "heroic remedy" of difficulties by transposition of lines. The introductory account of Propertius and his works is concise and pointed. An able, painstaking, and welcome edition.

Cornelii Taciti Historiarum Liber III. Edited by Walter C. Summers, M.A., Firth Professor of Classics in the University College, Sheffield. (2s. 6d. Cambridge University Press—Pitt Press Series.)

We do not think it worth while to quarrel with Prof. Summers for calling Tacitus "the greatest of Latin prosaists": the opinion rests on grounds that it would be irrelevant to inquire into now, and we prefer to regard it as a sign of the special interest of the commentator. The introduction is divided between compendious and instructive

remarks on the characteristics of Silver Latin and a pointed historical summary of the events narrated in the book in hand. The notes (pages 63-160, including index to notes) are fresh and independent, pithy, and thoroughly well thought out. There is a map of Rome, and a map of Italy mainly illustrative of the march of the Flavian army on Rome. A very able and adequate edition, and sure to be most serviceable to students.

MATHEMATICS.

Elementary Mensuration. By G. T. Chivers. (5s. Longmans.)

Mensuration is less rich in text-books than most branches of elementary mathematics, and Mr. Chivers is probably correct in his estimate of the demand existing for a work such as the present one. Be that as it may, the book is intrinsically good. In order to make it specially helpful to students to whom a knowledge of mensuration is requisite, but who are unacquainted with the calculus, the author has derived the formulæ demonstrated without the help of subjects more advanced than algebra and trigonometry. He discusses very fully the mensuration of plane rectilinear figures and the circle, Simson's rules and how to apply them, the mensuration of solids bounded by plane faces, and so on. A brief preliminary explanation of the essential characteristic of each conic enables the author to give some useful propositions connected with the approximate rectification and quadrature of these curves. The theorems of Guldinus and their relation to the measurement of the surface and volume of a solid of revolution are included, and there are chapters also on the metric system and on specific gravity. For purposes of reference and for the benefit of the advanced student who can supply the proofs from outside reading, a collection of important formulæ depending on the calculus appears in the final chapter of the volume.

Elementary Algebra. Part I. By Chintamani Mukerjee, B.A. (Allahabad: The Indian Press.)

The many good points which characterize the little volume before us will be appreciated wherever it may be employed as a text-book. The theory of the subject is rendered interesting, as well as intelligible, to the beginner, and algebra and arithmetic are carefully compared and contrasted, the study of their mutual relation receiving closer attention than we generally find in books of a similar type. The form in which the little work has been brought out differs in many respects from that of the ordinary English text-book; but it seems probable that the author did not contemplate a wide circulation in this country.

Constructive Geometry. By John G. Kerr, LL.D. (1s. 6d. Blackie.)

Dr. Kerr has arranged an interesting course in geometry suitable for science students in their first year. The work is marked by an individuality for which we seek in vain in so many of the text-books now being produced. It is, in addition, more than usually free from unsatisfactory passages. The course includes most of the subject-matter of the first three books of Euclid, and the pupil's knowledge is obtained chiefly as the result of experiment and the synthesis of observed facts; deductive reasoning is, however, also used. The idea of motion, particularly that of rotary motion, is freely employed in the demonstrations, but we are obliged to confess that this is not always productive of greater simplicity, and that in evading some of the difficulties experienced by the student commencing Euclid the author has introduced others that will probably cause equal trouble. Some of the propositions of Euclid do not form part of the text, but are set as "riders" amongst the numerous exercises. Each chapter closes with a concise summary of its contents and an examination paper. In dealing with the substance of Book II. of the "Elements" Dr. Kerr treats the propositions as geometrical verifications of the corresponding equations in algebra, and he confines himself to the consideration of commensurable magnitudes.

New School Arithmetic. By Charles Pendlebury, M.A., F.R.A.S. assisted by F. E. Robinson, M.A. (Complete with or without Answers, 4s. 6d., or in Two Parts, 2s. 6d. each; Answers separately, 6d. net. George Bell.)

The sixteenth edition of Mr. Pendlebury's well known and deservedly popular treatise on arithmetic forms the basis of the new issue. In the task of revising, enlarging, and rearranging the earlier text, the author has been ably assisted by Mr. F. E. Robinson, M.A. The features which call for special notice in the present volume are the excellent use made of graphical methods in the explanation of rules, the greater prominence assigned to the metric system of weights and measures, the attention devoted to graphs and some of their many applications, the adoption of algebraical symbols where these appear to offer material assistance in simplifying a demonstration, and the introduction of chapters on elementary mensuration and on logarithms. The earlier portions of the complete work have also been published separately as Part I. of the text-book.

SCIENCE.

Electromagnetic Theory of Light. By Charles Emerson Curry, Ph.D. Part I. (12s. net. Macmillan.)

The present volume handles the more familiar phenomena that can be satisfactorily explained by Maxwell's theory, the rest being left over for treatment in a second Part. The introductory chapter puts the

reader in position in a thoroughly businesslike way. Spherical and primary and secondary waves, the interest of which is largely theoretical, are treated at some length in the first four chapters, as "indicating another fertile field of research offered by Maxwell's equations." The remaining chapters are vigorously practical. Dr. Curry's object is "to account for the manifold phenomena of light as electromagnetic phenomena, deriving the same from the fundamental differential equations for electromagnetic disturbances." In treatment he "lays more stress on a rigorous development of the fundamental laws of optics than on the derivation of the many consequences or secondary laws that can be deduced from the former by familiar principles and have little to do with our conception of the nature of light," and, moreover, can be found in ordinary text-books of any considerable compass. The historical sketches introducing each chapter are very welcome, and the well chosen and fairly numerous examples appended to each chapter will be of very real service. The whole work is extremely able, and the exposition is lucid.

Messrs. Grevel issue a third edition, revised and augmented, of Mr. Pattison Muir's translations of the popular lectures on *Chemistry in Daily Life* by Prof. Lassar-Cohn, of the University of Königsberg (5s.). A very able, instructive, and practical exposition, which any intelligent reader can readily follow without special technical knowledge.

Messrs. Warne publish Part I. of "*Wild Flowers, Month by Month*, in their Natural Haunts," by Edward Step, F.L.S. (8d. net.)—flowers of March. The selection is judicious and the description popular without sacrifice of scientific quality. The illustrations from photographs are numerous and good, and the get-up is artistic.

ENGLISH LITERATURE.

Gower: Selections from the Confessio Amantis. Edited by G. C. Macaulay, M.A. (4s. 6d. Clarendon Press.)

On grounds both of literary and of linguistic interest, the work is to be welcomed in supplement of the usual extracts from Chaucer for illustration of the history of our literature and language towards the end of the fourteenth century. The selections exhibit the general plan and framework of the "*Confessio Amantis*," and include some of the more interesting stories. Whether Gower "represents the average literary taste of the time better than Chaucer" is a question that may be left to experts: for school purposes there can be no question of the importance of the wider exemplification he offers. The introduction deals fully and carefully with Gower and his works, Latin as well as English, and provides adequate preliminary explanation of the characteristics of his language (orthography, phonology, inflexion) and of his metre. The Notes and the Glossary will enable a student to make his way through the extracts with intelligence and comfort. Mr. Macaulay has put a great deal of arduous and sincere work into the little volume.

New volumes of "*Heinemann's Favourite Classics*" are three plays of Sheridan (6s. net each): (1) *The Rivals* (with portrait of Downton as Sir Anthony Absolute); (2) *The School for Scandal* (with portrait of Sheridan after Gainsborough's painting); and (3) *The Critic* (with a plate representing King as Puff). Each play is furnished with an introduction by Edmund Gosse.

ENGLISH READERS.

Longmans' British Empire Readers—Introductory (88 pages, 8d.), Books I.-VI. (128, 144, 192, 224, 256, 288 pages; 10d., 1s., 1s. 3d., 1s. 6d., 1s. 8d., 1s. 9d.)—form a new series, with the chief aim of fostering a love of good reading. There are original stories, fairy tales, varied extracts from well known writers for the young and from standard authors in prose and poetry, moral lessons being largely suggested in the earlier volumes. The illustrations, many of them coloured, and nearly all of them specially drawn for the series, are very abundant and exceptionally good. The graduation of the books rests on the interest of the matter rather than on the difficulties of the vocabulary; and, if the principle be granted, the matter is very fairly graduated. The type, paper, and binding are excellent. The series has been very carefully planned and ably executed, and it will undoubtedly prove attractive. The publishers invite teachers to apply for specimen copies.

Steps to Literature (Edward Arnold) is a well selected, carefully graduated, and most attractive series. Book I. (112 pages, 10d.) gives "*Tales of the Home-land*"—folk-tales and fairy-tales, with rhymes and simple verses. Book II. (144 pages, 1s.) presents "*Tales of Many Lands*," with simple rhymes and poems. Book III. (192 pages, 1s. 3d.) contains "*Stories from English and Welsh Literature*," from Bede to Tennyson, with simple poems of high merit. Book III. A (224 pages, 1s. 6d.) gives "*Stories from the Literature of the British Isles*." Book IV. (224 pages, 1s. 6d.) consists of "*Literary Readings relating to the Empire*"—legends and myths of various countries, travel tales of Empire pioneers, literary descriptions of great historical events, and poems relating thereto. Book V. (224 pages, 1s. 6d.) consists of "*Literary Readings relating to Europe*"—tales from the Greek and Latin classics, the Song of Roland, the Nibelungenlied, the Heims-kringla Saga, and other romances, literary extracts relating to the

people or countries of Europe, and English poems with a European background. Book VI. (256 pages, 1s. 6d.) offers "Glimpses of World Literature." The books are all correlated with the "Home and Abroad Geographical Readers." The volumes are beautifully printed and got up, and very liberally and effectively illustrated.

Meiklejohn's Poetry Books—"a new selection"—are, so far, four in number (2d., 3d., 3d., 4d.: Meiklejohn & Holden). The matter is varied and attractive throughout, and sufficiently graduated. The books are well printed and very tastefully got up. The children will read them through and through of their own accord.

FRENCH READERS AND WRITERS.

(1) *A First French Writer*. (2) *A Second Year French Writer*. (3) *A Third Year French Writer*. By G. H. Wade, M.A. (2s. 6d., 3s. 6d., 3s. 6d. Rivingtons.)

Each of the three volumes of the series contains exercises, lessons, and vocabulary. The first volume, while presupposing preliminary or simultaneous study of English grammar and sentence-construction, exercises the pupil carefully and systematically from simple sentences on to continuous prose. The second aims at giving "such a grounding in the uses of the infinitive and of the compound sentence as is required for the writing of continuous prose." The third "is mainly occupied with those idiomatic constructions and terms of phrase which are most commonly required in the writing of French prose"; and special attention is bestowed on connecting particles and prepositions—both difficult and important matters. The "lessons" are all grammatical: they set out the main points very clearly and with full illustration, and they are to be worked in with the exercises. Mr. Wade has evidently been at great pains to select the most suitable matter and to dispose it effectively; and we have no doubt that the volumes will prove eminently successful. They are attractively printed and flexibly and strongly bound.

The Matriculation French Reader, edited by J. A. Perret, Officier d'Académie (2s. 6d., Clive), contains a judicious and ample collection of prose and verse extracts suitable for examinations of the standard of the London University Matriculation. The passages are roughly graduated; and notes and a full vocabulary are appended. A careful and useful compilation.

Mr. W. G. Hartog, B.A., has compiled a substantial and varied volume of *Lectures Scientifiques* (Rivingtons), containing extracts from modern French scientific works in Chemistry, Physics, Mathematics, Physiology, and Botany, with a glossary of technical terms. The book will be especially valuable for students reading for a degree in science at a university (e.g., London) that requires capacity to read with understanding French scientific works. The glossary supplements the ordinary dictionary.

HISTORY.

Wellington, Soldier and Statesman, and the Revival of the Military Power of England. By William O'Connor Morris. (5s. Putnam—Heroes of the Nations Series.)

The late Mr. O'Connor Morris had devoted long and earnest study to the Napoleonic period, and he contributed the "Napoleon" volume to the present series. While he treats the whole range of Wellington's career with ample knowledge and care, he is most at home in discussing disputed questions in the history of the Peninsular and Waterloo campaigns. His views on several points have been challenged by writers of knowledge and ability, but, in view of the elements of doubt, the student should not neglect Mr. O'Connor Morris's arguments and conclusions, grounded as they are upon a very wide acquaintance with the authorities available and upon industrious independent study. The style is engaging; and there are maps of India in 1804, and of Spain and Portugal (illustrating the Peninsular War), together with some 30 welcome illustrations.

The Constitution of the Kingdom of Norway: an Historical and Political Survey. By H. L. Brækstad. (Nutt.)

In view of the constitutional difficulties that have been agitating Norway and Sweden for some time past and have quite recently become acute, Mr. Brækstad's able essay is very welcome. He sketches the constitutional position from the Union of 1814 under Bernadotte (Karl Johan), and he has historical sense enough to present the disputed questions without Norwegian prejudice. An excellent translation of the Norwegian Constitution and of the Act of Union is appended. The volume is nicely printed and attractively got up.

Messrs. Ginn & Co. have just issued a revised edition of *Ancient History*, by Philip van Ness Myers, formerly Professor of History and Political Economy in the University of Cincinnati (7s. 6d.), a very laborious, well balanced, attractively written, and careful work, commencing with the Eastern Empires and reaching down to the restoration of the Roman Empire in the West by Charlemagne. There are 12 plates, 21 coloured maps and 14 sketch maps, and 184 illustrations. The volume is liberally printed and strongly and flexibly bound.

EDUCATION.

Der Säemann, "Monatschrift für pädagogische Reform, herausgegeben von der Hamburger Lehrervereinigung für die Pflege der

künstlerischen Bildung," with the co-operation of numerous well known names throughout Germany (Leipzig: Teubner), has now been running for half a year. It takes a wide range, embracing literary, artistic, and social subjects, as well as purely pedagogic matter, and treating them with much fullness and vigour. The articles are instructive and stimulating, and, if the "Pädagogische Reform" is not pressed very urgently, it may yet follow gradually on persistent discussion. The journal gives good promise of wide usefulness.

We must acknowledge our inability to do justice to the *Museum*, a Polish monthly journal, edited by Dr. Boleslaw Mankowski, and published at Lwow. By a dim rushlight of Russian, we can see that the articles are substantial and handle large questions of immediate interest, and that the abundant news matter keeps readers well informed as to what is doing educationally far and near. Dr. Kazimierz Lutoslawski contributes to a recent number the fullest account of the forthcoming Sanitary Conference in London that we have yet seen anywhere—with special reference to the bearings on schools. The journal is in its twenty-first year, and manifestly thriving and deserving to thrive.

MISCELLANEOUS.

"A Study" of *Chamberlain*, by John M. Robertson, M.A. (6d. Watts), is a cool and remorseless application of the author's historical and political scalpel. It is severely condemnatory, though it cannot be said to be unfairly critical from Mr. Robertson's standpoint.

The *University Correspondence Prospectus*—a handy reprint from the "Calendar," containing particulars as to the courses and books for the London University Examinations of two years ahead—exhibits a large organization that has developed remarkably upon its inherent merits. In 1903-4 the College passed 1,092 students at London University, including 16.9 per cent. of the Matriculation successes (548 out of 3,245). These successes undoubtedly rest on the administrative capacity of the Principal and the academic qualifications and pedagogic experience of the staff. The University Tutorial Press has similarly expanded to large dimensions, providing text-books specially adapted to the various subjects and courses. Our review columns have often testified to their very high level of ability. The College is doing eminently useful work, especially for such of its students as cannot attend either day or evening classes.

The Caledonian Railway Company publish in good time for the summer holidays (1) *Through Scotland*, and (2) *Oban and the Land of the Gael*, excellent descriptive guide-books, by George Eyre-Todd (2d. each). Mr. Eyre-Todd weaves in a good deal of history and romance, and there are capital tour maps and a first-rate general map in (1), and plenty of good illustrations in both; (2) is very daintily got up. And here is also an *Illustrated Official Guide to Hotels and Furnished Lodgings* in all parts served by the Caledonian Railway, with a special map (Glasgow: J. M. Munro, 123 Hope Street).

The Midland Railway Company publishes a capital map, showing primarily their hotels and buffets, and incidentally commercial routes and historical places of importance.

FIRST GLANCES.

MATHEMATICS.

Arithmetic, Advanced. Part I. By the Rev. J. Lightfoot, M.A., D.Sc. 2s. net. Key, 2s. net. Normal Press.

[Examples very abundant. Answers.]

Arithmetic, Methods in. By Geo. R. Purdie, B.A. 1s. 6d. Pitman.

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(Continued on page 270.)

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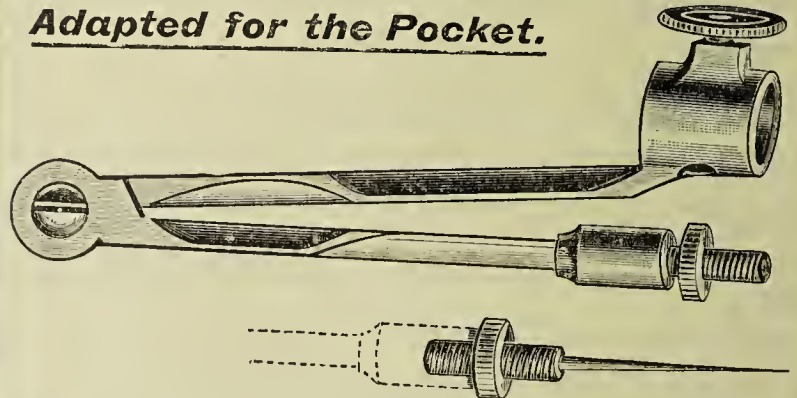
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MATHEMATICS.

15657. (Professor NEUBERG.)—Les diagonales AC, BD d'un quadrilatère ABCD se coupent à angle droit en O. On sait que les projections de O sur les côtés du quadrilatère sont situées sur une même circonférence. Si p est la puissance de O par rapport à cette circonférence et R le rayon, démontrer que

$$1/p = 1/(OA \cdot OC) + 1/(OB \cdot OD),$$

$$4R^2/p^2 = (1/OA - 1/OC)^2 + (1/OB - 1/OD)^2.$$

Solutions (I.) by the PROPOSER; (II.) by C. M. ROSS.

(I.) Soient $(a, 0), (0, b), (a', 0), (0, b')$ les co-ordonnées des points A, B, C, D. Les équations de la droite AB et la perpendiculaire Oa étant $x/a + y/b = 1, y = (a/b)x$, les coordonnées de a sont $x = ab^2/(a^2 + b^2), y = a^2b/(a^2 + b^2)$. Exprimons que ce point est sur la circonférence

$$x^2 + y^2 - 2mx - 2ny + p = 0;$$

on trouve $1 - 2m/a - 2n/b + p(1/a^2 + 1/b^2) = 0$(1).

Par analogie, si β, γ, δ sont sur la même circonférence, on a

$$1 - 2m/a' - 2n/b + p(1/a'^2 + 1/b^2) = 0$$
.....(2),

$$1 - 2m/a' - 2n/b' + p(1/a'^2 + 1/b'^2) = 0$$
.....(3),

$$1 - 2m/a - 2n/b' + p(1/a^2 + 1/b'^2) = 0$$
.....(4).

Ces équations se réduisent à trois, car (1) + (3) = (2) + (4); donc les quatre points $\alpha, \beta, \gamma, \delta$ sont concycliques.

Si l'on soustrait (1) de (2) et de (4), on obtient

$$m = \frac{1}{2}p(1/a + 1/a'), \quad n = \frac{1}{2}p(1/b + 1/b')$$
.....(5).

En portant les valeurs (5) dans (1), il vient $1 - p(1/aa' + 1/bb') = 0$; ce qui démontre la première formule proposée. Ensuite

$$R^2 = m^2 + n^2 - p = \frac{1}{4}p^2 [(1/a + 1/a')^2 + (1/b + 1/b')^2] - p,$$

$$4R^2/p^2 = (1/a + 1/a')^2 + (1/b + 1/b')^2 - 4(1/aa' + 1/bb')$$

$$= (1/a - 1/a')^2 + (1/b - 1/b')^2.$$

Les formules proposées peuvent s'étendre à un octaèdre à trois diagonales rectangulaires concurrentes (*Mathesis*, 1904, p. 258). [Rest in Reprint.]

15752. (Professor M. W. CROFTON, F.R.S.)—Show that $n^n - 1$ is divisible by $4n + 1$ if the latter is a prime number.

Solutions (I.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.;

(II.) by R. W. D. CHRISTIE; (III.) by F. N. MAYERS, M.A.

(I.) This is a known theorem. It may be proved thus, $2^2 \cdot n \equiv -1$, and $2^4 \cdot n \equiv -2^2 \pmod{p}$; therefore

$$(2^4)^{\frac{1}{2}(p-1)} n^{\frac{1}{2}(p-1)} \equiv (-1)^{\frac{1}{2}(p-1)} (2^2)^{\frac{1}{2}(p-1)} \pmod{p}.$$

Herein $2^{p-1} \equiv +1, \frac{1}{2}(p-1) = n$; and $(-1)^{\frac{1}{2}(p-1)}, 2^{\frac{1}{2}(p-1)}$ both $\equiv -1$ when n is odd, and both $\equiv +1$ when n is even; therefore $n^n \equiv 1 \pmod{p}$ always.

(II.) (1) Let n be odd. We have

$$4n \equiv -1 \pmod{4n+1},$$

i.e.,

$$4^n n^n \equiv -1,$$

$$4^n n^{2n} \equiv -n^n \equiv -1 \text{ (hyp.)}.$$

$$4^n \cdot n^{2n} - 4n \equiv 0 \pmod{4n+1};$$

i.e.,

$$4^{n-1} n^{2n-1} \equiv +1 \pmod{4n+1} \text{ (even),}$$

$$4^{n-2} n^{2n-2} \equiv -1 \pmod{4n+1} \text{ (odd),}$$

$$4^n n^{n+1} \equiv -1 \pmod{4n+1} \text{ odd;}$$

$$4^0 n^n \equiv +1$$

or $n^n \equiv +1$ as per hypothesis.

(2) Let n be even

$$4n \equiv -1 \pmod{p},$$

$$4^n n^n \equiv +1 \pmod{p},$$

$$4^n n^{2n} \equiv n^n \equiv +1 \text{ (hyp.)},$$

$$4^{n-1} n^{2n-1} \equiv -1 \text{ (odd),}$$

$$4^{n-2} n^{2n-2} \equiv +1 \text{ (even),}$$

$$4^n n^{n+1} \equiv -1 \text{ odd,}$$

$$n^n \equiv +1, \pmod{4n+1}, \text{ as before.}$$

I may here give an interesting deduction from the working. By Wilson's theorem we have $(4n)! \equiv -1, \pmod{4n+1}$, and $4n \equiv -1$, thus

$$(4n-1)! \equiv 1 \pmod{4n+1},$$

and the above theorem leads to others.

(III.) It is evident that the problem amounts to showing that n is a biquadratic residue of $4n+1$; for, if $n \equiv a^4, n^n \equiv a^{4n} \equiv 1 \pmod{4n+1}$. Or, if we denote $4n+1$ by p ; that $\frac{1}{4}(p-1)$ is a biquadratic residue of p . If we divide the residues of p into four classes A, B, C, D, being respect-

ively of the form $g^{4n}, g^{4n+1}, g^{4n+2}, g^{4n+3}, g$ being a primitive root of p , as is done by Gauss in his *Theoria Residuorum biquadraticorum*, it is evident that class A are all biquadratic residues, class C quadratic residues and biquadratic non-residues, and the other two classes are non-quadratic residues. It is evident that the quotient of any two numbers of the same classes one by the other will be a biquadratic residue, for it will be of the form g^{4l} .

(1) If p is of the form $8n+5$, 2 is a non-residue, and 4 therefore belongs to class C. But -1 , from the well known biquadratic character of -1 , belongs to the same class. For $(-1)^{\frac{1}{4}(p-1)} = -1$; $\frac{1}{4}(p-1)$ being odd. Hence $\frac{1}{4}(p-1)$ belongs to class A.

(2) If p is of the form $8n+1$, both $p-1, (-1)^{\frac{1}{4}(p-1)} = +1, \frac{1}{2}(p-1)$ being even, and 4 belong to class A; for in this case 2 is a quadratic residue; so that in this case $\frac{1}{4}(p-1)$ obviously belongs to class A.

The classes A, B, C, D are defined by Gauss as being such that, if a belongs to the first, second, third, or fourth class, $(a)^{\frac{1}{4}(p-1)}$ will be congruent to 1, $f, -1, -f$ respectively; these four quantities being the four roots of $a^4 \equiv 1 \pmod{p}$.

9749. (Professor CATALAN.)—ABC étant un triangle donné, soit D le point de contact avec BC du cercle inscrit I. On projette les sommets B, C en E, F sur la bissectrice AO; puis l'on construit les parallélogrammes DEBG, DFCH. Cela posé (1) les points B, G, C, H appartiennent à une circonférence; (2) le centre de cette circonférence et le centre I du cercle inscrit sont également distants du côté BC.

Solutions (I.) by R. F. DAVIS, M.A., and J. A. H. JOHNSTON, M.A.; (II.) by Professor SANJANA, M.A., and Rev. R. A. THOMAS, M.A.; (III.) by T. DENNIS.

(I.) By construction, GD is parallel to BE, and is therefore perpendicular to AO. Similarly, HD is perpendicular to AO; and G, D, H are collinear. Since BEDI is cyclic,

$$\angle BDE = \angle BIE = \frac{1}{2}(A+B)$$

$$= \frac{1}{2}(\pi - C),$$

or DE is perpendicular to IC. Similarly, DF is perpendicular to IB.

$$\angle GBC = \angle BDE = \angle CID = \angle CFD$$

(since CIFD is cyclic)

$$= \angle GHC;$$

thus BGCH is cyclic.

Let CI meet GH in J, and the perpendicular from G on BC in K. Since D is the orthocentre of the triangle IEL, ID is perpendicular to EL. Therefore EL is parallel to BC and BDLK is a parallelogram, so that DL = BE = GK, and KG is consequently = 2ID. Now in the triangle GBC the distance of the circum-centre from the base BC is half the distance of the orthocentre K from the vertex G; that is, = ID.

(II.) As BE, CF are parallel, DG, DH are in a straight line, and

$$DG \cdot DH = BE \cdot CF = bc \sin^2 \frac{1}{2}A = (s-b)(s-c) = BD \cdot DC;$$

so that B, G, C, H are concyclic. Again $\angle BDI = \angle BEI$; therefore $\angle BDE = \angle BIE$; thus $\angle GBC = \angle BDE = 90^\circ - \frac{1}{2}C$. Hence the radius (ρ) of the circle BGCH = $GC/(2 \sin GBC) = GC/(2 \cos \frac{1}{2}C)$; so that

$$4\rho^2 \cos^2 \frac{1}{2}C = GC^2 = GD^2 + DC^2 + 2GD \cdot DC \cos GDB$$

$$= c^2 \sin^2 \frac{1}{2}A + (s-c)^2 + 2c(s-c) \sin \frac{1}{2}A \cos \frac{1}{2}(C-B).$$

Employing the formulæ $r \cos \frac{1}{2}C = (s-c) \sin \frac{1}{2}C = c \sin \frac{1}{2}A \sin \frac{1}{2}B$, we get

$$\frac{r^2 \cos^2 \frac{1}{2}C}{\sin^2 \frac{1}{2}B} + \frac{r^2 \cos^2 \frac{1}{2}C}{\sin^2 \frac{1}{2}C} + 2 \frac{r^2 \cos^2 \frac{1}{2}C}{\sin \frac{1}{2}B \sin \frac{1}{2}C} \cos \frac{1}{2}(C-B)$$

$$= \frac{r^2 \cos^2 \frac{1}{2}C}{\sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C} [\sin^2 \frac{1}{2}C + \sin^2 \frac{1}{2}B$$

$$+ 2 \sin \frac{1}{2}B \sin \frac{1}{2}C (\cos \frac{1}{2}C \cos \frac{1}{2}B + \sin \frac{1}{2}C \sin \frac{1}{2}B)]$$

$$= \frac{r^2 \cos^2 \frac{1}{2}C}{\sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C} (\sin^2 \frac{1}{2}C - \sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C + \sin^2 \frac{1}{2}B - \sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C$$

$$+ 2 \sin \frac{1}{2}B \sin \frac{1}{2}C \cos \frac{1}{2}C \cos \frac{1}{2}B + 4 \sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C).$$

$$= \frac{r^2 \cos^2 \frac{1}{2}C}{\sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C} [(\sin \frac{1}{2}C \cos \frac{1}{2}B + \cos \frac{1}{2}C \sin \frac{1}{2}B)^2 + 4 \sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C]$$

$$= \frac{r^2 \cos^2 \frac{1}{2}C \cos^2 A}{\sin^2 \frac{1}{2}B \sin^2 \frac{1}{2}C} + 4r^2 \cos^2 \frac{1}{2}C.$$

Thus, finally, $4\rho^2 = a^2 + 4r^2$; therefore $\rho^2 = r^2 + (\frac{1}{2}a)^2$. As the centre is in the perpendicular bisector of BC, we see that its distance from BC equals r , i.e., ID. [Rest in Reprint.]

15704. (R. F. WHITEHEAD, B.A.)—Expand $\theta/\sin \theta$ in ascending powers of $\cos \theta$.

Solution by the PROPOSER.

$$\frac{\theta}{\sin \theta} = \int_0^{\frac{1}{2}\pi} \frac{dx}{1 + \cos \theta \cos x} = \int_0^{\frac{1}{2}\pi} dx (1 - \cos \theta \cos x + \cos^2 \theta \cos^2 x - \dots)$$

$$= \frac{1}{2}\pi \left(1 + \frac{1}{2} \cos^2 \theta + \frac{1 \cdot 3}{2 \cdot 4} \cos^4 \theta + \dots \right) - \left(\cos \theta + \frac{2}{3} \cos^3 \theta + \frac{2 \cdot 4}{3 \cdot 5} \cos^5 \theta + \dots \right).$$

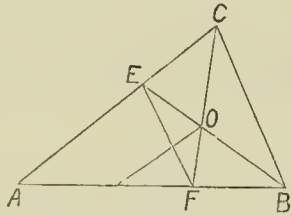
15105. (SARODA PRASAD BAUERJEE.)—From a point O, taken at random in a triangle ABC, the lines BO and CO are drawn to meet the opposite sides in E and F. Find the mean area of the circle circumscribed about AEF.

Solution by the PROPOSER.

Let us take AB and AC for the axes of x and y ; and, as usual, let $AB = c$ and $AC = b$. If x', y' be the co-ordinates of O, the equation of COF, which joins $(0, b)$ and (x', y') , is

$$x(y' - b) - x'y + bx' = 0.$$

Putting $y = 0$, we get $AF = \frac{bx'}{b - y'}$.



Similarly, $AE = \frac{cy'}{c - x'}$. Now,

$$EF^2 = AF^2 + AE^2 - 2AF \cdot AE \cos A$$

$$= \frac{b^2 x'^2}{(b - y')^2} + \frac{c^2 y'^2}{(c - x')^2} - 2bc \cos A \frac{x'y'}{(c - x')(b - y')}.$$

And, if R be the radius of the circle circumscribed about AEF, and S its area, we have $R = EF/(2 \sin A)$. Therefore

$$S = \pi R^2 = \frac{\pi}{4 \sin^2 A} EF^2.$$

Hence

$$M(S) = \frac{1}{\Delta ABC} \frac{\pi}{4 \sin^2 A} \times \iint \left\{ \frac{b^2 x'^2}{(b - y')^2} + \frac{c^2 y'^2}{(c - x')^2} - 2bc \cos A \frac{x'y'}{(c - x')(b - y')} \right\} \sin A dx' dy'$$

$$= \frac{\pi}{2bc \sin^2 A} \iint \left\{ \frac{b^2 x'^2}{(b - y')^2} + \frac{c^2 y'^2}{(c - x')^2} - 2bc \cos A \frac{x'y'}{(c - x')(b - y')} \right\} dx' dy'.$$

Now, since the integral is to extend over the entire area of the triangle ABC, the limits of y' are from 0 to $b(1 - x'/c)$, and that of x' from 0 to c . Transforming the integral by putting $x' = cu$ and $y' = bv$, we get $dx' dy' = bc du dv$, and the limits of v are from 0 to $1 - u$ and those of u from 0 to 1. Hence

$$M(S) = \frac{\pi}{2 \sin^2 A} \int_0^1 \int_0^{1-u} \left\{ \frac{c^2 u^2}{(1-v)^2} + \frac{b^2 v^2}{(1-u)^2} - 2bc \cos A \frac{uv}{(1-u)(1-v)} \right\} du dv$$

$$= \frac{\pi}{2 \sin^2 A} \left\{ c^2 \int_0^1 \int_0^{1-u} \frac{u^2 du dv}{(1-v)^2} + b^2 \int_0^1 \int_0^{1-u} \frac{v^2 du dv}{(1-u)^2} - bc \cos A \int_0^1 \int_0^{1-u} \frac{2uv du dv}{(1-u)(1-v)} \right\}.$$

Now the first two integrals can easily be seen to be each equal to $\frac{1}{6}$. The last integral, namely,

$$\int_0^1 \int_0^{1-u} \frac{2uv du dv}{(1-u)(1-v)} = \int_0^1 \frac{2u du}{1-u} \int_0^{1-u} \frac{v dv}{1-v} = \int_0^1 \frac{2u du}{1-u} \int_0^{1-u} \left(\frac{dv}{1-v} - dv \right)$$

$$= \int_0^1 (u-1) \log u \frac{2u du}{1-u} = - \int_0^1 2u du - 2 \int_0^1 \frac{u \log u}{1-u} du$$

$$= -1 - 2 \int_0^1 \frac{1 - (1-u)}{1-u} \log u du$$

$$= -1 - 2 \int_0^1 \frac{\log u du}{1-u} + 2 \int_0^1 \log u du$$

$$= -1 + 2 \cdot \frac{1}{6} \pi^2 - 2 = \frac{1}{3} \pi^2 - 3.$$

Hence $M(S) = \frac{\pi}{2 \sin^2 A} \left\{ \frac{1}{6} b^2 + \frac{1}{6} c^2 - bc \cos A \left(\frac{1}{3} \pi^2 - 3 \right) \right\}$

$$= \frac{\pi}{12 \sin^2 A} \left\{ b^2 + c^2 - 2bc \cos A (\pi^2 - 9) \right\}.$$

15699. (JAMES BLAIKIE, M.A.)—Prove that $m^{2n+1} + (m-1)^{n+2}$ is a multiple of $m^2 - m + 1$. [E.g., $1000^{12} + 999^9 = M(999001)$.]

Additional Solution by R. W. D. CHRISTIE.

We have $(m+1)(m^2 - m + 1) = m^3 + 1 = 0 \pmod{m^2 - m + 1}$; therefore $m^{2n+1} (m^3 + 1) = m^{2n+1} + m^{2n+1} = 0 \pmod{m^2 - m + 1}$ (1). Again $m^2 = (m-1) \pmod{m^2 - m + 1}$; thus $m^{2n+1} = (m-1)^{n+2} \pmod{m^2 - m + 1}$ (2); therefore (1) becomes $(m-1)^{n+2} + m^{2n+1} = 0 \pmod{m^2 - m + 1}$. Similarly its cognate $m^{2n-1} \mp (m+1)^{n+2} = 0 \pmod{m^2 + m + 1}$, the sign plus or minus according as n is odd or even.

15724. (S. C. BAGCHI, B.A.)—The transformation

$$\xi = \alpha x + \beta y, \quad \eta = \gamma x + \delta y$$

makes a point (ξ, η) on the curve c_2 correspond to a point (x, y) on the curve c_1 . If $\alpha\delta - \beta\gamma = \pm 1$, show that, when c_1 satisfies $\phi(p^2\rho) = 0$, c_2 will satisfy the same functional equation, where ρ is the radius of curvature at a point and p is the distance of the tangent at that point from the origin.

Solution by the PROPOSER.

The correspondence is obtained by linear substitutions for ξ and η . The operators of the first and second degree are respectively

$$\alpha (\partial/\partial \xi) + \beta (\partial/\partial \eta), \dots \text{ and } \alpha^2 (\partial^2/\partial \xi^2) + 2\alpha\beta (\partial^2/\partial \xi \partial \eta) + \beta^2 (\partial^2/\partial \eta^2), \dots$$

Now on making these operators perform their functions on the given form it is at once found that the new shape of $\phi(p^2\rho) = 0$ differs from the original by the presence of the extraneous factor $(\alpha\delta - \beta\gamma)^2$. Therefore the given theorem follows.

15739. (Professor SANJANA, M.A.)—Evaluate

$$\left[(\tanh ax)^{-2} - (ax - \frac{1}{3} a^3 x^3)^{-2} \right] / x^2$$

when $x = 0$.

Solution by C. M. ROSS.

$$\tanh ax = (\epsilon^{ax} - \epsilon^{-ax}) / (\epsilon^{ax} + \epsilon^{-ax}) = ax \left(1 + \frac{a^2 x^2}{3!} + \dots \right) / \left(1 + \frac{a^2 x^2}{2!} + \dots \right).$$

Hence expression becomes

$$\left[\left(1 + \frac{a^2 x^2}{2!} + \dots \right)^2 \left(1 + \frac{a^2 x^2}{3!} + \dots \right)^{-2} \right] / a^2 x^2 - \left[1 - \frac{1}{3} a^2 x^2 \right]^{-2} / a^2 x^2$$

$$= \left\{ \left(1 + \frac{2a^2 x^2}{2!} + \frac{2a^4 x^4}{4!} + \dots \right) \left(1 - \frac{2a^2 x^2}{3!} - \frac{2a^4 x^4}{5!} + \dots \right) \right\} / a^2 x^2$$

$$- \left(1 + \frac{2}{3} a^2 x^2 + \dots \right) / a^2 x^2$$

$$= \left\{ -a^2 x^2 \left(\frac{2}{3!} - \frac{2}{2!} + \frac{2}{3} \right) - \left(\frac{2}{5!} + \frac{4}{2!3!} - \frac{2}{4!} + \dots \right) a^4 x^4 \right\} / a^2 x^4$$

$$= - \left(\frac{2}{5!} + \frac{4}{2!3!} - \frac{2}{4!} \right) a^2 + \text{higher powers of } x^2 \dots = -\frac{4}{15} a^2,$$

since higher powers of x^2 vanish in the limit.

15693. (Professor NANSON.)—If a fixed straight line cut one of a series of concentric similar and similarly situated conics at angles θ, ϕ , the length of the intercepted chord varies inversely as $\cot \theta + \cot \phi$.

Solution by Professor SANJANA, M.A.

The conics will be represented by $x^2/a^2 + y^2/a^2 k^2 = 1$, where a is variable and k is constant ($= 1 - e^2$). Let the extremities of the chord in any one conic have eccentric angles α and β . The tangents at these points are $x \cos \alpha/a + y \sin \alpha/ak = 1$, $x \cos \beta/a + y \sin \beta/ak = 1$, and the chord is $x \cos \frac{1}{2}(\alpha + \beta)/a + y \sin \frac{1}{2}(\alpha + \beta)/ak = \cos \frac{1}{2}(\alpha - \beta)$. Hence $\cot \theta$ is

$$\frac{[1 + k^2 \cot \alpha \cot \frac{1}{2}(\alpha + \beta)] / [k \cot \frac{1}{2}(\alpha + \beta) - k \cot \alpha]}{[\sin \alpha \sin \frac{1}{2}(\alpha + \beta) + k^2 \cos \alpha \cos \frac{1}{2}(\alpha + \beta)] / [k \sin \frac{1}{2}(\alpha - \beta)]};$$

so $\cot \phi = \sin \beta \sin \frac{1}{2}(\alpha + \beta) + k^2 \cos \beta \cos \frac{1}{2}(\alpha + \beta) / [k \sin \frac{1}{2}(\alpha - \beta)]$.

Thus

$$\cot \theta + \cot \phi = [\sin \frac{1}{2}(\alpha + \beta) (\sin \alpha + \sin \beta) + k^2 \cos \frac{1}{2}(\alpha + \beta) (\cos \alpha + \cos \beta)] / [k \sin \frac{1}{2}(\alpha - \beta)]$$

$$= 2 \cos \frac{1}{2}(\alpha - \beta) [\sin^2 \frac{1}{2}(\alpha + \beta) + k^2 \cos^2 \frac{1}{2}(\alpha + \beta)] / [k \sin \frac{1}{2}(\alpha - \beta)];$$

also the square of L, the length of the chord, is

$$a^2 (\cos \alpha - \cos \beta)^2 + a^2 k^2 (\sin \alpha - \sin \beta)^2$$

$$= 4a^2 \sin^2 \frac{1}{2}(\alpha - \beta) [\sin^2 \frac{1}{2}(\alpha + \beta) + k^2 \cos^2 \frac{1}{2}(\alpha + \beta)].$$

Therefore

$$L^2 (\cot \theta + \cot \phi)^2 = 16a^2 \cos^2 \frac{1}{2}(\alpha - \beta) [\sin^2 \frac{1}{2}(\alpha + \beta) + k^2 \cos^2 \frac{1}{2}(\alpha + \beta)]^3 / k^2.$$

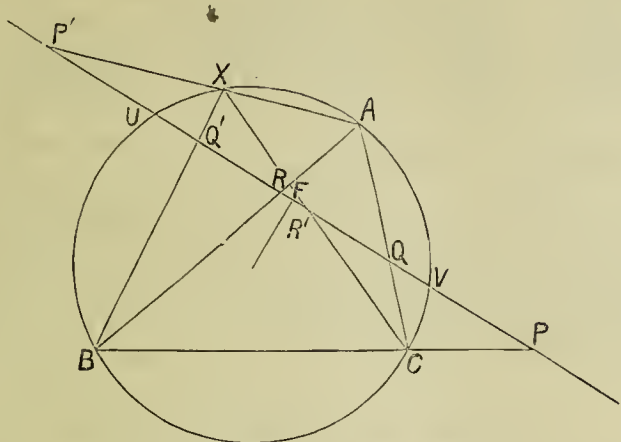
Now, as the chord is a fixed straight line, the ratios of the coefficients in its equation are fixed; so that $k \cot \frac{1}{2}(\alpha + \beta)$ and $ak \cos \frac{1}{2}(\alpha - \beta) / \sin \frac{1}{2}(\alpha + \beta)$ are fixed. From the former we get $\frac{1}{2}(\alpha + \beta)$ constant, and then the latter gives $a \cos \frac{1}{2}(\alpha - \beta)$ also constant. Thus $L^2 (\cot \theta + \cot \phi)^2$ is fixed, and therefore L varies inversely as $\cot \theta + \cot \phi$.

15730. (JAMES BLAIKIE, M.A.)—ABC is a triangle of which O is the circum-centre, and BC, CA, AB meet a given straight line in P, Q, R; F' is the foot of the perpendicular from O to the given line; and P', Q', R' are points in the line such that F is the mid-point of PP', QQ', RR'. Prove that AP', BQ', CR' meet in a point on the circum-circle of ABC.

Another Solution by Professor SANJANA, M.A.

Since F is the mid-point of UV, P and P' are isotomically conjugate to U and V; so are Q and Q', R and R'. Hence AP', BQ', CR' are concurrent. (See Question 14233, Reprint, Vol. LXXV., p. 28.) Again (PP', QQ', RR') is an involution of which U and V, F and ∞ ,

are conjugate points: hence, the connectors of the quadrilateral ACBX



and the circle ACB cut the line UV in eight points in involution. Thus X also lies upon the circle. (Converse of § 273, Lachlan, *Modern Pure Geometry*.)

The PROPOSER wishes to point out that this is the more general theorem of which Question 15691 is a particular case.

[N.B.—For solution by the PROPOSER of the present problem, see *Reprint*, Vol. VIII., N.S., p. 76 (now in press).]

15747. (J. L. S. HATTON.)—If

$$ax^2 + by^2 + cz^2 + 2hxy + 2gzx + 2fyz = 0$$

be the general equation of the second degree in trilinear co-ordinates, show that the necessary and sufficient condition that it should represent a circle is

$$(a + b + c - 2h \cos C - 2g \cos B - 2f \cos A)^2 + 4 \begin{vmatrix} a & h & g & \sin A \\ h & b & f & \sin B \\ g & f & c & \sin C \\ \sin A & \sin B & \sin C & 0 \end{vmatrix} = 0.$$

Solutions (I.) by J. A. H. JOHNSTON, M.A.;

(II.) by Professor SANJANA, M.A.; (III.) by C. M. ROSS.

(I.) The necessary and sufficient condition for a circle in Cartesian is that $(a-b)^2 + 4h^2 = 0$, implying $a = b$ and $h = 0$. This may be written

$$(a+b)^2 + 4(h^2 - ab) = 0 \dots\dots\dots(i).$$

Now $(a+b)$ and $(ab-h^2)$ for all linear transformations have associated invariable forms, e.g., it

$$X = x \cos \phi + y \sin \phi - p_1, \quad Y = x \cos \chi + y \sin \chi - p_2, \\ Z = x \cos \psi + y \sin \psi - p_3,$$

and if these values be substituted in the general equation

$$aX^2 + bY^2 + cZ^2 + 2fYZ + 2gZX + 2hXY = 0,$$

it is at once demonstrable that $(a+b)$ transforms into

$$(a + b + c - 2f \cos A - 2g \cos B - 2h \cos C),$$

and $(ab-h^2)$ into $A \sin^2 A + B \sin^2 B + C \sin^2 C + 2F \sin B \sin C$

$$+ 2G \sin C \sin A + 2H \sin A \sin B,$$

where

$$\chi - \psi = 180^\circ - A, \text{ \&c.}$$

The condition for a circle in trilinears may therefore be written by (i.),

$$(a + b + c - 2f \cos A - 2g \cos B - 2h \cos C)^2 - 4(A \sin^2 A + \dots) = 0,$$

which is the required result.

This result is given in Salmon's *Conic Sections*, p. 352, sixth edition, and proved in another way. [Rest in *Reprint*.]

15756. (Professor NEUBERG.)—Trouver $\int_0^1 \cos x \cos 2x \cos 3x \cos 4x \, dx$.

Solution by C. M. ROSS.

$$\cos x \cos 2x \cos 3x \cos 4x = \frac{1}{4}(\cos 4x + \cos 2x)(\cos 6x + \cos 2x) \\ = \frac{1}{4}(\cos 4x \cos 6x + \cos 2x \cos 4x + \cos 2x \cos 6x + \cos^2 2x) \\ = \frac{1}{8}(1 + 2 \cos 2x + 2 \cos 4x + \cos 6x + \cos 8x + \cos 10x).$$

Hence

$$\int \cos x \cos 2x \cos 3x \cos 4x \, dx \\ = \frac{1}{8} \int dx + \frac{1}{4} \int \cos 2x \, dx + \frac{1}{4} \int \cos 4x \, dx + \frac{1}{8} \int \cos 6x \, dx + \frac{1}{8} \int \cos 8x \, dx + \frac{1}{8} \int \cos 10x \, dx \\ = \frac{1}{8}x + \frac{1}{16} \sin 2x + \frac{1}{32} \sin 4x + \frac{1}{48} \sin 6x + \frac{1}{64} \sin 8x + \frac{1}{80} \sin 10x.$$

Hence, between the given limits, expression on the dexter becomes .1998.

N.B.—The angles are taken to be in radian measure.

The Integration of $\int \frac{dx}{a \sec x + b \operatorname{cosec} x}$.

By GEORGE SCOTT, M.A.

$$\int \frac{dx}{a \sec x + b \operatorname{cosec} x} = \int \frac{\sin x \cos x \, dx}{a \sin x + b \cos x} = f(x).$$

Put $a = r \cos \alpha$, $b = r \sin \alpha$; then

$$f(x) = \frac{1}{r} \int \frac{\sin x \cos x \, dx}{\sin(x+\alpha)}$$

$$[\sin(x+\alpha) + \sin(x-\alpha)][\sin(x+\alpha) - \sin(x-\alpha)] = 4 \sin \alpha \cos \alpha \sin x \cos x,$$

or
$$\sin x \cos x = \frac{\sin^2(x+\alpha) - \sin^2(x-\alpha)}{2 \sin 2\alpha}.$$

Hence
$$f(x) = \frac{1}{2r \sin 2\alpha} \left[\int \sin(x+\alpha) \, dx - \int \frac{\sin^2(x-\alpha) \, dx}{\sin(x+\alpha)} \right],$$

$$\sin(x-\alpha) = \sin[(x+\alpha) - 2\alpha] = \sin(x+\alpha) \cos 2\alpha - \sin 2\alpha \cos(x+\alpha);$$

therefore

$$\int \frac{\sin^2(x-\alpha) \, dx}{\sin(x+\alpha)} \\ = \int \left\{ \cos^2 2\alpha \sin(x+\alpha) - \sin 4\alpha \cos(x+\alpha) + \frac{[1 - \sin^2(x+\alpha)] \sin^2 2\alpha}{\sin(x+\alpha)} \right\} dx$$

$$= \int \left[\cos 4\alpha \sin(x+\alpha) - \sin 4\alpha \cos(x+\alpha) + \frac{\sin^2 2\alpha}{\sin(x+\alpha)} \right] dx$$

or
$$= \int \left[\sin(x-3\alpha) + \frac{\sin^2 2\alpha}{\sin(x+\alpha)} \right] dx;$$

therefore

$$f(x) = \frac{1}{2r \sin 2\alpha} \left[\int \sin(x+\alpha) \, dx - \int \sin(x-3\alpha) \, dx - \sin^2 2\alpha \int \frac{dx}{\sin(x+\alpha)} \right]$$

or

$$f(x) = \frac{1}{2r \sin 2\alpha} [\cos(x-3\alpha) - \cos(x+\alpha) - \sin^2 2\alpha \log \tan \frac{1}{2}(x+\alpha)] \\ = 1/r [\sin(x-\alpha) - \sin 2\alpha \log \tan^{\frac{1}{2}} \frac{1}{2}(x+\alpha)].$$

where $r = \sqrt{a^2 + b^2}$, $\alpha = \tan^{-1}(b/a)$.

10582. (R. KNOWLES, B.A.)—The equation to a conic referred to a tangent and normal as axes being $ax^2 + bxy + cy^2 + gy = 0$, prove that, c being the eccentricity, the equation to its transverse axis is

$$[4a(a+c) - (2-c^2)(b^2-4ac)]x + 2b(a+c)y + bg(2-c^2) = 0.$$

[N.B.—For (b^2-4ac) read $(4ac-b^2)$.—ED.]

Another Solution by W. F. BEARD, M.A.

Let the equation of a conic referred to its centre be $ax^2 + 2hxy + by^2 = 1$; let e be its eccentricity; then

$$(e^2 - 1)/(2 - e^2)^2 = (h^2 - \alpha\beta)/(\alpha + \beta)^2 \dots\dots\dots(1).$$

Also the lengths and equations of the axes are given by

$$1/r^4 - (\alpha + \beta)/r^2 + \alpha\beta - h^2 = 0 \text{ and } (\alpha - 1/r^2)x + hy = 0 \dots(2), (3)$$

(see Smith's *Conics*). From (1) and (2),

$$1/r^4 - (\alpha + \beta)/r^2 + [(1 - e^2)(\alpha + \beta)]/(2 - e^2)^2 = 0;$$

therefore $1/r^2 = (\alpha + \beta)/(2 - e^2)$ or $[(1 - e^2)(\alpha + \beta)]/(2 - e^2)^2$.

The second value is easily seen to give the transverse axis. Thus its equation is, from (3), $\{\alpha - [(1 - e^2)(\alpha + \beta)]/(2 - e^2)\}x + hy = 0$; or, from (1), $[\alpha(\alpha + \beta) - (2 - e^2)(\alpha\beta - h^2)]x + h(\alpha + \beta)y = 0$. The equation of the given conic referred to its centre is $ax^2 + bxy + cy^2 = 2ag^2/(4ac - b^2)$, and the co-ordinates of its centre are $bg/(4ac - b^2)$, $-2ag/(4ac - b^2)$. Thus the equation of its transverse axis is

$$[4a(a+c) - (2 - e^2)(4ac - b^2)]x - bg/(4ac - b^2) \\ + 2b(a+c)[y + 2ag/(4ac - b^2)] = 0 \\ \text{or } [4a(a+c) - (2 - e^2)(4ac - b^2)]x + 2b(a+c)y + bg(2 - e^2) = 0.$$

QUESTIONS FOR SOLUTION.

15786. (I. ARNOLD.)—An equilateral triangle ABC is suspended at A and its side is kept vertical by a ring at B. It is required to find what the angular velocity of the triangle round AB must be in order that there may be no pressure at B.

15787. (W. J. DOBBS, M.A.)—Show how to resolve a given force into three forces of given magnitudes acting respectively through three given points situated in one plane with the line of action of the given force.

15788. (R. CHARTRES.)—Evaluate $\int_0^\beta \log \cos x \, dx$, β being not greater than $\frac{1}{2}\pi$.

15789. (Lt.-Col. ALLAN CUNNINGHAM, R.E.) [Suggested by Question 15734.]—Find perfect square numbers, each containing all the 10 digits, under the following conditions:—

- (1) The least square possible.
- (2) The greatest square containing no repeated digit.
- (3) The least square which, when reversed, is still a square.
- (4) The least square which is unaltered by reversal.

15790. (Professor SANJANA, M.A.)—Resolve into prime factors (or at least into six factors) the numbers $6^{42} + 1$ and $24^{20} + 1$.

15791. (A. H. BELL.)—When is a triangular number a pentagonal number? Required, a general solution with examples.

15792. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Sum to n terms the series $1 + 24 + 162 + 640 + 1875 + \dots$

15793. (Professor NANSON.)—Eliminate x, y, z, x', y', z' from

$lx + my + nz = 0, \quad lx' + my' + nz' = 0;$

$(abcfgh)(xyz)^2 = 0, \quad (abcfgh)(x'y'z')^2 = 0, \quad (abcfgh)(xyz)(x'y'z') = 0.$

15794. (ROBERT W. D. CHRISTIE.)—Where p_n, q_n are any convergents of $p_n^2 - 2q_n^2 = \pm 1$, prove

$2 \tan^{-1} q_n/q_{n+1} \pm \tan^{-1} 1/p_{2n+1} = \tan^{-1} 1 = \frac{1}{2}\pi \dots\dots\dots (1),$

$2 \tan^{-1} p_n/p_{n+1} \mp \tan^{-1} 1/p_{2n+1} = \tan^{-1} 1 = \frac{1}{2}\pi \dots\dots\dots (2);$

and show that Euler's and Machin's series are simple cases (signs alternate).

15795. (S. C. BAGCHI, B.A.)—The picture of a system of latitude and longitude obtained by orthogonal projection on one of the polar-tangent planes is the same as that (on any plane) obtained by inversions from properly chosen centres.

15796. (C. E. YOUNGMAN, M.A.)—With four given concyclic points as foci, two circular cubics are drawn. Prove that their asymptotes coincide with the axes of the parabolas determined by the four points.

15797. (Communicated by M. V. A. SASTRY, B.A.)—If n_1, n_2, n_3, n_4 be the lengths of the four normals and t_1, t_2, t_3 the lengths of the three tangents drawn from any point to a semi-cubical parabola $ay^2 = x^3$, then will $27n_1n_2n_3n_4 = at_1t_2t_3$. [An elegant solution wanted.]

15798. (H. J. RAYMOND.)—Determine, by a purely geometrical construction, using straight lines and circles only, the straight line common bisector of the areas of any two triangles lying in the same plane.

15799. (D. BIDDLE.)—From a point A on the circumference of a given circle, a straight line of a diameter's length is drawn in any direction in the same plane. (1) Find, on the circumference, another point P such that a straight line drawn from it through the centre shall meet the given line in X, making $AX = AP$. (2) Find the locus of X.

15800. (R. F. DAVIS, M.A.)—Prove that the semi-axes of the ellipse which is inscribed in the triangle of reference and has for its centre the point whose trilinear co-ordinates are a, β, γ are determined by the equation $a\sqrt{(a^2 - \rho^2)} + b\sqrt{(\beta^2 - \rho^2)} + c\sqrt{(\gamma^2 - \rho^2)} = 0$.

15801. (W. F. BEARD, M.A.)—P is a point on an ellipse; PM, PN are drawn perpendicular to the directrix and axis; CK is drawn parallel to SP to meet the normal at P in K. Prove that KN, SM are parallel.

15802. (Communicated by JAMES BLAIKIE, M.A.)—Étant donnés deux points A et B, on prend les points I et I' qui partagent le segment AB dans un rapport donné a/β et l'on considère toutes les droites D telles que le rapport de leurs distances aux points A et B soit égal à a/β . Démontrer que les plans ID et I'D sont rectangulaires. En conclure:— (1) que les droites D qui passent par un point fixe S engendrent un cône dont les sections circulaires sont perpendiculaires aux droites SI et SI'; (2) que les droites D qui sont situées dans un plan Π enveloppent une conique ayant pour foyers les projections des points I et I' sur le plan Π . Indiquer ce qui arrive lorsque le point S est situé sur la sphère qui a pour diamètre II' ou lorsque le plan Π est tangent à cette sphère. (See Guichard, Compléments de Géométrie.)

15803. (Professor NEUBERG.)—ABCD étant un rectangle donné, trouver sur le côté AD un point X tel que les volumes engendrés par le triangle ABX et le trapèze BCDX tournant autour de la droite BX aient un rapport donné K.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10819. (W. J. GREENSTREET, M.A.)—Show how to find the meridian altitude of the Sun when an observation precisely on the meridian cannot be had.

12057. (Professor RAMASWAMI AIYAR.)—Prove that a harmonic polygon can be inverted into one having any assigned point (within the circum-circle) for its symmedian point.

12070. (R. TUCKER, M.A.)—The polars of A, B, C with respect to the Brocard circle intersect in l, m, n . Show that Al, Bm, Cn meet in a point whose polar with respect to the same circle is

$a/a^3 + \beta/\beta^3 + \gamma/\gamma^3 = 0 \dots\dots\dots (1).$

If the polar of A meets AC in E and AB in F, and BE, CF meet in a (b, c for the other polars), then Aa, Bb, Cc meet in $a/a^3 = \beta/\beta^3 = \gamma/\gamma^3$. The polars also meet the sides of the triangle where the line (1) meets them.

12079. (R. A. ROBERTS, M.A.)—A particle moves freely in a plane which passes through the axis of a uniform circular plate attracting according to the law of the inverse fifth power of the distance; if the velocity in any position be that from infinity under the action of the force, show the orbit is a nodal bicircular quartic, of which the two points in the plane on the circumference of the plate are foci. Show also that this quartic may become a confocal conic or a circle with respect to which the two points are inverse, if the particle move initially in the tangent to either of these curves.

12255. (Professor SYLVESTER.)—Find the mean value of the tetrahedron of which two points are taken in two opposite edges of, and the other two anywhere within, a given tetrahedron.

[See Professor Sylvester's solution of Question 1887, Reprint, Vol. v., p. 35.]

12361. (G. S. CARR, B.A.)—If (with the usual notation of the Calculus of Variations) V is a function of y, p, q, r, s, \dots , not involving x explicitly, show that, when $\int_a^b V dx$ takes a maximum or minimum value on account of a variation in the form of the function y , we shall have (writing d for d/dx and D for D/Dx)

$V = [(d + D)P + (d^2 - D^2)Q + (d^3 + D^3)R + (d^4 - D^4)S + \dots][p/(d + D)],$
 d operating only upon p , and D only upon P, Q, R, S, \dots

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, May 11th, 1905.—Prof. A. R. Forsyth, President, in the Chair.

Mr. W. M. Roberts was admitted into the Society.

The following papers were communicated:—

"On the Intersections of Two Conic Sections," Mr. J. A. H. Johnston.

"On a System of Conics yielding Operators which annihilate a Cubic, and its Bearing on the Reduction of the Cubic to a Sum of Four Cubes," Mr. H. G. Dawson.

Informal communications were made as follows:—

"High Pellian Factorisations," Lt.-Col. A. Cunningham.

"The Stability of a Loaded Column," Prof. A. E. H. Love.

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JULY 1, 1905.

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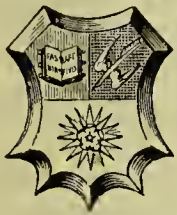
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The Educational Times.

Registration, Past, Present, and Future.

THE Report of the Teachers’ Registration Council for 1904 is a belated document. As it was signed by the Chairman of the Council on February 10, why it should not have been communicated to the press till June 16 is one of those mysteries of officialism that we cannot hope to fathom. The statistics are already out of date; there is no balance-sheet, and we have nothing but a rough calculation of the probable balance on March 31 of the current year. Those who have a taste for figures may consult the original document and discover for themselves the exact number of men and women who have been respectively admitted and rejected under each head and sub-head of the Regulations, and the number of attendances at Council meetings and Committees that each member of the Council has put in. We prefer to call attention to some of the broader considerations that the Report suggests—to discuss how far the scheme framed by the Consultative Committee and approved by the Board of Education has fulfilled the professed objects of its authors and what defects have been revealed in the working, reserving for the present the question what modifications or changes in the Orders in Council would seem advisable—a question already tackled in another column by an esteemed correspondent.

The history of the movement that led to the registration of teachers has been repeatedly told in these pages and elsewhere, though some historians have omitted to give due credit to the College of Preceptors for suggesting and initiating the reform. We are here concerned only with the last chapter of the narrative, to which we must briefly refer, as it explains the present state of affairs and accounts for anomalies that would otherwise be unintelligible.

The Board of Education Act of 1899 conferred on the Board powers for constituting by Order in Council a Consultative Committee for the purpose, primarily, of framing, with the approval of the Board, Regulations for a Register of Teachers. The Committee was constituted in the following year, and the recommendations submitted by them to

the Board were, after amendments by the Board, incorporated in the Order in Council of March 6, 1902.

Such are the bare facts, and the inner history was, we believe, somewhat as follows. The profession itself was ranged in two opposite camps—those who held that a Register should be inclusive, comprehending competent teachers of all ranks, and those who, like the College of Preceptors, advocated an exclusive Register of Secondary Teachers, on the ground that primary teachers were already to all intents and purposes registered by the Certificates of the Board. So long as this divergence of professional opinion existed it was felt that either party, with the help of independents and reactionaries who were certain to oppose any measure, would be strong enough to wreck a Bill, however reasonable, in the House of Commons. Hence the ingenious device of transferring action from the Executive to the Administrative. Hence, too, the compromise adopted by the Board of Education, who sought to hold the balance even between the two parties. Elementary teachers were entered on the Register *en bloc*, whether they desired it or no; but they were penned off in a fold by themselves, from which there was no escaping. As a set-off, they were excused fees, and were to be printed in a common alphabetical list together with their superior brethren. As might have been predicted, this compromise has satisfied no one. So far from cutting the knot, it has produced a tangled skein that neither the administrative ability of Mr. Morant nor the legal ingenuity of Sir William Anson can unravel. The elementary teachers, through their National Union, have to a man repudiated the Register as a farce and an insult. The Board have not even attempted to keep Column A up to date, and the Report states that until the Board takes action “the Card-Register of Column A must necessarily remain in the same incomplete state as at the date of last year’s [1903] Report.”

But the evil does not end here: it affects also the secondary teachers. The inclusion of some 70,000 teachers who are thus registered against their will has proved a fatal impediment to the publication of the Register, and at the end of three years we are left with an out-of-date list of Column A and a list of Column B published by the enterprise of a private firm. It has taken three years for the Board to discover that its original proposal was absolutely

unworkable, and financially spelt ruin. Yet Sir John Gorst assured the House that the Register would be self-supporting and that he anticipated no financial difficulties.

On the face of it Column B has succeeded beyond expectations, and proves that at any rate secondary teachers appreciate the benefits of registration. We reckon that at the present date there must be well over 8,000 names entered. This cannot be taken to mean that there are 8,000 fully qualified teachers. Some 2,500 have been admitted as heads or joint heads of schools, and of these no qualification either academic or professional is required, except that the school over which they preside has satisfied the Board's Inspectors. Over 1,500 are "ten-year" men and women, to borrow a Cambridge phrase, but these, though untrained and presumably without degree or diploma, have all produced evidence of ability to teach. It is only when we examine the number of fully qualified teachers as defined by the permanent Regulations that we see how temporary and illusive is this apparent prosperity. Up to December 31, 1904, there were registered under Regulation 3 four men and 149 women. The full significance of these figures is pointed out in the Report: "The stultification of the Register, which a continuation of this state of affairs must surely bring about, is a contingency which the Council cannot but view with grave apprehension." It means, in short, that, unless a new Order in Council is issued, the Register will in the course of the next year die of inanition. In March, 1906, the temporary provisions of the Register will cease to be operative, and after that date the annual entries, at the present rate, will be not much over fifty. Nor are there at present many signs of increase. From inquiries made by the Council it appears that only sixty-six men are at present undergoing a training course for secondary teaching, and only three small schools for boys have so far laid themselves out to provide the alternative course for student-teachers admitted by the present Order.

There is no need to labour the point or to show, as it would be easy to do, how in other ways the Order of 1902 has proved unworkable. We may, however, note in passing that kindergarten teachers fall between the two Columns, and that the Supplemental Registers are postponed *sine die*.

The Consultative Committee are at the present moment employed in what appears to us the hopeless task of mending and refurbishing their handiwork. In our opinion, no piecing or botching will preserve the old garment, and we need a new scheme framed with different objects and on different principles. What these objects and principles should be—that is another story.

NOTES.

THE University of Liverpool may be taken to have seen its way through the difficulties of granting degrees to evening students. The same rooms may be used; but will the same staff serve for both day and evening turns? If not, there is the necessity of duplication, more or less. Will the evening classes deplete the day classes? Experience points to a fair probability that they will. "In justice to the day student," says the *Birmingham Evening Despatch*,

—the Liverpool idea has been for some time in Birmingham minds—"the evening degree would have to be specially marked off in some way." But, if it is not, where does the injustice to the day student come in? Presumably both classes of students will pass the same degree examination, or, at any rate, a practically equal examination; and, if so, what does the difference of day and evening study matter? If the degree of the evening student is not the same, or of the same value, as the degree of the day student, it had better never be called into existence. Why it should not be the same, and on the same examinations, we do not in the least understand.

In the *Nineteenth Century* (June) the Head Master elect of Eton concludes an important article on the training of teachers with these words:

It is little short of gross unreasonableness for any one who knows the difficulties of class teaching to deride the attempt the Government is now making to give men a better initial equipment for their task; and that this is still done seems to be a symptom of the remarkable disbelief in thoroughness of preparation which still characterizes the English people.

"An Old Etonian" of recent date, writing to the *Morning Post*, sensibly agrees with Mr. Lyttelton's conclusion, and points out the wide scope for good teaching at Eton. "The education now given and received at Eton," he says roundly, "is inadequate and obsolete."

I once watched a class in a gymnasium performing exercises with a Sandow elastic exerciser: one youth seemed to be performing the exercises in the same manner as the rest of the class, but in reality, as the drill sergeant pointed out in forcible terms, saying, "I wish I'd got you in the barrack-yard; I'd make you sick," he was not exerting his muscles in the least; he was going through the form of the exercise, but it was the elastic which was doing the work. That is exactly what happens at Eton to the vast majority of boys. The classics are taught, but they do not reach the average boy; he goes through the form of the thing with the sole effort of achieving the minimum of exertion with the maximum pretence at industry. The net result of his classical education is that he can neither read nor write in Greek and Latin, and that he is imbued with a profound indifference and contempt for letters in general. This is, surely, not necessary.

The writer goes through the other subjects, with like comments. He points to the test of examinations for any branch of the public service; "even to pass into the universities—to pass Smalls or the Little-go—boys who have left Eton are sometimes obliged to spend several months at a crammer's." All this is beyond the need of criticism. One can only "hope that Mr. Lyttelton, who is so eminent a representative of the true and old Eton athletic spirit, will, by the influence of his vigorous personality, be able to modify to a certain extent this melancholy state of things. It will be the earnest hope of all who love Eton."

WHEN the *Manchester Guardian's* "candid critic" is finished with the Manchester School of Technology he had better proceed on a tour of inspection of institutions more or less similar in character. The School, he thinks, made "the initial mistake of starting work with too low a standard," and, in spite of the best intentions, "the quality of students improves far too slowly." "The School is practically full now—a very few more students would cram the place inconveniently; but my argument," he says, "is that it is filled with material of poor character instead of material that is select, and the best men are kept back by the worst."

The scholarship students are "not nearly so good as they ought to be." "An Old Student" also writes to point out why everybody—the Committee, the staff, the day scholars, the ratepayers—is dissatisfied; and his remarks vividly show how awkward a situation may be created by insufficient forethought, and how difficult it may be to remedy. The criticisms have every appearance of fairness and considerateness, as well as competence. Taken in conjunction with other indications, they suggest that the system of technical education would be none the worse for overhauling in detail. Initial mistakes may be indulgently treated; but they should be discovered and remedied as promptly as possible, and that can be done only by vigilant observation and skilled revision.

If the Faculties of Commerce in our modern universities have "fallen far short of what might have been reasonably expected of them"—and this by reason of the apathy of "the class for whose use and benefit they were specially designed"—it is a great pity. The Liverpool, Manchester, and Birmingham Commercial Faculties are fully organized and equipped; yet, says Mr. W. R. Lawson in the *Financial Times*, "not one of them is working up to 20 per cent., or even 10 per cent., of its teaching capacity." The comparison with a 50-stamp mill or mine yielding only five tons of ore per day, or with a factory engine working up to only a fourth of its power, is rather halting and delusive; and perhaps, after all, expectations have not been quite "reasonable." The expected students that have not come forward need to feel the pressure of academic competitors; and many of their employers need to reach fresh convictions through like practical modes of suasion. "Fortunately, more encouraging results are to be seen in other parts of the world"—Germany and the United States; but these countries have less, or no such, inertia to overcome. It is too early to judge our Commercial Faculties. Moreover, they are not the only examples of teaching power largely under-used—though, indeed, that is no legitimate source of consolation.

WHILE every other subject of thought has been galvanized by the active spirit of inquiry, the Law, which was once upon a time a mighty theme of intellectual interest even in England, continues to lie dormant. The Inns of Court have frustrated the Attorney-General's scheme for a School of Law worthy of the Metropolis and of the Empire; and he has, we understand, amiably divided his £130,000 between the Council of Legal Education and the Law Society and washed his hands of the whole business. These bodies, rich enough already, will now be in clover over the ears. The University of London, left out in the cold, has at last braced itself up to decree and to constitute a Law Faculty. The situation is instructive: the legal bodies have money galore and practically all the students, while their instruction, though improving, falls leagues short of an academic standard; the University Law Faculty has no money at all and only a handful of students, but a very decent standard. The whole weight of the advancement of legal studies (in any substantial sense) is thus placed on the shoulders of the Faculty—eleven men more or less engaged in practice, ten

of them having not a single stiver of salary and only nominal fees. Whether adequate endowments will be found in the face of the present meagre attendance of students, whether the fag-end of the Professors' energies is considered sufficient for the work, whether it is supposed that there is no more scope for research in legal subjects—we refrain to inquire. The University, having created the body, will no doubt strive to put it in a position to bring forth the expected fruits. But the public ought at least to know how difficult and amazing the situation is, and how nearly it concerns English scholarship that the Faculty should have some chance of performing its work with credit. At present, it is not too much to say, the study of law in England, as compared with the study of law on the Continent or in America or even in Australasia, is far from satisfactory.

HARVARD shows an example that is well worth meditation. The appeal for half a million to increase the salaries of the teaching staff has brought in £360,000, and the circular asking for the rest says this:

The position of Harvard to-day among American universities is due not so much to its age, traditions, or able administration as to its noble line of teachers. That the teachers in the college should be the best in the land; that the older professors should be free from the cares of a straitened income; that the younger teachers should be able to give themselves without distraction to their work, and that the best men should not be drawn away to other colleges, but should see before them reasonable promotion in work and salary, is essential to the leadership of Harvard and the culture of her sons.

No less essential is the same principle to the University of London. The professorship should in every case be a business, in no case a by-job; and the professors "should be able to give themselves without distraction to their work." Work there is in plenty for them, in every department—even in the Faculty of Law.

WITHOUT accepting the whole of Sir George Lambert's argument in the *Nineteenth Century* upon "The Scandal of University Education in Ireland," one can readily agree that "in England the seriousness of this question of higher education for the mass of the Irish people appears never to have been grasped." "That we should shut out from the benefits of higher education three-fourths of a nation like the Irish, full of natural ability, involves a loss to the Empire, in every part of it, that can hardly be exaggerated"; and, even if it be contended that they shut themselves out, the mischief still remains the same. Whatever remedy may be applied, it does seem futile, "after the miserable series of failures in the past, to revert to the practice of forcing upon an unwilling people a system that they refuse to accept, or will accept so long only as something better cannot be exacted by renewed agitation." Sir George says the Catholics of Ireland could provide at least two thousand students for a suitable university. Will they rally to Father Finlay's scheme for an independent institution in "buildings of a cheap and temporary character," or to Dr. Conor Maguire's more solid extension of that plan? Even then, the essential difficulty would remain confronting us. For we are told that "the erection of a voluntary institution is in fact advocated not as a final solution, but as a strategic step calculated to force a final solution." After all, is there, in the circumstances, any possibility of a "final solution"?

UNIVERSITIES are 'so keen for dollars in these days that one is mildly startled to learn that the University of Mississippi, like any ordinary perverse library committee, has refused 25,000 of Mr. Carnegie's dollars for a library. Mr. Vardaman, the Governor of the State and a member of the Board of Trustees, explains the brief reason why from an elevated moral platform: "The University does not want money coined from the blood and tears of the toiling masses." Allowing something for the rhetorical energy of expression, one has some difficulty in imagining from what other source Governor Vardaman ever expects to get dollars for his University. Anyhow, it is refreshing to have such tidings of high social morality wafted from New Orleans. There are universities that do not consider such things so curiously, prudently refraining from looking gift horses in the mouth. Poverty is said to acquaint a man with strange bedfellows, and perhaps the University of Mississippi is not so poor as to make 25,000 dollars a matter of purely business consideration. Nor do the Trustees appear to have thought of redeeming "the blood and tears of the toiling masses," to some extent at least, by a wise application of the dubious dollars.

IN the good old times, when the late Prof. Legge, the distinguished missionary and Chinese scholar, was a student at the University of Aberdeen, there would appear to have been material academic fortifications of the vigour of candidates for scholarships. At the end of his course, Legge competed for the Hutton Prize in classics and philosophy under circumstances thus detailed in his recent biography:

The three candidates were left until midnight in the care of the porter and sacristan, who procured for them six bottles of good old port "for strengthening and stimulus during the competition." On the last evening, when the clock struck twelve and the porter removed the box containing their papers, he admitted three youths, friends of the three candidates, who had been invited by them to come and celebrate the close of the examination by helping them to finish off the bottles of port.

Legge proved the successful candidate, whatever the "good old port" may have had to do with it. But the examination has long since become a dry function, fulfilled in other ways, whether or not "lest one good custom should corrupt the world."

SUMMARY OF THE MONTH.

THE idea of producing a fresh breeze from the outside world into the universities has "caught on" in America. Columbia University, whose distinguished President is now on a visit to this country, announces two considerable courses by European scientists of distinction. In December this year Dr. Vilhelm Priman Bjerkner, Professor of Mechanics and Mathematical Physics in the University of Stockholm, will deliver a course of fifteen lectures on "Fields of Force," including the discussion of hydrodynamic analogies and the electrostatic and electromagnetic fields. And in March and April next year Dr. Hendrick Antoon Lorentz, Professor of Physics in the University of Leyden, will deliver a similar course on "Extensions of Maxwell's Electromagnetic Theory of Light, and the Dynamics of the Electron." It is further expected that similar courses by distinguished foreign scholars will be arranged for the winter of 1906-7.

THE following is the list of this year's "Wranglers":—

- | | | |
|---------------------------------|-------|--------------------------|
| 1. { J. E. Littlewood, Trinity. | 14. { | N. J. Chignell, Clare. |
| { J. Mercer, Trinity. | | G. A. Millward, Queens'. |
| 3. H. Smith, Trinity Hall. | 18. { | T. Smith, Queens'. |
| 4. C. J. A. Trimble, Trinity. | | T. B. W. Spencer, Jesus. |
| 5. { L. B. Booth, Christ's. | 21. { | J. B. Frith, Pembroke. |
| { H. J. Priestley, Jesus. | | D. C. Jones, Pembroke. |
| 7. H. R. Hassé, St. John's. | 23. { | D. Leonard, Sidney. |
| 8. { J. P. Forsyth, Caius. | | G. T. Lloyd, Clare. |
| { W. M. Page, King's. | 25. { | R. W. Wrigley, Emmanuel. |
| 10. { P. Fraser, Queens'. | | F. M. Kahn, St. John's. |
| { G. S. Hardy, St. John's. | 26. { | D. J. Owen, Jesus. |
| 12. { J. M. Keynes, King's. | | J. H. James, Queens'. |
| { T. G. Strain, St. John's. | | L. Cullis, St. John's. |

There are 17 Senior Optimes and 13 Junior Optimes. Miss E. M. Newbold (Newnham) is bracketed equal with the 26th Wrangler; ten other women attain the rank of Senior Optimes, and ten the rank of Junior Optimes.

WHERE are the "Great Public Schools"? (asks the *Evening Standard*). "One of the two Senior Wranglers received his education in the Cape Colony before going to St. Paul's and Trinity. This will be very gratifying to South Africans and to colonists generally. His partner in the premier position is a Lancashire man, educated first at a local institute, and then at the Liverpool University. The third Wrangler came from King Edward's School, Birmingham. The fourth is the son of a Welsh clergyman, and he was taught at the admirable foundation known colloquially as the Blue Coat School. The fifth came from Wakefield Grammar School, the sixth from the famous Nonconformist school at Mill Hill, and the seventh from Leeds and Owens College, Manchester. This list is noteworthy quite as much for what it does not contain as for what it does. It will be seen that it does not include a representative of any one of those highly expensive educational establishments which are distinctively known as the "great" public schools. These seven successful young mathematicians did not come up from Eton or Harrow or Winchester or Rugby or Marlborough or Charterhouse or Uppingham or Shrewsbury. In fact, in the whole catalogue of the Wranglers and the Senior and Junior Optimes, some sixty in all, there is only one candidate apiece from Eton and Harrow, and none at all from most of the other seminaries just mentioned. The honours are gained by middle-class youths from middle-class schools."

"The list," says the *Pall Mall Gazette*, "makes humiliating reading for the great public schools. There is hardly a public-school man (in the narrower sense) in the list at all; while of the two bracketed Senior Wranglers one comes from London's great middle-class day school, St. Paul's, and the other, from Liverpool, was a County Council scholar. Then, the third Wrangler was at an elementary school before he proceeded to King Edward's School, Birmingham. It is undoubtedly a notable triumph of the democratic school—if we may use an expression which does not really fit what we mean, but which may perhaps sufficiently convey the idea. Such striking proof of the openness of a career (so far as a Tripos is a career) to talent is very welcome, and should stir the classic public schools to an effort to regain their lost ground."

AT Rugby the following have been elected to Entrance Scholarships:—

G. Elton (Mr. P. Christopherson's, Lockers Park, Hemel Hempstead), Tait Scholarship; B. C. Malony (Mr. A. W. Johns, St. Olaf, Brighton), Local Examination Scholarship; G. E. Mansfield (Rugby School), Derby Scholarship; G. Dunn (Rugby School); F. K. Bliss (Rev. E. Earle, Bilton Grange); A. L. S. Cope (Rev. E. L. Browne, St. Andrew's, Eastbourne); H. W. R. Hamilton (Messrs. Miller and Hart, the Knoll, Woburn Sands); A. J. Cruickshank (Messrs. Overton and Browne, Lambrook, Bracknell), and D. Ll. Vawdry (Mr. E. W. M. Lloyd, Hartford House, Winchfield), equal; J. K. Stanford (Messrs. T. H. G. Mason, Rottingdean School, Brighton).

AT Marlborough College the scholarships examination has resulted as follows:—

Seniors: R. J. M. Lias (honorary scholar), G. C. Turner, W. M. Peacock, A. R. Marshall, R. M. Kirkpatrick (Berens scholar). Juniors: A. L. Jenkins (Mr. T. G. Bradshaw, Hockley Heath), Gilmore scholar; G. T. Ellwood (Mr. Tabor, Cheam), first house scholar; R. Leather (Mr. Rendall, Cranley), second house scholar; E. E. Meyrick (home tuition); E. A. Pam (Rev. F. J. Woodhouse, Surbiton); V. B. Rowe (Mr. Tabor, Cheam); M. Vincent-Jackson (Rev. E. Earle, Bilton Grange); J. B. Moule (Mr. Duckworth, Weston-super-Mare). Senior Modern: H. C. D. C.

Mackenzie-Kennedy. Honourable Mention, C. N. T. Perrens. Junior Modern: G. S. Leventhorpe (honorary), G. H. E. Parr, W. T. Fry. Authors: G. F. Evans.

At Malvern the following have been elected to entrance scholarships:—

Senior Scholar and Faber Exhibitioner: S. W. H. Welsby (Mr. E. W. M. Lloyd). Foundation Scholar: O. S. Cleverley (Mr. H. Frampton Stallard). House Scholars: M. A. Hepburn (Mr. Stallard); A. R. Smith (Mr. Mason, Rottingdean); E. H. Blumhard (Mr. Chippett); G. M. Hill (Mr. Basil Thompson). Minor Scholars: L. J. Southern (Mr. Waterfield, Temple Grove); M. M. Pearson (Mr. Clark, Lichey Hills); B. Hill (Mr. G. T. Worsley, Evelyns); L. Hudson (Rev. H. R. Brown, Eastbourne); G. W. T. Lindsay (Rev. E. Owen, Stancliffe); B. M. Bateman (Mr. Waterfield); B. W. Peek (Mr. Luckham, Bourne-mouth).

The result of the examination for entrance and other scholarships at Aldenham School is as follows:—

Recommended for Junior Platt Scholarships: A. C. Blyth (the school), J. S. Boulter (St. John's, Leatherhead), A. K. Fison (the school). House Scholarships are awarded to G. C. F. Mead (Kensington Preparatory School), W. G. Price (the school), C. E. Wurtzburg (Heddon Court, Hampstead).

The following have been elected to entrance scholarships at Clifton College:—

A. K. Trower, A. R. Wallace, £100; C. R. B. Murray, H. R. Russell, £50; A. B. Craddock, £25; C. E. Schwalm, C. G. Usher, P. M. Monckton, H. F. Johnson, House Exhibitions of £25.

At St. Edward's School, Oxford, awards have been made on examination:

Scholarships—J. P. Higgs (St. Edward's School), M. H. B. Nethersole (Rev. E. Owen, Stancliffe Hall, Matlock), T. E. Withington (Mr. J. R. Morgan, Connaught House, Weymouth), L. A. Strange (Mr. H. Reynolds, Cliff House School, Southbourne-on-Sea). Exhibitions—E. R. A. Biggs (Clayesmore School, Pangbourne), F. A. C. Tidmarsh (St. Edward's School). Choral Exhibition—W. Hare.

The new premises of Naish House School, Burnham, Somerset, preparatory for the public schools and the Royal Naval College, Osborne, were opened (June 1) by the Dean of Wells (Dr. Jex Blake, late Head Master of Rugby), who held a short service and gave an address in the big schoolroom.

AMONG the resolutions passed at the annual Conference of the Association of Head Mistresses, at Winchester (June 2-3), Mrs. Bryant, D.Sc., Litt.D., President, in the chair, were the following:—

That this Conference approves the action of the Executive Committee in appointing representatives on the Council of the proposed College of Secondary Teachers; and, in the event of such College being established, agrees to subscribe for the next five years £25 a year, plus a capitation fee of 5s. for each ordinary member of the Association.

That, while accepting the principle that co-education in schools has advantages in the case of children under the age of ten, and realizing that in small country places and under other circumstances of special difficulty co-education may be the best solution available, the Conference considers that after the age of ten it is in general undesirable, under present conditions in this country, for the following and other reasons:—(1) That the head of a co-educational school for pupils above the age of ten is usually a man, while the health and character of girls need the care and control of a woman with complete authority and responsibility; (2) that the curriculum adopted for boys between the ages of twelve and sixteen especially is unlikely to be the best for girls, in consideration more particularly of their health and development at that age.

Assistant Mistresses.—(1) That the minimum initial salary for a fully qualified non-resident mistress giving her whole time should be not less than £105 to £120, rising to £150. (2) That provision should be made in every secondary school for salaries on a higher scale between £180 and £200, and occasionally rising to £300.

Head Mistresses.—(1) That no non-resident head mistress should receive from the time of her appointment less than a salary of £300. (2) That the general range of salaries should be between £350 and £700; but that, in the interests of education, for the sake of the encouragement which is thereby given to all teachers and the gain in the attractiveness of the teaching profession, there should be, as at present, some prizes of substantially higher value.

THE annual Congress of Church School Managers and Teachers discussed as one of its chief subjects the future policy of the

Church with regard to primary education. The Rev. A. J. Allen (Cambridge) moved:

That, in the opinion of this Congress, no settlement of the education question will be satisfactory which does not provide that every child shall have the right to be taught the religion which its parents profess in every State-supported school by the regular school staff in school hours.

He urged, first, no compromise; secondly, sacrifice on the part of Church people to maintain what they had got. The Liberal party were resolved to modify the Education Acts. The first of these modifications would be to abolish religious tests for teachers and to alter the proportion of foundation managers to those elected by the County Council or Local Authority. If these two points were carried, the present Church system would be practically washed out. The Rev. J. O. Bevan (Dover) moved as an amendment:

That this Congress expresses its conviction that no settlement of the education question can be fair and just which does not provide that all children in provided and non-provided schools alike shall have the right to be taught the religion professed by their parents as part of the regular school curriculum, and under arrangements to that end made by Local Education Authorities, and carried out by the managers of individual schools.

After discussion the latter portion of the amendment, relating to the giving of the religious education "under arrangements made by Local Authorities, &c.," was withdrawn, and the amendment thus altered was carried.

THE Manchester Education Committee has approved the draft scheme drawn up by a joint sub-committee of the Education Committee and the University of Manchester for the institution of a Faculty of Technology. Sir John Hay said the scheme had received the sanction of the Senate of the University, and was therefore in a position to go forward to immediate completion in time for inclusion in the syllabus of the School of Technology and the calendar of the University for the commencement of the next session. The impelling idea in regard to the carrying out of the scheme was that it would enable students at the School of Technology to obtain a degree at the Manchester University. Things were different in other countries, and more especially in Germany, but only of late years had it been the custom in Germany to give schools of technology the power of granting degrees. The German universities had power to grant degrees upon their own motion without connexion with any ordinary university. They could not hope for anything of that sort for a long time, and therefore if it was desired to give the degree advantage to students at the School of Technology they must proceed by some such process as was developed in the proposed scheme.

THE Marquis of Linlithgow received two deputations (June 17) in Edinburgh on the Scotch Education Bill. One consisted of representatives of the School Boards of Edinburgh, Glasgow, Dundee, and Aberdeen; the other represented various governing bodies of endowments for secondary education in Scotland and of the Scottish universities. The latter were specially concerned for a clearer definition of the position of endowed schools. In reply, Lord Linlithgow said he could not commit himself or his colleagues to anything definite, but to the majority of the suggestions they would give their favourable consideration. Others, however, would require closer scrutiny and attention. It was the intention of the Government to use every endeavour in its power to make the Bill become law.

MR. E. A. WALTON, R.S.A., has presented a series of special reports on the instruction given in the principal schools of art in Scotland. He announces "a great improvement on the past," and thinks that, if all the classes of the schools were brought in the line with the best classes he has seen under the new system, "the art student would now be able to receive, as designer, craftsman, or artist, as complete and thorough a training as he could get anywhere at home or abroad." He recommends strongly the encouragement of a closer union and freer intercourse between the different schools, and notes with satisfaction that the Board schools are drawing nearer the art schools. He says:

There is a very distinct effort being made to bring the Board school drawing classes for children into closer touch with the system of the art schools; I made it my business when in Scotland to visit one or two of the Board schools to make myself acquainted with the system

employed. I was greatly impressed with this department of general education; I think it augurs well for the future, for every branch of handicraft and learning will be greatly aided by it, and it will materially raise the standard of the art schools. In the art schools themselves every encouragement should be given by the masters to the sketching clubs, as it helps greatly to raise the standard of the students' work and encourage their individuality.

THE annual report of His Majesty's Inspectors on Continuation Classes in Scotland shows that the number of students of all divisions during the year under review was 85,011, and that the total expenditure incurred by the managers amounted to £128,830, of which £112,017 was recognized by the Department. Sums to meet the expenditure were met from the fees, which (including the sale of books and materials) reached the total of £12,508, while the Department grants amounted to £71,790, and those from the County Councils to £12,322. The endowments were £1,508, the subscriptions £5,138, and the total received from the rates £27,714. A feature of the report is the fact that it records that attendance at the rural continuation schools shows a decline. Generally speaking, the number of pupils shows a steady, if not marked, increase, and in the large towns and more populous districts this is especially marked.

AT a meeting of the School Nature-Study Union held at the College of Preceptors (June 2) Mr. R. Lulham read a paper on the training of teachers for Nature study, insisting upon the necessity for a proper ground-work. A resolution was passed urging upon the London County Council the need of providing classes for those who have to teach Nature study, and suggesting that a wild garden for their benefit should be established in at least one of the London parks, in which the botanic gardens arranged for the students of systematic botany have already proved so useful.

THE annual Conference of the National Society (June 8) passed by a large majority a resolution proposed by the Rev. H. W. Dennis, Principal of St. John's Training College, Battersea, in favour of inviting all the religious educational bodies to a conference, and asking them to co-operate, with the object of placing results before the educational authorities and offering to co-operate with them in framing a national system. The N.U.T. "Memorandum on Examination in Religious Knowledge," which urges abolition of such examinations in the interest of true religious teaching, was condemned by the Rev. H. R. Evers, Diocesan Inspector (Exeter), and other speakers, but no resolution on the subject was put to the vote. Other subjects of discussion were the best method of securing adequate religious instruction for future elementary-school teachers and the problem of keeping in touch with pupil-teachers during the secondary-school stage.

MERIONETHSHIRE EDUCATION COMMITTEE are dissatisfied with the pupil-teacher system, and have a mind to do away altogether with their P.T.'s. According to the present system, it is said, the teachers themselves are not properly educated, and on the other hand the children are neglected. The Merionethshire Authority have already advertised in vain for two female teachers, the clerk reporting at the last meeting that not a single application had been received. It has been decided to make the best terms possible with the present teachers, who resigned because the Committee refused their application for an increase of salary.

IN his presidential address to the South Eastern Union of Scientific Societies at Reigate (June 7), Prof. Petrie, of University College, London, remarked that about half of all the energies of the nation was used up in the replacement of the present generation by its successor. This view of the balance of the economic life of the nation was of the first importance in many questions; yet, strangely, it had been hardly looked at, and certainly it had never been given its place as one of the leading features in the political economy of a civilized State. The first and most obvious bearing of this expenditure was that the more it could be reduced in quantity and increased in quality the better for all. Probably it might be said that sanitary progress had halved the death rate and doubled the average length of life. That did not imply that we spent on human replacement only half of what was spent before, but that we were able to spend

twice as much on the better quality of the life, health, and training of each generation. The unhealthy towns in the kingdom were wasting life a quarter more than London, or wasting an eighth of their whole income in needless loss. To put an extra tax on all incomes in Liverpool of 2s. 6d. per £, in order to bring its mortality down to that of London, would be true economy. Another conclusion enforced by seeing the heavy cost of replacement was that it was worth a little more to secure quality as well as quantity; that health and education were the last things to cheapen over, nationally as well as individually. Could it be credited that a subject on which half our labour was spent was absolutely untaught, save to a few professional people, and that the whole preparation of what cost so much was mainly left to chance or ignorance? Our colonies showed us the road, as in Canada there was now a regular course of education in the rearing and training of children. It was not too much to say that a half of the education of women—the parallel to the technical education of men in business—should be given to enabling them to make the best use of the moiety of the national expenditure on renewal.

MME. MARIE MADELEINE CARLIER, foundress (with Mlle. Marguerite Bodin), of La Société de l'Éducation Pacifique at Croisilles (Pas-de-Calais), in 1901, appeals to the teachers of Great Britain for co-operation in promoting the objects of the Association—"l'éducation de la jeunesse suivant les principes de paix et de fraternité internationales, sans porter aucune atteinte au sentiment sacré du patriotisme." The programme is, summarily, this:

Faire comprendre à l'enfant qu'il n'y a pas deux morales, une pour les nations et une pour les individus: le pénétrer de l'idée de justice et du sentiment de la fraternité humaine envers tous les peuples de la terre; lui inculquer le respect de la Vie; lui démontrer que la guerre n'est point un mal inévitable, et que les discordes des Gouvernements peuvent être réglées par l'arbitrage: en un mot, former des cœurs pacifiques et transformer le patriotisme de haine en patriotisme d'amour.

M. Frédéric Passy, member of the Institute, is honorary President of the Society.

IN their capacity of parents and guardians (says *Womanhood*), a petition has been made by a number of the burghers of Frankfurt-on-the-Main to the Minister of Public Education, urging the necessity of co-education as applied to their native town. Their plea is that the private institutes which prepare girls for the University have an unnecessarily long curriculum, are expensive, and are uncertain. For instance, the specified age for entrance is fifteen, and pupils must have completed their twentieth year before they can pass the final examinations; expensive, because the fees are double what is charged in the public schools; and uncertain, because, as it is a private undertaking, it can only be kept up by a stated number of pupils, and, failing these, must be discontinued. That a great deal more is done by the State for the education of the male sex is seen by the recent debates in the Prussian Diet on the subject of the Budget estimates for the education of the youth of both sexes. In order to keep up the higher boys' schools in proper form, the sum of 14,000,000 marks was forthcoming, while for the girls' schools 350,000 marks was thought sufficient. The inhabitants of Frankfurt are very earnest in their petition that girls who are thinking of going in for University study should be allowed to join the classes at the boys' public schools. In this way they would have the best advantages at the most moderate cost. The directors of the institutes in question are perfectly willing to allow girls to take part in the classes if the Prussian Ministry agree and issue a decree to that effect.

THE report of the United States Commissioner of Education for 1903 contains in its 1,327 pages an abundance of information concerning all grades of American education, and parts of the educational systems of other countries. Dr. Charles F. Thwing, President of Western Reserve University, contributes an account of the development of American universities, their organization, conduct, and relations to the life of the nation. He shows that the growth of university endowment funds has kept pace with the growth of the wealth of the country at large. For example, the productive funds of Yale College have increased from about £6,000 in 1800 to more than £1,000,000 now. The growth of libraries also has been significant in particular instances; yet Dr.

Thwing says the "libraries of most colleges are inadequately furnished and inefficiently administered." The functions of universities in American communities are considered under various aspects. First, as conserving forces in the presence of a democracy inclined to make all things new; then as inspiring with high moral ideals an age inclined to pursue mere material aims. As an agency to promote systematic research—the seeking after truth as such—the university fulfils an increasingly useful function. An account of education in France includes some interesting statistics concerning French universities. The registration in State universities has increased by about 60 per cent. since 1887, the total registration for 1901 being 29,931 students. The University of Paris has 12,289 students; Lyons, with 2,458 students, and Bordeaux, with 2,119, stand next to Paris. As for the distribution by faculties, Law leads with 10,152 students, Medicine follows with 8,627, Science comes third with 3,910 students, and is closely followed by the faculties of Letters with 3,723 students.

A "GERMAN RESIDENT" is good enough to communicate to the *National Review* (June) "Some Candid Impressions of England." He is specially struck with the indifference of Englishmen to their individual duties as citizens of a great Empire, whereas the opposite virtue is the mainspring of German success. The penalty of an extra year of military service dissuades the German youth from laziness and negligence at school: the English boy has no such definite terror before his careless eyes. Our public schools are "good in a way, so far as they form character, but bad in that they neglect intellect." Our primary education turns out surprisingly bad products: the knowledge imparted does not seem calculated to make good citizens. The majority of our workers read little but the sporting press, and care for little but betting and sport. "Made in Germany" has become a term of guarantee, not of contempt: witness Mercedes motors and scientific instruments. An honest criticism enough; but, after all, one would require to know the area of vision and the degree of instruction of the organ of inspection.

LAST year the French Ministry of Public Instruction initiated, in conjunction with the Board of Education, a scheme whereby a number of young teachers (men and women) were appointed temporary assistants for one year in French *lycées* and *collèges*. The scheme will continue in operation this year, and the French Ministry will shortly proceed to make fresh appointments. It is hoped that similar arrangements may be made with Prussia, with the exception that in this case there will be no posts open to women. The main duty of the assistant will be to conduct small conversation classes for about two hours daily. Though not taking any part in the regular instruction of pupils, he will, both in France and Germany, be considered in all other respects as the colleague of the masters. He will not receive a salary, but he will be lodged and boarded at the institution to which he is attached, subject to the provision that in Germany in certain cases a sum of about £65 (marks 1,300) may be paid to him in lieu of board and lodging. Candidates for such posts should preferably be graduates of some British University, and should forward their application, containing particulars of their course of study and qualifications, to the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, enclosing testimonials in duplicate as to character, capacity, and teaching experience, and a medical certificate of health. It will also be necessary for each candidate to have a personal interview with the Director at his office. All applications must be received on or before Saturday, July 8.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

THE next Vice-Chancellor is to be Mr. Roberts, Cambridge. of Caius, another example of a rapid promotion from the onerous post of college tutor to the high honours of the Academic chair. The Master of Caius has done most things, and done them well; he has, however, forgotten to grow old, and perhaps the secret of his popularity with "his boys," as he is wont to call them, is that the boys aforesaid feel that he is one of themselves.

We have been reasonably free from illness during the latter

part of the term; not a single case of scarlet fever arose after the primary severe outbreak, and the visitors for the May week had nothing of which to be afraid. The May races—always such a festive scene—were overclouded by the sad ferry accident at Ditton in sight of the holiday-making crowd assembled in the paddock. Many University men who attempted rescues had narrow escapes themselves, and, sad as the occurrence was, it is fortunate that more valuable lives were not lost. A still greater danger exists at the "grind" higher up the river, where there is invariably a severe congestion of river traffic after the races, and no one to control the struggling mass of boats. Doubtless people will be more cautious another year.

There has been a very pretty little discussion in the Senate about some expenditure which has been incurred by the Medical Buildings Syndicate without due authority first obtained. The Financial Board issued a minute as to this expenditure, and the two august bodies got up on their hind legs at once. It was quite a delightful performance, and much more amusing than many of the side-shows provided for the delectation of our summer visitors. The Medical Buildings Syndicate are warned to be better boys for the future and by next term it will all be forgotten. Mr. Shipley, of Christ's, made a very sensible suggestion: that there should be a permanent Syndicate to conduct all negotiations about new buildings. Under present conditions, as he rightly observed, a Syndicate taking charge of any new building wastes much time and labour in learning the details of its own work.

The "honorary degree" day, June 14, was remarkable for the cosmopolitan character of the distinguished recipients of our complimentary "free pass." Prof. Vinogradoff, Father Ehrle (of the Vatican Library), Prof. Gildersleeve (of the Johns Hopkins University), Sir Robert Finlay, Captain R. F. Scott, and Sir Francis Younghusband made up a notable list of really distinguished men. The Rede Lecture was delivered on the previous Saturday by Sir F. Younghusband: it was well attended and proved of the greatest interest. The subject was "Our True Relations to India," and the lecturer convinced an enthusiastic audience that one Englishman at least had solved the great problem.

Trinity was successful in filling the two first places in the Mathematical Tripos, Mr. Littlewood, who hails from South Africa, being bracketed with Mr. Mercer, who was educated at Liverpool. The daily press has not taken any serious notice of the fact that the number of men classed in the Mathematical Tripos is 56, whereas the Natural Science Tripos has no fewer than 119. The Cambridge Medical School, with the allied branches of Chemistry, Physics, and Botany, is making gigantic strides. Mere numbers are a fallacious test, but it is quite certain that the older Triposes are not attracting men as once they did.

The gymkhana held by the University Volunteers was a great success: this is now becoming a recognized attraction of the May term.

The Footlights Dramatic Club produced a new and original musical play. The book was the work of Mr. Hugh Brodie, and the music was composed by Mr. J. W. Ivimey; some additional numbers being provided by Mr. Paul Rubens. The affair was a great success and crowded houses resulted. The A.D.C. gave "Pilkerton's Peerage" in their own theatre, and the acting was of a high order.

Third Trinity easily retained the proud position of head of the river, with Trinity Hall second, Lady Margaret third, and Jesus fourth. The last named college is rapidly rising to its proper place at the head of the river or near it.

By the time these notes appear in print Cambridge will be a deserted town.

SIR EDWARD BUSK has been elected Vice-Chancellor London. for 1905-6.

The Lister Institute of Preventive Medicine has been admitted as a school of the University in the Faculty of Medicine for the purpose of research in hygiene and pathology.

The Senate have approved Archæology as a subject for the Honours degree of B.A. and B.Sc., and for the degree of D.Sc., for both internal and external students; also for the degree of M.A. for internal students.

The Faculty of Laws, for which provision was made in the statutes promulgated for the government of the University in 1900, but the establishment of which has hitherto been postponed, has now been constituted by the Senate. It consists, in

the first instance, of the following:—Prof. J. Cutler, Mr. H. W. Disney, Dr. W. N. Hibbert, Prof. W. S. Holdsworth, Dr. L. Macassey, Prof. Sir John Macdonell, Prof. A. F. Murison, Prof. J. W. Neill, Dr. L. F. L. Oppenheim, Prof. W. J. Whittaker, and Mr. R. A. Wright.

The following Doctorates have been conferred:—D.Sc. in Economics (Internal), Mr. Gilbert Slater, for a thesis entitled "Common Fields and Enclosures in the Eighteenth and Nineteenth Centuries." D.Sc. in Botany (External), Mr. Felix Eugene Fritsch, for a thesis entitled "Studies on Cyanophyceæ" and other papers. D.Sc. in Botany (External), Miss Marie Charlotte Carmichael Stopes, for a thesis entitled "On the Double Nature of the Cycadean Integument," to accompany "Beiträge zur Keimtnis der Fortpflanzungsorgane der Cycadeen," and other papers.

Queen's College, London. THE report of Queen's College, London, for the past year shows that the institution continues in a flourishing condition. The annual gathering (May 25) was addressed by the Bishop of London, who dwelt principally upon the religious difficulties of girls, and ways of meeting them. On leaving Queen's College they should keep with them the aroma of the college, and, whatever part of London they were in, they would be a credit to their college and a credit to the Church.

Birmingham. THE new club house for students is almost completed. The freehold site, adjoining the University buildings, was provided by the University Council, who guaranteed also a sum not exceeding £2,000. The furnishing, which is estimated to cost some £1,500, is undertaken by the students, and all interested in the University are invited to contribute to the Students' Fund.

Sheffield. THE charter granted by the King in Council (May 29) ordaining the founding of the University at Sheffield was brought from London (June 3) by Mr. George Franklin, the Pro-Chancellor, and its arrival was made the occasion of a demonstration by the students of what has hitherto been University College. They paraded at the railway station, and the procession passed to the College Hall, where the Pro-Chancellor formally handed over the charter to the Vice-Chancellor (Dr. Hicks, F.R.S.), and congratulatory speeches were made on the successful termination of an effort which has enlisted the loyal support of the whole city. Large sums have been raised for the new University buildings, which the King and Queen have consented to open in July. An endowment fund has been raised by Sheffield people of about £140,000, while the City Council and the Councils of neighbouring boroughs and counties have guaranteed annual rate aid equivalent to an even larger capital sum. The first Chancellor of the University is the Duke of Norfolk, who telegraphed to the Vice-Chancellor: "My heartiest congratulations to you and all connected with University on reception of our charter, and earnest best wishes for a glorious future of good work for Sheffield."

Wales. At a special meeting of the Court of the University held (June 9) at Shrewsbury, the Registrar announced the receipt of letters of resignation from Mr. W. Edwards, Mr. R. E. Hughes, Mr. D. E. Jones, and Mr. T. W. Phillips, four of His Majesty's Inspectors of Schools, of their seats on the Court. Dr. R. E. Roberts, Junior Deputy Chancellor, asked whether the Court knew the cause of their resignations. The Chairman (Sir Isambard Owen) said he had no information that he could lay before the Court, except that he had read in the papers that the resignations had been sent in under orders of the Board of Education. He understood that members of Parliament were prepared to ask questions on the matter. It came to his knowledge some months ago, through a channel he was not at liberty to name, that the details of the scheme of reconstruction of the joint conference were perfectly well known in the Education Department, and it was stated to him that it was believed the Board of Education contemplated in some way interfering with the liberty of the Court in dealing with the matter. On the motion of Mr. J. L. Muspratt (Flint), a resolution was passed expressing deep regret at the simultaneous loss of so many active members of the Court, and intimating that, if the resignations were due to instructions received from the Board of Education, the Court desired to express its

great surprise that the Education Board had deemed it necessary to take such a step on the eve of an important meeting of the Court, and its still greater surprise that no notice whatever had been given to the University.

The Court considered at great length two alternative schemes for the future administration of the university. The Executive Committee of the Court recommended the pensioning of the present Registrar, Mr. Ivor James, at £200, being half his salary, and the appointment of a new Registrar at £600 a year, with other minor appointments. It was also recommended that the Vice-Chancellor should still act as president of the Senate and chairman of the Examining Boards, the other routine duties performed by the Vice-Chancellor to be transferred to the Registrar.

Sir T. Marchant Williams submitted an alternative scheme, in which he suggested the appointment of a working head of the University at £1,000 a year, thus relieving the principals of the colleges from acting as Vice-Chancellor, and the appointment of a Registrar at £400 a year, with other appointments. It was agreed that, in order to admit of further consideration by the Court of the question of the appointment of a salaried head of the University, (1) the University grant the present Registrar a pension of £200; (2) that a Registrar with academic qualifications be appointed at a salary of £500 a year.

Queen's College, Belfast. At a meeting of subscribers to the fund for the better equipment of Queen's College, Belfast (June 2), there was read a report showing the progress of the past four years, and setting out the more pressing requirements of the time. The fund had risen to over £30,000. A resolution was passed: "That this meeting most earnestly desires to bring under the immediate notice of His Majesty's Government the strong and increasing claims of Queen's College, Belfast, to more generous treatment by the State." Prof. Letts said it was difficult to see now, after all this money had been subscribed, what reason the Government could have for not finishing the building and for not fulfilling their pledge. He did not know that it was any secret why the Government did not keep to their promise. It was merely an echo of a speech Mr. Balfour made many years ago at Edinburgh, when he said that nothing could be done for Queen's College until the question of a Roman Catholic university had been settled. Altogether he thought they had a very real and a very clear grievance against the Government. In the first place it was their duty to keep the college in a proper condition of equipment and efficiency. That they had not done. Then, having insisted that money should be got from the public before they would do anything further for them, they ought by this time to have kept their promise. But they had not done either, and, if they were going to wait until the Irish university question or the question of separate education for Roman Catholics was settled, they might never do it. He therefore very warmly seconded the resolution, and trusted that it would have the desired effect. He hoped that it might remind the Government of both a serious duty and of a definite but unfulfilled promise.

The *Northern Whig* comments strongly on "the illogical attitude of the Government." "The desire of all true educationalists is that learning should be free and unfettered. They do not wish to see it made the handmaid of any Church or party, and because these non-sectarian principles are strictly adhered to in the Queen's College, Belfast, the necessary funds for carrying on the work on a large scale are withheld. On no ground whatever can the action of the authorities be justified."

Reading. THE foundation-stone of the new buildings of University College, Reading, was well and truly laid (June 7) by Lord Goschen, Chancellor of the University of Oxford. The site, which is an extensive one, is freehold, the gift of the late Mr. George Palmer. Some £80,000 is required, and £35,700 has been already subscribed. Lord Goschen, speaking at a preliminary luncheon in the municipal buildings, said:

In the position of education at the present time there was some confusion, and, as for controversies, they were endless. There were controversies as to the relations between the old universities and the new universities, as to the relations between useful knowledge and mental training, and, in regard to mental training, which he hoped would not be put in the background by the advancing forces of technical educa-

tion simply, they had the controversy as to what was the best means of mental training. There were controversies in schools, and conflicts of agencies, studies, methods, and aims. Amid all these conflicts the main thing was to direct the educational passion of the nation, for he was glad to say that at present the nation was thoroughly determined to be educated. The desire for education was stronger than it had ever been, and it was for those who were charged with education to see that these aspirations were guided into the correct channels. And among these conflicts there were the dangers of fanaticism and of competition. Amid the hustling of those who championed various causes, might he at least put in a word for higher culture? Might he echo what was written by Mr. George William Palmer, that literature and science might hold their own in this country apart from useful knowledge; that the humanities should be supported, and that history and geography and all those matters that broadened the mind, as well as those that helped to a livelihood, should have their proper place in our educational system? The advocates of technical education would always have an enormous audience, and it was right for the sake of the nation that it should be so, and there would always be advocates for the exploration of the secrets of Nature and for increasing our knowledge of those forces of Nature which tended to the advantage of man. But they should take care that the humanities were not driven into a back place. This nation realized—he hoped its educated classes realized—that there was a danger that amidst specialization and technical education higher culture might suffer. Mr. Choate, the most eloquent of American ambassadors, recently said that he thought America had now become rich enough to be able to spare some time for culture. At this time, when our friends across the water were advancing in the direction of culture, let them see to it that culture did not take a back place in this country. The old universities, and, above all, the University of Oxford, ought always to be responsible to the nation so that culture should not be degraded.

CONFERENCE ON THE SALARIES OF ASSISTANT TEACHERS IN LONDON SECONDARY SCHOOLS.

SINCE the beginning of the year a Conference, called together by the London Branch of the Incorporated Association of Assistant Masters, has been considering the question of the remuneration of teachers in London secondary schools. In addition to representatives from the above branch of the I.A.A.M., the Conference is composed of delegates from the following bodies:—(1) the Association of University Women Teachers, (2) the Assistant Mistresses' Association, (3) the Teachers' Guild (Central Guild), (4) the Federation of London Teachers. Among others, resolutions have been passed:—

(a) Suggesting a minimum salary of £150 a year, rising to £300 a year, in the case of men; and £120, rising to £200, in the case of women, for teachers registered in Column B; and (b) welcoming the condition attached by the London County Council to the payments of grants to secondary schools, that the improvement of such salaries as are below the normal scale shall be made the first charge upon the maintenance grant.

A considerable body of statistics illustrating the condition of remuneration in London secondary schools has been collected, and much evidence has also been obtained which tends to show that the supply of university men and women entering the teaching profession is diminishing. The deliberations of the Conference culminated in a deputation which was received by the Teaching Staff Sub-Committee of the London County Council on Thursday, May 18. The deputation consisted of Mr. G. F. Bridge, Chairman of the Conference, representing the Assistant Masters' Association and the Teachers' Guild, Miss Macklin, of the Assistant Mistresses' Association and Association of University Women Teachers, and Mr. P. Abbott, Honorary Secretary of the Federation of London Teachers. The proceedings were held in private. The deputation presented tabulated statistics and also a diagram showing the difference in the prospects of secondary teachers and those in pupil-teacher centres and higher elementary schools, and said that their desire was that the Education Committee should define the normal scale. The Chairman expressed the interest of the Committee in the information which had been laid before them, and said that it would, no doubt, be found valuable.

The Conference has not yet been dissolved, and is at present engaged in collecting further statistics with respect to London salaries, both of men and women assistant teachers. Any information respecting the same would be very gladly received by the Secretary to the Conference, Mr. C. Hale, of the South-Western Polytechnic, Manresa Road, Chelsea, S.W.

OPEN COURT.

They haif said . . .

Quhat say thay?—Lat thame say!

PARENTS AND SCHOOLMASTERS.

[From the *Morning Post*.]

A SHORT time ago we ventured to ask the parents of boys now at school in England to consider the prospects of those of their boys who will have to make their own way in the world, and to compete, when they offer their services to those who are able to pay for work, with boys trained in America or in Germany. We pointed out that wherever in the world good work is wanted men trained in other countries compete for it with men trained in England and that even the English market cannot be closed against them. We have since then had evidence that a good many fathers and mothers think our view of the prospect fairly correct, and that some of them would like to know what they can do towards improving it. Little can be done for boys now at school by any efforts to influence the authorities who control schools—either the Board of Education, the local bodies, or the governors of public schools. All such authorities move slowly, and only as a result of a pronounced and definite public opinion. The man or woman whose son is now at school hardly wants to wait until the system has been improved. A good many parents, too, find it hard to test or check off what the school is doing for their boy. The lessons are in subjects in some of which the parents are not on their own account much interested, so that there would be a difficulty in their plunging into the actual work of the lessons to see how the boy is getting on. But any father or mother who really cares about it can give the schoolmaster a great deal of help by taking a comparatively small amount of trouble. Part of the business of the schoolmaster is evidently to help the boys to get into the way of thinking about what they see and hear and of expressing themselves clearly. It is not hard to find out whether this part of the work is being carried on with profit. The boy has been to see something that has interested him—a show, a play, or a cricket match. If his schooling is what it should be, he ought to be able to sit down and write a short letter describing what he has seen. To find out whether he is being taught to write nothing more is needed than to read the letter. It will be found that in too many schools teaching to write is supposed to mean merely practising hand-writing. But it ought to include teaching the boy how to put on paper what he has in his mind. If this is not part of the course, the parent ought certainly to let the schoolmaster know that the course has a serious defect. Perhaps this is at present the weakest point in half the schools of England: that the boys are not taught as one of the regular lessons to tell a plain tale in their mother tongue. Yet that is what ought to be meant by lessons in the English language.

We have suggested the simplest way of testing what the school is doing because, if parents would take the small amount of trouble involved in it, the schools would improve at once. The schoolmasters themselves are for the most part sensible men, and would agree that boys should be taught to express themselves easily and clearly in their own language. But, they would say, that means a good deal of time and the lesson hours are already filled up. Then comes the parent's turn, for he will find that the other parents will agree with him, and that, provided they consent, the schoolmaster will put a regular writing lesson in the sense here explained into the time-table. The little boys ought to be made to tell their tale by word of mouth without writing it, a practice which will make the beginning of written expression, or "composition" as the schools call it, much easier. We have a practical reason for beginning with something simple. No parent who has not tried it has any idea of the influence which will be exerted on a whole school by his taking a direct interest in his boy's work, even if it goes no further than has already been suggested. The mere fact of his seriously discussing with the master the end and purpose of teaching will stimulate and help the master. We come to a further point, which to find out requires a little more trouble. There is all the difference in the world between the system in which a master who thoroughly knows a subject and is interested in it gives a lesson to his class, and the system in which the boys are set down to learn by rote a page of a school book, and are then "heard their lesson." The one process is an awakening of the mind, the other

too often a putting it to sleep. The best part of teaching is the direct intercourse between the master and his pupils, and parents would do well to be jealous of all contrivances for substituting text-books for real instruction. Even in that part of school work which is perhaps the best conducted—the teaching of Latin and Greek—there has been too much scope allowed for the tendency of the teacher to hand over to the pupil what he ought to do himself. There has been for some years a multiplication of annotated editions—many of them excellent—of the Greek and Latin classics read in schools, and of the English classics too. We suspect that these editions are the grave of true scholarship. The notes distract the attention from the text, which thus never gets consecutively read and never becomes familiar, and the attention is drawn away to matters the greater number of which are mere trifles. The accident of every language has to be learned by rote. There is no escape from that. Of the syntax a few main rules must be explained until they are thoroughly grasped, but the refinements of syntax are learned only by long observation. These elements, the accident and the leading principles of syntax, once learned, the language can be mastered, apart from conversation, which is impracticable with dead languages, only by translation and retranslation or composition in sufficient quantity, composition following at some distance behind reading or translation. We should like to see editions with notes banished altogether from schools, or at any rate kept out of reach of schoolboys, and the lessons given from the plain text. This implies, of course, that the master really knows the language he is teaching. In the case of Greek and Latin at the public schools this is the case. But there are too many instances in which a modern language is taught, at any rate in schools below the first rank, by men who can neither speak nor write it. If you want your boy to learn French at school, take the trouble to find out whether his French master speaks French.

Above all, a parent should satisfy himself that what his children are taught is kept in touch with reality; that, if they learn a language, they are learning to think and to express themselves in that language; that their geography means to them a knowledge of the world they live in; that their history is the lives of real people, whom they love or hate, admire or despise. If you find that school geography means lists of names, school history summaries of events and tables of dates, and school language mere rules and paradigms, you may be sure that the school is not giving an education that will lead into life. But, if such schools exist, the fault is only in part that of the schoolmasters. The parents who have gone to sleep while the best years of their children's lives have been wasted on the dry bones of nothing are at least equally to blame. Here is the world, full of interest of every sort and full of life; there are near us countries as remarkable as our own, full of people as much alive as our people, with their past as instructive as that of England. To this world and its meaning the school should be an introduction. English schools will perform that function so soon as English parents are determined that they shall.

CORRESPONDENCE.

We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

THE TEACHERS' REGISTER:

COLLAPSE AND RECONSTITUTION.

To the Editor of "The Educational Times."

SIR,—The Report of the Teachers' Registration Council shows patent failure of the Register at every point, and impresses the necessity for a fresh start. What is to be done? I note the pressure on your space, and therefore limit myself to suggesting a mere outline, which others may fill out or modify. To begin with, a clean sweep must be made of Column A, which serves no useful purpose, and only cumber the ground. Then the classification of the Register must proceed, not, as at present, on the class of school in which a teacher has gained his experience, but solely on his academic qualifications. All teachers must equally furnish proof that they have been trained and have profited by their

training, and they will then be distinguished as possessing a degree or some lower certificate of general knowledge. I am well aware that I am here treading on dangerous ground, and enunciating views on which the Council of the College have not yet definitely pronounced. I may be mistaken, but it seems to me that the Act of 1902 has made it impossible for the future to draw any hard and fast line between primary and secondary schools and teachers. I would further urge that it is now practically impossible, even were it desirable, to exclude elementary teachers from the Register, and to objectors who argue that the training and experience demanded of primary and secondary teachers are and must be essentially different I would answer that the information supplied under each name in the Register will enable those who hold this view to differentiate the ex-pupil-teacher from the probationer for an Eton or Harrow mastership. This by way of suggestion. The present system stands confessed a hopeless futility.—I am, Sir, &c.,

EMERITUS.

SCOTLAND AND BRITISH PATRIOTISM.

A PROTEST FROM THE NORTH.

To the Editor of "The Educational Times."

SIR,—The bearing of Japan's patriotism upon her astounding success in the present war has awakened some of our statesmen, and a number of our public journals, to the importance of developing a similarly patriotic spirit at home. To this end it is urged that in our schools the rising generation should be made better acquainted with our country's history, and with the deeds of heroism and the triumphs of genius that glorify its pages.

But, if the end desired is to be helped and not hindered by this means, the school histories from which the young are being taught will have to be purged from the errors and misrepresentations that meantime offend and alienate the smaller nationalities, and weaken instead of strengthening the Imperial bond. How, *e.g.*, is Scotland treated in the history books published by English firms? Although the very first condition of union between England and Scotland was that in all time coming the United Kingdom should be called by its united name, this provision—so vital to international fraternity—is constantly and gratuitously violated in the books referred to. While Germany is never called "Prussia," or the German army called the "Prussian" army, Britain is continually called "England," and our Army, Navy, throne, flag, and Parliament, which are all British, are called "English." In many cases the terms objected to are used as offensively as if the express purpose were to irritate the feelings of the Scottish people. Scots, of whom their country is justly proud—men like Adam Smith, James Watt, David Livingstone, Sir Ralph Abercrombie, Sir John Moore, and Sir Colin Campbell (afterwards Lord Clyde)—are all described as "Englishmen." How would English people feel if they found school histories teaching the young to call Clive a Scot or Shakespeare an Irishman? Yet Clive was as much a Scot, and Shakespeare as much an Irishman, as Abercrombie, Moore, and Lord Clyde, or Adam Smith, Watt, and Livingstone were Englishmen.

Affronts of this kind, aggravated by the sense of injustice in taking from Scotland honours that belong to her and crediting them to England, whose they are not, cannot fail to irritate national feeling, and certainly do not help to strengthen the Imperial sentiment or promote that international fraternity of feeling which we all desire to see. The invasion of Scotland by schoolbooks abounding in this offensive misuse of our national names, and in this and other ways doing grave injustice to Scotland's history and to her part in the development of the British Empire, and seeking practically to sink her name and nationality in those of England, is bound to give increasing offence. Already a number of important School Boards, including those of Glasgow and Edinburgh, have begun to take action, as has also the Convention of Royal and Parliamentary Burghs. But why should English authors, publishers, and educational authorities make such action necessary, when the practice complained of not only tends to international friction, but involves misrepresentation of historic truth and the violation of an international pledge?—I am, &c.,

DAVID MACRAE,
President Scottish Patriotic Association.

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THE half-yearly General Meeting of the members of the College of Preceptors will be held at the College on Saturday, July 29, at 3 p.m.

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A HOLIDAY COURSE will be held in London, July 17—August 18; a shorter Course, July 31—August 18. Practical classes in composition, conversation, and phonetics; Lectures on literary, philological, and social subjects. Apply to Director of Holiday Courses, c.o. Registrar of the University of London, South Kensington, S.W.

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PRESIDENT N. MURRAY BUTLER, of Columbia University, will be entertained at dinner by educational and other admirers at the Hotel Great Central (Wharncliffe Rooms) on July 5, at 8 p.m. Dr. H. Frank Heath and Mr. P. J. Hartog (University of London, South Kensington, S.W.) are the Hon. Secretaries of the Reception Committee.

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THE London Geological Field Class will make an excursion to Reading (Reading Beds) on July 2.

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A CONFERENCE of head masters, head mistresses, and governesses of secondary schools will be held at Durham University on July 1 to consider how County Councils and secondary schools can best co-operate in the interests of secondary education.

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MISS WALTER, H.M.I. (38 Woodberry Grove, Finsbury Park, N.), is arranging a party to Switzerland (Kandersteg and Zweisimmen) on August 1 for a fortnight. 10 guineas.

OXFORD UNIVERSITY has conferred the honorary degree of Litt.D. upon Herr Gerhart Hauptmann, the most original German dramatist of to-day, and upon M. Emile Senart, member of the Institute of France; the honorary degree of D.Sc. upon Mr. Edwin Ray Lankester, M.A., F.R.S., Hon. Fellow of Exeter College, and Director of the Natural History Museum, South Kensington; the degree of D.M. upon Prof. Osler, the new Regius Professor of Medicine; and the honorary degree of M.A. upon Mr. C. J. Holmes, Slade Professor of Fine Art, Oxford.

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THE honorary degrees that we mentioned last month as proposed by Cambridge University were duly conferred, with two exceptions. M. Paul Cambon, the French Ambassador, was unable to attend; and Father Denifle, one of the archivists of the Vatican, was in the meantime seized with illness, which, unhappily, proved fatal. The honorary degree of LL.D. has also been conferred upon Lord Cromer.

THE University of Dublin has conferred the following honorary degrees:—

LL.D.—Margaret Byers; Henrietta Margaret White; Sir Thomas Drew, President Royal Hibernian Academy; the Right Hon. Sir Arthur Wilson, B.A., K.C.I.E.

M.D.—Sir Richard Douglas Powell, Bart., K.C.V.O.; Henry Rosborough Swanzy, M.B.

Sc.D.—Edward A. Schäfer, Professor of Physiology, Edinburgh; Sydney Young, Professor of Chemistry, T.C.D.

Litt.D.—William Graham, M.A., Professor of Jurisprudence and Political Economy, Queen's College, Belfast; Hon. Emily Lawless.

Mus.D.—Michele Esposito.

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MR. SAMUEL H. BUTCHER, M.A., Hon. D.Litt. Oxford and Dublin, F.B.A., formerly Fellow of Trinity College, Cambridge, and of University College, Oxford, and Professor of Greek at Edinburgh University, has been elected to an honorary Fellowship at University College, Oxford.

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MR. RITCHIE, M.A., B.Sc., Fellow of New College and Reader in Pathology in the University of Oxford, has been constituted Professor of Pathology so long as he holds the Readership.

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DR. J. A. H. MURRAY, editor of the Oxford English Dictionary, has been nominated a corresponding member of the Imperial Academy of Sciences of Vienna.

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THE French Academy has awarded a prize of 12,000 fr. (£480) to Mr. G. A. Grierson, C.I.E., for his work in connexion with the Linguistic Survey of India and the Languages of India.

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Endowments and Benefactions. MR. G. W. PALMER, formerly M.P. for Reading, has offered £50,000 to Reading University College, to be called (after his father) "The George Palmer Endowment Fund."

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THE Goldsmiths' Company has given £5,000 towards the production of the sixth volume of the Oxford English Dictionary.

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MR. VERNON J. WATNEY, M.A. New College, Oxford, has given £500 to the General Fund of the Bodleian Library.

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THE Surveyors' Institution has founded three scholarships, £80 a year each, at Cambridge University, to afford facilities for the higher education of surveyors in branches of scientific knowledge cognate to their profession.

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MR. YARROW has given the Institution of Civil Engineers £10,000, to be applied to the education of necessitous members of the engineering profession.

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THE Northampton Institute offers three scholarships in September. They will give exemption from fees (£52) during the whole of the four years' course in Mechanical or Electrical Engineering.

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Scholarships and Prizes. THE Law Society offers 12 scholarships, £50 a year each, tenable for three years, in October—6 to articled clerks, 6 to men not yet articled (3 to candidates under nineteen, 3 to University graduates only). Holders will pursue a course of legal studies approved by the Council. Candidates give notice in writing to the Director of Legal Studies (at the Society's Hall, 113 Chancery Lane, W.C.) by September 15.

A GEOGRAPHICAL SCHOLARSHIP, £60, will be open to candidates that have taken Honours in one of the Final Schools of the University of Oxford. Examination, October 12. Send names to the Reader in Geography, Old Ashmolean Building, Broad Street, Oxford, by October 2.

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JESUS COLLEGE, CAMBRIDGE, offers two Lady Kay Scholarships, £60 a year each, in July. Testimonials of qualifications to reach the Master by July 14.

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TWELVE scholarships (8 of £50 and 4 of £25 a year each for 3 years) for Catholic students entering the Royal University of Ireland will be awarded in October on the results of the Intermediate examinations. Apply to the secretary of the Committee of the Catholic Scholarship Fund, University College, Dublin, by October 1.

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Appointments and Vacancies. MR. E. A. BECK, M.A., Master of Trinity Hall, has been re-elected Vice-Chancellor of Cambridge University.

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SIR ARCHIBALD GEIKIE, LL.D., F.R.S., has been invited to deliver the Huxley Lecture at Birmingham University next year.

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M. A. BELJAME, Professor at the Sorbonne, has been elected Clark Lecturer in English Literature at Cambridge for 1905-6.

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AFTER consultation with the Senate of the University of London, the Council of University College have decided to institute a Chair of Roman Dutch Law, and will shortly proceed to make an appointment to it.

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MR. E. BROWN, M.Sc., M.E. (Liv.), Lecturer on Applied Mechanics in Liverpool University, has been appointed Assistant Professor of Civil Engineering and Applied Mechanics in the McGill University at Montreal.

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DR. J. E. DUERDEN, of the University of Michigan, formerly Curator of the Museum, Jamaica, has been appointed Professor of Zoology at the Rhodes University College, Grahamstown, Cape Colony.

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MR. ALEXANDER OGG, M.A., B.Sc., Ph.D., Royal Naval Engineering College, Devonport, has been appointed Professor of Applied Mathematics and Physics in Rhodes University College, Grahamstown, South Africa.

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DR. A. J. HERBERTSON, M.A., Ph.D., has been appointed University Reader in Geography at Oxford in place of Mr. H. J. Mackinder, M.A., resigned. Dr. Herbertson has been Lecturer in Regional Geography and Curator of the School of Geography since it was established.

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MR. W. J. GOODRICH, M.A. Oxon., has been appointed junior assistant Lecturer in Classics in Manchester University.

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MR. J. H. DAVIES, M.A., has been appointed Registrar of the University College of Wales, Aberystwyth.

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MR. CLOUDESLEY BRERETON, M.A. Cantab., L.-ès-L., Officier d'Académie, has been appointed an Inspector in Modern Languages under the London County Council.

MR. L. A. BORRADAILE, M.A., has been appointed Assistant Secretary for Lectures under the management of the Cambridge Local Examinations and Lectures Syndicate for the year 1905-6.

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MISS H. M. STEPHENS, Warden of the Victoria University Hall of Residence, Manchester, has been appointed Warden of the Alexandra Hall, Aberystwyth.

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THE REV. ST. JOHN BASIL WYNNE-WILSON, M.A. Camb., assistant master at Rugby, has been elected Master of Haileybury College, in succession to Canon Lyttelton.

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THE REV. ARTHUR CHILTON, M.A., Head Master of Emanuel School, has been appointed Head Master of the City of London School.

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THE REV. H. W. MCKENZIE, second master at Durham School (since 1895), has been elected Head Master, in succession to the Rev. A. E. Hillard.

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MR. T. W. BERRY, Assistant Director of Education to the City of Manchester, has been appointed Director of Education under the Rhondda Education Committee, Glamorgan-shire.

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Literary
Items. WITH several thoughtful and agreeable literary articles, *Occasional Papers* (May) propounds "A New Philosophy," which is not philosophy at all, but a speculation as to the part played by oxygen in the mechanism of the universe; and it is superfluous enough to persist in arguing (per L. M. Irby) that Bacon wrote Shakespeare.

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MR. HENRY FROWDE is adding two more volumes to his Oxford editions of standard English works—the "Tales from Shakespeare," by Charles and Mary Lamb, with illustrations from the Boydell Gallery, and the "Popular Stories," by the Brothers Grimm, reprinted from the first English edition, with the illustrations by Cruikshank so highly praised by Ruskin.

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MESSRS. A. & C. BLACK are including in their series of Colour Books "London to the Nore"—sea pictures by Mr. W. L. Wyllie, A.R.A., with descriptive text by Mrs. Wyllie.

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MESSRS. GEORGE PHILIP & SON have taken over "Dale's Walter Crane Reader Second Primer," and will shortly issue a new edition.

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THE praise of head masters' wives—*Dominae Scholae*—is charmingly set forth in the June *Contemporary*—a rare tribute of justice.

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THE *Athenæum* announces that a work of prose fiction by Mr. Swinburne—"Love's Cross-Currents"—will be published this month.

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THE second number of the *University Review* (6d. net, Sherratt & Hughes) is varied and vigorous. Canon Barnett writes on "University Settlements," Mr. Ramsay Muir on "The Study of Local History"; and Sir Oliver Lodge, continuing his "Questions for Discussion," throws out provisional opinions on the kind of degrees that should be given by a university, and the kind of curriculum to be encouraged. There are portraits of the late Dr. Martineau and the late Principal Salmond, and a sketch map of the university seats in France.

The first number (May) of the *Skandinavisk Månadsrevy* (Tyska, Engelska, Franska), conducted by the German, English, and French Lektors at Lund University (1 kr.; Gleerupska Univ. Bokhandeln, Lund), gives excellent promise of interest and vitality.

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A CRITICAL edition of Juvenal by Prof. A. E. Housman, LL.D., of University College, London, intended to make good some of the principal defects in existing editions, and especially to supply a better knowledge of the manuscripts, will be published shortly (says the *Athenæum*) by E. Grant Richards.

General. MRS. BYERS, LL.D., Principal of Victoria College, Belfast, has been presented with an address (and a cheque) by her old pupils and personal friends on the occasion of her educational jubilee. "It would be impossible, without a comparison of the state of female education in this country fifty years ago with that of the present day," wrote the Rev. Prof. Martin Todd, "to appreciate the greatness and value of Mrs. Byers's service to the community."

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PRINCESS ALEXANDER OF TECK laid the foundation-stone of the new memorial buildings to be erected in memory of Old Etonians who fell in South Africa (June 29).

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THE Privy Council Committee has assigned the Welsh National Museum to Cardiff, and the Welsh National Library to Aberystwyth, and advised that application should be made for royal charters.

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"THE Littlejohn of Invercharron Challenge Vase" has been presented by Mr. Alexander Littlejohn of Invercharron to the Aberdeen University Court "for the encouragement of manly sport and good fellowship among the students attending the University of Aberdeen, and more particularly for continuing an interest in the ancient Celtic game of shinty." The vase has been placed in the Students' Union, Marischal College.

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THE Regulations for the Cambridge Higher Local Examinations in December, 1905, and June, 1906, can now be obtained from the Local Secretaries, or from Dr. Keynes, Syndicate Buildings, Cambridge.

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THE late Prof. Mommsen's library has been purchased entire, and presented to the University of Bonn, by an anonymous lady.

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EVERY five years the students at the University at Leyden celebrate the anniversary of its foundation by the representation of some historic event. This year's subject has been "The Return of King William III. from England to the Congress of the Hague in 1691."

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THE Association of Assistant Mistresses in Secondary Schools has now completed its twenty-first year. The Report of last year's work shows vigorous activity on broad lines.

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A CURIOUS and interesting exhibit at the Indian and Colonial Exhibition at the Crystal Palace is an historical collection of fountain and stylographic pens, gathered by Mr. J. P. Maginnis, A.M.I.C.E., M.I.M.E., and shown by the London Pen Company.

SIR JOSHUA REYNOLDS :

SOME ACCOUNT OF HIS CONTRIBUTION TO PRINCIPLES OF METHOD.

AT the Evening Meeting of the members of the College of Preceptors on June 16, Prof. J. ADAMS, B.A., B.Sc., in the Chair, Prof. J. J. FINDLAY, M.A., Ph.D., read a paper on "Sir Joshua Reynolds: some Account of his Contribution to Principles of Method." He said:

It may appear, on the first blush, very presumptuous for a man who knows nothing of the art of painting, who cannot even make a brushwork "blob," to offer to lecture on Sir Joshua Reynolds. I shall do well, therefore, at once to explain the limits within which I propose to travel and the use which I desire to be made of the famous "Discourses." This I can best do by explaining how I myself came to be attracted to Reynolds's work and to attach importance to his exposition of principles.

I have never regarded teaching as an esoteric cult whose mysteries can only be unveiled by those who bear the name of pedagogy and speak from the rostrum of a training college. Doubtless we who labour in this special field have much to do in interpreting, in systematizing—perhaps in rediscovering—doctrine; but we soon get astray if we venture to expound our doctrine as an original invention or a special device which will enable the user to dispense with the experience and example of the master craftsman.

The student of education, therefore, must ever be on the look out for good workmanship—for examples, that is to say, of those who have, first of all, achieved great things in their craft, and, secondly, have exposed their hand—have shown us how they worked to reach their end. Socrates, for example, is a fount of wisdom for all mankind; but for teachers he has this additional value—that we can study his method. His disciples Plato and Xenophon enable us to see the craftsman and his pupils working on a settled plan for the study and exposition of the great themes they handled.

He, therefore, who wishes to extend his inquiries as to principles of method can always be learning from the study of the work of great men, in those cases where they have left on record some explanation of the secret of their power. This is, of course, not their proper business, and sometimes they are neither willing nor able to offer explanation; they do not choose to turn the workshop into a demonstration room; their apprentices have to learn simply by the master's example, and outsiders who do not follow the craft can in such instances learn nothing—we can but admire the finished product.

Fortunately, however, in some cases a great worker has also been a gifted teacher. Indeed, when one comes to think of it, there are at least two reasons why this should be so. For the truly great are commonly endowed most lavishly by Nature—and this not only with the genius which makes them master of their craft, but with those intellectual qualities which enable them to reflect upon origin and process and end. Nor do they often lack those broad and generous sympathies which make them ready, and often enthusiastic, in imparting their ideas and plans to their fellow-craftsmen. The greatest men are great all round, and, along with their specific gifts, they possess in generous measure those common qualities which touch the interests of mankind at large.

You see, therefore, how I have come to find help from Reynolds's "Discourses." Here is a master craftsman explaining principles of method—explaining them, too, in a style which shows him to be a master in two crafts: in literature as well as in painting. In such company we feel safe. We have something to work upon: if we can interpret and apply his experience and his doctrine, we shall not go far astray.

But here let me anticipate an objection. Are you right, it will be said, in taking your principles of method from the practice or precept of the man of genius? The teacher is himself a humdrum average person, and his scholars are, perhaps, on a still lower plane. Is it likely that what may be valid for the great man is valid for the little man? I answer, unhesitatingly, Yes. The executed work will, indeed, be on a lower plane; but the principles of human action are the same, whether the genius or a fool is practising the art. You may need, no doubt, to adapt the details of your practice in obedience to various special and local conditions; but the main outlines of procedure must be based on universal laws, and it is in such laws that the basis for sound method is to be sought. This is, indeed, the reply that Reynolds makes, in the "Discourses," to a similar objection:

Study, therefore, the works of the great masters forever. Study, as nearly as you can, in the manner and on the principles on which they studied. Study Nature attentively, but always with those masters in your company; consider them as models which you are to imitate, and at the same time as rivals with whom you are to contend.—(Conclusion of the "Sixth Discourse.")

Let us then review the method of Reynolds as a teacher. His function, in the narrower sense, was merely to instruct young men engaged in painting or sculpture; but he made it very clear that these special arts were merely examples of the working of principles which cover a much wider field, and he constantly illustrates his views from other departments of artistic activity, especially from literature. Let us follow his example and seek to give his precepts a universal character, applying them, with any needful qualifications, not only to students of a Royal Academy, but to students, young and old, engaging in practising any art.

The arts practised in the schoolroom are many—some, such as handwriting and spelling, are merely mechanical; others, such as manual training or modern languages, involve many mechanical exercises, but lead, in their higher stages, to work which should bear the features of fine art. All alike, however, are distinguished from the groups of studies which lead to learning, to the wisdom of science, by the fact that the end of the achievement is skill in the art, mastery in power of production, whether or no this power be accompanied by ordered scientific knowledge.

I invite you to follow with Reynolds the steps by which he desired his students to mount from the threshold to the summit, and to study his views in their universal aspect. There is one idea which pervades the whole of the "Discourses," and may well be selected as the central theme of this lecture, namely, the part played by imitation or copying in the acquirement of skill:

A painter must not only be an imitator of the works of Nature, which alone is necessary to dispel this phantom of inspiration, but he must be as necessarily an imitator of the works of other painters; this appears more humiliating, but it is equally true; and no man can be an artist, whatever he may suppose, upon any other terms. . . . For my own part, I confess, I am not only very much disposed to maintain the absolute necessity of imitation in the first stages of the art; but am persuaded that by imitation only variety and even originality of invention, is produced. I will go further; even genius, at least what is generally so called, is the child of imitation.

Now, since Reynolds's day a great deal of scientific work has been done by psychologists in studying the part played by imitation in the life of young children, and the results tend to show that all that Reynolds maintains as to the need for imitation in the training of older students is doubly important in dealing with children of school age. For we recognize not only the value of conscious voluntary imitation where a model is selected with the express intention of copying, but there is the power of suggestion to be reckoned with, the tendency, largely instinctive in the years before adolescence and displaying itself in many directions even in later years, to mould personal action on the model of those whose behaviour is witnessed about us.

This, then, is a leading general principle, and it is so obviously true that it may be asked whether it is really necessary to urge it upon the attention of the teacher. It appears to me to be very necessary, because the traditions of our profession have been fostered on other lines, on methods positively antagonistic to the principle here laid down. The teacher still bears in his ways the character of a man of learning; his concern is with ideas rather than habits, with abstract thought rather than skilled practice; and his method has necessarily been evolved from those occupations which have given him this special stamp. Every school pursuit which he handles tends to be cultivated according to this method, even if the pursuit be one which in its own nature has only a remote association with the intellectual life. Let me illustrate from a personal experience during my student days at Jena—an experience which will illustrate at the same time the doctrine with which I set out. The Jena Seminar has been to many teachers during the last twenty years a great school of method: we have gone there—in obedience to Reynolds's dictum—to sit at the feet of a great craftsman in our profession; but, at the same time, when we have passed the first stage of our pupilage, we combine criticism with imitation. Now, you are all aware of the nature of the five steps by which the Herbartian analyzes the inductive processes involved in the acquirement of knowledge: these steps applied to their proper purpose appear to me to offer a safe guide to the teacher in preparing to instruct his scholar, but their purpose needs to be limited to that object alone; and when the attempt is made to force the

teaching of an art within the five-step machinery the result is disastrous. You will find, however, in much of the Herbartian literature that such an attempt is made. I found, for example, that the lessons in singing were planned according to these formal steps, with the result that the attention of the scholar was fastened upon the theory, the ideas as to scale, tone, &c., which attach themselves to singing exercise. No one, however, who delights himself in musical expression can be content with turning this emotional art into an exercise for the intellectual powers: music from first to last is acquired by sympathy, by suggestion, by imitation, and a teacher of music who ignores these elements, who is a thinker before he is an artist, will never secure a musical response from his scholars.

I have chosen this merely as an illustration, all the more striking because it comes from a school of reformers who are, in many directions, contributing to progress. If they are still so much under the influence of scholastic tradition, we need not be surprised to find many more extreme examples in the practice of more conservative teachers.

Reynolds, however, does not limit his range to the beginnings of art acquirement: he traces this universal law of imitation from the early stages to the later stages. The keynote of the first is obedience; the keynote to the second is freedom.

What is it then that the young scholar should obey? He is to subject himself to rules—*i.e.*, to prescriptions laid down by his teachers which he may not fully apprehend, but to which he is bound to render implicit obedience; and it is in the selection of rules, in the order in which the succession of these rules is planned, that great skill may be displayed by a good teacher. A craftsman who is not a teacher has no method. He can merely say: "Do as I do; watch me, imitate me, and you will come out right." The teacher says the same (and, unless he can behave as a model, he cannot teach!); but he does more: he plans a sequence of exercises, each embodying some new rule, some new habit, and the obedience that he exacts is not merely the attention of an apprentice, but the reflection of an intelligent scholar, who compares and remembers. The one is the method—or, rather, no method—of the workshop; the other is the method of the school—the school of art.

But these rules, however implicitly to be obeyed, are not eternal in their nature like the laws which are evolved in the inductions of the Five Steps—they are stepping-stones to freedom. The steps to be followed by a student of art, whether the art be fine or mechanical, lead to the same goal—the making of a free craftsman, who, after laborious and patient study of models, after obeying, one by one, the series of rules laid down by his instructor, finally arrives at mastery, at a power which enables him decisively to express himself in the work which he creates. True, indeed, that his work will show the traces of his teaching. The rules which he obeyed in earlier years are not now to be broken simply because the artist is emancipated from his teacher; but he has now come of age, and all that he has learnt in the years of discipline is reshaped by invention—that is, by the personal impress of his own mind and taste.

It would take us beyond the limits of this hour to attempt to apply these universal principles to the daily tasks of the classroom, and yet the practical teacher—and let us hope that we all boast of that title—will rightly inquire whether he may expect to find any serviceable guidance in the preparation of lessons from any discussion of universal principles. I can only reply that my own practice in the class-room—both when I myself teach boys and girls or when I guide the teaching of others—is controlled day by day under such guidance.

There are two branches of great importance, lying very remote from the topics of Reynolds's "Discourses," in which these principles seem to me to find application at every turn. One of these is the acquirement of English—both the writing of good English and the appreciation of good literature; the other is the acquirement of a foreign language. In both of these fields I believe that our teachers would receive more help from studying the methods of reflective and thoughtful artists—I mean artists in literature as well as in painting—than from the more recognized exponents of method within the profession. Such a book, for example, as Hamerton's "Intellectual Life" or Ruskin's "Elements of Drawing," although the ideas in detail cannot be applied to our work, serve to start off the mind at a new tangent, and when, with such an impulse to start us, we turn to our strictly professional task, we find ourselves at work with a freedom and independence which is seldom attained so long as we keep along the ordinary routes.

I desire, in conclusion, with some diffidence, to suggest that not only are Reynolds's "Discourses" worthy of general attention by all classes of teachers, but also have a special claim upon teachers of art. Since the days when the Royal Academy was founded, artists as well as teachers of art have multiplied on every hand, but it may be questioned whether the prevailing conception of the artistic ideal corresponds to any serious extent with the lofty and manly claims which are exhibited in the "Discourses." I am not aware that there is any account published in this country of the history of art teaching, but it would be a theme well worthy of investigation by those who are competent for the task. Within the lifetime of many in this audience a revolution has taken place in our schools, due in part to the desire to elevate the taste of the multitude, but due quite as much to motives based on what Reynolds calls "considerations merely mercantile." And no one who devotes his life to art, whether as teacher or artist, can shut his eyes to the moral and economic forces which play in our modern world so great a part. We cannot look in the "Discourses" for any direct guidance on these problems so special to our time, so alien to the days of Reynolds; but there are two thoughts which appear to me to be full of suggestion. If I read the "Discourses" rightly, they give me an impression that, in Reynolds's mind, art is something which is related to *life as a whole*, and its value to mankind depends wholly upon the success with which the artist interprets human experience. True, the artist is a craftsman who commands special tools which only he can wield; he must qualify himself by unceasing practice, by laborious study, to acquire the mastery of these tools; but the subjects that he chooses are, or should be, of universal interest,* and the source of this interest must be found in the springs of our common life.

If, now, we seek to translate this idea into the vocabulary of our modern pedagogy, we find ourselves advocating the doctrine of correlation. We are pleading that art in the school shall be something that finds response in the experience of our scholars, touching them vitally as a part of their present experience. The teacher of art in the eighteenth century had no thought of correlation, because he did not attempt to guide the pencil of young children: he only commenced to take a pupil in hand when he had grown to years of adolescence; in these days, however, we permit the child while still an infant to express himself with brush and pencil, and the problem presented by correlation increases vastly in difficulty when we deal with scholars whose experience and outlook vary so greatly from those of the adult. For the child does not see with our eyes; he does not see a picture as we do, nor does he see the object of the external world which a picture—his own or ours—is intended to portray. Hence the adult artist, unless he becomes also a student of children's experience, is helpless in face of the problem presented by art in the school. But, whether our scholars be old or young, we cannot afford to neglect the fundamental connexion between art and life: whatever be our method for teaching art to the young, it will fail unless the subjects which are represented stand for some real experience in the life of those we teach.

And, growing out of this conception as to the direction from which the subjects of art are to be secured, a second thought appears to me to be suggested by the "Discourses." Art with Reynolds is something which achieves an end beyond the immediate product of picture or statue: it gives a tone, a colouring to the whole life:

Though a man cannot, at all times and in all places, paint or draw, yet the mind can prepare itself by laying in proper materials, at all times and in all places. Both Livy and Plutarch, in describing Philopoemen, one of the ablest generals of antiquity, have given us a striking picture of a mind always intent upon its profession. . . . I cannot help imagining that I see a promising young painter equally vigilant, whether at home or abroad, in the streets or in the fields. Every object that presents itself is to him a lesson. He regards all Nature with a view to his profession, and combines her beauties or corrects her defects. He examines the countenances of men under the influence of passion, and often catches the most pleasing hints from the subjects of deformity. . . . The artist who has his mind thus filled with ideas and his hand made expert by practice works with ease and readiness; whilst he who would have you believe that he is waiting for the inspiration of genius is in reality at a loss how to begin and is at last delivered of his monsters with difficulty and pain.†

This noble delineation of the true craftsman appears to me

* "The Fourth Discourse."

† "The Second Discourse."

to suggest a point of view beyond the immediate intention of Reynolds in writing it. We do not teach art in schools in order to create artists, but, if our teaching is to be of any real value, it must sink so deeply into the impulses and interests of our scholars that they will find art in everything. A mere facility in representation with a pencil is no doubt of value, but it is of no account in comparison with the cultivation of taste, where the feelings have become habituated to like what should be liked in the colour and form of things perceived by the eye. We have not much time in schools to give to positive art teaching, and even that scanty time tends to be wasted in effort to produce showy results for examiners and exhibitions: the real achievement is to be sought in a direction which no examination can test, but which, nevertheless, is the final goal of all worthy teaching. The method by which this end can be secured is, once more, a problem which Reynolds cannot directly help us to solve, for he only taught young men; nevertheless, the spirit of his counsels should serve as an inspiration even in the kindergarten.

A word, in conclusion, as to the writer of the "Discourses." I have commended them to students of education because they contain the reflections of a great teacher who was also a great artist; but it is worth while to remember, too, he was something more than either teacher or artist. Teachers are often pedants: artists often absorbed in narrow conceit. Reynolds offers us a fine example in the better direction. His life is the best commentary on the "Discourses": as a young student he is absorbed in reverential study of all the great men who have gone before him; and in riper years he is a man among men—always an artist, but always a man of the world. He loves letters and associates with literary men: his own art is the greatest pleasure and the supreme occupation of his life; but he knows that he can only foster painting by finding pleasure also in literature, in politics, in society—and hence we find him, at all periods of his life a citizen of the world. And, finally, the diligence and industry that marked his whole career are a fine commentary upon these exhortations to his pupils. When at the close of his life he concluded the series of "Discourses" by a panegyric upon the labours of Michael Angelo, all who heard him knew that he himself had never spared effort and toil in the pursuit of his profession.

I have sought to show how these "Discourses" may help the teacher in studying principles of method, and in thinking upon the relations of art to the life of school. May I venture to urge, in conclusion, that the example of Reynolds's life, as well as the doctrines of his book, is worthy of our imitation?

Mr. TIBBEY thought that there was less danger in schools of the neglect of the faculty of imitation than of an undue insistence on its use, and naturally so, because this faculty offered an obvious and ready means of instruction. But teachers who attached too much importance to imitation would lose many opportunities of training their pupils, for it often happened that deviations from a model set for imitation afforded useful indications of the contents of a child's mind. It was important to discriminate between the parts of a subject in which imitation might legitimately have play and those in which it would be harmful. For instance, in reading, so far as the mechanical parts, enunciation and articulation, were concerned, it was necessary that the child should imitate as nearly as possible the best model the teacher could provide. But, with regard to expression, if the child were allowed to reproduce exactly the modulation and emphasis of the teacher, it was clear that the object of the lesson might be defeated, for such reproduction might be merely a mechanical imitation of the sounds, and expression should be the result of the child's understanding of the passage he was reading. There were other school subjects in which it was difficult to know how long the pupil should be bound down to follow closely the model, and when he should be allowed freedom.

Mr. ORCHARD was of opinion that imitation and self-expression should proceed *pari passu*. The fact that children imitated their teachers threw a great responsibility on the teachers.

The CHAIRMAN said the relation of the art of painting to the science of teaching was of the highest importance because the one illustrated the other in the relation of the concrete to the abstract. The French school of impressionist painting was really an exemplification of this. The clean palette that these painters claimed was of considerable interest for teachers. The principle was that the combination of colours should be made within the mind of the observer instead of on the painter's palette. In teaching the same was true to a certain extent. Teachers were too apt to combine the materials for the benefit of the pupil, whereas the really skilful teacher offered first one item then another, and left them to join themselves within the region of the child's mental activity. Many teachers—particularly those of the Froebelian school—were a little afraid of imitation: They were afraid

imitation would interfere with the wonderful power of initiative—of self-activity. There did not seem to be any real conflict between originality on the one hand and imitation on the other. Imitation was the power by which one became possessed of the external world and by which at the same time one was incorporated by the external world. The work of imitation was to supply that great fund of correlated activities that were relegated to the lower brain, while it was the privilege of the upper brain to select from this store those activities that could be combined for certain useful purposes in a way that was relatively original. There were degrees of originality, and what was original to the individual concerned might not be original from the point of view of the race. The amount of originality in the individual was strikingly small in proportion to the amount of imitation: yet the two elements were equally important in the development of the individual.

Prof. FINDLAY having replied to the various speakers, a vote of thanks to the lecturer concluded the proceedings.

THE RETIREMENT OF MISS CARPENTER.

(From the *Cambrian News*.)

THE retirement of Miss Carpenter, who for the past eighteen years has been at the head of the Women's Hostel of the University College of Wales, Aberystwyth, is a fitting occasion on which to point out the conspicuous success of a remarkable woman in a most difficult administrative position. When the college was opened in 1873 very few people, in or out of the Principality, believed that it would ever be attended by as many as a hundred students, and, later, when it was urged that women also should be admitted, all sorts of reasonable and unreasonable objections were raised to that radical proposal. After a prolonged struggle, women were admitted to the college in 1884 on the same terms as men, except that women students who were not living at home in the town had to be provided for in a hostel managed under college authority. Before the end of 1884 there were ten women students. Miss Carpenter, on her appointment, found the number of women students to be about twenty in number. Now, at the time of her retirement, the number is two hundred and fifteen, and we do not think the fact can be questioned for a moment that this remarkable success is mainly due to the skill and insight and courage of Miss Carpenter, who has often had to fight, almost single-handed, against the reactionaries for what she wisely deemed to be essential conditions of success. . . . We need not on this occasion set forth in detail the nature and number and gravity of the difficulties to be encountered in managing an institution containing more than two hundred women students. Miss Carpenter has faced those difficulties and has dealt with them so skilfully that to the duller sort they have not even seemed to exist. This is the highest possible tribute that could be paid to her. She has been able to exercise control without coercion, and to concede freedom without licence. She has known—rare gift—when to see and when to be discreetly blind. She has been the indisputable head of the institution with unquestionable authority if needs be, and has never failed as the mother-heart of the community in which she moved compassionately strong among her peers.

Not the least among Miss Carpenter's difficulties has been the steady increase in the number of women students, and the consequent need for increased accommodation. Time after time fact has outgrown anticipation, and at the present moment the hostel is too small for the number of students, some of whom have to be accommodated elsewhere. This continued growth in itself would have overtaxed the powers of any ordinary woman, but Miss Carpenter is not an ordinary woman, and has always been found more than equal to the ever-pressing occasion. When the Queen's Hotel was taken, the timid shook their heads ominously. When the hostel was built, they dismally asked what next. And now it is clear even to them that the hostel is not anything like large enough, and they admit that another hostel will certainly have to be built, if the growth of the work of the college is not to be restricted.

Of course Miss Carpenter has been enthusiastically helped and supported in her position and her aims by the more far-seeing members of the governing bodies of the college. Lord Rendel, Principal Roberts, and others have stood by her, and have made that bearable which else would have broken the spirit, however valiant. . . . She has not waited until sickness or failing powers necessitated retirement, but is seeking that personal freedom to which she feels herself to be entitled after many years of hard work.

We presume that Miss Carpenter's connexion with the college will not be wholly severed. We are quite sure of one thing, namely, that she will do all that is in her power to make her own retirement as little fraught with calamity as possible. . . . Miss Carpenter's successor, we are sure, will be helped by her in ways that mean the crown of self-effacement to a period of worthy activity which, we trust, is to be followed by many years of leisure and repose.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on June 17. Present: Dr. Wormell, President, in the Chair; Prof. Adams, Mr. Baumann, Mr. E. A. Butler, Mr. Chettle, Miss Crookshank, Miss Dawes, Mr. Eve, Prof. Findlay, Mr. Hawe, Dr. Lawrence, Bishop Mitchinson, Dr. Moody, Mr. Morgan, Mr. Starbuck, and Mr. Storr.

The minutes of the last meeting were read and confirmed.

Prof. J. Adams was appointed to deliver the Autumn Course of Lectures to Teachers on the Practice of Education.

Saturday, July 29, was fixed as the date of the next Ordinary General Meeting of the members of the College.

The Draft Report of the Council to the General Meeting was considered, and referred to the President, Vice-Presidents, and Dean for final revision.

Mr. R. Ferguson, L.C.P., 5 Courtney Road, Croydon, was elected a member of the College.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—Rule's Graduated Lessons on the Old Testament, 3 vols.

By the BUREAU OF EDUCATION, WASHINGTON.—Report of the Commissioner of Education for the Year 1903, Vol. I.

By the STATE EDUCATION DEPARTMENT, NEW YORK.—Taylor's Teaching in the United States.

By A. & C. BLACK.—Kirkman and Morgan's First French Song Book; Lees's Biographical History Reader.

By the CAMBRIDGE UNIVERSITY PRESS.—Graves's Aristophanes' Acharnians; Kirkpatrick's Galdós' Trafalgar; Spratt's Thucydides, Book VI.

By GINN & Co.—Blaisdell's Our Bodies, and How to Keep Well; Carruth's German Reader; Chance's Little Folks of Many Lands; Fossler's Practical German Conversation; Hardy's Sea Stories for Wonder Eyes; Lee's Selected Poems of Mrs. Browning; Minckwitz and Wilder's Lessing's Minna von Barnhelm; Stickney's Earth and Sky: a Third Reader; Wauchope's Essays of Charles Lamb.

By MACMILLAN & Co.—Cotterill's Ballads Old and New, Parts I. and II.; Hall's Easy Graphs.

By METHUEN & Co.—Horth's Repoussé Metal-work; Shipley's English Church History for Children, A.D. 597-1066; Snowden's Brief Survey of British History.

By J. MURRAY.—Consterdine and Barnes's Practical Mathematics.

By the OXFORD UNIVERSITY PRESS.—Buchheim's Short German Plays (Second Series).

By the NATIONAL UNION OF TEACHERS.—N.U.T. Report, 1905.

Calendar of Edinburgh University, 1905-6.

COLLEGE OF PRECEPTORS.

PRACTICAL EXAMINATIONS FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of successful candidates at the Examinations held in February and May, 1905:—

FEBRUARY.

Class I.

Craddock, W. H. A.
Gandy, Miss E. S.
Oates, Miss E. M.
Richardson, H. E.

Class II.

Bird, R. T.
Blanchard, W. J.
Bodger, Miss E. V.
Evans, E. O.
Teakle, S. G.
Voy, Miss H.
Wyatt, H. G.

MAY.

Class I.

McDermott, Miss M. J.
White, Miss F. A.

Class II.

Harrison, W. E.
King, C. F. W.
Pass, G. J.
Peirce, Miss M. E.
Wertheim, P.

REVIEWS.

TUSCULANAE DISPUTATIONES.

M. Tulli Ciceronis Tusculanarum Disputationum Libri Quinque: A revised Text, with Introduction and Commentary, and a Collation of numerous MSS. By Thomas Wilson Dougan, M.A., Professor of Latin in Queen's College, Belfast, and Fellow of the Royal University of Ireland. Volume I., containing Books I. and II. (10s. net. Cambridge University Press.)

A very fine example of patient, capable, and thorough scholarly work. The distinction lies mainly in the incredible labour on the critical examination of the text. Prof. Dougan's story of textual experience is sufficiently startling at this time of day. He was lecturing on the Tusculan Disputations (if one must follow the slack translation of the title), and regarding the critical notes as a very secondary matter, supposing he had no more to do but to select these from existing editions, "especially from those of Orelli, Kühner, and Moser." So completely are even good scholars lulled into comfortable reliance on the Germans, particularly when the Germans show excellent results on some aspect of the subject. Prof. Dougan acknowledges, for example, that he "has the highest admiration" for Kühner's edition, and "there is, perhaps, no work from which I have learned more Latin." Very good, in one aspect; but what of the text? "It was therefore [but why "therefore"?] surprising to me to find readings constantly attributed by him to G 2, G II., or Aug., which are not contained in those MSS.; he even confuses G II. with Aug. in his preliminary notice of these MSS. When a scholar so eminent deals so inaccurately with the readings of MSS. contained in a town not fifty miles distant from his own . . ." Just so: but the difficulty is to get a scholar to be equally alive to all aspects of his author, and to be resolute enough to verify everything with his own eyes. A striking example of the futility of reliance on other's men's eyes is connected with a passage to which we shall recur. "Being in Berne," says Prof. Dougan, "I consulted the Berne MS. to see how the whole passage I., § 88, stands in it. I was surprised to find that, instead of reading *carere in malo* as stated by Orelli on the authority of Usteri, a Berne Professor, who supplied him with an account of its readings, this MS. very plainly and clearly reads *morte*." Prof. Dougan ought not to have been surprised; only it was well that such experiences at last wakened him out of his "dogmatic slumber," aroused his scepticism, and led him on to criticism on his own account. Accordingly, he has "looked into upwards of eighty MSS. and examined several test passages with a view of ascertaining the value of each," and "thirty of these MSS. I have carefully read through and collated in detail"—a veritable labour of Hercules. The consequence is that the critical apparatus he furnishes renders his edition unique—an honour to himself and his college, and to the Cambridge University Press. The publication of two such critical editions as Mr. Wyse's "Isaëus" and the present work practically together is a very notable fact both for British scholarship and for the enterprise of the publishers.

The Introduction deals concisely with Cicero's philosophical works generally, and with the date, dedication, sources, MSS., and argument of the Tusculan Disputations. The classification and description of the MSS., and the analysis of their errors, are extremely interesting and instructive. The MS. readings are placed under the text, and under them runs a tolerably full and adequate commentary, which has been read through by Prof. J. S. Reid and enriched by a considerable number of his comments. Two subjects, rather extensive for notes, are dealt with in excursions annexed. On I., § 88 (*carere in malo . . . est malum*), perhaps the most adventurous of all Prof. Dougan's independent emendations, we cannot agree with him. We have considered his note *ad loc.* and his elaborate exposition in the Introduction (following his previous discussion of the point in the *Classical Review* for February, 1902), and we are entirely unconvinced. Not only, in our opinion, is his transposition wrong, doing plain violence to the literary connexion and in no way relieving any difficulty in the argument, but the sense, as well as the immense weight of the manuscript authority, seems plainly to require *morte*, and not *malo*. "All emendations hitherto put forward have been unsatisfactory," and "to all these I object that the context fails not only to carry on the argument, but even to yield any definite sense." The passage is too long for detailed treatment here, but we would recommend Prof. Dougan

to tackle the MS. text again without any emendation at all and without prejudice. There does not seem to us to be any need either for emendation or for transposition. The volume is beautifully printed and chastely got up. The printing of the critical notes, which has involved niceties and difficulties, deserves a word of special commendation.

POLITICAL AND SOCIAL SCIENCE.

- (1) *Modern Constitutions in Outline*. By Leonard Alston, M.A., Deputy Professor of History, Elphinstone College, Bombay. (2s. 6d. net. Longmans.) (2) *The Life of the State*. By Geraldine Hodgson. (2s. 6d. Horace Marshall.) (3) *A Short History of Citizenship and Introduction to Sociology*. By H. Osman Newland. (2s. 6d. net. Elliot Stock.)

(1) In four introductory chapters, filling a good half of his book, Mr. Alston explains "General Principles"—difficulties of classification, federalism and the bicameral system, the party system (with Cabinet or Committee), and the demarcation of powers. Then follow in summary "the Separate Constitutions" of more instructive character. The author has aimed merely at producing "a brief readable introduction to a complex subject"; "while seeking to present something more than a bare skeleton of dry facts, he has aimed, first and last, at the merit of brevity." But is brevity a merit in a case like this? It may be so for adults of some experience, but scarcely for school or college students. These want a clear and full exposition of such points as are selected for treatment: and they need particular illustrations of general propositions. Mr. Alston does very well within his limits, but his mania for brevity makes these limits too narrow: his book would have been a simpler and safer guide if it had been twice or thrice as long as it is. "There is considerable jealousy in Norway of the preponderating influence of Sweden in the joint policy of the two countries." Such a statement, without elucidation, is either unmeaning or misleading. "When matters affecting Norway are discussed in the Swedish Council, a Norwegian member shall be present"—not only so, but "the Norwegian Minister of State, as well as the two Norwegian Councillors of State in attendance upon the King at Stockholm, shall have seats and a deliberative vote in the Swedish Council of State, when affairs that affect both kingdoms are transacted there" (*Grundlov*, sect. 38). "A measure twice rejected by the Lagthing is determined in joint session" of Lagthing and Odelsting: yes, but "by a majority of two-thirds" (*Grundlov*, sect. 76). And so constitutional alterations require the votes of "two-thirds of the Storting" (*Grundlov*, sect. 112). Similar comments might be made on the introductory chapters. Thus, the bicameral system "serves one important purpose in tending to check over-hasty action," affording "time for reconsideration" by "a different body" of legislators "less liable to hasty action" and "less afraid of popular passion": the passage bristles with matters that need elucidation, if the impression is not to be fallacious or nugatory. Again, English "judges have not scrupled on occasion to give decisions contrary not only to the letter, but even to the spirit, of the law, on the ground that a particular statute has conflicted with the underlying principle of all law (as has happened in recent trade union disputes); but such cases are most exceptional, and should almost certainly be counted unconstitutional." Such a statement, standing by itself, is thoroughly unsatisfactory, not only containing very disputable matter, but probably based on misapprehensions of fact; and, in any case, it throws an intolerable burden upon the teacher. The idea of the volume is excellent, and it is useful as it stands, but we hope it will be rewritten from a standpoint closer to that of teacher and of pupil, with fuller and more precise statement of essential facts and with self-contained explanation, and not necessarily without "brevity."

(2) Miss Hodgson's book, originally delivered as lectures to school-girls, very rightly seeks a wider audience. She sketches first the life of the City-States of Greece and Rome, next the growth of the English State, and then the working of the English Parliament, judicature, and executive, concluding with a chapter on national liberty. She disclaims originality, and acknowledges considerable debts to Mr. Warde Fowler and Sidgwick: she could not have done better than to run into debt in such quarters. The book is opportune and valuable, inasmuch as it brings together in handy form much important information that lies outside the ordinary school histories, and sets it out in simple and attractive language. She stumbles occasionally on unfamiliar ground, as in the incomplete description of the legal organization; but generally the volume is accurate, well balanced,

and instructive. It is collateral and supplementary to the school history, and should be available in all school libraries.

(3) Mr. Osman Newland's slim volume is also the outcome of lectures, which were delivered under the auspices of the late London School Board. Referring to other works of the "citizen" class, he remarks that "in none of them is citizenship conceived as other than the offspring of our own national institutions"; and he aims at putting forward a cosmopolitan and universal conception on scientific principles. The treatment is mainly historical; human society without cities, cities without citizenship, the beginnings of citizenship in Greece, the universal citizenship of Rome, citizenship and commerce in the Middle Ages, the dawn of citizenship in England, modern citizenship—these are the principal heads of the exposition, which is really "a concise history of the origin and evolution of citizen ideas and institutions throughout the ancient and modern world." Both the subject and the handling are interesting, and the volume is timely and attractive. It would be all the better for revision here and there, in order to give more fullness and precision of statement, to modify doubtful expressions, and to smooth down opinions on which there is warm contradiction. But, even as it stands, it should prove instructive and stimulating.

SCHOOLMASTER AS POET.

- (1) *Carthusian Memories*. By W. Haig Brown, LL.D. (5s. net. Longmans.) (2) *Arachnia*. By the late James Robertson. Macmillan.)

Among the advantages of verse-making as a part of classical education is the cultivation of poetry by head masters, even though they are (or were) proverbially below par in English prose.

Dr. Haig Brown, Master of the Charterhouse, and formerly Head Master of Charterhouse School, has commissioned his daughter to put together some of his occasional verses in several languages with the modest motto

Non recito quidquam nisi amicis, idque coactus.

They cover a long space of time. Some go back to his courtship and to the days when he was at the head of Kensington School. In a prologue written for that school we find an antidote to "flannell'd fools":

Scorn not such triumphs. He who deftly wields
The bat may conquer yet on other fields.
The boy who guards his wicket well may show
A good defence against his country's foe,
Or hence may learn, whate'er in life his part,
To play it with a brave and constant heart.

There are many similar prologues for Charterhouse theatricals. A school song for Christ's Hospital, of which the distinguished author was an *alumnus*, is accompanied by Greek, French, and German versions. The line:

Et le cœur se retrempe aux combats de la vie

contains a pretty reminiscence of Victor Hugo's "Lui." Among the lighter verses is a farewell to tobacco, with a Latin translation. It dates from 1855, and as we read:

But, since my breath may noisome prove
To my late blossomed flower of Love,

we cannot help thinking "tempora mutantur." One nonsense rhyme may conclude our quotation. It is marked "Anon," but may be by the Doctor himself:

There once was a new motor car
Which Papa gave to dearest Mamma.
In spite of our groan,
They went out alone:
You ask if we're orphans?—We are!

A French version is appended.

Mr. James Robertson, associated successively with Rugby, Harrow, and Haileybury, was known to his friends not only as a poet, but also as an accomplished essayist and preacher. His lyre is of widest range, passing from merry trifling to wisdom and pathos. There are some spirited denunciations of the opponents of Dr. Temple's appointment to the See of Exeter. One begins:

Brekekekex kekex!
Come let us harry and vex
This heretic Bishop of Exe:—
Down with your intellect, down with the lex,
Brekekekex kekex!

The best of the Harrow poems is a song which has obtained a wider circulation—

Heroes angelic on Haemus or Helicon
All, all are dead;
Where shall our mountain, where shall our fountain,
Be now instead?
How it confuses—sang the nine Muses—
Our poor dear head!—

After rhyming "Teneriffe" with "any leaf," "Dhawalagiri" with "dreary," and "Apennine" with "happy mind," the poem ends with their migration to Harrow on the Hill.

Some of the best poems in the volume are memorial verses on Dean Stanley, on Mr. Gladstone, on W. G. W., and on a Rugby colleague, W. K. Wilson, who was killed on the Riffelhorn. Of Mr. Gladstone he says:

No tongue so peerless,
No toil so long;
What heart so fearless?
What head so strong?
Whose faith more fervent?
More calm whose end?
We bless God's servant;
We mourn man's friend.

The volume concludes with a number of translations, mostly from German *Volklieder*, written to be sung, with others from Victor Hugo and Béranger.

GENERAL NOTICES.

MATHEMATICS.

A New Trigonometry for Schools. By W. G. Borchardt, M.A., B.Sc., and the Rev. A. D. Perrott, M.A. (4s. 6d. G. Bell.)

One of the primary objects of the work is to give prominence to the practical parts of trigonometry and to the great value of the subject in its various applications. For this purpose the book is well arranged. The present volume forms the complete text-book, but Part I. has also been issued separately. Part II. is excellent; Part I., though good in many respects, is open to severe criticism from the point of view that trigonometry, in common with other branches of mathematics, is classed among the *exact* sciences and that the study of it should be a means of mental discipline. The confusion in the text of positive and negative quantities is complete; for the authors, after defining the same, are either unaware or, more probably, are oblivious of the fact that a line or an angle is positive or negative by virtue of the *direction in which it is measured*, and that—to give but one example—the position of a vertical line in the first quadrant does not make it positive if it is named as being measured *towards* the x axis instead of *from* it. The disregard of direction is unwise even when a preliminary discussion of acute angles and triangles in the first quadrant is undertaken, and or this reason—that the pupil is allowed to use expressions which must of necessity be contradicted later; but in the more general treatment of the subject the failure to recognize and to maintain rigid accuracy in respect of direction admits of no excuse. Broadly speaking, Part I. ought to be rewritten; after being subjected to this process, it would probably be as satisfactory as the second section of the treatise. There the authors are almost, if not quite, free from the necessity of treading on dangerous ground, with the result that their real mastery over the general theory of the subject can be fully appreciated. The discussion of *limits* in trigonometry and of De Moivre's theorem and its applications may be cited as examples of really good work. In the body of the text four-figure logarithms are employed as being best adapted for practical calculations. Seven-figure logarithms, however, form the subject of one appendix, while a second is devoted to a description of the slide rule and its uses.

Elementary Practical Mathematics. By the Author of "Commercial Arithmetic," &c. (1s. 6d. Oliver & Boyd; Simpkin, Marshall, & Co.)

The student of technical subjects will meet here with a considerable store of useful information and with a varied collection of practical rules bearing on the portions of arithmetic, algebra, and mensuration with which he is principally concerned. Though written with special reference to the wants of pupils attending continuation classes (Division II.), the author anticipates that his small manual will prove serviceable to a wider circle of students during the earlier period of training. In many cases the working formulae which are recommended are sufficiently explained; in others they appear as mere statements—a matter for regret, seeing that a forgotten formula cannot be readily recovered unless its mode of construction has been rendered familiar to the student in the first instance. One of the least satisfactory parts of the work is that which treats of the contracted methods of multiplication and division of decimals.

SCIENCE.

A Text-Book of Physics. By J. H. Poynting, Sc.D., F.R.S., Mason Professor of Physics in the University of Birmingham; and J. J. Thomson, M.A., F.R.S., Sc.D., LL.D., &c., Cavendish Professor of Experimental Physics in the University of Cambridge. Vol. III.: *Heat.* (15s. Griffin.)

The two previous volumes expounded the properties of Matter and Sound; there are two to follow, on Magnetism and Electricity, and on Light. In accordance with the general plan, the treatment appeals only to very elementary mathematical methods, though more advanced mathematical students will find it most useful to condescend to follow the exposition. As Prof. Poynting justly remarks, the elementary methods "bring before us more evidently the points at which various assumptions are made, and they render more prominent the conditions under which the theory holds good." The Text-Book is chiefly intended for such students as lay most stress on the study of the experimental part of physics; and reasons of space impose a limitation to such phenomena as are of special importance, or as throw light on other branches of physics. The implication is that students of physics show a disinclination to go far into mathematical studies—an unfortunate fact that receives confirmation in many other quarters. The exposition is thoroughly clear, carefully graduated, and up to date at every point. There are 193 illustrations, and print and binding are excellent.

A Primer of Biology and Nature Study. By Randal Mundy, B.A., B.Sc. Lond., Lecturer at the Ashton-under-Lyne Technical School. (2s. 6d. Ralph, Holland, & Co.)

The work falls into three parts—general biology, plant life, and animal life; and the handling keeps steadily in view the fundamental connexion of the plant and animal worlds and the gradual development of existing types of life on evolution principles. It is a simple, clear, and sound book for beginners. "It is especially planned to arouse the interest of the young teachers in our elementary schools, and to enable them to group the scattered facts of their experience of the living world into a methodical and logical system of biological knowledge"; and the plan is efficiently carried out. There are 131 figures, besides a frontispiece showing the anatomy of a bean-plant.

An enlarged edition of *Notes on Volumetric Analysis*, by J. B. Russell, B.Sc. Lond., assisted by A. H. Bell, B.Sc. Vict. (2s., Murray), is very welcome. It provides most useful laboratory instructions for students at secondary or technical schools, with a considerable number of worked examples and a large number of exercises and numerical examples. Calculations and methods are very distinctly set forth. A valuable practical manual.

Some Difficulties in getting on is a reprint from the *Electrician* (November 18, 1904) of an instructive and suggestive address by James Swinburne, past President of the Institution of Electrical Engineers.

ENGLISH LITERATURE.

The Masters of English Literature. By Stephen Gwynn. (3s. 6d. Macmillan.)

Mr. Gwynn divides English authors into two classes—the obligatory and the unessential—those that one is expected to know about, and those that ordinary readers have neither time nor inclination to study at first hand; and his main criterion of selection is public fame. Neglecting the latter class, he deals with the former by way of biographical narrative and literary criticism, addressing himself to young readers or to such as have made no exhaustive study of literature. There need be no serious quarrel with him either on the point of selection or on the method of treatment. He furnishes a very interesting general view of the authors and their work, and his style is fluent, if occasionally loose and unpolished. The volume will be a welcome companion to the publishers' series of "English Classics," awakening and quickening a love for English literature. Differences of critical opinion here and there need not interfere with a general appreciation of the design and the execution. Let the pupils have access to the book for collateral reading on their own account, and they will read it through and through. It will be stimulating as well as instructive.

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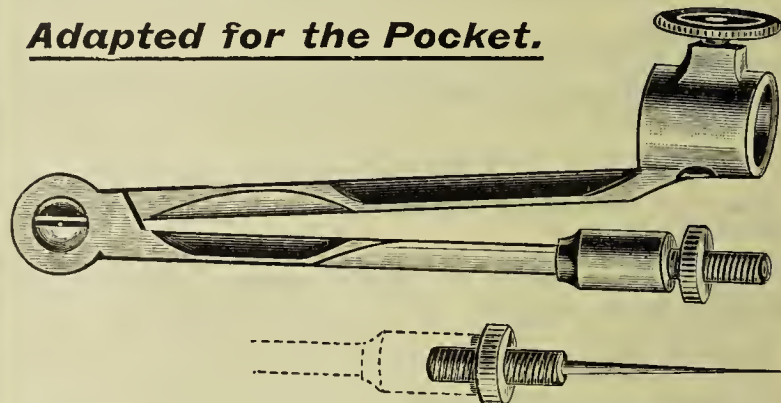
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$$\sum (\cot \omega_r) = \frac{1 + \cot A \cot B \cot C \cot \omega + \cot^2 \omega + \cot^4 \omega}{\cot \omega - \cot A \cot B \cot C}$$

Solution by the PROPOSER and K. S. PATRACHAN.

$$\cot \omega_1 = \cot \omega + \cot(C - \omega) - \cot C = \frac{(\cot \omega - \cot C)^2 + \cot C \cot \omega + 1}{\cot \omega - \cot C}$$

$$= \frac{1 + \cot^2 \omega}{\cot \omega - \cot C} - \cot C;$$

therefore $\sum \cot \omega_r = \frac{(1 + \cot^2 \omega)(3 \cot^2 \omega - 2 \cot^2 \omega + 1) - \cot \omega}{\cot \omega - \cot A}$

$$= \frac{(1 + \cot^2 \omega)^2 - \cot^2 \omega + \cot A \cot \omega}{\cot \omega - \cot A}$$

$$= \frac{1 + \cot^2 \omega + \cot^4 \omega + \cot A \cot \omega}{\cot \omega - \cot A}$$

15751. (Communicated by J. A. H. JOHNSTON, M.A.)—Two light rods OA, OB, of equal length l , are hinged at a fixed point O, and carry heavy rings of equal mass m at the ends A and B. A third light smooth rod runs through the two rings and is hinged at a point P, vertically above O, at a distance l' from it ($l' > l$). The whole is started from the configuration in which A and B are vertically above and below O respectively, by impressing an angular velocity ω upon the rod PAB. Show that when the angle AOB between the rods is 2θ the reaction at P is

$$[2ml(\omega^2 - g/l')(l'^4 - l^4) \cos \theta] / [l'^2 - l^2 \cos 2\theta]^2.$$

Solution by C. W. O'HARA.

At time t let C be the mid-point of AB, and let $\angle OPC = \phi$. Then, from the Question,

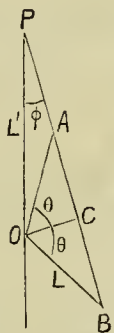
$$\angle COA = \angle COB = \theta; \quad OA = OB = l; \quad OP = l'.$$

Also we obviously have the relation

$$l' \sin \phi = OC = l \cos \theta \dots \dots \dots (1).$$

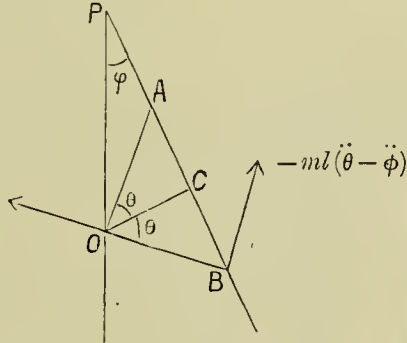
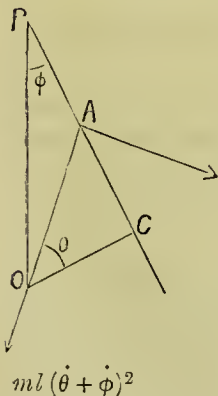
This determines ϕ in terms of θ .

Now, from the figure, the rod OA makes an angle $\frac{1}{2}\pi - (\theta + \phi)$ with OP, and the rod OB an angle $\frac{1}{2}\pi - (\theta - \phi)$ with PO produced. Hence the angular velocity and acceleration of ring A are $-(\dot{\theta} + \dot{\phi})$ and $(\ddot{\theta} + \ddot{\phi})$; and of ring B $-(\dot{\theta} - \dot{\phi})$ and $-(\ddot{\theta} - \ddot{\phi})$; whence the kinetic reactions for rings A and B are as shown in the diagrams.



Ring A.

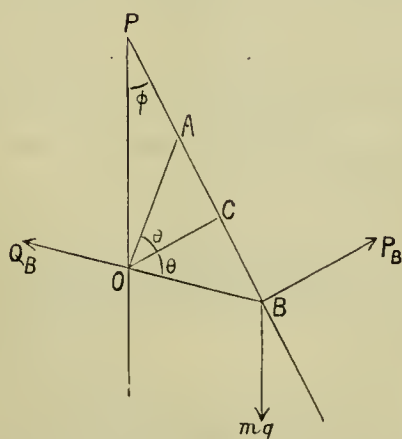
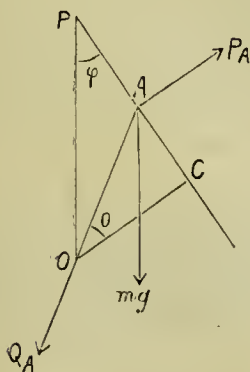
Ring B.



And the forces acting on the rings A and B are as shown in the diagrams:—

Ring A.

Ring B.



Hence, from the diagrams, resolving at right angles to OA, for ring A

we have $-ml(\ddot{\theta} + \ddot{\phi}) = P_A \sin \theta + mg \cos(\theta + \phi)$, and, resolving at right angles to OB, for ring B, we have

$$-ml(\ddot{\theta} - \ddot{\phi}) = P_B \sin \theta - mg \cos(\theta - \phi);$$

and therefore, by addition,

$$-2ml\ddot{\theta} = (P_A + P_B) \sin \theta + mg [\cos(\theta + \phi) - \cos(\theta - \phi)],$$

i.e.,

$$-2ml\ddot{\theta} = R \sin \theta - 2mg \sin \theta \sin \phi,$$

R evidently being the reaction we are required to determine.

Now $\dot{\theta} = (d/d\theta)(\frac{1}{2}\dot{\theta}^2)$, and, from (1), $l' \sin \phi = l \cos \theta$. Hence the above equation becomes

$$R \sin \theta = -ml(d/d\theta)(\dot{\theta}^2) + 2mg(l/l') \cos \theta \sin \theta \dots \dots \dots (2).$$

To find $(d/d\theta)(\dot{\theta}^2)$, we first form the energy equation for the rings. At time t the velocities of the rings A, B are respectively $-(\dot{\theta} + \dot{\phi})l$ and $-(\dot{\theta} - \dot{\phi})l$, and therefore their kinetic energy is

$$\frac{1}{2}m[l^2(\dot{\theta} + \dot{\phi})^2 + l^2(\dot{\theta} - \dot{\phi})^2],$$

i.e., $m l^2 (\dot{\theta}^2 + \dot{\phi}^2)$. Now, by differentiating, with respect to t ,

$$l' \sin \phi = l \cos \theta,$$

we get

$$l' \cos \phi \dot{\phi} = -l \sin \theta \dot{\theta} \dots \dots \dots (3).$$

Hence we find

$$\dot{\phi}^2 = [l^2 \sin^2 \theta / (l'^2 - l^2 \cos^2 \theta)] \dot{\theta}^2.$$

Hence kinetic energy

$$= m l^2 \dot{\theta}^2 [1 + l^2 \sin^2 \theta / (l'^2 - l^2 \cos^2 \theta)] = m l^2 \dot{\theta}^2 [(l'^2 - l^2 \cos 2\theta) / (l'^2 - l^2 \cos^2 \theta)].$$

Initially, $\dot{\phi} = \omega$, $\phi = 0$, $\theta = \frac{1}{2}\pi$. Hence, from (3), $l'\omega = -l\dot{\theta}_0$, where $\dot{\theta}_0$ is the initial value of $\dot{\theta}$, and therefore the initial kinetic energy is $m\omega^2(l^2 + l'^2)$. Also the height of C, the centroid of the rings A, B above O, is $l'(1 - \cos^2 \phi) = l' \sin^2 \phi = (l^2/l') \cos^2 \theta$, and therefore the potential energy of the system, the initial configuration being standard configuration, is $2mg(l^2/l') \cos^2 \theta$. Hence the energy equation is

$$m\omega^2(l^2 + l'^2) - m l^2 \dot{\theta}^2 [(l'^2 - l^2 \cos 2\theta) / (l'^2 - l^2 \cos^2 \theta)] = 2mg(l^2/l') \cos^2 \theta.$$

This equation determines $\dot{\theta}^2$ in terms of θ , and, differentiating with respect to θ , we easily find $(d/d\theta)(\dot{\theta}^2)$. Substituting the value of $(d/d\theta)(\dot{\theta}^2)$ thus found in (2), we can find R in terms of θ . The result is

$$R = 2ml \cos \theta \{ [(l'^4 - l^4)(\omega^2 - g/l') / (l'^2 - l^2 \cos 2\theta)^2] \}.$$

Cubic Equations: a direct method of solving them (when irreducible by Cardan's method) to any required degree of approximation.

By D. BIDDLE.

Reduce the equation to the form

$$x^3 + qx + r = 0 \dots \dots \dots (a).$$

Let

$$x = (r/q)u \quad \text{and} \quad q^3/r^2 = -c \dots \dots \dots (b).$$

Then we obtain the following equalization of known quantities:—

$$u^3 - cu - c = 0 \dots \dots \dots (1),$$

(a) belongs to a group, infinite in extent, of which the standard is of form

$$X^3 + QX + R = 0 \dots \dots \dots (2),$$

and each individual equation resembles

$$x^3 + Qm^2x + Rm^3 = 0 \dots \dots \dots (3),$$

where m may be either integral or fractional and $x = mX$. For the whole group under the particular standard, the quantities in (1), both known and unknown, are identical. Therefore when (1) is solved for any particular standard the whole group belonging to that standard is practically solved also: adjustment of values, according to (b), is then alone necessary. Thus, if we are able to solve $X^3 - 7X - 6 = 0$, it is easy to solve $x^3 - 28x - 48 = 0$, because $28 = 7 \cdot 2^2$ and $48 = 6 \cdot 2^3$, whence we have $x = 2X$. Now, by (1),

$$c = u^3/(u+1) = u^2 - u + 1 - \Delta \dots \dots \dots (4, 5),$$

where $\Delta = 1/(u+1)$. By (5),

$$u = \frac{1}{2} [1 \pm (4c - 3 + 4\Delta)^{\frac{1}{2}}] \dots \dots \dots (6).$$

For our present purpose, the sign preceding the quantity under the radical sign may be regarded as always positive, because it is only in cases in which c exceeds $6\frac{3}{4}$ that Cardan's method is inoperative. At that value of c , the values of u are $3, -\frac{3}{2}, -\frac{3}{2}$; the positive value of u increases with c , and the positive value of u is the only one we need seek, as this will enable us to find the corresponding value of x , the two remaining values of which can then easily be found from the quadratic equation to which the cubic (a) becomes reducible.

Taking (6) as our formula, we can carry out the following process, until the required degree of approximation is reached. It is neither laborious nor prolonged, and, though expedited by the use of logarithms and reciprocals, is in reality independent of all tables.

Let $u_1 = \frac{1}{2} [1 + (4c - 3)^{\frac{1}{2}}]$, $u_2 = \frac{1}{2} \{ 1 + [4c - 3 + 4/(u_1 + 1)]^{\frac{1}{2}} \} \dots (7, 8),$

$$u_3 = \frac{1}{2} \{ 1 + [4c - 3 + 4/(u_2 + 1)]^{\frac{1}{2}} \} \dots \dots \dots (9),$$

and so on. The convergence is very rapid, but some oscillation, by way of alternate increase and decrease in results, occurs.

Example.—Solve $x^3 - 17x - 20 = 0$, giving results correct (say) to five places of decimals. Here $c = 17^2/20^2 = 12\frac{113}{400}$; and the stages are as follows:—

n	$4c - 3 + 4/(u_{n-1} + 1)$	$[4c - 3 + 4/(u_{n-1} + 1)]^2$	u_n	$4/(u_n + 1)$
1	46.130000	6.791906	3.895953	0.817012
2	46.947012	6.851789	3.925895	0.812050
3	46.942050	6.851426	3.925713	0.812065
4	46.942065	6.851428	3.925714	

Therefore we are justified in regarding $u = 3.9257135$ as its positive value; and, corresponding to this, $x = \frac{2}{3}u = 4.618486$. For the two remaining roots of x , we are able to form the following quadratic equation, by reduction of the cubic: $-x^2 + 4.618486x + 4.330423 = 0$, whence we obtain $x + 2.309243 = \pm 1.001090$. Thus, the three roots of x are 4.618486, -1.308153, -3.310333. Their products taken two at a time sum to -16.999995 instead of -17, and the product of all three is defined by the logarithm 1.3010309, instead of 1.3010300, which is the logarithm of 20.

N.B.—It is sometimes possible to see that the convergence is towards an exact value, on assuming which an absolute result is obtained.

15495. (The late Rev. Prebendary WHITWORTH.)—Show geometrically that, if ABCD be a quadrilateral inscribed in a circle, and if AP, AQ, AR be perpendiculars from A on BC, CD, BD respectively, then

$$BC/AP + CD/AQ = BD/AR.$$

[It is impossible to publish more than a few typical solutions out of the large number sent in.—ED.]

Solutions (I.) by J. H. CARSON, B.A., Rev. T. WIGGINS, B.A., and others; *(II.)* by W. SCRIMGEOUR, M.A., B.Sc., and S. C. BAGCHI, B.A.; *(III.)* by C. M. ROSS; *(IV.)* by T. B. RAMACHANDRAN, B.A., and others.

(I.) P, Q, R are collinear (Simson's line). The triangles ABR and ACQ are similar; therefore

$$BR/RA = CQ/AQ \dots\dots(1).$$

The triangles ARD and APC are similar; therefore

$$RD/RA = PC/AP \dots\dots(2).$$

The triangles BAP and DAQ are similar; therefore

$$BP/AP = DQ/AQ \dots\dots(3).$$

Therefore, adding (1) and (2), and subtracting (3),

$$BD/AR = BC/AP + CD/AQ.$$

(II.) [For figure see Solution (I.)] RQ is the Simson line of the point A with respect to the triangle BCD; RAQD, PBAR, PCQA are cyclic quadrilaterals.

$$\begin{aligned} BC \cdot AQ \cdot AR + CD \cdot AP \cdot AR &= \frac{BC \cdot 2\Delta QAR}{\sin QAR} + \frac{CD \cdot 2\Delta PAR}{\sin PAR} \\ &= \frac{BC \cdot 2\Delta QAR}{\sin BDC} + \frac{CD \cdot 2\Delta PAR}{\sin DBC} \\ &= \frac{BD (2\Delta QAR + 2\Delta PAR)}{\sin BCD} \\ &= \frac{BD}{\sin BCD} (2\Delta PAQ) = \frac{BD \cdot 2\Delta PAQ}{\sin PAQ}, \end{aligned}$$

therefore $BC \cdot AQ \cdot AR + CD \cdot AP \cdot AR = BD \cdot AP \cdot AQ$;

therefore $BC/AP + CD/AQ = BD/AR$

[since $\angle QAR = \angle BDC$, $\angle PAR = \angle DBC$.] [Rest in Reprint.]

15713. (Professor LAUVERNAY.)—Dans un triangle rectangle ABC, α, β, γ sont les points de contact de cercles ex-inscrits respectivement avec les côtés BC, CA, AB. Démontrer que, si les droites $A\alpha, B\beta, C\gamma$ sont concourantes sur la circonférence inscrite à ce triangle, les côtés de ce triangle sont proportionnels aux nombres 3, 4, 5.

Solutions (I.) by Prof. SANJANA, M.A.; *(II.)* by the late R. TUCKER, M.A.; *(III.)* by C. M. ROSS.

(I.) The equations of the lines $A\alpha, B\beta, C\gamma$ are

$$\beta\gamma = (s-b) \sin C / [(s-c) \sin B], \dots, \dots;$$

hence their point of concurrence is

$$\beta b / (s-b) = \gamma c / (s-c) = a a / (s-a).$$

For this to be on the in-circle, we must have $\sum \cos A \sqrt{a} = 0$; thus

$$\begin{aligned} \sqrt{[(s-a)/a]} \sqrt{[s(s-a)]/bc} \pm \sqrt{[(s-b)/b]} \sqrt{[s(s-b)]/ca} \\ \pm \sqrt{[(s-c)/c]} \sqrt{[s(s-c)]/ab} = 0; \end{aligned}$$

so that $(s-a) \pm (s-b) \pm (s-c) = 0$. Taking $s-a + s-b - (s-c) = 0$, we get $3c = a + b$. If A be the right angle, we have also $a^2 = b^2 + c^2$; whence we obtain $a = \frac{5}{3}c, b = \frac{4}{3}c, i.e., a : b : c = 5 : 4 : 3$.

(II.) The in-circle is

$$x^2 + y^2 - 2(s-a)(x+y) + (s-a)^2 = 0 \dots\dots(i).$$

The line BC is

$$bx + cy - bc = 0 \dots\dots(ii),$$

and the intersection (P) of B $\beta, C\gamma$ is

$$x/c + y/(s-c) = 1, \quad x/(s-b) + y/b = 1,$$

i.e.,

$$x = [c(s-b)]/s, \quad y = [b(s-c)]/s \dots\dots(iii).$$

Now (iii.) is on (i.); therefore

$$c^2(s-b)^2 + b^2(s-c)^2 - 2(s-a)s[(b+c)s - 2bc] + s^2(s-a)^2 = 0 \dots(iv).$$

Also, equating two expressions for the radius, we get

$$bc = 2s(s-a) \dots\dots(v).$$

Hence (iv.) gives $4a^2s^2 - 12bc(b+c)s + 17b^2c^2 = 0$,

$$i.e., \quad a^2(a+b+c)^2 - 6abc(a+b+c) + 5b^2c^2 = 0,$$

$$i.e., \quad [a(a+b+c) - 5bc][a(a+b+c) - bc] = 0.$$

Hence $2sa = 5bc = 10s(s-a)$ by (v.); therefore $a = 5(s-a)$ or $6a = 5s$, and this, with $b^2 + c^2 = a^2$, gives $a : b : c = 5 : 4 : 3$.

(III.) It is known that $Ca = s-b$ and $C\beta = s-a$. Hence the equations of $A\alpha, B\beta, C\gamma$ are $x/(s-b) + y/b = 1, x/a + y/(s-a) = 1$, and $x/[a(s-b)] = y/[b(s-a)]$ (axes AC and CB). These lines intersect in the point $\delta [a(s-b)/s, b(s-a)/s]$. It is easily proved that $C\gamma$ passes through this point since the determinant

$$\begin{vmatrix} b, & s-b, & b(s-b) \\ s-a, & a, & a(s-a) \\ b(s-a), & a(s-b), & 0 \end{vmatrix}$$

vanishes.

Again the equation of the in-circle is

$$(x-s+c)^2 + (y-s+c)^2 = (s-c)^2 \dots\dots(1).$$

Also the co-ordinates of the point δ may be written

$$[\sqrt{(a^2+b^2)}-b, \sqrt{(a^2+b^2)}-a],$$

since $c^2 = a^2 + b^2$; therefore, substituting these values for x and y in (1), it becomes $13a^2 + 5ab + 13b^2 - 11(a+b)(a^2 + b^2)^{\frac{1}{2}} = 0$. Squaring and rearranging, $48(a^2 + b^2)^2 - 112ab(a^2 + b^2) + 25a^2b^2 = 0, i.e.,$

$$[12(a^2 + b^2) - 25ab][4(a^2 + b^2) - ab] = 0.$$

From this equation $4a - 3b = 0$; therefore $a : b = 3 : 4$; therefore the lines $A\alpha, B\beta, C\gamma$ will intersect on the in-circle if $a : b : c = 3 : 4 : 5$.

15753. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Solve in integers

$$\frac{1}{2}(q^2 + 1) = p^4.$$

Solutions (I.) by R. W. D. CHRISTIE, R. F. DAVIS, M.A., and A. H. BELL; *(II.)* by the PROPOSER.

(I.) We have infinite solutions of the equation $2q^2 - p^2 = 1$. If any one of them $q = t^2$, then $2t^4 - p^2 = 1$, and the equation required is solved. Let $t = 2y^2 + 2yz + z^2$. We have generally

$$2(2y^2 + 2yz + z^2)^4 = (4y^4 + 16y^3z + 12y^2z^2 - z^4)^2 + (4y^4 - 12y^2z^2 - 8yz^3 - z^4)^2 \dots\dots(1).$$

If $y = 1$ and $z = 1$, this becomes

$$2(2y^2 + 2y + 1)^4 = (4y^4 + 16y^3 + 12y^2 - 1)^2 + (4y^4 - 12y^2 - 8y - 1)^2 \dots(2),$$

$$2(2 + 2z + z^2)^4 = (4 + 16z + 12z^2 - z^4)^2 + (4 - 12z^2 - 8z^3 - z^4)^2 \dots\dots(3).$$

Now, if we can make $4y^4 - 12y^2 - 8y - 1 = \pm 1$, the problem is solved; *e.g.*, $4y^4 = 12y^2 + 8y$ or $y^3 = 3y + 2$ ($y = 2$) and $2(13)^4 = 239^2 + (-1)^2$ by (2), and similarly with the equation $4 - 12z^2 - 8z^3 - z^4 = \pm 1$, or indeed any of the six dexter squares. The solution involves that of a biquadratic, but probably the work of securing integers would be laborious. The theorem is deeply interesting and in this connexion one may use the oscillating equation of the convergents given in Vol. III.

(II.) Here $q^2 - 2(p^2) = -1$, and the solutions of $\tau - 2.v^2 = -1$ must be picked out which have $v = \square$. The only solution (until $q > 1,600,000$) is $239^2 - 2.13^4 = -1$.

[For a table of such solutions, see the PROPOSER'S new *Tables of Quadratic Partitions*, p. 261.]

15721. (Professor M. W. CROFTON, F.R.S.)—Two players A., B., whose chances of winning a game are p, q ($p + q = 1$), put down each a stake, and play on the condition that whoever wins two games running shall receive the whole. Show that in fairness their stakes ought to be in the proportion

$$p^2(1+q) : q^2(1+p).$$

Solution by F. N. MAYERS.

The game will terminate at the $2n$ -th game unless there is an alternation of wins by each player in succession, the probability of which is

$2p^nq^n$, or p^nq^n if the alternation is to begin with a win by an assigned player.

If A. is to win precisely at the $2n$ -th game, there must be an alternation for the previous $2n-2$ games in which A. loses the last game, followed by two wins by A.; the probability of this is $p^{n-1}q^{n-1} \times p^2 = p^{n+1}q^{n-1}$. If A. is to win at the $(2n-1)$ -th game precisely, there must be alternation in the previous $2n-2$ games, in which A. must win the last game, followed by a win by A.; the probability of this is $p^{n-1}q^{n-1} \times p = p^nq^{n-1}$. The probability that he wins at or before the $2n$ -th game is the sum of the probabilities that he wins at the $2n$ -th, $(2n-1)$ -th, ..., 2nd game precisely.

Hence we get for the required probability the sums of the two following series:—

$$p^{n+1}q^{n-1} + p^{n-1}q^{n-1} + \dots + p^2 = p^2 [1 + \dots + (pq)^{n-1}] \dots\dots\dots (1),$$

and $p^nq^{n-1} + \dots + p^2q$ (the first game being excluded)
 $= p^2q [1 + pq + \dots + (pq)^{n-2}] \dots\dots\dots (2).$

The sum of (1) is $p^2 \{ [1 - (pq)^n] / (1 - pq) \}$, and that of (2) is

$$p^2q \{ [1 - (pq)^{n-1}] / (1 - pq) \}.$$

Making n infinite, the sum of (1) and (2) is $[p^2(1+q)] / (1-pq)$. Similarly probability of B. winning is $[q^2(1+p)] / (1-pq)$; hence the required result.

If we make the number of games odd instead of even, i.e., $2n+1$ instead of $2n$, it will only add the infinitesimal term $p^{n+1}q^n$ to series (2).

15677. (ROBT. W. D. CHRISTIE.)—Let p be any prime and the letters all different integers. Prove that

$$pqr = l^3 + l^2s + lt + u = (LMN)^{\frac{1}{2}}, \dots;$$

e.g., $103.18.35 = 25^3 + 25^2.53 + 25.635 + 265 = (630.3605.1854)^{\frac{1}{2}}$.

[N.B.—The original form of the Question has been slightly modified by the Proposer so as to ensure clearness —ED.]

Solution by the PROPOSER.

$$pqr = l^3 + l^2s + lt + u = (LMN)^{\frac{1}{2}} \dots\dots\dots (A).$$

This theorem depends on the two fundamental theorems

$$r^{2m} + 1 = 0 \pmod p \quad \text{and} \quad ab - (a+b)[ab-r]/(a+b) = r,$$

a root, where in the case of $p = 4m+1$ we may put $r = 1$ always. Thus theorem (A) in this case simplifies considerably. Let

$$\begin{aligned} l &= (ab-r)/p &&= 25 \text{ in the given case, } L = l^2 + r = 630, \\ s &= (a^2 + b^2 + 2r)/p &&= 53 \quad \text{,,} \quad \text{,,} \quad M = a^2 + r = 3605, \\ t &= qr + R &&= 635 \quad \text{,,} \quad \text{,,} \quad N = b^2 + r = 1854, \\ u &= R[a^2 + b^2 + 2R]/(a+b) = 265 &&\quad \text{,,} \quad \text{,,} \\ q &= \text{residue of } [(r^{2m+1})^2 + r]/p \text{ and } r = \text{any root of } p, \\ r &= \text{residue of } [(r^{3m+2})^2 + r]/p. \end{aligned}$$

In the example given take $r = 5$, the smallest root of 103. Then

$$\left. \begin{aligned} a &= \text{residue of } 5^{26} \pmod p = 60 \\ b &= \text{residue of } 5^{77} \pmod p = 43 \end{aligned} \right\} = 103.$$

Then the equation $ab - (a+b)[ab-r]/(a+b) = r$ becomes

$$60.43 - 103.25 = 5;$$

thus $l = 25$. Again $q = (60^2 + 5)/p = 35$, $r = (43^2 + 5)/p = 18$. Consequently in the given equation we have

$$103.18.35 = 25^3 + 25^2.53 + 25.635 + 265 = (630.3605.1854)^{\frac{1}{2}}.$$

Similarly for root 6 the figures would be

$$103.10.49 = 22^3 + 22^2.59 + 22.496 + 354 = (490.1030.5047)^{\frac{1}{2}},$$

and we may have as many forms as there are roots, i.e., 32 sets for the prime 103. In this connexion the theorems by the Solver in former volumes may be consulted with advantage.

The theorems may also be written

$$(A) \quad pqr = \left[\left(\frac{ab-r}{a+b} \right)^3 + \left(\frac{ab-r}{a+b} \right)^2 \left(\frac{a^2 + b^2 + 2r}{a+b} \right) + \left(\frac{ab-r}{a+b} \right) (qr + R) \right] + \left[\left(\frac{a^2 + b^2 + 2r}{a+b} \right) (R) \right] = (LMN)^{\frac{1}{2}} \dots$$

for primes of form $4m-1$, and

$$(B) \quad pqr = \left[\left(\frac{ab-1}{a+b} \right)^3 + \left(\frac{ab-1}{a+b} \right)^2 \left(\frac{a^2 + b^2 + 2}{a+b} \right) + \left(\frac{ab-1}{a+b} \right) (qr + 1) \right] + \left[\left(\frac{a^2 + b^2 + 2}{a+b} \right) \right] = (LMN)^{\frac{1}{2}} \dots,$$

for primes of form $(4m+1)$.

The theorem leads indirectly to one or two other theorems, one of which is

$$a^2 + b^2 + a^2 + b^2 + (ab+1)^2 = (a+b)^2 + 1^2 + a^2 + b^2 + (ab)^2,$$

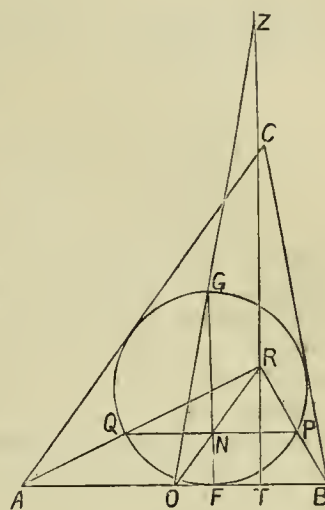
where it will be noticed, the sum of the roots being equal, we may add n to the root of each square, &c.

15748. (A. M. NESBITT, M.A.)—A, B, K are three fixed points on a tangent to a conic, and the other tangents from A and B meet in C. Any straight line through K cuts the conic in P and Q, and AQ, BP

meet in R. Prove that the locus of R is a conic inscribed in the triangle ABC.

Solutions (I.) by R. F. DAVIS, M.A.; (II.) by J. A. H. JOHNSTON, M.A., and Professor SANJANA, M.A.

(I.) This theorem is the generalization by conical projection of the following particular case:—If PQ be a variable chord of the inscribed circle of the triangle ABC drawn parallel to AB, then the locus of the point of intersection R of AQ, BP is a conic inscribed in ABC.



Let O be the middle point of AB and FG the diameter of the inscribed circle through the point of contact F with AB. Draw RT perpendicular to AB and let it meet OG produced in Z. Then

$$ZR.RT : GN.NF = OR^2 : ON^2$$

and $PN^2 (= GN.NF) : OB^2 = RN^2 : OR^2$; therefore

$$ZR.RT : OB^2 = RN^2 : ON^2 = TF^2 : OF^2,$$

or $ZR.RT$ varies as TF^2 . Hence the locus of R is a conic having OF, OG for tangents and FG for the corresponding chord of contact. It is, moreover, evident by an examination of the figure that, since P, Q always lie within ABC, the locus of R reaches both CA, CB, but does not cross these lines. Therefore CA, CB are tangents to the locus. [Rest in Reprint.]

10790. (Corrected. H. W. SEGAR, B.A.)—Show that

$$\frac{1}{4}\pi \int_0^{\frac{1}{2}\pi} \log(1 + \cos \theta \cos x) \frac{dx}{\cos x} = \frac{\cos \theta}{1^3} - \frac{\cos 3\theta}{3^3} + \frac{\cos 5\theta}{5^3} - \dots$$

Solution by Professor SANJANA, M.A.

The left side is known to be $\frac{1}{4}\pi \frac{1}{2}(\frac{1}{4}\pi^2 - \theta^2) = \frac{1}{8}\pi^3 - \frac{1}{8}\pi\theta^2$. Calling the right side $\phi(\theta)$, we have $\phi'(\theta) = -\sin \theta/1^2 + \sin 3\theta/3^2 - \sin 5\theta/5^2 + \dots$ $\phi''(\theta) = -\cos \theta/1 + \cos 3\theta/3 - \cos 5\theta/5 + \dots$. Let $2 \cos \theta = x + x^{-1}$; then

$$2\phi''(\theta) = -x/1 + x^3/3 - x^5/5 \dots - x^{-1}/1 + x^{-3}/3 - x^{-5}/5 + \dots$$

= $-(\tan^{-1} x) - (\tan^{-1} 1/x)$ (by Gregory's series)

$$= -\tan^{-1} \infty = -\frac{1}{2}\pi.$$

Thus, $\phi''(\theta) = -\frac{1}{4}\pi$. Integrating, $\phi'(\theta) = A - \frac{1}{4}\pi\theta$; and putting $\theta = 0$, we get $A = 0$. Thus $\phi'(\theta) = -\frac{1}{4}\pi\theta$; hence

$$\phi(\theta) = B - \frac{1}{8}\pi\theta^2.$$

Putting $\theta = 0$, we get $B = 1/1^3 - 1/3^3 + 1/5^3 - \dots = \pi^3/2^5$. Thus

$$\phi(\theta) = \frac{1}{8}\pi^3 - \frac{1}{8}\pi\theta^2;$$

hence the result.

QUESTIONS FOR SOLUTION.

15804. (ROBERT W. D. CHRISTIE.)—Let $p = m^4 - m^3 + m^2 - m + 1$. Prove $[(m^2 + 1)(m - 1)]^{n+1} + m^{4n-1} = 0 \pmod p$ and generalize.

15805. (A. H. BELL.)—Is 9462853 a prime number?

15806. (Rev. F. H. JACKSON.)—Given

$$P_n(x) = \frac{[2n]!}{(2)_n [n]! [n]!} \left\{ x^n - p^3 \frac{[n][n-1]}{[2][2n-1]} x^{n-2} + \dots \right\},$$

in which the p prefixes of the terms of the series form the sequence

$$(p^3, p^8, p^{15}, \dots, p^{r(r+2)}, \dots),$$

and $[n] = (p^n - 1)/(p - 1)$, $(2)_n = (1 + p^n)(2)_{n-1}$, $[n]! = [n][n-1]!$,

show that $\frac{[n]}{[2n-1]} \frac{P_n}{P_{n-1}}$ may be expressed as a continued fraction

$$\frac{\frac{[n]^2}{[2n+1][2n-1]} p^{n+2}}{x - \frac{[n+1]^2}{[2n+3][2n+1]} p^{n+3}} \dots$$

15807. (A. M. NESBITT, M.A.) [Suggested by Question 15738.]—If there are $2n$ quantities a_1, a_2, \dots, a_n ; c_1, c_2, \dots, c_n , and if p_r = the sum of the products of the c 's taken r together, then will

$$p_{n-1}x_0 - p_{n-2}x_1 + \dots + (-1)^{n-1}x_{n-1} = p_n x^{-1}$$

where

$$x_s = a_1 c_1^s + a_2 c_2^s + \dots + a_n c_n^s.$$

15808. (Professor NANSON.)—If $(b+c)x + (c+a)y + (a+b)z = 0$ and $ayz + bzx + cxy = 0$, then $ay^2z^2 + bz^2x^2 + cx^2y^2 = 0$.

15809. (Professor SANJANA, M.A.)—Resolve into factors the following and two other similar expressions:—

$$4abc(b+c-a)(c+a-b) - (b+c-a)(c^2+a^2-b^2)(a^2+b^2-c^2) - (c+a-b)(b^2+c^2-a^2)(a^2+b^2-c^2) + (a+b-c)(b^2+c^2-a^2)(c^2+a^2-b^2).$$

15810. (J. J. BARNVILLE, B.A., I.C.S.)—Having

$$u_n + u_{n+1} + u_{n+2} = u_{n+3},$$

prove that

$$\frac{1.1.5}{1.1.2.3} + \frac{2.3.9}{1.2.4.5} + \frac{3.5.17}{3.4.7.9} + \frac{6.9.31}{5.7.13.17} + \dots = 3,$$

$$\frac{1.1.4}{1.2.2.3} + \frac{2.3.7}{1.3.4.6} + \frac{4.5.13}{2.6.7.11} + \frac{7.9.24}{4.11.13.20} + \dots = \frac{3}{2}.$$

$$\frac{1.2.6}{1.3.3.5} + \frac{2.3.11}{2.5.6.9} + \frac{4.6.20}{3.9.11.17} + \frac{7.11.37}{6.17.20.31} + \dots = \frac{7}{12},$$

$$\frac{1}{1.6} - \frac{2}{3.11} + \frac{3}{2.19} - \frac{6}{6.36} + \frac{11}{11.66} - \dots = \frac{1}{6}.$$

15811. (R. CHARTRES.)—From a variable point within a triangle perpendiculars are drawn to the sides. Find (1) the maximum value, (2) the mean value of the product of the perpendiculars, and (3) the mean value of the area of the triangle formed by joining the feet of the perpendiculars. [Elementary proof.]

15812. (S. C. BAGCHI, B.A.)—If $f(x)$ is a rational and algebraic function of degree n of a single variable x which vanishes for n values only of x , viz., a_1, a_2, \dots, a_n , show that the plane area bounded by $(xy+n)f(x) - xf'(x) = 0$, $x-1 = 0$, and $x-\kappa = 0$, where κ is infinite, is given by $S_1 + 2S_2 + 3S_3 + \dots$ where $S_p = \sum a^p$ and $f'(x)$ is the first derivative of $f(x)$.

15813. (Professor NANSON.)—Determine the point and plane equations of the quadric on which lie the lines common to three given linear complexes.

15814. (Professor COCHEZ.)—Constructions des courbes

(i.) $y = x \sin 1/x$, (ii.) $y = 2 \sin x - x$.

15815. (The late R. TUCKER, M.A.)—OA, OB are at right angles, and a semicircle APB is described on AB. Prove that the "S" point locus of the triangle APB has for its equation

$$(a^2 + 3k^2)x^2 + (a^2 + 3h^2)y^2 + 6hkxy - hx(a^2 + 6k^2) - ky(a^2 + 6h^2) + 3h^2k^2 = 0.$$

15816. (C. E. YOUNGMAN, M.A.)—From a fixed point A on a rectangular hyperbola chords AP, AP' are drawn, making with a given direction angles whose sum is constant, so that P coincides with P' at two places B and C. Prove that PP' turns on a fixed point, namely, the inverse, with respect to the circle ABC, of the centre of the hyperbola.

15817. (A. W. T.)—Prove by pure geometry that, if three points of a conic be concyclic with the centre, the poles of the joins of their conjugates are also concyclic with the centre.

15818. (R. F. DAVIS, M.A.)—A triangle circumscribes a given circle (centre I, radius r) and has its orthocentre at a given point H. Prove that the angular points lie on a fixed conic whose focus is at H, and whose directrix KK' is found by producing IH to X, so that IH.IX = $2r^2$, and drawing KXK' perpendicular to IHX. [Amplification of No. 1,114 of Wolstenholme's Problems.]

15819. (Professor NEUBERG.)— a, b, c, R désignant les côtés d'un triangle ABC, et le rayon du cercle circonscrit, trouver le maximum ou le minimum du rapport $(a^2 + b^2 + c^2) : R^2$.

15820. (Professor NEUBERG.)—Sur les côtés du triangle ABC on construit extérieurement les triangles équilatéraux BCA', CAB', ABC'. Trouver les coordonnées du centre de gravité de l'aire de l'hexagone AC'BA'CB'A et celles du centre de gravité du périmètre de ce polygone.

15821. (W. J. DOBBS, M.A.)—A given force P is in equilibrium with three others Q, R, and X, all in one plane. The forces Q and R are of known magnitudes, and act respectively through given points; the force X acts along a given straight line. Show how to determine, by geometrical construction or otherwise, the magnitude of X and the directions of Q and R.

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8962. The solution of a linear equation of differences can always be made to depend upon that of a linear differential equation of the same order, and *vice versa*.

9019. (ASPARAGUS.)—In a given ellipse is inscribed a triangle ABC of maximum perimeter (2s): prove that, if ρ_1, ρ_2, ρ_3 be the radii of curvature of the ellipse at A, B, C,

$$\rho_1 \cos^3 \frac{1}{2}A = \rho_2 \cos^3 \frac{1}{2}B = \rho_3 \cos^3 \frac{1}{2}C = s, \quad \rho_1 \rho_2 \rho_3 = 8r^3,$$

r being the radius of the circle inscribed in the triangle ABC.

9269. (Professor SCHOUTE.)—Given a plane curve C_m of the m -th class and a line l in its plane. What is the result, if every tangent t of the curve undergoes a rotation through a given angle α about its point of intersection with l ? And what if every tangent t of the curve is replaced by the two bisectors of the angle (t, l) ?

9552. (D. EDWARDES.)—Integrate the equation

$$\frac{dy}{(y-a)(1-y^2)^{\frac{1}{2}}} + \frac{2.2^{\frac{1}{2}} dx}{[x^2 + 2ax^2 + 1]^{\frac{1}{2}}} = 0.$$

10693. (Professor LAMPE, LL.D.)—Find all the values of x that satisfy the equation $64 \sin^2 x \sin^2 2x \sin^2 3x = 7$.

10720. (Professor ORCHARD.)—A small negatively electrified proof-plane is introduced through a small aperture in a spherical shell; the surface-area of the shell is 16π , and it has a positive charge of 200. If when the proof-plane is 1 foot from the centre of the sphere the potential there is zero, find the charge on the proof-plane.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, June 8th, 1905.—Prof. A. R. Forsyth, President, and, temporarily, Prof. W. Burnside, Vice-President, in the Chair.

Mr. V. Ramaswami Aiyar was elected a member.

The President announced that the De Morgan Medal for 1905 had been awarded to Dr. H. F. Baker for his researches in pure mathematics.

The following papers were communicated:—

"On the Conditions of Reducibility of any Group of Linear Substitutions," Prof. W. Burnside.

"On Criteria for the Finiteness of the Order of a Group of Linear Substitutions," Prof. W. Burnside.

"On a Class of Many-valued Functions defined by a Definite Integral," Mr. G. H. Hardy.

Informal communications were made as follows:—

"The First Principles of Cauchy's Theory of Functions," Mr. G. H. Hardy.

"Differential Equations whose Integrals are expressible by Partial Quadratures," Prof. A. R. Forsyth.



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2. PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.—The next Practical Examination will be held in **October, 1905**.

3. CERTIFICATE EXAMINATIONS.—The Christmas Examination for Certificates will commence on the 5th of December.

4. LOWER FORMS EXAMINATIONS.—The Christmas Examination will commence on the 5th of December.

5. PROFESSIONAL PRELIMINARY EXAMINATIONS.—These Examinations are held in March and September. The Autumn Examination in 1905 will commence on the 5th of September.

6. INSPECTION AND EXAMINATION OF SCHOOLS.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

PRIZES.

Diploma Examination.—The following Prizes will be offered for competition:—Theory and Practice of Education, £10; Classics (Greek and Latin), £5; Mathematics, £5; Natural Science, £5. The Doreck Scholarship of £20 will be awarded on the results of the Christmas Examination.

Certificate Examination.—Prizes will be awarded as follows, subject to the conditions stated in the Regulations:—

First Class.—Four Prizes for General Proficiency; two each for Classics, Mathematics, Modern Languages, Natural Sciences, and English subjects; one for Scripture History.

Second Class.—Four Prizes for General Proficiency.

Third Class.—Four Prizes for General Proficiency.

Two Medals will also be awarded to the best Candidates in Shorthand.

The Regulations for the above Examinations can be obtained on application to the Secretary.

C. R. HODGSON, B.A., *Secretary*.

PROFESSIONAL PRELIMINARY

EXAMINATIONS.—The COLLEGE of PRECEPTORS will hold an Examination for Certificates recognized by the Board of Education, the Scotch Education Department, the Incorporated Law Society, the General Medical Council, the Royal College of Physicians of London, the Royal College of Surgeons of England, the Royal College of Veterinary Surgeons, the Pharmaceutical Society of Great Britain, and other bodies, on the 5th, 6th, and 7th of September, 1905.

The Examination will take place in London, and at the following Local Centres:—Birmingham, Bristol, Leeds, Liverpool, Manchester.

Examination Fee, 25s.

Regulations and Entry Forms may be obtained on application to the Secretary.

C. R. HODGSON, B.A., *Secretary*.

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LECTURES FOR TEACHERS. ON THE SCIENCE AND ART OF EDUCATION.

PRACTICAL PROBLEMS IN CLASS TEACHING.

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The Fee for the Course of Twelve Lectures is Half-a-Guinea.

The Lectures will be delivered on Thursday Evenings at 7 o'clock, at the College, Bloomsbury Square, W.C.

For Syllabus, see p. 330.

Members of the College have Free Admission to the Course.

C. R. HODGSON, B.A., *Secretary*.

UNIVERSITY OF ST. ANDREWS.

REGISTRATION OF TEACHERS.

The Board of Education have made the following addition to Appendix B of the Teachers' Registration Regulations:—"A Certificate of the University of St. Andrews, granted under the conditions regulating the L.L.A. Diploma Examinations, and bearing either that the holder has obtained Honours in at least two of the subjects classed under Departments A, B, C of the L.L.A. Diploma Scheme of Examination; or, that the holder has obtained at least a pass in each of two Languages (other than English) and in Logic or Mathematics."

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Vice-Principal—S. H. HOOKE, B.A. Hons. Lond.

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MEDICAL SCHOOLS.

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ST. MARY'S HOSPITAL MEDICAL SCHOOL.
ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.
LONDON HOSPITAL MEDICAL COLLEGE.

(For particulars of the above, see following pages.)

TRAINING COLLEGES, &c.

CAMBRIDGE TRAINING COLLEGE.
MARIA GREY TRAINING COLLEGE.
DATCHELOR TRAINING COLLEGE.
HOME AND COLONIAL TRAINING COLLEGE.
FROEBEL EDUCATIONAL INSTITUTE.
ST. MARY'S COLLEGE, PADDINGTON.
ANSTEY PHYSICAL TRAINING COLLEGE.
TRAINING COLLEGE FOR TEACHERS OF THE DEAF.

ROYAL HOLLOWAY COLLEGE.
ST. GEORGE'S TRAINING COLLEGE.
CHERWELL HALL, OXFORD.
SOUTHPORT PHYSICAL TRAINING COLLEGE.

(For particulars of the above, see following pages.)

OTHER COLLEGES, &c.

UNIVERSITY COLLEGE OF NORTH WALES.
UNIVERSITY COLLEGE, LONDON.
UNIVERSITY COLLEGE, BRISTOL.
UNIVERSITY TUTORIAL COLLEGE.
LONDON COLLEGE OF MUSIC.
CARLYON COLLEGE.
ST. GEORGE'S CORRESPONDENCE CLASSES.
BURLINGTON CORRESPONDENCE COLLEGE.
CITY AND GUILDS OF LONDON INSTITUTE.
UNIVERSITY OF EDINBURGH.
TRINITY COLLEGE OF MUSIC.
METROPOLITAN SCHOOLS OF MEDICINE.
BIRKBECK COLLEGE.
WELLESBOURNE POSTAL COLLEGE.
BEDFORD COLLEGE FOR WOMEN.
KING'S COLLEGE, LONDON.

(For particulars of the above, see following pages.)

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Schools visited and Examinations conducted.

AT LONDON MATRICULATION,
JUNE, 1905,

187

SUCCESSSES

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(Incorporated under Royal Charter, and a Constituent College of the University of Wales.)

Principal—H. R. REICHEL, M.A., LL.D., Fellow of Jesus College, and late Fellow of All Souls College, Oxford.

DEPARTMENTS.

Subjects.	Professors.
Greek	T. Hudson Williams, M.A. (Lond.).
Latin	E. V. Arnold, Litt.D., late Fellow of Trinity College, Cambridge.
French	O. H. Fynes-Clinton, M.A.
German	Thomas Rea, M.A.
Semitic Languages...	T. Witton Davies, B.A., Ph.D.
History	J. E. Lloyd, M.A., Lincoln College, Oxford.
Constitutional History	The Principal.
English Language and Literature ...	{ W. Lewis Jones, M.A., late Scholar of Queens' College, Cambridge.
Philosophy.....	James Gibson, M.A., late Fellow of St. John's College, Cambridge.
Mathematics.....	G. H. Bryan, Sc.D., F.R.S., late Fellow of Peterhouse, Cambridge.
Welsh	J. Morris Jones, M.A., Research Fellow of Jesus College, Oxford.
Physics	E. Taylor Jones, D.Sc.
Chemistry	K. J. P. Orton, M.A., Ph.D., late Scholar of St. John's College, Cambridge.
Biology	R. W. Phillips, M.A. (Camb.), D.Sc. (Lond.), late Scholar of St. John's College, Cambridge.
Zoology	Philip J. White, M.B. (Edin.), F.R.S.E.
Agriculture	Thomas Winter, M.A. (Edin.), F.G.S.
Education	J. A. Green, B.A.

Inclusive Tuition Fee £11. 1s. a year. Laboratory Fees additional, on the scale of £1. 1s. per term for six hours a week.

The College Courses qualify for the Degrees of the University of Wales, and include most of the Subjects for Degrees of London University in Arts and Science. Students may pursue their first year of medical study at the College. There are special Departments for Agriculture and Electrical Engineering, a Day Training Department for men and women, and a Department for the Training of Secondary and Kindergarten Teachers.

The average cost of living (in lodgings) and tuition at Bangor for the Session (35 weeks) is from £30 to £40. A Hall of Residence for Women, under the supervision of Miss H. M. M. Lane, who is the College Lady Superintendent of Women Students, is now open.

At the Entrance Scholarship Examination (which commences in September in each year) over 20 Scholarships and Exhibitions, ranging from £40 to £10, will be offered for competition.

For detailed information as to Courses, Entrance and other Scholarships, &c., apply to the Secretary and Registrar,

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EVENING KINDERGARTEN LECTURES.

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Lectures are given at the above College on the Kindergarten Gifts and Educational Handwork prescribed by the Syllabus of the National Froebel Union for 1906.

The Lectures will recommence on Wednesday, September 20th. Fees, payable in advance, 30s. per Course (September, 1905, to July, 1906), or 12s. 6d. per term. Courses have also been arranged for the study of the other subjects necessary for the N.F.U. Certificates.

Further particulars can be obtained from Miss D. FITCH, Wellfield, Duke's Avenue, Muswell Hill, N.

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Courses are held in preparation for all Examinations of the University of London in Arts and Science, for the Teachers' Diploma (London), and for the Teacher's Certificate (Cambridge), and also a Special Course of Scientific Instruction in Hygiene.

Six Laboratories are open to Students for Practical Work.

Two Entrance Scholarships will be offered for competition in June, 1906. The Early English Text Society's Prize will be awarded in June, 1906.

Students can reside in the College.

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A Scholarship of the value of £20 for one year is offered for the Course of Secondary Training, beginning in October, 1905.

The Scholarship will be awarded to the best candidate holding a degree or equivalent in Arts or Science.

Applications should reach the HEAD OF THE TRAINING DEPARTMENT not later than September 18th.

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A residential College providing a year's professional training for Secondary Teachers.

The course includes preparation for the Cambridge Teacher's Certificate (Theory and Practice), and for the Teachers' Diploma of the London University. The Students attend the Cambridge University Lectures on Teaching, in addition to those of the Resident and Visiting Lecturers. Ample opportunity is given for practice in teaching science, languages, mathematics, and other subjects in various schools in Cambridge.

Students are admitted in January and in September. Full particulars as to qualifications for admission, scholarships, and bursaries may be obtained on application to the PRINCIPAL, Cambridge Training College, Wollaston Road, Cambridge.

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Ten ENTRANCE SCHOLARSHIPS, from £50 to £60 a year, tenable for three years, will be offered for competition in July, 1906.

For further particulars apply to the SECRETARY, Royal Holloway College, Englefield Green, Surrey.

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Lecturers { G. RHEINART ANDERSON, Esq., F.R.C.S.
DAVID MACDONALD, Esq., M.D.
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Mrs. MARY E. RYE, M.B. (Lond.).

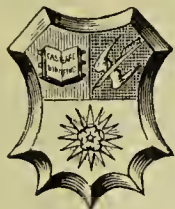
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M.A., 6 (1898, 1899, 1901, 1902, 1904).
B.A., 1904, 7 out of 10. 2 in Hons.

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Full particulars with reference to the formation of these Centres will be forwarded to Principals of Schools upon application.

SYLLABUS for 1905 may be had of the **SECRETARY.**

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T. WEEKES HOLMES, *Secretary.*

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SCHOOL EXAMINATIONS (Syllabus B). Held three times a year, viz., March and April, June and July, and October and November.

Specimen Theory Papers for past years (Local Centre and School) can be obtained on application to the Central Office. Price 3d. per set, per year, post free.

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The Educational Times.

The London Charlottenburg. THE Preliminary Report of the Departmental Committee on the Royal College of Science (including the Royal School of Mines) invites very careful consideration, less on account of its positive contents than on account of the general educational bearings of its subject. The Committee reserve their recommendations on "the present working" of the institution—the character of the instruction given and the possibilities of attracting more advanced students; but that will not occasion any anxiety in the minds of those that know "the admirable work accomplished by the Royal College of Science not only in training teachers, but in its general method of science teaching and in the promotion of research," which the Committee recognize in general terms. The important part of their reference was "to consider in what manner the staff, together with the buildings and appliances now in occupation or in course of construction, may be utilized to the fullest extent for the promotion of higher scientific studies in connexion with the work of existing or projected institutions for instruction of the same character in the Metropolis or elsewhere." The tendency to expansion and co-ordination was already strong, when there came "certain munificent offers of aid" towards the provision of "increased facilities for advanced instruction and research in science, especially in its application to industry." These offers, unhappily vague from first to last, gave a special trend to ideals, which has embarrassed the Committee and needs to be handled with promptitude and firmness.

The Committee agree that "the moment is *prima facie* opportune for a comprehensive scheme." Undoubtedly; but what sort of scheme? The Committee outline their own ideal. "We are impressed," they say, "by the fact that the most urgent need in scientific education is the establishment of a centre in which the specialization of the various branches of study and the equipment for the most advanced training and research should be such as ultimately to make it the chief technical school of the Empire." "Ultimately": Rome itself was not built in a day. Meantime, let us make a start, with the end steadily in view. "The existence of the Royal College of Science with the

Royal School of Mines and of the Central Technical College in close proximity points to South Kensington as the best position for such a centre as we contemplate." But, with all the existing accommodation, and with all the "far greater effect and economy" that would result from possible arrangements between the Government and the City and Guilds Institute, the buildings and equipment "are quite inadequate for existing requirements and still more for the purpose in view." Yet a glint of relief is discernible—somewhat at the expense of the central importance of South Kensington—in the opinion that "it is quite compatible with an effective realization of the scheme that separate departments might be conducted in detached colleges." Then, "it is of the first importance that there should be no divorce between teaching and research in technology on the one hand and in pure science on the other," though "it may be necessary hereafter to limit the instruction to the higher branches" of both subjects. The educational and financial control should not—practically cannot—be vested entirely in the Government: the Committee look to "the hearty union and co-operation of several independent bodies in a common enterprise"—a representative Council.

The conditions of success are numerous and complicated. The following is the Committee's enumeration:—

1. The gift of a large capital sum (say not less than £100,000) for buildings and initial equipment.
2. The gift of a considerable additional site (say not less than 4 acres) at South Kensington.
3. The willingness of the Board of Education to allow their College at South Kensington to be brought into a scheme of common government and administration.
4. The similar willingness of the City and Guilds of London Institute in respect of their College at South Kensington.
5. The continuance of the Government contribution, including the necessary provision for the maintenance of the new laboratories and other buildings of the Royal College of Science, now approaching completion.
6. The continuance of the support given by the Corporation and Livery Companies of the City of London to the Central Technical College.
7. The provision (in the proposed College of Applied Science at South Kensington) of instruction in certain departments of Engineering either by new foundation or by transfer and enlargement of part of the work of some existing college or colleges (*e.g.*, University College or King's College).
8. The co-operation of the University of London.
9. The assurance of a sufficient maintenance fund.

The initial capital sum is surely forthcoming after Lord Rosebery's rousing of expectations. The Board of Education has affirmed its willingness to allow the Royal College of Science to go into the scheme, and Lord Londonderry has

broadly hinted at such an increased grant to it as the Committee desiderate. The City and Guilds Institute is understood to be favourable; the City and the Livery Companies will scarcely hang back; and the University is sure to "co-operate" as best it may. Indeed, there seems little probability that the conditions of success will fail.

But what will be the significance of their success? A grand rift in the co-ordination of the higher educational institutions, an ominous divergence from the policy of concentration, a grievous maiming of the University of London. The University is charged by statute with the higher education of London. There is no question about its competence to fulfil this duty. The unification and extension of the agencies and means of instruction is steadily proceeding: University College is, or all but is, incorporated in the University by Act of Parliament; King's College is understood to be getting ready for a like result. Is this, then, a time to choose for diverting the Royal College of Science and the Central Technical College to another alliance? That is to say, is it statesmanlike to institute a new all-embracing Technical College under circumstances that will inevitably assure it of a monopoly of the higher technical teaching, and the controlling influence upon the lower technical teaching, in the Metropolis, and so maim the University in one of its most important members? Elsewhere, too, the trend is in the opposite direction: the Manchester School of Technology is working into the closest relations with the University, the Massachusetts Institute of Technology has declared for affiliation with Harvard University, and Germany itself is beginning to see that much is lost by the dissociation of technical from academic training. In plain terms, the scheme is retrograde. The University must remain the head and centre of all the institutions of higher learning, and all purposes of expansion should be moulded to consonance with the amplest natural development of the University. Any such large scheme as this under an independent control cannot, except nominally, have the "co-operation" of the University: its essential effect must be to paralyze the University on one side. Moreover, if all the expected results were operated through the agency of the University, there would certainly be a very considerable saving of expenditure.

NOTES.

"WHAT is needed," says Sir William Collins, in reference to the report of the Departmental Committee on the proposed new College of Science—"what is wanted is some presiding genius, some master mind, who will do for London what Humboldt did in the case of Berlin University." But Humboldt was not asked to make bricks without straw: he was provided with a capacious building ready made and funds enough for the scheme, which, by the way, was a vastly simpler affair than the co-ordination of London institutions of the higher learning. Moreover, the Charlottenburg College of Applied Science did not start with a small and dubious fraction of the necessary funds: it was provided with an initial expenditure of £500,000, and a yearly sum of £55,000. The co-ordination of technological teaching within its own sphere and in relation to the University

of London would prove no very difficult task were the "presiding genius" furnished with the wherewithal to do his work. But, if our wealthy citizens, notwithstanding the shaming liberality of American college benefactors as well as of the German States, fail to respond to their obvious duty, and if the Government cannot be approached without fear of an official scare, then we must judge our "presiding genius" with great leniency.

WE have already recorded Mr. Carnegie's provision of £2,000,000 for teachers of advanced age or reduced energy in non-State institutions of the higher learning in America, and the splendid and successful effort—if, indeed, it was so much as an effort—of Harvard to raise £500,000 merely "to increase" the existing salaries of her professorate. Yet Mr. Chamberlain, with all his Birmingham University achievement and aspirations, and with his conviction that "the highest education has been seriously neglected in this country," has just expressed a fear that, if the National Physical Laboratory were to ask a special grant, and if the Universities were to come forward one after another with a like request, the Treasury would get scared; and so he modestly suggests a joint application for a lump sum, say a modest £100,000. Why, only a couple of months ago we recorded that the Ontario Government, which scarcely ranks with the Government of the British Empire, had granted £100,000 towards the proposed new buildings of the University of Toronto, and that Mr. Carnegie had offered £100,000 to the University of Virginia on the occasion of the installation of Dr. Alderman, the new President. We are, of course, very well aware of the abnormal difficulties of the Chancellor of the Exchequer; but "some presiding genius" of policy, which determines his expenditure, should not find much difficulty in bringing him relief enough to satisfy all the reasonable needs of all our educational institutions. We commend to attention a timely article on "The American Professor and his Salary" by Mr. Herbert W. Horwill, in the July number of the enterprising *University Review*.

MR. JOHN D. ROCKEFELLER'S munificent gift of 10,000,000 dollars (£2,000,000) to the General Educational Board of the United States is not his first contribution to that important body. His first gift—1,000,000 dollars (£200,000)—was devoted exclusively to the furtherance of education in the Southern States. The present gift is confined to no particular locality in the States, but is restricted to higher education, being designed especially for colleges as distinguished from the great universities, although these are eligible to share. There is to be no denominational or sectarian discrimination; no part of the income, however, can be devoted to specifically theological instruction. The fund may be used for endowment, or building, or satisfaction of debts, or payment of current expenses; but the objects must always give promise of permanent utility. It is understood that Mr. Rockefeller's further beneficence will depend upon the results that may be achieved. We agree with the *Daily Express* that here is another "shining example for our British millionaires."

THE reception of President Murray Butler, of Columbia University, by our educationists has been of the most grati-

fyng character. Academically, Oxford and Manchester have honoured themselves by inscribing his name on their graduate rolls under their doctor's degrees. Socially, he has been fêted by distinguished companies of educationists: he was entertained at dinner by the pick of our active educational workers, the Lord President of the Board of Education in the chair; and he was the centre of attraction at Mr. and Mrs. Alfred Mosely's garden party at the Botanical Gardens. His brief speeches both in London and in Manchester have impressed the distinctive characteristics of the man, and touched the most generous chords of educational aspiration. His visit has not only soldered personal acquaintanceships, but also stirred international interest, and knitted more firmly the educational bond—and perhaps deeper bonds—between this country and America.

THE Report of the City and Guilds of London Institute for the past year exhibits a remarkable development. The number of students during 1904 was 409, as against 304 in the year preceding; and the Institute obtained eight out of the eleven degrees in Engineering conferred at the last degree examination of internal students of the University. The increase of students has necessitated an increase of the teaching staff, and an extension of buildings at Finsbury is already going forward. The Technological Department is rising in importance under the pressure of demand for instruction in the application of science and art to specific trades and industries. The Council specify two directions in which improvements might be effected in the technical education of artisans—first, in the preparation of students before entering upon their courses of evening technical instruction; and, second, in the standard of qualifications of the teachers nominated by Local Authorities to give such instruction. This opinion lends strong emphasis to what may be regarded as a general complaint. It was only last month that we called attention to a similar weakness at another important technical institution. We trust, with Sir John Wolfe Barry, that the scheme of “confederation or co-ordination” of the Institute with other institutions, now in preparation, will, “when it is completely developed, result in the establishment of an educational system at South Kensington second to none in the world.”

WRITING in *Indian Education* (June), Prof. Sadler reports that “both in England and in Wales, not to speak of Ireland, the educational barometer points to storm.” “There are now in England and Wales six separate and potent causes of our educational unrest.” First, “the social movement”; for “economic prosperity has produced an upper artisan class,” which “requires a type of education on a level far superior to that provided in the old-fashioned public elementary school,” and “the clerk population will join hands with them in their demand.” Second, “the vehemence of religious conviction”—Roman Catholic, Anglican, and anti-theological. Third, “the conflict of political ideas”—commercial Imperialism *v.* humanitarian cosmopolitan Liberalism, Church *v.* State, Conservative farmers *v.* Progressive reformers. Fourth, “the growing discontent with the duller forms of the old tradition of higher secondary education”: “huge masses of new know-

ledge have come into the world during the past fifty years, and no Vittorino da Feltre has forged a new educational instrument out of these intractable materials.” Fifth, “the slow growth of a ‘national’ ideal of public education.” Sixth, “economic” conditions: “good education is necessarily a very costly thing,” and, for all the talk of its being “free,” “somebody must pay for it”—but few like to pay, and many can't. Each of the points offers substantial food for diligent mastication.

THE Public Health Congress, held in London (July 19 to 25) under the auspices of the Royal Institute of Public Health, devoted two of its eight sections to questions more particularly concerning the school life and physique of children, and perhaps no sections attracted more vivid interest. In Section B, under the presidency of Mr. J. H. Yoxall, M.P., considerable prominence was given to the municipal side of the questions: for example, to the municipal administration of the Education Acts, defective children, underfed children, and the provision and application of physical exercises in various forms. Section C was devoted to Child Study and School Hygiene, with a presidential address from Lord Stanley of Alderley, sixteen papers, and three discussions, to say nothing of practical illustrations. The stress laid upon these subjects shows the efficiency of the labours of those that have been long urging them upon public and professional attention. In other departments were discussed important matters throughout the whole range of sanitary and hygienic interests. The garden party in the delightful gardens of Russell Square was remarkable for the interest taken in the exhibition of physical exercises by the children of the Bellenden Road School, and in the demonstrations of movement by members of the physical training classes, Northfield, Stamford Hill. The report of the proceedings will form a comprehensive manual—a basis for further progress. The Congress will have no doubt given an immense impetus to the popular appreciation of the subjects and methods discussed, and strengthened the hands of the promoters of reform.

WE do not interfere between Prof. Henry Jones and Sir Marchant Williams on the questions of immediate policy as to government and administration of the University of Wales, and we leave the Bangor people to tackle the realization of Prof. Jones's hope that their University College will one day be elevated to university rank. But we cordially agree with his contention that the local colleges should grow great “according to their own ideals,” and should set “an adequate ideal” before them. The same principle, indeed, is applicable throughout the whole of our educational system; and, however much we may gather from the experience and the ideals of other nations and foreign thinkers, we must transmute and transfuse it all into harmony with our own processes of development. The object is natural growth, not mere increase by agglomeration, or the transformation of the native plant into the semblance of an exotic. Prof. Jones also did good service in telling his hearers with some emphasis that “they would never have a great university unless they got great teachers and gave them full freedom of teaching and research.”

SUMMARY OF THE MONTH.

THE Scottish Education Bill, says the *Educational News*, was "done to death at the threshold of the Committee stage on July 14. It is probably impossible for a journal which speaks for teachers to express in adequate terms the thoughts which possess teachers at this wanton destruction of their fondest hopes." The destroyer was Mr. Caldwell's amendment, to maintain the existing system of Parish and Burgh School Boards.

To a question by Mr. McKenna, in reference to the East Ham education difficulty, Mr. Balfour replied (July 18):

As I informed the honourable gentleman on June 5, I have no promise of legislation. I duly received the deputation of which I spoke in my answer of that date. The deputation laid before me a very elaborate scheme of relief, and that scheme, in accordance with my promise to the deputation, is being carefully considered by the Departments concerned. I am very anxious to find some means of meeting the difficulty; but great care is required for so delicate and difficult a problem, and time must be allowed before a detailed or final answer can be given.

SIR WILLIAM ANSON, in reply to a question put by Mr. Brynmor Jones, M.P., in the House of Commons, on the subject of the resignation by certain of H.M. Inspectors of their membership of the Court of the University of Wales, said:

The resignations referred to were effected in consequence of instructions from the Board given during the first week in June. The Board are of opinion that it is undesirable that His Majesty's Inspectors should take part in public meetings or as members of local bodies in matters of local controversy. I am aware of the circumstances referred to by the hon. member, and regret any inconvenience which may have been occasioned to the bodies who were represented by the Inspectors in question. But, having regard to the contentious character of the matters which were coming up for discussion at the Court, the Board consider that the instructions given were necessary. No correspondence on the subject passed between the Board and any other member of the Court.

A NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT was constituted at a meeting at the Mansion House (June 28) under the presidency of the Lord Mayor. A resolution was passed recommending that all the agencies at present engaged in isolated work for physical improvement should have the opportunity of combining. The new League thus proposes in no way to supplant existing agencies, but to federate them. The Bishop of Ripon, the Lord Chief Justice, and Sir William Broadbent were the chief speakers.

A CONGRESS of British University Students met at University College, London, at the end of last month. The delegates were received by Lord Reay, President of University College, Principal Sir A. W. Rücker, and Principal Gregory Foster. Sir Arthur Rücker, in his speech of welcome, regretted that neither Oxford nor Cambridge was represented. Lord Reay expressed pleasure that the University Conferences were about to issue a "British Students' Song Book." He was also at one with the delegates on the matter of the State support of universities being good for education. To succeed properly the universities must become international. Mr. A. C. Ward (Leeds) presented the report of a Sub-Committee appointed to consider the question of residential halls, both at home and abroad. The report was adopted, and another Committee was formed for the purpose of ascertaining what could be done to better the existing circumstances. The constitution, after discussion, was altered so as to include the universities of Ireland, which had for the first time sent delegates, with a view to the Congress becoming an annual British gathering.

ON the occasion of the triennial *conversazione* of University College, London (June 28), the whole of the laboratories and rooms were thrown open to the visitors. In the same room as the botanical exhibits were specimens of the tsetse fly, which imparts sleeping sickness, together with specimens of blood from lower animals inoculated with the disease. In the Physics Lecture Theatre the structure of atoms was illustrated by floating magnets moving under the action of magnetic forces. In the Chemical Department Sir William Ramsay gave demonstrations of luminescence produced by the emanations of radio-

active substances and of spectra of rare gases. One of the most interesting sections was that of Applied Mathematics, where Prof. Karl Pearson showed a collection of calculators and other instruments of precision, and the astronomical equipment recently purchased by the Drapers' Company. Also under a grant from the Drapers' Company is the Biometric Laboratory, where the Professor and his assistants make research in variation among lower animals and in heredity.

THE London County Council has adopted (July 4) the following scale of salaries for teachers in elementary schools, provided and non-provided alike, the first figure showing the commencing salary, the second that to which the teacher will rise by annual increments:—

	£	£
Trained certificated (men) teachers	100	200
Trained certificated (women) teachers ...	90	150
Untrained certificated men	80	200
Untrained certificated women	75	150
Head assistant teachers (men)		230
Head assistant teachers (women)		170
Head masters (schools under 200)		210
Head masters (schools under 400)	200	300
Head masters (schools over 400)	300	400
Head mistresses (under 200)		160
Head mistresses (under 400)	150	225
Head mistresses (over 400)	225	300

There will be a promotion list of teachers qualified to be head and assistant head teachers, and, in case managers of the old voluntary schools refuse to nominate from this list, a lower salary will be paid. The new scale will increase the cost of salaries, and, when it takes full effect in 1909-10, the extra annual amount paid in salaries will be £215,000—a yearly increase of £69,000 in non-provided schools and £146,000 in Council schools.

The following recommendation of the Education Committee was adopted by a majority of four to one:—

That, at each of the secondary schools directly administered by the Council, Scriptural instruction be given on strictly undenominational lines; that no teacher be required to take part in such instruction; and that the parent of any child be allowed to withdraw that child from this instruction on request in writing.

ADDRESSING the Executive of the National Union of Teachers (July 22), President Murray Butler, of Columbia University, drew attention to the importance of co-ordinating all grades of education, so that the various sections should work together as an integer. He deprecated the practice of fixing and determining the conditions of the lower-grade schools by arbitrary requirements for admission to higher schools, and emphasized the opinion that the primary school should be set free to do the best it could for children under its care. A thing which touched the heart of every American visitor to our shores was our intense nationalism, a spirit which could only be maintained by bringing every boy and girl into touch with those moving ideals which are the essence of our national life. The educationist, so far from being a faddist concerning himself with unrealities, was dealing with the only things which were both real and lasting. In illustration, he pointed out that, among the ancients, we honoured the memory of men of ideas, not men of wealth. He sketched the work being done in America by the National Education Association, and said the importance of education was demonstrated and a public opinion in favour of education created by calling together great gatherings of thousands of teachers from elementary and secondary schools, colleges, and universities.

A MEETING was held at the House of Commons (July 4), Mr. R. B. Haldane, K.C., M.P., in the chair, to advocate an additional State grant to the National Physical Laboratory, Teddington. Dr. Glazebrook said £30,000 was required to put the equipment on a satisfactory basis. Towards that the Treasury had given £5,000 and raised the annual grant from £4,000 to £6,000, but that assistance was quite insufficient.

Mr. Chamberlain said he was convinced that, if they looked on the whole matter as an investment, it was from the highest education that they would get the largest return. He observed that those interested in the National Physical Laboratory put forward two methods by which science could be helped. The first was by educating young people so that they might apply most readily the latest results of scientific discovery to their work. The second was by testing in a scientific manner the products of industry and by carrying out experi-

ments and undertaking inquiries designed to obtain accurate standards, to elucidate difficult points of manufacture, or to develop new processes. This institution claimed to be concerned with the second method, and that was the differentiation which they made between such a university as that in which he was chiefly interested and the National Physical Laboratory. But he would like to ask one or two questions. Were not all the modern universities doing the same work as this particular institution? In what way was this institution really distinct? He did not know the exact amount received by other institutions, but certainly Birmingham did not obtain £6,000 a year from the State, and it had not had a single farthing from the Government in aid of buildings. He did not think the Universities of Manchester, Liverpool, Leeds, and Sheffield had had such aid either. Birmingham was spending nearly £450,000, collected privately, on buildings which, when completed, would be very large and efficient, and would meet all modern requirements. In consequence of that, Birmingham, with others, was going to the Government for more money. The question was whether they were each to apply separately, and thereby frighten the Chancellor of the Exchequer, or whether they were to put their forces together and ask as a whole for a largely increased grant, and leave for consideration afterwards how that grant should be divided among different institutions. Was it wise, he asked, to operate alone? Could they not do much more if they all went to the Government together? He readily agreed that the State was giving too little to the highest form of education, and he thought it was quite right that while the universities were willing to do everything possible for themselves they should have some further assistance from the State.

THE programme of the Oxford University Extension meeting (August 4-28) is designed to illustrate the history, literature, fine art, and architecture of the period of the Renaissance and the Reformation, and there will also be a special section devoted to natural science and social economics, and special classes in the theory and practice of teaching, and in the English language; the last designed primarily for foreigners. The meeting will be divided into two parts for the convenience of such as cannot stay the whole time. The inaugural meeting is to be held under the presidency of the Vice-Chancellor, and an address is to be given by Prof. James Stuart, of Cambridge, the real pioneer of University Extension. Among the lecturers are the Dean of Christ Church, the Warden of Keble, the President of Corpus, the Earl of Crewe, the Earl of Lytton, Mr. George Wyndham, M.P., Father Gasquet, Dr. Horton, Dr. Barry, Sir Richard Temple, Prof. Walter Raleigh, Churton Collins, Flinders Petrie, W. J. Courthope, F. S. Boas, W. F. R. Weldon, Francis Gotch, Sherrington, and many more. Full particulars can be obtained from the Secretary to the University Extension Delegacy, Oxford.

At an Extraordinary General Meeting of the Incorporated Association of Assistant Mistresses, held at the College of Preceptors (July 1), the President, Miss Lewis, Wycombe Abbey School, in the chair, the proposals for a College of Secondary Teachers were discussed, and the following resolutions were passed:—

1. That the A.A.M. approves in principle of a Federation of Associations of Secondary Teachers.
2. That the A.A.M. is willing to join the proposed College of Secondary Teachers, or such other Federal Union of Secondary Teachers as may be established in lieu of the proposed College, always provided that conditions satisfactory to the A.A.M. Committee are obtained.
3. That the A.A.M. would accept, as academic qualification for future members of the College of Secondary Teachers, examinations of the standard of those which now admit to membership of the College of Preceptors.

The Secretary briefly reported the proceedings of the Conference on Salaries in London Secondary Schools, held on the initiative of the London Branch of the Assistant Masters' Association between delegates of five associations representing secondary assistant teachers. The Conference had sent a deputation to the Higher Education Sub-Committee of the London County Council, and had recommended that a qualified woman teacher in a secondary school should receive an initial salary of not less than £120, rising to at least £200. This maximum was slightly higher than that asked for in the A.A.M. Salary Scheme. But the cost of living in London made it necessary that salaries there should be higher than the average for the whole country.

THE Code of Regulations for Public Elementary Schools for 1905, issued as a Blue Book (Cd. 2579), contains a number of important changes. The age up to which attendance at school may count for grant has been extended in accordance with the

provisions of the Act of 1902. The new Regulations as to higher elementary schools recognize instruction of two kinds—a development of the work of the elementary school, and an introduction of work of a special and practical character; and the Board of Education say that it would seem undesirable to remove the scholar from the general teaching of the elementary school to the more specialized teaching of the higher elementary school before the age of twelve; and the course should not, except in special cases, be longer than three years. The new Regulations, therefore, provide accordingly, and admit of attendance for a fourth year in special cases. The arrangements permit the development of a system of higher elementary education of various types, and, as the curriculum of such a school as it is now desired to encourage will be, on the whole, less specialized than that hitherto imposed on higher elementary schools, it is hoped that the buildings, equipment, and teaching staff required will not be on the expensive scale rendered inevitable by the old Regulations. Thus the grant, which is reduced as compared with that hitherto provided, will, the Board of Education say, probably bear much the same proportion as before to the requisite scale of expenditure. The determination of the curricula for the new schools will be left to local consideration in the first instance, but in each case the curriculum must be approved by the Board of Education as a condition of the recognition of the school as a higher elementary school. In the first Schedule a new paragraph has been added which will bring in other teachers than those now recognized as certificated teachers. It refers to those that “have qualifications and previous experience which, in the opinion of the Board, are substantially equivalent, for the purpose of teaching in public elementary schools, to those represented by the Board's Certificate.”

A CURIOUS history of this last-mentioned change is given by a correspondent of the *Times*, who says that “it is consideration for Imperial unity which has been chiefly responsible for bringing the new rule into existence.” He writes:

Some months ago application was made on behalf of a Canadian teacher for employment under the Education Authority for London, the County Council. This lady had been trained in McGill Normal School, the training college connected with McGill University, Montreal, which supplies the teaching staffs of the Protestant schools in the Province of Quebec. She had passed her examinations with high honours, and won diplomas entitling her to teach in high as well as elementary schools. When, after teaching for some time in Canada, she went with her family to the United States, the value of her diplomas was immediately recognized. The Education Department of the State of New Jersey issued a certificate enabling her to teach on exactly the same footing as if she had been trained in that State. When, however—again owing to family reasons—she had returned to British soil and wished to practise her profession in the chief city of the Empire to which she belonged, she was at once faced with apparently insuperable difficulties. The London County Council declines to give an appointment on its staff to any teacher who cannot produce a Certificate from the Board of Education; and the Board of Education could not, under the Code hitherto in force, grant a Certificate to a teacher whose qualifications, no matter how high they might be, were derived from a training college in another part of the Empire. The best she could do, it appeared, was to take a situation as an “uncertificated teacher” in some school where the managers were less particular in such matters than the County Council, and, after serving a full year in that inferior capacity, to come up and sit for the Board of Education's Certificate Examination as if she were a novice. As a matter of fact, she obtained casual work in Council schools in the humble position of a “supply” teacher. The absurdity of the situation was obvious, and, happily, the Board of Education recognized the injustice of the Code's operation in such a case. The new subsection of Schedule I. has been provided as the remedy. Every such case will now be considered on its merits, and, if the applicant proves to have qualifications equal to those represented by diplomas obtained in this country, a Certificate will no doubt be granted.

THE Regulations for Evening Schools, Technical Institutions, and Schools of Art and Art Classes for the period from August 1, 1905, to July 31, 1906, have also been issued by the Board of Education (Cd. 2574). Section 33 has been extended so as to afford direct encouragement to the establishment of organized courses for commercial, as well as for technical, studies. Section 42, by which provision was made last year for aid to detached technical classes that had previously received grants as science and art day classes recognized under other regulations of the Board, has now been extended so as to include with such classes others eligible for grants under these regula-

tions intended for such as may still be devoting a large part of their time to preparation for their work in life. The change which has been made in Section 51, relating to grants to schools of art, will facilitate in certain places the co-ordination of art instruction. Physical training has now been included in the field for which aid is given under the Regulations.

THE Education Committee of the London Chamber of Commerce has awarded its second "Higher Commercial Education Certificate" to Mr. B. C. Wallis for eleven examination successes, seven of these with distinction. Mr. Wallis, who is the Head Master of the Civil Service and Commercial Department at the Cusack Institute, Moorfields, E.C., was one of the first "Graduates in Commerce" of London University last year, and has also gained the London Chamber of Commerce Teacher's Diploma in Banking and Currency, Machinery, English, Drawing, Political Economy, and Mathematics—four of these "with distinction."

UNIVERSITIES AND COLLEGES.

THE 400th anniversary of the foundation of Cambridge. Christ's College was celebrated (July 4) by over 300 members. The college was founded by the Lady Margaret, Countess of Richmond and Derby, mother of King Henry VII., in 1505, when there was merged in it an earlier college founded by Henry VI. under the name of God's House; but this is the first time that any anniversary has been kept. The Westminster choir, which took part in the commemoration service, also sang during dinner all the songs of "Comus" set by Lawes for the masque in 1634; Sir Frederick Bridge, who recently discovered Lawes's manuscript, giving for the first time the true version. The Dean of Westminster made a gift of a bust of the foundress, modelled on the bust in Westminster Abbey; and some letters of the foundress, lent by the Dean of Westminster, were shown in the library. A fund has been started for some permanent improvement or enlargement of the buildings.

UNDER the benefaction made by Mr. Martin White London. for the promotion of the study of sociology, three special courses have been arranged for next year—forty lectures and twenty seminar classes by Dr. E. A. Westermarck, Ph.D., on "The Comparative Study of Institutions"; a short course of ten lectures introductory to the study of Institutions; and a course of twenty lectures and seminar classes on Comparative Psychology, by Mr. L. T. Hobhouse, M.A.; and a systematic course of thirty lectures and seminar classes on Ethnology, by Dr. A. C. Haddon, Sc.D., M.A., F.R.S. Mr. Martin White has placed in the hands of the Senate a special donation of £200 for the establishment of two bursaries and a studentship in Sociology. The bursaries will be of the value of £25 each for two years, and will be awarded during the present year respectively to a student who has passed the Internal Examination in Science (Economics) and to a student who has passed the Intermediate Examination in Arts, with the intention of taking the sociological course for the degree. The studentship will be of the value of £100, and will be open in November of next year to students who have taken sociology at either the B.Sc. (Economics) Examination or the B.A. Honours Examination, and who intend to pursue a course of study in this subject. A complete scheme of lectures in Sociology and cognate subjects will be published at a later date, when it is hoped to include a special course of lectures on a non-European civilization.

COMMISSIONS having now been definitely assigned Manchester. to the University, the Court, in the face of some opposition, decided (July 11) to establish at once a scheme for providing instruction in military history and strategy, military tactics, and military topography.

President Murray Butler, expressing his appreciation of the honour of enrolment as a member of the vigorous and progressive Manchester University, remarked that the urban university of the type to which Manchester University belonged was a new creation. It came into existence with the growth of modern city populations. Nowhere was a university more necessary or valuable than in the centre of a vastly populated area, and he conceived that such a university should have chiefly two great aims to serve. The first was to keep alive the fires of scholarship, and to make plain that this vast material expansion added to the value of the old truths and the controlling ideals

which had lifted mankind out of his barbarism to the civilization of which we were so justly proud. Next it seemed to him to be the function of an urban university to show the urban community and those who were dependent upon it how their interests, their health, their growth, their education, and their prosperity might best be increased and furthered by the application of scientific truth and method to the needs of the moment.

LEEDS. HUDDERSFIELD TECHNICAL COLLEGE has been affiliated with the University of Leeds, as from October 1 next, "for the purpose of having attendance upon classes in the College recognized as exempting from attendance upon classes in the University in the first year of the courses required for the degrees of B.A., B.Sc. (including Engineering), M.B., and B.S."

A congregation of the University assembled (June 27) at the Town Hall for the conferment of degrees—the first occasion of the kind since the establishment of the University. The Vice-Chancellor (Dr. N. Bodington) presided, and was accompanied by the Pro-Chancellor (Mr. A. G. Lupton). Dr. Bodington said the charter and statutes of the University enabled them to incorporate in the University old associates in the Yorkshire College and also other students who, after a course of study, had qualified for degrees in the Victoria and other universities. The congregation, therefore, welcomed a large number of old students of the Yorkshire College, who were showing their loyalty to the University by qualifying for membership of Convocation.

SHEFFIELD. AT the first meeting of the Court (June 26), 15 members were elected to the Council, and several representatives of educational institutions of the city and district were elected on the Court, namely, the Head Master of King Edward VII. School, the Principal of the Central Secondary School, the Head Mistress of Sheffield High School for Girls, the Head Masters of Rotherham Grammar School, King Edward's School, East Retford Grammar School, Chesterfield, and St. Cuthbert's College, Worksop; and the Principal of Sheffield Training College. It is hoped that by-and-by other head masters and head mistresses will be elected on the Court, so as to bring the schools into close touch with the University.

The University was opened (July 12) by the King. Its immediate parent was the University College of Sheffield, which has stood in the same relation to the University as Mason's College, Birmingham, stood to the University of Birmingham, and Owens College, Manchester, to the Victoria University of Manchester. The University College of Sheffield was created by a Royal Charter in 1897, and was the result of the fusion of the Sheffield School of Medicine, the Firth College, and the Sheffield Technical School. The Sheffield School of Medicine was founded in 1828. Firth College was founded in 1879 by Mr. Mark Firth at a cost of nearly £30,000. The Sheffield Technical School was opened as a branch of Firth College in 1884. University College has had throughout its career as its President the Duke of Norfolk, who is the present Chancellor of the new University. The Principal of the College during the whole time of its existence was the retiring Vice-Chancellor of the University, Dr. W. M. Hicks.

BANGOR. THE twenty-first anniversary of the North Wales University College was celebrated on June 27. A movement is now in progress for providing the College with new buildings at an estimated cost of £175,000, of which £30,000 has been already promised. The site has been given by the Corporation, who now presented the deed of gift to Lord Kenyon, President of the College. Lord Kenyon expressed the hope that the rest of Wales would follow the liberality shown at Bangor, and that there would be no more need for the best professors of the College to leave for more lucrative positions in other parts of the United Kingdom. Mr. Lloyd-George, M.P., dwelt upon the greater amount of interest taken in education by the Welsh working classes than by the same classes in England. Speeches were also delivered by Sir Isambard Owen, Principal Reichel, and Prof. Henry Jones (Glasgow).

CARDIFF. THE PRINCE OF WALES, as Chancellor of the University of Wales, laid the foundation stone of the new buildings of the University College.

The *Welsh Leader* says: The Cardiff gift of £40,000 to the South Wales University College appears an enormous sum

when compared with the modest £15,000 gift of Bangor. And yet, as Principal Reichel very properly observed, the Bangor gift is, after all, incomparably greater than that of Cardiff. The value of the present made by the Bangor City Council is equal to a subscription of 30s. from every inhabitant—man, woman, and child—in the borough. If Cardiff had but given in proportion to its rateable value on a scale corresponding to that of Bangor, its gift would have been, not £40,000, but £300,000. In other words, were the generosity of Cardiff on a par with that of Bangor, it would have presented the South Wales University College not merely with a site, but with a complete pile of buildings.

At an agricultural conference held in the end of June Mr. Ailwyn Fellowes, President of the Board of Agriculture, promised £800 a year to the College, and £200 a year towards the College Farm (200 acres), which was then "opened"; and he expressed a hope that an increase would be eventually made in better times. It was decided to ask the County Councils to appoint representatives to consider the details of a scheme of organization for the Agricultural Department at a conference to be held in October. The following resolution was passed:—"That this Conference desires to record its warm gratitude to the Board of Agriculture for the invaluable aid it has rendered to agricultural education in the counties affiliated to the University College of Wales at Aberystwyth. The Conference is of opinion that the results already attained, and the response to the help and guidance received from the Board by the Local Authorities out of their limited resources, constitute a strong claim for largely increased grants from the central Government towards agricultural education, which is a matter of the highest importance in the interests of the kingdom and the Empire at large."

At the summer graduation ceremony Principal Aberdeen Lang commented on the fact that the number of matriculated students did not increase in the ratio that was desirable in view of the increase of population. While he expressed cordial approval of the movement that had led so many women to enter the universities, he deplored the fact that the number of male students was decreasing. He urged that the area of university service was wider than that covered by the professions; that its area was, or ought to be, co-extensive with the life of the nation. It would be an immense benefit to the whole morale of citizenship, and certainly no loss to the commerce and industry of the nation, if more direct encouragement were given to young men to complete the instruction of the public school by a higher university discipline before entrance into a special business career.

THE EDUCATIONAL LADDER.

At King's School, Canterbury, the following elections have been made:—

To junior foundation scholarships: C. B. Simeon, P. G. E. Chave, D. L. Robertson, E. A. Graty (for modern subjects), all of King's School. To probationer foundation scholarships: J. W. M. Maynard (Mr. Meakin, Southbourne), H. D. Townend (Mr. Irving, Camberley), C. B. Jerram (Mr. Robinson, Godalming), J. M. Courtney (Mr. Taylor, Broadstairs), R. E. Martin (Mr. Pearce, Ripley), P. L. Bathurst (Mr. Mallam, Sydenham), T. Barry (Mr. Hinxman, Worthing), B. S. Rea (Mr. Counsell, Sevenoaks). To entrance scholarships: C. J. Galpin (Junior King's School), P. L. Bathurst (Mr. Mallam, Sydenham), H. D. Townend (Mr. Irving, Camberley), B. S. Rea (Mr. Counsell, Sevenoaks), R. E. Martin (Mr. Pearce, Ripley), D. O. Fardell (Junior King's School). To house scholarships: C. B. Jerram (Mr. Robinson, Godalming), J. B. Sidebotham (Mr. Malden, Brighton), J. W. M. Maynard (Mr. Meakin, Southbourne), T. Barry (Mr. Hinxman, Worthing).

At Bath College the following scholarships and exhibitions have been awarded:—

Entrance scholarships (a) for boarders: J. O'G. Delmege (Mr. Rowley, Avondale, Clifton), £60; T. V. A. Grebbie (Mr. Trask, St. Christopher's, Bath), £40. Exhibitions have also been awarded to E. Biddle (Miss Lucas, Albert Villas, Clifton), £25; G. T. Symons and L. C. Borthwick (Mr. Walker, Upcott House, Okchampton), £25. (b) For day boys: E. S. White, £15. Scholarships for members of the school: (a) for boarders, T. Williams, £60; L. H. D. Acland and W. H. C. Ramsden, £30. An exhibition of £25 is also awarded to F. H. Silcock; (b) for day boys—C. C. Harrison, £30; W. B. Chopc, £20; E. Lewis, R. C. Knox, F. J. A. Eland, and L. S. White, £15. The £90 scholarships were not awarded, but in lieu thereof an extra number of smaller scholarships and exhibitions were granted as stated above.

At King Edward's School, Birmingham, the following have been recommended for election to foundation scholarships at the High School for Boys:—

S. Barrowclough (Miss H. C. Lucas, Moseley); W. G. Booth (King Edward's Grammar School, Camp Hill); R. A. Brown (King Edward's Grammar School, Aston); J. D. Crichton (Mr. W. J. P. Ridgway, the Edgbaston Proprietary School); G. S. Davison (the Misses Ewen, Cambridge House School); L. B. Gardner (Day Technical School, West Bromwich); D. H. S. Mould (Handsworth Grammar School); E. D. Price (Messrs. McCroben and Fawcett, Inkberrow); W. H. Rayner (Mr. W. J. P. Ridgway, Edgbaston); E. H. Stansbie (Miss Lloyd, Aston Park School); E. B. Young (Mr. W. J. P. Ridgway, Edgbaston); C. L. Wiseman (Mr. W. J. P. Ridgway, Edgbaston). Recommended for election to Swinburn Scholarship—E. C. Bagnall.

At Westminster School the result of the recent scholarship and exhibition examinations is as follows:—

Resident scholarships to—E. W. Williamson (Llandaff Cathedral School), A. C. Edgar (Mr. Row, Richmond), H. J. Davis (Westminster School), M. Hammond (Mr. Waterfield, East Sheen), C. G. Usher (Miss Lucas, Clifton), P. H. Malden (Mr. Snell, Brighton), K. D. Murray (Streatham School), H. N. Wood Bigshotte (Rayles, Wokingham), W. F. Lutyens (South Kensington Preparatory School), E. B. Shaw (Grammar School, Thame). Non-resident scholarships to—C. C. Gover (Westminster School), J. E. D. Manlove (Westminster School), F. F. C. Marriott (Quernmore School, Bromley), E. H. Gray (Dulwich College Preparatory School), S. A. H. Codd (Kenmore School, West Hampstead), P. S. Ham (Mr. Olive, Wimbledon). Exhibitions to—G. P. Antrobus and H. F. R. Rawson (both of Westminster School).

At Bradfield the following elections have been made:—

To foundation scholarships—A. G. Garrod (Mr. S. C. Newton, Loudoun House School, N.W.); K. L. Armitage (Mr. C. C. Lynam, Oxford Preparatory School, Oxford); W. F. C. Claxton (Mr. E. W. M. Lloyd, Hartford House, Winchfield). To a Warden's exhibition—J. S. Eytton (Bradfield College). To general exhibitions—E. E. Calthrop (the Rev. E. Earle, Bilton Grange, Rugby); A. B. Bond (Mr. A. M. Kilby, Lindisfarne, Blackheath); A. C. N. Spicer (Bradfield College), W. G. Holmes (Junior School, Bradfield College); D. A. Wilkinson (Bradfield College); R. T. B. Pope (Mr. T. H. Mason, Rottingdean, Brighton).

At Blundell's School the following have been recommended for election to scholarships:—

To scholarships—C. J. Hamilton (Mr. Mills, Highfield, Southampton). To foundation scholarships—Pyemont (Blundell's School), Sandys (Blundell's School). To Pinchard scholarship—J. B. Windle (Mr. Thring, The Wick, Brighton). To scholarships—G. P. Statham (Mr. Prideaux, Ayshford School, Uffculme), A. G. West (the Rev. A. E. Alcock, Highgate School), C. E. H. Druitt (the Rev. H. J. Graham, Danecourt, Parkstone), H. Burrowes (Mr. Steinhardt, Nevill House, 29 York Place, London). To exhibitions—B. B. Silcock (Mr. Bull (Fritherne House, 29 York Place, London); C. Hopegood (Mr. Steinhardt), A. A. Bouter (Mr. Trollope, Tyttenhanger Lodge, St. Albans), and J. A. Fisher (Mr. Southeby, Hazledon, Tavistock).

The following awards have been made on the recent examination for Glenalmond scholarships:—

McQueen Bursary (for sons of officers): G. C. D. Hill (Mr. J. M. Stuart-Edwards, Elleray Park, Wallasey). Open scholarships of £40: L. E. J. Maude (home tuition) and G. C. M. Miller (Mr. Marillier Miller, Abbey School, North Berwick). Warden's nomination: J. P. C. Done (Mr. A. Howard Linford, Finchley Road). Fil. Cler. scholarships: H. M. Ash (Mr. Pearse, St. Ninian's, Moffat) and R. A. Shepherd (home tuition and Morrison's Academy, Crieff). Fil. Cler. exhibition: E. O. Black (Merchiston Junior School).

INTERMEDIATE EDUCATION IN IRELAND.

COMMISSIONERS' REPORT.

Messrs. F. H. Dale and T. A. Stephens, H.M.I., the Commissioners appointed to inquire into and to report upon schools receiving grants from the Intermediate Education Board in Ireland, have just issued their report. The terms of reference were these:

To inquire into and report upon the system of intermediate and technical education in Ireland—the latter so far as it is connected with the former—with a view to ascertaining whether any organic or other changes in the system are desirable. The inquiry and report should, in particular, deal with the following points:—(1) the co-ordination of intermediate education with primary, technical, and university education; (2) staffing, equipment, sanitary condition of schools receiving grants from the Intermediate Board; (3) (a) allocation of the funds of the Intermediate Board, (b) possibility of allocating the school grant in the form of grants to selected schools, (c) to what extent, if any, inspection might take the place of the examination conducted by the Intermediate

Board; (4) possibility of establishing a profession of intermediate teachers analogous to that of elementary teachers, (a) training of intermediate teachers, (b) salaries, (c) proper staffing of schools, (d) registration of schools.

The Commissioners explain that the subjects they were directed to investigate are primarily questions of administration and organization, and involve a consideration rather of the preliminary conditions affecting the success of the system of intermediate education as a whole in Ireland than of the educational work done by individual schools or scholars. Many important questions concerning the details of the curriculum or the aims and methods of instruction in the various subjects of intermediate education are therefore either excluded from the report or are treated only in so far as they have a bearing upon the main objects of the inquiry; nor has it come within their province to pronounce upon the relative merits or defects of the teaching given in each of the institutions visited by them. The Commissioners visited nearly eighty intermediate schools of all types and denominations in different parts of the country, including schools in each of the six county boroughs. They sum up their conclusion and recommendations in the following terms:—

As regards the existing relation of intermediate to primary education, the following specific defects have been noticed:—1. Although many children pass from the national to the intermediate schools, no steps are taken to secure that such passing shall be made at the most suitable point in the child's school life; overlapping in the form of undue retention of the scholars in primary schools is so common as to be practically universal.

2. There is a great deficiency in the provision of scholarships or bursaries for the transference of poor children of ability from the national to the intermediate schools. Such provision is in particular entirely absent as regards children living in most of the rural districts, especially as regards the poorer Roman Catholic boys intended for secular pursuits.

3. There is a considerable deficiency of schools, especially in the North of Ireland, for supplying a systematic course of intermediate education in its lower grades to children attending the national schools, whose parents, though possessing limited means, could afford to give them such education. The primary cause of this want of co-ordination between the system of intermediate and that of primary education is the non-existence in Ireland of any department with power to survey the two systems. As a whole co-ordination could only be effectively secured by means of legislation. The existing system of scholarships awarded by the Intermediate Board should be reconstructed. In particular there should be two distinct classes of junior scholarships tenable at intermediate schools: first class for scholars from the primary schools, the second open to all children within the limits of age. Apparently, a sum of £4,050 per annum would be available for these junior scholarships.

4. A Central Authority might undertake various measures to remedy the deficiency of good local schools for children up to sixteen—namely (after a detailed survey of each district), by making local loans to managers for new buildings, by encouraging local technical committees to assist schools in their areas by establishing in certain districts advanced departments in national schools, by regularizing the position of the model schools, and by arranging for the instruction of monitors in the lower-grade intermediate schools.

5. The Department of Agriculture and Technical Instruction has assisted in the erection and equipment of laboratories in intermediate schools, and has reformed the teaching in experimental science. This result has been secured by the co-operation of the Intermediate Education Board, and marks a distinct advance in the efficiency of Irish intermediate education.

6. Serious defects, however, in organization arise from the fact that the intermediate schools have to deal with two Authorities. Grants are made on two principles inconsistent with each other. The rules of the two Boards relating to the management of schools are at variance. A school subsidized by the one Board may be refused recognition by the other. In some cases laboratories have been added to unsuitable school buildings, and a premium is put on the teaching of science, which should not be treated as a subject detached from the rest of the curriculum.

7. The remedy for these defects would appear to be to transfer the administration of the funds devoted to the promotion of science and art in the intermediate schools from the Department to the Central Authority. Such a change would not impair the proper co-ordination of intermediate and technical education.

8. The connexion of the universities with intermediate education is at present very imperfect. The Intermediate Board does not necessarily include representatives of the universities. There is a lack of substantial identity between the Intermediate Board's courses of study and those required for the University Entrance Examinations. There is an overlapping of examinations; the Intermediate Board's methods of awarding exhibitions prevent proper preparation for subsequent honours courses at the university.

9. These defects can only be removed by the equalization of the final

school examinations held by the State with the entrance examination to the universities. For this purpose, and in order that the universities may exercise a preponderant influence on the higher classes of the first-grade schools, we recommend the formation, by the Central Authority, of a small Consultative Committee, which should include representatives of the universities.

10. As regards premises and equipment, the larger schools, chiefly boarding schools—in number about 63 boys' and 52 girls' schools—are well provided. There are some 50 day schools with about 50 scholars each, and the condition of these institutions is, as a rule, also not unsatisfactory; but of the 110 schools with fewer than 50 scholars each, at least 40 fall below a proper standard as regards school-rooms, cloak-rooms, play-grounds, lighting, ventilation, and sanitary arrangements.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

THE TEACHERS' REGISTER.

AN APPEAL TO THE COLLEGE.

To the Editor of "The Educational Times."

SIR,—“Emeritus” declares, in your last issue, that “the Report of the Teachers’ Registration Council shows patent failure of the Register at every point, and impresses the necessity for a fresh start.” Could any other issue have been expected? There were many who prophesied failure as soon as they had read the Regulations, and the present writer advocated the boycotting of the Register by secondary teachers from the very first. Had that been done, a fresh start would have been necessitated long ago, and now we should have been so much nearer the goal.

No doubt has ever existed in the minds of many friends as to the rôle to be taken up by the College, and I am amazed at the supineness of the general body of members in this particular.

One of its ambitions is the organization of secondary education. If, and when, the scheme of federation is accomplished, its responsibility in this direction will be even more clearly indicated. An important element of this organization is the registration of schools and teachers. The College, therefore, should claim that a liberal scheme be elaborated whereby *bona fide* and accredited teachers in secondary schools should be stimulated and encouraged to have their names placed on a Register without delay.

There is no reason why elementary teachers should not be independently registered, if they so desired; but the fact is they are already virtually placed on a Government list, and the need for their further registration under the auspices of a Registration Council is not felt either by themselves or the public, so that any effort in this direction has not only been a waste of energy and of money, but has rendered the solution of the problem more difficult by the creation of a kind of vested right.

With secondary teachers registration should be a necessity; in the case of elementary teachers it is a superfluity—the term having a different signification and application. In respect of the latter class, their “gratuitous” inclusion *en masse* with a body of persons admitted to the profession and to the Register under different conditions of preparation, qualification, and service has overweighted the present Register, obscured its usefulness, diminished its acceptability, and prevented its official publication and dissemination.

It remains, as I believe, with the College to take up the question at this juncture, and to combine with all other bodies of secondary teachers in bringing forward a simple and comprehensive scheme calculated to popularize the Register in the eyes of those who (in their own interest and in the interest of the public) may be expected to take advantage of it.

Furthermore, the present Register has failed in another sense. The desire to insist upon a high qualification has only defeated its object. Initially, the great thing is to get a Register of some sort—an inclusive Register as far as may be, taking in as many, not as few, as possible. The purgation of that Register might well be left to time. Five-and-twenty years would be an interval none too long for the perfecting of that process. It should be insisted upon that the present condition of things places no limit upon the number of unqualified or unregistered teachers. It postpones, rather than hastens, the time when the analogy of all other professional registers should be followed, and no one

allowed to teach or to preach unless he had been both trained and tested.

I differ, *toto coelo*, from the conclusions "Emeritus" sets out at the close of his communication. Indeed, they are quite illogical. It would appear that the statements he himself adduces furnish a drastic condemnation of his reasoning, and point to the only way of salvation—viz., that—for many reasons, educational and financial alike—the Register must be simplified, and confined to those engaged in the different varieties of secondary schools. EIGGINS

I am leaving England for some months, and am therefore precluded from continuing the correspondence, but I hope some member of the Council will initiate a discussion at an early date, and that the College will take the matter up in some such sense as that I have indicated.—I am, Sir, &c.,

Chillenden Rectory, Dover,

J. O. BEVAN.

July 12, 1905.

THE PREDICAMENT OF THE SPECIALIST.

To the Editor of "The Educational Times."

SIR,—Writing in your leader of July 1 on the subject of Registration in Column B, you state that "kindergarten teachers fall between the two columns." May I be allowed to remark that there are many other teachers, who certainly cannot be classed as illiterate or incapable, who are in precisely the same predicament? Take the case of the art master who is engaged on the staff of a secondary school and is responsible for the whole of the art and a portion of the other work. The head master of the school would not have offered him the post if he had not been satisfied that he had received a good secondary education and a training in school method, and the master would not retain his position if he were proved to be unfit. Surely, a training in a school of art, extending over four or five years, including literary subjects such as architecture, anatomy, history of ornament, &c., and qualifying the student to become the head master of a school of art, is a sufficient proof of the possession of a fair education. It will only be dealing fairly with specialists, whether in art, science, manual instruction, or any other subject, if their names are placed on Column B, provided that they are able to produce evidence of having either (1) been educated at a secondary school, or (2) passed an examination of, say, the standard of London Matriculation. In the event of the framing by the County Education Committees of scales of salaries, preference will most likely be given to "Col. B" teachers, with the result that it will be possible for a "ten-year man" to be more highly paid than a well qualified specialist.—I am, Sir, &c.,

PHILIP CASSÉ.

Wright's School, Faversham, July 3, 1905.

THE TEACHING OF THE PRINCIPLES OF EVOLUTION IN THE SCHOOLS.

To the Editor of "The Educational Times."

SIR,—I think the time has arrived when all educationists should consider the desirability of teaching children the principles of evolution. I believe that all the sects accept the evolution theory, and that it would not be difficult to present the facts in such a way that children could understand them.

This subject is dealt with very interestingly by the late Prof. W. K. Clifford, F.R.S., in an essay, entitled "Virchow on the Teaching of Science" (*Nineteenth Century*, 1878), reprinted in "Collected Essays." At a meeting of German naturalists and physicians at Munich, 1877, the late Prof. Virchow delivered an address "On the Liberty of Science in the Modern State," in the course of which he said: "If the theory of descent is as certain as Prof. Haeckel thinks it is, then we must demand its admission into the school, and this demand is a necessary one." He considered it desirable to make certain reservations, and that they ought to say: "Do not take this for established truth; be prepared to find that it is otherwise; only for the moment we are of opinion that it may be true." That was over a quarter of a century ago. There is no dispute about it now.

Prof. Clifford, in the course of his article, asks: "In what form shall we have the doctrine of evolution taught to our children? Certainly not as a dogma to be accepted on the authority of the teacher, evidence for which may be forthcoming afterwards. Certainly not at all until our children are competent to understand the nature of the evidence for it. Certainly not, therefore, first in its most general form, and afterwards in special

applications, but first in those special cases where the evidence is of the simplest kind, most closely related to the facts; and then, as a consequence of the comparison of these cases, the general doctrine may suggest itself. Nevertheless, the teacher, knowing what is to come in the end, may so select the portions of various subjects which he teaches at an earlier stage that they shall supply in a later stage a means of understanding and estimating the evidence on some question of evolution.

At present various beliefs are taught in the schools as if they were matters of fact, but which are really highly controversial. Prof. Clifford shows how desirable it is that in such cases we ought to say: "Do not take this for established truth; be prepared to find that it is otherwise. Only for the moment we are of opinion that it may possibly be so." I think all fair-minded people will agree that Prof. Clifford's views are eminently reasonable.—I am, Sir, &c.,

J. A. R.

Bedford, July 10, 1905.

[Are not the pertinent subjects already taught so as to indicate probability of evolution, at proper stages? And is not the timetable already pretty full with matters of "established truth"?—ED. E.T.]

PRIVATE SCHOOLS AND LOCAL AUTHORITIES.

To the Editor of "The Educational Times."

SIR,—Can any of your readers inform me whether there is any means of redress against the action of Local Education Authorities in setting up a technical day school (run on private-school lines) and a higher-grade school in a borough town? Also, by what means the Sub-section 2 of Section II. of the Act of 1902 can be put into effective force? Also, again, whether, if it can be put into force, any of your readers feel disposed to help in the matter? I shall be glad to receive suggestions and advice in the matter, as we despair of assistance from private-school associations.—I am, Sir, &c.

E. J. SINGLETON SMITH.

St. Margaret's College, Lowestoft, July 15, 1905.

THE RELIGIOUS DIFFICULTY IN SCHOOLS.

COMPROMISE AT MANCHESTER.

AFTER several informal attempts at some compromise that would meet the views of Churchmen, Nonconformists, and others, on the vexed question of religious teaching in schools, the following series of resolutions have been adopted at a conference of Churchmen and Nonconformists at Manchester:—

1. The law for all schools and all denominations should be the same, and not be affected by any trust deed.
2. All schools should be managed by the Authority. Existing voluntary schools should be rented from their owners, or reasonable compensation should be given.
3. No religious test should be imposed upon any teacher, but, subject to this condition, regard should be had to the religious requirements of the schools in allocating the teachers.
4. Bible teaching should be given at least three days in each week, but no religious teaching should be included in the time-table except such as has been, or shall be, ruled to be lawful under the Cowper-Temple clause.
5. The Authority should invite representative members of the religious bodies to constitute a visiting or advisory committee to manage the ordinary Bible teaching in each school, and should, in doing so, as far as possible, have regard (a) to the religious conditions obtaining in the district served by the school, and (b) to the qualification of experience of religious work among children.
6. All religious instruction should be given by qualified teachers, *i.e.*, by teachers who can give satisfactory proof of competent knowledge in their subjects, and who are willing to declare that they do not dissent from the teaching which they will have to give.
7. Subject to due safeguards, it should be enacted that, if any parent declares that he has reason to fear that a teacher is likely to exercise an influence hostile to his own convictions on matters of religion, the attendance of his child at that school shall cease to be compulsory.
8. When practicable, and subject to the condition that no religious teaching should be included in the time-table except such as is referred to in paragraph 4, denominational teaching should be permitted for the children whose parents demand it, and at the same time as the undenominational teaching, but it should be given (a) at the charges of the denomination, (b) by a teacher competent to keep good order, who (c) in giving the teaching should not reflect in any way on the tenets or status of any religious body. (d) It should be under the management of a denominational board, which should be constituted under a scheme prepared by the religious body in consultation with the Board of Education.

9. There should be no prizes nor inducements of any kind in connexion with religious teaching.

10. In any case of dispute between the Authority and the religious body about the giving of religious instruction in the school, or as to the arrangements made for it, there should be an appeal to the Board of Education, which should act in consultation with a permanent advisory committee upon which the religious bodies should be represented.

11. In the interest both of the teachers and of the children the religious teaching should be given as much as possible by the teachers of the school.

12. The above guarantees should apply to the religious instruction of the pupil-teachers and scholars in secondary schools.

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CURRENT EVENTS.

Fixtures. THE Oxford University Extension summer meeting will be held August 4–28.

* * *

THE Psychology course at King's College, London, next session will include General Psychology, by Prof. Caldecott (1st and 2nd terms); Structure of the Nervous System, by Prof. Halliburton (1st term); and Experimental Psychology (2nd and 3rd terms) and Modern Research on the Psychology of Memory (2nd term), by Dr. C. S. Myers. Dr. Myers's Lectures on Memory are free to teachers and to internal students of London University.

* * *

THE first International Congress on Esperanto will meet at Boulogne on August 5. Dr. Zamenhof, the inventor of Esperanto, will preside. The session will last a fortnight.

Honours. AMONG the Birthday Honours are the following:—

O.M.—Field-Marshal Sir George Stewart White, G.C.B., G.C.S.I., &c.; Admiral Sir John A. Fisher, G.C.B.; Sir Richard C. Jebb, M.P.; Sir Laurence Alma-Tadema, R.A.; George Meredith; and W. Holman Hunt.

BARONET.—Mr. Charles Holcroft, M.P., who has taken a prominent part in the establishment and development of the University of Birmingham.

KNIGHTS.—Dr. Thomas M. Anderson, M.D. Glas., Regius Professor of Medicine, Glasgow University; Dr. William Bousfield, LL.D. Leeds, Chairman of the Girls' Public Day Schools Company; Dr. A. B. W. Kennedy, LL.D., F.R.S., M.Inst.C.E., Emeritus Professor of Engineering in University College, London; and Dr. W. J. Smyly, M.D., F.R.C.P.I., Gynæcologist, Adelaide Hospital, Dublin.

C.B.—The Hon. W. N. Bruce, Principal Assistant Secretary (Secondary Schools), Board of Education; Col. D. Bruce, F.R.S., R.A.M.C., Advisory Board, Army Medical Services; and the Rev. Edmund Warre, D.D.

I.S.O.—C. E. Stronge, M.A., Senior Inspector of Schools, Ireland; and Napoleone Tagliaferro, late Director of Education, Malta.

* * *

THE University of Oxford has conferred the following honorary degrees:—

D.C.L.—Major-General Sir F. R. Wingate, K.C.B., K.C.M.G., D.S.O., Sirdar of the Egyptian Army and Governor-General of the Sudan; Mr. W. Holman Hunt, the eminent painter; and Dr. Charles Stewart Loeh, B.A. Oxon., LL.D. St. Andr., Professor of Economics, King's College, London.

D.Sc.—Dr. George H. Darwin, M.A., F.R.S., D.Se., LL.D., Plumian Professor of Astronomy, Cambridge.

D.LITT.—M. Paul Sabatier, Paris; Dr. Basil L. Gildersleeve, LL.D. Camb., Professor of Greek, Johns Hopkins University, Baltimore; Dr. Barelly Vincent Head, D.C.L. Durh., Ph.D. Heid., Lauréat de l'Institut de France, Keeper of the Department of Coins and Medals, British Museum; Dom German Morin, O.S.B., of Maredsous; and Dr. N. Murray Butler, President of Columbia University.

* * *

DURHAM UNIVERSITY has conferred the honorary degree of D.C.L. upon the Very Rev. John H. Bernard, Dean of St. Patrick's Cathedral, Dublin, Mr. Andrew Lang, and Dr. Donald McAlister.

* * *

On the occasion of the fourth centenary of the Royal College of Surgeons, the University of Edinburgh has con-

ferred the honorary degree of LL.D. upon M. Paul Cambon, the French Ambassador; Prof. Ernst von Bergmann, Berlin; Prof. Cameron, Toronto; Prof. J. Lucas Championnière, Paris; Prof. Francisco Durante, Rome; Dr. Anton Freiherr von Eiselsberg, Vienna; Prof. Halsted, Baltimore; Prof. Keen, Philadelphia; Prof. Carl Gustaf Lennander, Upsala; Prof. Saxtorph, Copenhagen; Prof. Shepherd, Montreal; Prof. Subbotin, St. Petersburg.

* * *

THE Royal College of Surgeons of Edinburgh, on the celebration of the fourth centenary of its foundation, has conferred honorary Fellowships upon 35 eminent surgeons of various nationality.

* * *

THE Royal Victorian Order of the Fourth Class (M.V.O.) has been conferred upon the Rev. Dr. Wood, Head Master of Harrow School.

Official Degrees. THE following members of the staff of Leeds University and members of the Faculty of the Leeds Infirmary have been admitted to degrees in Science of the University:

M.Sc.—Prof. Wright, Prof. Beaumont, Prof. Goodman, Prof. Proctor, Prof. Green, Prof. Kendall, Mr. Bevan Lewis, Mr. Walter H. Brown, Mr. Harry Littlewood, Mr. Secker Walker, Mr. G. D. A. Parr, Mr. A. R. Dwerryhouse, and Mr. C. E. Whiteley.

B.Sc.—Dr. Dawson, Mr. Lowson, and Mr. Unwin.

* * *

PROF. CHURTON COLLINS has received the degree of M.A., and Prof. Arthur Robinson the degree of M.D., in the University of Birmingham.

Endowments and Benefactions. OXFORD UNIVERSITY, according to a statement prepared by a body of the professors, requires for its proper equipment a capital of £546,250, and an annual expenditure of £93,880.

* * *

THE Cambridge University Benefaction Fund now amounts to £81,877. Among the donors to the last £6,700 are: Lord Rayleigh, £5,000; Lord Iveagh, a further donation of £1,000; Mr. C. J. Heywood, £100; Mr. J. Lumb, £100; Messrs. J. Shires & Sons, £60; the British Association (a contribution from the surplus resulting from the Cambridge meeting), £50; Mrs. W. Foster, £50; Mr. J. Tennant, £50; Mr. George Weston, £25; Sir W. Broadbent, Mr. B. Broadbent, and Mr. R. Hirst, £20 each. A sum of over £6,000 has also been promised for the University Library.

* * *

MR. MARTIN WHITE has made a special donation of £200 to London University for two bursaries (£25 each for two years) and a studentship of Sociology (£100).

* * *

THE Liverpool City Council has agreed to grant a further sum of £10,000 to Liverpool University during the current year, not less than £1,000 of the sum to be devoted to Liverpool scholarships, including assistance to undergraduates and post-graduates, and payment and remission of fees.

* * *

SIR ALFRED JONES has promised £1,000 for four years towards the expenses of the proposed School of Research in connexion with the University of Liverpool. The school is to inquire into the natural resources of the tropical possessions of the Empire. Lord Mountmorres is to be the first Director.

* * *

GLASGOW UNIVERSITY has received a bequest of £500 under the will of the late Mr. McIntyre, Greenock, for founding a

bursary in Arts. Mr. R. W. Seton-Watson has founded a (probably biennial) Watson Historical Prize—"it shall never be of the value of less than £50"—to encourage the study of history and foreign languages.

* * *

ABERDEEN UNIVERSITY has received £200 from Mrs. Anne D. Beaton to found a prize in Zoology in memory of her father, the late Prof. Macgillivray, and £100 from the Rev. Dr. Miller, Buckie, towards the funds of the Caithness Prize in history.

* * *

BLACKROCK COLLEGE UNION has given the College a scholarship of £50, and an anonymous past student has offered one of £15.

* * *

MR. ROCKEFELLER has presented £2,000,000 to the General Educational Board of the United States, and £200,000 to Yale University.

Scholarships and Prizes. CHRIST CHURCH, Oxford, offers two scholarships of £50, tenable for one year, to selected candidates for the India Civil Service. Candidates to send their names (with three testimonials as to character and three references) to the Dean before the end of the Government Examination. Election without further examination.

* * *

MAGDALEN COLLEGE, Oxford, offers one or more demys in Natural Science (£80 a year) to candidates under nineteen on December 20. Exhibitions (£25 to £60 a year) may be given to candidates under twenty-one. Examination, December 12, in combination with University and Lincoln Colleges. Candidates call on the President (with birth certificate and testimonial to character), December 11, 9-10 p.m.

Also similar demys and exhibitions in History. Candidates send to the President, any time in December before December 10, application forms duly filled up, birth certificate, and testimonial to character. Examination December 12.

* * *

MR. J. E. CROMBIE, Lord Rector's Assessor, has given £1,000 towards the cost of the Aberdeen University Quatercentenary celebration, primarily to guarantee any deficiency in the Publication Committee's expenses. Probably at least three volumes of academic contributions, besides a formal record of the proceedings, will be presented to delegates and other guests.

* * *

AT Bedford College, London, the Reid Scholarship in Arts has been awarded to Miss K. M. Curtis, of the North London Collegiate School, and the Arnott Scholarship in Science to Miss E. M. Stokes, of Dame Alice Owen's Girls' School.

The Council offers a scholarship of £20 for one year to candidates holding a degree or its equivalent in Arts or Science for the course of secondary training. Apply to the Head of the Training Department by September 18.

* * *

MR. S. ERNEST PALMER has given £1,000 for 3 scholarships at the Guildhall School of Music.

* * *

THE Carnegie Trust's awards for 1905-6 include 16 research fellowships, 28 research scholarships, and 40 research grants, amounting to close upon £7,000.

* * *

THE Society of American Women in London proposes to raise funds to support 96 scholarships for American lady graduates, tenable two years at Oxford, Cambridge, or

London. The scheme originated with the Hon. Mrs. Bertrand Russell. It requires some £2,000,000.

* * *

THE subjects for the Empire Day Essays (see May number, page 214) for 1906 are: (1) for secondary schools, "The Ideas expressed by the word 'Empire'"; (2) for primary schools, "The Chief Stages in the Growth of Greater Britain." These subjects have been chosen by Sir Richard Jebb.

Appointments and Vacancies.

DR. WILLIAM M. HICKS, M.A., Sc.D., F.R.S., Principal and Professor of Physics in Sheffield University, has resigned the post of Vice-Chancellor, and is succeeded by Sir Charles Norton Edgecumbe Eliot, M.A. Oxon., LL.D. Edin., K.C.M.G., C.B., lately H.M. Commissioner and Commander-in-chief for the British East Africa Protectorate.

* * *

AT Manchester University, Mr. J. H. Hopkinson, M.A., a late Craven Travelling Fellow of Oxford University, has been appointed Lecturer in Classical Archæology; and Dr. Cyril Atkinson, Lecturer in Jurisprudence and Roman Law.

* * *

AT Birmingham University, Mr. Stephen M. Dixon, M.A., M.I.C.E., Professor of Civil Engineering in Dalhousie University, Nova Scotia, has been appointed Professor of Civil Engineering; Miss Rose Sidgwick, Tutor at Somerville College, Oxford, Assistant Lecturer in History; and Mr. M. O. B. Caspari, Lecturer in Greek Language, Literature, and Archæology.

* * *

DR. C. E. PURSLOW has been appointed Ingleby Lecturer in Birmingham University for 1906.

* * *

DR. CHARLES BONNIER, Lecturer in French in Liverpool University, has been appointed to the James Barrow Chair of French Language and Literature.

* * *

MR. W. H. WATKINSON, Professor of Engineering in the Glasgow and West of Scotland Technical College, and formerly Lecturer in Engineering at the Central Science School, Sheffield, has been appointed to the Chair of Engineering in Liverpool University, in succession to Prof. Hele-Shaw.

* * *

DR. T. G. PINCHES has been invited to join the staff of the Institute of Archæology in association with the University of Liverpool as Assyriologist.

* * *

THE REV. DR. IVERACH succeeds the late Dr. Salmond as Principal of the United Free Church College, Aberdeen.

* * *

PROF. JOHN DEWEY has resigned the Deanship of the College of Education, University of Chicago, to accept the Chair of Philosophy in Columbia University. He is succeeded by Mr. George H. Locke.

* * *

MR. WILLIAM PHILLIPS, M.A., Lecturer in the Normal Department for Men, Cardiff University College, has been promoted to be Professor of Education, in succession to Prof. Raymont.

* * *

MR. ALEXANDER S. HARVEY, Barrister-at-Law, formerly of H.M. Consular Service in China, has been appointed Professor of English and International Law in the University of Pekin.

* * *

MR. W. BLACK ODGERS, LL.D., K.C., has been appointed

Director of Legal Education under the Council of Legal Education (Inns of Court).

* * *

MISS PHILIPPA GARRETT FAWCETT, who fifteen years ago was placed "above the Senior Wrangler," has been appointed principal assistant in the Education Executive Officer's Department of the London County Council.

* * *

MR. A. C. BENSON has been appointed a member of the Consultative Committee of the Board of Education, in room of Canon Lyttelton, resigned.

* * *

MR. T. P. BLACK has been appointed Demonstrator in Physics in Armstrong College, Newcastle-upon-Tyne.

* * *

MISS O. C. M. ILES, Assistant Mistress of Method, Winchester High School, has been appointed Lecturer on Education in Liverpool University.

* * *

THE REV. FRANCIS AIDAN HIBBERT, M.A., Head Master of Worksop College, Notts, has been appointed Head Master of Denstone College.

* * *

MR. SHELDON ROBERT HART, M.A. Camb., Head Master of Handsworth Grammar School, has been appointed Head Master of Rugby Lower School.

* * *

MR. ARTHUR CLENDON, M.A. Camb. and Lond., Head Master of the County School, Dolgelly, has been appointed Head Master of Handsworth Grammar School.

* * *

THE Head Mastership of Andover Grammar School is vacant by the death of the Rev. J. C. Witton, B.A., B.Sc., who had held the post for 25 years.

* * *

MR. IVOR B. JOHN, Assistant Lecturer in English, Cardiff University College, has been appointed to the Goldsmiths' Training College, New Cross.

* * *

MR. G. AIMER RUSSELL, M.A., B.Sc., F.R.A.S., First Science Master, Kilmarnock Academy, has been appointed Rector of Peterhead Academy, in succession to Mr. John Don, M.A., who has become Head Master of Maybole Grammar School.

* * *

MR. W. A. DAVIE, M.A., B.Sc. (Agr.) Aberd., Assistant Lecturer in Agricultural Chemistry, Aberdeen University, has been appointed a Deputy-Inspector in the Agriculture and Lands Department under the Soudan Government.

* * *

MR. HANS S. DENNLER, B.L. (Berne), Modern Language Master, Arbroath High School, has been appointed head of the Modern Languages Department, Dundee High School.

Literary Items. THE Braille Printing and Publishing Company, Edinburgh, are commencing to issue a penny weekly newspaper in Braille type. We hope it will be adequately supported.

THE Clarendon Press is adding to its series of translations the works of Lucian, "the last great master of Attic

eloquence and Attic wit," by H. W. Fowler and F. G. Fowler, in four volumes.

* * *

MESSRS. SAMPSON LOW, MARSTON, & Co. promise, in October, a new work by Captain A. T. Mahan on "Sea Power in its relations to the War of 1812," in two volumes, with photographic illustrations, maps, and plans.

* * *

MESSRS. W. & A. K. JOHNSTON announce the early publication of "An Atlas of Commercial Geography," edited by R. Ferguson Savage, F.R.G.S. There will be thirty-six maps, royal quarto size.

* * *

Occasional Papers for July is varied and vigorous. Mr. W. J. Locke concludes that Zola was not only a great man of letters, but a great and steadfast man, and "one of the greatest and purest ethical teachers of the nineteenth century."

* * *

Child Life for July contains Mr. J. H. Badley's able and suggestive Presidential Address to the Froebel Society (March 24) on "The Teacher's Part in the New Education," together with several useful Froebelian articles of a practical nature.

* * *

MRS. ADA S. BALLIN describes in *Womanhood* (with illustrations) "An Educational Home for Girls"—Clovelly, St. John's Road, Eastbourne—recently opened by Mrs. F. H. Browne, whose late husband was Head Master of Ipswich School, 1883-94.

* * *

THE publishing business of the Cambridge University Press has just been removed from Ave Maria Lane to Nos. 133-137 Fetter Lane (St. Dunstan's House), E.C.



THE BISHOP OF HEREFORD unveiled the medallion portrait of the late Archbishop Temple in Rugby School chapel (June 20). The medallion is in alabaster and white Carrara marble, and is fixed in the right side of the nave, close to the pulpit. The work was executed by Mr. Brock, R.A.

* * *

THE KING opened the new University of Sheffield; and the Prince of Wales laid the foundation stone of the new buildings of University College, Cardiff.

* * *

THE Electrotechnics Laboratories at Liverpool University were formally opened on Degree Day (July 9). They have cost some £10,000, which was provided by a bequest of the late Mr. David Jardine. Sir Joseph W. Swan delivered an address on the importance of electrical training and research.

* * *

PROF. SHOZO Aso, Dean of the Japan Women's University, after a year's research work in the United States, has come to England, "charged with a joint mission from his University and from the Education Department," to study especially technical education for women. The Women's University has over 1,100 students, 700 of them resident.

* * *

THE Robert Browning Settlement appeals for the honorary assistance of teachers, play-leaders, story-tellers, accompanists, and guides for the annual Walworth Holiday School during the next four weeks. Sandford Row School, 10-12 a.m.; Tooting Common, afternoon. Communicate with Miss Ethel Lancaster, Browning Hall, Walworth, S.E.

COLLEGE OF PRECEPTORS.

HALF-YEARLY GENERAL MEETING.

THE ordinary half-yearly General Meeting of the Members of the Corporation was held at the College on Saturday, July 29.

The SECRETARY having read the advertisement convening the meeting, Dr. WORMELL was appointed Chairman.

The Report of the Council was laid before the meeting, and was taken as read, a copy having previously been sent to every member. It was as follows:—

REPORT OF THE COUNCIL.

The Council beg to lay before the members of the College the following Report of their proceedings during the past half-year:—

1. They have to report that the number of candidates entered for the Midsummer Certificate and Lower Forms Examinations is about 5,560, showing a falling off of about 4 per cent. as compared with the number of entries for the corresponding Examinations last year. This diminution is to be ascribed partly to the clashing of the date of the Examination with that of the Board of Education Science and Art Day Examinations, and partly to the effect of the new Regulations for Secondary Schools aided by the Board, which prohibit the entry of pupils for external examinations until they are in the third year of the prescribed school course. The Council have under their consideration the question of making a representation to the Board of Education on this subject.

2. The Professional Preliminary Examination for Certificates recognized by the Board of Education and a number of professional bodies was held as usual in the first week in March, and was attended by 379 candidates, an increase of 27 as compared with the previous March Examination.

3. The Christmas Examination of Teachers for the College Diplomas was held in the first week in January, and was attended by 541 candidates, as compared with 552 who presented themselves at the corresponding Examination last year. During the past half-year the Diploma of Licentiate has been conferred on 32 candidates, and that of Associate on 145, who had passed the required Examinations.

4. The Council have conducted during the past half-year the inspection and examination of five schools by Visiting Examiners.

5. The Thirty-third Annual Series of Lectures to Teachers on "The Science and Art of Education" commenced on February 9 with a Course of Twelve Lectures on "The Psychological and Logical Foundations of Intellectual Education," by Mr. W. E. Johnson, M.A.; and a Course of Twelve Lectures on "Practical Problems in Class Teaching" will be given in the autumn by Prof. J. Adams, M.A.

6. At the Members' Meetings held during the past half-year the following Lectures have been given:—"The Sunny Side of Egotism: an examination of the educational applications of self-reference," by Prof. J. Adams, M.A.; "On the Teaching of Geography to Higher Classes," by Prof. L. W. Lyde, M.A.; "On Chaos and Contradiction in present-day Educational Thought," by F. H. Hayward, D.Lit.; "Sir Joshua Reynolds: some account of his contribution to Principles of Method," by Prof. J. J. Findlay, M.A. At another Meeting (in conjunction with the Assistant Masters' Association) Mr. T. Percy Nunn, M.A., B.Sc., delivered a Lecture on "Science Teaching and the Theory of Science." Reports of the Lectures and Discussions have been published, as usual, in *The Educational Times*.

7. The movement for the federation of Associations of Teachers concerned with secondary education, referred to in the last two reports of the Council, has not made such progress as was expected, and the Council are not in a position to submit definite proposals for the consideration of the members of the College at the half-yearly General Meeting. The Council desire, however, to lay before the members a short account of the history of the movement. Recent developments in the organization of secondary education forced on the attention of teachers the desirability of forming a general Association which should represent secondary teachers as a whole, and be qualified to speak authoritatively on their behalf. It was considered that the views of such a body would be of service to Education Authorities when details of organization and administration came to be discussed; and it was also felt that the special interests of the different sections of teachers would more readily secure attention if supported by the authority of the whole body of secondary teachers. Certain prominent members of existing Associations formed themselves into a Committee with the object of promoting federation. They considered that the movement would be greatly helped if the reputation and resources of the College of Preceptors could be enlisted in its support. Accordingly, they invited the Council of the College to co-operate in the work. The Council, while conscious that the work of the College was essentially different in character from that of the sectional Associations, nevertheless welcomed the idea of federation, believing that a comprehensive union of secondary teachers would benefit the cause of education. They also hoped that such a union might assist in developing the work of the College, and they were of opinion that it would be of advantage to the public that the claims of sectional Associations should

be discussed by a generally representative body of teachers before being submitted to Education Authorities. They therefore appointed three of their number to confer with an equal number of the Federation Committee. After prolonged deliberations a statement was drawn up of the terms which the representatives of the College were prepared to submit for the consideration of the Council, provided that the Federation Committee should first ascertain that such terms were acceptable to the other Associations. These terms provided for the direct representation of the several Associations on the Council of the federated body; for the payment of monetary contributions by the various Associations to the central body, and for the granting of certain privileges in return for such payments. Each of the constituent bodies (federating bodies other than the College of Preceptors) was to undertake to form part of the federated body for an agreed period, after which the constitution of the federated body would be revised, and each of the constituent bodies would be free to secede from the Union. It was further proposed that the Charter of the College of Preceptors, with such modifications as might be necessary, should be utilized to give authority to the scheme, and it was therefore suggested that the College should apply to the Privy Council for an amending Charter. As the obtaining of an amending Charter would involve a large expenditure of money on the part of the College of Preceptors, as well as some risk of interference with the present work of the College, the Right Hon. R. H. Haldane, K.C., and another eminent Counsel, Mr. T. T. Methold, were requested to advise the Council as to the legality of the suggested application, and also as to the likelihood of its being favourably entertained by the Privy Council. Their opinion was as follows:—"The tendency of the times and the disposition to regard the qualification of teachers from a changed point of view appears to us to render it probable that the Lord President of the Council would not advise the grant of the proposed Charter, and we do not see that any amendment germane to the purposes of the present application could be introduced with the prospect of making success more likely. If, however, the applicants determined to proceed, we see no legal difficulties which stand in the way of success. Such cases as the *King v. Passmore*, 3 Term. Rep. 199, show that, if the majority of the Corporation desire a change, it is within the competency of the Crown to grant a new or further Charter effecting it." Since this opinion was expressed the Federation Committee have been engaged in efforts to convince the various Associations of the advantages of federation, but these bodies have not all yet seen their way to undertake the financial burden or to acquiesce in the conditions necessarily involved in carrying out such a scheme. Under these circumstances it might perhaps be advisable to be content at present with the formation of a voluntary joint Committee of representatives of the various Associations to deal with matters of common interest, the College supplying a local habitation and other aid. Such a plan would not involve great expense to any of the bodies concerned, and would leave each body free to carry on its own special work. It would also enable the different bodies to ascertain by experience how far it might be possible to work together, and it might eventually pave the way for a more complete union.

8. During the past half-year 20 new members have been elected, notice has been received of the withdrawal of 2, and the names of 12 members have been removed on account of non-payment of their subscriptions. In the case of 41 persons who had been admitted to the privileges of membership under Sect. II. cl. 5 of the By-laws, the privileges have been withdrawn. The Council regret to have to report the deaths of the following members of the College:—The Rev. Dr. Hiron (for many years a Member of the Council and of the Examining Board), Dr. R. Biggs, Mr. E. C. Clark, A.C.P., and Mr. R. Tucker, F.C.P.

Mr. GUTTERIDGE, in reference to paragraph 3, remarked that, while there was a considerable number of examinees to whom the diplomas of Associate and Licentiate respectively had been awarded, no candidate appeared to have obtained the Fellowship. He thought that this was to be ascribed to the want of elasticity in the requirements for this grade, and suggested that more options should be allowed, as was now the case in the Degree Examinations of the University of London.

Mr. RADFORD referred to the falling off in the number of entries for the Certificate Examinations, and recommended the Council to consider the advisability of instituting examinations in single subjects on a plan similar to that of the Society of Arts and of the London Chamber of Commerce.

Mr. ORCHARD, in reference to the subjects of the lectures given at the members' meetings, suggested that it might be useful to arrange for a conference to consider the whole question of educational chaos and contradiction, and the means that might be adopted to remedy the evils arising therefrom.

In reference to the subject of paragraph 7, Canon BELL, by permission of the meeting, read a statement on the present position of the federation question. The CHAIRMAN, however, ruled that, as no notice had been given, it would not be in order to discuss this statement.

The CHAIRMAN pointed out that for the purposes of discussion the paragraph might conveniently be divided into sections. The

first section stated that the Council had no proposals to lay before the members. The second explained the reasons for federation. The third described the steps taken by the Council to consider the proposals made to them by the Federation Committee. The fourth section gave an outline of the conditions of union drawn up by the representatives of the Council and of the Federation Committee; and in the fifth section the Council made a suggestion which was different from the proposals for federation that had been submitted to them.

Dr. J. BELL insisted that a special meeting ought to be called to consider this matter, which involved the very existence of the College.

Mr. JAS. WILSON said he had been inclined to regard the paragraph as an obituary notice of the federation scheme. Any one who at all appreciated the tangle of difficulties that beset the initiation of such a scheme could feel no surprise at what had happened. Even if the legal and financial obstacles were out of the way, it seemed to him that federation would not effect the objects of its promoters. Federalism spelt weakness, not strength; its machinery was cumbrous and slow-working when it worked at all. No Education Authority would be in the least likely to seek the guidance of a federal council or be influenced by its remonstrances. In short, each of the federating associations acting on its own initiative for its own interests, and uniting with the others in common action as occasion arose, would afford far better guarantees for the promotion of the interests of secondary teachers than could be reasonably expected under federation. However, it was from the point of view of a member of the College that he desired to look at what had been done and what it was proposed to do in reference to the obtaining of a new Charter. The College had been at work under the existing Charter over fifty years. Owing to its success, due to the goodness of its work and largely to the administrative ability of its executive, considerable property and funds had been accumulated. In these funds each member of the corporation was individually interested, and in certain contingencies they might become productive of individual benefit. The significance of those vested interests constituted by the existing Charter seemed to be ignored by the promoters of federation. They proposed to change the name of the corporation, as if such change were a trivial matter, to divert its surplus funds to uses not warranted by its Charter, and yet they appeared to be unaware of the fact that such fundamental changes could only be effected by the surrender by *all* the corporators of the existing Charter as a preliminary step. There was high legal authority for the proposition that a corporation circumstanced as the College would be "restrained from surrendering their Charter for the purpose of getting a new one altering the constitution of the body on the ground that the Charter did not contemplate at all, nor did the common law admit, except by consent of *all* the corporators, of an interest constituted by the Charter being destroyed." The late Lord Selborne, in deciding a case between an individual objector and a society seeking a supplemental Charter, stated that objection to the grant to be successful should be in one of three forms—either that the proposed Charter was contrary to the general law, or that no proper authority to apply for the Charter had been given, or that some personal or individual right of the objector had been wrongly interfered with. The proposals of the Federation Committee could be objected to under all three heads. They had stated publicly that one of their objects was to form a body to resist the encroachments of the State and the Local Education Authorities. How intelligent men could persuade themselves that a Royal Charter would be granted for such a plainly illegal object passed his comprehension. Then these promoters of federation had never taken the means open to them of explaining to their fellow corporators what exactly they wanted and how they proposed to get it, or asked for any authority to pursue their scheme. It was unnecessary to specify the various ways in which existing rights would be interfered with. In short, the project looked to him quite hopeless, and he trusted that the Council would not play any longer with it. They were drifting into a false position and giving countenance to aims that could not be realized except by the dissolution of the College. He earnestly hoped that all concerned would see the wisdom of allowing the matter to drop.

The DEAN said he wished to make clear the position that the Council took up in this matter. They had not yet been in a position to bring anything formally before a General Meeting. When the question was first mooted by certain individuals for whom he had the highest respect, the members of Council first

approached felt that it was a proposal that could not lightly be put aside. The matter was brought formally before the Council, and a Committee was appointed to examine it. The Council subsequently came to the conclusion that it deserved their favourable consideration, provided it could be carried out so as to be a development of the work of the College. It was their declared intention to submit these proposals to a Special General Meeting when they had been worked out in detail; but at present nothing had been done, especially in view of the very strong legal opinion that had been given against the scheme. He himself had felt all along that the object they desired would, if it could be carried out, be of advantage to the College and to secondary education; but he thought it might be possible to attain it without a paper constitution by gradually getting members of different associations to join the College and make it a centre, so to speak, for all secondary teachers, without going through the formality of amending the Charter. He hoped it was on these lines that the suggested joint Committee would proceed, not merely as a temporary committee but as a standing one. Such action might be the beginning of a great development of the College. The paragraph in the Report was mainly historical, and did not commit the Council or the members to anything. The Council had not been guilty of discourtesy towards the general body in not laying any definite proposition before the members at that meeting, as they had not yet received in due form such a proposition from the Federation Committee. So far as he had been able to gather it, the opinion of the meeting was rather adverse to the completion of the negotiations that had been carried on, and the Council must of course take account of that feeling. He would be sorry if any scheme which was supported by such an educational authority and loyal member of the College as Canon Bell should entirely fall through, as it had been taken up in the interests alike of the College and of the teaching profession. Although he did not feel very sanguine as to any propositions being made which would be acceptable to the members, he did not wish to put a stop to negotiations. He trusted that the paragraph in the Report would not be rejected by the meeting, as, whatever opinions members might hold, there would be no advantage in doing so. The question must in any case come before a Special General Meeting before the Council could take any formal steps with regard to it.

Paragraph 7 was put to the meeting and adopted, and the Report as a whole was then adopted.

The DEAN then presented his Report, which had been printed and circulated among the members present. It was as follows:—

THE DEAN'S REPORT.

In addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Midsummer Examination of candidates for Certificates took place on the 27th June to the 1st July at 165 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Abingdon, Anerley, Arnside, Attleborough, Aylesbury, Bamford (Derbyshire), Banagher, Bath, Belfast, Birmingham, Blackburn, Blackpool, Bognor, Boston Spa, Brecon, Brewood, Brighton, Bristol, Bruff, Buttevant, Camelford, Cardiff, Carlisle, Carnarvon, Cheltenham, Coleraine, Cork, Croydon, Darlington, Dublin, Dumfries, Durham, Ealing, East Grinstead, Eccles, Edinburgh, Epsom, Erith, Exeter, Eye (Suffolk), Falmouth, Farnworth (Lanes), Felixstowe, Forest Hill, Fraserburgh, Goudhurst, Greenwich, Grimsargh Grove Ferry, Hastings, Hawkhurst, Hexham, Hornsea, Horsmonden, Huddersfield, Hulme, Hunstanton, Hutton (Preston), Hythe, Inverurie, Iron Bridge, Jersey, Kington, Kirkby Stephen, Launceston, Leamington Spa, Leeds, Leek, Lisburn, Liskeard, Liverpool, London, Long Sutton, Lostock Gralam, Maidstone, Manchester, Margate, Market Bosworth, Market Harborough, Mayfield, Merthyr Tydfil, Middlesbrough, Midhurst, Middleton, Mountmellick, Muswell Hill, Newcastle-on-Tyne, Newton Abbot, Newtownards, Nottingham, Old Colwyn, Oswestry, Paisley, Penarth, Plymouth, Porth, Portsea, Portsmouth, Richmond (Surrey), Richmond (Yorks), Ripley (Surrey), Rivington, Rochester, Rugeley, Ruthin, Rye, St. David's (Pem.), St. Leonards-on-Sea, Scorton, Seaford, Shebbear, Sheffield, Southampton, Southend, South Molton, Southport, Southwell, Stamford Hill, Streatham Hill, Stroud, Sunderland, Taplow, Taunton, Tavistock, Tettenhall, Thorne, Towcester, Uckfield, Walsall, Waterford, Wellington, Wells (Som.), Westcliff-on-Sea, West Hartlepool, West Norwood, Weston-super-Mare, Weybridge, Wimbledon, Winslow, Woodstock, York, Youghal. The Examination was also held at Gibraltar, Constantinople, Free Town (Sierra Leone), Lagos (West Africa), Johannesburg and Uitenhage (S. Africa), Colombo (Ceylon), Rangoon (Burma), and Wei-hai-wei (N. China).

The total number of candidates examined (not including 119 examined at Colonial and Foreign Centres) was 3,876—2,501 boys and 1,375 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined during the year ending Midsummer, 1905 (not including those who attended the supplementary examinations in March and September), has been 10,284.

The following table shows the proportion of the candidates at the recent Midsummer Examination who passed in the class for which they were entered:—

	Examined.	Passed.	Percentage.
First Class [or Senior].....	445	206	46
Second Class [or Junior]...	1,848	860	47
Third Class	1,583	1,203	76

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (277 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 43 examined at Colonial and Foreign Centres) was 1,152—644 boys and 508 girls. Of these 910 passed, or 79 per cent.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held on the 7th to 9th of March, in London and at seven Provincial Centres, viz., Birmingham, Bristol, Cardiff, Inverness, Leeds, Liverpool, and Manchester, 366 candidates presented themselves.

Practical Examinations for Certificates of Ability to Teach were held in February, May, and June. At these Examinations 48 candidates presented themselves. Of these 20 obtained Certificates, and 19 satisfied the conditions prescribed by the Teachers' Registration Council for candidates applying under Reg. 5 (2) (b).

The Report was adopted.

A vote of thanks to the Chairman concluded the proceedings.

ADJOURNED MEETING OF THE COUNCIL.

AN adjourned meeting of the Council was held on July 29. Present: Mr. E. A. Butler, Vice-President, in the Chair; Rev. Canon Bell, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Charles, Mr. Eve, Mr. Holland, Rev. R. Lee, Rev. G. E. Mackie, Dr. Moody, and Mr. Vincent.

The diploma of Licentiate was granted to Mr. Ernest Rigby, who had fulfilled all the required conditions.

OPEN COURT.

Thay haif said . . .

Quhat say thay?—Lat thame say!

PARENTS AND SCHOOLMASTERS.

THE ACTUAL STATE OF AFFAIRS.

By GILBERT J. PASS,

Assistant Master, Craufurd College, Maidenhead.

THE interesting views expressed by the writer of "Parents and Schoolmasters" in last month's issue of *The Educational Times* must awaken in the hearts of many schoolmasters a yearning that is very rarely satisfied; for who amongst the pilgrims ever reaches the educational Mecca so vividly pictured?

The "parent" difficulty is most felt in the schools of lesser importance, which, however, educate as many, if not more, pupils than the greater schools. The authorities in the larger schools have maintained complete independence by pointing out to parents that, if they do not approve of the existing state of affairs, they had better remove their children; whereas the lesser schools, relying much more upon the good will of parents, are unable to take up such a sturdy independent attitude, and, in consequence, often have to brook interference from those who are the least qualified to speak on educational matters.

Instead of co-operation, the average teacher has often to educate the pupil in spite of the parents, and sometimes in spite of the child himself. The parents frequently desire a special curriculum for their children, and when the schoolmaster ventures to remonstrate he is told that he is autocratic and impatient of criticism. Yet surely no teacher worthy of his salt is intolerant of fair criticism: what he does resent, and rightly, is

interference with his methods. Parents come to him and say: "My boy must not learn Greek; it will be no good to him when he goes into business." Or: "I want my boy to pay special attention to shorthand and book-keeping, and not to devote time to such useless subjects as Latin or Euclid"; and so on, through the whole catalogue of such requests.

It is difficult to convince parents of the wrongness of the position they take up in this matter. They go to their physician for some bodily ailment, and follow his advice implicitly, and yet when they consult an educational specialist they are unwilling for their children to follow out his "course of treatment," though it may be the result of many years' careful study and successful experiment. To ask a schoolmaster to omit portions of his curriculum for individual pupils is just as absurd as to request a doctor to omit this or that drug from his prescription because no immediate effect is seen to result from it. We wish to be judged and fairly criticized upon the sum total of the work accomplished, and not by patchwork performed at the request of some amateur.

True, many of the subjects we teach—and, indeed, even those to which we devote the most time—are not employed by our pupils when they have finished our course. It is certain that a very large percentage of children who learn at school Algebra and Geometry, or Latin and Greek, do not employ these subjects again once their schooldays are ended; and it is not always easy to impress parents with the fact that such branches have not been taught *per se*, but rather to exercise the power of accurate and careful thinking—a habit which, if acquired at school, will help their children inestimably when they have to fight the battle of life.

"Oh!" they will say impatiently, "we did not learn these things at school, and yet we have been able to get on all right. Drop teaching Latin and Greek, Geometry and Algebra, and devote all your time to such useful subjects as Arithmetic, Modern Languages, and the like." They grumble if their children make progress in Classics or Mathematics, and yet cannot learn to speak French or German. They forget that environment, so absolutely essential for true progress in modern languages, is of necessity absent from the large proportion of our schools. Yet the schoolmaster should be satisfied if a good grounding is imparted in this branch, so that, should his pupil later on go abroad, he may quickly obtain a mastery over conversational French or German.

Parents wrongly imagine that, if their children do not make progress in subjects they will be able to employ when they grow up, they are not in reality advancing at all; yet, if they leave school with a half-assimilated knowledge of commercial subjects, and a superficial acquaintance with a few everyday phrases in French and German, they consider that they have had an eminently satisfactory schooling. They lose sight of the fact that it is not the schoolmaster's highest aim to turn out pupils crammed with undigested facts, but rather to send into the world individuals capable of thinking clearly, having high aspirations, and a proper knowledge of their duties as citizens. Let parents give us a free hand in our curriculum, and let them judge our work synthetically rather than analytically, and then we shall look forward with confidence to their criticism.

They can do much to help us by awakening the dormant intelligence of their children and by urging them to work industriously and make the most of their opportunities. In the holidays they can take them to places of instructive amusement, and, by the "powder-in-the-jam" method, enable them to acquire useful and interesting facts.

How often it is the lot of schoolmasters, and especially of those in boarding schools, to find pupils much deteriorated after a vacation!—the spoiling they receive at home, the late and irregular hours, and the absence of anything definite to do, so upset them that they frequently take some weeks to settle down to anything like regular work.

We live in an age of educational conferences, but there has not as yet been a conference between parents and teachers. If such a conference could be brought about, and if there were a complete interchange of views, much might be done to promote an *entente cordiale*, and far better results might be obtained.

How then can this much-needed co-operation be brought about? Only by pointing out clearly to parents what our aims are, how we are working for the distant future rather than for the immediate present, and how they can best assist us. If we can but do this satisfactorily, we may yet see parent, schoolmaster, and pupil completely *en rapport*, and all working for the common good.

REVIEWS.

EDUCATIONAL UNITY.

The Philosophy of Education. By Herman Harrell Horne, Ph.D., Assistant Professor of Philosophy and Pedagogy in Dartmouth College. 7s. 6d. net. (Macmillan.)

Dr. Horne explores "the foundations of education in the related natural and mental sciences." He does not make war on other educationists; on the contrary, he is anxious to bring "the warring sects" to "peace through unity," for in unity lies "the educational truth to-day." "If claims can be rightly adjusted, harmony should ensue for a season, until indeed the educational life develops new contradictions to be synthesized." His volume is not another manual of practice, but an essay in interpretation: "it would give not rules, but insight." "Enough theory will be found here to illumine practice, and only so much; enough practice, too, to give weight to theory." Dr. Horne treats successively the biological, physiological, sociological, psychological, and philosophical aspects of education. His own contribution to the definition of the conception of education, he says, "will doubtless appear in a certain large and systematic unity, herein introduced into the hitherto rather unshapen notion of what education is and means in human experience; in the analysis of the spiritual environment of the pupil, together with the attempt to vindicate on sociological and psychological grounds the equal right of æsthetic with physical, intellectual, and moral education; and in the induction of the Kantian ideas of God, Freedom, and Immortality from educational rather than ethical facts."

On the biological aspect, Dr. Horne expounds the theoretical and the practical educational significance of three main facts: (1) the increasing size of the cerebrum, or hemispheres of the brain, both absolutely and relatively to the size of the body, in the ascending scale of mammals; (2) the prolonged period of human infancy in comparison with lower animals; and (3) the brain as the organ of the mind. Following Spencer, he is led to lay special stress on adjustment to environment. Perhaps the most important single point is the suggestion that "the temptation is strong upon educators, particularly upon those who have not duly considered the physical limitations of mental development, to extend unwarrantably the possibilities of education." The physiological aspect raises three questions as to the education of the body: (1) How does the body influence the mind? (2) What consequent attention should it receive? and (3) What attention is it receiving in our educational system to-day? The points to be practically considered in the physical nature of children are, with the exception of fatigue, indicated but generally; others of them might have been very usefully enlarged upon. The points falling under the third head—manual training, play, gymnastics, and athletics—are treated at some length. It may be, as President Butler affirms, that "the soundest educational philosophy the world over teaches that the individual alone is nothing, but that the individual as a member of society and of a race is everything"; but Dr. Horne's seventy-two pages on the sociological aspect seem to us to contain a great deal that is considerably remote from his specific purpose, however true and interesting in itself. The psychological aspect is still more fully depicted: one chapter is occupied mainly with imitation, interest, and effort—"those three chosen ways whereby man's complete self-realization is attained"; another inquires into "the nature of that self-development which is the consequence of self-activity." The philosophical aspect reveals education as "a world-process in time," with implications grouped about three main concepts—the origin, nature, and destiny of man. Dr. Horne's psychology "is the kind familiar since Kant, that considers the unity of mind in its threefold diversity of knowing, feeling, and willing," though he indicates the need of a new classification and points to Prof. Royce's proposals, not to others. His philosophical system he terms "Idealistic Theism"—"the necessary implication of the educational process"; and here also he looks up to Prof. Royce. As the result of his whole inquiry, he evolves the definition of education as "the eternal process of superior adjustment of the physically and mentally developed, free, conscious human being to God, as manifested in the intellectual, emotional, and volitional environment of man."

These very brief indications of the drift of the book will scarcely give ground for any serious anticipation that Dr. Horne will be accepted as the educational unifier. His mental science does not seem strong enough for the task: Prof. Royce is indeed a

charming popularizer, but hardly a name to conjure with in the region of pure thought. When Dr. Horne sticks to facts, and keeps out of the mists of metaphysics, he shows himself, not indeed originally suggestive, but orderly, lucid, and industrious. His volume has the high merit of regarding the whole subject, of treating its different aspects seriously, of marshalling the points of discussion on clear system, and of setting out the matter in simple and easy exposition. If an advanced student will become impatient with some details and occasional digressions, perhaps these expansive portions will be instructive to more elementary students. The volume is a sincere and in many ways an able treatise, and, though we do not find in it either finality or profundity, we commend it to such educationists as are eagerly looking for educational solutions.

A COMPANION TO HOMER.

Handbook of Homeric Study. By Henry Browne, S.J., M.A. Oxon., Professor of Greek at University College, Dublin. (6s. net. Longmans.)

Notwithstanding Sir Richard Jebb's "Introduction," which indeed is now falling out of date in some respects, there is ample room for Prof. Browne's more comprehensive and fresher volume, which will certainly contribute materially "towards lessening the difficulties of Homeric study and making it more intelligent." Though Prof. Browne has his own conclusions, he is constantly concerned "to lay before the reader the elements out of which he can form a judgment of his own"—a candid and unselfish attitude of good practical consequence. He does not wish to supersede the ordinary Homeric grammars, text-books, or lexicons: his object is to marshal compendiously the materials of the various Homeric questions, to sift the divergent views of scholars upon them, and to penetrate through the surface differences to points of real and practical unanimity. The attempt is beset with difficulties for any single scholar; but, though Prof. Browne may fail to satisfy the experts on some branches of his subject, there can be no doubt that his volume will prove most instructive and stimulating to young students and to general readers.

The first chapter presents a broad view of "the Homeric Poems." Prof. Browne sketches the scope and spirit of the "Iliad" and the "Odyssey," remarks on the "Hymns," and, having described briefly the so-called Cyclic poems, discusses at some length the relation of Homer to the Trojan Cycle. He then traces the history of their acceptance and their influence among the Greeks, and gives a concise account of the Alexandrian textual criticism. The fourth and sixth sections—on dialect, grammar, style, and metre—inevitably furnish evidence of the difficulty of compendious handling: there is inadequate space for the really necessary detail. The other sections of this chapter, however, are among the best in the book. The second chapter—on "the Homeric Bards"—consists of a series of half-a-dozen sections investigating the authorship, composition, and local origin of the poems: and the third chapter outlines historically the Homeric controversy. On a final comparison of the various theories, Prof. Browne is somewhat bewilderingly eclectic, accepting something and rejecting something of nearly all the prominent views. He is quite clear that the poems could not possibly have been the work of a single bard; and, much as he agrees with the late Sir William Geddes, he "refuses to follow him in postulating one single author for all the Odyssean work (that is, the *Odyssey* and the non-Achillean books of the *Iliad*), still more in giving this author the name of Homer."

The fourth chapter is concerned with the matter of the poems as furnishing an account of the various aspects of "Homeric Life"—geography and commerce, religion and ethics, social organization, and material civilization. On all these heads, Prof. Browne sets forth in orderly disposition a large amount of very interesting and instructive matter, which will be very helpful to the beginner in Homeric study. The fifth chapter deals with the question: "Who were the Homeric people?" This plunges us in the excavations, and in the question of the connexion of Homeric and Mycenaean culture. The statement of the difficulties of the Mycenaean theory, brought to a head by the cumulative blows of Prof. Ridgeway, appears sufficiently formidable; yet Prof. Browne endeavours, as usual, "to construct a *via media*" between the opposing theories, and to find "a working hypothesis which will explain all the facts equally." He is more ingenious than convincing; and, while his handling of archaeological matters is scarcely of expert quality, the immense detail of Prof. Ridgeway's work precludes a satisfactory appreciation of his

results within the space available in Prof. Browne's book. Still, the exposition will be very serviceable to young students. The final chapter is a tentative criticism of "the Epic Art of Homer," brief and suggestive, but by no means satisfying; perhaps it is enough, for the occasion, that the points taken are suggestive. Generally, it may be remarked that Prof. Browne does not distinguish with the desirable decisiveness between the different degrees of value of the authorities he adduces. After all deductions, however, the volume shows an immense amount of careful and thoughtful labour, and it will be cordially welcomed as a valuable companion to Homer in the schools. There are twenty-two plates and some inset illustrations, all of them interesting and serviceable.

The Coming of Parliament. By L. Cecil Jane. (5s. T. Fisher Unwin. The Story of the Nations.)

We do not quite agree with Mr. Jane that "the general scheme of this volume is indicated by its title": a better indication is the statement that "it is an attempt to trace the steps by which Parliament attained to a permanently important share in the government of England." But, "while special stress is laid upon this theme, other sides of the national life have not been ignored"; indeed, not only is there "some allusion" to such other matters as are necessarily or advantageously referred to in illustration of the progress of Parliament, but there is even "an outline of the general history of the period, that the reader's memory may be refreshed as to the principal events." We cannot help thinking that Mr. Jane might fairly have assumed the reader's knowledge of the general history, and so have obviated the danger of swamping by its details his specific account of the Parliament.

The volume presents in substance a sketch of the history of England from 1350 to 1660—a somewhat flaccid and colourless narrative of outstanding events, with brief summary and simple comment at the end of the chapters. Inevitably there is much information of varied interest for readers that are but little acquainted with the history of the period; but Mr. Jane does not present it with narrative power or with dramatic force. The Parliamentary development may, for the most part—better in the earlier than in the latter times, for Mr. Jane has not seen far into the quarrel of Charles I. with the Parliament—be gathered satisfactorily from the containing mass of the general history. But the volume is lacking in consistent definiteness of purpose and in vigour of execution. It will be more useful to the general reader than to the student. There are some fifty illustrations, largely portraits, and a map (from Camden's "Britannia"), showing the means of communication in England in the seventeenth century.

GENERAL NOTICES.

CLASSICS.

Thucydides. Book VI. Edited by A. W. Spratt, M.A. (6s. Cambridge University Press—Pitt Press Series.)

The introduction (pages ix-xliii) is partly historical, partly philological. The historical part does not supersede Dr. Holden's fuller essay introductory to his edition of Book VII. in the same series, but it makes a good and sufficient summary. The section on the order of words in Thucydides is suggestively illustrated by well chosen examples. Below the text runs a considerable array of critical notes, and critical points are frequently discussed in the general notes or commentary. After all, though "attention has been directed to all the more important variants," yet "a complete 'apparatus criticus' has been rendered impossible by limitations of space." Indeed, Mr. Spratt would have done better, we think, to have reserved his laborious critical notes (except in a few passages where they are for one reason or another specially important) for an edition addressed to scholars; for it is only scholars that will take interest in them, and other readers likely to use this edition will find them in the way. The commentary (pages 108-378) is a careful and scholarly piece of work; but it is distracted between the claims of "the younger student" and "the mature scholar." Mr. Spratt should have decided once for all which horse he was to ride. However, there can be but one opinion as to his scholarship and industry, and as to the value of the work.

Messrs. George Bell & Sons issue a very charming edition of *Horace*, the Latin text and Conington's translation on opposite pages (5s. net). The text follows closely Dr. Gow's recension in the last edition of the "Corpus Poetarum Latinorum," with certain deviations on special grounds. The volume is beautifully printed, handy in form, and very tastefully and substantially got up. All lovers of Horace will give it a cordial welcome.

An excellent addition to "Murray's Handy Classical Maps" is *Mare*

Aegeum, &c. (1s. net). The sheet exhibits the Aegean Sea, the Propontis, the Nile from 22°, and various plans of Rome and Athens at different periods or in different degrees and points of detail. It will be exceedingly useful in class-room and in study.

The Clarendon Press has issued a second edition of Prof. Percy Gardner's suggestive brochure, *Classical Archaeology in Schools* (1s. net).

MATHEMATICS.

Plane Geometry. By John Sturgeon Mackay, M.A., LL.D., F.R.S.E. (Chambers.)

The manner in which the author places before his readers the substance of the first four books of Euclid is marked by a pleasing freshness and originality; and, amongst other points, it may be noted that the young student is very frequently brought into close relation with the train of thought which led the writer to attack a problem or a theorem in a particular way. The text-book takes its place amongst those of the newer type: it rejects at pleasure (not always happily) the sequence of theorems adopted by Euclid, and it keeps problems and theorems in separate groups. The constructions might, as usual, be greatly improved in some cases by the exercise of more care to reproduce exactly in words what is undoubtedly implied. The practice of placing allied propositions in juxtaposition is very good. A short chapter on the nature and object of geometrography is both novel and interesting. The work contains a very large and varied supply of exercises. Some misprints occur, but are, perhaps, for the most part, of minor importance.

Preliminary Geometry. By Rawdon Roberts, B.Sc. (1s. Blackie.)

The work contains a lengthy series of exercises in practical geometry, arranged so as to form suitable material for a preliminary course. The correct mode of working a particular exercise is often sufficiently obvious and may be supposed to suggest itself to the pupil. In many cases, on the contrary, the steps must be indicated by the teacher. Interest in the subject is stimulated by the practice afforded in the construction of attractive geometrical patterns.

The "Council" Arithmetic for Schools, Parts I., II., III., and IV. Scheme B. By T. B. Ellery, F.R.G.S. (2d., 3d., 3d., 4d. (paper); 3d., 4d., 4d., 6d. (limp cloth). Answers to each part, 4d., limp cloth. Black.)

A series of bright, ably compiled little books, adapted for use in primary and secondary schools, and written with special reference to the conditions subsisting under the new Education Authorities. The series will be complete in eight parts, and is to provide for a course of instruction fulfilling the requirements of pupils working for various scholarship examinations, for the Oxford and Cambridge Locals, and for other examinations of a similar standard. It is likely to become popular owing to the constant appeal which the exercises make to the circumstances of daily life; and the younger pupils will be attracted, too, by the many illustrations that accompany the examples in the earlier parts. It may even be anticipated that they will feel a certain regret when they arrive at the stage at which these cease to form a feature of the text.

SCIENCE.

Trees: a Handbook of Forest-Botany for the Woodlands and the Laboratory. By H. Marshall Ward, Sc.D., F.R.S., Professor of Botany in the University of Cambridge. Vol. I.: *Buds and Twigs*. Vol. II.: *Leaves*. Vol. III.: *Flowers and Inflorescences*. (4s. 6d. net each. Cambridge University Press, Cambridge Biological Series.)

Prof. Marshall Ward takes the point of view of the outdoor naturalist and shows how he should go about the study of trees and shrubs. With every proper respect for laboratory processes, he wants to encourage a first-hand acquaintance with the plant in its own home, and the practice of thorough observation of peculiarities of structure and adaptation. In fact, he applies to "woody" plants the expository method he formerly exhibited with marked success in his book on the Grasses. The work, appealing to the amateur, avoids all unnecessary (but no necessary) technicalities, and may be taken as an introduction to Nature study (in a serious practical sense); it grounds the student in the methods of systematic botany and morphology, and in the expert study of Forest-Botany; and it incidentally deals with matters of Histology and Physiology. In short, it is "an attempt to teach the fundamental principles of Botany by means of examples selected from trees and other woody plants." There are to be six volumes in all. The present three volumes are each divided into a "general" and a "special" part of nearly equal extent. The exposition is lucid, and the arrangement exceedingly helpful; the whole treatment is thoroughly judicious and instructive. The first volume has 136, the second 124, the third 142, admirable illustrations. The work will be very cordially welcomed by layman and expert alike.

A Further Course of Practical Science. By J. H. Leonard, B.Sc. Lond., and W. H. Salmon, B.A. Camb., B.Sc. Lond. (2s. Murray.)

The volume assumes only an elementary knowledge of algebra and geometry, and, though naturally a continuation of the "First Course of Practical Science," may readily be followed by pupils that have worked through some similar course. The subjects—Mechanics, Hydro-

statics, and Heat—are treated, as far as practicable, on graphical and experimental methods. The opening chapter, on Physical Arithmetic, showing the pupil how to calculate the degree of accuracy of his observations, is very useful. In several of the chapters new departures have been taken and fresh methods have been applied, partly on the basis of independent experiments. A series of varied and carefully devised exercises is appended to each chapter, and the answers to the numerical examples are given at the end of the book. There are fifty-nine figures. The explanations are direct, lucid, and interesting. A very thoughtful, careful, and serviceable book.

MODERN LANGUAGES.

La Clef de la Conversation française. Par Louis Lagarde. Third edition. (Berlin: Weidmann.)

The preface raises the question whether, when persons having already a grammatical knowledge of French apply to a teacher for lessons in conversation, he should proceed without a book. Much depends on the teacher, but the talk is not unlikely to run into narrow grooves, and there is usually need for some systematic process. The present little work, which rightly claims to be a "method," not a "manual," takes up the facts of daily life: the human body, clothing, food, a house, family, politics, industry, commerce, recreations, &c. On each reading passage there is a "questionnaire"; some dialogues and social letters are also given; and at the end come vocabularies to the respective lessons. It is an admirable book, and seems to have found many friends on the Continent.

Deutsch-Russische Handelskorrespondenz. Von Dr. Th. von Kawraysky. (3s. Leipzig: Göschen.)

This is the most recent volume of an excellent series of handbooks for students of the chief European languages on the commercial side, prepared by teachers with business experience. There is still complaint made of the inertness of British traders in forming Russian trade relations; visitors to St. Petersburg comment on the absence of anything like an adequate supply of British goods to establishments in the Nevsky Prospect. Doubtless the difficulty of the language accounts partly for this, but Germans profit by our negligence; and if, indeed, there are few good aids to the acquirement of commercial Russian, this, at any rate, is one of them. The arrangement is systematic; the forms of documents those most needed; the exercises businesslike.

Lecciones Castellanas. By Prof. H. Runge. (2s. 6d. Leipzig: Teubner.)

An introduction to the Spanish language by a skilled teacher—one of the publisher's series of short language books prepared on modern lines. Each lesson begins with reading matter, to which a special vocabulary is attached; then come grammatical notes, to be mastered before the exercise of connected matter for translation into Spanish is attempted; and, finally, a conversation, for which some reference to the alphabetical vocabulary at the end may be required. The materials are throughout drawn from everyday life—the streets, society, business, and recreations. The book is intended for travellers, journalists, merchants, and students alike. It embodies much information about the country and the people. It seems excellently adapted to fulfil its purpose.

HISTORY.

The World of To-day. By A. R. Hope Moncrieff. Vol. II. (8s. net. Gresham Publishing Company.)

The second instalment of Mr. Hope Moncrieff's vivid and instructive "survey of the lands and peoples of the globe as seen in travel and commerce" takes us through the Eastern Peninsula (Burma, Indo-China, the Malay Promontory), the Eastern Archipelago, Afghanistan and Beloochistan, Persia, Asia Minor and its Borderlands, and Arabia. There are 4 coloured plates, 10 maps (3 of them coloured), and some 80 text illustrations. Between the text and the illustrations one obtains an excellent general impression of the physical and social characteristics of the countries. The author seizes the main features with the skill of experience, and depicts them in a forcible and popularly impressive manner. The description of Afghanistan, Beloochistan, and Persia will be specially attractive and informative at the present time. The Geographical and Commercial Survey appended will prove an exceedingly handy and serviceable repertory of statistics. The type is most readable, and the illustrations are very skilfully reproduced.

Messrs. Ginn publish a revised edition of *Mediæval and Modern History*, by Philip Van Ness Myers (7s. 6d.)—a companion volume to the author's revised "Ancient History," which we announced very recently. It is an abridgment of "The Middle Ages" and "The Modern Age," both of which we have noticed very favourably. A handsome and most serviceable volume, showing great care and judgment and immense diligence. There are 8 plates, 30 coloured maps, 9 sketch maps, and 113 illustrations.

COMMERCE.

The Romance and Realm of Commerce. By Alfred Morris, Member of the London Chamber of Commerce. (1s. 6d. Nelson.)

A most sensible, practical, and engaging little book, which ought to be placed in the hands of every boy that means to go into business. It is intended "to set before parents and sons in a brief way the

advantages and prospects of a commercial career." Mr. Morris vindicates the dignity of commerce, sketches its history and possibilities, remarks on education, on choosing a trade, and on the grounds of success and failure, passes to colonization and emigration, and finishes with personal habits, commercial economy, and business morality. The fundamental maxim is "spend less than you earn," but there are many more. The book is based on experience and on high principle; and it is written in a plain, straightforward, vigorous style. There are a good many illustrations, and the get-up is substantial and tasteful.

A Commercial Geography of the British Empire. By Ernest Protheroe, Lecturer in Commercial Geography at the Wolverhampton Municipal Science and Technical School. (1s. 6d. Nelson. School and College Series.)

Mr. Protheroe presents a vast quantity of information in lucid arrangement and statement, with numerous maps, diagrams, and other illustrations. In Part I. he surveys the field generally, enumerating and remarking on the various productions, vegetable, animal, and mineral, the methods of transport, the distribution of trade among the nations, and a number of other pertinent matters. Part II. deals with the trade of the United Kingdom: one of the chapters, on "Where the Trade lies," might perhaps have been extended with advantage. Part III. describes the trade of Greater Britain, in five chapters. We observe that he says (page 143) that "trade follows the price-list rather than the flag," which is true on the whole. Yet there is a remarkable particular exception (page 18) in the case of Madagascar, which may, however, be temporary if our manufacturers exert their wits. An appendix contains a variety of useful tabular information. A thoroughly good text-book.

PRACTICAL MANUALS.

Forestry. By Dr. Adam Schwappach. (1s. net. Dent. Temple Cyclopædic Primers.)

This is a translation and adaptation of Dr. Schwappach's esteemed *Forstwissenschaft*, some parts being abridged and others somewhat extended. The subject is treated throughout in its economic aspects, anything peculiar to any particular country being specifically noted as such. It is an excellent compend of the essential matters, and it is popular in form. There are thirty illustrative figures.

Cutting Out, for Student Teachers. By Amy K. Smith. (4s. net. City of London Book Depôt.)

The descriptions are detailed, clear, and precise, so that there need be no difficulty in following them without the aid of a teacher; and the garments are sufficiently miscellaneous. Surely we have here the whole art and mystery of the subject. There are twenty-eight figures and an appendix of examination tests.

Messrs. Percival Marshall & Co. publish *Educational Woodwork*, by A. C. Horth. (3s. 6d. net.) The more distinctively practical part of the work is also issued in three sections, intended for three successive years' courses. (4d. net each.) The complete work contains, in addition to the matter of the three separate sections, chapters on fittings and furnishing, discipline and organization and method, and instruction of the physically and mentally deficient and the blind, together with object lessons. It seems to be judiciously graduated, and, being based on the author's school experience, will no doubt be useful to other teachers and pupils. There are 163 figures.

Messrs. Dawbarn & Ward have added to their excellent "The Home Worker's" series of practical handbooks, edited by H. Snowden Ward, (1) *How to build a Petrol Motor*, suitable for driving a bicycle, by James F. Gill, B.Sc.; (2) *How a Steam Engine works*, by W. E. M. Curnoek; (3) *How to read a Workshop Drawing*, by W. Longland; and (4) *How to build a Lathe*, by A. W. Burford, A.M.I.C.E. (6d. net each)—all simply and clearly written and liberally illustrated.

A very attractive addition (No. 29) to their "Useful Arts and Handicrafts" Series (also edited by H. Snowden Ward) is a booklet on china: *Decorating and Repairing China and Earthenware*, by the Rev. F. C. Lambert, M.A. (6d. net). The instruction and hints are practical and simple, and ought to be very useful to careful housewives as well as to students of these matters. There are six full-page plates of designs, besides diagrams in the text.

Messrs. Cassell issue a "fourth series" of their *Cyclopædia of Mechanics*, edited by Paul N. Hasluck (7s. 6d.). The work is complete in itself, and offers many thousands of receipts, processes, and memoranda for workshop use, based on the personal experience of many experts in the various subjects; and a very full index enables one to put one's finger at once upon the article required. It is a most comprehensive and practically valuable collection. There are some twelve hundred illustrations.

PHYSICAL TRAINING AND HEALTH.

A Boy's Control and Self-expression. By Eustace Miles, M.A. (6s. Author: 10 St. Paul's Road, Cambridge.)

Mr. Miles tells us that this book usually keeps within sight of the idea expressed in the following sentence:—"Fairly considering all I know now, what training of body and mind should I choose if I were allowed to become a boy again, and if I wanted to prevent the most

serious mistakes as easily as possible and with as little attention to them as possible, so as to avoid morbidness or crankiness or priggishness?" He speaks from his own point of view—what suits himself; but he has more sense than to attempt to restrict other people absolutely to his own lines. He deals with pertinent matters of physiology, hygiene, exercise in many forms, mental influences on the body, and a miscellany of general considerations, addressing himself to elder boys, parents, and teachers. A great deal of practical information and good sense is mixed up with special notions, of which we have no experience. There are some two hundred illustrations.

Health at School, considered in its Mental, Moral, and Physical Aspects. By Clement Dukes, M.D., B.S. Lond., F.R.C.P. (10s. 6d. net. Rivingtons.)

This is a fourth edition of a standard book, revised, enlarged, partially rearranged, and largely rewritten in the light of the latest knowledge. Dr. Dukes has inserted a new chapter upon those sudden emergencies of school life where immediate treatment by master or schoolfellow may be required before the doctor can be on the spot. There are forty-four illustrations and fifty-two tables and charts. A most judicious and valuable work, based on technical knowledge and special experience.

Messrs. Ginn publish a revised edition of *Our Bodies, and How we Live, an Elementary Text-book of Physiology and Hygiene for use in Schools*, by Albert F. Blaisdell, M.D. (3s.). The book has been rewritten, rearranged, and illustrated in accordance with the latest teachings of science. Questions on the text are appended to each chapter. The glossary of technical terms will be useful. There are some two hundred good illustrations and nearly a hundred experiments. Paper and type are excellent; and the matter is effectively disposed.

Messrs. Gale & Polden issue revised editions of *The Theory of Physical Education in Elementary Schools* and *The Manual of Drill and Physical Exercises* (with or without dumb-bells or music), both by Thomas Chesterton, Organizing Teacher of Physical Education to the London School Board (3s. net each). They have fifty-five and seventy-nine figures respectively. Both works appear to deserve their popularity.

Mr. J. Theodore Dodd, M.A., Barrister-at-Law and Councillor and Guardian of the City of Oxford, has addressed a letter to the Local Government Board on "The Health of the Nation," showing "what the Government may do for it without an Act of Parliament"; and the letter is now published, with a preface by Sir John Gorst (6d. net, Alden; Simpkin, Marshall, & Co.). A very opportune and suggestive pamphlet.

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MISCELLANEOUS.

Mrs. C. S. Peel, who has already written usefully for the instruction of housewives, now offers "more recipes"—442 of them—together with a special chapter on the trying business of "the management of the oven," in *The Single-handed Cook* (3s. 6d., Constable). "It is merely a collection of proven receipts inexpensive enough to be included in the menu of the ten shillings a head housekeeper, and simple enough to be within the powers of a single-handed cook." "Ten shillings a head" means 10s. a week, the family being "six or more persons," and the provision being "nice catering of a wholesome description." A most useful compilation, lucid and businesslike.

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Mr. Fisher Unwin publishes in pamphlet form an instructive paper on *Protection and Employment* read by Mr. Harold Cox at Liverpool in January last.

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Mr. Fisher Unwin has published a popular edition (1) of *The Man who was afraid* (Foma Gordyéef), translated by Herman Bernstein (1s. net)—vivid sketches of a crude and unsound social order, with gropings after better things; and (2) of *Robert Orange*, by John Oliver Hobbes—a distinctive work of the author (6d. net.).

Messrs. Seeley issue an agreeable sixpenny edition of *Life's Aftermath*, by Emma Marshall—a very pleasant and enjoyable story.

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Libraries, Free: (1) Finsbury—Quarterly Guide for Readers, July. 1d. (2) Dundee—Report for 1904.

S.A.O.N.A.: Report of Twentieth Annual Conference, held at Bradford, Easter, 1905. Published by E. A. Cook (General Secretary), 115 St. John's Road, St. John's, London, S.E.

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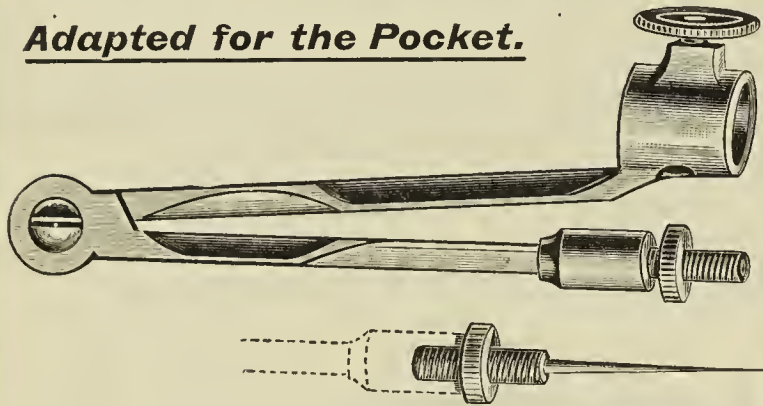
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MATHEMATICS.

15773. (Rev. F. H. JACKSON.)—Show that

$$\left(1 - \frac{x}{1^3} + \frac{x^2}{1^3 \cdot 2^3} - \frac{x^3}{1^3 \cdot 2^3 \cdot 3^3} + \dots\right) \left(1 + \frac{x}{1^3} + \frac{x^2}{1^3 \cdot 2^3 \cdot 3^3} + \dots\right) = 1 - \frac{3!}{1^3 \cdot 2^3 \cdot 1^3} x^2 + \frac{6!}{1^3 \cdot 2^3 \cdot 3^3 \cdot 4^3 \cdot 1^3 \cdot 2^3} x^4 - \dots$$

Solution by the PROPOSER.

Taking the product of the series, coefficient of x^n (n odd) $\equiv 0$,

$$\begin{aligned} \text{coefficient of } x^n \text{ (} n \text{ even)} &\equiv \left[\binom{1}{n!}^3 - \left(\frac{1}{(n-1)! 1!} \right)^3 + \dots + \binom{1}{n!}^3 \right] \\ &\equiv \frac{1}{(n!)^3} \left[1 - \binom{n}{1}^3 + \binom{n(n-1)}{2!}^3 - \dots \right] \\ &\equiv \frac{1}{(n!)^3} (-1)^{3n} \frac{(\frac{3}{2}n)!}{[(\frac{1}{2}n)!]^3} = (-1)^{3n} \frac{(\frac{3}{2}n)!}{[n! (\frac{1}{2}n)!]^3} \end{aligned}$$

The sum of the series of cubes is well known, having been discussed by many writers—Morley, MacMahon, Richmond, Dixon—for general values of n as well as integral values. The series of cubes is due originally to Prof. F. Morley.

15781. (Professor GENESE.)—Prove that there always exists one point which has the same tetrahedral co-ordinates with respect to any two given tetrahedra.

Solution by J. A. H. JOHNSTON, M.A.

Let s_1, s_2, s_3, s_4 and s'_1, s'_2, s'_3, s'_4 be the faces of the two tetrahedra and V, V' their volumes. Then, if p and p' be perpendiculars from a point on s_1 and s'_1 , the x co-ordinates of this point are $\frac{1}{3}ps_1/V$ and $\frac{1}{3}p's'_1/V'$ with reference to the two tetrahedra. If these be the same, $p/p' = Vs'_1/Vs_1$, and this restricts the position of the point to a determinate plane through the intersection of s_1 and s'_1 . If the x, y , and z co-ordinates are the same, the point is therefore determined as the point intersection of three definite planes. Finally, since $x+y+z+u=1$ for both systems, the four co-ordinates are the same for this point of intersection.

15770. (C. E. YOUNGMAN, M.A.)—A sum of money is made up of ordinary coins of the realm, each of as large value and as little frequency

as may be consistent with the money being shared as follows by A., B., and C.:—first A. takes a penny and one-third of the rest, then B. a penny and one-third of the rest, then C. likewise, and the remainder they share equally. Then one of them discovers that his coins are worth a shilling each on the average. Find (without algebra) who this is.

Solutions (I.) by B. C. WALLIS, F.C.P., B.Sc. (Econ.); (II.) by the PROPOSER.

(I.) C. has a total of 8s. in 8 coins out of a total of 32s. 5½d. Since each takes a third after taking a penny, what he takes is half of what he leaves. For convenience of nomenclature call the amount each received at the final division x . Then C. receives 1d., 1½ times x , and x ; B. receives 1d., 2¼ times x plus ½d., and x ; A. receives 1d., 3⅓ times x plus ¼d., and x . That is, the second amounts taken in each case involve for A. 1¼d., for B. ½d., and for C. no odd fractions of a penny. Each man must take a penny, and the one who has an average value of a shilling must also have n coins to the value of $ns.$ and 11d., i.e., he must have the original penny, two half-crowns, one florin, a sixpence, a three-penny piece, and two pennies: a total of eight coins to the value of 8s.

Consider the case of A.: if he had 8s., 4⅔ times $x = 8s.$ less 2¼d., which yields a value for x of 87⅕ farthings, an impossible value. If B. had 8s., then 3¼ times $x = 8s.$ less 1½d., from which $x = 116⅔$ farthings. In the case of C., 2½ times $x = 8s.$ less 1d., whence $x = 38$ pence. Therefore the total is 32s. 5½d. A. receives 1d., 10s. 9½d., and 3s. 2d.; in all 14s. 0½d. B. receives 1d., 7s. 2d., and 3s. 2d., in all 10s. 5d. C. receives 1d., 4s. 9d., and 3s. 2d.; in all 8s.

(II.) Add 2d. to the money; then let A. take ⅓, leaving ⅔; B. ⅔, leaving ⅓; C. ⅓, leaving ⅔; and give each in addition ⅓. Thus A. gets ⅓⅓, B. ⅓⅓, and C. ⅓⅓; and the result is the same as in the Question, except that each has ⅓d. too much. One or other, then, of these shares is worth certain exact shillings, + ⅓d.; in other words, it is ⅓ of 3s. 2d., or 6s. 2d., or 9s. 2d., ... But the smallest possible number of coins (averaging 1s. each) in any share is 6, viz., three pennies, a 3d., a 6d., and a 5s.; and even this will not do—the 5s. is too much all at once, because no one gets more than about ⅔ of his total at one taking. Hence in the series above we need not consider terms less than 21s. 2d.; so that in farthings the series will be 1016, 1160, 1304, ...; in which we have to find a term divisible by 35 or 26 or 20. Plainly the 1160 (= 24s. 2d.) is divisible by 20; indicating 8s. as C.'s share, and ⅓⅓ of ⅓ of 24s. 2d., or 32s. 7½d., as the original sum (with the added 2d.). This tested by sharing it according to the Question, turns out right; so that it is perhaps unnecessary to seek terms divisible by 35 or 26, or again by 20. They are easily found, but result in shares so large that the coins composing them would average more than a shilling each.

Propositions connected with the Equi-conjugate Diameters of an Ellipse.

By W. F. BEARD, M.A.

PROP. 1.—If CP, CD are two conjugate semi-diameters and PV, DR are the ordinates to one of the equi-conjugate diameters, then PV = CR and CV = DR.

Let ECE', FCF' be the equi-conjugates. Let the tangents at P, D meet ECE' at T, t. Then

$$\begin{aligned} VT/CR &= PT/CD \\ &\text{(from similar triangles)} \\ &= CT/Ct \\ &\text{(from similar triangles)} \\ &= CR/CV, \end{aligned}$$

for CV.CT = CE² = CR.Ct.

Thus CR² = CV.VT = CV.CT - CV² = CE² - CV² = PV², because PV² + CV² = CE², as CE is an equi-conjugate; therefore CR = PV, and similarly DR = CV.

PROP. 2.—If PV, PV' be the ordinates to the equi-conjugates and CD the semi-diameter conjugate to CP, and if PV produced meet the ellipse at p, then VV' = Cp = CD.

$$\begin{aligned} CV &= DR \\ CV' &= PV = CR \end{aligned} \left. \begin{array}{l} \\ \end{array} \right\} \text{from Prop. 1,}$$

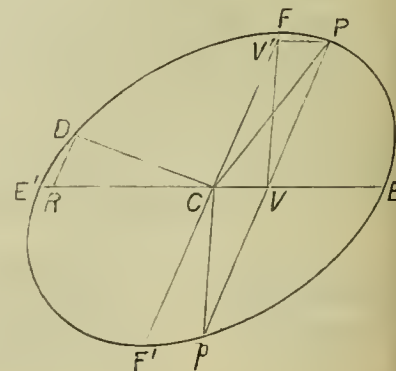
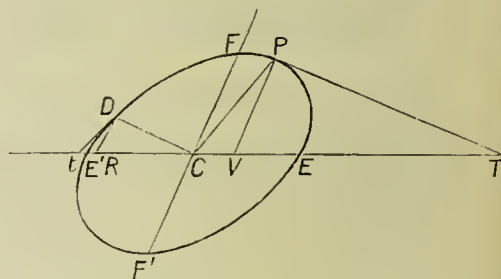
and $\angle VCV' = \angle CRD$;

therefore VV' = CD.

Also $pV = PV = CV'$;

therefore Cp = VV',

and is parallel to VV' = CD.



PROP. 3.—To prove the sum of the squares on two semi-conjugate diameters is constant.

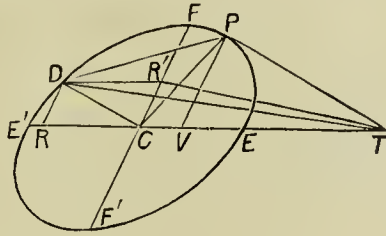
In the figure of Prop. 2,

$$CP^2 + CD^2 = CP^2 + Cp^2 = 2(PV^2 + CV^2) = 2CE^2 = \text{const.} = CA^2 + CB^2,$$

by making P coincide with A.

PROP. 4.—To prove that the area of the conjugate parallelogram is constant.

Let PCP', DCD' be two conjugate diameters. Let the tangent at P meet ECE' at T. Draw DR, DR', the ordinates of D. Join D'T. The area of the conjugate parallelogram, i.e., the parallelogram formed by the tangents at P, D, P', D',



$$= 8\Delta PCD = 8\Delta DCT$$

(because PT is parallel to CD)

$$= 8\Delta R'CT \text{ (because DR' is parallel to CT).}$$

But the area of the triangle R'CT : CR' . CT in constant ratio, and

$$CR' . CT = DR . CT = CV . CT \text{ (because DR = CV) (Prop. 1)}$$

$$= CE^2 = \text{constant};$$

therefore the triangle R'CT, and consequently the conjugate parallelogram, is of constant area.

PROP. 5.—If PV, PV' are the ordinates to the equi-conjugates, the circle round PVV' touches the ellipse at P, and if it cuts the equi-conjugates at K, K', then PK = PK' = CD.

Let the tangent at P to the ellipse meet CE at T. Then

$$(1) PV^2 = CE^2 - CV^2$$

$$= CV . CT - CV^2$$

$$= CV . VT$$

$$= PV' . VT;$$

therefore

$$PV' : PV = PV : VT$$

and $\angle PVT = \angle VPV'$;

therefore the triangles VPV', TVP are similar;

therefore

$$\angle VPT = \angle PV'V,$$

and therefore PT touches the circle at P, i.e., the circle VPV' touches the ellipse at P.

(2) PV', VK are parallel chords of the circle; therefore

$$PK = VV' = CD \text{ (Prop. 2) = similarly PK'}$$

COR.—If PV produced meets the ellipse at p, then the circle round the triangle CPT passes through p and K'; for $pV = PV$; therefore $PV . Vp = CV . VT$; therefore the circle round CPT goes through p. Also $\angle PK'V' = \angle PVV'$ (angles in same segment) = $\angle PTV$, because the triangles PVV', VTP are similar; therefore the circle round CPT goes through K'. [Rest in Reprint.]

15729. (R. TUCKER, M.A.)—The circle $dd'k$ touches AB, AC, and the arc BC of the circle ABC (internally); the circle $ee'k'$ touches BC, BA, and the arc CA; and the circle $ff'k''$ touches CA, CB, and the arc AB. Prove (i.) ed', fe', df' are parallel to AB, BC, CA respectively; (ii.) $Cd' . Ae' . Bf' = Af' . Bd' . Ce$; (iii.) r_1 (radius of circle $dd'k$) = $r \sec^2 \frac{1}{2}A$; (iv.) Ak, Bk', Ck'' intersect in a point.

Another Solution by H. W. WEBSTER, M.D.

Let ABC be any triangle. Bisectors of A, B, and C meet the circum-circle in Q, H, L. The diameter QSJ is perpendicular to BC. The in-radius DI is continued to P, making IP = QJ. Then JQIP is a parallelogram. JI meets the circum-circle in k. The radius Sk cuts AI in m, and md' is perpendicular to AC, and therefore parallel to SH and to IE, the in-radius. md' is perpendicular to AB.

(i.) Because

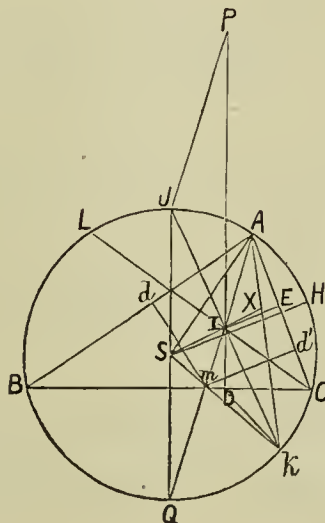
$$2Rr = AI . IQ = JI . Ik = IP . ID,$$

the points J, P, D, k are cyclic; therefore the angles DkI, JPI, JQI, IkA, SAQ are equal. Also mkI, SJk, mAk, DIk are equal; therefore $IDk, AIk; Amk, kmI; md'A, IEA$ are three pairs of similar triangles. By multiplying the ratios

$$\frac{ID}{Ik} \frac{Am}{Ak} \frac{md'}{mA} = \frac{AI}{Ak} \frac{km}{kI} \frac{IE}{IA}$$

or $md' = mk$; therefore d, d', k are points touched by the circle, with centre m.

Because $km/md' = kS/SH$ the points k, d', H



are collinear: and similarly the points k, d, L; therefore the points B, A, C, L, k, H form a Pascal's hexagon, and the intersections d', I, d are collinear; and obviously AI bisects dd' at right angles. Similarly it is shown that I bisects ee' and ff' ; therefore ee' and ff' form a parallelogram, and $d'f$ is parallel to BC. So with others.

(ii.) Because $Ae'f, ABC$ are similar, $Ae'/AB = Af/AC$. By multiplying these and the corresponding ratios from B and C, the required result is obtained.

$$(iii.) md'/IE = mA/IA = \Delta md'A / \Delta d'IA = mA^2/d'A^2 = \sec^2 \frac{1}{2}A.$$

(iv.) The triangle $SI m$ and the transversal AkX will give, by theorem of Menelaus, $(SX . IA . mk)/(Sk . IX . mA) = 1$; therefore

$$SX/IX = Sk/mk . mA/IA = Sk/mk . md'/IE = R/r,$$

similarly Bk' and Ck'' can be shown to cut SI in ratio $R : r$. Therefore they meet in a point.

15791. (A. H. BELL.)—When is a triangular number a pentagonal number? Required, a general solution with examples.

Solution by J. BLAIKIE, M.A., and F. N. MAYERS, M.A.

The general expression for a triangular number is $N = \frac{1}{2}n(n+1)$ and for a pentagonal number $N = \frac{1}{2}m(3m-1)$. We have therefore to find positive integral solutions of the equation

$$n^2 + n = 3m^2 - m \dots\dots\dots(1).$$

This may be written in the form

$$3y^2 - x^2 = 2 \dots\dots\dots(2),$$

where

$$x = 6m - 1, \quad y = 2n + 1.$$

If p and q be values of x and y which satisfy the equation

$$x^2 - 3y^2 = 1 \dots\dots\dots(3),$$

then the values $x = 143q \pm 71p, y = 41p \pm pq$ satisfy (2). For

$$3y^2 - x^2 = 3(41p \pm 71q)^2 - (143q \pm 71p)^2$$

$$= (3 \cdot 41^2 - 71^2)(p^2 - 3q^2) = 2 \cdot 1 = 2.$$

The values of p and q which satisfy (3) are the alternate convergents to $\sqrt{3}$, viz., 1, 0; 2, 1; 7, 4; 26, 15; 97, 56; ...; but these only give integral values of m and n when $x+1$ is divisible by 6 and $y-1$ by 2. These conditions are satisfied in the 1st, 3rd, and 5th cases taking the positive sign, when we get the values given in the adjoining table.

p	q	x	y	m	n	N
1	0	71	41	12	20	210
7	4	989	571	165	285	40755
97	56	13775	7953	2296	3976	7906276

15784. (R. F. DAVIS, M.A. Suggested by Question 15748.)—If ABCD be a quadrilateral whose opposite sides BA, CD meet in E, and any variable transversal EPQ meet AD, BC in P, Q respectively, then $AP . PD/EP^2 : BQ . QC/EQ^2$ is constant.

Solutions (I.) by W. AUSTIN SLEIGH, B.A., and H. W. WEBSTER, M.D.; (II.) by W. J. DOBBS, M.A.; (III.) by J. BLAIKIE, M.A.

(I.) Let AD, BC meet in F. Because the sides of the triangle FPQ are cut by the transversals EDC, EAB respectively, we have (Todhunter's Euclid, Appendix 57) $PE . QC . FD = EQ . CF . DP$, i.e.,

$$(PE . QC)/(EQ . DP) = CF/FD \dots\dots\dots(1),$$

and $PE . QB . FA = EQ . BF . AP$, i.e.,

$$(PE . QB)/(EQ . AP) = BF/FA \dots\dots\dots(2).$$

Combining (1) with (2), we have

$$(AP . PD/PE^2)/(BQ . QC/EQ^2) = (AF . FD)/(BF . FC).$$

The right-hand side is a constant for all positions of EPQ.

(II.)

$$(AP/EP)(PD/EP)$$

$$= (\sin \theta / \sin A)(\sin \phi / \sin D).$$

Also $(BQ/EQ)(QC/EQ)$

$$= (\sin \theta / \sin B)(\sin \phi / \sin C);$$

therefore

$$AP . PD/EP^2 : BQ . QC/EQ^2$$

$$= \sin B \sin C : \sin A \sin D.$$

(III.) Draw PM, QN perpendicular to EB.

$$AP \sin A/BQ \sin B = PM/QN = EP/EQ;$$

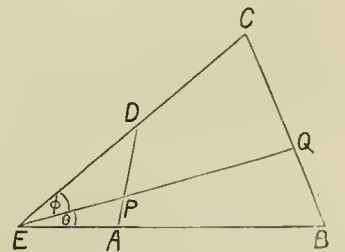
therefore

$$AP/EP : BQ/EQ = \text{cosec } A : \text{cosec } B.$$

Similarly

$$DP/EP : CQ/EQ = \text{cosec } D : \text{cosec } C;$$

therefore $AP . DP/EP^2 : BQ . CQ/EQ^2 = \text{cosec } A \text{ cosec } D : \text{cosec } B \text{ cosec } C = \text{a constant ratio.}$



11039. (Professor SYLVESTER.)—Let x_1, x_2, \dots, x_n represent $x + a_1, x + a_2, \dots, x + a_n$, where a_1, a_2, \dots, a_n are any real quantities. Also let b_1, b_2, \dots, b_n be any positive quantities. Prove that the continued

fraction
$$x_1 - \frac{b_1}{x_2 - \frac{b_2}{x_3 - \dots - \frac{b_{n-1}}{x_n}}}$$

changes sign exactly $2n - 1$ times as x passes from one end of infinity to the other.

Solution by Professor NANSON.

Let y_n denote the continued fraction, and let

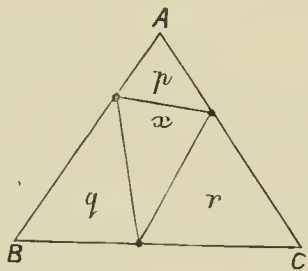
$$z_{n-1} = x_2 - \frac{b_2}{x_3 - \frac{b_3}{x_4 - \dots - \frac{b_{n-1}}{x_n}}}$$

so that $y_n = x_1 - b_1/z_{n-1}$. Now assume that as x increases from $-\infty$ to $+\infty$ dy_n/dx is positive, and y_n passes n times from $-\infty$ to $+\infty$ and therefore vanishes n times, viz., once in each interval, and consequently changes sign $2n - 1$ times, viz., once in each of the n intervals and once at each of the $n - 1$ boundaries between two intervals. The like properties therefore hold for z_n . But we have

$$y_{n+1} = x_1 - b_1/z_n, \quad dy_{n+1}/dx = 1 + (b_1/z_n^2) dz_n/dx.$$

Hence dy_{n+1}/dx is positive; so that y_{n+1} increases with x . Also y_{n+1} changes from $+\infty$ to $-\infty$ as x increases through each of the n values which make z_n vanish. Further, y_{n+1} is $-\infty$ when $x = -\infty$ and is $+\infty$ when $x = +\infty$. Hence as x passes from $-\infty$ to $+\infty$ y_{n+1} passes $n + 1$ times from $-\infty$ to $+\infty$ and increases throughout each interval. It follows that y_{n+1} vanishes $n + 1$ times, viz., once in each interval, and consequently changes sign $2n + 1$ times, viz., once in each of the $n + 1$ intervals and once at each of the n boundaries between two intervals. Thus, if the theorem be true for y_n , it is true for y_{n+1} . But inspection of the graph of y_2 shows that the theorem is true for y_2 . Therefore, &c.

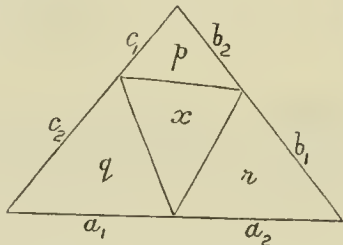
15769. (R. CHARTRES.)—A random point being taken in each side of the triangle ABC, find the mean value of $p^h q^k r^l, x^n$, and $\log x$. Elementary proof required.



Solution by R. CHARTRES.

Let $\Delta = 1$.

$$\begin{aligned} M(p^h q^k r^l) &= M[(c_1 b_2)^h (c_2 a_1)^k (a_2 b_1)^l] / (bc)^h (ca)^k (ab)^l \\ &= M(a_1^h a_2^k b_1^l b_2^h c_1^k c_2^l) / a^{h+k+l} b^{h+l} c^{h+k} \\ &= \frac{(h! k! l!)^2}{(h+k+l)! (k+l+1)! (l+h+1)!} \dots (A), \end{aligned}$$



since $a^{h+k+l} = (a_1 + a_2)^{h+k+l}$, having $(h+k+l)$ terms of equal mean value.

If, $y = p + q + r$, then, from (A),

$$M(y) = \frac{3}{4}, \quad M(y^2) = M(3p^2 + 6pq) = \frac{3}{4} + \frac{1}{4} = \frac{7}{12},$$

$$M(y^3) = M(3p^3 + 18p^2q + 6pqr) = \frac{67}{144}, \dots;$$

$$\text{therefore } M(x^n) = M(1-y)^n = 1 - \frac{3}{4}C_1 + \frac{7}{12}C_2 - \frac{67}{144}C_3 + \frac{227}{864}C_4 - \dots,$$

$$M(\log x) = -\left(\frac{3}{4} + \frac{1}{2} \cdot \frac{7}{12} + \frac{1}{3} \cdot \frac{67}{144} + \dots\right),$$

putting C_r for C_r^n .

If we express (A) in gamma functions, the result will hold for all values: thus, if $h = -\frac{1}{2} = k = l$, $M(p^{-\frac{1}{2}} q^{-\frac{1}{2}} r^{-\frac{1}{2}}) = \pi^3$.

15776. (Professor HUDSON, M.A.)—Prove that the cusps of the evolute of the focus-roulette of a hyperbola on a straight line are at the same distance from that line.

Solution by the PROPOSER.

The cusps of the evolute are the centres of maximum and minimum curvature of the roulette; from symmetry, these occur when the vertices are in contact with the straight line. If $2a$ be the transverse axis, e the eccentricity, ρ the radius of curvature at the vertex of the hyperbola, R, R' the radii of curvature of the roulette when the nearer and further vertices are in contact, we have (Besant's *Roulettes and Glissettes*, Art. 30) $R = r^2/(r-\rho)$, $R' = r'^2/(r'-\rho')$, where $r = a(c-1)$, $r' = a(e+1)$, $\rho = -\rho' = a(e^2-1)$. The distances of the centres of curvature from the straight line are $r-R, r'-R'$, and each of these is $a(e-1/e)$. If r, R be any focal distance and the corresponding radius of curvature of the roulette, the relation $1/R + 1/r = \text{constant}$ (Art. 31) shows that the evolute has no other cusps.

QUESTIONS FOR SOLUTION.

15822. (G. H. HARDY, M.A.)—If

$$F_a(x) = \sum_0^\infty \frac{x^n}{\Gamma(an+1)} \quad (0 < a < 2),$$

then (i.)
$$\frac{1}{2\pi i} \int F_a(-u)(-u)^{s-1} du = -\frac{1}{\Gamma(1-as)},$$

(ii.)
$$\int_0^\infty F_a(-\sigma u^s) F_a(-\tau u^s) du = -\frac{\sin a\pi}{a \sin \pi/a} \frac{\sigma\tau(\sigma^{-(1/a)} + \tau^{-(1/a)})}{\sigma^2 - 2\sigma\tau \cos a\pi + \tau^2},$$

where $s < 1, \sigma > 0, \tau > 0$, and the contour of integration in (i.) is a loop enclosing the real axis.

15823. (J. J. BARNIVILLE, B.A., I.C.S.)—Having $u_n = u_{n-1} + u_{n-3}$, prove that

$$\begin{aligned} \frac{1}{1.4} + \frac{1}{2.5} + \frac{1}{4.7} + \frac{2}{5.11} + \frac{3}{7.16} + \dots &= \frac{1}{2}, \\ \frac{1}{1.2} - \frac{2}{2.4} + \frac{3}{4.5} - \frac{4}{5.7} + \frac{6}{7.11} - \dots &= \frac{1}{3}, \\ \frac{2}{1.5} - \frac{3}{2.7} + \frac{5}{4.11} - \frac{7}{5.16} + \frac{10}{7.23} - \dots &= \frac{1}{4}. \end{aligned}$$

15824. (D. BIDDLE.)—Give instances of quintets of integers in arithmetical progression, four being perfect squares placed in the following order:—(1) the first three and the last, (2) the last three and the first, (3) the first two and the last two, (4) all four together. Example of $1-7^2, 13^2, 17^2, 409, 23^2$. [An incomplete answer will be considered better than none at all.]

15825. (B. C. WALLIS, F.C.P., B.Sc.Econ.)—What are the general formulæ to express the relationship between the lengths of the sides of a right-angled triangle in terms of one number n ? *E.g.*, when the smallest side is an even number of units long the formula $(n+1)^2 = (n-1)^2 + 4n$ holds when n is a perfect square; also when the smallest side is an odd number of units long the formula $n^2 = (n-1)^2 + (2n-1)$ holds when n is such that $2n-1$ is a perfect square. These two formulæ enable us to write down a table showing the lengths of the sides when the short sides are the consecutive numbers beginning with 3.

15826. (J. A. C., M.A.)—Solve, in integers, $x^2 + y^2 = 5z^2$; and generally solve $x^2 + y^2 = Az^2$, where A is not a square number.

15827. (ROBERT W. D. CHRISTIE.)—Factorise 9,702,044,791, and show the principle is general for a certain class of numbers.

15828. (Communicated by K. DEVA RAO, B.A.)—A square board is divided into 16 equal squares by vertical and horizontal lines. In how many ways can 4 of these squares be painted white, 4 black, 4 red, and 4 green, without repeating the same colour in the same vertical or horizontal row?

[This familiar question is solved in a variety of ways. But the answer (576) may not be right.]

15829. (S. C. BAGCHI, B.A.)—A correspondence is established between the points (θ, y) and (ξ, η) of a graph of tangents and a parabola respectively, such that, for a given θ , $\xi = ay^2$ and $\eta = 2ay$. If a chord AB of the parabola describe a given diameter, show that $f(\varpi_A, \varpi_B)$, which expresses the linear relation between the parameters of A and B, is an ellipse, in bifocal co-ordinates, of which the major axis is $\varpi_A + \varpi_B$; and, further, if AB is invariable in length, but moves in any manner, the relation between the inclination of AB with the y -axis and the parameter of A or B is expressed by one or other of two sextics passing through the origin which are so related that one is the image of the other in the y -axis (the origin being the vertex of the parabola and the vectorial distance = ϖ the parameter).

15830. (R. CHARTRES.)—A point P is taken within a square and joined to A, the extremity of the diagonal AC. Find the mean value (1) of the angle PAC, and (2) of its square.

15831. (Professor NANSON.)—Given any number of conics a, b, c, \dots , lying on the same conicoid and passing through the same point, any two a, b determine a meet ab , and the three meets bc, ca, ab determine a plane abc . Show that the four planes bcd, acd, abd, abc meet in a point (a, b, c, d) . Show also that the five points $(b, c, d, e), (a, c, d, e), (a, b, d, e), (a, b, c, e), (a, b, c, d)$ lie on a plane $abcde$, and generally that $2n$ conics determine $2n$ concurrent planes, and that for $2n+1$ conics the $2n+1$ points of concurrence so found are coplanar, and that all the points of concurrence are on the conicoid.

15832. (Professor NEUBERG.)—Le centre A d'un sphère de rayon constant R parcourt une droite donnée d . Trouver (1) l'enveloppe du plan polaire π d'un point fixe P par rapport à la sphère mobile A, (2) la surface engendrée par la circonférence suivant laquelle le plan π coupe la sphère.

15833. (Professor COCHEZ.)—Trouver le lieu des foyers d'une hyperbole dont on connaît un sommet et une asymptote.

15834. (A. M. NESBITT, M.A.)—Two conics S, S' circumscribe a triangle ABC, and a common tangent cuts BC in O, while OA meets the two conics in F and G. If the conic through ABCDE cut OA in H,

then the range (OFGH) is harmonic. Further, if K be the harmonic conjugate of A with respect to F and G, and if L be the fourth intersection of S and S', then, if conics through ABCKL and ABCDE cut in M, the pencil A (LBMC) is harmonic.

15835. (The late R. TUCKER, M.A.)—Given A, a, b in a triangle (the "ambiguous" case), if ω, ω' arc the "B" angles of the triangle, prove $\cot \omega + \cot \omega' = 2b^2 \cot A / (cc')$.

15836. (C. E. YOUNGMAN, M.A.)—Two similar triangles, one inscribed in the other, are in perspective but not homothetic. Show that their double point lies on their circum- and nine-point- circles.

15837. (Professor SANJANA, M.A.)—Points P, Q, R are taken in the sides BC, CA, AB of a triangle such that the areas AQR, BRP, CPQ are each equal to a given area T. Show how to construct for the points, and prove that the distances of any two from the side not containing them are together equal to the corresponding altitude of the triangle.

15838. (W. F. BEARD, M.A.)—The inscribed circle of a triangle ABC touches BC, CA, AB respectively at D, E, F; I is the in-centre; L, M, N are the orthocentres of the triangles IBC, ICA, IAB. Prove that (1) DL, EM, FN are equal to the radii of the three escribed circles; (2) MN, NL, LM pass through D, E, F; (3) the triangles LMN, ABC are equal in area; (4) if the escribed circles opposite to A, B, C touch BC, CA, AB respectively in D_1, E_1, F_1 , MN, NL, LM are at right angles to AD_1, BE_1, CF_1 respectively; (5) MN, NL, LM meet AD_1, BE_1, CF_1 respectively on the circumference of the inscribed circle.

15839. (N. PARAMESWARA MENON.)—ABC is any triangle. Through B, BS is drawn parallel to AC and equal to $\sqrt{a} [\sqrt{(2a) - \sqrt{b}}] / \sqrt{2}$. Any line RSPQ inclined to AB at an angle $\frac{1}{2}(B-A)$ is drawn cutting AB, BC, CA in R, P, and Q respectively. Prove that PQ is the minimum line which bisects the given triangle.

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10599. (Professor GRAM.)—Résoudre l'équation $[abx(x-a-b)]^{\frac{1}{2}} + [bcx(x-b-c)]^{\frac{1}{2}} + [cax(x-a-c)]^{\frac{1}{2}} = [abc(a+b+c)]^{\frac{1}{2}}$.

10680. (H. J. WOODALL.)—A plane has points scattered on it in an arbitrary fashion, the average being a per square inch, but the maximum in any square inch is b , the minimum is c . A plane figure (area A) is thrown on the plane; what is the probability that the number of points covered is p ? Also the special case of the most probable value of p ?

10756. (Professor HUDSON, M.A.)—In a communistic society in which every one is equally frugal and industrious and devotes an amount (X) of his wealth to production, the wealth produced by each man's labour per unit of time is x times the capital with which he works. If the population increase at the rate of $100p$ per cent. per unit of time, prove that each man's wealth will continually increase so long as X bears a greater ratio to his whole wealth than $p : x$; X, x, p being all supposed to vary continuously.

10882. (The late Professor CLIFFORD, F.R.S.)—A triangle ABC has its vertices A, B joined to two rods AD, BE, which can turn about the fixed points D, E. Express the co-ordinates of the point C in terms of elliptic functions of a single parameter.

10892. (Professor TARRY.)—Trois ballons se meuvent en ligne droite avec des vitesses uniformes. On donne leurs positions à deux instants différents. Construire une ligne droite qui puisse être parcourue par un ballon avec une vitesse uniforme de telle sorte que les trois premiers ballons paraissent immobiles à l'aéronaute du quatrième.

10928. (Professor MORLEY.)—In a cuspidal cubic let T be the asymptotes, c the cusp. It is well known that c lies on the maximum in-ellipse of T (SALMON, *Curves*, third edition, p. 158). Let U be this ellipse, c' the point on it opposite c , U_1 the conic inscribed in T with centre c' , t and t_1 the points of contact of the fourth common tangent of U and U_1 . Prove that (1) the point on U_1 collinear with c and t_1 is the point of inflexion; (2) the cusp-tangent and the inflexional tangent meet at t .

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OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—MIDSUMMER, 1905.

The list of successful candidates at the Colonial and Foreign Centres will be published in the October number of "The Educational Times."

[Throughout the following Lists, bracketing of names implies equality.]

PRIZES.

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- Jacoby, Miss E. G. Miss Cowdroy, Crouch End High School, Weston Park, N.

General Proficiency.

FIRST CLASS [OF SENIOR].

1. Spear, J. H. (Isbister Prize.) Mr. Dymond, Hoe Grammar School, Plymouth,
2. Eggington, A. T. (Pinches Prize.) Rev. L. H. Pearson, Market Bosworth Grammar School.
3. Jacques, H. Rev. L. H. Pearson, Market Bosworth Grammar School.
4. Doidge, R. M. Mr. Hardy, Dunheved College, Launceston.

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2. Schneider, Miss N. V. Miss Newton, Skinners' Company's School, Stamford Hill, N.
3. Foster, A. Mr. Blay, Technical Day School, Walsall.
4. Austin, J. E. Mr. Blay, Technical Day School, Walsall.

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2. Condrup, C. O. Messrs. Butler & Brown, Tollington Schools, N.
3. Pool, W. J. Mr. Hammond, Harborough Grammar School, Market Harborough.
4. Faulkner, H. Mr. Francis, People's College, Nottingham.

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2. Edwards, H. H. Mr. Woodhall, The Polytechnic Secondary Day School, Regent Street, W.

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Rev. L. H. Pearson, Market Bosworth Grammar School.

Modern Foreign Languages.*

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2. Santamaria, R. Rev. Brother Attale, St. Joseph's College, Beulah Hill, S.E.

Classics.

- Rev. W. P. Whittington, Ruthin Grammar School.

Natural Sciences.

- Messrs. Butler & Brown, Tollington Schools, N.
Mr. Hardy, Dunheved College, Launceston.
Messrs. Butler & Brown, Tollington Schools, N.

Taylor-Jones Prize for Scripture History.

- Walker, G. Mr. Hammond, Harborough Grammar School, Market Harborough.

Pitman Medals for Shorthand.

1. Earley, F. (Silver Medal.) The Xaverian Brothers, Catholic Collegiate Institute, Manchester.
2. Daw, W. E. (Bronze Medal.) Mr. Kinton Bond, Corporation Grammar School, Plymouth.

* J. H. Spear, Hoe Grammar School, Plymouth, was disqualified for the First Prize for Modern Foreign Languages in consequence of having obtained it at a previous Examination.

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS. (Only those who obtained Distinction are included.)

Scripture History.

1. Walker, G. Mr. Hammond, Harborough Grammar School, Market Harborough.
2. Doyle, Miss M. E. Miss Moss, The Friends' School, Mountmellick.
2. Jones, A. Rev. W. P. Whittington, Ruthin Grammar School.

English Language.

1. Jacoby, Miss E. G. Miss Cowdroy, Crouch End High School, Weston Park, N.

English History.

1. Eggington, A. T. Rev. L. H. Pearson, Market Bosworth Grammar School.
2. Bunting, H. L. Rev. L. H. Pearson, Market Bosworth Grammar School.
2. Spear, J. H. Mr. Dymond, Hoe Grammar School, Plymouth.

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2. Rhys, T. B. Private tuition.

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1. Grundy, A. G. Mr. Bonnor, Rivington and Blackrod Grammar School, Rivington.
2. Doidge, R. M. Mr. Hardy, Dunheved College, Launceston.

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1. Sandison, L. M. Mr. Sisling, Newcastle Modern School, Newcastle-on-Tyne.
2. Eggington, A. T. Rev. L. H. Pearson, Market Bosworth Grammar School.

Geometry.

1. Eggington, A. T. Rev. L. H. Pearson, Market Bosworth Grammar School.

Trigonometry.

1. Edwards, H. H. Mr. Woodhall, The Polytechnic Secondary Day School, Regent Street, W.
2. Eggington, A. T. Rev. L. H. Pearson, Market Bosworth Grammar School.
2. Hudson, R. P. Mr. Constable, Thorne Grammar School.
2. Jacques, H. Rev. L. H. Pearson, Market Bosworth Grammar School.

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1. Byrne, H. J. Mr. Heath, Tudor Hall, Hawkhurst.
2. Fentum, C. A. Mr. Foster, Melbourne College, Anerley, S.E.
1. Prince, F. G. Mr. Osman Thomas, Lancaster College, West Norwood.

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1. Medard, R. Rev. Brother Attale, St. Joseph's College, Beulah Hill, S.E.
1. Ridel, Miss M. A. M. Miss Berdoe, Kenilworth School, Ealing.
1. Santamaria, R. Rev. Brother Attale, St. Joseph's College, Beulah Hill, S.E.

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1. Edwards, S. E. Messrs. Butler & Brown, Tollington Schools, N.
2. Spratt-Bowring, Miss I. F. Private tuition.

Italian.

1. Santamaria, R. Rev. Brother Attale, St. Joseph's College, Beulah Hill, S.E.

Spanish.

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2. FitzHugh, W. R. Private tuition.

Latin.

1. Spear, J. H. Mr. Dymond, Hoe Grammar School, Plymouth.
2. Evans, G. I. Rev. W. P. Whittington, Ruthin Grammar School.

Greek.

1. Jones, A. Rev. W. P. Whittington, Ruthin Grammar School.

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2. Eggington, A. T. Rev. L. H. Pearson, Market Bosworth Grammar School.
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2. Coles, L. A. Messrs. Butler & Brown, Tollington Schools, N.
2. Glover, J. F. Messrs. Butler & Brown, Tollington Schools, N.

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Shorthand.

1. Early, F. The Xaverian Brothers, Catholic Collegiate Institute, Manchester.
2. Daw, W. E. Mr. Kinton Bond, Corporation Grammar School, Plymouth.

Domestic Economy.

1. Irons, Miss M. A. Miss Day, Grey Coat Hospital, Westminster.
1. Nicholls, Miss A. W. Mr. Murphy, Clark's College School, Brixton Hill, S.W.

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- | | | | | |
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| al. = Algebra. | f. = French. | he. = Hebrew. | nh. = Natural History. | sh. = Shorthand. |
| b. = Botany. | g. = Geography. | i. = Italian. | p. = Political Economy. | sp. = Spanish. |
| bk. = Bookkeeping. | ge. = German. | l. = Latin. | ph. = Physiology. | tr. = Trigonometry. |
| ch. = Chemistry. | geo. = Geology. | m. = Mechanics. | phys. = Elementary Physics. | z. = Zoology. |
| d. = Drawing. | gm. = Geometry. | ma. = Magnetism & Electricity. | s. = Scripture. | |
| do. = Domestic Economy. | gr. = Greek. | ms. = Mensuration. | sc. = Elementary Science. | |

The small figures ¹ and ² prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

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- Ash, W.C. *d.* Technical Day S., Walsall
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- Wilson, H. *d.* Pupil-Teacher Centre, Walsall
- Sparke, E. Rutherford Coll., Newcastle-on-Tyne
- Cochrane, L.V. St. John's Coll., Brixton
- Earley, F. *sh.*
Catholic Coll. Inst., Manchester
- Cumberbirch, H. Private tuition
- Green, H.E.B. Private tuition
- Lee, E.A. Tollington Schools, N.
- Ross, F. St. Joseph's Acad., Kennington Rd., S.E.
- Rundle, F.J. Bible Christian Coll., Shebbear
- Soulby, E. Ruthin Gram. S.
- Bronghan, C.W. *bk.* Herne H., Cliftonville, Margate
- Rhys, T.B. *g.* Private tuition
- Harrington, W.J. The Douglas S., Cheltenham
- Kingsnorth, T.W. Dunheved Coll., Launceston
- Widger, L. Corporation Gram. S., Plymouth
- Austin, G.M. Technical Day S., Walsall
- Banks, J. Brighton Gram. S.
- King, S.H. *d.* Tollington Schools, N.
- Maynard, T. *d.* Bethany H., Goudhurst
- Seeds, L.J. Stationers' Company's S., Hornsey
- Steeple, H. *d.* Private tuition
- Burgess, S.L. *d.* Surrey Lane Hr. Grade S., Battersea
- Crundall, A.H. *ms.* Tudor Hall, Hawkhurst
- Dunkley, C. Brewood Gram. S.
- Grant, L. Pitman's Metropolitan S., W.C.
- Rattenbury, S.F. Balham School
- Cock, M.C.D. *d.* Richmond Hill School
- Guard, H. Private tuition
- Toy, H.S. Dunheved Coll., Launceston
- Grist, W. Polytechnic Sec. Day S., Regent St., W.
- Ivon, J.F. *f.* Private tuition
- Williams, C.E. Queen Mary's Gram. S., Walsall
- Hoyland, F.W. *ch.* Private tuition
- Tansley, S.A. *sh.* Pitman's Metropolitan S., W.C.

- Anstin, J.E. *a.phys.ch.d.* Technical Day S., Walsall
- Farenc, G.L. *g.f.d.* University S., Southport
- Freeman, P.T. *ch.* Portsmouth Council Secondary S.
- Onvry, A. *af.* St. Joseph's Coll., Beulah Hill, S.E.
- Suelgrove, F.W. *a.ch.d.* Northern Polyt. Day S., Holloway Rd., N.
- Harvey, L.W. *s.a.al.* Market Bosworth Gram. S.
- Dodson, F.K. *al.ma.d.* Hutton Gram. S.
- Hart, W.L. *d.* Tollington Schools, N.
- Venning, G.L. *a.ch.* Truro Coll.
- Baber, E.A. *f.* Gram. S. Stoke Newington
- Madden, L. St. Joseph's Coll., Dumfries
- Tackley, E.J. *a.* Tollington Schools, N.
- Thayer, J. *s.a.* Lindisfarne Coll., Westcliff-on-Sea
- Gibson, J.T.S. *a.l.d.* Private tuition
- Rednal, E.H. *a.d.* Eye Gram. S.
- Edwards, J. *a.ch.d.* Technical Day S., Walsall
- Macnamara, N. *al.* People's Coll., Nottingham
- Symons, A.G. *a.l.d.* Mercers' School, E.C.
- Kent, W.P. *ch.d.* Technical Day S., Walsall
- Mercer, S. *gm.bk.* Brewood Gram. S.
- Cowan, F.C. *ch.d.* St. Paul's S., W. Kensington
- Atkin, J. *a.ch.* Mundella Hr. Elementary S., Nottingham
- Grinley, S.P. *a.* Market Bosworth Gram. S.
- Briggs, P. *s.a.* Fartown Gram. S., Huddersfield
- Walters, W.E. *s.a.* Lady Hawkins's Gram. S., Kington
- Archer, H.T. *a.* Market Bosworth Gram. S.
- Bryan, C.J. *a.ch.sh.* Catholic Coll. Inst., Manchester
- Hasbroneq, J. *af.* St. Joseph's Coll., Beulah Hill, S.E.
- Renney, C.H. *agm.* Argyle H., Sunderland
- Playford, C.R.B. *s.a.d.* Tollington Schools, N.
- Reddish, E.G. *a.ch.* Market Bosworth Gram. S.
- Eaues, E.D. *a.al.phys.* Portsmouth Council Secondary S.
- Metcalfe, H.A. *s.a.* Argyle H., Sunderland
- Tobitt, G.R. *s.* Valentine H., S. Norwood, S.E.
- Durbin, C.H. *ch.d.* Technical Day S., Walsall
- Spencelayh, V.C.H. *a.al.d.* University S., Rochester
- Sandford, F.T. *s.gm.d.* Fartown Gram. S., Huddersfield
- Allen, R.G. *f.d.* University S., Rochester
- Bonser, A.T. *al.gm.* Market Bosworth Gram. S.
- Clark, L. *a.al.* Hawkesyard Coll., Rugeley
- Crellin, D. *a.al.* Tollington Schools, N.
- Clark, G.T. *a.al.phys.* Portsmouth Council Secondary S.
- Jacobs, C. *a.* Argyle H., Sunderland
- Mack, J.H. *a.al.* Portsmouth Council Secondary S.
- Sweet, A. *al.gm.* Wellingborough Gram. S.
- Betton, A. *a.al.ch.* Northern Polyt. Day S., Holloway Rd., N.
- Rash, A.W. *a.d.* Eye Gram. S.
- Rayner, A. *a.* Tollington Schools, N.
- Coulson, A.H. *a.* Tollington Schools, N.
- Gilbert, A.N. *ch.d.* Mundella Hr. Elementary S., Nottingham
- Morris, C.E. Wadham S., Liskeard
- Bellman, H. *d.* St. Bede's Coll., Hornsea
- Billsou, F. *ch.d.* Mundella Hr. Elementary S., Nottingham
- Pegge, W.J. *al.* Catholic Coll. Inst., Manchester
- Schütte, E.R. *a.d.* Paddington Technical Inst. Day S.
- Tinn, A. *gm.d.* People's Coll., Nottingham

SECOND CLASS [or JUNIOR].
Honours Division.

- Weston, H.E. *s.e.a.al.gm.d.* Northern Polyt. Day S., Holloway Rd., N.
- Hamilton, S.B. *a.ma.ch.d.* Polam Grange S., Darlington
- Long, A. *a.al.gm.d.* Thorne Gram. S.
- Foster, A. *a.ch.d.* Technical Day S., Walsall

BOYS, 2ND CLASS, HONS.—Continued.
 Bale, G. W. *a.d.* Polytechnic Sec. Day S., Regent St., W.
 Howells, W. B. *d.* Lady Hawkins's Gram. S., Kington
 McMonnies, N. Tollington Schools, N.
 Medard, R. *f.* St. Joseph's Coll., Beulah Hill, S.E.
 Shaw, E. N. *a.* Tollington Schools, N.
 Woolway, H. E. *s.* Bible Christian Coll., Shebbear
 James, R. W. *bk.* Polytechnic Sec. Day S., Regent St., W.
 Coope, G. M. *ma.ch.* Hutton Gram. S.
 Fowler, F. P. Technical Day S., Walsall
 Minhinick, A. S. B. Tavistock Gram. S.
 Peters, C. O. *l.d.* Mercers' School, E.C.
 Jackson, C. E. *s.a.* Fartown Gram. S., Huddersfield
 Killpack, C. D. *a.* Private tuition
 Rogers-Tillstone, H. F. Private tuition
 Bennett, W. E. *a.d.* Battersea Polytechnic Secondary S., S.W.
 Gumbley, G. S. *a.* Hawkesyard Coll., Rugeley
 Sherrard, B. St. John's Coll., Brixton
 Yates, A. B. Gram. S., Eccles
 Hancock, S. W. Northern Polyt. Day S., Holloway Rd., N.
 Watts, J. E. P. *f.* Private tuition
 Austin, W. H. New Coll., Worthing
 Bush, F. R. *a.d.* Johnston Terrace S., Devonport
 James, H. L. Private tuition
 Wolfers, A. *a.* Margate Jewish Coll.
 Felkin, J. S. *a.phys.d.* Mundella Hr. Elementary S., Nottingham
 Hunkin, S. L. Bible Christian Coll., Shebbear
 O'Halloran, T. *f.* St. Aloysius S., Highgate
 Poswayo, H. S. African Training Inst., Colwyn Bay
 Tait, E. S. *l.* Cranbrook School
 Hodgson, N. *a.* Argyle H., Sunderland
 Howie, J. W. *ch.* Northern Polyt. Day S., Holloway Rd., N.
 Hudson, V. B. *d.* Thorne Gram. S.
 Paget, J. H. Kensington Coaching Coll. Nevers Sq., S.W.
 Pennant, D. H. The Coll., Clevedon
 Whorlow, C. G. *ch.d.* St. Paul's S., W. Kensington
 Yates, V. B. *m.d.* Gram S., Eccles
 McIver, A. *d.* Mundella Hr. Elementary S., Nottingham
 Turner, J. R. *al.* Northern Polyt. Day S., Holloway Rd., N.
 Woodhouse, R. A. *s.ch.* Hutton Gram. S.
 Bent, M. D. *ge.* Tollington Schools, N.
 Davis, J. H. C. *a.* Private tuition
 Ewart, A. *a.d.* Rutherford Coll., Newcastle-on-Tyne
 Hignan, T. H. Tavistock Gram. S.

**SECOND CLASS [or JUNIOR].
 Pass Division.**

1Wallbank, T. *d.* Hutton Gram. S.
 1Baldock, L. *d.* Technical Day S., Walsall
 1Aitchison, H. Hutton Gram. S.
 1Haddon, H. Hutton Gram. S.
 1Eastham, W. Hutton Gram. S.
 1Evans, R. W. *sh.* Private tuition
 1Black, T. M. Hutton Gram. S.
 1King, H. E. University S., Southport
 1Jones, B. S. The College, Clevedon
 1Lloyd, M. J. M. Tollington Schools, N.
 1Abbott, C. H. *d.* Bethany H., Goudhurst
 1Beard, J. *d.* People's Coll., Nottingham
 1Hoade, R. W. St. George's Coll., Weybridge
 1Taylor, S. E. *s.a.* Stafford Coll., Forest Hill
 1Waller, H. T. *a.d.* Thorne Gram. S.
 1Cadman, H. *s.* Ruthin Gram. S.
 1Hollingsworth, E. Stationers' Company's S., Hornsey
 1Kemp, G. A. *a.* Thorne Gram. S.
 1Morrison, J. C. *a.d.* Private tuition
 1Oliver, A. *a.* Mundella Hr. Elementary S., Nottingham
 1Knowles, R. H. Lancaster Coll., Morecambe
 1Robinson, H. E. *l.* Marlborough College
 1Wheddington, F. P. Stationers' Company's S., Hornsey
 1Barkell, W. S. Tavistock Gram. S.
 1Bower, C. J. *d.* Paddington Technical Inst. Day S.
 1Costa, J. R. *sp.* Alton H., Blackheath
 1Dishman, L. *d.* Thorne Gram. S.
 1Gee, T. Farnworth Gram. S.
 1Shiach, J. Higher Grade S., Lowther St., Carlisle
 1Thomson, G. R. Private tuition
 1Whitaker, W. B. *a.* Bible Christian Coll., Shebbear
 1Wilkinson, C. A. *ch.* Tollington Schools, N.
 1Cooper, C. A. *a.d.* St. Marylebone Central S., W.
 1Danby, G. C. *a.* Balham School, S.W.
 1Lory, M. R. Dunheved Coll., Launceston
 1McRae, D. *al.f.* Private tuition
 1Stockman, G. D. Tollington Schools, N.
 1Thoburn, H. F. Kent House Coll., Anerley

Carey, T. H. *a.d.* Catholic Coll. Institute, Manchester
 1Cuzner, M. Hawkesyard Coll., Rugeley
 1Drake, S. B. School for Sons of Missionaries, Blackheath
 1Hastie, W. A. Modern S., Southport
 1Jewell, J. *a.d.* Stoke Public Higher S.
 1Penhale, W. P. *s.a.* Middle S., Holsworthy
 1Scheurmier, H. W. Stationers' Company's S., Hornsey
 1Stubbs, G. G. B. Tollington Schools, N.
 1White, A. J. Paddington Technical Inst. Day S.
 1Colyer, C. G. Northgate S., Winchester
 1Ellison, D. C. *d.* Oswestry Gram. S.
 1Maddison, R. Rutherford Coll., Newcastle-on-Tyne
 1Tokeley, H. E. Tollington Schools, N.
 1Kitchen, J. E. *gm.* New Coll., Harrogate
 1Lakey, S. E. *a.* Bible Christian Coll., Shebbear
 1Levinson, W. E. Private tuition
 1Payne, G. H. S. *al.d.* Private tuition
 1Williams, J. G. Oswestry Gram. S.
 1Evans, S. G. Ruthin Gram. S.
 1Fuller, R. Tollington Schools, N.
 1Glendinning, A. St. Joseph's Coll., Dumfries
 1Hartland, H. D. *a.d.* Boys' High S., Ironbridge
 1Pearson, T. H. Market Bosworth Gram. S.
 1Smith, J. W. *d.* Market Bosworth Gram. S.
 1Brown, P. G. Seaford College
 1Comeau, P. Private tuition
 1Gould, H. R. Tollington Schools, N.
 1Hardy, L. S. *a.d.* Mundella Hr. Elementary S., Nottingham
 1Ollevant, H. E. *d.* S. of Languages, Sheffield
 1Stone, S. Towcester School
 1Wright, F. C. *d.* Kent House Coll., Anerley
 1Carne, H. H. Bible Christian Coll., Shebbear
 1Colmer, C. A. *d.* Wadham S., Liskeard
 1Green, J. St. Joseph's Coll., Dumfries
 1Little, J. A. St. Mary's Hall, Roath, Cardiff
 1Smiles, H. T. Yorkshire Society's S., S.W.
 1Couldery, W. W. *s.* Rye Gram. S.
 1Dixon, H. *d.* Northern Polyt. Day S., Holloway Rd., N.
 1Fuller, A. Paddington Technical Inst. Day S.
 1Gardner, L. S. *s.* Stafford Coll., Forest Hill
 1Hodson, H. People's Coll., Nottingham
 1Lonsdale, P. *a.d.* Northern Polyt. Day S., Holloway Rd., N.

Callaghan, T. Catholic Coll. Inst., Manchester
 1Hall, B. Boys' Educ. Class, 3rd Brigade, Aldershot
 1Hanham, F. R. *a.al.* Battersea Polyt. Secondary S., S.W.
 1Hiley, H. *ch.* Taunton School
 1Newman, C. J. *d.* St. Paul's S., W. Kensington
 1Radford, R. C. Brewood Gram. S.
 1Roberts, G. H. Ruthin Gram. S.
 1Satterthwaite, F. Technical Day S., Walsall
 1Stamp, C. A. *ma.* Bethany H., Goudhurst
 1Zeroni, W. T. O. *d.* Balham School, S.W.
 1Cline, E. C. Dulwich College, S.E.
 1Gould, E. F. Clifton H., Eastbourne
 1Muir, J. *a.ma.* Rutherford Coll. Newcastle-on-Tyne
 1Tatchell, W. D. Taunton School
 1Bonner, J. W. Polytechnic Sec. Day S., Regent St., W.
 1Clarke, J. *gm.* Newton S., Waterford
 1Doidge, H. Higher-Grade S., Lowther St., Carlisle
 1Dutson, N. R. Gram. School, Chepstow
 1Milner, H. W. Hutton Gram. S.
 1Pimm, A. Channel View S., Clevedon
 1Bernstein, A. Private tuition
 1Blandy, C. R. B. *a.* University S., Southport
 1Gee, P. H. *s.* Fartown Gram. S., Huddersfield
 1Phillips, F. I. *gm.d.* Higher Grade S., Cardiff
 1Pirrie, J. V. High S., Leek
 1Pracey, D. S. Stationers' Company's S., Hornsey
 1Rawbotham, C. People's Coll., Nottingham
 1Roberts, R. L. *s.a.* Ruthin Gram. S.
 1Russell, J. *al.* People's Coll., Nottingham
 1Salmon, H. M. *a.al.* St. Mary's Hall, Roath, Cardiff
 1Sanders, W. H. D. *f.* Hove Coll., Hove
 1Schofield, A. J. Private tuition
 1Baldwin, C. G. Scorton Gram. S.
 1Brown, J. G. *a.* Lindisfarne Coll., Westcliff-on-Sea
 1Hoatson, S. High S., Leek
 1Mason, A. F. *al.* Bethany H., Goudhurst
 1Morgan, E. A. Private tuition
 1Walters, H. People's Coll., Nottingham
 1Watson, C. T. *a.* Gram. S., Stockton-on-Tees
 1Webb, J. D. Gram. S., Newton Abbot
 1Beresford Hulas, H. J. Private tuition
 1Charles, A. H. *a.* Polytechnic Sec. Day S., Regent St., W.
 1Longley, W. Polytechnic Sec. Day S., Regent St., W.
 1Parry, F. G. *a.al.* School of Commerce, Chester

Abbott, S. S. *d.* The Cedars, Ealing
 1Benson, C. M. Yorkshire Society's S., S.W.
 1Blamey, P. R. Dunheved Coll., Launceston
 1Clarke, H. *d.* Central Classes, Long Sutton
 1Farrell, J. St. Joseph's Coll., Dumfries
 1Keenan, C. Private tuition
 1Lepicard, P. A. L. *f.* St. Joseph's Coll., Beulah Hill, S.E.
 1Milner, A. S. Kingswood S., Bath
 1Moody, G. Bethany H., Goudhurst
 1Ragot, M. *f.* St. Joseph's Coll., Beulah Hill, S.E.
 1Brown, H. Private tuition
 1Gilson, H. M. Cranbrook Park S., Ilford
 1Laws, C. W. *a.* Hillmartin Coll., Camden Rd., N.W.
 1Miller, E. A. Montrose Coll., Streatham Hill
 1Parsons, R. St. Joseph's Coll., Dumfries
 1Stanesby, R. W. J. Seaford College
 1Steer, P. G. *ch.* Taunton School
 1Allen, L. L. Derwent H., Bamford
 1Barnett, B. Private tuition
 1Blaklock, J. B. *ma.* Paddington Technical Inst. Day S.
 1Bloomfield, H. O. Seaford College
 1Clews, J. P. Ruthin Gram. S.
 1Dawson, F. *sh.* Private tuition
 1Gwynne-Vaughan, H. Hazelcroft, Weston-s.-Mare
 1Heads, T. *d.* Modern S., Newcastle-on-Tyne
 1Jones, G. L. Gram. S., Peucader
 1Jones, T. S. Ruthin Gram. S.
 1Symons, W. S. Gram. S. Camelford
 1Thunder, L. W. V. *d.* New Coll., Worthing
 1Whitehead, N. T. Tonbridge School
 1Bagshaw, W. B. Brewood Gram. S.
 1Black, S. Osborne High S., W. Hartlepool
 1Felton, P. W. *d.* Oswestry Gram. S.
 1Gibson, C. de V. Kensey, Launceston
 1Hall, H. Mundella Hr. Elementary S., Nottingham
 1Harvey, C. *d.* Brent Hill S., Hanwell
 1Jones, W. Wadham S., Liskeard
 1Llewellyn, G. Christ Coll., Brecon
 1MacLachlan, M. S. *s.d.* Skerry's Coll., Southampton
 1Pollard, C. A. Private tuition
 1Tilson, J. H. Northgate S., Winchester
 1Vincent, H. *f.* Private tuition
 1Clarke, A. B. Bible Christian Coll., Shebbear
 1Fletcher, T. W. Private tuition
 1Foley, D. St. Joseph's Acad., Kennington Rd., S.E.
 1Griffiths, J. Private tuition
 1Levi, H. *he.* Private tuition
 1Smith, S. J. Bible Christian Coll., Shebbear
 1Wallis, F. R. Farnham Gram. S., Farnham
 1Campbell, J. W. *al.* Eton H., Southend-on-Sea
 1Fouracre, F. W. Tollington Schools, N.
 1Mills, W. J. *gm.* Tollington Schools, N.
 1Ruck, C. F. L. The Douglas S., Cheltenham
 1Rushton, A. Hutton Gram. S.
 1Stevenson, R. C. Montrose Coll., Streatham Hill
 1Wheeler, L. C. Kent House Coll., Anerley
 1White, S. E. *a.* Sellhurst Park Coll., Norwood
 1Yeoman, J. G. *d.* Bethany H., Goudhurst
 1Chapman, W. Mundella Hr. Elementary S., Nottingham
 1Crowther, J. J. Private tuition
 1Dunn, J. T. Taunton School
 1Gilmore, R. S. *d.* Catholic Coll. Inst., Manchester
 1Higsou, R. *ch.* Hutton Gram. S.
 1Laurie, J. W. *s.* Netley Court, Netley Abbey
 1Martin, G. People's Coll., Nottingham
 1Symon, A. J. S. Mercers' School, E.C.
 1Ware, F. Rivington & Blackrod Gram. S.
 1Williams, R. Gram. S., Camelford
 1Wilson, L. W. Private tuition
 1Wivell, A. Hutton Gram. S.
 1Armstrong, E. Farnworth Gram. S.
 1Hopkins, J. *a.* Private tuition
 1Lawson, W. E. Skerry's Coll., Liverpool
 1Leese, J. S. Dunstable Gram. S.
 1Mayor, F. Private tuition
 1Norris, P. E. *ma.* Central Foundation S., Cowper St., E.C.
 1Savage, L. N. Bethany H., Goudhurst
 1Squires, W. R. Paddington Technical Inst. Day S.
 1Thompson, F. Osborne High S., W. Hartlepool
 1Wakelin, D. *a.* Eastward Ho! Coll., Felixstowe
 1Weaver, E. A. Handsworth Gram. S.
 1Esilman, A. University S., Southport
 1Evans, H. A. *a.al.gm.* Private tuition
 1Griffiths, H. L. S. *al.* Private tuition
 1Hewitt, W. C. *d.* Tollington Schools, N.
 1Hobbs, G. Private tuition
 1Kirk, A. St. John's Coll., Brixton
 1Lees, I. Brewood Gram. S.
 1Spranklin, S. St. John's Coll., Brixton
 1Stringer, R. *a.* Brewood Gram. S.
 1Bolter, C. A. St. Paul's S., W. Kensington
 1Cory, C. Private tuition
 1Crouch, C. E. *a.* Southsea College
 1Jones, W. S. *a.* Polytechnic Sec. Day S., Regent St., W.

MacLachlan, N. St. Joseph's Coll., Dumfries
 Moore, A. G. Tavistock Gram. S.
 Moore, R. B. *d.* Bible Christian Coll., Shebbear
 Roskilly, W. W. *ch.* Tavistock Gram. S.
 Simpson, T. *a.d.* Secondary S., Stalybridge
 Underhay, A. E. Tollington Schools, N.
 Yates, J. University S., Southport
 1Brown, W. A. Nelson S., Wigton
 1Cannon, A. C. Wadham S., Liskeard
 1Glanville, F. H. *d.* Silesia Coll., Margate
 1Hyde, A. A. Wellington H., Hampstead, N.W.
 1Jones, G. S. Ruthin Gram. S.
 1Wakely, H. E. *a.al.* Stoke Public Higher S.
 1Alston, H. Bethany H., Goudhurst
 1Baker, W. N. Melbourne Coll., Anerley
 1Davies, D. H. *a.* Private tuition
 1Day, G. A. *d.* St. Paul's S., W. Kensington
 1Harvey, H. J. L. *d.* Private tuition
 1Hoening, J. St. Joseph's Acad., Kennington Rd., S.E.
 1Long, H. W. St. George's Coll., Weybridge
 1Parkyn, K. Kingswood S., Bath
 1Crabb, H. A. E. Montrose Coll., Streatham Hill
 1Wright, T. W. W. Derwent H., Bamford
 1Baker, J. H. Bethany H., Goudhurst
 1Barclay, W. L. Tollington Schools, N.
 1Byrne, H. J. *bl.ms.* Private tuition
 1Dykens, W. A. Ruthin Gram. S.
 1Eytton Jones, W. E. Harborough Gram. S., Market Harborough
 1Hayes, L. J. St. Joseph's Coll., Dumfries
 1Holman, W. Bible Christian Coll., Shebbear
 1Richardson, J. W. R. *f.* Secondary S., Glossop
 1Scales, W. H. Bickerton H., Birkdale
 1Shackle, I. T. *a.* Private tuition
 1Snow, F. Private tuition
 1Stevens, W. Private tuition
 1Whitman, H. W. Private tuition
 1Williamson, V. B. Gram. S., Eccles
 1Boyce, H. W. J. Tudor Hall, Hawkhurst
 1Browett, H. A. *s.* Newtown S., Waterford
 1Ferner, E. K. G. *ge.* Balham School, S.W.
 1Fitzwilliam, G. E. Tollington Schools, N.
 1Hayes, J. *al.* Pitman's Metropolitan S., W.C.
 1Hodgson, M. C. L. Aylwin Coll., Arnsdale
 1Jury, T. E. Fartown Gram. S., Huddersfield
 1Legg, K. B. *a.* High S. for Boys, Bromley
 1Morrell, W. P. Adv. Elem. Boys' S., Merthyr Tydfil
 1Pickworth, F. A. *ch.* East Anglian S., Bury St. Edmunds
 1Sturridge, R. F. Epsom College
 1Sutherland, A. C. *gm.l.* Private tuition
 1Tunnicliffe, F. D. Private tuition
 1Wainwright, G. H. Eye Gram. S.
 1Williams, G. W. Corporation Gram. S., Plymouth
 1Holderness, H. B. *d.* Central Classes, Long Sutton
 1Konigabgab, A. African Training Inst., Colwyn Bay
 1Smith, S. H. Private tuition
 1Addison, H. Yorkshire Society's S., S.W.
 1Haythornthwaite, R. H. Private tuition
 1May, G. M. Private tuition
 1Metcalfe, C. P. Argyle H., Sunderland
 1Mitchell, P. J. Clark's C.S. Coll., Chancery Lane, W.C.
 1Orchard, W. G. Private tuition
 1Tilly, G. H. *ch.* St. Paul's S., W. Kensington
 1Tyson, J. Private tuition
 1Woodfield, W. Paddington Technical Inst. Day S.
 1Carlisle, H. C. S. Polytechnic Sec. Day S., Regent St., W.
 1Calnan, W. *a.* St. Joseph's Coll., Dumfries
 1Hill, J. E. B. *ch.* Taunton School
 1Houman, J. D. Tollington Schools, N.
 1Lane, J. W. Ashfield, Winchester
 1Lilly, C. O. St. Paul's S., W. Kensington
 1Saffer, T. *a.* Northern Institute, Leeds
 1Sheldon, H. C. *s.* Ruthin Gram. S.
 1Wood, E. H. Battle Hill S., Hexham
 1Baldwin, C. G. B. Scorton Gram. S.
 1Bennett, G. R. Brynmelyn S., Weston-s.-Mare
 1Berryman, E. Brewood Gram. S.
 1Cabot, P. C. Bible Christian Coll., Shebbear
 1Christopher, F. Private tuition
 1East, F. W. Battersea Polytechnic Secondary S., S.W.
 1Goldie, H. A. *d.* Lancaster Coll., W. Norwood
 1Heather, C. J. Newtown S., Waterford
 1Lawson, H. *d.* People's Coll., Nottingham
 1Robinson, J. H. Tollington Schools, N.
 1Shanley, H. St. Joseph's Coll., Dumfries
 1Snape, R. *d.* Secondary S., Stalybridge
 1Dalley, E. Mundella Hr. Elementary S., Nottingham
 1Linzee, N. H. Woolston Coll., Southampton
 1Pickthall, W. I. Harlesden College, N.W.
 1Piper, S. Bethany H., Goudhurst
 1Archer, N. Rivington & Blackrod Gram. S.
 1Burrell, J. H. Bailey S., Durham

BOYS, 2ND CLASS, Pass—(Continued.)
 Deverson, W.H. Polytechnic Sec. Day S., Regent St., W.
 Geddie, A.B. Private tuition
 Harlow, A.G. a. Polytechnic Sec. Day S., Regent St., W.
 Kiernander, E. bk. St. Aloysius' S., Highgate
 Maywhort, J.H. Private tuition
 Rowntree, T. Yorkshire Society's S., S.W.
 Sharp, R.A. a. al. Private tuition
 Sturt, L.H. Montrose Coll., Streatham Hill
 Thomson, H.C.S. Tollington Schools, N.
 Foster, A. People's Coll., Nottingham
 Harrington, A.J. Private tuition
 Nodes, P.W. Polytechnic Sec. Day S., Regent St., W.
 Pern, A.S. Alwyne Institution, Gower Street, W.C.
 Taylor, C. Private tuition
 Wheldon, T. d. Tollington Schools, N.
 Blake, H. ma. Private tuition
 Bonning, S.L. Taunton School
 Coyle, T. a. St. Joseph's Coll., Beulah Hill, S.E.
 Cunningham, L. Hutton Gram. S.
 Evans, W.M. Private tuition
 Jones, A.G.M. ch. Taunton School
 McPherson, W.C. d. York Manor S.
 Richards, R.N. Sutton Park S., Sutton
 Savage, A.C. Corporation Gram. S., Plymouth
 Wood, R.G. Secondary S., Stalybridge
 Carruthers, N.S. Private tuition
 Croncher, F.K. Oxford House, Bexhill
 Eames, R.O. Ruthin Gram. S.
 Eedes, R.G. Bethany H., Goudhurst
 Gaskell, G. Hutton Gram. S.
 Hitchens, A.P. Oxford Coll., Waterloo, L'pool
 Jaynes, W.E. Technical Day S., Walsall
 Pile, C.C. Bethany H., Goudhurst
 Roberts, A.C. Ruthin Gram. S.
 Rudd, S. Culham College S.
 Sellick, H.D. Tavistock Gram. S.
 Bevis, S.W. Philological S., Southsea
 Bradford, L. Hazelcroft, Weston-s.-Mare
 Currie, E. Hawkesyard Coll., Rugeley
 Gledhill, R. University S., Southport
 Goodwin, R.W.G. a. al. Devonport High S.
 Hart, S. Private tuition
 Hough, G.H. Private tuition
 Lowthian, J.B. Mundella Hr. Elementary S., Nottingham
 Middleton, H. Rutherford Coll., Newcastle-on-Tyne
 Notley, N. Bethany H., Goudhurst
 Potts, J.W. Old Elvet S., Durham
 Simpson, A. People's Coll., Nottingham
 Waite, G.W. d. Hutton Gram. S.
 Bourn, T. Bailey S., Durham
 Edwards, A.S. Private tuition
 Hinchcliff, S.B. d. Thorne Gram. S.
 Hughes, C.H. d. Oswestry Gram. S.
 Hynes, R. Elm Bank S., Nottingham
 Kay, R.C. St. Joseph's Coll., Dumfries
 Marshall, A.S. St. Mary's Hall, Roath, Cardiff
 Rice, T.H. Tavistock Gram. S.
 Sparrow, H. Eton H., Southend-on-Sea
 Whiteside, D. Gram. S., Birkdale
 Batten, K.C. Polytechnic Sec. Day S., Regent St., W.
 Falkner, S. Private tuition
 Gregory, R. Secondary S., Stalybridge
 O'Farrell, J. St. Joseph's Coll., Beulah Hill, S.E.
 Tanner, R.D. Private tuition
 Callaway, F. LeM. Tollington Schools, N.
 Feinstein, J. Central Foundation S., Cowper St., E.C.
 Hopgood, A.S. Argyle H., Sunderland
 Lane, S.A. Marlborough College
 Myers, T. King James I. Gram. S., Bishop Auckland
 Shelton, A.V. Handsworth Gram. S.
 Whitbrook, T.M. Farnworth Gram. S.
 Bradley, B.R. Private tuition
 Brown, G.L. Private tuition
 Faulkner, C.R. Private tuition
 Fielding, T. a. Lytham College
 Foggitt, T.T. University S., Southport
 Jarman, R. Private tuition
 Stedman, P.R.M. s.h. Private tuition
 Ashford, D. Ripley Comm. Schools
 Coalbank, N.C. Eastman's Royal Naval Acad., Winchester
 Duffy, J. St. Joseph's Coll., Dumfries
 Gibb, J. St. Joseph's Coll., Dumfries
 Montgomerie, W.G. Hutton Gram. S.
 Norris, W.W. Hillmartin Coll., Camden Rd., N.W.
 Singleton, W.J. Aylwin Coll., Arnside
 White, B. Hawkesyard Coll., Rugeley
 Allen, H.J. Private tuition
 Barrett, J.W. St. George's Coll., Weybridge
 1Branthwaite, J.S. Gram. S., Eccles
 1Brown, O. H. Private tuition
 Burrows, H.C. d. Wilmot St. P.-T. Centre, Ilkeston
 Clarke, A. H. St. Boniface's Coll., Plymouth
 Gilbert, J.C. Taunton School

Gurney, F. Selhurst Park Coll., Norwood
 Lavery, W. St. Joseph's Coll., Dumfries
 Mason, H.F. d. Secondary S., Stalybridge
 Matthews, H.G.V. Eye Gram. S.
 Oates, F.N. Epsom College
 Proctor, H.W. Gram. School, Chestow
 Sprenger, H. Brewood Gram. S.
 Tuxford, H. The King's S., Ottery St. Mary
 Vincent, L.D. St. James's Coll. S., St. Helier's
 1Williams, J. Brighton II., Oldham
 Cross, A. People's Coll., Nottingham
 Little, H.L. Boys' High S., Erdington
 Marsh, E. Academy, Crewe
 Taylor, V.H. Congregational S., Hopton, Mirfield
 Armstrong, D.B. Eton H., Southend-on-Sea
 Cooke, E.J. s. Lady Hawkins's Gram. S., Kington
 Hustedt, C. al. People's Coll., Nottingham
 Rant, G.H. Culham College S.
 Stranger, R.H. Allhallows S., Honiton
 Young, L. Bethany H., Goudhurst
 Beauverd, D. f. Private tuition
 Bright, J.L. Brighton Gram. S.
 Hughes, H.R. Ruthin Gram. S.
 Kiddell, J.B. New Coll., Cliftonville, Margate
 Kilner, S.A. Pierremont Coll., Broadstairs
 MacGregor, R.K. Private tuition
 Mills, C.R. Ruthin Gram. S.
 Pywell, C.H. Private tuition
 Snowball, H.H. Balham School, S.W.
 Thomas, W.R. St. George's Coll., Wimbledon
 Wild, A.S. Private tuition
 Coppinger, T.C. s. Stafford Coll., Forest Hill
 Fabian, C.E. d. Tollington Schools, N.
 1Gurney, J.H. Boys' Educ' Class, 3rd Brigade, Aldershot
 1Jeffery, F.B. Tavistock Gram. S.
 Leaning, C.W. Mundella Hr. Elementary S., Nottingham
 Lester, A. St. Aloysius' S., Highgate
 Morgan, C. bk. Taunton School
 Paget, C.N. St. George's Coll., Weybridge
 Shilton, R.O. Handsworth Gram. S.
 Soutter, J.C. Tollington Schools, N.
 Wightman, W.J. Catholic Coll. Institute, Manchester
 Corbett, C.H. a. Eye Gram. S.
 Day, W.G.H. Culham College S.
 Evans, W. University S., Southport
 Forrest, T.H.N. Private tuition
 Pullen, M. Paddington Technical Inst. Day S.
 Reeves, R.C.J. The Modern S., East Grinstead
 1Salt, D.H. St. George's Coll., Weybridge
 Wenham, F. Brunt's Technical S., Mansfield.
 Balding, C. Harlesden College, N.W.
 Batten, K. a. Sunny Hill S., Ilfracombe
 Clibborn, R. Oswestry Gram. S.
 Eke, W.R. Old Elvet S., Durham
 Henderson, W.D. Kingswood S., Bath
 Legge, H.J. Lady Hawkins's Gram. S., Kington
 Morton, W.C. Balham School, S.W.
 Parry, W.F. Private tuition
 Potter, R.G. The Modern S., East Grinstead
 Robinson, E.C. Eton H., Southend-on-Sea
 Hanson, T. d. Rivington & Blackrod Gram. S.
 Hayward, P.G. Boys' High S., Wareham
 Leatham, W.S. Newton S., Waterford
 1Mills, C.E. University S., Southport
 Stevenson, C. Boys' High S., Iron Bridge
 Blows, C.E. Private tuition
 Craze, L. gm. High S., Leek
 Gatis, J. d. St. George's Coll., Weybridge
 Hall, H.G. Balham Gram. S., S.W.
 Hooper, S.W. a. Private tuition
 Lewis, F.H. Oswestry Gram. S.
 Maunders, G.C. Tavistock Gram. S.
 Parry, R.M. Taunton School
 Rees, R.H. Cawley S., Chichester
 Begley, F. Montrose Coll., Streatham Hill
 1Code, G.B. Private tuition
 Greenhill, E.S. Taunton School
 Guy, E.F. Tutorial S., Penarth
 Hallinan, W.E. S. Wales Tutorial Classes, Cardiff
 Hulme, E. Rose Hill High S., Bowden
 Lethbridge, P.L. Tonbridge School
 Morris, L.J. Private tuition
 Sayer, H.E. Beverley S., Barnes
 1Spencer, L.S. Kingswood S., Bath
 Wilcox, H.B. a. The Modern S., East Grinstead
 Brown, L.D. Taunton School
 Jackson, T.H. Highgate Gram. School, N.
 Jordan, A.F. Palmer's School, Grays
 Kent, T.H. Private tuition
 Lochs, G.M. d. Polytechnic Sec. Day S., Regent St., W.
 Martin, S.W. Paddington Technical Inst. Day S.
 Mills, M.B. Tollington Schools, N.
 Moxon, J. Private tuition
 1Chanfourier, V.M.D. f. Private tuition
 Dickens, S.R. Northern Poly. Day S., Holloway Rd., N.

Dixon, J. Higher Grade S., Lowther St., Carlisle
 1Dunlop, W.R. Private tuition
 Henry, W.T. Higher Grade S., Lowther St., Carlisle
 Ogle, J.E. Taunton School
 Ross, E.S. Alton H., Blackheath
 Sharland, A.P. Brighton Gram. S.
 Watson, S.C.C. al. Modern S., Newcastle-on-Tyne
 Band, A. High S., Leek
 Blunt, C.G. Private tuition
 Fanthorpe, R. Dudley H., Lee, S.E.
 Hall, E.W.G. Culham College S.
 Keeler, E.D. Endcliffe Coll., Ranmoor, Sheffield
 Ketley, W.J.B. Private tuition
 Manning, A. Bible Christian Coll., Shebbear
 Mercer, R.L. Rivington & Blackrod Gram. S.
 Quilliam, H. Private tuition
 Budd, G. d. Hythe School
 1Butt, C.E. Dunheved Coll., Launceston
 Heydenreich, A.V. Forest Gate High S. & Comm. Coll.
 Hornsby, R.H. Aylwin Coll., Arnside
 1Jones, S. Boys' High S., Iron Bridge
 1Larkin, W.H. Bethany H., Goudhurst
 Roberts, B.V. Ruthin Gram. S.
 Pearson, H. People's Coll., Nottingham
 Swallow, S. Mundella Hr. Elem. S., Nottingham
 Baker, C. Private tuition
 France, J.H. Private tuition
 Gollidge, V.F. H.H. d. Dean Close S., Cheltenham
 Heath, H.H. Endcliffe Coll., Ranmoor, Sheffield
 Hill, E.E. Taunton School
 Meacher, S.G. Kingham Hill S., Chipping Norton
 Philcox, P. St. John's Coll., Brixton
 Bamber, W. Rivington & Blackrod Gram. S.
 Evans, E.P. a. Gram. & Coll. S., Carnarvon
 Caithness, G. f. Private tuition
 Finch, T. Rivington & Blackrod Gram. S.
 Griffin, P.D. Bourne Coll., Quinton
 Hurst, R.C. Private tuition
 O'Brien, G.J. St. George's Coll., Weybridge
 Pullen, F.E. Private tuition
 1Richardson, T. Private tuition
 1Wilcock, T. Hawkesyard Coll., Rugeley
 Turner-Smith, B.W. Taunton School
 Vallebona, H. bk. sp. St. George's Coll., Weybridge
 Walker, A.F. a. Private tuition
 Dalkin, R.G.S. Private tuition
 Hayman, J.R. Private tuition
 Haynes, L.P. Private tuition
 Price, R.C. s. Hythe School
 Purkis, K.N. Philological S., Southsea
 Aldridge, G. Private tuition
 Costa, J.N. Holmwood S., Bexhill-on-Sea
 Gollop, C. Tollington Schools, N.
 Gittings, H. Cleave's S., Yalding
 Graham, E. a. Southend Road S., Penrith
 Hunt, C. People's Coll., Nottingham
 Millett, T.F. a. Private tuition
 Wardle, R.M. Montrose Coll., Streatham Hill
 Watt, T.G. Bethany H., Goudhurst
 Watters, T. St. Joseph's Coll., Dumfries
 Anderson, J.H.P. Oswestry Gram. S.
 Browne, H.M. Private tuition
 Goodenough, H. Culham College S.
 Martin, G.W. Bible Christian Coll., Shebbear
 Paynter, J.H. Bible Christian Coll., Shebbear
 Tidd Pratt, G. Lady Hawkins's Gram. S., Kington
 Walton, H.C. al. Private tuition
 Williams, T.V. Private tuition
 Williamson, A.A. d. Wilmot St. P.-T. Centre, Ilkeston
 Balfour, W.I. a. Fraserburg Academy
 Bowen, I.A. Tutorial S., Penarth
 Fleming, James St. Joseph's Acad., Kennington Rd., S.E.
 Hamburg, R.E.M. Paddington Technical Inst. Day S.
 Jeffery, F.C. Headland Park S., Plymouth
 Swire, F. Private tuition
 1Walkley, A.J. Hawkesyard Coll., Rugeley

Pool, W.J. s.e.g.a.al.f. Harborough Gram. S., Market Harborough
 Coath, E.F. al. d. Tollington Schools, N.
 Hutchinson, P.K. g. d. Tollington Schools, N.
 Faulkner, H. e.a.al.gm. People's Coll., Nottingham
 Hodan, C.e.a.f. Marist Bros.' S., Grove Ferry
 Delagrange, Y. e.f. Marist Bros.' S., Grove Ferry
 Shaw, E.H. e.g.a.al.gm. Tollington Schools, N.
 Skinner, P.F. g.al.d. High Pavement Elem. S., Nottingham
 Young, P. al.gm. People's Coll., Nottingham
 Cowper, R. g.d. High Pavement Elem. S., Nottingham
 Lack, J.W. s.h. Grove H., Highgate
 Fergusson, W. e.g.al.gm.f. St. John's Coll., Brixton
 Courteaux, G. f. Marist Bros.' S., Grove Ferry
 Cowling, R.L. e.gm.f.d. St. George's Coll., Weybridge
 Hamilton, B. St.G. e.gm.f.l. Polam Grange S., Darlington
 Masters, H.E. e.g.gm.d. Tollington Schools, N.
 Terry, A. al.d. High Pavement Elem. S., Nottingham
 Dunstan, C.P. al.gm. Market Bosworth Gram. S.
 Freegard, F.L. e.al.gm. Tollington Schools, N.
 Stevenson, G.C. a.al. Tollington Schools, N.
 Campion, R.R. e.f. St. Aloysius' S., Highgate
 Bates, N.A. e.a. People's Coll., Nottingham
 Bostock, E. d. High Pavement Elem. S., Nottingham
 Henderson, M. e.d. Tollington Schools, N.
 Hirschland, H.E. e.al.gm. Tollington Schools, N.
 Lawrenson, R.F. g.al.gm.sc. Tollington Schools, N.
 Mackenzie, K.F. a.al.gm. Tollington Schools, N.
 Cook, W. a. d. High Pavement Elem. S., Nottingham
 Geary, A. a.al.gm.d. Market Bosworth Gram. S.
 Parker, F. a. d. High Pavement Elem. S., Nottingham
 Taplin, W.G. e.g.al.f. Tollington Schools, N.
 Thompson, M. g. d. People's Coll., Nottingham
 Austin, T.C.M. a.al.gm. Tollington Schools, N.
 Hollidge, A. g.al. Tollington Schools, N.
 Million, V.L. e.g.al.f. St. George's Coll., Weybridge
 Morley, L. d. People's Coll., Nottingham
 Pepper, R. e. People's Coll., Nottingham
 Raistrick, H. d. High Pavement Elem. S., Nottingham
 Khalifa, R. e.al.bl.f. St. Aloysius' S., Highgate
 Livermore, W.B. e.gm.f.l. Tollington Schools, N.
 Lowman, J. al.sc. High Pavement Elem. S., Nottingham
 Peet, F. a. High Pavement Elem. S., Nottingham
 Thomson, G.M.C. al. Grove H., Highgate
 Weston, R.G. a.f. St. Joseph's Coll., Dumfries
 Yates, E.C. e.gm. Gram. S., Eccles
 Greenhalgh, W.M. g.al. Ruthin Gram. S.
 Lee, A.G. g. Tollington Schools, N.
 Westbrook, S.A. gm. Tollington Schools, N.
 Briddon, C. Mundella Hr. Elem. S., Nottingham
 Gibson, C. a. People's Coll., Nottingham
 Rowe, C.H. e.a.al.l. Coll. S., South Terrace, Cork
 Scotney, J. d. High Pavement Elem. S., Nottingham
 Sweeting, R. e.gm.f. St. John's Coll., Brixton
 Weedon, C.H. g.al.gm. Tollington Schools, N.
 Holdsworth, W.F. al. Kent House Coll., Anerley
 Jobin, G. f. St. Joseph's Coll., Beulah Hill, S.E.
 Macintosh, M.H. a.gm.f. Tollington Schools, N.
 Nolan, J.F. a.al. St. Joseph's Coll., Dumfries
 Self, W.J. e.g.a.al. Palgrave S., nr. Diss
 Wilcox, F. s.g. People's Coll., Nottingham
 Bannard, J.W.Y. Towcester School
 Bates, A.J. a. People's Coll., Nottingham
 Clarke, A. al. Hutton Gram. S.
 Cort, W.P. s. Harborough Gram. S., Market Harborough
 Dijoud, R. e.f. Marist Bros.' S., Grove Ferry
 Byrne, E.P. St. Joseph's Coll., Beulah Hill, S.E.
 Sharp, C.L.V. a.al.gm.sc. Market Bosworth Gram. S.
 Neeves, A.E. a. Rye Gram. S.

THIRD CLASS.

Honours Division.

Edwards, S.E. e.a.al.gm.f.g.e. Tollington Schools, N.
 Rudowsky, C.C.O. e.h.g.a.al.gm.f. Tollington Schools, N.
 Garner, H.M. a.al. Market Bosworth Gram. S.
 Condrupe, C.O. h.al.gm.f. Tollington Schools, N.
 Pearce, T. e.g.al.gm. Tollington Schools, N.
 Lawrence, J.C.V. e.g.gm. Tollington Schools, N.

BOYS, 3RD CLASS, HONS.—Continued.
 Bowes, A.A. e.g.m. Gram. S., Eccles
 Gilliland, R.H.M. McC. s.e.al. Ulster Provincial S., Lisburn
 Payne, J. d. High Pavement Elem. S., Nottingham
 Pearson, L.H. al.g.m. Market Bosworth Gram. S.
 Carder, H. g.a. People's Coll., Nottingham
 Diver, G.H. Tollington Schools, N.
 Flynn, A.E. al.g.m. Tollington Schools, N.
 Green, T. People's Coll., Nottingham
 Guerout, G.G. a.al.f. Ripley Comm. Schools
 Langdon, R.J.S. e.a. Bible Christian Coll., Shebbear
 Myles, T. a. Tudor Hall, Hawkhurst
 O'Brien, J.R. a.al.f.l. St. George's Coll., Weybridge
 Ramsbottom, R. a.d. University S., Southport
 Vennard, H.R. e.a.al. Wadham S., Liskeard
 Holden, J.A. a.g.m. Market Bosworth Gram. S.

Dyson, W.H. e. Westbourne Rd. Prep. S., Sheffield
 Newell, E.F. al. Tollington Schools, N.
 Pin, e.f. Private tuition
 Terrier, M.G. Marist Bros.' S., Grove Ferry
 Unwin, F.A. a.al. Eye Gram. S.
 Bell, S.J. f. Hutton Gram. S.
 Crundall, A.W. e.h. Tollington Schools, N.
 Gaskell, R.H. gm. Tollington Schools, N.
 Graves, L.A. W. People's Coll., Nottingham
 Hallett, J.W. a.d. Grove H., Highgate
 Holland, F. St. Joseph's Coll., Dumfries
 Izzard, W.C. a. Towcester School
 Leman, R.L. a. Lindisfarne Coll., Westcliff-on-Sea
 Oliver, B.E. e.a. Tollington Schools, N.
 Proctor, C.A. Modern S., Newcastle-on-Tyne
 Rolfe, T.W. People's Coll., Nottingham
 Scrimshaw, S.H. al.g.m. Tollington Schools, N.
 Treherne, C.W. f.l. Private tuition

Bell, W.A. e. Aylwin Coll., Arnside
 Florido, F. sp. St. Joseph's Coll., Dumfries
 Hillier, J.S. e.al. Hillmartin Coll., Camden Rd., N.W.
 Payne, H.G. a.al. Rye Gram. S.
 Paynter, R.G. gm.d. Bible Christian Coll., Shebbear
 Seager, J.E.B. gm. University S., Rochester
 Tucker, J.E. g.al.g.m. Tollington Schools, N.
 Webster, T. Harborough Gram. S., Market Harborough
 Wood, Charles e. Hythe School
 Bell, R.N. al. Modern S., Newcastle-on-Tyne
 Blackman, J. e.a.al. Revue Council S., Blackpool
 Hill, B. Mundella Hr. Elem. S., Nottingham
 Houghton, H.B. a. Harborough Gram. S., Market Harborough
 Locke, W. s.e.a. Bethany H., Goudhurst
 Newham, C.E. People's Coll., Nottingham
 Weeks, W.H. a.g.m. St. John's Coll., Brixton
 Windus, C.E. e.a. St. John's Coll., Brixton
 Woodward, W. High Pavement Elem. S., Nottingham

Bardon, E. e.sc. Newtown S., Waterford
 Lewis, L. Grove H., Highgate
 McCormick, A.E. a.al.g.m. Tollington Schools, N.
 Poput, J. sp. Marist Bros.' S., Grove Ferry
 Savage, L. f. People's Coll., Nottingham
 Taylor, L.T. al.g.m. Tollington Schools, N.
 Benny, S.A. al.g.m. Tollington Schools, N.
 Coape-Arnold, R. St. Joseph's Coll., Dumfries
 Livermore, L.L. Tollington Schools, N.
 Phelan, E. St. Joseph's Coll., Dumfries
 Thomas, D. de S. a.al.g.m. Oswestry Gram. S.
 Elliott, C.A. e. Westbourne Rd. Prep. S., Sheffield
 Freagard, C.G. Tollington Schools, N.
 Hookham, F.W. f. Tollington Schools, N.
 Norris, W.H. Catholic Coll. Inst., Manchester

Avery, J.R. Forest Gate High S. & Comm. Coll.
 Collingridge, J.H. e. Tollington Schools, N.
 Deemig, W. Mundella Hr. Elem. S., Nottingham
 Doherty, B.J. d. St. George's Coll., Weybridge
 Firth, S.H. al. Tollington Schools, N.
 Holloway, F. d. Mundella Hr. Elem. S., Nottingham
 Macintosh, L.M. Tollington Schools, N.
 Seed, P. W. Hutton Gram. S.
 Strugnell, L.F. e. Montrose Coll., Streatham Hill
 Adcock, L.F. a.g.m. Towcester School
 Armstrong, C. a.g.m. Argyle H., Sunderland
 Boughton, F. g.a.al. Tollington Schools, N.
 Brockbank, H. d. Gram. S., Eccles
 Gruchy, S.P. f. Seaford College
 Hitchin, J. s. Ruthvin Gram. S.
 Lepper, E.T. a.g.m. d. Towcester School
 Newport, P.H. d. Towcester School

Sternberg, R. e.f. Norman H., W. Didsbury
 Tate, T.C. e.g.m. Colebrook H., Bognor
 Cox, R.H. g. Penwerris Gram. S.
 Dennis, F. High Pavement Elem. S., Nottingham
 Fender, P.G. e. St. George's Coll., Weybridge
 Griffiths, L.E. e.g.m. Oswestry Gram. S.
 Keech, D.F. Harborough Gram. S., Market Harborough
 Kelly, C.P. St. George's Coll., Weybridge
 Mottram, R.W. a. Harborough Gram. S., Market Harborough
 Ray, A.C. W. e.a. Montrose Coll., Streatham Hill
 Squire, T.R. al. Modern S., Newcastle-on-Tyne
 Whitehead, R. gm. University S., Rochester

**THIRD CLASS.
 Pass Division.**

2Hodgson, C.F. d. Tollington Schools, N.
 2Laurence, W.B. Taunton School
 2Hooke, A. Bible Christian Coll., Shebbear
 2Moorhead, T. Argyle H., Sunderland
 2Sowton, R.C. Tavistock Gram. S.
 2Davis, H. Modern S., Newcastle-on-Tyne
 2Gilfillan, J.M. Tollington Schools, N.
 2Leman, W.E. Lindisfarne Coll., Westcliff-on-Sea
 2Bhmtacharji, M.C. Oxford County S., Thame
 2Addie, J.P. Osborne High S., W. Hartlepool
 2Cooke, W.T. Rye Gram. S.
 2Morot, V. a. St. Joseph's Acad., Kennington Rd., S.E.
 2Rushton, N. Hutton Gram. S.
 2Stapleford, G.B. sh. Silesia Coll., Margate
 2Waters, J.F.B. Horsmonden School
 2Lidstone, A. Tollington Schools, N.
 2Knight, W. St. Boniface's Coll., Plymouth
 2Stone, A.E. Seaford College
 2Sundquist, E.A. Silesia Coll., Margate
 2Hepburn, W. Eton H., Southend-on-Sea
 2Back, J.H. Polytechnic Sec. Day S., Regent St., W.
 2Beunett, C.J.F. 57 Lansdowne St., Hove
 2Carter, A.C. Seaford College
 2Herford, R. St. Aloysius' S., Highgate
 2Hewson, F.B. The College, Weston-s.-Mare

2Bailey, W.W. Kingswood S., Bath
 2Baker, G. Melbourne Coll., Anerley
 2Linnell, A.P. Silesia College, Margate
 2Such, H. Bethany H., Goudhurst
 2Letty, W.H. d. Paddington Technical Inst. Day S.
 2Ainger, D.S. Epsom College
 2Beal, R.W. Brighton Gram. S.
 2Bristow, F.L. Epsom College
 2Wood, W.F. Kingswood S., Bath
 2Rice, H.F. d. Paddington Technical Inst. Day S.
 2Foote, E.G. a.d. Lindisfarne Coll., Westcliff-on-Sea
 2Newling, G.A. d. Mundella Hr. Elem. S., Nottingham
 2Codling, W.F. London Coll., Holloway Rd., N.
 2Haworth, A. Hutton Gram. S.
 2Holliday, C.N. University S., Southport
 2Sims, D.G.M. Taunton School
 2Smith, S. Minster Gram. S., Southwell
 2Richardson, G.D. Hutton Gram. S.
 2Geddes, W. Northern Poly. Day S., Holloway Rd., N.
 2Hunter, H. Osborne High S., W. Hartlepool
 2Marshall, D. Gram. S., Eccles

2Carroll, J.B. St. Joseph's Coll., Dumfries
 2Deacock, A.E. Grove H., Highgate
 2Idris, J.H. W. Lindisfarne Coll., Westcliff-on-Sea
 2McDonald, H. Holloway Coll., Holloway Rd., N.
 2Py, F.E. St. Joseph's Coll., Beulah Hill, S.E.
 2Southworth, T. Hutton Gram. S.
 2Tawana, D.M. African Training Inst., Colwyn Bay
 2Cattell, J.W. Tollington Schools, N.
 2Fleming, John St. Joseph's Acad., Kennington Rd., S.E.
 2Henderson, J. Higher-Grade S., Lowther St., Carlisle
 2Mortimer, C. People's Coll., Nottingham
 2Penn, E.A. Montrose Coll., Streatham Hill
 2Thomson, C. de B. Epsom College
 2Bailey, W.J. Gram. S., Eccles
 2Benison, N.S. d. Hillmartin Coll., Camden Rd., N.W.
 2Brunt, R. St. Joseph's Acad., Kennington Rd., S.E.
 2Richards, L.P. Bible Christian Coll., Shebbear
 2Smith, R.H. a. Eton H., Southend-on-Sea
 2Williams, S. Eton H., Southend-on-Sea

2Chambers, W.W. Wilmot St. P.-T. Centre, Ilkeston
 2Dodds, B. Private tuition
 2Scarlett, S.J. Highfield S., Wandsworth Common
 2Bridge, F.J. Catholic Coll. Institute, Manchester
 2Broadbent, J.W.D. Longwood Gram. S., Huddersfield
 Cowd, A. gm. St. Boniface's Coll., Plymouth
 2Faraday, M.S. Kingswood S., Bath
 Geary, F. s. St. John's Choir S., Upper St. Leonards
 Hersey, H.R. e.f.l. Sutton Park S., Sutton
 Hill, R. d. High Pavement Elem. S., Nottingham
 2Lambert, C.J. Horsmonden School
 Lang, W.J. e.a. Bible Christian Coll., Shebbear
 2Michie, A.E. Selhurst Park Coll., S. Norwood
 2Swinburne, E. People's Coll., Nottingham
 Allan, M. g. High Pavement Elem. S., Nottingham
 Corbett, C.S. e.a.al. Palgrave S., nr. Diss
 Cottam, H. Muudella Hr. Elem. S., Nottingham
 Fish, L. e.a. Tollington Schools, N.
 2Gruby, D. McL. Tudor Hall, Hawkhurst
 2Hudson, A.C. d. Rose Hill High S., Bowden
 2Kelly, E. St. Joseph's Coll., Dumfries
 Mattinson, C.W. a.d. St. Joseph's Coll., Dumfries
 Mills, G.W.C. Eye Gram. S.
 Rapson, L.B. Wadham School, Liskeard
 2Rowley, W.E. d. Boys' High S., Iron Bridge
 Simons, A.G. gm. Towcester School
 Amon, H. e. Rye Gram. School
 Blacklock, W.J. f. St. Joseph's Coll., Dumfries
 Blight, G.E. d. Tutorial S., Penarth
 Bouckley, F.G. Aylwin Coll., Arnside
 2Brown, L. Uckfield Gram. S.
 2Crowe, G.L. Montrose Coll., Streatham Hill
 2Harvey, H. Bethany H., Goudhurst
 2Jones, R. Penistone Gram. S.
 2Kleczynski, R. d. Bethany H., Goudhurst
 2Litchfield, W.F. Horsmonden School
 2McQueen, O.C.B. Balham School, S.W.
 Middleton, B. High Pavement Hr. Elem. S., Nottingham
 Mould, R. h. Gram. S., East Finchley
 2Pryor, R.J. Bible Christian Coll., Shebbear
 Roberts, J.T. e.a.al. Gram. and Coll. S., Carnarvon
 Walmsley, T. Rivington & Blackrod Gram. S., Rivington
 West, S.L. a.al. Wadham School, Liskeard
 Williams, W.C. a. Bible Christian Coll., Shebbear
 Woodin, W.E. Bible Christian Coll., Shebbear

2Coates, G. St. Joseph's Coll., Dumfries
 Cook, W.A. Gram. S., Camelford
 Gratton, D.W. e.f.l. Sutton Park S., Sutton
 Greenhalgh, F. gm. Ruthin Gram. S.
 2Kendrick, F.W. Richmond Hill School
 Riley, W.H. a.al. Revue Council S., Blackpool
 Susman, J. St. John's Coll., Brixton
 Toone, W.A. e. Colebrook H., Bognor
 2Trevena, W.N. Penwerris Gram. S., Falmouth
 Turnbull, A.W. e.a. Wesbourne Rd. Preparatory S., Sheffield
 Williams, H.C. a. Wadham S., Liskeard
 2Bell, T.H. Lancaster Coll., W. Norwood
 2Chatfield, F. People's Coll., Nottingham
 Dangerfield, D.W. Kent House Coll., Anerley
 2Davies, L.G. Tutorial S., Penarth
 2Fairer, B.N. Private tuition
 2Haydon, A. Bible Christian Coll., Shebbear
 Holmes, G.S. The College, Bebington
 2Hunter, W.R. Taunton School
 Hurst, J.F. St. Joseph's Coll., Dumfries
 2Large, L.G. Tudor Hall, Hawkhurst
 2Parsons, W. Warwick House, Southsea
 Stansfield, W.H. Hutton Gram. S.
 Young, O.C. Argyle H., Sunderland

2Appleton, F. Mundella Hr. Elem. S., Nottingham
 Cottee, H. d. People's Coll., Nottingham
 2Crompton, A. Rivington & Blackrod Gram. S., Rivington
 Greene, L.F.A. Grove H., Highgate
 Harrison, F. People's Coll., Nottingham
 Hornby, A.J. W. Richmond H., Handsworth
 King, W.C.H. e. Tollington Schools, N.
 Muntton, F.T.N. Towcester School
 Polkinghorne, H.C. d. Tollington Schools, N.
 Sealy Fisher, R.S. The College, Bebington
 Shipley, T. Brewood Gram. S.
 2Shuttleworth, S.F. Grove H., Highgate
 2Somerville, G.C. Stafford Coll., Forest Hill
 2Stone, W.J. Culham College S.
 2Whitlock, C.M. High S. for Boys, Bromley
 Woodin, A.J. Bible Christian Coll., Shebbear

2Caulkwell, C.A.B. a. People's Coll., Nottingham
 Caunt, H. d. High Pavement Elementary S., Nottingham
 2Chandler, H.V. d. Tudor Hall, Hawkhurst
 2Clogg, A.R. Wadham School, Liskeard
 Colley, E.V. al. Bethany H., Goudhurst
 Field, J.E. Hillmartin Coll., Camden Rd., N.W.
 Gaskin, C.M. e. St. Aloysius' S., Highgate
 Gaze, R.A. Bible Christian Coll., Shebbear
 Gordon, W. Hutton Gram. S.
 Holton, A.W. gm. Towcester School
 2Hustedt, L. People's Coll., Nottingham
 2Knight, F.A. Grove H., Highgate
 Matheson, D.H. Wadham School, Liskeard
 Matthiae, H.C. e. Hillmartin Coll., Camden Rd., N.W.
 2Rees, J.E. Taunton School
 Root, A.C. Lancaster Coll., W. Norwood
 Saunders, R. Grove H., Highgate
 Tregay, L. d. Gram. S., Camelford
 Weight, L.G. Hythe School
 Westall, F.D. e. University S., Southport
 Aikman, E.R. Seaford College
 Bush, M.H. al. Bethany H., Goudhurst
 Day, A.A. Hillmartin Coll., Camden Rd., N.W.
 Eggins, J.J. e. Gram. S., Camelford
 Evans, W. Mundella Hr. Elementary S., Nottingham
 2Green, H. Ulster Provincial S., Lisburn
 2Haynes, F.S. Technical Day S., Walsall
 2Hills, L. Simon Langton S., Canterbury
 2Johns, S. Tavistock Gram. S.
 2Knight, C.B. Montrose Coll., Streatham Hill
 Laine, C. e.f. St. Joseph's Coll., Dumfries
 Macdonald, L. Elton High S., Bristol
 Nicholls, J.G. Penwerris Gram. S.
 2Parkes, W. ch. Bible Christian Coll., Shebbear

Redman, A.L. al. Hutton Gram. S.
 Seager, H.L.B. University S., Rochester
 Sheldon, C.H. a. People's Coll., Nottingham
 Walker, F. al. People's Coll., Nottingham
 Watson, D.A. New Coll., Worthing
 2Webb, W.H. Tettenhall College
 Wilson, C.H. Uckfield Gram. S.
 Wyatt, S. e. St. John's Coll., Brixton
 2Anderson, C. Argyle H., Sunderland
 2Anderson, S. Bethany H., Goudhurst
 2Bennett, W. Paddington Technical Inst. Day S.
 Bonner, B.G. al.g.m. Tollington Schools, N.
 2Brabin, J. St. Joseph's Coll., Dumfries
 Brown, W. e.f. Hutton Gram. S.
 Cann, H. e. Brewood Gram. S.
 Dunstan, H.O. Bible Christian Coll., Shebbear
 Green, G.A. Derwent H., Bamford
 2Harrison, W. Bethany H., Goudhurst
 Loseby, G. Market Bosworth Gram. S.
 Rickeard, G.C. a.al. Wadham School, Liskeard

Scott, J.R. Grove H., Highgate
 Waterhouse, F. Newtown S., Waterford
 Williams, F.C. Tollington Schools, N.
 Connor, R. Newtown S., Waterford
 Goodall, A.M. gm. University S., Southport
 2Harris, L. Paddington Technical Inst. Day S.
 Hornsby, J.R. gm. Towcester School
 Johnson, C.A. e.a. Higher-Grade S., West Bridgford
 2Kane, J. Hawkesyard Coll., Rugeley
 Locks, B. Bethany H., Goudhurst
 Mackintosh, J.C.T. Market Bosworth Gram. S.
 2McMahon, A.J. Catholic Coll. Institute, Manchester
 2Nelder, R.C. Taunton School
 Penketh, G.A. Catholic Coll. Institute, Manchester
 2Simpson, A.G. York Manor School
 2White, J. St. Joseph's Coll., Beulah Hill, S.E.
 2Witthaus, F.J. Tollington Schools, N.
 Young, J.D. Modern S., Newcastle-on-Tyne
 2Adams, F. Bethany H., Goudhurst
 2Anthony, W. Colchester Royal Gram. S.
 2Bedford, C.C. The Academy, Wakefield
 2Blower, B. Private tuition
 2Boffin, S.C. Woodstock Secondary S.
 Britton, W.H. a. Harborough Gram. S., Market Harborough
 2Christie, R. St. Joseph's Coll., Dumfries
 Clough, T. Brewood Gram. S.
 2Gardner, K.A.R. Market Bosworth Gram. S.
 Holland, G. Gram. S., Eccles
 Jones, A.F. Gram. S., Eccles
 2Mills, W.A. Endcliffe Coll., Ranmoor, Sheffield
 Morris, H.H. a. Kent House Coll., Anerley
 2Robinson, H. de R. Yorkshire Society's S., S.E.

2Sandifer, H.C. Balham Gram. S., S.W.
 2Thompson, J.H. St. John's Coll., Brixton
 2Vinter, P.M. Hove College, Hove
 2Way, F.W. King's Coll., Wimbledon
 2Williams, C.B. Oswestry Gram. S.
 2Woodcock, A.N. Wellington H., Hampstead, N.W.
 Barber, H.W. Modern S., Newcastle-on-Tyne
 Bonwick, L. Forest Gate High S. & Comm. Coll.

BOYS, 3RD CLASS, PASS—Continued.
 Bootland, F.R. Gram. S., Eccles
 Dodd, E. al. Bethany H., Goudhurst
 Dowley, F. W. f. Harringay S., Hornsey
 2Gruby, T.W. Tudor Hall, Hawkhurst
 Harrison, G.A. gm. University S., Rochester
 Hempel, K. People's Coll., Nottingham
 Howell, J.E.S. Oswestry Gram. S.
 2Smith, S.H.S. Lucton S., Henfield
 2Toriello, A.C. sp. Hutton Gram. S.
 Tyson, J. Catholic Coll. Institute, Manchester
 Mitchell, F.L. Wilmot St. P.-T. Centre, Ilkeston
 Palmer, A.E. People's Coll., Nottingham
 Yeo, C.C. Middle S., Holsworthy

2Adams, G.W. Epsom College
 Brown, F. g. St. John's Coll., Brixton
 Catlow, R.S. University S., Southport
 2Cousin, J.D. Aylwin Coll., Arnside
 Dooley, T.J. a.al. 34 Victoria Avenue, Newtownards
 Ewen, W.J. St. Joseph's Coll., Dumfries
 Fletcher, J.B. Market Bosworth Gram. S.
 2Fox, R. Rye Gram. School
 Franghiadi, G.P. Lindisfarne Coll., Westcliff-on-Sea
 2Graham, A.W. Hutton Gram. S.
 Guy, R.T. a. Bible Christian Coll., Shebbear
 2Hepburn, C. St. Joseph's Coll., Dumfries
 Hornsby, R.A. Towcester School
 Knighton, T. g.d. Wilmot St. P.-T. Centre, Ilkeston
 Lyne, T.P. Wadham School, Liskeard
 Mitchell, A. Bethany H., Goudhurst
 2O'Erton, P.E.L. St. John's Coll., Grimsargh
 Pain, A. Brewood Gram. S.
 2Pearson, J. Gram. S., Eccles
 Rayner, V.G. Gladstone School, Ramsgate
 2Ridgway, C.R. Tettenhall College
 Smith, R.L. Dagmar H., Hatfield
 Wheeler, E.G. Birkbeck Schools, Kingsland
 White, G.F. Tutorial S., Penarth

Bouckley, J.A. Aylwin Coll., Arnside
 Bree, C.J. St. Aloysius' S., Highgate
 Broady, A. Osborne High S., W. Hartlepool
 Browne, W.J. Rye Gram. S.
 Calem, A. d' O. f. St. George's Coll., Weybridge
 Deacock, A.V. Grove II., Highgate
 2Hilton, R. Rutherford Coll., Newcastle-on-Tyne
 Holmes, C.T. Bible Christian Coll., Shebbear
 2Lainé, L.H. Tollington Schools, N.
 Mackness, A.E. St. John's Coll., Brixton
 Martin, W. University S., Southport
 Naylon, C.N. St. Joseph's Coll., Dumfries
 Newton, E.S. Gram. S., Eccles
 2Nixon, E. Modern S., Newcastle-on-Tyne
 Ruddock, R.B. Modern S., Newcastle-on-Tyne
 Russell, G.W. Private tuition
 2Tims, H.D. Oswestry Gram. School
 Williams, J.M. Ruthin Gram. S.

Barter, R.W. Coll. S., South Terrace, Cork
 Bell, R. Newtown S., Waterford
 Bolt, H.T. Towcester School
 2Brady, A.N. St. John's Coll., Grimsargh
 2Brown, R.D. Clifton H., Uxbridge
 Brown, R.S.F. Harborough Gram. S., Market Harborough
 2Dowling, A. St. Joseph's Acad., Kennington Rd., S.E.
 Gethen, H.M. f.sp. St. George's Coll., Weybridge
 Gregory, G.S. Harlesden College, N.W.
 Hancock, A. High Pavement Elem. S., Nottingham
 Harvey, L. Upton S., Slough
 Mackenzie, M.R.B. a. Clapham Gram. S., S.W.
 2Murdoch, T. Gram. S., Eccles
 2Neale, S.H. The Douglas S., Cheltenham
 2Nicholls, A.W. Technical Day S., Walsall
 Nixon, J.B. Modern S., Newcastle-on-Tyne
 2Redpath, E. Rutherford Coll., Newcastle-on-Tyne
 Stirling, C. Norman H., West Didsbury
 Thorpe, R.H. St. John's Choir S., Upper St. Leonards
 Whitehead, J.C. a. High School, Kirkby Stephen
 2Wickett, T.P. Gram. S., Camelford
 2Abdurahman, I. Private tuition
 Bell, L.E.R. Montrose Coll., Streatham Hill
 Cusworth, J. e. Eton H., Southend-on-Sea
 Davis, C.J.B. Grove H., Highgate
 2Gibson, L.H. The Academy, Wakefield
 Hodges, R.W. St. Aloysius' S., Highgate
 Hopwood, R. University S., Southport
 2Jack, G.G. New College, Cliftonville, Margate
 Lipscombe, F.C. a. Lindisfarne Coll., Westcliff-on-Sea
 Marriot, W.E. High Pavement II. Elem. S., Nottingham
 O'Donnell, E. St. George's Coll., Weybridge
 Oliver, C. Middle S., Holsworthy
 2Rossiter, B. St. George's Coll., Weybridge
 Sherwell, J.G. Summerleaze Coll. S., East Harptree
 Ward, W. The Modern S., East Grinstead

2White, H.S. Bethany H., Goudhurst
 Williams, C.W. St. Aloysius' S., Highgate

2Arnot, P.E. Hazelcroft, Weston-s.-Mare
 Barnaby, A. People's Coll., Nottingham
 2Brewer, H. Tollington Schools, N.
 Briggs, L. People's Coll., Nottingham
 2Cresswell, W.R. Tollington Schools, N.
 Gosling, L.D. St. George's Coll., Weybridge
 2Graves, H. Bible Christian Coll., Shebbear
 2Hatchell, G.W. University S., Southport
 2Haydon, D.B.H. Tettenhall College
 Heaton, W. gm. Rivington & Blackrod Gram. S., Rivington
 Leigh, F. d. University S., Southport
 Lock, B. Tollington Schools, N.
 Newbery, B.C. St. George's Coll., Weybridge
 Williams, J.H. Oswestry Gram. S.

2Bamford, C. bk. St. Joseph's Coll., Dumfries
 2Bentall, A.E. Lindisfarne Coll., Westcliff-on-Sea
 2Blows, F.V. Eton H., Southend-on-Sea
 Brown, T.B. Modern S., Newcastle-on-Tyne
 2Coulson, F.A. Tollington Schools, N.
 Fenton, H.S. Derwent H., Bamford
 Halcomb, F. Elton High S., Bristol
 2Hutson, A. Clifton H., Uxbridge
 Pearson, A. s. Newtown S., Waterford
 2Perkins, J.S. Taunton School
 Smith, V.C.E. Colebrook H., Bognor
 2Starrs, P. St. Joseph's Coll., Dumfries

Birkett, M. g. Aylwin Coll., Arnside
 Callcott, W.N. Hythe School
 2Cleverly, R.H. Westbourne S., Paddington
 2Dean, W.R.M. Gram. S., Eccles
 2Evenden, A.R. The Modern S., East Grinstead
 Fisher, H.M. St. John's Coll., Brixton
 Flood, S.J. Bible Christian Coll., Shebbear
 Foster, W.S. Oswestry Gram. School
 2Fourt, F. Gram. S., Redditch
 Frupp, G.C. University S., Southport
 Glancy, J.H. Catholic Coll. Institute, Manchester
 2Gort, F.N. d. Eastward Ho! Coll., Felixstowe
 2Ingram, A.N. Kingswood S., Bath
 Lund, J.A. Harlesden College, N.W.
 Moore, A.C. Bible Christian Coll., Shebbear
 Nichols, A.E. Lady Hawkins's Gram. S., Kington
 2Phillips, T.S. Oswestry Gram. S.
 2Porter, H.J. Boys' High S., Wareham
 2Powis, F.M. Technical Day S., Walsall
 Smith, T.B. Higher-Grade S. West Bridgford
 Walker, K.M. Eye Gram. S.

Armistead, W. Hutton Gram. S.
 Beckett, R.E. Bethany H., Goudhurst
 Berry, M.R.R. Tollington Schools, N.
 Camm, W. Wilmot St. P.-T. Centre, Ilkeston
 Clements, H. Stoke Public Higher S., Devonport
 Gosling, P.F. Uckfield Gram. S.
 2Halliday, P. Newtown S., Waterford
 Jones, H. Brewood Gram. S.
 Keay, A.C. Tollington Schools, N.
 Kingston, C.J. Towcester School
 Matson, O. The Modern S., East Grinstead
 Radford, S. Ripley Comm. Schools
 Seager, L.G.C. Tollington Schools, N.
 Wharrier, J.A. Tollington Schools, N.
 White, F. St. John's Coll., Brixton

Brabyn, H. Johnston Terrace S., Devonport
 Charlwood, R.A. Catholic Coll. Institute, Manchester
 2Crowe, J.A. Montrose Coll., Streatham Hill
 Delahunty, M.L. Catholic Coll. Institute, Manchester
 2Gerrard, T. Catholic Coll. Institute, Manchester
 2Goldie, C.H. Lancaster Coll., W. Norwood
 Goodrich, J.F. Tollington Schools, N.
 Hancock, E.O. Endcliffe Coll., Ranmoor, Sheffield
 Hobson, E.E. Coll. S., South Terrac, Cork
 2Muras, R.R. Tettenhall College
 Phelan, A. St. Joseph's Coll., Dumfries
 Summersell, G.S. Bethany H., Goudhurst

Abbott, L. Bethany H., Goudhurst
 2Bainbridge, E. Middle Class S., Stalybridge
 2Brown, R.C. Tollington Schools, N.
 Charlesworth, P. Thorne Gram. S.
 2Croker, W. Newtown S., Waterford
 2Glissan, E.B. Tettenhall College
 Harris, R.D. Bible Christian Coll., Shebbear

2Horrocks, H.T. Catholic Coll. Institute, Manchester
 2Irving, J.H.A. Tollington Schools, N.
 Jones, W.O. Brewood Gram. S.
 Mahoney, B. St. Boniface's Coll., Plymouth
 Miller, R.W. Seaford College
 O'Kane, W.J. St. Joseph's Coll., Dumfries
 Riley, A. University S., Southport
 2Shillitoe, R.J. Private tuition
 Splnk, C.A. St. John's Coll., Brixton
 2Taylor, T.H. Epsom College
 2Thompson, H. Skerry's Coll., Newcastle-on-Tyne

2Vernon, W. Tettenhall College
 Walsh, E.L. gm. Salesian S., Battersea
 Whittle, H.B. Boys' High S., Wareham

2Abrahams, S. a. Townley Castle S., Ramsgate
 Brady, C.M. St. Joseph's Coll., Beulah Hill, S.E.
 Burn, J.H. Battle Hill S., Hexham
 Charig, A. Hythe School
 Clark, J.D. Battle Hill S., Hexham
 Curtis, A.H. St. Ronan's High S., Dawlish
 2Delves, N.D. Rye Gram. S.
 Dixon, H. Hutton Gram. S.
 Duckels, W. d. Thorne Gram. S.
 Easton, H.S. The Modern S., East Grinstead
 Ison, J.E. a. Market Bosworth Gram. S.
 Lake, G. al. People's Coll., Nottingham
 Lichtenberg, A. Tollington Schools, N.
 Little, P. McD. St. Mary's Hall, Roath, Cardiff
 Morrell, G. Thorne Gram. S.
 Schoonraad, V.J. Kent House Coll., Anerley
 Stoneley, G.J. a. Market Bosworth Gram. S.
 Tattersall, C. e. The College, Weston-s.-Mare

2Warren-Roberts, C.E. Oswestry Gram. S.
 Wyatt, L. St. John's Coll., Brixton

2Banks, F.W. Bethany H., Goudhurst
 Beeny, F.W. Uckfield Gram. S.
 Biddle, E.M. Montrose Coll., Streatham Hill
 Blades, E.R. Osborne High S., W. Hartlepool
 Brown, J. Hutton Gram. S.
 Carter, H.G. Oswestry Gram. S.
 Hales, H.S. University S., Rochester
 Johnson, W.E. Battle Hill S., Hexham
 Jones, L.O. Lindisfarne Coll., Westcliff-on-Sea
 Kilkenny, A.J. St. Aloysius' S., Highgate
 McGuinness, P.A. St. Joseph's Coll., Dumfries

2Morrison, A. Bethany H., Goudhurst
 Pearce, F.J. Gram. S., Camelford
 2Piggott, T. d. Brent Hill S., Hanwell, W.
 Pryce, J.D. d. Stafford Coll., Forest Hill
 Rundle, J.R. Wadham S., Liskeard
 Tomlinson, J. Thorne Gram. S.
 Waterhouse, G. Newtown S., Waterford
 Weston, A.W. St. Joseph's Coll., Dumfries

2Chambers, G.F. Lady Hawkins's Gram. S., Kington
 Craven, P. University S., Southport
 Croker, R. gm. Newtown S., Waterford
 Cutler, E.R. Culham College S.
 Dowsett, S.G. Taplow Gram. S.
 Fogden, H.L.F. Lindisfarne Coll., Westcliff-on-Sea
 Freeman, A.G. Eye Gram. S.
 Gomez Mora, E. sp. St. Joseph's Coll., Dumfries

2Harrison, T. Hillmartin Coll., Camden Rd., N.W.
 Hellis, A.W. Tollington Schools, N.
 Hinton, A.W. Woodstock Secondary S.
 Mills, W. Gram. S., Newton Abbot
 1Ollington, J.F. Balham School, S.W.
 Pitchford, H. Mundella Hr. Elem. S., Nottingham
 2Shaw, H. a. Longwood Gram. S., Huddersfield
 2Smith, S. Green Park Coll., Bath
 Soilleux, M. Eton H., Southend-on-Sea
 Stephen, J. Norman House S., West Didsbury
 Tetlow, L.M. Private tuition
 Wale, W.A. Grove H., Highgate

Bird, A. Brent Hill S., Hanwell, W.
 Frost, C.R. York Manor School
 Graves, J.N. Aylwin Coll., Arnside
 Tracey, B. St. Boniface's Coll., Plymouth
 2Bagnall, W.K. Eastward Ho! Coll., Felixstowe
 Boase, G.R. Kent House Coll., Anerley
 Booth, F. a. Harborough Gram. S., Market Harborough
 Dunning, R. High S., Kirkby Stephen
 Entwisle, F. Gram. S., Eccles
 Evans, D.E. Higher-Grade S., Porth
 Free, F. St. John's Choir S., Upper St. Leonards
 2Jenkins, W.F.L. Rye Gram. S.
 Klemantaski, B.L. Holmwood H., Hampstead
 Middleton, A.E. Private tuition
 Pickworth, H.B. Market Bosworth Gram. S.
 Suhr, F.G. Ripley Comm. Schools
 Woodward, G.S. Grammar S., Chichester
 Worthington, W.W. Hythe School

Belsham, V.W. Bethany H., Goudhurst
 2Cobden, R. Epsom College
 Davies, H.J. St. Joseph's Coll., Dumfries
 Fletcher, F.H. Derwent H., Bamford
 2Kendall, J. Uckfield Gram. S.
 Long, N.S. Stafford Coll., Forest Hill
 McNamara, F.G. Birkbeck Schools, Kingsland
 Milnc, R. Tutorial S., Penarth
 Petchey, C. Margate Commercial S.
 Rigby, J. Rivington & Blackrod Gram. S., Rivington
 Smalley, W.M. High Pavement Elem. S., Nottingham

2Sturgeon, J. St. Joseph's Acad., Kennington Rd., S.E.
 Swainson, E. Ruthin Gram. S.
 Thomas, G.I. Higher-Grade S., Porth

2Baird, C.C. Brighton Gram. S.
 2Biggers, R.G. Gram. S., East Finchley
 2Biggs, J.H.C. Holt H., Cheshunt
 Binder, A.E.L. Tollington Schools, N.
 Cameron, G.F. St. Peter's Preparatory S., Exmouth
 Crisp, S.J. d. Eye Gram. S.
 2Crouch, E. Sinon Langton S., Canterbury
 Gribbon, C. St. Joseph's Coll., Dumfries
 Kingston, H.C. Stafford Coll., Forest Hill
 Lloyd, G.H. a. Oswestry Gram. S.
 2Morgan, E. Taunton School
 Norburn, W.H.J. Eye Gram. S.

Ashbrook, C.H. Gram. S., Eccles
 Baker, H.W. Minster Gram. S., Southwell
 Chennells, C. Ripley Comm. Schools
 Colley, W.D. Bethany H., Goudhurst
 Currie, P.J. St. Joseph's Coll., Dumfries
 2Drew, J.W. Cuiham College S.
 Ellis, J.A. Silesia Coll., Margate
 2Farrant, S.G. Tudor Hall, Hawkhurst
 2Forder, J.L. Ruthin Gram. S.
 Fullerton, A.J. St. Joseph's Coll., Beulah Hill, S.E.
 Hattrell, J.A. Bethany H., Goudhurst
 Hill, W.J. Stoke Public Higher S., Devonport

2Hodgson, W. Hawkesyard Coll., Rugeley
 Hurwood, V. Scorton Gram. S.
 2Parsons, W. St. Joseph's Coll., Dumfries
 Passby, E.A.S. University S., Rochester
 2Pickup, J.B. Gram. S., Eccles
 Sans, E.W. Harringay S., Hornsey
 Watkins, R.G. Eye Gram. School
 Whalley, A. Farnworth Gram. S.
 Whitehead, J.L. Gram. S., Eccles
 Wilks, E.F. Tollington Schools, N.
 Wood, S. Conv. of Mercy, Clifford, Boston Spa

2Brooke, C. The Academy, Wakefield
 Chatterton, W.O. Gram. S., Eccles
 Crawshaw, F.C. Derwent H., Bamford
 Gadd, W.J. Higher-Grade S., Porth
 Huddleston, M.A. St. Joseph's Coll., Dumfries
 Jameson, L. Battle Hill S., Hexham
 Johnson, V. Bethany H., Goudhurst
 Jones, T.M. Tutorial S., Penarth
 Mason, G.E. Ruthin Gram. S.
 2Million, J.A. f. St. George's Coll., Weybridge
 Nowell, E.H. Florence St. S., Islington, N.
 Owen, H. Gram. & Coll. S., Carnarvon
 2Pattinson, C.F. St. John's Coll., Southend-on-Sea
 Proctor, S. Central Classes, Long Sutton
 2Shacklock, A. Brunt's Technical S., Mansfield

Abel, A.H. Towcester School
 Anderson, E.H. e. New College, Worthing
 2Berry, W.E. Farnworth Gram. S.
 Butler, R.A. Egham High School
 Channell, H.J. Melbourne Coll., Anerley
 Day, A.E. St. George's Coll., Weybridge
 Fletcher, A.E. Derwent H., Bamford
 Johnson, G.S. St. Joseph's Coll., Beulah Hill, S.E.
 Peacock, M.G. Scorton Gram. S.
 2Reynolds, M. St. Joseph's Coll., Dumfries
 Sabran, J. f. St. George's Coll., Weybridge
 Sanders, C.W. Anerley College, S.E.
 2Summer, J.L. Private tuition
 Toner, J. St. Aloysius S., Highgate
 Wells, H.P. Tollington Schools, N.

Bickell, J.H. Tavistock Gram. S.
 Bold, T.L. Gram. S., Eccles
 Buckle, C. Philological S., Southsea
 Burt, L.C. Balham Gram. S., S.W.
 Fairclough, W.G. S. Bristol Coll. S., Coronation Rd., Bristol
 Gill, W.E. Higher-Grade S., Porth
 Gouldstone, R.E. Eye Gram. S.
 2Green, B.J. Lancaster Coll., W. Norwood
 Greville, E.K. deM. Taplow Gram. S.
 Hennriegel, A.M. Tudor Hall, Hawkhurst
 Hudson, D.H. Taplow Gram. S.
 Loughton, H. g. Woodstock Secondary S.
 McKenny, A.R. Tollington Schools, N.
 Oppenheimer, A.G. Lindisfarne Coll., Westcliff-on-Sea
 Poole, E. University S., Southport
 Samuel, E.D. s. Clarendon Coll., Tufnell Park
 Sheridan, C.O. St. Joseph's Coll., Dumfries
 Smith, L. a. University S., Southport
 Stobo, D.C. Modern S., Newcastle-on-Tyne
 Tolley, A.E.S. Culham College S.
 Wheldon, J.T. Hutton Gram. S.
 White, E.H. s. Ruthin Gram. S.

Baker, J. University S., Southport
 Bird, G. Thorne Gram. S.
 2Blount, M. Private tuition
 Campbell, G. Elton High S., Bristol
 Dawson, R. Bethany House, Goudhurst
 2Discombe, A.H. Horsmonden S.
 Durant, R.J.C. Park House S., Blackburn
 Ewen, P.J.J. St. Joseph's Coll., Dumfries
 Gomm, J. Springfield Coll., Acton, W.

BOYS, 3RD CLASS, PASS—Continued.
 Kirkup, W.S. Osborne High S., W. Hartlepool
 2Millership, A. Wilmot St. P.-T. Centre, Ilkeston
 2Preston, J.C. Ulster Provincial S., Lisburn
 Richards, F.M. e. Oswestry Gram. S.
 Roberts, F.G. Harringay S., Hornsey
 2Slater, N.A. d. Higher-Grade S., West Bridgford
 Tinperlake, F.V. Modern S., Eccles
 Wade, L.E. Scorton Gram. S.
 2Adamson, T. Rivington & Blackrod Gram. S., Rivington
 2Barker, F.C. Kingswood S., Bath
 2Binnes, P. Private tuition
 Charlton, F. Culham College S.
 2Clarkson, C.R. Higher-Grade S., West Bridgford
 Coon, F.A.H. Gram. S., Camelford
 Flynn, J. St. Joseph's Coll., Dumfries
 2Hunt, W.C. Catholic Coll. Institute, Manchester
 Lach-Szyrna, D.W. Cranbrook Park S., Ilford
 2Lawrence, C.W. Higher-Grade S., West Bridgford
 Lewin, C.H. Minster Gram. S., Southwell
 2Noble, B. The Academy, Wakefield
 2Olds, W.A. Blundell's S., Tiverton
 Sara, A. Penwerris Gram. S.
 Tombs, J.B.E. Holmwood H., Hampstead
 Watson, S.F. Hillmartin Coll., Camden Rd., N.W.
 Whiting, S.K. Tollington Schools, N.
 Yates, H. Rivington & Blackrod Gram. S., Rivington
 Ashworth, B. Hawkesyard Coll., Rugeley
 Barling, G. Rye Gram. S.
 Bryan, H.V. Catholic Coll. Institute, Manchester
 Cole, F.G. St. Joseph's Coll., Dumfries
 Harnack, E.P. Forest Gate High S. & Comm. Coll.
 Harrison, P.W. Melbourne Coll., Anerley
 2Huxley, J.C. Oswestry Gram. S.
 McAnulty, E.B. St. Joseph's Coll., Dumfries
 Morgan, N.F. Castle Hill S., Ealing
 Murray, H. Forest Gate High S. & Comm. Coll.
 Pollitt, E. Norman House S., West Didsbury
 Sandison, E.W.W. Modern S., Newcastle-on-Tyne
 Sehnan, C. The College, Weston-s.-Mare
 Sharp, C.C. Horsmonden School
 Shaw, R.W.C. Montrose Coll., Streatham Hill
 Silley, H.H. Lindisfarne Coll., Westcliff-on-Sea
 Welch, S.R. Modern S., Newcastle-on-Tyne

Whitridge, H.S. Oswestry Gram. S.
 2Wickens, T.M. Uckfield Gram. S.
 Balderson, H.L.P. New College, Cliftonville, Margate
 2Hicks, J.L. Tettenhall College
 Hollywood, J. Ulster Provincial S., Lisburn
 2Needs, H.W. Boys' High S., Iron Bridge
 Walton, G. Scorton Gram. S.
 Webster, N.S. Gram. S., Birkdale
 Wyatt, W.H. Bible Christian Coll., Shebbear
 2Yardley, E.F.W. Claughton Coll. S., Birkenhead
 Barrett, J.H. St. George's Coll., Weybridge
 2Browning, C. Headland Park S., Plymouth
 Conway, D.W. The College, Weston-s.-Mare
 Dunderdale, A. Seaford College
 Fenwick, W.D. Modern S., Newcastle-on-Tyne
 Griffiths, W.J. Gram. and Coll. S., Carnarvon
 Kendon, F. Bethany H., Goudhurst
 2King, D.W. Hillmartin Coll., Camden Rd., N.W.
 McMenemy, J.A.R. St. Joseph's Coll., Dumfries
 2Moss, V. Tudor Hall, Hawkhurst
 Ridley, H.W. e. The Modern S., East Grinstead
 2Rogerson, H. Wesleyan S., Wainfleet
 Scammell, W.P. Stafford Coll., Forest Hill
 Seed, E.R. Hutton Gram. S.
 Surgeson, A. St. J. Salesian S., Battersea
 Teague, S. University S., Southport
 Worn, W. Eton H., Southend-on-Sea
 2Brown, H.L. Private tuition
 Counsel, H. Gram. S., Eccles
 David, J. St. Boniface's Coll., Plymouth
 Galgey, C. St. Aloysius' S., Highgate
 Lavers, W.R. Hoe Gram. S., Plymouth
 Le Riche, E.M. Park S., Wood Green
 O'Sullivan, B.F. St. Joseph's Coll., Beulah Hill, S.E.
 Ramsay, W.R.K. Lindisfarne Coll., Westcliff-on-Sea
 Richardson, E.T. Montrose Coll., Streatham Hill
 Ruben, L. Townley Castle Schools, Ramsgate
 Truslove, P.S. Bible Christian Coll., Shebbear
 Blakeley, T. Gram. S., Eccles
 Brown, F.P. Towcester School
 2Fisher, J. Stand Gram. S., Whitefield
 Luff, E.C.W. Montrose Coll., Streatham Hill
 Matthews, S.O. Stafford Coll., Forest Hill
 Newton, S. Hutton Gram. S.
 Oakley, T.J. Horsmonden School

2Weale, W.V. Private tuition
 Woodhill, H. Gram. S., Chorlton-cum-Hardy
 Allfree, H. Minster Gram. S., Southwell
 Ashbrook, G.W. Gram. S., Eccles
 Burniston, H.M. Hurst Leigh, Southampton
 2Flanagan, R.S. Gram. S., Eccles
 Freke, T.J. St. Mary's Hall, Roath, Cardiff
 Havers, W.H. Eye Gram. S.
 Lion, R. Townley Castle Schools, Ramsgate
 Scoley, E. Minster Gram. S., Southwell
 Senior, F.B. Gram. S., Eccles
 Waller, L.A. Taplow Gram. S.
 Wood, A.J. Hawkesyard Coll., Rugeley
 Aitken, G.H. Higher-Grade S., West Bridgford
 Bush, D. Hutton Gram. S.
 Essex, W.V. Hawkesyard Coll., Rugeley
 Galsworthy, H.B. Mall Rd. Middle Class S., Hammersmith
 Harper, E.C. Uckfield Gram. S.
 2Ingham, H. Gram. S., Newton Abbot
 Mason, J.W. Tollington Schools, N.
 Matthews, J.J. Taplow Gram. S.
 McDonald, A. St. Joseph's Coll., Dumfries
 Owen, G.L. Aylwin Coll., Arnside
 Pope, L.K. Hurst Leigh, Southampton
 2Shaw, H. Private tuition
 Stapleford, H.W. Silesia Coll., Margate
 Stevenson, T. Intermediate S., Ballyclare
 Wakefield, T.C. Gram. S., Camelford
 Walker, H.W. Minster Gram. S., Southwell
 Watson, W.I.J. Buda Coll., Aldrington, Hove
 Wild, A. Middle Class S., Stalybridge
 Withycombe, T.H. Towcester School
 2Cocker, A.M. Cromwell H., Patricroft
 Jennis, L.E. Taplow Gram. S.
 Kinnell, A. Eastward Ho! Coll., Felixstowe
 Lacy, G.W. University S., Rochester
 Lambert, A.J. Horsmonden School
 Norton, F. Hawkesyard Coll., Rugeley
 2Pearce, E.J. Private tuition
 2Rowell, N.L. Battle Hill S., Hexham
 Turner, E.J. Bible Christian Coll., Shebbear
 2Wahid, A.W.H. Private tuition
 Walford, A.S. Oswestry Gram. S.
 2Walter, H. Bethany H., Goudhurst
 White, J.S. St. George's Coll., Weybridge
 Wickens, R.N. Uckfield Gram. S.
 Aspden, T. University S., Southport
 2Bampton, G.H. Higher-Grade S., West Bridgford
 Beeston, W.J. University S., Southport
 Brown, W.R. Farnworth Gram. S.
 Gerard, A. Wellington H., Hampstead, N.W.
 Nicholls, C. Farnworth Gram. S.
 Ronayne, J.A. Alexandra S., Youghal

2Shaw, H. Farnworth Gram. S.
 Smith, F. St. C. Forest Gate High S. & Comm. Coll.
 Wing, F.T. Bethany H., Goudhurst
 Wood, Cecil Hythe School
 Bell, G.F. Hutton Gram. S.
 Brodie, H. Brewood Gram. S.
 2Chaloner, R.M. Battersea Polytechnic Secondary S.
 Cox, R.H. Eastward Ho! Coll., Felixstowe
 Ellison, I. Townley Castle Schools, Ramsgate
 Hill, S.H. Stoke Public Higher S., Devonport
 Hoctor, W. St. Joseph's Acad., Kennington Rd., S.E.
 Hurndall, C.R. Lindisfarne Coll., Westcliff-on-Sea
 2Malvern, J.F. Private tuition
 McPherson, D.T. Balham Gram. S., S.W.
 2Moore, S.A. Park S., Wood Green
 Boldero, G.S. Eastward Ho! Coll., Felixstowe
 Callcott, E.A.C.H. Hythe School
 Connochie, S.J. St. Aloysius' S., Highgate
 Dayan, J. Townley Castle Schools, Ramsgate
 Palmer, E.C.M. Belgrave Villa, Lee
 Pape, W.G. Rivington & Blackrod Gram. S., Rivington
 Priestley, S. Forest Gate High S. & Comm. Coll.
 Quarmy, H. University S., Southport
 Smith, E. Mundella Hr. Elem. S., Nottingham
 Tate, A.E. Culham College S.
 Hallam, W.S. Minster Gram. S., Southwell
 Harris, C. Derwent H., Bamford
 Lane, H.G. Balham Gram. S., S.W.
 2Martin, F.W. Philological S., Southsea
 Warmisham, R. Gram. S., Eccles
 2Corcoran, W.B. St. George's Coll., Weybridge
 Fothergill, J.H. Private tuition
 2Gillbanks, C.C. Lancaster Coll., W. Norwood
 Healy, H. Kensey, Launceston
 Baker, L.F. St. George's Coll., Weybridge
 Bean, G. Uckfield Gram. S.
 Brown, E. Hutton Gram. S.
 White, H. Brewood Gram. S.
 Greenop, C.D. Montrose Coll., Streatham Hill
 Jones, A.F. Oswestry Gram. S.
 Laurie, E.W. Netley Court, Netley Abbey
 2Phillips, H. Choristers' S., Durham
 Sanders, F.G. Anerley College, S.E.
 Sandford, R.M. Oswestry Gram. S.
 Varley, H.C.J. Tollington Schools, N.
 Wilson, L.L. Forest Gate High S. & Comm. Coll.

CLASS LIST — GIRLS.

(For list of abbreviations, see page 348.)

**FIRST CLASS [or SENIOR].
Honours Division.**

Jacoby, E.G. e.f.s.d. Crouch End High S., Weston Park, N.
 Venndt, A.F.A.O. ge.d. Hill Croft S., Wellingborough

**FIRST CLASS [or SENIOR].
Pass Division.**

Hanson, E.C. f. High S., L'pool
 Spratt-Bowring, I.F. s.f.ge. Private tuition
 Ley, M. d. Private tuition
 Doyle, M.E. s. Friends' S., Mountmellick
 Baker, A.M. f. Private tuition
 Petitpont, M. h.f.
 Conv. of the Assumption, Richmond, Yorks
 Lofts, N. The College, Goudhurst
 West, C.V. d. Upper St. Leonards Ladies' Coll.
 Harbord, F.M. Private tuition
 Berney, H. Brunt's Technical S., Mansfield
 Cooper, J. f.
 Conv. of the Assumption, Richmond, Yorks
 Laurence, D. f. North Kensington Coll., S.W.
 Parker, M.A. Oxford H., St. Leonards-on-Sea
 Yardley, M.A.R. Claughton Coll., Birkenhead

Halsall, D. Private tuition
 Tharp, M. Pupil-Teacher Centre, Walsall
 Locke, C.N. d. The Coll., Goudhurst
 Millen, I.K. Gordonville Ladies' S., Coleraine
 Maxted, D.M. Hughenden High S., Bexhill-on-Sea
 Rudwick, E.M. d. Stafford H., Nightingale Lane, S.W.
 Smith, N. Pupil-Teacher Centre, Walsall
 Taylor, E.M. The Rectory, Failsworth, Manchester
 Fox, E. Pupil-Teacher Centre, Walsall
 Riley, E.B. The College, Goudhurst
 Jefferson, M. Private tuition
 Linton, I. Bitterne H., Bitterne

**SECOND CLASS [or JUNIOR].
Honours Division.**

Best, L.A. g.a.f.d.sh. Private tuition
 Schneider, N.V. s.h.g.f.d. Skimmers' Company's S., Stamford Hill
 Richards, F. s.d. Advanced Elem. Girls' S., Merthyr Tydfil
 Clarke, N. d. 13 Strandmillis Rd., Belfast
 Dix, E.R. ma.ch. Technical S., St. George, Bristol

Davies, E. Brunt's Technical S., Mansfield
 Dixon, M.H. d. Skimmers' Company's S., Stamford Hill
 Kelly, E. ch.d. St. Augustine's Secondary S., Darlington
 McKeag, E.M. a.d. The Friends' S., Mountmellick
 Solomon, A. a.d. Skimmers' Company's S., Stamford Hill
 Seegar, M. Skimmers' Company's S., Stamford Hill
 Pollitt, M. Advanced Elem. Girls' S., Merthyr Tydfil
 Beynon, F.E. d. Advanced Elem. Girls' S., Merthyr Tydfil
 Best, D. a.ma. Rutherford Coll., Newcastle-on-Tyne
 Palmer, L.E.A. s.mu. Rye Collegiate S.
 Edwards, L. a. Rutherford Coll., Newcastle-on-Tyne
 Hart, M. s.a. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Heard, A.M. ma. Technical S., St. George, Bristol
 Moloney, N. St. Augustine's Secondary S., Darlington
 Nash, E.M. a.d. Skimmers' Company's S., Stamford Hill
 Oakley, V. St. Mary's Couv., Middlesborough

**SECOND CLASS [or JUNIOR].
Pass Division.**

1Richardson, E.K.f. Private tuition
 1Walpole, R. St. Katharine's Coll., Hammersmith
 1Walkinshaw, E. Rutherford Coll., Newcastle-on-Tyne
 Cole, L. Skimmers' Company's S., Stamford Hill
 Atkinson, C.D. s. Victoria College, Belfast
 1Finlay, E. Private tuition
 White, M. s.d. The Friends' S., Mountmellick
 Langlois, J. f. The Convent, Seaford
 1Norris, E.M. Private tuition
 1Bromwich, A. Pupil-Teacher Centre, Walsall
 Packer, C. d. Brunt's Technical S., Mansfield
 Manly, L.G. a. Skimmers' Company's S., Stamford Hill
 Dobson, E. s. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Hughesdon, M. h.d. Clark's College S., Brixton Hill, S.W.
 Nicholls, A.W. do. Clark's College S., Brixton Hill, S.W.
 Smithers, G. Northern Poly. Day S., Holloway Rd., N.
 Gillam, I.M. s. Mountside High S., Hastings
 1Hughes, D.E. Paddington Technical Inst. Dav S.

GIRLS, 2ND CLASS, PASS—Continued.
 Williams, R.J. Advanced Elem. Girls' S., Merthyr Tydfil
 Caldwell, M. a. Gordonville Ladies' S., Coleraine
 Fitzgerald, M. ch. St. Augustine's Secondary S., Darlington
 Griffiths, G. Advanced Elem. Girls' S., Merthyr Tydfil
 Snelson, L. High S., Leek
 Wright, T. d. St. Mary's Conv., Middlesborough
 Davies, A.J. a. Higher-Grade S., Porth
 Holland, S. d. Mundella Hr. Elem. S., Nottingham
 Matthews, E.W. a. Skinners' Company's S., Stamford Hill
 Piekup, A. Conv. Hr.-Grade S., Blackburn
 Beales, A.M. Pengwern Coll., Cheltenham
 Harman, E.R. Carden Girls' S., Peekham Rye
 Metcalfe, I. Private tuition
 Tibbitts, E.E. d. Skinners' Company's S., Stamford Hill
 Young, M.M. Private tuition
 Clayton, M. R.C. Pupil-Teachers' Centre, Blackburn
 Kelly, K. ch. St. Augustine's Secondary S., Darlington
 Tindall, E.M. d. Upper St. Leonards Ladies' Coll.
 Haughton, A.E. The Friends' S., Mountmellick
 O'Connell, J. St. Augustine's Secondary S., Darlington
 Thomas, F.V. Northern Polyt. Day S., Holloway Rd., N.
 Atherton, M. a. Northern Polyt. Day S., Holloway Rd., N.
 Wainwright, M. a. Secondary S., Stalybridge
 Darling, J. s.g.d. Clark's College S., Brixton Hill, S.W.
 O'Hagan, R. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Morfee, W.L. Northern Polyt. Day S., Holloway Rd., N.
 Egan, K. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Potter, L. a. Northern Polyt. Day S., Holloway Rd., N.
 Haseltine, M. d. St. Bernard's S., Southsea
 Sawyer, G. St. Joseph's, Birkdale
 Skidmore, L.M. Technical S., St. George, Bristol
 Abbott, M. Higher-Grade S., Lowther St., Carlisle
 Davis, F.M. The College, Goudhurst
 Dixon, F.R. Clark's College S., Brixton Hill, S.W.
 Wyde, G. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Franks, M.M. d. Wellington S., Deal
 Mears, G.H. Skinners' Company's S., Stamford Hill
 Cox, M. d. George Dixon Secondary S., Birmingham
 Edwards, B.E. Skinners' Company's S., Stamford Hill
 Hortin, E.H. George Dixon Secondary S., Birmingham
 Irons, M.A. do. Grey Coat Hospital, Westminster, S.W.
 Law, J. a. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Pether, L.M. Waldron House, Havant
 Richardson, C. a.d. R.C. Pupil-Teachers' Centre, Blaekburn
 Bull, H.M.E. Private tuition
 Chalmers, M.E.J. s. St. Kilda's Coll., Bristol
 Ede, R.M. a. Northern Polyt. Day S., Holloway Rd., N.
 Foster, I. Ladies' Coll. S., Tavistock
 Mowenstein, E.M. Blagdon, Eastbourne
 Meginn, A. s.d. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Shelton, G. s. Upper St. Leonards Ladies' Coll.
 Draper, G.E. Skinners' Company's S., Stamford Hill
 Harland, K. d. Skinners' Company's S., Stamford Hill
 Smith, L. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Webb, S.S. s. The Friends' S., Mountmellick
 Apthorp, G.I.F. s. Wincham Hall Coll., Lostoek Gramam
 Cole, A.I. s. St. Kilda's Coll., Bristol
 West, G.M. Kilmar Coll., Liskeard
 White, G.C. s. The Friends' S., Mountmellick
 Davies, G.C. d. Windyeroft Coll., W. Hampstead, N.W.
 Davies, M. s. Gorphwysfa, Old Colwyn
 Griffiths, M.J. s. University S., Rochester
 Kiernan, M. d. R.C. Pupil-Teachers' Centre, Blaekburn
 Zwart, A. Skinners' Company's S., Stamford Hill

Barrett, L. Notre Dame Coll. S., Leeds
 Bevern, I.M. Upper St. Leonards Ladies' Coll.
 Godden, M.V. Advanced Elem. Girls' S., Merthyr Tydfil
 Payling, F.M. d. Brunt's Technical S., Mansfield
 Dobie, I. Hr.-Grade S., Lowther St., Carlisle
 Earnshaw, A.V. Girls' High S., Cheadle
 Finney, A.E. s. Convent School, Banagher
 Firth, K.E. mu. Alley Park, West Dulwich
 Colgate, W.E. Carden Girls' S., Peekham Rye
 Hodges, D.M. The College, Goudhurst
 Tilden-Smith, E.N. f. Private tuition
 White, M.E. Skinners' Company's S., Stamford Hill
 Widdell, L. Lansdowne Coll., Lansdowne Rd., W.
 Dimes, P.E. Clark's College S., Brixton Hill, S.W.
 Gibson, J.M. 4 Ashwood Villas, Leeds
 Johnson, P. St. Augustine's Secondary S., Darlington
 Reid, F.C. a. Skinners' Company's S., Stamford Hill
 Rorke, C. gm. Rutherford Coll., Newcastle-on-Tyne
 Southam, S.M. ch. Gartlet, Watford
 Steel, G.H. d. Upper St. Leonards Ladies' Coll.
 Swan, E.A. Geneva H., Brondesbury, N.W.
 Adair, C.A. Victoria Coll., Belfast
 Smith, E. Avenue S., Leigh
 Westgarth, A. a. St. Mary's Conv., Middlesborough
 Cogan, A. Notre Dame Coll. S., Leeds
 Dipper, H. Brunt's Technical S., Mansfield
 Faulkner, M. Central Classes, Long Sutton
 Kerr, C.J.I. Victoria S., Kingstown, Co. Dublin
 McDonnell, C. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 McWilliam, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Pike, E.B. f.l. Private tuition
 Burrows, E.H. h. Wilmot St., P.-T. Centre, Ilkeston
 Gray, I.M. d. Ten Mile Villa, Chigwell
 Sibson, R.M. Higher-Grade S., Lowther St., Carlisle
 Sutherland, M.A.G. Leigh Bank Coll., Leamington Spa
 Wattson, H.G.S. Skinners' Company's S., Stamford Hill
 Bowles, C.A. 29 South Terrace, Cork
 Jackson, M.L. d. Upper St. Leonards Ladies' Coll.
 Clenerly, L.E. Skinners' Company's S., Stamford Hill
 Coulthard, F.I. Brunswiek H., Carlisle
 Hammond, N.E. a.d. Private tuition
 Hope, E.A.M. s. Private tuition
 Trull, E. S. Kilda's Coll., Bristol
 Welford, N. a. St. Mary's Conv., Middlesborough
 Bairsto, L. d. Aintree High S.
 Bradbury, M. a. Secondary S., Stalybridge
 Dennis, G.O. d. The College, Goudhurst
 Smith, B. Private tuition
 Wilson, R.M. Victoria Coll., Belfast
 Le May, C.E. d. St. John's H., Felixstowe
 Mullane, M. St. Augustine's Secondary S., Darlington
 Norman, S.M. The College, Devizes
 Ward, L. High S., Leek
 Clarkson, I. St. Augustine's Secondary S., Darlington
 Fox, A.M. Milton H., Atherstone
 Gibbings, L.M. Lynton H., Portsmouth
 Stoker, R. Notre Dame Coll. S., Leeds
 Wheway, F.G. Milton H., Atherstone
 Cradoek, K. s. Dulwich Hamlet S., S.E.
 Moger, F.E. Central Council S., Weston-s.-Mare
 Murphy, M.C. Notre Dame Coll. S., Leeds
 Neaverson, F. Central Classes, Long Sutton
 Bell, E.B. ch.d. High S., Tunbridge Wells
 Brooks, D. Conv. Higher-Grade S., Blaekburn
 Goodridge, G. High S., Wordsworth Av., Cardiff
 Hodgkinson, M.d. Milton Lodge, Fleetwood
 Keable, M.G. a.d. Skinners' Company's S., Stamford Hill
 Miehell, M.A. Baker Street High S., N.W.
 Myrseough, M. g. R.C. Pupil-Teachers' Centre, Blaekburn
 Protheroe, A. a.d. Higher-Grade S., Porth
 Ridge, M. High S., The Green, Twickenham
 Skillcorn, A. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Rowland, C. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Sears, E.M. The College, Goudhurst

Adamson, E.F. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Claypole, F.E. Rhianva Coll., Hunstanton
 Flisher, E.M. Rye Collegiate S.
 Jolley, C. R.C. Practising S., Mt. Pleasant, L'pool
 Jones, L. Mundella Hr. Elem. S., Nottingham
 Kendon, E.W. The College, Goudhurst
 Laing, M. Brunswick H., Carlisle
 Straw, M.H. Skinners' Company's S., Stamford Hill
 Lesbirel, M.A. s. Kilmar Coll., Liskeard
 McDonough, J. St. Mary's Conv., Bruff
 Fugh, E. Boughrood H., Brecon
 Stubble, L. Central Classes, Long Sutton
 Williams, A.J. Advanced Elem. Girls' S., Merthyr Tydfil
 Bieber, G.I. s. University S., Rochester
 Clare, M.E. s.h. St. Margaret's, Cardiff
 Clarkson, M. Notre Dame Coll. S., Leeds
 Fisher, W.F. St. Kilda's Coll., Bristol
 Gibson, E.A. The Friends' S., Mountmellick
 Holiday, C. s. Higher-Grade S., Lowther St., Carlisle
 Ibbotson, J. Conv. Higher-Grade S., Blackburn
 Inwood, B.F. George Dixon Secondary S., Birmingham
 Molyneux, M. R.C. Practising S., Mt. Pleasant, L'pool
 Mortimer, E.M. Paddington Technical Institute Day S.
 Bott, A.J. Southlands College Girls' S., Battersea, S.W.
 Doubleday, L.V. The College, Goudhurst
 Harvey, R.B.L. Private tuition
 Geall, A. Dorking British S.
 Hawkesworth, M.E. Higher Grade S., Lowther St., Carlisle
 Hogan, J. Notre Dame Coll. S., Leeds
 Laing, W. High S. for Girls, Aberdeen
 Ruddy, A. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Yates, M.S. ge. Private tuition
 Clarke, D. Japonica H., Exmouth
 James, M. Paddington Technical Institute Day S.
 Maddoeks, C. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Down, K.T. d. Private tuition
 Gough, C. R.C. Pupil-Teachers' Centre, Blaekburn
 Heaton, E.M. St. Paul's, Standishgate, Wigan
 Reardon, M.T. St. Mary's Conv., Middlesborough
 Burke, E. St. Mary's Conv., Bruff
 Gladwin, M. d. St. Katharine's Coll., Hammersmith
 Howard, N.W. Pengwern Coll., Cheltenham
 Smart, M. Private tuition
 Woodhead, M.E. Skinners' Company's S., Stamford Hill
 Hardy, E.F. Northern Polyt. Day S., Holloway Rd., N.
 Lawson, F.M. Ashley High S., Long Sutton
 McCarthy, V. d. St. Nicholas S., Liverpool
 Nunn, M.I. d. St. John's H., Felixstowe
 Richards, L.H. Skerry's Coll., Liverpool
 Stancliffe, D.G. Northern Polyt. Day S., Holloway Rd., N.
 Forster, M. Rutherford Coll., Newcastle-on-Tyne
 Mills, M.C. Private tuition
 Osborne, I.A.B. Technical S., St. George, Bristol
 Sanders, C. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Wilson, D.L. 13 Strandmillis Road, Belfast
 Woolcock, E.D. d. Leigh Bank Coll., Leamington Spa
 Connor, W. Hr.-Grade S., Lowther St., Carlisle
 Kidd, G.E. s. North Park Coll., Croydon
 McDonnell, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Raymond, J. J. St. Oswald's S., Rhyl
 Bushby, C. Hr.-Grade S., Lowther St., Carlisle
 Gurtner, A. Conv. of the Sacred Heart, Maidstone
 Keleh, F. End. High S., Norwiel Av., Bournemouth
 Newstead, O.S.H. Wolvershill, Harrogate
 Dale, A. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Harkin, S. s. St. Peter's Girls' S., Liverpool
 Hunt, G. a. Blagdon, Eastbourne
 Read, M.D. Skinners' Company's S., Stamford Hill
 Watt, C.H.F. High S. for Girls, Aberdeen
 Kendall, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Clarke, D.F.E. Coston Park S., Levenshulme
 Grimsditch, M.A. 26 Trinity Road, Bootle

Hatfield, W. d. Brunt's Technical S., Mansfield
 Hough, E. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Jackson, F. Rhianva Coll., Hunstanton
 O'Brien, S. R.C. Practising S., Mt. Pleasant, L'pool
 Scott, W.H. Wineham Hall Coll., Lostoek Gramam
 Stokes, D.M. Brunswiek H., Carlisle
 Verwey, E.F. de la F. African Training Inst., Colwyn Bay
 Fawkes, A. Notre Dame Coll. S., Leeds
 Heath, W.M. Wilmot St. P.-T. Centre, Ilkeston
 Ivens, A.I. Technical S., St. George, Bristol
 Shortridge, A. Rutherford Coll., Newcastle-on-Tyne
 Steel, F.E. a. Congregational S., Hopton, Mirfield
 Bowen, E. mu. Skinners' Company's S., Stamford Hill
 Hudner, A. St. Mary's Conv., Bruff
 Morris, M.F. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Bixton, E.E. Skinners' Company's S., Stamford Hill
 Eeroyd, M. d. Abbey H., Selby
 Garbutt, A.E. West View, Alstonefield
 Miles, H. Higher-Grade S., Lowther St., Carlisle
 Minahan, D. St. Mary's Conv., Bruff
 Buekley, J. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Fiquet, J.M. French Conv., Newhaven
 Hasset, B.M. a. Notre Dame Coll. S., Leeds
 Parker, M.W.F. Girls' Secondary S., Portsmouth
 Pyner, G. Mundella Hr. Elem. S., Nottingham
 Robinson, M. Private tuition
 Panton, P.I. Pengwern Coll., Cheltenham
 Preston, A. Private tuition
 Allan, E. Dulwich Hamlet S., S.E.
 Twigg, C. Blagdon, Eastbourne
 Campbell, A.L. Brookvale Coll. S., Belfast
 Maeneilage, A. Private tuition
 Millns, F. Central Classes, Long Sutton
 Paul, E.B. Technical S., St. George, Bristol
 Bruce, M.M. d. The College, Goudhurst
 Cottam, T. R.C. P.-T. Centre, Blaekburn
 O'Halloran, K. Notre Dame Coll. S., Leeds
 Aldrich, G.L. Entry H., Diss
 Butt, A.M. Wilmot St. P.-T. Centre, Ilkeston
 Cobb, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Fitzmaurice, D. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Leeson, E.M. d. Trevor Hill H., Newry
 McKee, M. Notre Dame Coll. S., Everton Valley, L'pool
 Oldham, E.E. The Tower, Prestwich
 Wood, A. Longfleet High S., Poole
 Wordsworth, C. Notre Dame Coll. S., Leeds
 Bevern, G.M. d. Upper St. Leonards Ladies' Coll.
 Charlton, A.A. Higher-Grade S., Lowther St., Carlisle
 Gunning, I. Southview H., Clevedon
 Keay, C.J.M. d. Durham H., Crouch Hill, N.
 Markesky, A. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 McCutcheon, A. Ladies S., Newtownards
 Pryce, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Roche, J. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Shields, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool

**THIRD CLASS.
Honours Division.**

Ridel, M.A.M. h.a.d.f. Kenilworth S., Ealing
 Kensole, G. s.e.g.a.d. Advanced Elem. Girls' S., Merthyr Tydfil
 Wells-Thatcher, C.M. g.mu. Llanberis, Ealing, W.
 Pearson, M.H. Market Bosworth Gram. S.
 Cummins, E. s.e.a.d. Skinners' Company's S., Stamford Hill
 Hope, J.L.R.A. s.e.h.g.f. 21 Oakley St., Chelsea
 Henderson, M. d. High Pavement Hr. Elem. S., Nottingham
 Jacob, S.H. s.a.l. Friends' S., Mountmellick
 Andrews, M.A. e.a.f. Victoria Coll., Belfast
 Douglas, M.I.e.a.d. Friends' S., Mountmellick
 Jackson, V. a. High Pavement Hr. Elem. S., Nottingham
 Jones, G. s.g.a.d. Advanced Elem. Girls' S., Merthyr Tydfil
 Kelly, M.J. e.a.f. Loreto Conv., Hulme
 Vaughan, D. s.e.f. Vicarage S., Clapham Common, S.W.

GIRLS, 3RD CLASS, HONS.—Continued.

Boyd, M.H. *e.g.m.* Victoria Coll., Belfast
 Keogh, P.D. *a.* Loreto Conv., Hulme
 Williams, T. *s.e.g.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 Marshall, H. *d.*
 High Pavement Hr. Elem. S., Nottingham
 Thiel, H. *e.g.e.d.* Tunbridge Wells High S.
 Barwell, E. *e.d.l.*
 Central Classes, Long Sutton
 Davies, E.F. *e.g.d.l.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 Bennett, S.E. *e.d.* Friends' S., Mountmellick
 Kensole, I.M. *s.g.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 Steel, M.A. *e.f.*
 Skippers' Company's S., Stamford Hill
 Weir, M.B. *s.h.g.f.* Private tuition
 Grigaitis, S. *e.f.d.* Loreto Conv., Hulme
 Jennison, A.
 High Pavement Hr. Elem. S., Nottingham
 Wechsler, S. *e.a.*
 Skippers' Company's S., Stamford Hill
 Freeman, A. Friends' S., Mountmellick
 Harris, M.A. *K.d.* Kent House Coll., Anerley
 Wormald, E.M. *e.d.* Loreto Conv., Hulme
 Evans, C. *e.f.* Loreto Conv., Hulme
 Horley, D.L. *s.* The Conv., Bexley Rd., Erith
 Janes, K.A. *e.* Boughrood H., Brecon
 Conolly, K.H. *e.a.*
 Vernon H., Higher Broughton
 Mills, K.E.H. *e.* Clifton Lodge, Lee, S.E.
 Noon, M.F.
 High Pavement Hr. Elem. S., Nottingham
 Rayner, E.W.
 Vicarage S., Clapham Common, S.W.

Northage, N.
 High Pavement Hr. Elem. S., Nottingham
 Waldoek, V.A. *e.a.*
 Skippers' Company's S., Stamford Hill
 Evans, T.G.
 Advanced Elem. Girls' S., Merthyr Tydfil
 McCaw, F.E. *a.*
 Knock Intermediate S., Belfast
 Whalley, D.E. St. George's H., Wimbledon
 Whittle, G.A. *e.g.* Holmeroft S., Bromley
 Higgins, N. *e.* Loreto Conv., Hulme
 Hobday, M. *e.*
 Skippers' Company's S., Stamford Hill
 Holthouse, D. *g.d.* Mundella S., Nottingham
 Knight, M.O. *e.*
 Upper St. Leonards Ladies' Coll.
 Millar, J. *e.* Pengwern Coll., Cheltenham
 Morgan, M.A. *s.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 Nevin, W.M. *e.* Convent S., Banagher
 Porter, A.M. Victoria Coll., Belfast
 Archer, V.F.W. *e.f.*
 Skippers' Company's S., Stamford Hill
 Hogan, D. *s.e.* St. Mary's Conv., Bruff
 Nethery, D.E.
 St. Winifred's S., Southampton
 Seobie, R.E. *e.f.* Private tuition
 Turner, M.B. *e.a.a.l.*
 Skippers' Company's S., Stamford Hill
 Clark, D. *g.f.* Holmeroft S., Bromley
 Coates, I.V. *s.e.f.* Victoria Coll., Belfast
 Poccock, D. *s.e.d.*
 Stratford Abbey Coll., Stroud

THIRD CLASS.
 Pass Division.

2Hawker, N. *d.*
 Mountside High S., Hastings
 2Lewis, G.M. *d.* Gartlet, Watford
 2Poole, G.E. Ascham H., Clifton, Bristol
 2Reynolds, A.L.
 Northern Polyt. Day S., Holloway Rd., N.
 2Williams, A.K.
 Advanced Elem. Girls' S., Merthyr Tydfil
 2Denner, F.B.
 Advanced Elem. Girls' S., Merthyr Tydfil
 2Harvey, B. Linwood S., Altrincham
 2Holloway, A.
 Keble Memorial Girls' S., Harlesden
 2Walker, A. *d.mu.* Malvern S., Leeds
 2Serrure, A. *f.* The Convent, Seaford
 2Simmons, J.
 R.C. Pupil-Teachers' Centre, Blackburn
 2Jennings, W.C.M.
 Leigh Bank Coll., Leamington Spa
 2Jones, U.M.D. *s.* Gorphwysfa, Old Colwyn
 2Boland, J.
 Convent Hr.-Grade S., Blackburn
 2Broadbent, E.M. Broughton S., Lewes
 2Okins, M.D.
 Keble Memorial Girls' S., Harlesden
 2Barker, H.F. Malvern S., Leeds
 2Brown, M.E. Fulford Fields H., York
 2Holland, B.M. Beaulien S., Parkgate
 2Reddy, K.J. Convent S., Banagher
 2Jewson, F.M.
 Battersea Polyt. Girls' Sec. Day S., S.W.
 2McAllister, S.E.
 St. Paul's, Standishgate, Wigan
 2Downey, W.W. Princess Gardens S., Belfast
 2Moody, M. Gordonville Ladies' S., Coleraine
 2Parks, I.D. Home Glen, Twickenham

2Fellows, R.
 Leigh Bank Coll., Leamington Spa
 2Luck, E. Polam Hall, Darlington
 2Patterson, R.A. Aintree High S.
 2Henry, M.E. *d.* Private tuition
 2Gostelow, M.E. Rhianva Coll., Hunstanton
 2Hughes, M.M. Linwood S., Altrincham
 2Maloney, M. Notre Dame Coll. S., Leeds
 2Murphy, L. *eh.*
 St. Augustine's Secondary S., Darlington
 Tinker, E. *d.*
 Longwood Gram. S., Huddersfield
 2Madden, E.E. Victoria Coll., Belfast
 2Riley, M. Convent Hr.-Grade S., Blackburn
 2Scott, I.M. Private tuition
 2Donnelly, N.
 Mundella Hr. Elem. S., Nottingham
 Houlton, S.D. *s.e.f.* Private tuition
 Knight, S.A. *e.f.d.*
 Upper St. Leonards Ladies' Coll.
 2Rennie, I.L. *s.* Clarendon H., Reigate
 Taggart, S. *a.* Victoria Coll., Belfast
 Barry, B.M. Alwyne Coll., Canonbury, N.
 Clarke, D.M. *e.g.* St. Margaret's, Cardiff
 Daly, M. *a.* St. Mary's Conv., Bruff
 Davies, E. *e.*
 Skippers' Company's S., Stamford Hill
 Edwards, C. *s.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 Golland, D.E. *e.*
 Skippers' Company's S., Stamford Hill
 Mitchell, D.M. *s.e.*
 Upper St. Leonards Ladies' Coll.
 2O'Neill, E. Notre Dame Coll. S., Leeds

Ayres, M. *s.g.*
 Brook Green Girls' Coll., Aynhoe Rd., W.
 Delisle, J.T. *e.f.* Private tuition
 Dennis, M. *e.*
 Skippers' Company's S., Stamford Hill
 Doggrell, S.A. *g.*
 Lithend Girls' S., Bishop's Waltham
 2Kendon, G.M. The College, Goudhurst
 2Lovell, M.A.
 Technical S., St. George, Bristol, E.
 McFarlane, M.U.
 Holmwood Coll., Westcliff-on-Sea
 Pearce, H.E. *e.* Quarry H., Guildford
 Roberts, F.R. Llanfair H., Kington
 Rodgers, E. *e.* Ulster Provincials, Lisburn
 2Scarre, M.
 St. Augustine's Secondary S., Darlington
 Bracey, I.F. *e.*
 Evering High S., Stoke Newington, N.
 Nathan, M.L. *e.f.*
 Cambridge H., Church End, Finchley
 2Porter, M. Victoria Coll., Belfast
 2Sudworth, M. Eldon Coll., Thornton Heath
 2Warner, W. Brunt's Technical S., Mansfield
 Wilson, D. *g.* Mundella S., Nottingham
 2Wilson, Emma Notre Dame Coll. S., Leeds

2Canning, H.T. Private tuition
 FitzSimons, M.J. Conv. S., Banagher
 Fooks, W.
 Ravenscourt H., Ravenscourt Pk., W.
 Foster, C. *s.* High S., Wells, Som.
 2Gosling, E. Ladies' Coll. S., Tavistock
 Hopewell, G.C.
 Mundella Hr. Elem. S., Nottingham
 Lawrence, H.J. *s.e.g.*
 Oldfield Pk. Private S., Bath
 2Malone, E.
 Convent Hr.-Grade S., Blackburn
 McLeod, H. Lynton H., Portsmouth
 2North, A.E.
 Technical S., St. George, Bristol, E.
 Parker, A.E. Temple Square S., Aylesbury
 Schmidt, M. *f.*
 Notre Dame High S., Battersea Pk. Rd., S.W.
 Sibley, C. *f.*
 Conv. of the Sacred Heart, Maidstone
 Tallis, C. *s.e.* Stratford Abbey Coll., Stroud
 Wrigley, L.B. *s.*
 Queen's S., Cliftonville, Margate
 2Arthur, I. Dulwich Hamlet S., S.E.
 Belchambers, A.B.
 Windycroft Coll., W. Hampstead, N.W.
 2Bennett, E.B.
 St. Anne's Coll., St. Anne's-on-Sea
 Hanna, B.A. *e.f.* 29 South Terrace, Cork
 Lambert, W.M. *e.* Tutorial S., Penarth
 McDermott, M. *s.e.h.g.*
 Conv. of the Assumption, Richmond, Yorks
 Reeves, A. *e.* The Close, Dyke Rd., Brighton
 Stevens, J.E. The Magnolias, Southsea
 2Stewart, M.G. Private tuition
 2Wynns, L. Notre Dame Coll. S., Leeds
 2Gold, I. Orton Coll., Coleshill
 Guinlan, B. St. Mary's Conv., Bruff
 Lucas, E.M. *a.* Private tuition
 Mason, V. *g.* Belvedere, Birkdale
 2McGrath, E.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Nevett, D.R. *f.* Clifton Lodge, Lee
 Sheely, M. St. Mary's Conv., Bruff
 Steere, D.F. Kent House Coll., Anerley
 Tidd-Pratt, N. Llanfair H., Kington
 2Woolley, M.E.
 Wilmot St. P.-T. Centre, Ilkeston
 Young, E.M. *e.*
 Skippers' Company's S., Stamford Hill
 Baker, W. Towcester School
 Billson, H.M. Devon Lodge, Wyld Green

2Galvin, M.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 2Hallifax, J. Central Classes, Long Sutton
 2Hardman, E. *d.*
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Heel, D.C. *e.*
 Skippers' Company's S., Stamford Hill
 2Keith, M.E.
 Rutherford Coll., Newcastle-on-Tyne
 2Lomas, O.
 Wincham Hall Coll., Lostock Gralam
 2McDonnell, M.J.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 2McVea, F.V. Brookvale Coll. S., Belfast
 Read, M. *e.f.*
 Notre Dame High S., Battersea Pk. Rd., S.W.
 2Regan, A.
 St. Augustine's Secondary S., Darlington
 2Rigby, E.O. Trevor Hill House, Newry
 Shelton, M.I.
 Mundella Hr. Elem. S., Nottingham
 Welsh, D.M. High S., Wells, Som.
 2Westaway, A.W. Home Park S., Stoke
 Wood, A.D. *e.*
 Skippers' Company's S., Stamford Hill

2Beck, M.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 2Clayden, E.J.
 Bitterne H., Bitterne Post Office
 Connor, A. St. Mary's R.C. Girls' S., L'pool
 2Doyle, N. St. Mary's Conv. S., York
 2Driscoll, E.
 St. Augustine's Secondary S., Darlington
 2Farwell, M.G.
 High Trees S., Bournemouth
 2Gray, S.J. Private tuition
 Kyle, M.C. Temple Square S., Aylesbury
 Law, A.K. *gm.*
 Gordonville Ladies' S., Coleraine
 Light, E.M. High Trees S., Bournemouth
 McLeod, M.J.G. Rathgar, Dublin
 2Miller, E. St. Stephen's Coll., Hounslow
 2Needham, A.
 Notre Dame Coll. S., Everton Valley, L'pool
 Prior, M. *e.*
 R.C. Practising S., Mt. Pleasant, L'pool
 2Reddish, F.M.
 Wilmot St. P.-T. Centre, Ilkeston
 Rowlands, G. *s.*
 R.C. Practising S., Mt. Pleasant, L'pool
 Williams, H. *f.* Rathgar, Dublin
 2Wilson, M.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool

2Adams, E.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Beck, D.A. *s.e.*
 Intermediate S., Manbey Pk., Stratford
 Bird, G.M. *s.* Brook Hall S., Winslow
 Bruton, K.M. Mundella S., Nottingham
 Drury, M.D. Heathleigh S., Horsmanden
 Foster, L.P. *e.* High S., Waltham Cross
 Millar, E. *s.* Pengwern Coll., Cheltenham
 2Morrow, M.K. Victoria Coll., Belfast
 2Ratchford, S.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 2Spencer, I.M.
 Andover Girls' High S., Wykeham
 Straw, G. *d.*
 Bloomsbury S. of Music, Guilford St., W.C.
 2Veness, E. Rye Coll. S.
 Annacker, A. Loreto Conv., Hulme
 Belchambers, H.E. *e.*
 Skippers' Company's S., Stamford Hill
 Bush, M.E. Gladstone S., Ramsgate
 2Clayton, F.
 St. Augustine's Secondary S., Darlington
 Fitt, I.M. Friends' S., Mountmellick
 Hall, L.R. St. George's H., Wimbledon
 Herwig, O.G. *e.*
 Skippers' Company's S., Stamford Hill
 Hickman, F.M. *e.*
 Skippers' Company's S., Stamford Hill
 2Mansfield, D. Friends' S., Mountmellick
 2Martin, A.M.
 Lycée & Kindergarten, Feltham
 McCarthy, Margaret *e.d.*
 St. Mary's High S., Midleton
 Munday, M.C.
 Nuthurst, Sanderstead, Croydon
 Nixon, E.E. *d.* Friends' S., Mountmellick
 Pendleton, M.F.
 138 Heathfield Rd., Handsworth
 2Sampson, L.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Southern, D.B.
 Girls' S., Promenade, S. Shore, Blackpool
 Spratt, M.F. *e.*
 Skippers' Company's S., Stamford Hill
 Stewart, E.M. Lynton H., Portsmouth
 Wilby, E. Dulwich Hamlet S., S.E.

Leith, F.J. *al.*
 Skippers' Company's S., Stamford Hill
 O'Keefe, M. St. Mary's Conv., Bruff
 2O'Neill, E.
 St. Mary's R.C. Girls' S., Liverpool
 (Smith, M.W. Rhianva Coll., Hunstanton
 Barnes, G.N.
 Wilmot St. P.-T. Centre, Ilkeston
 Bentley, E. Moss H., Whitefield
 2Berry, N.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Briggs, E.
 Mundella Hr. Elem. S., Nottingham
 Colson, A.M. *e.* The Southend S., Winchester
 2Dawe, G. Kilmor College, Liskeard
 Deacon, D. *e.* Granville Coll., West Croydon
 Dennis, G.T. *s.*
 Brook Green Girls' Coll., Aynhoe Rd., W.
 Dyer, G.E.M. High S., Wells, Som.
 Ferguson, S.M. *f.* Victoria Coll., Belfast
 Heritage, S. *e.g.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 2Holmes, M.
 Wilmot St. P.-T. Centre, Ilkeston
 Kenworthy, C.D. The College, Goudhurst
 2McNulty, E.
 Convent Hr.-Grade S., Blackburn
 Rowland, F.E. *a.*
 Skippers' Company's S., Stamford Hill
 2Stockton, M.
 St. Mary's Conv., Middlesborough
 Sturgess, G.A. *s.*
 Temple Square S., Aylesbury

2Cardall, P. *e.* Devon Lodge, Wyld Green
 2Dugan, G.M.
 Girls' Secondary S., Portsmouth
 Fahy, A. *e.*
 R.C. Practising S., Mt. Pleasant, L'pool
 French, H. *a.*
 Skippers' Company's S., Stamford Hill
 Garside, L. *e.* Revoc Council S., Blackpool
 2Harold, G.
 R.C. Practising S., Mt. Pleasant, L'pool
 Johnston, J. *s.d.* Princess Gardens S., Belfast
 Lye, D. *s.* Alwyne Coll., Canonbury, N.
 McHugh, M. *g.*
 Conv. of Mercy, Clifford, Boston Spa
 2Nicholson, D.F. *s.*
 Fartown Gram. S., Huddersfield
 2Sinnock, M.M.
 Junction Rd. S., Burgess Hill
 Stevens, G.M. *s.* Brook Hall S., Winslow
 Stewart, E.
 Hr.-Grade S., Lowther St., Carlisle
 Thoburn, K.L. *g.* Holmeroft S., Bromley
 Tuohy, M.J. Convent S., Banagher
 Watkins, A.J. Boughrood H., Brecon
 Wilding, C.A.
 Rougement Ladies' Coll., Blackpool
 2Wood, D.M.
 Upper St. Leonards Ladies' Coll.

Berthon, L.g. Orphanage of Mercy, Kilburn
 Bush, L. *ge.* The College, Goudhurst
 Conway, A. *e.*
 R.C. Practising S., Mt. Pleasant, L'pool
 Fagan, A. *a.* St. Peter's Girls' S., Liverpool
 Hayes, K. *e.a.*
 R.C. Practising S., Mt. Pleasant, L'pool
 Hughes, D. *s.*
 Hr.-Grade S., Lowther St., Carlisle
 2Ievers, E. Notre Dame Coll. S., Leeds
 2Lamb, E. Central Classes, Long Sutton
 2McCaughy, L. 13 Strandmillis Rd., Belfast
 Price, E.A. Boughrood H., Brecon
 Raphael, M.E.H. Private tuition
 Rose, M.A. *e.* Ashley High S., Long Sutton
 Wheeler, D.M. *e.*
 Skippers' Company's S., Stamford Hill
 Williams, M.L. Southoe H., Richmond
 Allam, M.K.
 Mansfield Coll., Cliftonville, Margate
 Bowden, D.V. *e.*
 Skippers' Company's S., Stamford Hill
 2Brown, C.I. 29 South Terrace, Cork
 Campbell, H.K. High S., Wells, Som.
 2Clarke, M. Gorphwysfa, Old Colwyn
 2Doyle, A.
 R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Farquharson, M. Private tuition
 Gayford, I. *e.*
 Hughenden High S., Bexhill-on-Sea
 Harvest, S.V. *g.*
 Girls' S., Promenade, South Shore, B'pool
 Hilton, A. *e.* Moss H., Whitefield
 2Hodgkinson, F.
 Hr.-Grade S., Lowther St., Carlisle
 Horton, E. Broadfield, Roehdale
 2Kelly, E. Ladies' School, Newtownards
 Leckie, M.E. *e.*
 Skippers' Company's S., Stamford Hill
 McKeivitt, M. *d.*
 R.C. Practising S., Mt. Pleasant, L'pool
 Mould, E.
 Mundella Hr. Elem. S., Nottingham
 Pentreath, W.K.
 West House High S., Forest Hill
 Ricketts, E. *e.*
 Advanced Elem. Girls' S., Merthyr Tydfil
 2Riggall, D.K.
 Leigh Bank Coll., Leamington Spa
 Simmons, M. *e.*
 Skippers' Company's S., Stamford Hill

GIRLS, 3RD CLASS, PASS—Continued.
Voigt, M. K. s. Llanberis, Ealing, W.
Woolley, K.
Wilmot St. P.-T. Centre, Ilkeston

Appleby, I.
St. Mary's Conv., Middlesborough
Broadwood, E. f. St. Joseph's Conv., Redhill
Coulson, N.
Hr.-Grade S., Lowther St., Carlisle
Fletcher, C. B. f.
Newton H., Tunbridge Wells
Fromow, G. E.
Brook Green Girls' Coll., Aynhoe Rd., W.
Kinane, D. St. Mary's Conv., Bruff
Moore, I. J.
Skinners' Company's S., Stamford Hill
Oakden, M.
High Pavement Hr. Elem. S., Nottingham
Peach, C. M.
Leigh Bank Coll., Leamington Spa
Pennington, H.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Skerry, D. Summerland H., Richmond
Solomon, M. R.
North Kensington Coll. S., W.
Stellman, R. f.
Anby House Coll., West Hackney

Brassington, E. E. a.
Trinity Terr. S., Cheltenham
Colmer, O. Woolston Ladies' Coll.
Gambier, A. V. Faversham College
Hill, D. C. g.
Leigh Bank Coll., Leamington Spa
Hill, E. Ladies' Coll. S., Tavistock
James, J. M. Higher-Grade S., Porth
Johnson, M. T.
Regent St. Hr.-Gr. S., Plymouth
MacDonnell, T. St. Mary's Conv., Bruff
Miles, L. Milton H., Atherstone
Nord, S. f. St. Joseph's Conv., Redhill
Parsons, R. e. D'Arcy Hey, Bosccombe
Pratt, E. e.
Skinners' Company's S., Stamford Hill
Roe, C. Clarendon H., Reigate
Routledge, M. E. Brunswick H., Carlisle
Sanderson, M. J. Gorphwysfa, Old Colwyn
Whitworth, M. M. Milton H., Atherstone
Wigston, J.
Hr.-Grade S., Lowther St., Carlisle
Williams, G. a.
Advanced Elem. Girls' S., Merthyr Tydfil
Wilson, A. M. Brookvale Coll. S., Belfast

Alexander, F. M.
Skinners' Company's S., Stamford Hill
Boyes, A. M. s. e.
Alwyne Coll., Canonbury, N.
Brian, J.
R. C. Practising S., Mt. Pleasant, L'pool
Burnside, M.
West House High S., Forest Hill
Cubbin, A. St. Paul's, Standishgate, Wigan
Elphick, A. M.
Southlands College Girls' S., Battersea
Fry, G. E. Private tuition
Mayell, D. Woodford High S.
Middle, G. Southview H., Clevedon
Paekham, M.
R. C. Practising S., Mt. Pleasant, L'pool
Pangbourne, A.
High S. for Girls, Tollington Pk., N.
Regan, M.
Convent Hr.-Grade S., Blackburn
Richardson, D. V. The College, Goudhurst
Snee, E. Notre Dame Coll. S., Leeds
Valentine, F. S. Brookvale Coll. S., Belfast
Whittington, M. Brent Hill, Hanwell

Angell, G. Woolston Ladies' Coll.
Band, M. Leigh Bank Coll., Leamington Spa
Botting, G. Ripley Comm. Schools
Carroll, K. a. St. Mary's Conv., Bruff
Cotley, L.
R. C. Practising S., Mt. Pleasant, L'pool
Darlington, B. M. The College, Goudhurst
Davies, E. M. L. Higher-Grade S., Porth
Flynn, G.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Poster, E. West View, Cheadle Hulme
Gurtner, N.
Conv. of the Sacred Heart, Maidstone
Kelly, E. M. Kilmar Coll., Liskeard
Sothern, E. e.
Orphanage of Mercy, Kilburn
Wheway, L. Milton H., Atherstone
Wilson, J.
R. C. P.-T. Centre, Mt. Pleasant, L'pool

Bath, E. Denmark Coll., Winbledon
Calleby, L. P. e.
Skinners' Company's S., Stamford Hill
Chatto, C. L. M. E. G.
St. Audrey's S., Swindon
Desmenes, S. J. Private tuition
Edney, M. A.
Brook Green Girls' Coll., Aynhoe Rd., W.
Evans, A. A.
Advanced Elem. Girls' S., Merthyr Tydfil
Ferguson, D. Notre Dame Coll. S., Leeds
Love, W. Gordonville Ladies' S., Coleraine
Noble, J. T.
Mundella Hr. Elem. S., Nottingham
O'Donoghue, M. e. f.
St. Mary's High S., Middleton

Parkin, M. L.
Rutherford Coll., Newcastle-on-Tyne
Porter, E. M. f.
Ladies' Coll. S., Belmont Pk., Belfast
Sibley, W. f.
Conv. of the Sacred Heart, Maidstone
Smalley, O.
Wilmot St. P.-T. Centre, Ilkeston
Thomas, V. Penventon S., Redruth
Weeks, E. E. St. John's Coll., Brixton, S. W.
Wilcox, G. Stratford Abbey Coll., Stroud

Bushell, F.
Conv. of Mercy, Clifford, Boston Spa
Carr, C. S. St. Aidan's, Whitley Bay
Edmunds, G. St. Margaret's, Cardiff
Gwyther, A. G. Milton Lodge, Fleetwood
Hawker, G. Mountside High S., Hastings
Jones, J. M. Higher-Grade S., Porth
Light, M. A. High Trees S., Bournemouth
Messenger, E.
Hr.-Grade S., Lowther St., Carlisle
Speigelhalter, A.
Notre Dame Coll. S., Leeds
Turnham, A. M.
Alwyne Coll., Canonbury, N.

Browne, M.
Gordonville Ladies' S., Coleraine
Cooke, J. St. Stephen's Coll., Hounslow
Dunmore, N. J. The Conv., Bexley Rd., Erith
Gott, R. Notre Dame Coll. S., Leeds
Irving, A.
Hr.-Grade S., Lowther St., Carlisle
Martia, E. A. Towcester School
Murnane, Mary
St. Mary's High S., Middleton
Paek, C. Central Classes, Long Sutton
Pender, L. J. Rhianna Coll., Hunstanton
Perryman, D. M.
Alwyne Coll., Canonbury, N.
Prowse, H. Blenheim H., Olton
Roberts, L.
Notre Dame Coll. S., Everton Valley, L'pool
Rowe, E. Regent St. Hr.-Grade S., Plymouth
Schatzberger, U. A. ge. Private tuition
Southworth, W.
Convent Hr.-Grade S., Blackburn
Spooner, E. J. d.
Cleveland H., Lower Clapton, N. E.
Sullivan, M. e.
R. C. Practising S., Mt. Pleasant, L'pool
Taylor, E. M. Alleyn Park S., West Dulwich
Wilson, D. E.
Skinners' Company's S., Stamford Hill

Aspinall, J.
352 Plymouth Grove, Loughsight
Bannerman, E. A.
Granville Coll., West Croydon
Beck, L. E.
Clark's College S., Brixton Hill, S. W.
Boyes, M. A. Alwyne Coll., Canonbury, N.
Burrows, E. e.
Orphanage of Mercy, Kilburn

Burton, I.
Mundella Hr. Elem. S., Nottingham
Carroll, A. Notre Dame Coll. S., Leeds
Cottrell, L. F. Milton H., Atherstone
Coulter, M. Grosvenor Coll., Liverpool
Fleming, K. A. Convent S., Banagher
Harbord, E. M. H. 29 South Terrace, Cork
Laver, A. B.
Thorntonville Schools, Thornton Heath
Lewis, M. L. The College, Goudhurst
Masters, W. N. Rye Collegiate S.
Murray, F. Ursuline Conv., Kingsland, N.
Orton, P. The College, Goudhurst
O'Sullivan, J. Notre Dame Coll. S., Leeds
Owen, G. H.
Stanfield Coll., Waterloo, L'pool
Penn, E. N. P. Private tuition
Pfeiffer, O. G. St. Kilda's Coll., Bristol
Smalley, B. E. The Laurels, Lincoln
Spurgeon, A. K. Manor H., Havant
Stevenson, F. E.
High Pavement Hr. Elem. S., Nottingham
Lyddon, S. M.
Girls' S., The Shrubbery, S. Molton
Taylor, M. F.
Ravenscourt H., Ravenscourt Pk., W.
Watson, H. Notre Dame Coll. S., Leeds

Bentley, H. e. Orphanage of Mercy, Kilburn
Black, E. B.
Mall Road Middle-Class S., Hammersmith
Brooks, E. A.
Clark's College, Brixton Hill, S. W.
Buggs, R. Heathleigh S., Horsmonden
Cook, C. W. St. Joseph's Conv., Chelsea, S. W.
Douglas, A. M.
St. Paul's, Standishgate, Wigan
Dyer, M. Private tuition
Goodall, C. H. Private tuition
Harris, D. M. Dagnall Park, South Norwood
How, N. Temple Square S., Aylesbury
Klemantaski, A. f.
Holmwood H., Hampstead, N. W.
Shepherd, A.
Mundella Hr. Elem. S., Nottingham
Tew, E. I. Hill Croft S., Wellingborough
Tyrrell, A. M.
Wilmot St. P.-T. Centre, Ilkeston
Wildbore, G. E.
High Pavement Hr. Elem. S., Nottingham

Abernethy, E.
Wincham Hall Coll., Lostock Gralam
Abrahams, N.
Skinners' Company's S., Stamford Hill
Barnard, M. H. W.
1 Manor Terrace, Tynemouth
Behan, F. S. The Conv., Bexley Rd., Erith
Berg, A. E. Pond H., Lower Clapton, N. E.
Bryant, U. Entry H., Diss
Clarke, D. High S., Attleborough
Clayden, E. M.
Bitterne H., Bitterne Post Office
Colgan, M.
The Convent, Palace Gate, Exeter
Dooley, M.
St. Joseph's Conv., Chelsea, S. W.
Fawdon, M. E. M. d.
Haslemere, Clapham Park, S. W.
Hayes, M. St. Mary's Conv., Bruff
Howarth, F. M.
Standfield Coll., Waterloo, L'pool
Hutchings, E. M. Torrhill Coll., Hastings
Kaye, B. Fartown Gram. S., Huddersfield
Kerriell, M. M.
Doreck Kindergarten S., Bayswater
Lenahan, L. Notre Dame Coll. S., Leeds
Logan, L. Intermediate S., Ballyclare
Meacock, H.
Westbourne S., Great Western Rd., W.
Pinnington, L. St. Joseph's, Birkdale
Potter, N. e. D'Arcy Hey, Boscombe
Puruell, W. A.
Ashleigh H., Paulton, nr. Bristol
Rose, F. K. The College, Goudhurst
Wilson, E. 13 Strandmillis Rd., Belfast

Buckenham, K. H.
Rhianna Coll., Hunstanton
Clarke, E. R.
Bible Christian Coll., Shebbear
Cornish, G. G.
Leigh Bank Coll., Leamington Spa
Cox, I. I.
Clark's College S., Brixton Hill, S. W.
Gibbins, D. G. Ladies' Coll. S., Tavistock
Gilbert, M.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Hutchins, L. K. St. Margaret's, Cardiff
Jones, D. E.
Mundella Higher Elem. S., Nottingham
Jordan, B. Loreto Conv., Hulme
Prosser, M. E.
Advanced Elem. Girls' S., Merthyr Tydfil
Scarborow, J. M. M.
Devonshire Rd. S., Forest Hill
Tattersall, E. E. G. Victoria Coll., Belfast
Vincent, L. M.
The Convent, Pulteney Rd., Bath
Wilson, E.
Hr.-Grade S., Lowther St., Carlisle

Austen, M. Notre Dame Coll. S., Leeds
Bailey, G. E. Vernon H., Higher Broughton
Dewey, G. N. Highfield, Wallington
Frodsham, E. Notre Dame Coll. S., Leeds
James, I. C. Temple Square S., Aylesbury
Jones, M. C.
R. C. Practising S., Mt. Pleasant, L'pool
Keary, A.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Kelly, E. B. Convent S., Banagher
Kershaw, A. S.
Skinners' Company's S., Stamford Hill
McNulty, K. Notre Dame Coll. S., Leeds
Menhinick, M. The College, Goudhurst
Moody, N. V.
St. Joseph's Conv., Chelsea, S. W.
Nicholas, M. M. St. Margaret's, Cardiff
Paice, M. E. Faversham College
Robinson, K. St. Helen's, Clifton, Bristol
Urquhart, J. The College, Goudhurst
Warne, E. M. Private tuition
Warwick, M. C. Intermediate S., Ballyclare
Winniffrith, E. M. R. Southmolton Coll. S.

Bayly, C. E. f.
Ravenscourt H., Ravenscourt Pk., W.
Bowman, G. R. Rhianna Coll., Hunstanton
Coleman, A. s.
Notre Dame Coll. S., Evertou Valley, L'pool
Emslie, L. e.
R. C. Practising S., Mt. Pleasant, L'pool
Evans, M. A. Higher-Grade S., Porth
Gaulter, H.
Highfield Coll., Park Avenue, Blackpool
Gilchrist, I. E. The Conv., Bexley Rd., Erith
House, E. Notre Dame Coll. S., Leeds
Howells, E. M. Llanfair H., Kington
Hughes, W. N. St. Margaret's, Cardiff
Irwin, A.
R. C. Practising S., Mt. Pleasant, L'pool
Johnson, E.
Pupil-Teacher Centre, Peterborough
Lawson, E. d.
Hr.-Grade S., Lowther St., Carlisle
Light, N. K. High Trees S., Bournemouth
Lowry, K.
St. Augustine's Secondary S., Darlington
Madden, M.
R. C. Practising S., Mt. Pleasant, L'pool
Scott, V. M. Private tuition
Smythe, H. D. d.
Skinners' Company's S., Stamford Hill
Standring, V. M. s.
Hr.-Grade S., Lowther St., Carlisle

Stewart, G. M. e. Dewsberry H., Pocklington
Waters, M. B. Heathleigh S., Horsmonden
Bartle, W. High S., Easthorne, Mirfield
Bayley, B. F. The Conv., Bexley Rd., Erith
Carrick, I. M. B.
Trinity Terr. S., Cheltenham
Feelan, K. Notre Dame Coll. S., Leeds
Gault, E. Intermediate S., Ballyclare
Jeffrey, H.
Hr.-Grade S., Lowther St., Carlisle
Jesty, H.
Hughenden High S., Bexhill-on-Sea
Jones, G. E. e. d.
Leinster H., Westcliff-on-Sea
Newcombe, W. M.
Peafield, Blackrock, Co. Dublin
Ruff, M. Summerland H., Richmond
Smith, D. H.
West House High S., Forest Hill

Cape, F. Orphanage of Mercy, Kilburn
Crow, M.
Conv. of Mercy, Clifford, Boston Spa
Gibb, M. St. Joseph's, Birkdale
Grey, F. Orphanage of Mercy, Kilburn
Guy, K. Conv. of Mercy, Clifford, Boston Spa
Hughes, J. K. 48 Park Avenue, Oswestry
Jones, A. Boughrood H., Brecon
Kelly, M.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Kelly, M. E. Convent S., Banagher
Watson, N. Stratford Abbey Coll., Stroud
White, W.
High Pavement Hr. Elem. S., Nottingham

Boot, D. A.
Mundella Hr. Elem. S., Nottingham
Clay, M. Z. Temple Square S., Aylesbury
Fletcher, V.
R. C. Practising S., Mt. Pleasant, L'pool
Giles, C. M. Temple Square S., Aylesbury
Hackney, C. Rhianna Coll., Hunstanton
Payne, E. P. Princess Gardens S., Belfast
Schaffert, R.
Holloway Coll., Holloway Rd., N.
Whiteley, A. Notre Dame Coll. S., Leeds
Yardley, F. B.
Anby House Coll., West Hackney

Bradley, L. I. M.
Skinners' Company's S., Stamford Hill
Evans, J. B. Tutorial S., Penarth
Goskirk, M.
Hr.-Grade S., Lowther St., Carlisle
Houghton, M.
Notre Dame Conv. Day S., Southport
Martin, F. L. Penventon S., Redruth
Maslen, W. A. Highwood House, Liskeard
Maunder, H. R. Belmont S., West Green
McClelland, E. M.
Ulster Provincial S., Lisburn
McNally, M.
St. Mary's R. C. Girls' S., L'pool
Morgan, M. Higher-Grade S., Porth
Potter, G. L. 11 Stopford Place, Stoke
Riddle, A. M.
Thorntonville Schools, Thornton Heath
Rühl, E. L. The Conv., Bexley Rd., Erith
Seffer, S.
Skinners' Company's S., Stamford Hill
Skinnider, F. C. e.
St. Margaret's Conv., Paisley
Stack, B. St. Mary's Conv., Bruff
Tyers, F.
High Pavement Hr. Elem. S., Nottingham
Walls, E. Kensington House, York

Brock, L. E. Holborn Estate Girls' S., W. C.
Carmody, W. e. St. Mary's Conv., Bruff
Cullington, M. St. Nicholas' S., Liverpool
Davis, D. Granville Coll., West Croydon
Goss, M. E.
Conv. of Mercy, Clifford, Boston Spa
Gouge, A.
Hr.-Grade S., Lowther St., Carlisle
Hill, D. K. 29 South Terrace, Cork
Hobson, A. E. Ulster Provincial S., Lisburn
Kerr, J.
Conv. of the Assumption, Richmond, Yorks
Machell, L.
Hr.-Grade S., Lowther St., Carlisle
Manning, R. B. Private tuition
Margetson, E. M.
Queen's S., Cliftonville, Margate
Marsh, E. A. G.
Nursling Church of England S., Southampton
Maxwell, G.
R. C. P.-T. Centre, Mt. Pleasant, L'pool
Minahan, K. St. Mary's Conv., Bruff
Murray, J. St. Bridget's S., Liverpool
Orange, M. Woodford High S.
Rees, L. M. Orphanage of Mercy, Kilburn
Rothwell, M. Highfield Coll., Bispham
Seecombe, P. D.
Queen's S., Cliftonville, Margate

Brodie, M.
Rougemont Ladies' Coll., Blackpool
Calvert, E. M.
Wincham Hall Coll., Lostock Gralam
Doherty, M. St. Mary's Conv., Bruff
Grinshaw, H. M.
Vernon H., Higher Broughton
Hamlyn, G. K. Hr.-Grade S., W. Bridgford
Jones, A. Notre Dame Coll. S., Leeds
Kilkenny, L. Notre Dame Coll. S., Leeds

GIRLS, 3RD CLASS, PASS—Continued.
 Murnane, Margaret St. Mary's High S., Midleton
 O'Sullivan, M. St. Margaret's Conv., Paisley
 Peckett, W. St. Helen's, Clifton, Bristol
 Robertson, N. Orphanage of Mercy, Kilburn
 Stewart, M.M. Private tuition
 Tobin, G. St. Mary's Conv., Bruff
 Vickers, N. Aintree High School
 Williams, E. Higher-Grade S., Porth
 Carpenter, Y.L. North Park Coll., Croydon
 Chamberlain, M. Kent House Coll., Anerley
 Crangle, A. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Guinane, L. St. Mary's Conv., Bruff
 Hatton, M.H. Skinnners' Company's S., Stamford Hill
 Haworth, L. 352 Plymouth Grove, Longsight
 Healey, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Hunt, J.E. Southlands Coll. Girls' S., Battersea
 McShane, M.M. St. Joseph's Conv., Chelsea, S.W.
 Morris, M. Wordsworth Avenue, Cardiff
 Mylrea, M. The Tower, Prestwich
 Odlum, M.K. Friends' S., Mountmellick
 Parker, E.M. Convent Hr.-Grade S., Blackburn
 Poole, G.M. e. Atcombe House, Barry
 Puddephatt, H.G. The College, Goudhurst
 Sheehy, M. Notre Dame Coll. S., Leeds
 Strode, E.M. Aintree High School
 Barnett, M. e. Orphanage of Mercy, Kilburn
 Cahill, M. Notre Dame Coll. S., Leeds
 Coll, M. St. Mary's Conv., Bruff
 Grant, L.M. Higher-Grade S., Porth
 Hannan, M. St. Mary's Conv., Middlesbrough
 Leonard, E.M. St. Helen's, Clifton, Bristol
 Mortell, M.T. a. St. Mary's Conv., Bruff
 O'Callaghan, H. Notre Dame Coll. S., Everton Valley, L'pool
 Purdy, E.E. Girls' S., Promenade, South Shore, B'pool

2Salt, A.V. Edgbaston Coll., Birmingham
 Schofield, E. Eaton H., East Hill, Wandsworth
 Stone, M.I. The Convent, Pulteney Rd., Bath
 Wain, C.E. Ivy House, Hanwell, W.
 Wilkins, M. Queen's S., Cliftonville, Margate
 Williams, M.J. Girl's S., The Shrubbery, S. Molton
 Ball, W. Rhianna Coll., Hunstanton
 James, F. Wordsworth Avenue, Cardiff
 Lock, A. Private tuition
 Middleton, M. Highfield Coll., Park Avenue, Blackpool
 Mullock, G. High S., Kirkby Stephen
 Niblock, M. Ladies' S., Newtownards
 Parker, M. Conv. of Mercy, Clifford, Boston Spa
 Phillips, D.H. The Tower, Prestwich
 Ronan, H. Notre Dame Coll. S., Leeds
 Bowker, D.W. Fairhaven High S., nr. Lytham
 Bowles, E. Eldon Coll., Thornton Heath
 Davies, C. Higher-Grade S., Porth
 Donohue, M. St. Augustine's Secondary S., Darlington
 Fenton, M. St. Mary's Conv., Bruff
 Gill, M.E. Lyndale H., Midhurst
 Hodson, J. Notre Dame Convent Day S., Southport
 Hornby, L. Orphanage of Mercy, Kilburn
 Simmons, M.D. Home Glen, Twickenham
 Carroll, N. St. Mary's Conv., Bruff
 Cunningham, M. Central Classes, Long Sutton
 Godfrey, D.H. Wilmot St. P.-T. Centre, Ilkeston
 Ives, W.M. Skinnners' Company's S., Stamford Hill
 Langan, H. R.C. Practising S., Mt. Pleasant, L'pool
 Lyons, E.M. Higher-Grade S., Porth
 Blackpool, W. Modern S., East Grinstead
 Short, A.M.E. High S., Waltham Cross
 Smith, A.M. High S., Wells, Som.
 Whitworth, D. Broadfield, Rochdale
 Williams, A.E. 29 South Terrace, Cork

Wilson, Ethel Notre Dame Coll. S., Leeds
 Wolfe, K. 29 South Terrace, Cork
 Clarke, E. F. f. Ladies' Coll. S., Belmont Pk., Belfast
 Duffett, M. e. Lyndale H., Midhurst
 Fitzpatrick, K. e. Notre Dame Coll. S., Everton Valley, L'pool
 Frayn, F.E. Ladies' Coll. S., Tavistock
 Gilmore, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Judd, L. Holloway Coll., Holloway Rd., N.
 Lodge, C. Notre Dame Coll. S., Leeds
 Lund, A. 352 Plymouth Grove, Longsight
 McCarthy, Mary St. Mary's High S., Midleton
 Parnell, E.C. Lyndale H., Midhurst
 Reeves, F. Conv. of the Sacred Heart, Maidstone
 Sayner, M.J. Birklands Ladies' S., Harrogate
 Banks, M. Conv. of Mercy, Clifford, Boston Spa
 Connolly, K. St. Mary's Conv., Bruff
 Haworth, G. 352 Plymouth Grove, Longsight
 Jeffers, H. Heathfield H., Cardiff
 Jones, D.G. Higher-Grade S., W. Bridgford
 O'Neill, C. Notre Dame Coll. S., Leeds
 Routledge, A. Higher-Grade S., Lowther St., Carlisle
 Winslow, E. Conv. of the Sacred Heart, Maidstone
 Duncan, L.L. Highfield, Wallington
 Harvey, A. e. R.C. Practising S., Mt. Pleasant, L'pool
 Hinderer, B.A. St. Mary's Convent S., York
 Hopper, N. St. Augustine's Secondary S., Darlington
 Turney, M.E. High Pavement Hr. Elem. S., Nottingham
 Ashton, E. Hill Croft S., Wellingborough
 Fursdon, E. Brent Hill, Hanwell
 Hackett, G. Holloway Coll., Holloway Rd., N.

Mulqueen, J. R.C. P.-T. Centre, Blackburn
 Sanders, C. Notre Dame Coll. S., Everton Valley, L'pool
 Sims, M.A. The Conv., Bexley Rd., Eritb
 Taylor, A. Notre Dame Coll. S., Leeds
 Folkard, Margaret Kensington H., York
 McFarlane, C.M. High S., Waltham Cross
 Rawcliffe, M. Girls' S., Promenade, South Shore, B'pool
 Schoonraad, E.G. Kent House Coll., Anerley
 Aston, D.M. Walford Coll., Tipton
 Bibby, L. Gram. & Coll. S., Carnarvon
 Carroll, N. R.C. Practising S., Mt. Pleasant, L'pool
 Eccles, E.M. Higher-Grade S., W. Bridgford
 Hasney, G. R.C. Pupil-Teachers' Centre, Blackburn
 Howarth, E. Convent Hr.-Grade S., Blackburn
 Maybury, M. Stratford Abbey Coll., Stroud
 Williams, C.M.V.F. Fairlaven High S., nr. Lytham
 Duncan, F.I. Highfield, Wallington
 Durrant, D.A. High S., Attleborough
 Nichol, A.F. St. Winifred's S., Southampton
 Rafter, E.M. Private tuition
 Tobin, M. St. Mary's Conv., Bruff
 Ashcroft, C. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Barret, D.A.W. Private tuition
 Coomber, L. Eldon Coll., Thornton Heath
 Fletcher, E. Central Classes, Long Sutton
 Johnson, M. St. Anthony's S., Harrow-on-Hill
 Keeling, M. St. Mary's R.C. Girls' S., Liverpool
 Crean, M. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Greenwood, D.E. Birkland Ladies' S., Harrogate
 Lawlor, W. R.C. P.-T. Centre, Mt. Pleasant, L'pool
 Ricketts, A.M. High S., Wells, Som.
 Parsons, A.M. Atcombe House, Barry

LOWER FORMS EXAMINATION.—PASS LIST, MIDSUMMER, 1905.

BOYS.

Abbott, A. Brent Hill S., Hanwell
 Adams, F. Margate College
 Agate, N.S. Holmsdale H., Worthing
 Aldworth, A.V. Xaverian Coll., Mayfield
 Alexander, A.J. St. George's Coll., Weybridge
 Allen, A.L. Tutorial S., Penarth
 Allen, A.S. Xaverian Coll., Mayfield
 Allen, J. Ulster Provincial S., Lisburn
 Allen, J. Culham Coll. S.
 Anderton, W.F. Park H., Hale, Altrincham
 Ashcroft, T. Hutton Gram. S.
 Ashlin, H.J. St. Aloysius' S., Highgate, N.
 Ashmore, G.M. Margate College
 Ashton, J. St. Bede's Coll., Hornsea
 Ashton, P. Hutton Gram. S.
 Auckland, E. Margate College
 Austin, K.S. Taplow Gram. S.
 Avery, J.E. Richmond Hill School
 Ayre, A. United Schools, S. Molton
 Ayre, T.S. Margate College
 Bagshaw, H.R. Eastward Ho! Coll., Felixstowe
 Bailey, E. Hutton Gram. S.
 Baker, P. United Schools, S. Molton
 Ballard, G.A. Woodstock Secondary S.
 Banks, A.E. The College, Tankerton-on-Sea
 Banks, H. Salesian S., Battersea
 Banks, L. The College, Tankerton-on-Sea
 Barker, G.T. Scorton Gram. S.
 Barnard, F.E. St. John's Coll., Brixton
 Barnes, H. Eton H., Southend-on-Sea
 Baster, S. Margate College
 Batcheller, H.G. Tudor Hall, Hawkhurst
 Bate, R. Beverley S., Barnes
 Baulkwill, J.O. Bible Christian Coll., Shebbear
 Baxter, R.T. Kent House Coll., Anerley
 Beatty, E.L.F. Lindisfarne Coll., Westcliff-on-Sea
 Beaufls, L.G. Margate College
 Besant, R.P. Uckfield Gram. S.
 Betts, D.C. Eye Gram. S.
 Betts, S.W. Eye Gram. S.
 Billsborough, W. Hutton Gram. S.
 Bird, G.L. Brook Hall S., Winslow
 Bishop, L.L. Taplow Gram. S.
 Blight, J.R. Tutorial S., Penarth
 Blight, V.W. Penwerris Gram. S.
 Boitel, A. Xaverian Coll., Mayfield
 Bold, T.A. Clapham Gram. S., S.W.
 Bolton, H.F. Hutton Gram. S.
 Booth, A.T. Eye Gram. S.
 Borregaard, W.R.E. Hill Croft S., Stamford Hill
 Boyce, W.S. Margate College
 Boynton, E. Mannamed Prep. S., Plymouth
 Blackpool, W. Modern S., East Grinstead
 Bradley, O. Bethany H., Goudhurst
 Brankin, E. St. Anthony's S., Harrow-on-Hill
 Brennan, J. Catholic Coll. Inst., Manchester
 Brewer, O.T. Wintersloe, Moseley
 Brice, L.S. Lindisfarne Coll., Westcliff-on-Sea
 Bridge, T.H. Catholic Coll. Inst., Manchester
 Bridgen, B.T. Margate College
 Brown, A.H. Margate College
 Brown, C. The College, Weston-s.-Mare
 Brown, G.T. Eye Gram. S.
 Brown, P.R. Wadhani S., Liskeard
 Brown, W.H. The College, Weston-s.-Mare
 Bryan, H.S. Lindisfarne Coll., Westcliff-on-Sea
 Bull, E.J.K. Hythe School
 Burgess, G.C.J. St. John's Coll., Grimsargh
 Burton, W.L. Richmond H., Handsworth
 Butler, J. Salesian S., Battersea
 Byron, C. Battle Hill S., Hexham
 Calderwood, W. Forest Gate High S. and Comm. Coll.
 Campbell, C.C. Ulster Provincial S., Lisburn
 Capon, S.C.J. Hillmartin Coll., Camden Rd. N.W.
 Carman, H.J. Horsmonden School
 Carpenter, C.M. Wintersloe, Moseley
 Carter, A.H. Xaverian Coll., Mayfield
 Carter, W.T. Buda Coll., Aldrington, Hove
 Carvalho, R. St. George's Coll., Weybridge
 Casey, F.D. St. George's Coll., Weybridge
 Catepool, H.J. Taplow Gram. S.
 Chaland, M.L. Balham Gram. S., S.W.
 Chamberlain, J.W.W. Kent House Coll., Anerley
 Chaplin, S.E. St. John's Coll., Brixton
 Charlton, J. Marist Bros. S., Grove Ferry
 Cherry, W. Scorton Gram. S.
 Chippendale, A. Rivington and Blackrod Gram. S.
 Cipriani, M. Xaverian Coll., Mayfield
 Clark, R.D. Wintersloe, Moseley
 Clark, E. Gram. S., Streatham
 Clarke, A.B. Eye Gram. S.
 Clemeence, F.G. Montague H., Streatham
 Clemeence, H.N. Montague H., Streatham
 Clement, P. Gram. S., Streatham
 Clifford, H. Margate College
 Clothier, R.H.S. Bible Christian Coll., Shebbear
 Coath, J.C. Wadhani S., Liskeard
 Conoley, J.C. St. George's Coll., Weybridge
 Cooksey, D. Forest Gate High S. & Comm. Coll.
 Cooper, R.K. Taplow Gram. S.
 Cornelissen, L. Ripley Comm. Schools
 Corp, J.V. The College, Tankerton-on-Sea
 Cosham, P.R. Private tuition
 Cottle, W.E.W. Montague H., Streatham
 Coudrey, A.W. St. George's Coll., Weybridge
 Courtney, T.F. Xaverian Coll., Mayfield
 Cowling, T. Gram. S., Streatham
 Crack, L.C. Balham Gram. S., S.W.
 Creek, A.H. Bible Christian Coll., Shebbear
 Creswell, R.W.G. Culham Coll. S.
 Culverwell, A.J. Margate College
 Dale, C. Osborne High S., W. Hartlepool
 Dale, W.L. The College, Weston-s.-Mare
 Davies, A.L. Hythe School
 Davies, D. Convent S., Banagher
 Davies, H.E. Oswestry Gram. S.
 Davies, J.R. Kent House Coll., Anerley
 Daws, E.W. Lindisfarne Coll., Westcliff-on-Sea
 Day, L.A. Hillmartin Coll., Camden Rd., N.W.
 Dear, N.C. Margate College
 Dearlove, C. Convent, Dighton St., Bristol
 Delevine, H.V. Margate College
 Dennis, E. Gram. S., Camelford
 Denniss, K.G. Kent House Coll., Anerley
 Dickson, H.R. Lindisfarne Coll., Westcliff-on-Sea
 Dingle, P.J. Wadhani S., Liskeard
 Dodson, J.H. Farnworth Gram. S.
 Dowling, V. Convent S., Banagher
 Droulers, J. Marist Bros. S., Grove Ferry
 Durrant, L.E. Lindisfarne Coll., Westcliff-on-Sea
 Durrant, N.W. Xaverian Coll., Mayfield
 Eales, H.G. Lindisfarne Coll., Westcliff-on-Sea
 Eastham, L.E.S. Hutton Gram. S.
 Edwards, C.S. The College, Weston-s.-Mare
 Edwards, J.B.O. Oswestry Gram. S.
 Elliott, F. Kent House Coll., Anerley
 Ellis, E.L. Hillmartin Coll., Camden Rd., N.W.
 Evans, I.J. Lady Hawkins's Gram. S., Kington
 Evans, R.S. Taplow Gram. S.
 Ewings, H.W.H. Lindisfarne Coll., Westcliff-on-Sea
 Farnham, W.E. Holmsdale H., Worthing
 Farrington, A. 29 South Terrace, Cork
 Fehrrnan, A.A.F. Balham Gram. S., S.W.
 Felce, H. Gram. S., Streatham
 Fell, P.W. Hythe School
 Felton, R.E. Tudor Hall, Hawkhurst
 Flanagan, E.P. Xaverian Coll., Mayfield
 Fleming, F. Uckfield Gram. S.
 Folkard, L.W.P.B. Eye Gram. S.
 Forbutt, C. Salesian S., Battersea
 Frauks, F.G. Margate College
 Fraulo, A. Salesian S., Battersea
 Fryer, F.B. St. George's Coll., Wimbledon
 Gale, M.T. St. George's Coll., Wimbledon
 Gander, L.S. Uckfield Gram. S.
 Gater, C.R.C. University S., Rochester
 George, E.J. Oswestry Gram. S.
 Gerard, J. Beverley S., Barnes
 Gerardin, P. Salesian S., Battersea
 Gilbert, E.C. Uckfield Gram. S.
 Gilbert, R.W.A. Eastward Ho! Coll., Felixstowe
 Girvan, A.D. Taplow Gram. S.
 Good, E. Forest Gate High S. & Comm. Coll.
 Goring, A.F. University S., Rochester
 Graham, F.B. Culham Coll. S.
 Grainger, W.G. St. George's Coll., Wimbledon
 Grannel, H.F. Xaverian Coll., Mayfield
 Green, T. Oswestry Gram. S.
 Greville, F. Hythe School
 Griffiths, E.O. Bethany H., Goudhurst
 Griffiths, O.T. Oswestry Gram. S.
 Griffiths, W.P. Oswestry Gram. S.
 Grimshaw, J.A. St. John's Coll., Grimsargh
 Grounds, K. Belgrave Villa, Lee
 Guy, H. Conv. of Mercy, Clifford, Boston Spa

BOYS, LOWER FORMS—Continued.
 Haigh, C.S. Aylwin Coll., Arnside
 Haigh, R. Aylwin Coll., Arnside
 Hall, J.F.D. Margate College
 Hall, P.P. St. Mary's Hall, Roath, Cardiff
 Hall, T.H. Battle Hill S., Hexham
 Hampshire, H.G. Taplow Gram. S.
 Hancock, E.W. Tufnell Park Terrace S., Holloway Rd., N.
 Hanna, H.L. 34 Victoria Avenue, Newtownards
 Harwood, C.A. Modern S., East Grinstead
 Harland, W. St. Mary's Hall, Roath, Cardiff
 Harrison, A. Beverley S., Barnes
 Harry, N. Eton H., Southend-on-Sea
 Harvey, J.E. Rivington and Blackrod Gram. S.
 Haslam, W. Rivington and Blackrod Gram. S.
 Haybittel, K.B. Seaford College
 Haynes, J.H. St. Aloysius' S., Highgate, N.
 Helmore, W. Durham H., Hove
 Hendry, A. St. Mary's Hall, Roath, Cardiff
 Hewett, D.S. Romford H., Forest Gate
 Hill, R. Gram. S., Streatham
 Hill, W.H. Merton H., Cliftonville, Margate
 Hines, H. Margate College
 Holloway, L. St. John's Coll. Brixton
 Hoskins, L.W. St. Aloysius' S., Highgate, N.
 Hughes, A.T. Scorton Gram. S.
 Humphrey, H.J. Horsmonden School
 Humphris, A. Brent Hill S., Hanwell
 Hurndall, F.C. Lindisfarne Coll., Westcliff-on-Sea
 Husband, W.H.G.M. Wadham S. Liskeard
 Hutchins, R. St. George's Coll., Weybridge
 Hyland, C. Tudor Hall, Hawkhurst
 Innes, W.K. Aylwin Coll. Arnside
 Iron, D. Tudor Hall, Hawkhurst
 Isherwood, L. Farnworth Gram. S.
 Ivison, E.S. St. George's Coll., Wimbledon
 Jack, H.C. Taplow Gram. S.
 Jackson, S.H. St. John's Coll., Brixton
 Jakins, H. Lindisfarne Coll., Westcliff-on-Sea
 Jeffers, J.F. Catholic Coll. Inst., Manchester
 Jenkins, J.A. Endcliffe Coll., Ranmoor, Sheffield
 Jode, S.E. Lancaster Coll., W. Norwood
 Johnson, R. Battle Hill S., Hexham
 Jones, J.S. Margate College
 Jones, T.A.W. Ulster Provincial S., Lisburn
 Jones, V.G. Hillmartin Coll., Camden Rd., N.W.
 Jordan, B. Salesian S., Battersea
 Keen, W.H. Eastward Ho! Coll., Felixstowe
 Keet, C. Park H., Hale, Altrincham
 Keith, A.G. Margate College
 Kelly, A. St. George's Coll., Weybridge
 Kemp, G.A.D. Margate College
 Kempsey, W. Salesian S., Battersea
 Kennedy, F.H. Hillmartin Coll., Camden Rd., N.W.
 Kershaw, H.C. Lindisfarne Coll., Westcliff-on-Sea
 Kingdon, W. United Schools, S. Molton
 Kingstou, C.J. Xaverian Coll., Mayfield
 Kirby, R. Margate College
 Kirkbride, F.J. Catholic Coll. Inst., Manchester
 Klefisch, P.J. St. Aloysius' S., Highgate, N.
 Kordik, O.J. St. Catherine's Conv., Clerkenwell, E.C.
 Kury, F.J. Xaverian Coll., Mayfield
 Kydd, W.S. Hillmartin Coll., Camden Rd., N.W.
 Lagae, A.V. Xaverian Coll., Mayfield
 Large, W.A. Tudor Hall, Hawkhurst
 Lasgourgues, F.B. Xaverian Coll., Mayfield
 Laxton, R.J. Gram. S., East Finchley, N.
 Lecocq, A.A. St. Aloysius' S., Highgate, N.
 Leigh, H. Rivington and Blackrod Gram. S.
 Lintott, B.G. St. George's Coll., Wimbledon
 Lintott, C.E.J. St. George's Coll., Wimbledon
 Little, R. Battle Hill S., Hexham
 Livesey, B. Rivington and Blackrod Gram. S.
 Lloyd-Williams, J.J. Oswestry Gram. S.
 Long, B. Forest Gate High S. and Comm. Coll.
 Long, L. Richmond Hill School
 Lorenzen, C.C. Gram. S., East Finchley, N.
 Lorimer, W.J. Bible Christian Coll., Shebbear
 Lovejoy, W.A. Margate College
 Ludlow, A. Taplow Gram. S.
 Mace, W.M. Taplow Gram. S.
 Macnamara, C. Xaverian Coll., Mayfield
 Maddever, S.B. Wadham S., Liskeard

Madge, A. United Schools, S. Molton
 Magrane, G.F. St. George's Coll., Weybridge
 Maley, T.P. Catholic Coll. Inst., Manchester
 Manning, A.P. Tutorial S., Penarth
 Marriott, G.W. St. John's Coll., Brixton
 Marsden, D. Rivington and Blackrod Gram. S.
 Martin, F. Marist Bros. S., Grove Ferry
 Mascall, W.J. St. Aloysius' S., Highgate, N.
 May, G.E. Kent House Coll., Anerley
 McAnally, A. Catholic Coll. Inst., Manchester
 McCarthy, D.P. Xaverian Coll., Mayfield
 McCulloch, A.M.G. St. John's Coll., Grimsargh
 McDonnell, A.V. St. George's Coll., Weybridge
 McDonnell, J. St. George's Coll., Weybridge
 McGuckin, B. Xaverian Coll., Mayfield
 McGuinness, H. Xaverian Coll., Mayfield
 McKay, C.S. Cawley S., Chichester
 McKillop, W.A. Catholic Coll. Inst., Manchester
 Mellor, W.L. Seaford College
 Michell, G.G. Stoke Public Higher S., Devonport
 Miller, J.A. University S., Rochester
 Miller, R. St. Aloysius' S., Highgate, N.
 Miller, W.J. St. Aloysius' S., Highgate, N.
 Milliken, J. Inter. S., Ballyclare
 Mills, F.T. Hill Croft S., Wellingborough
 Milman, F.J. St. Aloysius' S., Highgate, N.
 Milner, L. Hutton Gram. S.
 Minart, E. Marist Bros. S., Grove Ferry
 Minter, W.J. Uckfield Gram. S.
 Mizen, Edward Gram. S., Streatham
 Moloney, J.A. St. Aloysius' S., Highgate, N.
 Monk, C.F. St. George's Coll., Wimbledon
 Moon, F.A. The College, Tankerton-on-Sea
 Moon, H.J. Catholic Coll. Inst., Manchester
 Moon, W.H. 143 Ashburnham Rd., Hastings
 Moor, A. United Schools, S. Bolton
 Moore, I. Hutton Gram. S.
 Morgan, F.G. Lady Hawkins's Gram. S., Kington
 Morin, H. St. Anthony's S., Harrow-on-Hill
 Morley, G.F.A. Horsmonden School
 Morrow, H. Ladies' S., Newtownards
 Morrow, K. Ladies' S., Newtownards
 Mowll, G.H. Tudor Hall, Hawkhurst
 Mizen, Ernest Gram. S., Streatham
 Murdoch, G.H. Margate College
 Mutton, E.J. Gram. S., Camelford
 Muzzell, S.J.H. Margate College
 Nagel, H.P. St. George's Coll., Weybridge
 Nash, C. Durham H., Hove
 Nelson, H. Farnworth Gram. S.
 Newson, H.M. Margate College
 Nichols, H.P. Taplow Gram. S.
 Norton, C.E. Lindisfarne Coll., Westcliff-on-Sea
 Norton, F. United Schools, S. Molton
 Nowell, B.W. Xaverian Coll., Mayfield
 O'Carroll, M. Convent S., Banagher
 Offer, J.H. Margate College
 Oger, V. Taplow Gram. S.
 Oldfield, K.J. Eye Gram. S.
 Openshaw, T.L.H. Vernon H., Higher Broughton
 Ord, O.R. St. Catherine's Coll., Richmond
 Owen, C.P. Oswestry Gram. S.
 Owen, E.W.H. Oswestry Gram. S.
 Pace, G.H. Battle Hill S., Hexham
 Pargeter, A.H. Xaverian Coll., Mayfield
 Parrott, L.O. Margate College
 Pater, J.J.W. St. Aloysius' S., Highgate, N.
 Paterson, R.C. Wintersloe, Moseley
 Patterson, V. Forest Gate High S. and Comm. Coll.
 Paulton, E.H. Salesian S., Wandsworth Common
 Pelham, J.L. Uckfield Gram. S.
 Penhale, R.H. Middle S., Holsworthy
 Pepper, L.T. The College, Weston-s.-Mare
 Pereira, H.M. Hythe School
 Phillips, N.A. Private tuition
 Pickering, A.A. Battle Hill S., Hexham
 Pickles, R. Aylwin Coll., Arnside
 Pierce, W.H. Hutton Gram. S.
 Piggott, W.T. St. Aloysius' S., Highgate, N.
 Pile, I.J. Bible Christian Coll., Shebbear
 Pimington, W. St. Anstin's, Grassendale, L'pool
 Pflinsoll, C.T. The College, Weston-s.-Mare
 Polglase, H.J. Bible Christian Coll., Shebbear

Pond, C.F. Colebrock H., Bognor
 Porter, A.H. Ulster Provincial S., Lisburn
 Potts, E.V. Cranbrook Park S., Ilford
 Procter, R.W. Scorton Gram. S.
 Pugh, R.G. Oswestry Gram. S.
 Purcell, F.T. Liudisfarne Coll., Westcliff-on-Sea
 Quin, D.H. Salesian S., Wandsworth Common
 Quin, R.B. St. George's Coll., Weybridge
 Ramsbotham, J. Farnworth Gram. S.
 Range, I. Durham H., Hove
 Rant, W.E. Culham Coll. S.
 Rattenbury, O. United Schools, S. Molton
 Rawson, D.S. Forest Gate High S. and Comm. Coll.
 Rice, E. Salesian S., Wandsworth Common
 Rice, J. Salesian S., Wandsworth Common
 Richardson, D.R. Hutton Gram. S.
 Richardson, T.H.H. Stafford Coll., Forest Hill
 Rickard, P. Kent House Coll., Anerley
 Ritson, T.W. Battle Hill S., Hexham
 Robathan, T. Richmond H., Handsworth
 Robb, M. Battle Hill S., Hexham
 Roberts, R.V. Oswestry Gram. S.
 Robinson, C.C. Mannamead Prep. S., Plymouth
 Robinson, J.W. Battle Hill S., Hexham
 Rodman, C. Holloway Coll., Holloway Rd., N.
 Rogers, G.M. Taplow Gram. S.
 Rosinski, L. Salesian S., Battersea
 Rossiter, P.B. St. George's Coll., Weybridge
 Rouch, E.R. Wintersloe S., Moseley
 Ruddin, T.V. Catholic Coll. Inst., Manchester
 Rush, F.W. Gram. S., Camelford
 Rust, E. Scorton Gram. S.
 Sadler, F.G. Bethany H., Goudhurst
 Sandiford, A. Hutton Gram. S.
 Sarginson, R.H. Osborne High S., W. Hartlepool
 Saunders, F. Eye Gram. S.
 Schnell, E. Beverley S., Barnes
 Schwabe, S.P. Tudor Hall, Hawkhurst
 Scobie, J.A. Durham H., Hove
 Scoones, F.S. Horsmonden School
 Scott, C.W.B. Taplow Gram. S.
 Scott, E.R. Eye Gram. S.
 Shanly, H. Xaverian Coll., Mayfield
 Shannon, H. Inter. S., Ballyclare
 Shaw, R.C. Hutton Gram. S.
 Sheppard, F. Salesian S., Battersea
 Sherlock, D.F. St. Aloysius' S., Highgate, N.
 Sherwood, C.E.W. Horsmonden School
 Shields, J.R. Taplow Gram. S.
 Shonfeld, F.W. St. John's Coll., Brixton
 Short, J. Farnworth Gram. S.
 Shyvers, W. Gram. S., Streatham
 Simmons, H.O. St. John's Coll., Grimsargh
 Sinclair, M. Forest Gate High S. and Comm. Coll.
 Skellon, B.V. Xaverian Coll., Mayfield
 Smith, A. Brent Hill S., Hanwell
 Smith, A.J. Lindisfarne Coll., Westcliff-on-Sea
 Smith, C.W. Forest Gate High S. and Comm. Coll.
 Smith, H.M. Taplow Gram. S.
 Smith, W. Uckfield Gram. S.
 Smith, W. Scorton Gram. S.
 Snyth, M. Salesian S., Battersea
 Sortwell, V.W. Margate College
 Southcombe, A. United Schools, S. Molton
 Sownan, U.D. Gladstone S., Ramsgate
 Spellar, F.H. Margate College
 Spencer, W.V. Farnworth Gram. S.
 Spindler, E.L. Taplow Gram. S.
 Spink, W.H. St. John's Coll., Brixton
 Stannard, S.V. Hythe School
 Stark, A.B. Crouch End High S., Weston Park, N.
 Steele, H.G. Battle Hill S., Hexham
 Stephens, B.R. Gram. S., Camelford
 Stephenson, H. Osborne High S., W. Hartlepool
 Stevens, J. Horsmonden School
 Stevens, R.H. Lindisfarne Coll., Westcliff-on-Sea
 Stewart, J.C. Stafford Coll., Forest Hill
 Still, A.T. St. George's Coll., Weybridge
 Strong, C.C. Lindisfarne Coll., Westcliff-on-Sea
 Stubbings, L. St. George's Coll., Wimbledon
 Sullivan, J.A. Xaverian Coll., Mayfield
 Swann, A. Holloway Coll., Holloway Rd., N.

Sweeting, W.R. St. John's Coll., Brixton
 Sydney, C.A. Highbury New Park Coll., N.
 Syer, R.A. Xaverian Coll., Mayfield
 Tanner, B. St. Aloysius' S., Highgate, N.
 Taylor, C.F. Eye Gram. S.
 Taylor, E.H. Osborne High S., W. Hartlepool
 Taylor, I. Hutton Gram. S.
 Taylor, M.S.J. Culham Coll. S.
 Tennent, M.B. Hythe School
 Tennent, R.S. Hythe School
 Tetlow, J.L. Private tuition
 Theobald, R. University S., Rochester
 Thomas, C.R. Forest Gate High S. and Comm. Coll.
 Thomas, E.L.P. Lindisfarne Coll., Westcliff-on-Sea
 Thomas, P.R. Kent House Coll., Anerley
 Thorn, E.P. St. George's Coll., Weybridge
 Tiddy, E.W. St. John's Coll., Brixton
 Tooley, J.C. St. John's Coll., Brixton
 Topping, E. Hutton Gram. S.
 Topping, W. Hutton Gram. S.
 Tucker, M.H. St. George's Coll., Wimbledon
 Turner, L.H.B. Oswestry Gram. S.
 Turner, T. Wadham S., Liskeard
 Trehane, C.H. Hythe School
 Trelease, J.S. Wadham S., Liskeard
 Truscott, D.A. Penwerris Gram. S., Falmouth
 Truslove, F.H. Bible Christian Coll., Shebbear
 Tye, C. Eye Gram. S.
 Tyrrell, F. Gram. S., Streatham
 Tyrrell, P. Convent S., Banagher
 Varma, R. St. George's Coll., Wimbledon
 Vieira, M.C. Xaverian Coll., Mayfield
 Volkes Mackey, T. Convent S., Banagher
 von Wichmann, A. Durham H., Hove
 Walenn, L.G.P. Lindisfarne Coll., Westcliff-on-Sea
 Walker, L.G. Culham College S.
 Walmsley, C. Rivington & Blackrod Gram. S.
 Walters, G. The Halve, Trowbridge
 Walton, G. Battle Hill S., Hexham
 Ward, L. Gram. S., Streatham
 Wardle, J.R. Battle Hill S., Hexham
 Warren, L.S. St. George's Coll., Weybridge
 Watson, A. Brent Hill S., Hanwell
 Watson, B. Battle Hill S., Hexham
 Watson, D. 34 Victoria Avenue, Newtownards
 Watson, F. Hutton Gram. S.
 Watson, R. Gram. S., Streatham
 Watts, C.P. St. George's Coll., Wimbledon
 Weeks, A. Bethany H., Goudhurst
 Wells, A.L. Private tuition
 Wells, A.L. Margate College
 Wetz, H.J.D. St. Aloysius' S., Highgate, N.
 Wetzel, S. St. George's Coll., Weybridge
 Whalley, T. Hutton Gram. S.
 Whelan, R. St. Aloysius' S., Highgate, N.
 White, J.A. St. John's Coll., Brixton
 Whitechurch, C.G. Cawley S., Chichester
 Whitehead, J.K. Vernon H., Higher Broughton
 Wickens, G.E. Uckfield Gram. S.
 Wickham, J.N. Tudor Hall, Hawkhurst
 Widgery, S. United Schools, S. Molton
 Wightman, H.T. Eye Gram. S.
 Wilde, A. Rivington & Blackrod Gram. S.
 Wilkinson, J. Rivington & Blackrod Gram. S.
 Williams, G.O. St. Aloysius' S., Highgate, N.
 Williams, W.E. Wadham S., Liskeard
 Williams, W.H. Mannamead Prep. S., Plymouth
 Williams, R. Wadham S., Liskeard
 Willsler, D.M.S. Tudor Hall, Hawkhurst
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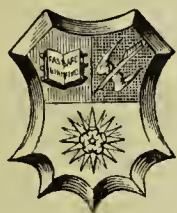
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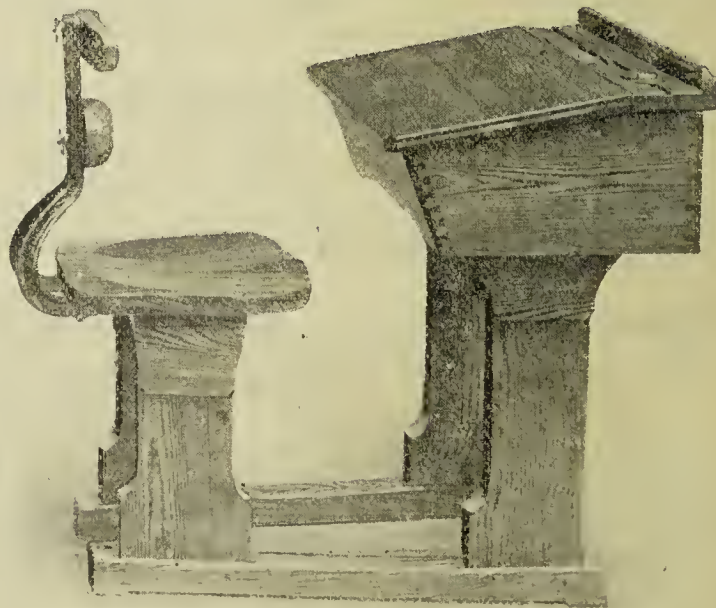
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The Educational Times.

School and Home. A SANITARY INSPECTOR from Scotland has just been telling the Sanitary Inspectors' Association that "no sanitary improvement worth the name will be effected, whatever Act you pass or whatever power you confer upon public officers, unless you can create a real and intelligent interest in the matter among the people at large." He is quite right. And the same principle holds in the matter of Domestic Science: you must get domestics to realize that there is an intelligent and an unintelligent way of boiling potatoes or of sewing on buttons. In both departments—both, so far as they are not the same—the desiderated interest is certainly growing; but, to judge from the latest Board of Education "Special Report," the Americans are keener on domestic science than we appear to be as yet in England. The Mosely Commissioners may not be wrong in holding that the Americans do not teach cookery and sewing so well as we do; yet Miss Ravenhill is certainly right in pointing out their wider educational and sociological conception and handling of the whole subject of domestic economics. The real and intelligent interest is widespread and embodied in organizations to give it effect. The Americans are bent upon being the foremost nation in the world, and they have begun to boil their potatoes with an eye to the generation of such physical, intellectual, and spiritual energy as shall fulfil their anticipated destiny.

Miss Ravenhill's copious, painstaking, and capable report has been slumbering in an official pigeon-hole for more than two years: it is dated May, 1903. The explanation is given in a prefatory note to the volume. The Board proposed to publish a series of papers dealing with School Training for the Home Duties of Women, according to plans laid by Mr. Sadler; and, for one reason and another, they seem to have judged it expedient to send the papers forth, not singly, but together. The home reports were postponed "until the new Local Education Authorities had found more opportunity to organize this part of their work by the introduction of more systematized methods than have hitherto been possible"—which looks painfully like a dread of betraying the nakedness of the land. Then

the European countries that pay special attention to domestic economy subjects had to be ransacked for material, and that would necessarily take time. Fortunately, however, "the increasing attention drawn to all matters affecting the health and well-being of the individual and the family which has resulted from the Report of the Inter-department Committee on Physical Deterioration, and the action of influential organizations which represented educational opinion of various kinds, have made it seem desirable to publish as much of the information as possible immediately." This explanation places itself beyond comment; but it makes clearer than ever how hopelessly antagonistic to Mr. Sadler's were the practical notions ruling at the Board.

However, here at last is the American Report, and it will furnish our domestic science students with material for thought and practice till the home product is matured and European experience has been collected. By way of introduction, Miss Ravenhill explains the scheme of public education in the United States (a very necessary step for the avoidance of misconceptions), and traces the history and development of domestic science teaching. Under this generic term she comprehends cookery, needlework, dress-making, millinery, laundry work, housewifery (marketing included), elements of domestic and personal hygiene (house sanitation included), and the care of young children. The main part of the Report is laid out in three divisions:—(1) State Institutions: grade (primary and grammar) schools, high schools, colleges, normal colleges; (2) Private Institutions: kindergartens, primary and grammar schools, high schools, technical institutes, women's colleges, universities; and (3) Social Agencies: women's clubs, philanthropic agencies, summer schools, university extension, the domestic service problem. The scheme, it will be seen, is thorough-going. The subjects are, of course, distributed according to the age and the capacity of the pupils. Schemes and syllabuses typical of courses and methods are furnished liberally; and there are eight illustrations. Miss Ravenhill's sympathetic—nay, enthusiastic—treatment of the varied matters at every point sustains and deepens the interest throughout.

It is hopeless for us to attempt any detailed examination of such a multifarious congeries of materials. We can

only point to the Report in a general way, and indicate its extreme value. There may be—no doubt there are—here and there, as Miss Ravenhill herself very modestly concedes that there may be, errors of observation and of comprehension, omissions, exaggerations, and so forth; but that goes without saying, and is of but minor importance. No foreign observer could reasonably be expected to master infallibly, in the course of a brief visit, “all the points in courses of study, the evolutions which have constantly cost years of thought and experimental practice, and which are also adapted to social conditions diverse from our own.” The essential matter is that the Report is thoroughly sincere and capable, and no doubt sound in the main—though it seems to have just a tinge of the colour of the rose. One cannot turn its leaves without becoming aware of a deepening impression that here are processes of the most fundamental and far-reaching influence; nay, of an insistent doubt whether there is any more important sphere in the whole range of educational activity. The interweaving of the school teaching with the facts of daily life, personal and civic, is of the last importance. “Observation shows,” says Miss Ravenhill, “that a rational study of Household Science helps to bind the girl to her home, to centre her interest there, and to show her the worth and beauty of family life. It has been well said that this subject, above all others, forges the facts of science and art into practical tools, by whose aid the home’s efficiency in the production of health and character is materially increased. . . . Speaking generally, it seemed to me that the aspects of Household Science and Art most emphasized in High School courses are the sound theoretical and scientific bases which underlie household duties; the opportunities for immediate application afforded in home life for artistic training; the increased mental and physical efficiency which follows upon a wise economy of time and an intelligent expenditure of money; and the claims of civics and patriotism upon those responsible for the rearing of the race.” Miss Ravenhill exhibits in a strong light “the admirable spirit animating some of the leisured women of the community to set personal example of the strength of their convictions in respect of home dignity and worth”; while “the trained intelligence of college women has also been directed by circumstances too numerous to detail to the economic effects of ignorance, carelessness, or indifference in the conduct of homes or of cities.”

Whether the study be advocated on utilitarian grounds for raising the standard of health and happiness, or for the advantages resulting from manual training, or on the broadest educational results, scientific, economic, sociological, and artistic—that matters little: naturally, “the line of division is rarely defined with absolute clearness.” The effects are substantially the same. It is bootless, in that case, to quarrel with motives and expectations when they all lead eventually to the same goal, and that goal is, in the opinion of all thoughtful persons, a most desirable one. And, if the effects are looked to in the United States to yield the primacy among the nations, they may be well considered in England with a view to hold her pride of place.

*An Exemplary
Private School.*

It is a pleasing and useful custom in Norway and the adjacent countries, on the twenty-fifth anniversary of the foundation of a school, to issue with the ordinary yearly report a review of its progress and accomplishment during the previous quarter of a century. Such a document, entitled “Otto Anderssens Skole 1880–1905,” has just reached us from Christiania. It extends to 131 pages. There is a brief history of the school; reflections, gravely eloquent, on the relations between the work of the school, mechanical as it may often appear to be, and the civic activities of after life; an enumeration, with dates, portraits, and other particulars, of the teachers, more than a hundred in number, who have worked in the school; and a brief account, taking up one half of the book, of the careers of the 302 pupils that have been “dismissed” to the University—that is to say, have passed a State Leaving Examination equivalent in difficulty to London Intermediate Arts.

In Norway, as in Denmark, the recognized private schools have hitherto trained the bulk of the teachers engaged in the State secondary schools. And, though Mr. Anderssen’s school is by no means the largest of its kind in Christiania, it has taken its full share of this important work, inasmuch as quite one-fourth of its men teachers have attained the higher emoluments and more assured position of the State school. No wonder that work of such quality and extent has met with grateful acknowledgment and sympathy from the leading dailies in Christiania. To such acknowledgments we cordially add our own; for there are few, if any, Norsemen that stand nearer to us in knowledge and sympathy than Mr. Anderssen. He speaks and writes English with accomplished ease. He has written in English “A Short History of English Literature” for schools, which, in its choice of subjects and manner of treating them, has hardly any superior on this side of the North Sea. He is the only one of his countrymen who has contributed to our Board of Education’s “Special Reports” on educational subjects; and, besides all this, he was, as we saw at the time (October, 1900), chosen President of the Quinquennial School Meeting of teachers from the four countries of the North, which met at Christiania five years ago, and met again last month in Copenhagen. He is also one of the two private schoolmasters that make one-third of the members of the Consultative Committee in Norway.

In Christiania secondary school attendance amounts to 36 per 1,000 of the population; and 85 per cent. of the entire number of pupils is to be found in such schools as Mr. Anderssen’s, where the education costs public funds not a single penny. If it be asked what arrangements there are in Norway tending to produce such a result more speedily than in England, a twofold answer may be given. In the first place, when Mr. Anderssen’s school had been in existence one year, it received State recognition for its lower classes, and full recognition came four years later. But the young and struggling school was not in either case burdened with the expense of the investigations that preceded recognition: *that* in Norway is regarded as an expense that belongs to the State alone, as it ought to be in England. The second answer can be indicated here only in the briefest terms. The State in Norway has shown itself more uni-

formly appreciative than the English State of the inestimable value of private co-operation of the wiser sort in the work of education; and it has taken care, as we in England with tardy steps are just beginning to do, so to bring education within the reach of the poorest as not to discourage, but to encourage, the educational employment of capital on the part of capable teachers. We congratulate Mr. Anderssen on his educational semi-jubilee, and heartily wish him a prolonged career of useful activity.

NOTES.

THE British Association in South Africa is just the British Association at home, except for an occasional touch of local colour, and for the impulse that it may give to the things of the mind in that very practical region. The President has, of course, acquitted himself in masterly fashion, as becomes the name of Darwin. After the Presidential address comes perhaps Sir Richard Jebb's exposition of the university ideal, which will furnish the Cape University with aspirations till the Association revisit it. Newman and Huxley and Matthew Arnold we know; general breadth of intellectual sympathies is good; general discipline of the mental faculties is good; the social intercourse, the informal education that young men give to each other, is good; the development of imagination, judgment, intelligent sympathy—in a word, culture—is good: all good, and all familiar. Yet one would wish that Sir Richard had gone deeper. True, he recognized that culture "cannot be regarded as something superfine—as an intellectual luxury suited only for people who can lead lives of elegant leisure." But we should have liked some strong leading on the practical means of bringing the universities more fully into the general life of the nation—and conversely.

WE have perused with much regret the voluminous correspondence between Dr. Gray, Warden of Bradfield College, and Mr. Gross, joint Secretary of the Oxford and Cambridge Schools Examination Board, over a report on the Bradfield chemistry. "As regards chemistry," wrote Mr. Gross, "the report is not sufficiently good to allow us to recommend the school to the Army Council in this subject." Yet Dr. Gray could show that his pupils "have, up to September, 1904, at least, done consistently well in the Army examinations in chemistry"; indeed, that "from 1889, when our Army Class was established on its present basis, till 1905, about seventy boys passed direct from Bradfield College into Sandhurst alone," every one taking chemistry. In view of these previous successes, the Board gave way so far as to be "prepared to recommend the school as satisfactory in the subject for the present," and Dr. Gray's candidates, who had been withdrawn, might now go on with their examination—which, however, Dr. Gray found impossible. Again, "Who are 'us'?" asked Dr. Gray. Was the decision reported by Mr. Gross the decision of the whole Board in meeting assembled? Or whose decision? Mr. Gross declined to answer, "at any rate without the direction of the Board so to do." There the correspondence breaks off. It is not easy to dissent from Dr. Gray's remark:

The principle of completely ignoring (in the first instance) past results,

and the summary verdict of a judge or judges the revelation of whose identity is refused, are methods which seem to suggest the procedure of mediæval rather than of modern days, and do not seem likely to command that universal confidence among the head masters and governing bodies of secondary schools which it has been the aim alike of the Board of Education and of the Army Council to inspire.

It is gratifying to note that the City is "waking up" to the necessity of commercial education, and moreover directing attention to the really practical expedients. The lines of the new Day Higher Commercial Department of the City of London College are laid on the following principles:—

Those responsible for the present scheme believe that, other things being equal, a youth who has been trained to see the principles which lie behind the facts of commerce, to know how far Nature has been controlled by commerce, and commerce by Nature, to know the commercial methods of his own and other nations, and the reasons for their existence, will make, not only a better man, but a better business man, than one who has had no such training. They are well aware that many things which business men must know cannot be taught except by actual business experience. These things they will make no attempt to teach. But they also believe that there is a mass of experience, accumulated from past times, and gained in the present from the rest of the civilized world, a judicious selection from which, if assimilated, will save an English youth, on his actual entry to commercial life, from errors and waste of time. It is precisely the lessons of such experience which the Governors of the City of London College desire to see taught.

The discrimination set forth here appears to be eminently sound, and everything will depend upon the judicious application of the principles in the actual course of training. The right results will soon convince such business men as still require to be convinced; and nothing else will convince them. We shall watch the operation of the scheme with interest.

"THE purpose of the Public Elementary School is to form and strengthen the character and to develop the intelligence of the children entrusted to it." This declaration, taken from the Introduction to the Education Code for 1904, heads "A Graduated Syllabus of Moral Instruction for Elementary Schools" issued by the Moral Instruction League—a carefully framed and fairly exhaustive scheme. It is interesting to note that the "Scheme of Training in Citizenship" approved in the end of last year by the Education Committee of the County Council of the West Riding of Yorkshire, "as part of the secular instruction in all West Riding public elementary schools"—1,270 in number—is remarkably similar to, indeed almost identical with, the syllabus of the League. The syllabus is, of course, readily adaptable for use in secondary schools. Generally, more and more stress is being laid on moral teaching. There ought not to be any conflict with Biblical teaching, though unfortunately there is. The Cheshire scheme, gratuitously aggressive, says the moral instruction must be "non-theological," while the Bishops insist on moral education "on a Christian basis." Yet, we understand, "moral instruction, as a secular subject, is now being given in hundreds of Church schools," without any apparent trouble. There ought not, indeed, to be any trouble if people would only be moderately reasonable and considerate.

"A CERTIFICATED TEACHER AND LONDON GRADUATE" writes with bitter energy in the *Schoolmaster* (August 12) on "the degradation of the elementary-school teacher." There is the unfair differentiation "in favour of the newer Day Training Colleges as against the older Residential Colleges";

there has, similarly, been "a gradual but well marked movement against the higher elementary and higher-grade schools, and the pupil-teacher centres." "These movements are inspired," says the writer, "by one unworthy and sinister purpose, which is to confine the elementary teacher, trained or untrained, graduate or non-graduate, to work of a purely elementary kind, and to bring in persons of other antecedents for every kind of higher work and for every office of substantial emolument." Then "in no department has this recent tendency of the Board of Education been more marked than in dealing with the Inspectorate." Finally, there is the Teachers' Register :

If we needed any further evidence of this shameful campaign against the body of elementary teachers, it is found in the establishment of the Teachers' Register with its division into Column A and Column B. The elementary teacher, however high his academic qualifications, and however distinguished his career, must further qualify for registration by experience which is technically secondary. While this proviso has wrongfully excluded hundreds of teachers who are intellectually qualified, the "service" qualification has admitted to the register swarms of poorly qualified teachers who have no academic qualifications whatever, but who have been employed, it may be at work of the most elementary character, in some kind of secondary school. But, indeed, the inequitable and indefensible regulations with which the Register is hedged are not the worst part of the business. A statesman would have seized the opportunity of the establishment of the Register for taking the first effective steps towards that unification which obtains in the clerical and medical professions, and not only the whole profession, but—what is of much greater importance—the whole community, would have benefited from the resultant interplay.

There is no doubt that every one of these points, however disputable, requires fresh and unprejudiced consideration, not only for the removal of grievances and suspicions, but for the general health of the educational body.

THOUGH it is now some time since Mr. Macleod retired from the inspectorate, his educational friends in the North are still keeping hold of him. He has just been *fêted* by the Wester Ross people at Gairloch, when he took the opportunity of outlining a scheme of special training for teachers in the Highlands. He proposes the establishment of a training college at Inverness. He says :

The aim of the wise educationist should be to prepare our pupils for the industrial pursuits in which the majority of them must engage, and to train them so that their lives may secure the maximum of happiness to themselves and the healthiest and most agreeable intercourse with their fellow-citizens. For this work we must have specially trained teachers, for which the universities are not, and never can be, so well adapted as the existing training colleges. The training colleges are established to make this their life-work, and may therefore be looked for to accomplish it more thoroughly than other institutions which can but roughly dovetail it into their general arrangements.

Mr. Macleod, of course, guarded himself carefully against depreciation of universities in their proper sphere, but a training college would give him more of what he considers necessary for the particular object of local education in the Highlands. However excellent an implement a sledge-hammer may be, he cannot but regard it as "out of place in the hands of a housemaid driving tacks into a carpet." The lonely, ill-remunerated, and prospectless post of a teacher in the Highlands can be but little attractive, we fear, even to local men or women with the most approved ideals of social service. Still, as the ragamuffin said to the counsel that unexpectedly got him off: "You never know what you can do till you try."

THE Esperanto meeting at Boulogne appears to have been very enthusiastic, and Dr. Zamenhof, the inventor of the

language, was accorded a grand ovation, which he received with the modesty of real greatness. A circular was issued to clear away popular doubts as to the aims of the Esperantists. It says :

Many people are ignorant of the essential nature of our aims. They think (1) that we wish to kill national languages ; (2) that we have some hidden reason ; (3) that Esperanto is one out of many existing international artificial languages with which it will have to compete ; (4) that it is only a commercial enterprise ; (5) that we are not fighting for an international language, but only for a pet plan of our own, and that Esperanto is a purely personal affair, consequently subjected to the caprice of its author.

Accordingly, an official declaration, drawn up at the Congress and sanctioned by it, is to be circulated, defining clearly the true principles of the movement, and "to be signed by representatives of Esperanto in every country of the world, so that we may have a wherewithal to answer these attacks and to shut the mouths of our enemies and calumniators." We should wish, rather than hope, that the declaration may have the desired effect. The objects of Esperanto are plain and simple enough : nobody is compelled to learn it ; and it is at any rate harmless, and may, under favourable circumstances, be convenient. It need not be misrepresented or calumniated. Still, it has been said that persecution is good for the faith.

SUMMARY OF THE MONTH.

A TREASURY Minute, dated July 18, upon the recommendations of the University Colleges Committee, has been issued as a Parliamentary Paper (2621). My Lords accept the recommendation—"the main feature in the Committee's proposals"—of the establishment of a permanent Committee to advise the Board of Treasury as to the distribution of the grant in aid, and "will endeavour in the course of the autumn to constitute such a body, which should also, in their opinion, undertake either by itself or by means of a sub-committee the duties hitherto performed with signal success by the quinquennial Committee of Inspection." They seek to allay the apparent apprehensions of some of the colleges "that the intervention of such a Committee may tend to weaken the responsibility of the college authorities, and to interfere unduly with their internal administration": my Lords disclaim any such intention. The amount allotted to each college for the year 1905-6 will be as follows :—

Manchester	...	...	...	£12,000
University College, London	...	...	...	10,000
Liverpool	...	...	...	10,000
Birmingham	...	...	...	9,000
Leeds	...	...	...	8,000
King's College, London	...	...	...	7,800
Newcastle-on-Tyne	...	...	...	6,000
Nottingham	...	...	...	5,800
Sheffield	...	...	...	4,600
Bedford College, London	...	...	...	4,000
Bristol	...	...	...	4,000
Reading	...	...	...	3,400
Southampton	...	...	...	3,400
Dundee	...	...	...	1,000
				£89,000

It must, however, be understood that this allocation is for the current year only, and that modifications may be introduced next year when the new Committee has been appointed. The balance of the total sum of £100,000—£11,000—is reserved for distribution in March next, when the new Committee has been able to consider the questions referred to it.

THE Esperanto Congress at Boulogne has opened wide the door to possibilities of every description (writes to the *Westminster Gazette* an enthusiastic delegate). A language which has been used day after day for proclamations, fierce argumentative debate, and earnest decisions, and night after night for songs, comedies, recitations, and compliments, can no longer be looked upon as a fad or a folly. The more so as the Congress was public, attended by some two thousand people of eighteen

tongues and representing twenty-two nations; and the people who would travel from Helsingfors, from Montreal, New Zealand, and Tiflis—working men and women, too, doctors, teachers, merchants, and not idlers, for such a purpose as the discussion of a world-wide language organization are not people to be despised. The only question was: Was the gathering of any use? And the only possible answer is: Most certainly, because an effective auxiliary language for international purposes must be useful and is already needed. The question now is: Will English people rise to the occasion and study the language for a mouth instead of sneering, though the last is better than indifference! The members of the Congress came, some of them with faint hearts. All attended with unflagging interest the frequent meetings, and left with intensified enthusiasm.

THE Summer Meeting of University Extension and other students at Oxford brought together upwards of one thousand students, including representatives from Russia, Austria, France, Belgium, Switzerland, Spain, Holland, Scandinavia, Germany, and the United States. The Meeting extended throughout the month, and the lectures illustrated the history, literature, and art of the period of the Renaissance and the Reformation, and dealt with natural science and economics. The inaugural address was delivered by Prof. Stuart, who sketched the history of the preliminary steps which led to his proposing to the University of Cambridge in the year 1871 that they should undertake the system of University Extension, and outlined the subsequent developments. He said he saw in the Education Committees established throughout England by the Act of 1902 the creation of the very bodies which were aimed at by the founders of the University Extension movement. He strongly advised the University Extension authorities of to-day to put themselves into communication with these bodies, and to be prepared, if necessary, to adapt the system to their requirements. He did not expect this would be done in a moment, for the newly formed Education Committees were intensely occupied in learning their elementary work. But the time was at hand, and a new obligation was put on the universities to aid the nation in the development that was obviously coming in the direction of the class of higher education that the universities were so well qualified to supply.

A JOINT Conference of trade unions, co-operative societies, Education Authorities, and branches of the Association to promote the Higher Education of Working Men was held at Oxford (August 13), the Dean of Christ Church presiding. The Bishop of Hereford moved a resolution to the effect that the Conference, having regard to the educational wastage consequent upon young people of both sexes either neglecting or being prevented by the conditions of their employment from utilizing the facilities afforded by Education Authorities for instruction in the evening, urged the Board of Education to ascertain from the Local Education Authorities how far and under what conditions employers and employed in their respective areas would welcome legislation having for its ultimate object compulsory attendance at evening schools. Personally he thought the course advocated by the resolution would do good, though he did not expect a great deal from it, in view of the opinion of both employers and employed in the cities and in the country, and of the indifference of the average English mind with regard to the value of education.

Prof. Sadler expressed the hope that they would be able to suggest to the Board of Education when they undertook this very valuable and practical inquiry that they should put the question in such a form as to induce not only favourable consideration, but even a favourable answer. He hoped it might be possible for the Board of Education, when they sent out this question, to attach to it what was often called a prefatory memorandum, in which the attention of all interested should be called to the fact of how much had already been done in England on the very lines that this resolution pointed to. It was his duty last year to ascertain how we came out in England comparatively in regard to the attendance at evening continuation schools, and to his surprise he found that only one country in Europe—Switzerland—could show a better attendance at continuation schools than in England and Wales. He would like the Board of Education, if they would, to include a list of the great firms which had already required the attendance at evening schools as a condition of apprenticeship. He believed they would never get compulsory continuation schools until they laid upon employers of labour the statutory duty of securing a technical

and civic education for their young workpeople. He would like to see suggestions thrown out by the Board of Education for joint committees of employers and trade unions and educational students, so that they might really, when they were planting compulsory schools, have some more definite idea of what they meant to teach. The resolution was carried with two dissentients.

A DAY Higher Commercial Department will be opened at the City of London College on September 21, under Mr. F. H. Spencer, LL.B. The Department will form part of the Scheme for Commercial Education inaugurated at the opening of the new buildings on May 26. The object is to provide a higher education for those who have already had an ordinary secondary education up to about the age of sixteen. The prospectus says:

Those pupils who are prepared to stay long enough as pupils of the Higher Commercial Department and are of the requisite ability will be allowed to enter for the examinations of the University of London for the degree of B.Sc. in the Faculty of Economics. But the organizers of this scheme do not believe that examination success is the complete or proper test of the efficiency of the kind of education they propose to give. The work of the Department will be so set out as to cover the work for the B.Sc. Econ.; but the aim of the Department will not be to enable its pupils to gain degrees, but to fit them better for business life. If the passing examinations, in *each particular case*, does not interfere with the more important aim of the Department, pupils will be allowed and even encouraged to enter for examinations, but not otherwise.

A COMPREHENSIVE and able article in the *Morning Post* (July 31) on the registration of teachers concludes thus:

The failure of the Register would be a great disaster to education. It would mean that teaching would be the one learned profession in which ignorance and incapacity could find a home. It would involve the loss of the State certificate, by which it is hoped that the efficient private schools will be discriminated from the inefficient. But the thought of such a failure ought not to be tolerated. Secondary teachers especially, who understand the value of class-room craftsmanship and who regard the Register as a means of acquiring a professional standing, and as an instrument for welding their heterogeneous elements into an organized body, ought to make every effort to save the movement from shipwreck. Unfortunately, as has been often pointed out in this column, school masters and mistresses do not seem to have yet learnt the lesson of the faggot and the sticks ("Æsop's Fables" being probably no longer read in schools), and remain divided into several different associations. But rumours of a combination or federal union of these bodies have been rife for a long time, and the doubtful outlook for the Register may perhaps do something to hasten the pace of this rather dilatory movement. Secondary teachers, like other people, can combine when their own interests are at stake. A delegation from five associations of London school masters and mistresses recently laid their claim for better salaries before the Teaching Staff Sub-Committee of the London Education Committee. Surely these teachers are not going to let it be said of them that they cannot unite for any purpose but that of getting their wages raised.

To erect what is known as the educational ladder for the children, and deny access to the upper staging to the teachers, is (says the *Morning Post*) an inconsistent and reactionary procedure. On behalf of the policy of restricting the primary teacher to primary work it is argued that the work of teaching in secondary schools requires very special qualifications; and doubtless that is true. But those special qualifications are not of such a nature that they cannot be possessed or acquired by men and women whose lot has been cast in the primary grades of education. Analyze the special qualifications which head masters and parents alike desire in secondary schoolmasters, and you will find that they amount to knowledge of the ways of boys and girls of that particular class, capacity for sympathetic intercourse with them, and readiness to organize and share in their amusements. Nothing but experience can give the first; nothing but character the second; nothing but physique and animal spirits the third. So that, if you take a primary teacher, man or woman, who has the power of sympathy with immature humanity and no natural distaste for healthy recreation, and give him a month or two to learn the ways of children of the rank and wealth he aspires to teach, you will secure your qualified secondary master, and, what is more, you will secure a teacher. Now it is perhaps no more than a suspicion that by its latest regulations the Board of Education has attempted to exclude primary teachers from secondary schools. Yet this purpose alone would seem to account for the exclusion of primary teachers from the university courses necessary to qualify them as secondary teachers. An article on the situation and its

recent sinister development, written with real passion by "A Certificated Teacher and London Graduate," appeared in the *Schoolmaster* last week. [See "Notes."] Let him take courage. The attempt to keep the primary teacher "in his place" is only half-hearted, and when the demand for trained teachers in the secondary schools becomes universal the supply from the ranks of primary teachers will not be checked by reactionary regulations.

THE REV. CANON WILSON, speaking on the occasion of his retirement from the Vicarage of Rochdale (August 15), said:

When I think what progress in the conception and practice of real education has been made in my fifteen years here nothing seems to me impossible or utopian. The progress of physical education in schools has been marked and rapid. Nowhere greater than in Rochdale. . . . But we are far from the goal as yet even in our schools. Still less am I satisfied with what we are doing for boys and girls who have left our schools. The care of the health of many of our children and of infants in the families from which they come is another unexplored possibility and duty of the most pressing kind. We all know of the shameful and wicked waste of child life in Rochdale. We do not all see and understand the effects of an equally shameful and wicked waste of infant and child health and vigour, our greatest national asset. Here is a great work, worthy of our parish to undertake. Some such area or school must pioneer. Then, again, we need immensely more attention to the games of boys. The boys in our towns are placed in wholly unnatural circumstances, and Nature punishes us for our stupid violation of her laws. The Lord Chief Justice, six weeks ago, publicly stated his opinion that, second to drink, and only to drink, the real cause of crime in England was the difficulty of finding healthy recreation for the young. No expenditure of public or private funds could be so certainly remunerative as the providing every separate school with a good-sized field and a ground and games supervisor. We want some one in high place to care persistently for our children and give the town no peace till their natural needs are met. . . . Not all the wealth of the world can supply the want of healthy and good children.

Canon Wilson went on to plead for something to be done to prevent the waste in elementary education caused by the stoppage of educational work at the age of thirteen or fourteen. He also asked that means should be devised to help boys on leaving school to get employment suited to their tastes and capacities.

THE Report of the Sixth Annual Examination for the National Diploma in Agriculture shows that 91 candidates entered, 58 in Part I. and 33 in Part II. In Part II. 20 candidates were successful, and thus became entitled to the Diploma, 5 of them with Honours. In Part I. 38 candidates passed. The general results show substantial progress in the teaching of agriculture and allied sciences. The number of candidates was higher than on any previous occasion since the institution of the Diploma Examination in 1900, and the fact that so many as five of the candidates succeeded in obtaining Honours proves the attainment of a higher standard of merit, as the Honours Diploma has not been gained by more than one candidate at any previous examination held by the Board.

THE list of L.C.C. awards of Senior County Scholarships, Exhibitions, and free places shows that nine scholars have been awarded scholarships at Cambridge University of the value of £60 per annum for three years, together with the payment of tuition fees to the extent of £30 per annum; that 28 Senior County Exhibitions, ranging from £30 to £70 a year, at university colleges have been awarded, while 9 scholars receive free places at university or other colleges in London; and that Intermediate Scholarships have been awarded to 50 boys and 30 girls, and 20 boys receive Commercial Intermediate Scholarships.

At the recent Oxford Local Examinations, boys were examined at 186 and girls at 213 centres. The total number of candidates was 14,222, as compared with 14,149 last year, and 9,732 certificates were awarded, against 9,805 in 1904. The Senior candidates numbered 3,646, the Juniors 6,960, and the Preliminary 3,616. Of these, 2,416 Seniors, 4,861 Juniors, and 2,455 Preliminary passed. Girls stood well in all the examinations. Thirty-seven girls, as against 30 last year, showed sufficient merit to receive certificates qualifying them for admission to the University examinations for the degree of B.A. and B.Mus., on conditions prescribed by the delegates. In the examination generally there is a distinct improvement in religious knowledge, in English, and in science.

THE President of the Section Pédagogique of the Liège International Congress (see "Fixtures") is M. Salomon Reinach, Membre de l'Institut, Conservateur du Musée Saint-Germain, Paris. The subjects are these:

1. Rechercher quelles sont les méthodes les meilleures pour réfectionner l'enseignement du français dans les diverses écoles des pays de langue française, depuis les classes primaires jusqu'à l'Université. Heures de cours. Livres employés. Rôle des classiques dans l'enseignement moyen, &c.

2. Examiner si l'on ne pourrait multiplier dans les centres des pays bilingues des établissements libres d'enseignement moyen, dont le français serait la langue, en suivant l'exemple donné à Anvers et à Gand. Application particulière de ce point de vue aux écoles de filles.

3. Le rôle de l'instituteur vis-à-vis des patois doit-il être de les détruire, de les respecter ou de les cultiver?

4. N'y a-t-il pas lieu de substituer dans l'enseignement de la langue française la lecture des écrivains du XVIIIe siècle à celle des prosateurs du XVIIe, dont la langue est déjà archaïque?

THE Royal Meteorological Society, being desirous of advancing the general knowledge of meteorology, and of promoting an intelligent public interest in the science, and thinking that these ends can be most readily attained by means of lectures delivered in connexion with scientific societies and institutions in various parts of the country, have appointed a lecturer, and offer his services at a moderate fee (with travelling expenses). They are willing to arrange for exhibiting at the gatherings of local scientific societies, institutions, or schools a collection of photographs, drawings, diagrams, and charts illustrating meteorological phenomena, and of various patterns of instruments used for meteorological observations. They would also, if desired, lend and fit up a complete climatological station for exhibition, showing the necessary instruments in position and ready for use. Apply to the Assistant Secretary, 70 Victoria Street, S.W.

At a recent meeting of the Kent Branch of the Association of Assistant Masters in Secondary Schools at Rochester, the Rev. S. Richards (Maidstone Grammar School), the Secretary, gave an account of the scheme for federating all the societies engaged in the work of secondary education in England, and a motion in favour of federation was passed. Methods of co-ordination of the work of mathematical and science masters were discussed. A resolution was also passed urging the County Council to give effect to a scale of salaries adopted at a former meeting in every school engaged in the training of their pupil-teachers. The next meeting will be at Tonbridge School.

SIR WILLIAM MACKWORTH YOUNG, K.C.S.I., presided at the second annual prize distribution at Uplands School, St. Leonards-on-Sea. The prizes were distributed by the Lady Edith Ashley. The Head Mistress (Miss Walsh) stated that the year's record was particularly gratifying for so young a school. Six pupils had passed the Cambridge Local Examination, one with Honours. Ten pupils had been successful in the examinations of the Royal Academy and Royal College of Music, and Trinity College; one of them passing in the Advanced Grade and winning the prize given at the local centre for the highest marks in piano-playing, and afterwards obtaining the Associateship of the Royal College of Music. Gratifying distinctions were obtained at the Exhibition of Drawing held in March by the Royal Drawing Society; and of the seventy-six papers submitted at the examination in June not one was rejected, and sixty-one gained Honours. Two complete Honour Certificates were won by pupils who had taken Honours in each division. Good progress had also been made in practical subjects, such as cookery and needlework. The record in the playing-field was equally satisfactory. Sir W. Mackworth Young paid a high tribute to the tone and efficiency of the school.

THE prizes at Sandecotes School, Parkstone, Dorset, were distributed by the Lady Rodney. The Head Mistress (Miss A. Grainger Gray) reported a very gratifying success for the past year in outside examinations. Four pupils had obtained the full Higher Certificates from the Oxford and Cambridge Joint Board, and six others had passed in various groups. Another had succeeded in the London University Matriculation Examination; and in the Cambridge Higher Local a pupil obtained Second Class Honours. Numerous successes had been gained in musical examinations. Two full Honour Certificates had been gained, and no less than twenty-eight pupils had taken Honours in one or more divisions, at the examination of the Royal

Drawing Society, and three pupils had received commendation at the Exhibition of that Society. The examiners of the Royal Drawing Society had been so struck by the excellent quality of the work done by Sandecotes pupils that their drawing mistress, Miss de Chaumont, had received a gratifying invitation to become a member of that Society.

THE REV. DAVID MACRAE, in his circular letter of protest against the misuse of "England" for "Britain" in history books, which we printed in our July issue, mentioned that the Convention of Royal and Parliamentary Burghs, with other bodies, had "begun to take action" in the matter. Presently the Convention forwarded to the Secretary for Scotland a representation urging that steps be taken to see that in school history books dealing with British history prior to the Union of the Crowns of Scotland and England a more adequate and accurate presentation be given of the important events in Scottish history; that these events should be presented from an authentic Scottish standpoint; and that in books relating to British history after the Union the words "British" and "Britain," not "English" and "England," be used whenever the United Kingdom or its affairs are referred to. It was pointed out that "with regard to our national names, although historical accuracy and the express terms of the Treaty of Union between Scotland and England require that the United Kingdom shall be called by its united name, this provision is in many of the history books used in Scottish schools disregarded."

Now the Secretary of the Scottish Education Department (Dr Struthers) has replied to this effect:

My Lords are in agreement with the views expressed in the representation that it is matter for regret, in the interests of historical accuracy, that errors such as those to which attention is called should be of not infrequent occurrence in several of the school books at present in use in Scotland. In particular they regret that the facts relating to the Treaty of Union and its effects, as set forth in Sections 3 and 4 of your representation, should not be accurately stated.

In view of the importance of the matter, my Lords propose to direct their Inspectors to make special inquiry as to the treatment accorded to these national questions in the text-books which they find to be actually in use in schools, and where, without raising pedantic questions, they find such treatment to be either inaccurate or seriously inadequate to report the circumstances to their Lordships for their further consideration.

It is pointed out, however, that the selection of school books is primarily a matter for the Local Education Authority, with whom, or with the peccant publishers, the complainants should communicate directly.

THE death is announced of Prof. Alexander Melville Bell, "vocal physiologist," in his eighty-seventh year. He was inventor of "Visible Speech," author of many works upon speech, elocution, stenography, and editor of a highly popular work, prepared for the use of elocutionists, known as "Bell's Standard Elocutionist."

Alexander Melville Bell (says the *Athenaeum*) was born in Edinburgh in 1819. From 1843 to 1865 he lectured on Elocution in Edinburgh, at the University and at New College; and in 1865 was appointed Lecturer at University College, London. In 1870 he removed to Canada and became Professor of Philology at Queen's College, Kingston, and in 1881 he went to Washington. He was widely known as an elocutionist, and his Shakespearean readings were famous in the United States. His son, Mr. A. Graham Bell, was inventor of the telephone; a brother, David Charles Bell, was a teacher of elocution in Dublin.

DR. DAVID BINNING MONRO, D.C.L., the Provost of Oriel College, Oxford, died in Switzerland (August 22). He had been unwell for some time, and gave up the Vice-Chancellorship of the University in 1904 owing to indisposition. Dr. Monro was born in Edinburgh in 1836, the eldest son of A. Binning Monro, of Auchinbowie, Stirlingshire. He was educated at Glasgow University and at Brasenose and Balliol. He was in the First Class in Classical and in Mathematical Moderations in 1856, gained the Ireland Scholarship in 1851, and in 1859 won the Latin Essay (B.A. 1858, M.A. 1862). He was Fellow of Oriel from 1859 to 1882, Tutor from 1863 to 1873, Vice-Provost from 1874 to 1882, Classical Moderator in 1869 and 1871, and in 1882 he became Provost of Oriel. He was the author of a valuable "Grammar of the Homeric Dialect" and of a well known edition of the "Odyssey."

UNIVERSITIES AND COLLEGES.

THE Commissioners appointed under the University London. College, London (Transfer), Act, 1905, held their first meeting at the University of London, South Kensington (August 15), under the chairmanship of Sir Edward Fry. An order was made postponing the day on which the transfer of the college to the University is to take effect to September 1, 1906. Mr. Arthur Paget, 9 King's Bench Walk, Temple, was appointed secretary.

A Committee consisting of the Chancellor, the Vice-Chancellor, and Chairman of Convocation, Sir William Collins, Dr. T. Gregory Foster, Rev. Dr. A. C. Headlam, Mr. H. J. Mackinder, Lord Reay, Sir Owen Roberts, Sir Albert Rollit, and Mr. Sidney Webb, has been appointed to consider and report upon the organization of commercial education in the University.

Mr. Edgar Schuster, the Francis Galton Research Fellow in National Eugenics, has presented a report containing a preliminary account of inquiries which have been made into the inheritance of disease, and especially of feeble-mindedness, deaf-mutism, and phthisis. Arrangements have been concluded with Mr. John Murray for the publication of a work on Noteworthy Families in Modern Science, written by Mr. Francis Galton in conjunction with Mr. Schuster. This is to appear as Volume I. of the publications of the Eugenics Record Office, and will contain accounts of the families of some fifty Fellows of the Royal Society. Miss Ethel Mary Elderton has been appointed Secretary to the Eugenics Record Office.

The Annual Report of the Goldsmiths' College Delegacy shows that evening classes have been carried on during the past year by arrangement with the London County Council and with the aid of a special donation of £5,000 made by the Goldsmiths' Company over and above their normal grant of £5,000. It is hoped that a number of these classes may be continued during next session. With the co-operation of the London, Kent, Middlesex, and Surrey County Councils and the County Borough Council of Croydon, the University has now completed the arrangements for the establishment of the training department of the college. This will accommodate 500 students, of whom 250 will be admitted during the first year. The course of training will extend over two years. Considerable improvements are being effected in the buildings, and the college will be opened in all its departments towards the end of September.

The following Doctorates have been conferred:—D.Sc. in Chemistry (Internal), Miss Ida Smedley; D.Sc. in Chemistry (External), Mr. William Horace Sodean; D.Sc. in Botany (External), Mr. David Ellis; D.Sc. in Geology (External), Mr. Felix Arthur Clair Oswald.

THE Faculty of Commerce of the Victoria Manchester. University of Manchester has issued its prospectus, which declares that the aim of the Faculty is to afford systematic training in higher commercial subjects, in the study of government and administration, and in the work of economic and social investigation. It will confer special degrees and grant certificates. The work in the Faculty comprises, first, teaching in the subjects which are fundamental in all commercial and administrative education; second, instruction in more special branches of study; and, finally, research and investigation. The object of the training provided is not merely to give useful information but to develop and discipline the mind, both generally and with special reference to the problems which must be faced in business and public life. It is no substitute for experience, but it should broaden the outlook, train the faculties to analyze new commercial and economic situations, and impart organized knowledge.

An Honours School of Celtic Studies has been formed in the Faculty of Arts, which places Irish and Welsh on the same level with Classics and Modern Languages as subjects of study for the Honours degree of the University. The significance of this new departure lies in the fact that it affords the student who is interested in Celtic philology and literature an opportunity of specializing in any one of the branches of study on the programme. Thus, in the third and fourth years of his work in the Honours School the student in Celtic philology may take either translation of Irish texts or translation of Welsh texts and Breton or Cornish texts for his prescribed subjects. In the same way, the student of history and literature may select either Irish or Welsh History as his special study.

THE Board of Trinity College have instituted a Dublin. Diploma in Economics and Commercial Knowledge.

The course for the examination includes, as obligatory subjects, the theory of economics, commercial history and geography, accountancy, and commercial law; and, as optional subjects, a modern language (French or German or Spanish), any one of a variety of special economic subjects, and any one of the following branches of economic and business organization:—banking, railways, insurance, agriculture. The diploma will be given for proficiency in the obligatory portion of the examination, and will give credit for further success in the optional courses. All persons are eligible as candidates for the diploma who have matriculated at any university or have passed the senior or middle grade Intermediate Examination, or have the certificates of any recognized technical school or school of commerce, or “possess any other qualification deemed sufficient by the Board.” The examination may be taken in parts, and the fee for each year will be for members of Trinity College one guinea and for other candidates two guineas. In the case of Trinity College students, the diploma will be accepted as an equivalent for the exercises required for keeping the Hilary and Trinity Terms of the Senior Sophister year. The first examination for the diploma will be held in October, 1906.

PROF. HENRY JONES (Glasgow), in his recent speech Bangor. on the great administrative controversy, said that the real importance of the University of Wales lay in the fact that it had displaced the University of London. But they would never have a great university unless they got great teachers and gave them full freedom of teaching and research. He warned them that the strengthening of the centre had a tendency to crush initiative. They did not want a “Principal of the University” as such; they did not want to see the local colleges under the authority of any central despot, however wise. They wanted them to grow great according to their own ideals. He hoped to see the Bangor College made into a separate university, as had been done in the case of Leeds, Manchester, and Liverpool. That was the trend of all modern universities, and in every instance to the great benefit and strengthening of the districts in which the colleges were placed, and therefore of the community as a whole. It was very easy to legislate for temporary difficulties. His advice to them was “don’t.” Let them set an adequate ideal before them. He himself had removed from Bangor partly because of the greater freedom from despotism he was allowed at St. Andrews.

VOLUNTARY SCHOOL ENDOWMENTS.

BOARD OF EDUCATION DECISION.

THE Board of Education have decided that, in the case of trusts for purposes of religious and secular education in combination, any scheme for the application of the endowments should secure as far as possible a continuation of that combination; and that, in cases where it is proposed to apply the income of such endowments to the provision of exhibitions, the exhibitors should satisfy the trustees as to their knowledge of the doctrines of the particular denomination with which the endowment is connected, or that the exhibitor has attended a Sunday school in connexion with the denomination. It is not, however, necessary or desirable that the exhibitors should be confined to schools connected with the particular denomination. The Board attach great importance to the introduction of the representative element on the governing body of such endowments, one representative of the Local Education Authority being necessary, especially in the case of endowments where the income is applied to purposes of higher education. It is made clear, however, that the representative element should not have controlling power over the administration of educational endowments affected by denominational trusts, but that there should be a strong majority of *ex-officio* and co-opted members. An exception is, however, to be made in the case of endowments consisting of buildings or the proceeds of sale or letting of buildings of disused denominational elementary schools, where there should be a representative of the Education Authority on the governing body. In dealing with the proceeds of the sale of such buildings, the Board will be willing to appropriate one-third of the income to the maintenance of a Sunday school connected with the denomination, and the remainder to purposes of secular education without denominational restrictions.

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CURRENT EVENTS.

Le Congrès international pour l'extension et la culture de la langue française se tiendra à Liège, les 10, 11 et 12 septembre. (For the Section Pédagogique see "Summary.")

Le 13 septembre aura lieu, en terre allemande, une excursion aux communes wallonnes qui ont conservé jusqu'aujourd'hui un patois d'origine française. On espère pouvoir consacrer une cinquième journée, le 14 septembre, à une excursion à Bruxelles, avec séance solennelle à l'université de cette ville, réception à l'hôtel de ville, &c.

Les Congressistes auront droit sur les chemins de fer français à une réduction de 50 p. c.; ils jouiront, en Belgique, et particulièrement à Liège, de toutes les faveurs accordées, à l'occasion de l'Exposition Universelle, aux visiteurs étrangers qui adhèrent à l'un des Congrès internationaux dont le siège sera en cette ville, l'été prochain.

On est prié d'adresser toutes les communications, relatives aux travaux du Congrès, à la propagande, &c., à M. Beck, secrétaire général du Congrès, Institut de sociologie Solvay, parc Léopold, Bruxelles. Les adhésions sont reçues par M. Tilkin, trésorier du Congrès, 5 rue Lambert-le-Bègue, à Liège.

* *

THE Board of Education announce that the Certificate Examination for Teachers in Elementary Schools will take place in 1907 and subsequent years during December instead of during July. This change is consequent upon the change in the date of the King's Scholarship Examination and upon the date fixed for the Preliminary Examination for the Certificate, which will take the place of the King's Scholarship Examination in 1907. The Examination for Students in Training Colleges is not affected, and will continue to be held in July. The detailed syllabus and regulations for the Certificate Examination of 1907 will be issued shortly.

* *

THE annual examination of candidates for the National Diploma in the Science and Practice of Dairying will be held for English students at Reading College, September 18–21, and for Scottish students at the Dairy Institute, Kilmarnock, September 25–28.

ON the occasion of the visit of the British Honours. Association the University of the Cape of Good Hope has conferred the following honorary degrees:—

D.Sc.: Prof. Darwin, President of the Association; Sir William Crookes, Past-President of the Association; Sir David Gill, Astronomer-Royal at the Cape; Prof. Porter, Montreal; Prof. Davis, Harvard University; Dr. Backlund, Director of the Nicholas Observatory, Pulkowa, Russia; Prof. Bohr, Copenhagen; Prof. Engler, Berlin; Prof. Kapteyn, Groningen; Prof. Penck, Vienna; and Dr. Sjogren, Stockholm.

D.Lit.: Dr. Murray, editor of the "Oxford English Dictionary," and Prof. Codier, Paris.

* *

LORD GREY, Governor-General of Canada, has received the honorary degree of LL.D. from Laval University.

THE University of London has accepted the offer of the Secretary of State for the Colonies of £700 a year for five years for a Chair of Protozoology, and has set aside a further sum of £200 a year for assistants and laboratory expenses in connexion with the chair.

THE following contributions have been promised to the building scheme of Bedford College for Women:—Mr. and Mrs. G. T. Pilcher, £1,000; Miss Shaen (one of the daughters of Mr. William Shaen, for some years Chairman of the college), £1,000; and the Clothworkers' Company, a donation when the sum collected has reached £50,000.

* * *

THE Drapers' Company, who have already done much for the East London Technical College (henceforth to be known as the East London College, courses in languages and literary subjects for the London B.A. having just been introduced), have made a further grant of £5,000 for an extension of the premises. They have also largely developed their scholarship scheme: next year they will award 19 scholarships of £40 a year for three years, some of them being reserved for women, while others will be awarded in the subjects of the London B.A. degree.

* * *

THE Dominion Government has just made a grant of £500 to the McGill University for its Faculty of Railway Engineering and Transportation. This is the Government's contribution, as owner of the Inter-Colonial, to a scheme to which the Grand Trunk and Canadian-Pacific have given £1,000, and the Canadian Northern £400, for the instruction of young men in railway construction and operation.

* * *

MISS SPARKS, of Bincombe House, Crewkerne, has given Crewkerne Grammar School £1,000 to defray the cost of the drainage and the refurnishing of the school gymnasium, the balance to be appropriated to a scholarship of £10 annually, for day boys, to be called the "John Sparks Scholarship."

* * *

THE University of Melbourne has received a largely increased endowment from the Government of Victoria to institute a degree in Agriculture, and invites applications for a Professorship of Botany and a Lectureship in Biochemistry.

* * *

MR. MOSES A. DROPSIE, late President of Gratz College, Philadelphia, has bequeathed 1,000,000 dollars to establish a Jewish College in that city. The institution will be non-sectarian and coeducational.

* * *

Scholarships and Prizes. THE Governors of the Merchant Venturers' Technical College, Bristol, will award annually to the most suitable candidate who, being a member of the College, has taken the B.Sc. degree of the University of London, or gained a similar distinction, a research scholarship of the value of £50, tenable at the College for one year.

* * *

Appointments and Vacancies. MR. S. HERBERT COX, A.R.S.M., and Past-President of the Institution of Mining and Metallurgy (1899-1900), has been appointed (temporarily) to the Professorship of Mining at the Royal School of Mines, vacant on the death of Sir Clement le Neve Foster.

* * *

MR. A. B. SKINNER has been appointed Director of the Art Museum at South Kensington, in succession to Sir Caspar Purdon Clarke, who goes to New York.

The Board are considering the advisability of making new arrangements in regard to the relations between the Council of Advice for Art and the work of the Art Museum, with a view to enlarging the scope and functions of the Council, and at the same time extending the responsibilities of the Director in certain directions.

* * *

THE Provostship of Oriel College, Oxford, is vacant by the death of Dr. D. B. Monro.

THE Professorship of Classical Literature in Manchester University is vacant through the death of Dr. A. S. Wilkins.

* * *

MR. FREDERICK MACKARNES, Barrister-at-Law, has been appointed Professor of Roman Dutch Law in University College, London.

* * *

MR. WILLIAM AUGUSTUS TILDEN, D.Sc., F.R.S., Professor of Chemistry at the Royal College of Science, has been appointed Dean of the College, in succession to Prof. J. W. Judd, C.B.

* * *

THE REV. F. E. BRIGHMAN, M.A., has been appointed to give a course of lectures on "The Ancient Liturgies" at King's College, London, in Lent Term next session.

* * *

SIR JOHN HALLIDAY CROOM has been appointed to the Chair of Midwifery in Edinburgh University.

* * *

AT the University of Aberdeen, Mr. Walter H. Moberley, M.A. Oxon., succeeds Prof. Lord as Lecturer in Political Science and Moral Philosophy; and two ladies, Miss Mary E. Thomson and Miss J. Forbes, have been appointed Senior and Junior Assistants to the Professor of Humanity.

* * *

AT Bristol University College, Mr. George Leonard, M.A. Camb., Lecturer in History in the college, has been promoted Professor of Modern History; Mr. Richard Pape Cowl, M.A. Dub., Lecturer in English Language and Literature in Birmingham University, has been appointed Professor of English Literature and Language; and Mr. J. H. Priestley, B.Sc. Lond., has been appointed Lecturer on Botany, in succession to the late Mr. George Brebner.

* * *

AT Royal Holloway College the following appointments have been made for next session:—Prof. Louis Brandin, M.A., Ph.D., as Visiting Lecturer in French Philology; Miss M. E. D. Honey, B.A., as Assistant Lecturer in French; Mr. Thomas Seccombe, M.A., as Visiting Lecturer in Modern History; Miss H. Fraser, B.Sc., as Demonstrator in Botany; Miss F. de Ghey as Assistant Lecturer in Classics. The Rev. Canon Beeching, M.A., will give a course of lectures on "English Lyrical Poetry."

* * *

THE REV. W. M. DAVIDSON, M.A., M.Sc., B.C.L., Lecturer in the Armstrong College, Durham University, has been appointed Vice-Principal of St. Katharine's College, Tottenham, in succession to the Rev. H. D'Albertanson, M.A., who has been appointed Chaplain of St. James's Church, Oporto, and Head Master of the Oporto British School.

* * *

THE REV. F. LOWMAN, M.A. Trinity College, Dublin, has been appointed Vice-Principal of the Exeter Diocesan Training College.

* * *

MR. C. E. GREENALL, B.Sc., has been appointed assistant master in the Bristol Day Training College for Men, which opens this month.

* * *

MR. D. R. HARRIS, M.A. Cantab., B.A. Lond., Lecturer on Education and Master of Method, London Day Training College, has been appointed Principal of the Bangor Normal College.

* * *

M. ALBERT BARRÈRE, Professor of French at Woolwich Military Academy, has been promoted Officer of the Legion of Honour. He is a brother of M. Camille Barrère, French Ambassador at Rome.

MISS KATHERINE C. CAIRD, M.A., has been appointed Lady Superintendent of Perth Academy.

* * *

MR. HAROLD G. D. TURNBULL, B.A. Oxon., Assistant to the Professor of Humanity in Aberdeen University, has been appointed Professor of English Literature in the Deccan College, Poona.

* * *

AT St. David's College, Lampeter, the Rev. W. H. Hayman, M.A. Oxon., has been appointed Theological Tutor, and the Rev. W. B. Frankland, M.A. Cantab., Mathematical Lecturer.

* * *

MR. R. G. WHITE, B.Sc., has been appointed Assistant Lecturer in Agriculture at University College, Bangor.

* * *

THE Rectorship of the Glasgow High School for Girls is vacant by the retirement of Dr. Milligan. Lady teachers are eligible.

* * *

THE REV. H. BUCHANAN RILEY, M.A. Oxon., Head Master of Sir Roger Manwood's Grammar School, Sandwich, has been appointed Head Master of Emanuel School, Wandsworth Common.

* * *

MISS BARBARA FOXLEY, Head Mistress of Queen Mary's College, Walsall (twelve years), will assist next session in the training of Diploma students in the University of Manchester.

* * *

MR. JOSEPH ERNEST BOYT, M.A. Cantab., B.A., B.Sc. Lond., assistant master, Bedford Grammar School, has been appointed Head Master of King Edward VI.'s Grammar School, Stourbridge.

* * *

MR. WATSON CALDECOTT, M.A. Dub., second master, Owen's School, Islington, and Lecturer in Birkbeck College, has been appointed Head Master of Wolverhampton Grammar School.

* * *

THE REV. JULIAN LLEWELYN DOVE, M.A. Cantab., Head Master of Denstone College, formerly of Haileybury, has been appointed second master of Durham School.

* * *

MR. W. ROOCROFT ANDERSON, M.Sc. Vict., assistant master, Leigh (Lancs.) Grammar School, has been appointed to Lady Manners' School, Bakewell.

* * *

MR. J. JOHN BENNISON, B.A. Lond., Poulton-le-Fylde Grammar School, has been appointed to Horsham Grammar School.

* * *

Literary
Items. THE Oxford University Press is about to publish a book of progressive lessons in Elementary Chemistry, experiment and theory, by Messrs. F. R. L. Wilson, assistant master at Charterhouse, and G. W. Headley, Head Science Master, Civil and Military Department, Cheltenham College. The object is to provide a school course of practical training in chemistry suitable for those studying the subject as an integral part of their general education, and at the same time to lay a solid foundation for such as may require to specialize later.

* * *

MESSRS. MACMILLAN will publish shortly "Essays on Mediæval Literature"—Early English prose, the similes of Dante, Boccaccio, Chaucer, Gower, Froissart, and Gaston Paris—by Prof. W. P. Ker, LL.D.

MESSRS. CROSBY LOCKWOOD & SON will publish this month a revised and greatly enlarged edition of De Fivas's "Grammar of French Grammars." More than 250 "Graduated French Texts" (selections from authors of repute of the most varied styles) precede the several original grammatical exercises.

* * *

THE Walter Scott Publishing Co. are issuing a work on "The Nurture and Management of Children," by the late Dr. Samuel Smiles, edited (with additions) by Sir Hugh Beevor, Bart., M.D., F.R.C.P.; also "The Story of the Harp," by Mr. W. H. Grattan Flood, organist of Ennis-corthy Cathedral, which will form the sixth volume of "The Music Story Series," edited by Mr. F. J. Crowest.

* * *

MESSRS. W. & A. K. JOHNSTON promise shortly "An Atlas of Commercial Geography," edited by R. Ferguson Savage, F.R.G.S.—36 maps, with notes—"attention being strictly confined to the real essentials of the subject only."

* * *

M. TCHERTKOFF is preparing for the Free Age Press four works of Tolstoy and several smaller pieces. The "critical essay on Shakespeare, explaining the conditions responsible for the misdirected worship of his writings," promises to be piquant.

* * *

THE *World's Work and Play* (August)—an excellent review, steadily improving—has an instructive article on "What the Public Libraries are doing for Children," by Ernest A. Baker, M.A. "In America, as in England, these libraries have proved an effectual means of combating the influence of low and pernicious journals and stories. They are a blow against hooliganism."

* * *

THE *University Review* for August has two notable (out of four good and live) papers: on "Summer Gatherings," by Dr. Alex Hill, and on "Workpeople and the University," by Albert Mansbridge. "The treasures brought back from a summer gathering," says Dr. Hill, "have a value which you are unlikely at any after time to call in question." "Any conception of a university as the parent of a high culture," says Mr. Mansbridge, "postulates broad and free contact with life." He concludes that "the outlook is full of promise."

* * *

MR. RALPH D. PAINE contributes a long, very interesting, and profusely illustrated article to the August *Century Magazine* on "American and English Rowing"—the first of a series on "The Spirit of School and College Sport."

* * *

THE Autophuistic Postal College, conducted by Mr. Oswald Sunderland, L.C.P., offers particular guidance in study with a special view to self-development of the industrious student.

* * *

General. THE first stone of the building erected in memory of Etonians who fell in South Africa in the years 1899 to 1902 was laid by H.R.H. Princess Alexander of Teck on July 29.

* * *

ANOTHER chance for the bards. Principal Reichel, of North Wales University College, is offering five guineas for a college song. It must be in Welsh, and not more than five stanzas long.

THE LOST SCOTTISH EDUCATION BILL.

[From the *Educational News*.]

Now that the Education Bill is out of the way, the country is in a position to sum up the results which have followed its introduction and its failure to pass. These we believe to be wholly bad. Better to have had no such Bill introduced at all than have the ordinary work of administration thus interfered with uselessly.

Among the evils we put first and foremost the encouragement given to lazy, indifferent, cheese-paring School Boards to postpone some necessary but expensive work, the extension and remodelling of inadequate and defective school premises, or the erection of a new school. When such School Boards saw the possibility of throwing upon the whole county district instead of upon the parish the cost of such operations delay became the order of the day until the Bill should become law. Complete paralysis supervened. Nothing was done, even in the most clamant cases. Inspectors of schools might confer with members and advise. School reports might threaten reduction of the grant were nothing done. Yet, greatly daring in the interests of their own pockets, School Boards did nothing. We have before us the case of a School Board which disregarded repeated warnings, and now the *whole grant* of its largest school has been withheld this year. As this fact has not yet been made public, because only a mutilated version of the Inspector's report appeared in the local press, we anticipate that the aggrieved rate-payers, in whose interests the Board has thus mistakenly acted, will have something lively to say to those short-sighted economists when the time for re-election comes on.

One thing the reluctant Board can urge in its defence. If it had not been for the Bill, action would have been taken long ago. A new school would ere this have been built. The health of the children and their education would have been better, the comfort of the teachers greater, and the town would have had a new school of which it was reasonably proud and for which it was ready to pay.

In more than one part of Scotland important reforms and extensions in the field of secondary education have been, of necessity, delayed—notably in Edinburgh. The Edinburgh Merchant Company had for some years been considering a large scheme for reorganizing their system of secondary schools, and, as the Education Department was year by year insisting on certain changes and extensions of the present buildings, the Company made preparations for an extensive building scheme. But when the Bill appeared it was evident that some of its provisions might affect the position of the managers of all endowed schools, and it was determined not to proceed until it was seen exactly how they would stand under the final form of the Bill. Now, after two years, the Merchant Company find themselves no further forward. They must now proceed, with the further disturbing thought that something will be done by the next Bill which, had they known, would have caused them to act differently. This experience could be paralleled in many parts of Scotland, and the result has been very unsatisfactory.

We need do no more than refer to the heavy but useless expense to which many bodies have been put. Many School Boards and other school managers put themselves to the trouble of issuing memoranda on the Bill in which there were to be found local facts bearing on critical questions, the preparation of which must have caused much labour and expense. The Educational Institute has of necessity spent money, and its committees and officials have had a heavy burden of responsibility as well as a great increase of work because of the Bill. A look at the gallery of the House of Commons on July 14, crowded with representatives from Scottish bodies, was sufficient proof of the great expense which the Bill had caused to be incurred.

Many teachers, especially rural teachers, to-day are wishing they had never seen the Bill. Their hopes have been raised as to better security of tenure, better promotion, better remuneration, better superannuation. The Bill was to put the teacher on a better footing professionally, and make him a self-respecting member of a community in which he could again hold up his head with some feeling of confidence and security. Now he is as he was, and unhappy at that. We have more than once proved the close connexion between the condition of the teacher in country districts and the supply of teachers, and we have expressed the conviction that improved conditions would mean supply more nearly adequate to the needs of the country than at

present obtains. In the interests of the country itself it is, therefore, a thousand times to be regretted that the Bill has been lost.

THE EDUCATION OF THE MASSES IN INDIA.

By V. R. NATU, B.A., LL.B.

[From the *Indian Review*.]

ONE of the resolutions at the recent Indian National Congress specially dealt with the question of the education of the masses. The general question of education is not new, so far as the deliberations of the Congress are concerned. It was more than once taken up and discussed, and yet it is a question which does not lose its importance by repetition. Education was, and will be, the principal concern of civilized man. No nation can neglect it without serious national deterioration. It is the foundation of all reforms, and without solving that question in a practicable manner no country can at all hope to come up to the modern standard of civilization. The ancient Aryas understood the importance of education and made it compulsory on all those who were included in the term "Arya." In their scheme of life one part was specially devoted to education. Though originally this education was almost exclusively religious, as was the case in all ancient countries, in the course of time different sciences were also included in the curriculum, not neglecting "Arthashastra," which included all sciences and arts then understood. This education was free, compulsory, and universal, in the "Aryan" society. Though conquered Shudras were not taught religion, still they could learn sciences and arts, and even Brahmins could learn the same from the Shudras. Though the Aryan nation admitted the Shudras—the mass of the people—into their society, they did not impart to them the full benefit of their own education, and the result was disastrous. Modern governments should take a warning from this historical event and try to bring the conquered races up to their own standard of civilization—by spread of education. . . .

Of all the countries, in India the education of the masses must receive the greatest attention of Government and the patriot. Notwithstanding the attempts of Government to extend education for nearly a century, the ignorance in the land is too terrible to describe. The darkness is deep and wide, and it is only a very thin fringe that has got some light. In enlightened countries like England and Germany there is still a cry for further progress in the popular education—a cry which requires more volume and depth in this country. Progress in education is not so rapid here as it should have been, and even at the beginning of the twentieth century only fifty-three persons in a thousand are considered "literate" under the wide sense that term has received at the hands of the Census reporter, so as to include great and renowned university *savants* with the "learned" police constable who scrawls out the letters of his name. This figure of literacy would also dwindle down if we exclude persons who receive education purely of a religious character, as is the case in Burma. It is also admitted that it is the select castes and professions which, through hereditary habits, take the chief benefit of the existing educational institutions, and the great mass of people remain in ignorance. Besides the natural apathy, the principal reason why in the lower strata of Indian society education is neglected, as given by the Census reporter, consists in the inability of the people to pay even the small fees charged in the elementary schools.

But the question of popular education in India cannot be left here with the knowledge of its defects and other causes, and given up as hopeless. All our reforms and the prosperity of the nation entirely depend upon the education of the masses. No political rights can be secured if the bulk of the people are ignorant. A sharp sowcar deprives a ryot of his land, a police constable teases him, a revenue agent robs him, a railway official treats him like a beast, or a shrewd liquor contractor tempts him to petition for a new shop. How are these evils to be remedied if not by education? How can the moral standard of these men be raised without education, and how can co-operation—so much needed for the industrial development of the country—play its full part if not by education? Can the *swadeshi* movement be popular without extensive mass education? Can any one expect that the agricultural population of the country,

steeped in ignorance, will be able to benefit itself by utilizing new labour-saving appliances? Give education to the masses in a practical way, and almost all our social and political reforms would be secured. In the recently published Quinquennial Report on Education in India for 1897 to 1902, the condition of primary education is thus summarized:

There was an almost complete arrest of progress in primary education during the quinquennium. In the period 1887-88 to 1891-92 the number of boys in the primary stage of instruction increased by 27,500, and in the next five years by 36,000; in the period under review it remained practically stationary. Bombay lost 55,000 and Bengal 19,000 boys in the primary stage, and the United Provinces' gain of 74,000 was the only considerable increase. The period which we have reviewed was one of misfortune: two severe famines and a widespread epidemic of plague disorganized both the administration and the population. But it would be idle to attribute the phenomenon wholly to these exceptional calamities: other and deep rooted causes lie below them. The work which has been accomplished by the Education Department in the past, great and laborious though it has been, is easy compared with the task which lies before it. Hitherto it has dealt, in the main, with the comparatively accessible and well-to-do classes of the population, who were more or less accustomed to education, and in some parts of the country were possessed of numerous indigenous schools. Now it has to carry education improved in methods and standards to meet modern ideas and requirements to the scattered and distant hamlets, to the poor ryots, to the landless labourer, to the ignorant low castes, and to the wild jungle tribes. To create a desire for education among these people and to supply them with a form of instruction which they are capable of assimilating, is an enterprise needing the most careful sympathetic treatment, a trained and intelligent agency, and ample funds.

The apathy of the people for the education now imparted in schools would be removed if the education took a more practical and useful shape. By knowing the three R's only, no tangible benefit is seen by the average ryot, and he naturally thinks that the money and time spent are wasted. The second cause for the neglect is the inability of the people to pay the fees, which also proves the poverty of the masses. In such a country, therefore, free education must be the ambition of the State. Its importance is now felt all over the civilized world, and poor countries like Italy have the courage to adopt it. The cost would be more than repaid by the improvement of the moral and material condition of the nation, and a country which pays crores of rupees as the price of conquest pure and simple can afford to bear this burden.

Fortunately the present unsatisfactory condition of education of the majority of the population in this country has been clearly admitted by the Government of India in the recent resolution on its education policy. After reviewing the past history of education in this country from the times of the Vedas up to the last report of the Educational Commission in 1884, and after noticing the benefits of education hitherto secured, the Government of India admits that the shortcomings of the present system in point of quantity need no demonstration. "Four villages out of five are without a school; three boys out of four grow up without education, and only one girl in forty attends any kind of school. The Government has clearly admitted that the existing methods of education stand in need of substantial reform." As regards the primary education, which alone would reach the masses, the admissions by the Government of India are surely very full:

Primary education is the instruction of the masses through the vernacular in such subjects as will best stimulate their intelligence and fit them for their position in life. It was found in 1884 that the consideration of measures to this end had been too much neglected, and a considerable increase of expenditure on primary education was then contemplated. The Education Commission recommended in 1883 that "the elementary education of the masses, its provision, extension, and improvement should be that part of the educational system to which the strenuous efforts of the State should be directed in a still larger measure than before."

The Government of India fully accept the proposition that the active extension of primary education is one of the most important duties of the State. They undertake this responsibility, not merely on general grounds, but because, as Lord Lawrence observed in 1868, "among all the sources of difficulty in our administration and of possible danger to the stability of our Government, there are few so serious as the ignorance of the people." To the people themselves, moreover, the task of education is now a more serious disadvantage than it was in more primitive days. By the extension of railways the economic side of agriculture in India has been greatly developed, and the cultivator has been brought into contact with the commercial world, and has been involved in transactions in which an illiterate man is at a great disadvantage. The material benefits attaching to education have at the

same time increased with the development of schemes for introducing improved agricultural methods, for opening agricultural banks, for strengthening the legal position of the cultivator, and for generally improving the conditions of rural life. Such schemes depend largely for their success upon the influence of education permeating the masses and rendering them accessible to ideas other than those sanctioned by tradition.

How, then, do matters stand in respect of the extension among the masses of primary education? The population of British India is over 240,000,000. It is commonly reckoned that 15 per cent. of the population are of school-going age. According to this standard there are more than 18,000,000 boys who ought now to be at school, but of these only a little more than one-sixth are actually receiving primary education. If the statistics are arranged by provinces, it appears that out of one hundred boys of an age to go to school, the number attending primary schools of some kind ranges from between 8 and 9 in the Punjab and United Provinces, to 22 and 23 in Bombay and Bengal. In the census of 1901 it was found that only 1 in 10 of the male population and only 7 in 1,000 of the female population were literate. These figures exhibit the vast dimensions of the problem, and show how much remains to be done before the proportion of the population receiving elementary instruction can approach the standard recognized as indispensable in more advanced countries.

These clear admissions leave little to be proved. No opinions and no statistics are necessary at least to enlighten Government on this point. The drawbacks and their extent are better known to the Government of India than to any of its critics. The Honourable Mr. Gokhale in his Budget speech in 1903 pointed out the defects and showed by admirable exposition the prime necessity of spreading education amongst the masses. As to general principles and actual facts, the Government of India admitted everything. On these points there is almost a complete unanimity, and the Government resolution is indeed a very instructive document on the question of education in all its branches. But the resolution itself will not remedy the shortcomings, unless honest strenuous attempts are made in the right direction to remove them at any cost. This question of cost is no doubt always important before any schemes of reform can be undertaken, and the Government of India says that the difficulty of finding out the requisite funds cannot be overcome. The Honourable Mr. Gokhale had anticipated this difficulty and suggested some means to get over the same. It is indeed amusing to see that the plea of cost should be put forward by a Government which finds enough funds to increase military charges, to undertake costly political missions, to construct non-paying railways, to hold costly durbars, or to pay exchange compensation to overpaid European officers, leaving the resources of the country undeveloped by allowing millions of its subjects to remain in darkness. This education of the masses is not a matter which can be achieved by purely private enterprise. It is the State which not only should recognize advancement of education in all branches as its first duty but should try to act up to it. The people, too, should come forward to assist in this national work. No doubt the new move of the Congress in holding industrial exhibitions is in that direction. It is the duty of educated India to advocate the cause of mass education on the platform and in the press; but they should also come forward with pecuniary help, establish societies for village education, and induce the younger generation to do the sacred duty of imparting useful knowledge to the people.

Mrs. Besant once said that education was not so much a matter for the Government as it was the duty of the people. "To be really successful, it must be taken, designed, guided, and carried out by those who are not only the lovers of the country but also men who understand its needs and who are well aware of its peculiarities, of its characteristics, and of its traditions." In India, elementary education was always a private concern until the establishment of Government schools. If our thoughts, our activities, our small charities, and our spare time are directed to the progress of education as a sacred and national duty, we shall in a short time achieve great results. Under the changed conditions of modern times, the solution of this question cannot, however, be left to the patriotic and philanthropic attempts of private enterprise. Government help is essential. It is, therefore, earnestly hoped that Government will treat this question liberally as an imperial paramount question, and when it acts on that faith the difficulty of funds will not be urged. We are, no doubt, thankful for the present attitude of Government towards education, but, bearing in mind that a vast population of 260,000,000 are poor, helpless, and ignorant, any delay in grappling with this question boldly would be against the vital interests of the Government and of the people.

THE AMERICAN NATIONAL EDUCATIONAL ASSOCIATION.

DECLARATION OF PRINCIPLES.

The National Educational Association, at its forty-fourth meeting held in Asbury Park and Ocean Grove, made the following declaration of principles:—

1. The Bureau of Education continues to render invaluable service to the nation. It is the judgment of the Association that the powers of the Bureau should be enlarged and that liberal appropriations should be made to it by Congress in order to enable it to widen its usefulness.

2. The National Educational Association notes with approval that the qualifications demanded of teachers in the public schools, and especially in city public schools, are increasing annually, and particularly that in many localities special preparation is demanded of teachers. The idea that any one with a fair education can teach school is gradually giving way to the correct notion that teachers must make special preparation for the vocation of teaching. The higher standard demanded of teachers must lead logically to higher salaries for teachers, and constant efforts should be made by all persons interested in education to secure for teachers adequate compensation for their work.

3. The rapid establishment of township or rural high schools is one of the most gratifying evidences of the progress of education. We believe that this movement should be encouraged until the children of rural communities enjoy the benefits of public education to an extent approximating as nearly as practicable the education furnished in urban communities.

4. The Association heartily approves of the efforts now being made to determine the proper place of industrial education in the public schools. We believe that the time is rapidly approaching when industrial education should be introduced into all schools and should be made to harmonize with the occupations of the community. These courses when introduced should include instruction in agriculture as well as manual training, &c. Wherever the conditions justify their establishment, schools that show the application of the branches of knowledge to practical life should be established.

5. The N.E.A. strongly recommends the increasing utilization of urban school buildings for free vacation schools, and for free evening schools and lecture courses for adults, and for children who have been obliged to leave the day schools prematurely.

6. It is the duty of the State to provide for the education of every child within its borders and to see that all children obtain the rudiments of an education. The constitutional provision that all persons must contribute to the support of the public schools logically carries with it the implied provision that no persons should be permitted to defeat the purposes of the public school law by forcing their children, at an early age, to become bread winners.

7. The National Government should provide schools for the children of all persons living in territory under the immediate control of the Government. The attention of Congress is specially directed to the need of adequate legislation to provide schools for the children of citizens of the United States living on naval reservations.

8. The N.E.A. regrets the revival in some quarters of the idea that the common school is a place for teaching nothing but reading, spelling, writing, and ciphering, and takes this occasion to declare that the ultimate object of popular education is to teach the children how to live righteously, healthily, and happily, and that to accomplish this object it is essential that every school inculcate the love of truth, justice, purity, and beauty through the study of biography, history, ethics, natural history, music, drawing, and manual arts.

9. The National Educational Association wishes to record its approval of the increasing appreciation among educators of the fact that the building of character is the real aim of the schools and the ultimate reason for the expenditure of millions for their maintenance. There is in the minds of the children and youth of to-day a tendency toward a disregard for constituted authority; a lack of respect for age and superior wisdom; a weak appreciation of the demands of duty; a disposition to follow pleasure and interest rather than obligation and order. This condition demands the earnest thought and action of our leaders of opinion, and places important obligations upon school authorities.

10. The National Educational Association wishes to congratulate the secondary schools and colleges of the country that are making the effort to remove the taint of professionalism that has crept into student sports. This taint can be removed only by forcing

students, alumni, and school faculties to recognize that interschool games should be played for sportsmanship and not merely for victory.

11. The National Educational Association observes with great satisfaction the tendency of cities and towns to replace large school committees or boards which have exercised through subcommittees executive functions by small boards which determine general policies but entrust all executive functions to salaried experts.

12. Local taxation, supplemented by State taxation, presents the best means for the support of the public schools, and for securing that deep interest in them which is necessary to their greatest efficiency. State aid should be granted only as supplementary to local taxation, and not as a substitute for it.

13. We cannot too often repeat that close, intelligent, judicious supervision is necessary for all grades of schools.

14. A free democracy cannot long continue without the assistance of a system of State-supported schools administered by the chosen agents of the people and responsible for its ideals, its conduct, and its results.

"SANE, SIGNIFICANT, AND SATISFACTORY."

There has not been a saner, more significant, and more all-round satisfactory convention in twenty years (says the *School Journal*) than was the one held at Asbury Park and Ocean Grove. Boston had larger numbers, enrolling almost twice as many tourist members. The 1905 meeting had President Roosevelt. The educational duty of the United States was never more comprehensively and more clearly presented. There was no desultory talking, and few attempts to make the welkin ring. Seriousness and purpose characterized the program from beginning to end. Minor topics were crowded to the rear even in the department meetings. Largeness of view prevailed. That pettiness which according to tradition is inseparable from the composite character of teachers was less in evidence than ever before, less than one meets with ordinarily in conventions of journalists, physicians, and clergymen. Reports of unusual value and importance were received and discussed. There were only few really great papers, but no less than at any previous meeting. The "declaration of principles" had bone and sinews and vital breath in it. A high standard has been set for years to come.

PRESIDENT ROOSEVELT AND THE TEACHERS.

I am peculiarly pleased (said President Roosevelt) to have the chance of addressing this Association, for in all this democratic land there is no more genuinely democratic association than this. It is truly democratic, because here each member meets every other member as his peer without regard to whether he is the President of one of the great Universities or the newest recruit to that high and honourable profession which has in its charge the upbringing and training of those boys and girls who in a few short years will themselves be settling the destinies of this nation. It is not too much to say that the most characteristic work of the Republic is that done by the educators, by the teachers, for whatever our shortcomings as a nation may be—and we have certain shortcomings (laughter)—we have at least firmly grasped the fact that we cannot do our part in the difficult and all-important work of self-government, that we cannot rule and govern ourselves, unless we approach the task with developed minds, and with what counts for more even—with trained characters. You teachers make the whole world your debtors. Of your profession this can be said with more truth than of any other profession, barring only that of the minister of the Gospel himself. If you—you teachers—did not do your work well, this Republic would not endure beyond the span of the generation. Moreover, as an incident to your avowed work, you render some well-nigh unbelievable services to the country. For instance, you render to the Republic the prime, the vital, service of amalgamating into one homogeneous body the children alike of those who are born here and of those who come here from so many different lands abroad. You furnish a common training and common ideals for the children of all the mixed peoples who are here being fused into one nationality. It is in no small degree due to you and to your efforts that we of this great American Republic form one people instead of a group of jarring peoples. The pupils, no matter where they or their parents were born, who are being educated in our public schools will be sure to become imbued with that mutual sympathy, that mutual respect and understanding which is absolutely indispensable for the working out of the problems we as a people have before

us. And one service you render which I regard as wholly indispensable. In our country, where altogether too much prominence is given to the mere possession of wealth, we are under heavy obligations to such a body as this, which substitutes for the ideal of accumulating money the infinitely loftier, non-materialistic, ideal of devotion to work worth doing simply for that work's sake. I do not in the least under-estimate the need of having material prosperity as the basis of our civilization, but I most earnestly insist that, if our civilization does not build a lofty superstructure on this basis, we can never rank among the really great peoples. A certain amount of money is of course a necessary thing, as much for the nation as for the individual; and there are few movements in which I more thoroughly believe than in the movement to secure better remuneration for our teachers.

[Here the President was interrupted by a storm of applause, in the midst of which a man near the front sprang to his feet and yelled out: "Three cheers for the President!" They were given with a will. When comparative calm reigned again the President, smiling his broadest smile, remarked: "I gather from this that I have your sympathy." He then went on with his speech.]

But, after all, the service you render is incalculable because of the very fact that by your lives you show that you believe ideals to be worth sacrifice and that you are splendidly eager to do non-remunerative work if this work is of good to your fellowmen. To furnish in your lives such a realized high ideal is to do a great service to the country.

Of the moulding influences at work on the great State system (writes Miss Ravenhill in Vol. XV., page 7, of the "Special Reports on Educational Subjects," recently published by the Board of Education), none is more powerful for good than the National Educational Association, which numbers its members by thousands, and is guided by some of the most gifted as well as most experienced educational leaders in the States. The bulky records of its annual meetings contain a mass of experience and suggestion combined with full recognition of the dignity and responsibility of teachers, and constitute a useful record of the worth of teaching ideals and of improved practice. Of the numerous organizations employed in the education of public opinion, few can compete with this potent, wisely regulated force; though to University Extension lectures, summer schools, and other culture agencies may be attributed a part of the prevalent public sympathy with, and respect for, the profession of teaching which prevails over a large part of the United States.

PRIMARY-SCHOOL METHODS.

PROFESSOR DEWEY'S DEVELOPMENTS.

MR. E. A. RILEY, B.A., speaking of "Self-Activity in the Pupil as a Guiding Principle in Education" (*Australian Journal of Education*), says: "An entirely new conception of education has been necessitated by the influx of population in all civilized countries into the great cities. In the old days the work of the school was instruction, and not education, the claims of which were fairly met by the life activities of the children. . . . But in city life all this was changed: the home industries disappeared for the most part, the close contact with Nature was no more. Yet, if human intelligence was not to shrivel, some substitute for the old home education must be found, and the work fell upon the schools, which, however, met the demand at first but indifferently.

"But, perhaps, the riddle has been read by John Dewey, of New York. It seems to me that he has, perhaps, made the most far-reaching progress that has been achieved during the past twenty-five years. I believe he has done for children of primary-school age what Froebel did for little children in his kindergarten. The principles of Froebel are no monopoly of the kindergarten. Many educators have felt this without seeing how to apply them to primary-school work. The introduction of manual training into the higher grades still left a big gap between them and the kindergarten. This gap had been filled tentatively by 'varied occupations'; but there was still no unity of spirit in the primary school such as marked the kindergarten. All was fractional, fragmentary. But Dewey, with the insight of genius, has bridged the gap. He makes life occupations the articulating centres of school life. The primary industries of the great world are taken and broken up, and their complexity so reduced as to be brought within the child's grasp. Round these occupations, domestic and industrial, all education, physical, intellectual, and moral, is made to cling. This is done

without the introduction of the technical spirit, though, of course, the school supplies a splendid basis for technical training afterwards. As every day brings varying employments, a great variety of muscular co-ordination is secured, together with adequate sense training. History, geography, science, &c., grow out of the child's curiosity as to the materials he is shaping. What are they? Whence come they? How does man use them? And a thousand other questions are ever in the pupil's mind, supplying continuous interest. As it is things in their human relationships that he is handling and thinking over, and as the whole school community is socially organized, the humanities are given full scope; and as the pupil is doing moral acts throughout the day, and not merely learning to talk about morality, moral education is a reality in the school. As an educator I am fascinated by this apparent solution of most of the difficulties which confront us in the primary school.

Miss Ravenhill writes ("Special Reports on Educational Subjects," Vol. XV., page 7):

In the United States, as in Great Britain, detailed conceptions of the best methods to follow in the scheming of a school programme are almost as numerous as the individuals who concern themselves with the question in any of its aspects; but emerging from this sea of opinions are a few prominent personalities whose freedom from prejudices or party spirit, scientific bases for their convictions, and courageous perseverance in face of obstacles and apparent failures secure a fair trial for their systems, and influence gradually the educational spirit and practice of their country. Of these one of the most notable is Dr. John Dewey, of Chicago University [now of Columbia University, New York], who has drawn public attention to two "tragic" weaknesses in the old school system, where, in his opinion, social spirit was wanting, being replaced by "that mediæval misconception which limited learning to books." By precept and undaunted practice, Dr. Dewey impresses on those who have ears to hear and eyes to see that "the ideal school should reproduce systematically, and in a large, intelligent, and competent way, what in most households is done only in a comparatively meagre and haphazard manner"; while he maintains that "the root question of education is that of taking hold of a child's activities, of giving them direction, and of so training them as to produce valuable results."

Again (page 143):

By written and spoken word, Dr. John Dewey and the late Colonel Francis W. Parker have asserted their conviction that all school work should connect on the social side with the life without; and that this connexion can be fitly and profitably made by means of suitable occupations carried on throughout the period of school life. "By occupation," writes Dr. Dewey, "is not meant any kind of 'busy work' or exercises that may be given to a child to keep him out of mischief or idleness when seated at his desk. By occupation I mean a mode of activity on the part of the child which reproduces or runs parallel to some form of work carried on in social life." In the Chicago University Elementary School these occupations are represented by the workshop with wood and tools, by cooking and sewing, and by textile work. To those to whom this conception is unfamiliar, a careful perusal of Dr. Dewey's book "The School and Society," and of his article on "The Psychology of Occupation" in the *Elementary School Record* will result in a better comprehension of his thesis. The limits of space forbid more than the most concise references to Dr. Dewey's writings, or to Colonel Parker's ideals and methods. Careful abstracts of a year's work in the schools where the views and methods of these leaders of educational thought are subjected to the test of practice are furnished in Tables XXI. and XXII. They are included in this portion of my report as affording the best illustrations I can offer of the means by which the domestic, equally with other, sciences and arts may be educationally employed to make schools for our children of all ages a "genuine form of active community life, instead of places set apart to learn lessons."

Dr. Dewey's opinion, shared, I believe, by the late Colonel Parker, must be borne in mind while studying these school programmes, viz., that "those subjects and that material develop the young intelligence of the child which (1) forge social links between school and home; (2) can be acquired largely in the first instance through the exercise of the bodily activities; (3) are so interwoven with family life as to appeal to the limited, familiar experience of a young child; and (4) demand thought, yet by their simplicity permit that thought to function in actions, habitual or suitably acquired at the special period of life at which the lesson requires them." Dr. Dewey also maintains that the educational material should stimulate efforts directed to the acquirement of technique, even though at considerable personal cost, and that each subject must possess inherent continuity in itself, adapting it for progressive development, consistent with the several periods of child growth. Further, both authorities agree that veritable correlation of each subject with the whole school programme is an essential qualification, not "through devices of instruction which the teacher employs in tying together things in themselves disconnected," but through wise selection, by which real, organic continuity of subject matter is ensured. In the University Elementary School at Chicago, therefore, the domestic sciences and arts appear throughout among the occupations for all

groups included in the time-table, from which it is Mr. Dewey's object to secure the absence of mere mechanical routine repetition, and to ensure the presence of conscious, intelligent action and habits of reflection.

THE BRITISH ASSOCIATION.

PAPERS ON EDUCATIONAL SUBJECTS.

UNIVERSITY EDUCATION AND NATIONAL LIFE.

SIR RICHARD JEBB, M.P., occupied the chair of the Educational Science Section of the British Association at the Capetown meeting. He discoursed on the Ideal of a University. The university, he said, tends to produce a general breadth of intellectual sympathies; it enables the specialist to acquire some sense of the relations between his own pursuit and other pursuits; he is helped to perceive the largeness of knowledge. But, besides bringing together students of various subjects, it is the business of a university to see that each subject shall be studied in such a manner as to afford some general discipline of the mental faculties. Sir Richard reviewed the development of universities at home, and of the condition of higher education in South Africa; expounded the characteristics of university education, making considerable critical reference to the views of Newman, Huxley, and Matthew Arnold; dwelt upon the common aims of literature and science; supported strongly the claims of literary culture; and urged that education is an Imperial concern. In conclusion, he said:

I would only say how entirely I share a conviction which has been expressed by one to whose ability, to whose generous enthusiasm and unflagging efforts, the cause of education in this country owes an incalculable debt—I refer to Mr. E. B. Sargant. Like him, I believe that the progress of education in all its grades, from the lowest to the highest, is the agency which, more surely than any other, will conduce to the prosperity and the unity of South Africa. For all workers in that great cause it must be an inspiring thought that they are engaged in promoting the most fundamental and the most far-reaching of national interests. They are endeavouring to secure that the men and women to whom the future of this country belongs shall be equal to their responsibilities and worthy of their inheritance. In that endeavour the sympathies which they carry with them are world-wide. As we come to see more and more clearly that the highest education is not only a national, but an Imperial, concern, there is a growing desire for interchange of counsels and for active co-operation between the educational institutions of the colonies and those of the mother country. The development of education in South Africa will command keen attention, and will be followed by earnest good wishes, not only in England, but throughout the British dominions. One of the ideas which are bound up with the history and the traditions of our English public schools and universities is the idea of efficient work for the State. Those institutions have been largely moulded, from generation to generation, by the aim of ensuring a supply of men qualified to bear a worthy part, either in the government of the nation, or in professional activities which are indispensable to the national welfare. In our own time, and more especially within the last thirty years, one particular aspect of that idea is illustrated by the closer connexions which have been formed between the Universities and the higher branches of the Civil Service. The conception of work for the commonweal is in its turn inseparable from loyalty to those ideals of character and conduct by which English life and public policy have been built up. It is by the long and gradual training which such ideals have given that our race has been fitted to grapple with responsibilities which have inevitably grown, both in extent and in complexity, far beyond anything which our forefathers could have dreamed. That training tends also to national self-knowledge; it makes for a sober estimate of our national qualities and defects; it quickens a national sense of duty to our neighbour. The munificence of a far-sighted statesman has provided that selected youths, whose homes are in this land, and whose life-work may be here, shall go for a while to England, shall breathe the intellectual and social atmosphere of a great English university, and shall learn to judge for themselves of the sources from which the best English traditions have flowed. That is excellent. But it is also most desirable that those traditions should pass as living forces into the higher teaching of South Africa itself, and that their spirit should animate educational institutions whose special forms have been moulded by local requirements.

THE DEVELOPMENT OF CAPE EDUCATION.

The Rev. W. E. C. Clarke, M.A., gave an interesting account of the historical development of education in the colony from 1652. He said:

Cape education had all along developed very much on its own lines,

and it had been the merit of the administration throughout to move forward less by radical changes than by adaptation of existing methods and machinery. This was evidenced in the remarkable increase in good school buildings, a result gained in spite of the want of continuity in the School Committees, and without sacrificing the pound-for-pound principle. The building loan scheme was probably Dr. Muir's most successful achievement. From the outset secondary work was combined with primary in the better schools, but during the last few years between thirty and forty high schools had been established, with a special curriculum arranged for them, leading up to the Matriculation certificate of the University. The new Education Act, while retaining Committees for individual schools, would provide School Boards for municipalities and large areas, with rating powers and with control over the communities in their area. One third of each Board was nominated by Government. A few institutions preparing for the University certificates and degrees were subsidized under the Higher Education Act of 1874, but as the number of students increased the idea arose of uniting the work of these separate colleges into a teaching University. While vested interests and keenness of rivalry had hitherto prevented such unification, the development of these separate colleges had proceeded rapidly, and it seemed likely that the teaching university of the future will consist of certain constituent colleges. The Rhodes Scholarships, while benefiting the individual holders, would also further higher education, if made post-graduation scholarships. In the original scheme they might have tended to do actual injury to higher education in the colony. A School of Mines was instituted at the South African College in 1896, and the students now completed their course at the Johannesburg Technical Institute. While the progress of education had thus proceeded satisfactorily along various lines, it could not be said that the position of the teacher had improved in a corresponding degree. It was true that the increased influence of the body of teachers was the most remarkable fact in modern education, and the Union of Cape Teachers in the South African Teachers' Conference, with its branches all over the country, had enabled them to speak with a strong voice on important questions, and to combine for purposes of mutual defence; but it was a matter for regret that so great a proportion of time and interest had been devoted in their meetings to questions of salary, pension allowances, and other factors making for the comfort of their position. It should not be necessary for teachers to have to assert their rights and to impress their claims on the rest of the community. The new Education Act arranged for greater security of tenure and for improvement of salaries; but satisfactory provision had yet to be made for pension on retirement. "The teacher should be removed beyond fear of want and anxiety about financial concerns. The community is not in a healthy condition in which education is not held in honour."

VARIOUS PROBLEMS.

Mr. A. D. Hall, Director of the Rothamsted Experiment Station, Harpenden, Hertfordshire, contributed a highly useful paper on "Rural Education appropriate to Colonial Life." Agriculture in South Africa, he said, showed that the kind of teaching which was required was one which would turn out experts on the one hand and practical farmers on the other. He advocated the establishment of practical schools, and for industries experimental institutions similar to those in Hungary.

UNIVERSITY FEDERATION.

Miss Clark explained the present position of higher education of women in South Africa; and a paper on the disabilities of the South African schoolboy, by Mr. Way, Principal of Graaf Reinet College, was read in the author's absence.

In the course of a general discussion on educational questions, Prof. Loveday strongly protested against the idea of university federation. He said he had received a large number of letters from colonial and new universities in Great Britain, and the weight of opinion against federation was overwhelming.

Miss Harvey declared that until South Africa could produce its own women teachers it was desirable that they should be imported from England. Prof. Ritchie advocated the establishment of a great teaching university at Cape Town as the best means of reconciling racial differences.

MATHEMATICS.

In the Mathematical and Physical Section Prof. Forsyth gave a very comprehensive summary of the progress of scientific discovery during the last three centuries. In this Section something of the nature of a sensation was created by a remarkable paper by Mr. Jeans, of Trinity College, Cambridge, on "The Theory of Argol Variables," which incited the enthusiastic interest of Prof. Darwin, Sir David Gill, and other astronomers. The general consensus was that Mr. Jeans's contribution was the most remarkable of the present meeting.

REVIEWS.

SUDERMANN.

Hermann Sudermann: Poète dramatique et Romancier. Par Henri Schoen, Agrégé de l'Université, Docteur-ès-Lettres, Chargé de Cours à l'Université d'Aix-Marseille. (3 fr. 50. Paris: Didier.)

Dr. Schoen is well known in England and America as an educationist, and at home his versatile pen has made his mark also in the regions of metaphysical, theological, dramatic, and literary exposition and criticism, especially on historical lines, to say nothing of his academic functions at Poitiers and at Aix-Marseille. Moreover, he brings special qualifications to his present task of appreciating Sudermann and his works. "Comme membre du 'Théâtre Libre' de Berlin, il a assisté aux débuts de Sudermann sur la scène allemande. Chargé pendant plusieurs années de la critique théâtrale pour l'un de nos plus grands journaux de l'Europe centrale," says the publisher, "il a suivi avec sympathie l'évolution et les progrès de la scène allemande depuis vingt ans. Ancien élève des Universités de Berlin et de Munich, il a connu personnellement la plupart des jeunes auteurs réalistes de l' 'Ecole Moderne.'" Such intimacy, however, does not deflect Dr. Schoen's judgment: his leaning is indeed favourable, and his admiration is open, but none the less his criticism is free.

First he sketches the moulding foreign influences—French, Scandinavian (meaning Norwegian), and Russian, but not English—upon German dramatic literature since 1860, and the internal influences, adverse and favourable (especially the establishment of the Freie Bühne in Berlin, 1889) to the development of the Ecole Moderne (Die Moderne). He finds that, while Sudermann's early works betray too much imitation of modern French writers, his later works present "des héros bien allemands, dans un milieu bien germanique." "En un mot, Sudermann est bien le poète de son temps et de son pays; et c'est dans la mesure où il est le représentant et le critique de son époque qu'il nous instruit et nous intéresse." For the highest achievement one looks for a wider interest and instruction, and that is supplied, to some extent, in the detailed examination of his works—"nouvelles, romans, études de mœurs, drames, comédies, tragédie biblique et conte dramatisé," a mass and variety of production constituting at least one element of greatness. Sudermann finds his own feet in "Magda." "Dans *Magda*, toutes ces influences étrangères, parfaitement légitimes du reste, se sont harmonieusement fondues, ou plutôt il n'y a plus qu'un seul auteur. Sudermann s'est enfin trouvé lui-même." "Enfin, l'art technique et la délicatesse des sentiments, la beauté de la forme et la vérité des émotions vont s'unir dans un drame qui obtiendra l'approbation des critiques d'art" (except that "pour rendre le contrast plus saisissant il a cru devoir forcer les caractères, et il l'a fait, semble-t-il, plus qu'il n'était nécessaire"), "sans faire naître les craintes des moralistes" (pages 152, 170). "*Magda* marque l'apogée de la popularité, sinon du talent dramatique de Sudermann" (page 305). The "qualité maîtresse" of Sudermann is found to be his exact observation—so much so that "on dirait quelquefois que l'écrivain allemand est resté absorbé dans les caractères extérieurs et n'a plus eu le temps de pénétrer dans les replis les plus cachés de l'âme de ses personnages"; and, notwithstanding Sudermann's psychological efforts, M. Richard Meyer affirms that his characters "n'ont que la vérité du moment présent." His "esprit satirique" is more especially prominent in his earlier works, where he does not scruple to ridicule the foibles of his countrymen, and to utter "assez de sarcasmes" on "les mensonges de convention et les soirées mondaines" and the like. His verse shows "un peu trop l'effort du poète," though he has moments of "l'élan lyrique ou la note sentimentale, si rare dans l'école réaliste." But it is in the matter of the author's work that Dr. Schoen takes the principal interest (page 314):

Sudermann aime à poser les plus grands problèmes de la vie moderne: qu'est-ce que l'honneur, qu'est-ce que l'art véritable, quels sont les droits et les devoirs de la femme, quelles sont les limites de l'autorité paternelle, qu'est-ce que le foyer ou la patrie, qu'est-ce que le vrai bonheur, quels sont les droits de la famille ou de la société, du patron ou des travailleurs? Il aime à présenter ces questions sous leur faces les plus diverses, à plaider tour à tour le *pour* et le *contre*, à nous faire entendre les arguments opposés. Mais il donne rarement une réponse nette et précise.

Again (page 327):

Il est difficile de caractériser les œuvres de Sudermann mieux que

l'auteur lui-même. Pourquoi lui demander plus qu'il n'a voulu nous donner? Satisfaire aux aspirations les plus élevées d'une partie de la génération de son temps, répondre à l'attente des esprits *actuellement* vivants et tourmentés, donner une forme artistique à leurs revendications, à leurs angoisses, à leurs plaintes, à leurs griefs et à leur révolte, leur présenter une image fidèle de leurs préoccupations et de leurs luttes, leur fournir les moyens de mieux comprendre leur tâche quotidienne, de se justifier à eux-mêmes leurs convictions ou leurs espérances, n'est-ce pas là un but assez élevé pour un poète dramatique? No doubt; but the deeper question is how it is done—the artistic characters of the literary presentation. To this point Dr. Schoen addresses himself, more or less, in his review of Sudermann's successive works, pointing out the gradual development of his *technique*. Still, the purely literary criticism is much subordinated to the subject-matter and the technicalities of mechanism. Altogether, however, the volume presents a most interesting account of Sudermann's life and work, with independent criticism within the limits indicated; and it throws instructive sidelights on the general literary and dramatic situation in the Germany of the period.

MODERN LANGUAGE TEACHING.

The Teaching of Modern Languages. By Leopold Bahlsen, Ph.D. Translated by M. B. Evans. (2s. 6d. Ginn.)

The author of this book is, or has been, an *Oberlehrer* in the Realschulen of Berlin, and Lecturer on Methods of French and German Teaching in the Teachers' College of Columbia University, and has played his part in Germany as an advocate of the *neuere Richtung* or reformed method. His object is to give an historical account of the growth of that method and some details as to its working. In his historical sketch he goes back to the time when Latin was the only language studied and the object was to put the student in a way of speaking and writing it from first-hand acquaintance with the classical authors. Melancthon, known as the "Praeceptor Germaniae," while dwelling on the importance of grammar, did not look upon it as an end in itself. Even in his time less stress was laid upon speaking Latin, and Luther actually had to tell teachers "to open the mouths of their children." Before long grammar, from being the servant in the acquisition of languages, became the master, and the "logical schooling" of the youthful intellect became a catchword. Protests were raised by eminent schoolmasters, notably by Ratich and Comenius, whose "Orbis Sensualis Pictus" anticipates many of the ideas now in vogue. The sketch of the history of Latin teaching is carried down to the middle of the nineteenth century, when a certain Dr. Kröger denounced the established method as leading to aversion to learning and to dullness of intellect.

Passing to the teaching of modern languages, we read of Meidinger (1756-1824), whose methods are familiar to us through his pupil and successor Ollendorff; of Jacotot, whose motto was "Tout est dans tout," and whose *tout* was practically Fénelon's "Télémaque"; of Hamilton, associated with interlinear translation; and of other inventors of methods; and, finally, of Ploetz, till lately "the undisputed monarch of French teaching in German schools." Of Ploetz's mastery of French and his clearness of statement Dr. Bahlsen speaks in the highest terms, but he deplores the absence from his books of any encouragement of the practical application of the living language. Before proceeding to more recent developments, he devotes a little space to the methods of self-instruction adopted by Schliemann, which remind us of the equally original methods of the great Arabic scholar E. H. Palmer. To pass on, the herald of the new method in Germany was Hermann Perthes, who in 1875 published a pamphlet on the reform of Latin teaching. It was followed by articles by Count Pfeil and by Moritz Trautmann; in 1882 appeared the epoch-making tractate of Vietor, who under the pseudonym of "Quousque tandem?" published "Der Sprachunterricht muss umkehren." Dr. Bahlsen briefly analyses Vietor's pamphlet (which, it appears, has not been translated into English) and gives a rapid sketch of the progress made by his ideas in Germany. It is sufficient to refer to an official manifesto of 1890 to the effect that in the higher schools the oral and written employment of the foreign languages shall be placed in the foreground and that grammar shall be treated merely as means to an end. Further ordinances, extorted by the persistence of the reformers, to whom their method became a sort of religion, recognized phonetic transcripts, free composition in the foreign language, and the discussion in that language of passages read in lieu of translation, as admissible deviations from established methods.

Among other improvements in teaching Dr. Buhlson com-

mends two steps taken by Prof. Martin Hartmann, of Leipsic—the organization of international correspondence between school-boys and the arrangement for peripatetic English and French elocutionists to visit various towns and read literary masterpieces to the pupils in the schools. He also dwells on the importance of *Realien*, in many cases illustrated by pictures of a better type than Hölzel's too familiar wall pictures of the seasons. Subsequent chapters are devoted to phonetic instruction, which, according to the author, should be the first stage, and the "analytic-inductive" method of teaching grammar—that is, the teaching of grammar direct from the reading book. Of the latter he gives some well selected examples, but a reading book combining literary merit with adaptation to the method is still a *desideratum*. On the whole, Dr. Bahlsen's sympathies are with the more moderate reformers, known in Germany as *Vermittler*: he recognizes that for English-speaking nations, whose language is practically uninflected, it is extremely difficult to dispense with systematic grammar. The book concludes with some sensible observations on the choice of German reading books.

ERASMUS AS EDUCATIONIST.

Desiderius Erasmus concerning the Aim and Method of Education.

By William Harrison Woodward, Professor of Education in the University of Liverpool. (4s. net. Cambridge University Press.)

"It may be reasonably maintained," says Prof. Woodward, "that of all the activities of Erasmus none was more congenial to him, none more characteristic, none of more influence in his own age and subsequently, than that which was concerned with education." His purpose, then, is to set forth this educational activity, disengaged as far as possible from other aspects of the work of the master. Accordingly he presents a sketch of the life of Erasmus, mainly in regard to his career as a scholar, and, in immediate connexion therewith, an exposition of "Characteristics," with a view to precise realization of "the appeal which Antiquity made to Erasmus and the message which he believed it to convey to the modern world."

Antiquity, as Erasmus read it, made this twofold appeal to him: the first, that of a social-cultural ideal, capable of being harmonized with the Christian ideal, and so fit for the modern age; the second, that of an intellectual type deeply congruous with his own. It is in the operation of this double attraction that we find the explanation of his zeal for the study of the ancient world, and, it may be added, the key to certain limitations and inconsistencies which we shall note in his interpretation of it.

Two sections on particular aspects—the Ciceronian controversy and the attitude of Erasmus towards the vernacular tongues of the day—are strikingly illuminative. In the latter Prof. Woodward summarizes the argument of Franciscus Floridus "as expressing the judgment of the group of scholars of whom Erasmus is chief."

In his third chapter Prof. Woodward comes to "The Educational Aim of Erasmus"—a social aim, though "we may perhaps doubt whether Erasmus had reached a clear reconciliation of social and individual aims in education." He sums up thus:

Briefly put, the only available material for instruction was that contained in the ancient writers. Partly, because through them alone could mind come into contact with mind. Partly, because subsequent inquiry had added nothing to the scientific wisdom therein contained. Partly, that outside of them there was no *organized* secular knowledge at all. And Erasmus knew that facts which, however interesting, are formless and unrelated have no value for the education of the young. Finally, the doctrine that education can only follow opinion is clearly realized. Erasmus is for ever proclaiming that "opinion" both in clergy and laity must be reformed before scholars can effect their ends. Rulers, parents, nobles must move before instruction can be moulded upon new lines. The absence of State organization throws the onus upon the Church and the governing classes. A new standard, a fresh subject of education, is impossible without the strong impulse of social, or professional, interest.

Then we have in detail "the Beginnings of Education" and "the Liberal Studies"—a concise, but very careful and complete, representation of the teaching of Erasmus in the various stages and in the various subjects. Prof. Woodward insists most properly that "in the study of Erasmus the text is the first, the second, and the third, authority"; and Part II. of the volume (pages 161-230) he devotes to a selection of Erasmian educational literature in English, "including the two treatises which best express the ordered views of their author upon Education," namely, the tract "De Ratione Studii" (which now, we imagine, appears for the first time in an English version) and the "De

Pueris Instituendis." There is a useful and fairly extensive "Chronological Outline," showing the principal dates of the life and writings of Erasmus, with contemporary events in the history of Humanism on the opposite page; very serviceable bibliographical lists; and a good index. The volume is comprehensive, thoroughly well considered, and most instructive. It is a very valuable and opportune contribution to the history of Education.

GENERAL NOTICES.

CLASSICS.

Corpus Poetarum Latinorum. Edited by J. P. Postgate. Fasc. V. (6s. net. George Bell.)

This part completes a work of notable scholarship and careful labour, most creditable to Prof. Postgate and his colleagues, and to the printers and publishers, who have combined to lay a weighty obligation upon all serious students of Latin poetry. The present fascicle contains Martial (by J. D. Duff), Juvenal (by Prof. A. E. Housman), and Nemesianus (by Heinrich Schenkl and Prof. Postgate).

The Teaching of Latin. By W. H. S. Jones, M.A. (1s. net. Blackie.)

Mr. Jones wishes "to show what a classical course can do for a boy, even though the time devoted to it be strictly limited." Even a boy, within the ordinary time-table, ought to do a considerable deal of Latin in three years. Mr. Jones lays out plans for three successive years, and much that he recommends—especially by way of method—is sure to reward adoption in practice. But one cannot get away from the impression that more progress would be made—that is to say, time and temper would be saved—if the study were commenced later, after the boy had been better prepared to grapple with the subject. At one point, Mr. Jones says: "Suppose a teacher is beginning work with a class of young scholars who know no grammar and cannot yet understand what a declension is." Any such supposition seems preposterous: it implies the doing of a right thing at a wrong time, or in the wrong order of procedure. The preliminary chapter on classics in schools may be useful in some quarters, though it does seem waste of time to prove the value of Latin and Greek and to argue that they can be profitably taught in secondary schools. The little essay, however, is all in the right direction.

Messrs. Blackie have just added to their series of "Latin Texts" the four books of the *Odes of Horace*, in separate volumes (6d. net each), with a concise and fresh introduction by Dr. Rouse, the general editor. The naturally long vowels are marked throughout. The type and get-up are excellent. The series is sure to find much favour.

MATHEMATICS.

An Elementary Treatise on Graphs. By George A. Gibson, M.A., F.R.S.E. (3s. 6d. Macmillan.)

Not a very large volume, but a text-book that acquires a special importance when compared with the minor publications which have appeared recently and which are intended to form supplementary chapters to well known elementary works on algebra. Mr. Gibson's book deals with this branch of mathematical science in a manner at once thorough, connected, and attractive. The earlier portions are presented in a form suitable even for the beginner, whilst the more advanced student will find the treatise adequate for much of his higher work. It discusses the subject in many of its principal developments, and considers those amongst its numerous applications which are of primary interest and admit of discussion by means of elementary mathematics. Many and varied problems in geometrical and physical science and others based on statistics are either treated fully for the sake of illustration or proposed as exercises for the student. The data in a large number of specified instances are the more valuable because they have been furnished by actual observation and experiment. In the course of his brief preface the author dwells on the importance of assigning its true position to graphical work. Until very lately but little general use was made of graphical methods, and now the tendency is to make them so prominent that there is some danger lest analysis may suffer. As usual, what is desirable is the happy medium—the recognition that, in a sense, graphical representation and analysis may, perhaps, be regarded as complementary instruments of investigation. Each is powerful for special purposes, and a problem is often best understood if considered from the two standpoints. Mr. Gibson's work will prove a thoroughly acceptable text-book, supplying a definite want.

Preliminary Practical Mathematics. By S. G. Starling, B.Sc. Lond., A.R.C.Sc. Lond., and F. C. Clarke, B.Sc. Lond., A.R.C.Sc. Lond. (1s. 6d. Edward Arnold.)

Written principally, but not exclusively, for students attending classes and requiring some knowledge of elementary mathematics to aid them in the course of a technical education. The authors have been able to bring long experience in the teaching of such students to bear upon their work, and the little volume will doubtless serve a

useful purpose, although the best methods are not invariably adopted, and the manual is not entirely free from inaccuracies.

Practical Geometry with Mensuration. (1s. Oliver & Boyd—Educational Series. Simpkin, Marshall, & Co.)

A suggestive and useful course in elementary geometry. The pupil gains a knowledge of the groundwork of the subject principally as the result of the "accurate use of ruler, compasses, protractor, and set-squares." The treatment in general is satisfactory, though rather superficial owing to the wide range which the material of so small a volume is made to cover. The exercises may be divided into two classes, including, on the one hand, those which are experimental and lead up to the enunciation of theorems; and, on the other, those that form series of tests of the knowledge already acquired.

Elementary Plane Geometry. By V. M. Turnbull. (2s. Blackie.)

A good and instructive introduction to deductive geometry designed to follow a course of experimental and practical work. To derive full benefit from the text, however, the book should be studied under an untiring and competent teacher, consistently careful to elicit from the young pupil the many reasons for arguments which may perhaps appear to be superfluous in print, but the constant repetition of which forms an essential part of a thorough training in elementary geometry.

FRENCH.

(1) *A Junior French Grammar.* Edited by L. A. Sornet and M. J. Acatos, B. ès L., ès Sc. (2s. Methuen.)—(2) *Latour's New Course of French: First Part of Vol. I., Lessons i.-vii.* (2s. net. Schulze, Edinburgh.)—(3) *Siepmann's Primary French Course, Second Part.* (2s. 6d. Macmillan.)—(4) *Bell's French Course.* By R. P. Atherton, M.A. Part II. (1s. 6d. George Bell.)—(5) *French Lessons on the Gouin Method.* By F. Thémoin, B. ès L., Principal of the Gouin Schools of Languages, London. Vols. I. and II. (2s. 6d. net each. Hachette.)—(6) *A New First French Reader and Writer.* By Prof. R. J. Morich. (2s. Swan Sonnenschein.)—(7) *New French Course for Schools.* By Charles Copland Perry, M.A., Ph.D., and Dr. Albrecht Reum. Part I. (1s. 6d. Macmillan.)

(1) About one-half of the book is given to the main points of the formal grammar; the second part consists of exercises, well devised and variously illustrative; then follow examination papers and vocabularies. If the grammar and the exercises be judiciously worked together, the results should be good. The work has been carefully and thoughtfully executed. (2) is "based on Gouin's method made etymological and grammatical." Lessons on pronunciation and orthography are alternated with lessons on grammar and elaborately treated vocabularies; and footnotes are abundant and discursive. The handling is freely unconventional. The multitudinous references, especially in the vocabularies, are probably wasted: not one student in a thousand, we should think, will heed them, except under direct compulsion. (3) consists of a reader—thirty lessons describing a trip to France (each illustrating a chapter in Part I. of the work), with some miscellaneous passages—a grammar (leading principles and rules only), and a varied series of exercises, with phraseology and vocabulary appended. It should be very effective in the hands of teachers and pupils that will follow the author's directions for its use. (4) offers nine lessons worked out in full; next, a series of prose passages (short stories) to be treated similarly, and a number of poetical pieces for repetition; then, a summary of grammar; and, finally, sentences for translation. Special attention is bestowed on the main uses of the subjunctive. A bright and practical book, with illustrations. (5) exemplifies the Gouin system authoritatively, with breadth of scope, and with great fertility of adaptation. After all, the English and the French expressions have to be brought together; but, given a fair vocabulary or else situations inevitably suggesting the meaning, the Gouin practice will be very rewarding. The latter half of the second volume mainly consists of extracts in French, with very slight notes. (6) is a new issue of the work by R. J. Morich and W. S. Lyon, M.A. Oxon., which was published in 1890 and has gone through nine editions. Now it has been "entirely rewritten" by Prof. Morich, though still framed on the same general principles. The Reader is the foundation, and the Writer is based on its subject-matter and vocabulary. The grammar is systematic, details being rigidly excluded. A very attractive, practical, and serviceable book. (7) is a well considered and skilfully executed first book "based on the principle of the direct method, combining the practical use of the living language with a systematic study of grammar." "The special features of the book are the *Phrases à compléter*, the *Arithmétique*, the *Division du Temps*, and the *Devoir* which concludes each lesson." The graduation is markedly careful.

ENGLISH.

Longmans' Class-books of English Literature.

(1) *Tales of King Arthur and the Round Table*, adapted from "The Book of Romance" by Andrew Lang, and furnished with brief introduction and notes by J. C. Allen, and with 20 charming illustrations by H. J. Ford (1s.), will be extremely interesting to younger readers. (2) *The Lays of Ancient Rome, with Iury and The Armada* (Macaulay), provided with a short biography by David Salmon, and with introduc-

tion and notes by J. W. Bartram, M.A. (1s.), will delight the new generation of school folk. (3-6) Then Scott is well represented: *The Lay of the Last Minstrel*, with introduction and notes by Fred. W. Tickner, M.A. (1s.); *Marmion*, with introduction and notes by Guy Kendall, B.A. (1s. 6d.); *The Lady of the Lake*, with introduction and notes by W. Horton Spragge, M.A. (1s. 6d.); and *The Talisman* (abridged), with introduction and notes by J. Thornton, M.A. (1s. 4d.). All the volumes have a very interesting and judicious biography of Scott by Andrew Lang; and (3) and (6) have "Questions" appended, and (5) has "Examination Papers" and "General Questions" as well—but, mercifully, they are neither numerous nor unreasonable. (7-9) *Paradise Lost* (Milton), Books I.-III., in separate volumes (6d. each), have a biography by D. Salmon, and argument and notes by W. Elliott, M.A. The series is efficiently edited and beautifully printed and got up. It cannot fail to be attractive, and it will do much to foster the habit of reading and the taste for good literature.

Elements of English Composition. By Tuley Francis Huntington, A.M. Harv., recently Member of the Faculty of the Leland Stanford Junior University. (3s. 6d. Macmillan.)

The book is "designed for use in secondary schools," and it is written in a breezy practical style that will catch and hold the attention of pupils that have any "spunk" in them (as Mr. Huntington might phrase it). The author labours to inculcate the notion that young compositors "must be taught at the start, not 'rules' of writing, but habits of writing"; and insists that "the only order on which the whole course in English composition should be based is the order a trained writer lays down for himself more or less instinctively in the writing of a specific composition"—first prevision, then revision. Accordingly, Part I. (pages 1-128) deals with "planning and writing"—first with "the whole composition" (choice and limits of subject, gathering materials, selection, arrangement, rough draft), and then with the paragraph. Part II. (pages 129-203) has to do mainly with "rewriting." "No one whose mind is wholly possessed by the desire to write something, and who also has something to write . . . ever stops to think of the sort of sentences he is writing," says Mr. Huntington; and so, after you have written something, more or less impetuously, you come to consider your sentences and your words. Then Part III. (pages 205-346) expounds four "kinds of writing"—letter-writing, narration, description, explanation and argument. Remarks on the preparation of school manuscripts and on punctuation are relegated to an appendix. There is much good practical matter in the book, with not a little exuberance; and the virtue of it perhaps lies more in its brisk directness of manner than in the newness or the validity of its precepts.

The Tempest, in Messrs. Blackie's "Red Letter Shakespeare," edited by E. K. Chambers, is a very charming volume, with an unusually piquant introduction (1s. 6d. net leather; 1s. net cloth). It appeals alike to the book-lover and to the general reader.

EDUCATION.

The Educational Theory of Immanuel Kant. Translated and edited by Edward Franklin Buchner, Ph.D. Yale, Professor of Philosophy and Education in the University of Alabama. (6s. Lippincott. Educational Series.)

Prof. Buchner's translation of the "Ueber Pädagogik," which apparently was completed before he saw Miss Churton's translation, runs from page 101 to page 222, with numerous footnotes, which will prove extremely serviceable. Supplementing the treatise, and completing Kant's contribution to the general theme of education, are "Selections" (pages 223-291), all newly translated, from Kant's other technical and popular writings. These are interesting and suggestive; but many of them can hardly be regarded as educational, except in the very widest sense. These "Lecture-Notes" of Kant, as the editor of the series puts it, "are of great practical value, because they consistently unfold in outline a rational pedagogic system: the vital matter is not wholly what system they unfold, but rather that they do unfold a system." They are to be reckoned with as the thoughts of a very great thinker, by no means as absolute pronouncements, but as stimulating inquiry, and it is well to note "the fact that Kant had a perennial interest in education and the relation of its practices to the philosophical doctrines which he was slowly working out in the eighties." Prof. Buchner, indeed, reminds us that the late Dr. Thomas Davidson "set forth Kant as the most important historical individual in the whole of modern education." The Introduction treats very fully (pages 11-94) the sources, the philosophical, psychological, and evolutionary bases, and the limitations of Kant's educational theory. It will reward careful study. A selection of the literature of the subject is convenient and helpful.

The Democratic Ideal in Education. By R. E. Hughes. (1s. net. Charles & Dible.)

Mr. Hughes believes that a certain "unreasoning admiration of some of our people (some, indeed, of the best friends of education) for foreign systems of schools is a most serious danger to our own schools," and sets about showing "that, although we may learn much, we dare copy but little, from the foreign schools"—"we must work

out our own salvation, we must dare to be ourselves." Sketching a curriculum for a complete English education, he works out the main features to this general form: "the right of each child of the State to complete growth; the solidarity of the national school; the independence of each of its parts and of itself as a whole; the solidarity and unity of the curricula of the schools; the solidarity of the teaching profession; and, lastly, the recognition of the sanctity of the personality of each child." Then he discusses his ideal in practice, and shows how the difficulties of realization may be overcome. It is in the field of "so-called secondary education" that "England's lamentable lack is at once apparent"; but "in the primary school we need more trained teachers, and those better trained," and "we need to place our rural schools on an equality with our town schools." To put things right we need "mutual co-operation and self-sacrifice," and we must work "with no mean aim of immediate profit or commercial success," but with a view to "the common good, not of to-day nor of to-morrow only, but also of the many morrows yet to come." The handling is earnest, broad-minded, elevated, and lucid; and, if the ideal stretches away into far regions, yet it can be reasonably well accommodated to the practical realities of the present. The essay should be widely read and pondered by educationists.

Messrs. Williams & Norgate have issued "the forty-sixth thousand of the cheap edition" of *Spencer's Education* (2s. 6d.). The type is agreeable and the get-up tasteful.

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AGRICULTURE.

The Education Committee of the Staffordshire County Council publishes an interesting joint report of *Field Experiments* conducted during 1904 in Staffordshire and Shropshire and at the Harper-Adams Agricultural College, Newport, Salop. The Committee, it may be noted, place the services of their agricultural instructor (Mr. John C. Rushton, F.H.A.S.) at the disposal of farmers in the county, so far as time permits, for advice upon all agricultural matters.

The Midland Agricultural and Dairy Institute (Kingston, Derby) issues a fresh batch of *Bulletins* for 1904-5, reporting experiments with (1 and 3) varieties of potatoes, and (4) barley, and field trials on (2) the manuring of seeds hay, and on (5) the manuring of mangels. The work of the Institute is carried on in conjunction with the County Councils of Derbyshire, Leicestershire, Lincolnshire (Lindsey), and Nottinghamshire.

MISCELLANEOUS.

Paton's List of Schools and Tutors, 1905. (1s. 6d. J. & J. Paton, 143 Cannon Street, E.C.)

This is the eighth annual issue. The contents are intended to "assist parents in their choice of schools, by placing before them in a concise and practical form particulars of many of the best English schools for boys and girls." The schools are classified in no fewer than fourteen lists, but there are other fourteen sections upon cognate institutions, with pertinent information: scholarships and exhibitions obtainable at boys' and at girls' schools; tutors for various special lines; naval, military, medical, agricultural, engineering, and other institutions; the Civil Service; physical training colleges, &c. A very large number of illustrations show the schools, &c. The information is given concisely, but in sufficient fullness to convey an adequate idea of the institutions; and "the publishers will be pleased to forward prospectuses of any of the schools, on application, free of charge." The volume has well over 1,000 pages, and is nicely got up. It ought to be very serviceable.

Mr. Fisher Unwin adds to his "Green Cloth Library" (6s. each) *Driven*, by Margaret Watson, a simple and sincere story illustrating forcibly the cruel fate of the working classes under the Corn Laws, specifically in the agricultural districts. "How's a man to live if he don't help himself?" And, if he do, then jail, transportation, or the scaffold, according to variety of circumstances. Men were "druv" to it. The characters are skilfully drawn, the turning-points of the plot are cleverly devised, and the interest is steadily maintained, though the broad issue is never in doubt.

Mr. Fisher Unwin also publishes a fresh and vigorous pamphlet on "Industrial Depression—its Cause and Cure," by Arthur Kitson (6d.). The cause is "an inequitable distribution of wealth resulting from our monetary and land systems." The cure is "to abolish them by repealing those inequitable laws and by nationalizing or socializing the instruments and factors of production." There still seems to be room for more discussion of the question.

The "Health Resort" continues to offer interesting and informative articles (with numerous illustrations) on eligible places for holidaying both at home and abroad. It is very much in season just now.

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(Continued on page 402.)

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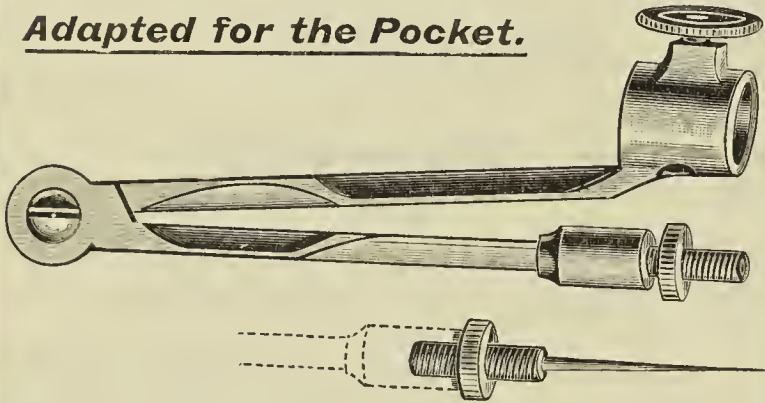
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### MATHEMATICS.

#### NOTE TO CORRESPONDENTS.

The Mathematical Editor has received an empty wrapper bearing post-mark:—"Culenburg, Aug. 11th, /05," and conveying no clue as to the contents originally enclosed in it.

15523. (A. M. NESBITT, M.A.)—A man, who has  $m$  hats of his own in his hall, is visited by  $n$  friends, each wearing a hat. They leave their hats with those of their host. When they are going away they are unfortunately not in a condition to distinguish between one hat and another. Find the chance that no guest takes away his own hat.

*Solutions (I.) by Professor M. W. CROFTON, F.R.S.; (II.) by Hon. G. R. DICK.*

There are  $n$  objects  $a, b, c, \dots$ , each of which has its proper place—say  $A, B, C, \dots$ —and there are besides  $m$  places  $X, Y, Z, \dots$ . If the  $n$  objects are distributed at random among the  $m+n$  places, to find the chance that no object shall be in its proper place.

It is easy to see that the number of ways the  $n$  objects can be distributed is  $(m+n)!/m! = (m+1)(m+2) \dots (m+n)$ .

Now this number consists of the cases (1) when all the objects are in their proper places, (2) when all but one are in their places, (3) when all but two are, and so on.

Let  $u_r$  = number of ways that  $r$  objects, each having a proper place, can be distributed among  $m+r$  places (as above) in such a manner that no object is in its place.

The number of cases (1) is 1. The number of cases (2) is  $nu_1$ : for suppose  $a$  the object out of its place: this gives  $u_1$  cases (it is evident that  $u_1 = m$ ); and there are  $n$  objects. The number of cases (3) is  $\frac{1}{2}[n(n-1)]u_2$ : for suppose  $a, b$  out of their places: this gives  $u_2$  cases; and the number of such pairs is  $\frac{1}{2}[n(n-1)]$ ; and so on. We infer that

$$(m+1)(m+2) \dots (m+n) = 1 + nu_1 + \frac{1}{2}[n(n-1)]u_2 + \dots + nu_{n-1} + u_n \dots (1).$$

By putting  $n$  successively equal to 1, 2, 3, ..., we can easily find  $u_1, u_2, u_3, \dots$  from this formula: thus  $u_1 = m, u_2 = 1 + m + m^2, \dots$

To find the general value of  $u_n$ , we have, from (1),

$$(m+1)(m+2) \dots (m+n) + u_0 - 1 = u_0 + nu_1 + \frac{1}{2}[n(n-1)]u_2 + \dots + u_n = (1+E)^n u_0,$$

where  $E$  is an operator increasing the variable by 1 in any function.

Also  $(m+1) \dots (m+n-1) + u_0 - 1 = (1+E)^{n-1} u_0,$   
 $(m+1) \dots (m+n-2) + u_0 - 1 = (1+E)^{n-2} u_0.$

Now  $u_n = E^n u_0 = (1+E-1)^n u_0;$

hence, from the above values for the powers of  $1+E$ ,

$$u_n = (m+1) \dots (m+n) - n(m+1) \dots (m+n-1) + \frac{1}{2}[n(n-1)](m+1) \dots (m+n-2) - \dots;$$

therefore  $u_n = \frac{(m+n)!}{m!} \left( 1 - \frac{n}{m+n} + \frac{1}{2!} \frac{n(n-1)}{(m+n)(m+n-1)} - \dots \right).$

Hence, dividing  $u_n$ , the number of favourable cases, by the whole number  $(m+n)!/m!$ , we have for the required probability

$$p = 1 - \frac{n}{m+n} + \frac{1}{2!} \frac{n(n-1)}{(m+n)(m+n-1)} - \frac{1}{3!} \frac{n(n-1)(n-2)}{(m+n)(m+n-1)(m+n-2)} + \dots$$

There are  $n+1$  terms. The terms  $u_0 - 1$  obviously disappear, as the sum of the binomial coefficients, alternately  $+$  and  $-$ , is 0.

*Note.*—The Problem is a very puzzling one. For the success of the modes of attack used by solvers in earlier volumes of *The Educational Times* and the *Reprint*, it is necessary to form the product of the following probabilities:—(1) the probability of A. not taking his own hat, (2) the probability of B. not taking his own if A. has not, (3) of C. not doing so if A. and B. have not, and so on; but it may be observed that the difficulty of solving on such lines would probably be very great. [Rest in Reprint.]

15819. (Professor NEUBERG.)— $a, b, c, R$  désignant les côtés d'un triangle ABC et le rayon du cercle circonscrit, trouver le maximum ou le minimum du rapport  $(a^2 + b^2 + c^2) : R^2$ .

*Solution by SARADAKANTA GANGULI, M.A.; Professor SANJANA, M.A.; and C. M. ROSS.*

$$\frac{a^2 + b^2 + c^2}{R^2} = \frac{4R^2(\sin^2 A + \sin^2 B + \sin^2 C)}{R^2} = 4(\sin^2 A + \sin^2 B + \sin^2 C) = u \text{ suppose.}$$

Then  $du = 0$ ; therefore  $\sin 2A dA + \sin 2B dB + \sin 2C dC = 0$ . Also  $dA + dB + dC = 0$ ; therefore  $\sin 2A = \sin 2B = \sin 2C$ . Therefore either

$$A = B = C = 60^\circ \dots (1),$$

or any two of  $A, B, C$  are each equal to  $0^\circ$  and the third =  $180^\circ \dots (2)$ .

(1) gives the maximum value, viz. 9; and (2) the minimum value, viz. 0.

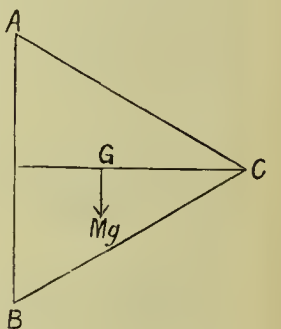
15786. (I. ARNOLD.)—An equilateral triangle ABC is suspended at A and its side is kept vertical by a ring at B. It is required to find what the angular velocity of the triangle round AB must be in order that there may be no pressure at B.

*Solution by W. J. DOBBS, M.A.*

The resultant weight  $Mg$ , through the centre of mass  $G$ , and the reaction at A must be together equivalent to  $M\omega^2(a/2\sqrt{3})$  along  $CG$ , where  $a$  is the side of the triangle and  $M$  its mass. Hence, taking moments about the axis through A perpendicular to the plane of the triangle, we have

$$M\omega^2 \frac{a}{2\sqrt{3}} \frac{1}{2}a = Mg \frac{a}{2\sqrt{3}};$$

therefore  $\omega = \sqrt{\frac{2g}{a}}.$



15806. (Rev. F. H. JACKSON.)—Given

$$P_n(x) = \frac{[2n]!}{(2)_n [n]! [n]!} \left\{ x^n - p^3 \frac{[n][n-1]}{[2][2n-1]} x^{n-2} + \dots \right\},$$

in which the  $p$  prefixes of the terms of the series form the sequence

$$(p^3, p^8, p^{15}, \dots, p^{r(r+2)}, \dots),$$

and  $[n] = (p^n - 1)/(p - 1), (2)_n = (1 + p^n)(2)_{n-1}, [n]! = [n][n-1]!$ ,

show that  $\frac{[n]}{[2n-1]} \frac{P_n}{P_{n-1}}$  may be expressed as a continued fraction

$$\frac{\frac{[n]^2}{[2n+1][2n-1]} x^{n+2}}{x - \frac{[n+1]^2}{[2n+3][2n+1]} x^{n+3}} \dots$$

*Solution by the PROPOSER.*

It is easy to establish for  $P_n$  a recurrence form

$$[n] P_n = [2n-1] x P_{n-1} - p^{n+1} [n-1] P_{n-2},$$

reducing, in case  $p = 1$ , to the recurrence form of Legendre's function

$P_n$ ; hence  $\frac{[n+1] P_{n+1}}{[2n+1] P_n} = x - p^{n+2} \frac{[n] P_{n-1}}{[2n+1] P_n}$



and  $f_n \frac{[2n+1][2n-1]}{[n]^2} p^{-n-2} = \frac{1}{x-f_{n+1}} \dots\dots\dots (A),$

where  $f_n = \frac{[n] P_n}{[2n-1] P_{n-1}}$ .

From (A) the form of the continued fraction at once follows.

15794. (ROBERT W. D. CHRISTIE.)—Where  $p_n, q_n$  are any convergents of  $p_n^2 - 2q_n^2 = \pm 1$ , prove

$2 \tan^{-1} \frac{q_n}{q_{n+1}} \pm \tan^{-1} \frac{1}{p_{2n+1}} = \tan^{-1} 1 = \frac{1}{4}\pi \dots\dots\dots (1),$

$2 \tan^{-1} \frac{p_n}{p_{n+1}} \mp \tan^{-1} \frac{1}{p_{2n+1}} = \tan^{-1} 1 = \frac{1}{4}\pi \dots\dots\dots (2);$

and show that Euler's and Machin's series are simple cases (signs alternate).

*Solution by the PROPOSER.*

A few preliminary results are desirable.

(a)  $p_{n+1} = q_{n+1} + q_n, p_n = q_{n+1} - q_n \dots\dots\dots (1, 2);$

for  $p_{n+1}^2 - 2q_{n+1}^2 = \pm 1$  and  $p_n^2 - 2q_n^2 = \mp 1$  from the general equation. Adding and equating,  $p_{n+1}^2 + p_n^2 = 2(q_{n+1}^2 + q_n^2) = (q_{n+1} + q_n)^2 + (q_{n+1} - q_n)^2;$

thus  $p_{n+1} = q_{n+1} + q_n, p_n = q_{n+1} - q_n.$

(b) From (1), (2) by addition and subtraction,

$p_{n+1} + p_n = 2q_{n+1}, p_{n+1} - p_n = 2q_n \dots\dots\dots (3, 4).$

(c) We have, by *Reprint*, Vol. VI., p. 99,

$p_{2n+1}^2 + 1 = (p_{n+1}q_{n+1} + p_nq_n)^2 + (p_{n+1}q_n - p_nq_{n+1})^2;$

thus  $p_{2n+1} = p_{n+1}q_{n+1} + p_nq_n, \pm 1 = p_{n+1}q_n - p_nq_{n+1} \dots\dots\dots (5, 6).$

(d)  $2q_nq_{n+1} = q_{n+1}^2 - q_n^2 \pm 1$ , for  $p_{n+1}^2 - 2q_{n+1}^2 = \pm 1$  and  $p_{n+1} = q_{n+1} + q_n$ ; therefore  $2q_nq_{n+1} = q_{n+1}^2 - q_n^2 \pm 1.$

A. We have to show that  $2 \tan^{-1} \frac{p_n}{p_{n+1}} \mp \tan^{-1} \frac{1}{p_{2n+1}} = \tan^{-1} 1 = \frac{1}{4}\pi.$

$2 \tan^{-1} \frac{p_n}{p_{n+1}} = \frac{2p_n p_{n+1}}{p_{n+1}^2 - p_n^2} = \frac{2p_n p_{n+1}}{2q_{n+1} + 2q_n} = \frac{q_{n+1}^2 - q_n^2}{2q_n q_{n+1}} = \frac{q_{n+1}^2 - q_n^2}{q_{n+1}^2 - q_n^2 \pm 1};$

also  $p_{2n+1} = p_{n+1}q_{n+1} + p_nq_n$  where  $p_{n+1} = q_{n+1} + q_n$  and  $p_n = q_{n+1} - q_n$ ; thus  $p_{2n+1} = q_{n+1}^2 - q_n^2 + 2q_nq_{n+1} = 2q_n^2 - 2q_n^2 \pm 1.$

Now, for brevity, let  $a = q_{n+1}^2 - q_n^2$ ; thus the theorem to be proved is practically then  $p_{2n+1} = 2a + 1 = 2q_{n+1}^2 - 2q_n^2 + 1,$

$\tan^{-1} \frac{a}{a+1} + \tan^{-1} \frac{1}{2a+1} = \frac{\frac{a}{a+1} + \frac{1}{2a+1}}{1 - \frac{a}{(a+1)(2a+1)}} = \tan^{-1} 1 = \frac{1}{4}\pi.$

Again, let  $a = q_{n+1}^2 - q_n^2 - 1$ ; then  $p_{2n+1} = 2a + 1 = 2q_{n+1}^2 - 2q_n^2 - 1$ ; thus

$\tan^{-1} \frac{a+1}{a} - \tan^{-1} \frac{1}{2a+1} = \frac{\frac{a+1}{a} - \frac{1}{2a+1}}{1 + \frac{a+1}{a(2a+1)}} = \tan^{-1} 1 = \frac{1}{4}\pi.$

B.  $2 \tan^{-1} \frac{q_n}{q_{n+1}} \pm \tan^{-1} \frac{1}{p_{2n+1}} = \tan^{-1} 1 = \frac{1}{4}\pi,$

for  $2 \tan^{-1} \frac{q_n}{q_{n+1}} = \frac{2q_n q_{n+1}}{q_{n+1}^2 - q_n^2} = \frac{q_{n+1}^2 - q_n^2 \pm 1}{q_{n+1}^2 - q_n^2}.$

Let  $a = q_{n+1}^2 - q_n^2 + 1$ ; thus  $2a - 1 = 2q_{n+1}^2 - 2q_n^2 + 1$ ; therefore

$\tan^{-1} \frac{a}{a-1} - \tan^{-1} \frac{1}{2a-1} = \frac{\frac{a}{a-1} - \frac{1}{2a-1}}{1 + \frac{a}{(a-1)(2a-1)}} = \tan^{-1} 1 = \frac{1}{4}\pi;$

and again,  $a = q_{n+1}^2 - q_n^2 - 1$ ; then  $2a + 1 = 2q_{n+1}^2 - 2q_n^2 - 1$ ; therefore

$\tan^{-1} \frac{a}{a+1} + \tan^{-1} \frac{1}{2a+1},$

as before.

C. It follows, since A and B each equal unity, that

$\tan^{-1} \frac{q_n}{q_{n+1}} + \tan^{-1} \frac{p_n}{p_{n+1}} = \tan^{-1} 1,$

which is proved directly from the results given.

2357. (T. COTTEBILL, M.A.)—(1) If the determinant  $\begin{vmatrix} a & f & e \\ f & b & d \\ e & d & c \end{vmatrix}$  vanish, the equations

$\alpha (bz^2 + cy^2 - 2dxy) = \beta (cx^2 + az^2 - 2cxy) = \gamma (ay^2 + bx^2 - 2fxy)$

are satisfied by two conjugate pairs of values of the variables, one pair

being independent of the constants  $\alpha, \beta, \gamma$ . Find the equation to the quadric satisfying the values  $y = z = 0, z = x = 0, x = y = 0$ , and the last pair of values, and the linear equations satisfying each conjugate pair. (2) Show that such a system of equations is the analytical representation of the projection of the three circles described on the lines connecting the opposite points of intersection of four lines in a plane as diameters, the circle circumscribing their diagonal triangle, and the line at infinity.

*Solution by Professor NANSON.*

The locus of a point such that the tangents from it to two conics given tangentially by  $\Sigma = 0, \Sigma' = 0$  form a harmonic pencil is a third conic given punctually by  $S = 0$ , where the coefficients of  $S$  are linear in the coefficients of  $\Sigma$  and in those of  $\Sigma'$ . Hence, if  $\Sigma'$  belongs to a range, then  $S$  belongs to a pencil. Taking the four common tangents of the range to be  $\alpha\xi^2 = \beta\eta^2 = \gamma\zeta^2$ , we have

$\Sigma = (abcfgh)(\xi\eta\zeta)^2, \Sigma' = a'\xi^2 + b'\eta^2 + c'\zeta^2, S = a'A' + b'B' + c'C',$

where  $A' = bz^2 + cy^2 - 2fyz, \dots$ , and  $a'/\alpha + b'/\beta + c'/\gamma = 0$ .

The four vertices of the pencil are seen, by taking  $a', b', c'$  in turn to be zero, to be given by  $\alpha A' = \beta B' = \gamma C' \dots\dots\dots (1),$

and these are the equations given in the Question,  $d, e, f$  having been replaced by  $f, g, h$ . Now, if the discriminant  $\Delta$  of  $\Sigma$  vanishes, the three equations  $A' = 0, B' = 0, C' = 0$  have two common solutions, viz., the co-ordinates of the two points now given by  $\Sigma = 0$ . These two points—P, Q, say—are independent of  $\alpha : \beta : \gamma$  and are two of the four vertices of the pencil.

Now the co-ordinates of P, Q are given by

$\xi^2/A = \eta^2/B = \zeta^2/C = \eta\zeta/F = \zeta\xi/G = \xi\eta/H,$

where A, ... are the co-factors of a, ... in  $\Delta$ . Hence the equation of PQ is  $x/F + y/G + z/H = 0 \dots\dots\dots (2),$

and this is one of the linear equations asked for. By combining this linear equation with any one of the quadratic equations  $A' = 0, B' = 0, C' = 0$ , we readily find the quadric relation asked for to be

$ayz/F + bzx/G + cxy/H = 0 \dots\dots\dots (3).$

One of the conics of the range touches PQ, viz., the one determined by

$Aa' + Bb' + Cc' = 0,$

and the corresponding S conic is

$(1/\alpha)(BC' - B'C) + (1/\beta)(CA' - C'A) + (1/\gamma)(AB' - A'B) = 0.$

It is obvious from geometry that this conic breaks up into the line PQ and the join of the remaining two vertices of the pencil. Accordingly, we readily verify that the last equation breaks up, in virtue of the condition  $\Delta = 0$ , into (2) and

$\frac{1}{\alpha} \left( \frac{gx - az}{H} - \frac{hx - ay}{G} \right) + \frac{1}{\beta} \left( \frac{hy - bx}{F} - \frac{fy - bz}{H} \right) + \frac{1}{\gamma} \left( \frac{fz - cy}{G} - \frac{gz - cx}{F} \right) = 0 \dots\dots\dots (4).$

This is the second linear relation asked for.

The three conics (1) are conics of the pencil, and the corresponding conics of the range are flat conics coinciding with the diagonals of the quadrilateral formed by the four common tangents. Each of the three conics (1) is therefore the locus of a point at which PQ and one of the three diagonals subtend a harmonic pencil. When then P, Q are at the foci of the conics (1) are the circles on the diagonals, their finite intersections are the two points defined by Clifford as the foci of the quadrilateral; (2) is the line at infinity; (3) is the circum-circle of the diagonal triangle; and (4) is the directrix of the parabola of the range.

15772. (R. W. D. CHRISTIE.)—Prove  $A^2 = B^2 + C^2$  (integers) when  $A = \sum_0^n \{(m+n)! / [2n!(m-n)!]\} (m \succ n).$

*E.g.,*  $m = 5, n = 5, 4, 3, 2, 1, 0$ ; then

$A = \sum_0^5 (1 + 9 + 28 + 35 + 15 + 1) = 8^2 + 5^2.$

*Solution by F. N. MAYERS, M.A.*

If we indicate the proposed expression by  $u_{2n-1}$ , and the parallel expression  $\sum_1^{n+1} \{(m+n)! / [(2n-1)!(m-n+1)!]\}$  by  $u_{2n}$ , then is  $u_l$  means the number of ways in which  $l$  playing cards can be dealt out without any succession of two or more red occurring if each card is returned to the pack every time. It can be immediately inferred from this that  $u_l$  obeys the law  $u_{l+1} = u_l + u_{l-1}$  (Art. "Probability," *Encyclopædia Britannica*, Section 1). But it can also be proved from the expressions themselves. The manner of addition is shown as follows:—

$u_5 = 1 + 5 + 6 + 1$   
 $u_6 = 1 + 6 + 10 + 4$   
 $u_7 = 1 + 7 + 15 + 10 + 1$   
 $u_8 = 1 + 8 + 21 + 20 + 5$

It appears, therefore, that the  $r$ -th term of  $u_l$ , added to the  $(r+1)$ -th term of  $u_{l+1}$ , is equal to the  $(r+1)$ -th term of  $u_{l+2}$ ; and this can be



shown to be always the case. It will be seen that  $u_{2n}$  has the same number of terms as  $u_{2n-1}$ ; hence, in this manner of addition, in adding  $u_{2n-1}$  to  $u_{2n}$ , there is unity overlapping one each side, and  $u_{2n+1}$  begins and ends in 1, as it should do; but, in adding  $u_{2n-2}$  to  $u_{2n-1}$ ,  $u_{2n-1}$  has one more term, and therefore no term overlaps at the end; so that  $u_{2n}$  begins with 1 and ends with  $n+1$ , as it should do.

To prove the  $r$ -th term of  $u_l$  +  $(r+1)$ -th term of  $u_{l+1}$  =  $(r+1)$ -th term of  $u_{l+2}$ . The  $r+1$ -th term of  $u_{2m-1}$  is  $(2m-r)! / [(2m-2r)! r!]$ . The  $(r+2)$ -th term of  $u_{2m}$  is  $(2m-r)! / [(2m-2r-1)! (r+1)!]$ . Their sum is  $(2m-r)! / [(2m-2r)! (r+1)!] (r+1+2m-2r)$

$$= (2m-r+1)! / [(2m-2r)! (r+1)!] = (r+2)\text{-th term of } u_{2m+1},$$

i.e.,  $u_{2n+1} = u_{2m} + u_{2m-1}$ . The  $(r+1)$ -th term of  $u_{2m}$  is

$$(2m-r+1)! / [(2m-2r+1)! r!];$$

the difference between this and the  $(r+1)$ -th term of  $u_{2m-1}$  is

$$(2m-r)! / [(2m-2r+1)! r!] - (2m-r+1 - (2m-2r+1))$$

$$= (2m-r)! / [(2m-2r+1)! (r-1)!] = r\text{-th term of } u_{2m-2},$$

i.e.,  $u_{2m} = u_{2m-1} + u_{2m-2}$ . Hence the relationship in question is proved, whether  $l$  is even or odd. The equation  $u_{n+1} = u_n + u_{n-1}$  gives  $E^2 - E - 1 = 0$ ; and, since  $u_1 = 2, u_2 = 3$ , we get, solving for  $E$ ,

$$u_n = (\alpha^{n+2} - \beta^{n+2}) / (\alpha - \beta),$$

where  $\alpha, \beta$  are roots of  $x^2 - x - 1 = 0$ . Then

$$\begin{aligned} & \left( \frac{\alpha^{n+2} - \beta^{n+2}}{\alpha - \beta} \right)^2 + \left( \frac{\alpha^{n+1} - \beta^{n+1}}{\alpha - \beta} \right)^2 \\ &= \frac{\alpha^{2(n+2)} + \beta^{2(n+2)} \pm 2\alpha^{2(n-1)} + \beta^{2(n-1)} \mp 2}{(\alpha - \beta)^2} \quad (\text{since } \alpha\beta = -1) \\ &= \frac{\alpha^{2n+4} + \beta^{2n+4} + \alpha^{2n+2} + \beta^{2n+2}}{(\alpha - \beta)^2} \\ &= \frac{\alpha^{2n+4} - \beta^{2n+3} + \beta^{2n+4} - \alpha\beta^{2n+3}}{(\alpha - \beta)^2} \quad (\text{since } \alpha\beta = -1) \\ &= \frac{(\alpha - \beta)(\alpha^{2n+3} - \beta^{2n+3})}{(\alpha - \beta)^2} = u_{2n+1}; \end{aligned}$$

therefore

$$u_{2n+1} = u_n^2 + u_{n-1}^2.$$

This proves the required relationship. It might, of course, be also deduced from the fact that the series 2, 3, 5, ... form numerators (or denominators) to successive convergents of the continued fraction

$$1 + \frac{1}{1 + \frac{1}{1 + \dots}}$$

It would, doubtless, be more elegant to prove the relationship

$$u_{2n+1} = u_n^2 + u_{n-1}^2$$

direct from the expression itself, without the intermediate relation

$$u_{n+1} = u_n + u_{n-1}. \quad [\text{Rest in Reprint.}]$$

15781. (Professor NEUBERG.)—Soit A le sommet d'une parabole. En un point quelconque M de cette courbe on mène une corde MN perpendiculaire à MA. Trouver le lieu du milieu de cette corde.

Solutions (I.) by J. A. H. JOHNSTON, M.A., and Professor SANJANA, M.A.; (II.) by W. AUSTIN SLEIGH, B.A., and L. ISSERLIS, B.A.; (III.) by A. M. NESBITT, M.A., and F. W. REEVES, B.A.

(I.) Let the chord be given by  $x'y'$  and  $x''y''$ , and be at right angles to the line from 0 to  $x'y'$ . If the middle point be  $(\xi, \eta)$ , and  $y^2 = 4ax$  the parabola,  $2\xi = x' + x''$  or  $8a\xi = y'^2 + y''^2, 2\eta = y' + y'' \dots \dots \dots (1)$ .

The direction of the chord is given by  $\tan \theta = 4a/(y' + y'') = 2a/\eta$ , where  $y'/x' = -\eta/2a$ , and therefore  $y' = -8a^2/\eta$  from (1); therefore

$$y''^2 = 8a\xi - 64a^3/\eta^2 \quad \text{and} \quad y'' = (2/\eta)(\eta^2 + 4a^2);$$

therefore

$$(\eta^2 + 4a^2)^2 = 2a\xi\eta^2 - 16a^4,$$

or the locus is

$$(y^2 + 4a^2)^2 = 2axy^2 - 16a^4.$$

[Rest in Reprint.]

15788. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Show that the product of the two series

$$1^3 + 2^3 + 3^3 + 4^3 + 5^3 + \dots + n^3, \quad 1^5 + 2^5 + 3^5 + 4^5 + 5^5 + \dots + n^5$$

may be represented as a single series.

Solution by C. M. ROSS and KELA DEVA RAU, B.A.

$$1^3 + 2^3 + 3^3 + \dots + n^3 = \frac{1}{4}n^2(n+1)^2,$$

$$1^5 + 2^5 + 3^5 + \dots + n^5 = \frac{1}{12}n^2(n+1)^2(2n^2+2n-1);$$

therefore the product of the series is  $\frac{1}{48}n^4(n+1)^4(2n^2+2n-1)$ , which may be taken as the sum of  $n$  terms of a certain series. Hence the sum of  $n-1$  terms of this certain series is obtained by putting  $n-1$  for  $n$ ; therefore

$$S_{n-1} = \frac{1}{48}n^4(n-1)^4(2n^2-2n-1).$$

Therefore the  $n$ -th term of the series

$$\begin{aligned} &= S_n - S_{n-1} = \frac{1}{48}n^4[(2n^2-1)\{(n+1)^4 - (n-1)^4\} + 2n\{(n+1)^4 + (n-1)^4\}] \\ &= \frac{1}{12}n^5(5n^4 + 8n^2 - 1). \end{aligned}$$

Thus the required single series is

$$1 + 296 + 9639 + \dots + \frac{1}{12}n^5(5n^4 + 8n^2 - 1).$$

2439. (T. COTTERILL, M.A.)—If  $a, b, c, d$  are collinear points as well as  $x, y, z, t$ , and in the same plane, then, of the sixteen intersections of  $ax, ay, bx, by$  with  $cx, ct, dz, dt$ , eight lie on one conic and eight on another. The four points of intersection of these conics lie on a third conic through  $a, b, x, y$  and a fourth through  $c, d, z, t$ , and these conics are respectively harmonics to the lengths  $(ab, xy)$  and  $(cd, zt)$ . Also the tangents to the four conics at any point of intersection are harmonic.

Solution by Professor NANSON.

Take the bases of the ranges as axes of  $x, y$ ; denote the eight points by  $a, b, c, d, a', b', c', d'$  and the reciprocals of their distances from the origin by  $a, b, c, d, a', b', c', d'$ , and let  $(aa') = ax + a'y - 1$ ; then the equation

$$S_1 \equiv \frac{(aa')(bb')}{(a-b)(a'-b')} - \frac{(cc')(dd')}{(c-d)(c'-d')} = 0$$

clearly represents a conic through the four meets

$$aa', cc'; aa', dd'; bb', cc'; bb', dd' \dots \dots \dots (1).$$

But  $S_1$  also passes through the four meets

$$ab', cd'; ab', dc'; ba', cd'; ba', dc' \dots \dots \dots (2).$$

For at the first of these meets we have  $ax + b'y - 1 = 0, cx + d'y - 1 = 0$ , and therefore at this point  $S_1$  reduces to

$$\frac{(a'-b')y(b-a)x - (c'-d')x(d-c)y}{(a-b)(a'-b')(c-d)(c'-d')},$$

i.e., to zero. Also  $S_1$  is not altered by interchanging  $c$  with  $d$  and  $c'$  with  $d'$ , or by interchanging  $a$  with  $b$  and  $a'$  with  $b'$ . Hence  $S_1$  passes through the eight meets (1), (2). It is obvious geometrically, and may be verified algebraically, that  $S_1$  can be put in the form

$$S_1 \equiv \frac{(ab')(ba')}{(a-b)(a'-b')} - \frac{(cd')(dc')}{(c-d)(c'-d')}.$$

Similarly, the other eight meets lie on a conic  $S_2$  where

$$S_2 \equiv \frac{(ad')(bb')}{(a-b)(a'-b')} + \frac{(cd')(dc')}{(c-d)(c'-d')} \equiv \frac{(ab')(ba')}{(a-b)(a'-b')} + \frac{(cc')(dd')}{(c-d)(c'-d')}.$$

Now we have identically

$$(a-b)(a'-b')(S_1 + S_2) = (aa')(bb') + (ab')(ba') \equiv S_3,$$

$$(c-d)(c'-d')(S_2 - S_1) = (cc')(dd') + (cd')(dc') \equiv S_4.$$

Thus the four meets of  $S_1, S_2$  lie on  $S_3$  and  $S_4$ , which go through  $aba'b', cdc'd'$  respectively. Again, since  $S_3$  is not altered when  $a, b$  are interchanged,  $S_3$  is harmonic to the lengths  $ab, a'b'$ . Also, since  $S_3, S_4$  are of the forms  $\lambda S_1 + \lambda S_2, \mu S_1 - \mu S_2$ , the tangents at any meet of the four form a harmonic pencil.

QUESTIONS FOR SOLUTION.

15840. (R. CHARTRES.)—Find the mean distance of all points within a square from one of the corners in terms of a parabolic arc. (Elementary proof.)

15841. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Jack and Jill run a race of 300 yards to the top of a hill, and then the same distance down the other side to a fixed goal. Going up the hill Jill takes 5 steps to Jack's 4, and going down takes 6 steps to Jack's 5. If their speed in ascending is half what it is in descending, and if the length of Jill's step to Jack's is as 3 to 4, how much start should be given to Jill in order that they may reach the goal together?

15842. (C. BICKERDIKE.)—Three motorists start from three different towns and meet at a junction and, on comparing notes, find that the sum of the distances travelled was a minimum, the distance of the places from each (as the crow flies) being  $a, d$ , and  $e$  miles respectively. Find the speed of each car, all starting and meeting at the same time, the time from starting to meeting being  $n$  hours.

15843. (OTTO MEISSNER.)—Required to show, by a single trial, that 20857 is a prime.

15844. (ROBT. W. D. CHRISTIE.)—Divide a straight line into two such parts that the square on one part shall equal three times the square on the other. Can it be solved generally?

15845. (Professor NANSON.)—If  $P_r$  is the arithmetic mean of the products  $r$  together of  $n$  positive quantities  $a, b, c, \dots$ , show that

$$P_r^2 - P_{r-1}P_{r+1} = k\Sigma(a-b)^2(\varpi_{r-1}^2 - \varpi_r\varpi_{r-2}),$$

where  $k$  is a positive numerical coefficient and  $\varpi_r$  is the sum of the products  $r$  together of the  $n-2$  quantities  $c, d, e, \dots$ ; and deduce that  $P_1, P_2^2, P_3^3, \dots$  are in descending order of magnitude.

15846. (H. CHENNAKESAVA IYENGAR.)—Solve the equations

$$\Sigma x(b-c) = \Sigma a(x-a^m) = \Sigma (b^n - c^n) a/x = 0.$$

15847. (Professor SANJANA.)—If  $a, b, c$  are all of one sign, and

$$\begin{aligned} & (b^2 + c^2 - a^2)^2 + (c^2 + a^2 - b^2)^2 + (a^2 + b^2 - c^2)^2 \\ &= (a+b+c)(-a+b+c)(a-b+c)(a+b-c), \end{aligned}$$



prove that  $a = b = c$ . Hence deduce that, when in a plane triangle  $\cot A + \cot B + \cot C = \sqrt{3}$ , the triangle is equilateral.

15848. (R. F. DAVIS, M.A.)—Solve the equations

$$(x^3 - 3acx)^2 = 4a^3c^3, \quad a^3x^6 + (b^3 - 3abc)x^3 + c^3 = 0 \dots (i., ii.)$$

15849. (Professor NEUBERG.)—On sait que les pieds M, M', M'', M''' des normales abaissées d'un point P sur une conique  $\Sigma$  sont sur une hyperbole équilatère  $\Sigma'$  passant par P et par le centre C de  $\Sigma$ . Étant donné l'hyperbole équilatère  $\Sigma'$  ( $xy = 1$ ) et les trois points M, M', M'' sur cette courbe, trouver (1) la relation entre les abscisses des points M, M', M'', M'''; (2) la relation entre les abscisses des points M, M', M'', P; (3) celle entre les abscisses des points M, M', M'', C.

15850. (C. E. YOUNGMAN, M.A.)—A parabola  $\pi$  and an ellipse  $\epsilon$  intersect at points A, B, C, D such that the centroid of ABC is both focus of  $\pi$  and centre of  $\epsilon$ ; the tangents at A, B, C to  $\pi$  and  $\epsilon$  form triangles  $A'B'C'$  and  $A_0B_0C_0$ ; the common tangents to  $\pi$  and  $\epsilon$  touch  $\pi$  at P, Q, R, V and  $\epsilon$  at  $p, q, r, v$ ; and the first three of them form a triangle  $P'Q'R'$ . Then (1) V is the vertex of  $\pi$  and P, Q, R lie on the sides of  $A_0B_0C_0$ , making  $A_0P, B_0Q, C_0R$  diameters of  $\pi$ ; (2)  $PpQ'R'$  is perpendicular to  $AA'$ ; (3)  $PQRVpqr$  are concyclic; (4) PQR has its orthocentre  $v'$  on its maximum inscribed ellipse; (5)  $rv'$  is a diameter of  $\epsilon$ , also polar of D in the triangle ABC; (6)  $pv', qv', rv'$  are normal to  $\epsilon$ ; (7) DV is tangent to  $\epsilon$ , also radical axis of circles ABC and PQR; (8) the axis of  $\pi$  is the pedal line of  $v$  in PQR and the polar of  $v$  in ABC; (9)  $\epsilon$  subtends a right angle at the centroids of PQR and  $P'Q'R'$ ; (10) the orthocentres of ABC,  $A'B'C'$ , and PQR are collinear; (11) normals to  $\pi$  at P, Q, R, and perpendiculars from  $P', Q', R'$  on the sides of  $pqr$  all meet on the Euler line of PQR; (12)  $2\Sigma \cot A = 3\Sigma \cot A'$ ; (13) the minimum eccentricity of  $\epsilon$  is  $\frac{1}{2}\sqrt{14}$ ; and many other particulars, especially when account is taken of the common self-polar triangle.

15851. (A. M. NESBITT, M.A.)—Two tangents ZP, ZQ are drawn to a parabola from a point Z on the directrix. The bisector of the angle PZQ cuts the curve in F, and the tangent at F meets PQ in K. Prove that the angle KZF is a right angle.

15852. (M. V. A. SASTRY, B.A.)—The normals at the points P, Q, R, S of an ellipse pass through the same point O and cut the ellipse again at  $P', Q', R', S'$ . If these points be concyclic, show that O lies on a hyperbola which cuts orthogonally all conics passing through the extremities of the axes of the ellipse.

15853. (S. C. BAGCHI, B.A.)—A pair of spheres of diameters  $d_1, d_2$  having internal contact at O is cut orthogonally by a second pair of spheres of diameters  $d_3, d_4$  and having internal contact at O. If

$$d_2^{-1} - d_1^{-1} = d_4^{-1} - d_3^{-1},$$

the spherical box so formed is inscribed in another sphere which is touched in a specific way by two other pairs of spheres circumstanced similarly to the first two pairs and passing through the same point O.

15854. (The late R. TUCKER, M.A.)—ABC is a triangle, D, E, F are the points of contact of the ex-circles with the sides BC, CA, AB. Find (i.) area of DEF, (ii.) the Brocard angle of DEF. Prove also that the equation to the circle DEF is

$$2 \Sigma a\beta\gamma = \Sigma a\alpha \Sigma \left( \frac{a \cos^2 \frac{1}{2}A - (b+c) \sin^2 \frac{1}{2}A}{s-a} \alpha \right).$$

15855. (D. BIDDLE.)—In the plane triangle ABC, suppose BC fixed, but A movable; also  $B = 2A, C < \frac{1}{2}\pi$ . Find the locus of A (for a range of C from  $\frac{1}{2}\pi$  to  $\pi$ ), and determine its variation from the circular arc whose centre is in BC produced and such that  $OC = \frac{1}{4}BC$ , and whose radius  $= \frac{1}{4}BC$ . Also estimate the error which would result from employing the aforesaid circular arc, instead of the proper locus, for the purpose of trisecting any angle less than  $\frac{1}{2}\pi$ , as represented by the external angle at C. Finally, on the radius bisecting the sector formed by joining O to the extremities of the aforesaid circular arc, find a point P from which, as centre, can be described another circular arc which shall afford a minimum of error in the above respect. [It is confidently expected that any attempt to depict the required locus and either one or the other circular arc as distinct curves, in any diagram drawn to scale and capable of insertion in *The Educational Times* or *Reprint* in the usual way, will prove futile.]

15856. (Professor COCHEZ.)—Trouver le lieu des points tels que leurs polaires relatives à trois cercles concourent en un même point.

15857. (Professor NEUBERG.)—Un cercle variable C touche deux cercles fixes A, B aux points D, E; soient D', E' les points du cercle C diamétralement opposés à D, E. Trouver (1) les lieux des points D', E'; (2) les enveloppes des droites DE', ED'; (3) l'enveloppe de la droite D'E'.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10450. (Professor CÉSARO.)—Démontrer que (1) les cercles osculateurs d'une courbe plane ne peuvent rencontrer un même cercle sous un angle constant; (2) il n'y a pas de courbes dont les sphères osculatrices rencontrent orthogonalement une sphère fixe. Y en a-t-il dont les sphères osculatrices rencontrent une même sphère sous un angle constant?

10743. (W. J. GREENSTREET, M.A.)—Prove that

$$\int_{-1}^{+1} A_n B^{-3} dy = \frac{2x^n}{1-x^2} \int_{-1}^{+1} A_n B^{-5} dy = \frac{4}{3} \frac{x^n}{(1-x^2)^2} \left( \frac{2n+3}{2} + \frac{2x^2}{1-x^2} \right),$$

where  $\sum_0^\infty A_n x^n = (1-2xy+x^2)^{-\frac{1}{2}} = B, \int_{-1}^{+1} A_n B^{-1} y = \frac{2x^n}{2n+1}$ .

10779. (Colonel CLARKE, C.B., F.R.S.)—Determine the positions in which a cube would float.

10792. (Professor SYLVESTER.)—If of a symmetrical matrix the determinant and the sum of the squares of all its first minors both vanish, prove that (1) the sum of the principal first minors must also vanish; (2) that the same thing will be true if, instead of the determinant, the sum of the principal second minors vanishes along with the sum of the squares of all its first minors; and (3) apply (1) to prove that a general quadratic function of  $n$  variables (with  $m$  conditions imposed as to the reality of its coefficients) can always be represented as a sum of the squares of  $n$  linear functions of the variables, unless the discriminant of the well known discriminating function of the  $n$ -th order related to the given quadric vanishes, in which case such representation in general becomes impossible to be effected.

10808. (Professor RAMASWAMI AIYAR.)—A body moves in space from one position to another. Show that volumes equal to those described by surfaces fixed in the body may be obtained by two motions of the body, one of them about and the other along a certain axis in the body.

10860. (H. J. WOODALL.)—Trace the curve

$$(a-x)^2 (x^2+y^2)^3 = 4x^2 [(a-x)^2 + y^2]^3.$$

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It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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OCTOBER 2, 1905.

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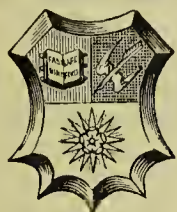
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## The Educational Times.

Prof. Sadler's  
Reports.

MR. MATTHEW ARNOLD repudiated with some warmth the appellation which, if we remember right, the *Daily Telegraph* sought

to affix to him as a weeping Jeremiah, "the one of the Hebrew prophets whom I the least admire"; but he was pleased to pose as a John the Baptist, a "vox clamantis in deserto." As his favourite character in English history, Lord Falkland, "ingeminated peace," so Mr. Arnold was never tired of preaching, in season and out of season, on the text: "Organize your secondary education." He did not live to garner even the first-fruits of his mission; but the seed fell on good ground, and, though we have not yet attained, it may be fairly said that the fields are white already to harvest.

This dead season of the year, when there is a lull in educational politics, when there are no conferences of teachers and Education Committees have not yet reassembled, would seem a favourable opportunity for surveying the ground and examining how far our present campaign against chaos and the powers of darkness has followed the lines laid down by Mr. Arnold, and to what extent his hopes have been realized. For such a survey the various Reports of Prof. Sadler, which virtually cover the whole country, extending as they do from a cathedral city in the West (Exeter) and an agricultural county in the South (Hampshire) to the chief port of England (Liverpool) and the engineering metropolis in the extreme North (Newcastle-upon-Tyne), afford us sufficient material.

It is not irrelevant to note in passing the strange irony of fate whereby it has devolved upon a retired officer of the Board of Education to expound and show the practical application of those principles to which an Inspector who died in harness failed to convert his superiors. No Wilhelm von Humboldt has yet arisen in England, and the best of our statesmen have been content to embody in legislation the educational reforms that have been forced upon them from outside.

The first demand that Mr. Arnold made was for a Minister of Education, not only for administrative con-

venience, but as a centre in which to fix responsibility. By the Act of 1902 we have our Minister of Education; not, indeed, a Humboldt—Lord Londonderry, who is a modest man, would be the first to deprecate any such comparison—but a head who, in the last resort, can be held responsible for the supply and maintenance of national education; not of primary alone, as was the case in Mr. Arnold's day.

Mr. Arnold's second suggested reform was the establishment of a High Council of Education on the lines of the French Conseil Supérieur. Such a Council we have in embryo in the Consultative Committee, but it is needful to point out how far it yet falls short of Mr. Arnold's ideal. The Committee is not representative, but is nominated by the President of the Board. Its deliberations are limited to matters referred to it by the Board; it sits *in camera*, and its recommendations, if they do not commend themselves to the Board, are quashed. Mr. Arnold desiderated a Council of recognized educational authorities, appointed without regard to politics, whose opinion the Minister should be obliged to take on all measures not purely administrative.

But, though Mr. Arnold was an out-and-out advocate of State interference, and looked to State control and State aid as the only remedy for the anomalies of English education, and in particular for the low ideals and defective culture of our middle classes, yet he was not blind to the dangers of centralization and bureaucracy. He suggested provincial School Boards with administrative powers, representing the State in the country, being the direct public organ of communication with the schools, superintending the execution of all public regulations applied to them, inspecting and examining them as far as was necessary to see that they were fulfilling their purpose.

It would take us too far to examine how far the County and Borough Councils, since they have been constituted the Local Authorities for Education, conform to Mr. Arnold's scheme, or whether he would have approved the merging of education with other municipal functions. He might, and probably would, have objected to the method pursued as leaving too much to local initiative without sufficient central control, but he would assuredly have acknowledged that his main object has been, in theory at least, attained. We have at last an authority, or authorities, on whom is laid the duty of co-ordinating all grades of education, and, as



a part of this duty, though in this case no compulsion is, so far, applied, the provision of an adequate supply of schools for the middle classes.

If we turn now to Prof. Sadler's Reports, we find convincing evidence (though from the nature of the case it is indirect) that the machinery set up by the Act of 1902 is already well in motion, and that it is working so far with little friction. The very fact that so many Councils have called in an educational expert is in itself a favourable omen. It is too early to tell how far his recommendations will be adopted in whole or in part, but it is a remarkable and encouraging fact that the Reports, in spite of the sweeping changes that they suggest and the large expenditure that they involve, have provoked little opposition and no violent protest. To deal first with the financial side of the question—which will loom largest in the eyes of County Councillors—Prof. Sadler proposes generally a 2d. rate for the purposes of secondary education over and above the “whisky money,” which by the Education Act is earmarked, and apart from initial expenses for sites and building.

More important, as involving a question of principle, is the suggested division of the cost of secondary education between the three interested parties—the parent, the Local Authority, and the State. We omit details and only give the scheme in the rough. The Local Authority should provide site, buildings, and upkeep of premises; and, further, the rungs of the educational ladder in the form of scholarships and maintenance allowances. The State should defray by capitation grants one-fourth of the gross cost of tuition. The parent should contribute the remainder in the form of school fees.

What impressed Mr. Arnold most on his official visit to Continental schools, next to their efficiency, was the lowness of the fees. According to him the French or German parent gets a better article at a fourth of the cost to the English parent. Times have changed, and Prof. Sadler is wise enough to see that the danger which confronts us in the immediate future is the multiplication of what, in vulgar phrase, may be described as “cheap and nasty” schools. His advice to the Hampshire County Council is to establish “a sufficient, though limited, number of well placed secondary day schools, so staffed and equipped as to give an intellectual and corporate training of high value as a preparation for professional callings and for posts of responsibility in business and administration, instead of spending all available funds upon a cheaper type of secondary schools.”

This brings us to the last point with which we can at present deal—a point on which Mr. Arnold and Prof. Sadler are wholly in accord—the staffing of the schools. As are the masters so is the school, and, unless the conditions of school-mastering are rendered more attractive, it will be impossible to induce men of brains and character to enter a profession which, except for the few prize-winners, entails virtual celibacy and offers no security against sickness or old age. Hitherto, the complaints from teachers of overwork and underpay have been brushed aside as “a tale of little meaning, though the words are strong”; but, now that an unimpeachable witness, who will not be suspected of having any axe of his own to

grind, has spoken out, his deliberate and often repeated judgment cannot fail to command attention.

We had intended to say something on private schools, to which a considerable space is allotted in the Reports, but this is too large and important a subject to be broached at the end of an article.

## NOTES.

SIR WILLIAM MATHER, who may be regarded as a pioneer of technical education in England by his foundation and fostering of the Salford Science School, only just superseded by recent local developments, appears to have been “discouraged” by his present visit to America. “The highest examples of technical schools to be found in the world,” he says (according to a Boston interviewer), “are here, in America”—not in England, which shows “such poor results,” nor even in Germany. How is this? Sir William finds the cause in the interest of the American parent in education; and this interest, he thinks, is “keener in the West even than it is in the East.” Accordingly, he concludes that “our duty must be to instil into the mind of the English parent some of the pride and self-sacrifice that, to my mind, adorn the conduct of the American parent.” For, though we have the schools, “we lack the support and interest of the parents, without which ours must be an almost hopeless task.” In Scotland, however, the “pride” of parents in the education of their children, and their “self-sacrifice” to this end, are certainly not inferior to those of American parents. It would thus be an interesting, and a somewhat important, inquiry to find out why it is that the English parent has arrived at, and stubbornly adheres to, such a very different—and very deplorable—view of the matter. However, after all, “we only want a little more intelligence brought to bear on our educational system and on our general conduct of business life, and we shall stand shoulder to shoulder with America.” There is not a little virtue, though, in that “only.”

WRITING about the high schools of Denmark, a correspondent of the *Morning Post* points out that the Danes themselves attribute the marked rise and intellectual development of the peasantry and the power of combination displayed by the tillers of the soil to the ever-increasing influence of the “high school” movement. The agriculturists (he says) save money and make sacrifices in order that their sons and daughters may enjoy the intellectual and spiritual culture that the “high schools” offer. “The only analogous movement we have in Great Britain is the burning desire on the part of the Scotch peasantry and small Scotch farmers for education. In England it would appear difficult to create a similar demand among our rural population. This may be because in the past country life has not been synonymous with intellectual life, except for the rich and well placed. Now that the intellectual needs of various classes are being more scientifically studied, an intimate knowledge of the working of these Danish schools, which have been so successful in revolutionizing intellectually and spiritually the rural life of Denmark, might be of



special value to members of rural Educational Councils in England. Mrs. Browning wrote: 'It takes a soul to move a body.' In Denmark of to-day the body, through its steadily growing co-operative undertakings, can be seen moving and gaining in strong and healthy national life. It is claimed by the more patriotic and intelligent among the Danes that the soul which moves and quickens this body was reborn in the daily life and aspiration of the 'high schools.'

THE *Guardian* gives considerable prominence to a disquisition by a correspondent which leads up to a recommendation that "the public schools give their minds to the meaning of co-education." "It is no longer of any use to bid our mothers and sisters mind their own business, to tell them that they don't know anything about boys, and to parry inconvenient questions by remarks about the formation of character." "They want to know not only what this process of formation is, but even whether this character ought to have been formed at all." And it is as an experiment in this inquiry that co-education comes in. The writer says:

On the face of it there is surely a strong presumption in favour of the opinion that boys and girls ought to be educated together. If education is to be the reasonable preparation by which children are fitted to become parents, the burden of proof lies upon those who would maintain that to separate boys and girls is the best warranty for wholesome relations between men and women. Is our present system of education equal to that burden? Are those who have been educated at our great public schools satisfied—are those who are working at education in those schools satisfied—that it is good for boys to be alone? It is impossible to be satisfied. As a matter of theory, it is absurd to suppose that the separation of the sexes during adolescence will lead them either to understand or to respect each other when they reach maturity. As a matter of practice, we know that this separation is attended with an enormous amount of moral evil.

There will, in any case, probably have to be a balancing of evil and good. The question should perhaps be argued on a wider basis, and there is much room for discriminations.

THE *Morning Post* does good service in branding "the vice of students of education" that "regard it not as a department of national life needing organization like other departments, but as an isolated function of the nation which can be perfected without reference to the whole organism and its place in the life of the world." At the same time the broad outlook requires very careful observation and discrimination, and may very easily mislead, perhaps no less than the narrower outlook which is rather more familiar. Our contemporary, fairly assuming that "it will probably be agreed that efforts of reform should in this country be directed first of all at the secondary-school system, since that is the weakest link in the chain," approaches the problem of secondary education with some other assumptions that will divide opinion decisively, not to say violently. It says:

We assume, then, that the obligation of military service in some form will, by consent of the nation, be imposed ultimately upon every British citizen; we assume that the success of the administration in India ensures the continuance of much the same system for another century, and that Egypt will not be abandoned; and we assume, though the point is still arguable, that the ideal of a federated Empire will never be realized, but that an alliance between the Old Country and fully developed colonial nationalities is the more natural outcome of the expansion, which probably reached its limits at the end of the nineteenth century.

There will be no difficulty, we apprehend, about universal military service in some form on one fundamental condition, namely, that the people of this country see exactly, and approve, what it is wanted for; and we venture to say that none of its advocates, nor all of them together, have yet faced the full handling of the question, and the public instinctively feel this. The inference from "the success of the administration in India," we confess, chills us to the bone. It was not without very definite facts in mind that we said that "the broad outlook requires very careful observation and discrimination."

OUR contemporary's onset on the traditions of the public schools, with "their attendant train of private preparatory schools," and on the operations (or, rather, lack of operations) of the Board of Education in regard to these, may help to stir efforts of reformation; and, at all events, the field of criticism is well within common knowledge and appreciation. With regard to the various types of secondary school, and the suggestions for differentiation, not by revolutionary methods, but by judicious adaptation to "altered conditions," if not to "a change in the national aim" (which has yet to be established, unless we mistake the meaning of the expression), our contemporary will probably conciliate a large amount of agreement and support. It is the plainest practical course to urge the Board of Education to "concentrate its efforts—and its grants—upon the schools which seem likely to supply most adequately the most urgent needs"—if we could only agree on "the most urgent needs." "What is needed is," undoubtedly, "a clear conception of the varieties actually needed by the nation, and a determination to secure those varieties at any cost." Here, then, is a task for an educational Hercules, especially in the matter of cost. "Would it be educationally a good use of public money?" There can be no two opinions. "We plead," says the *Morning Post*, "for an adequate provision of higher secondary schools and for a general raising of their standard, because experience has shown that the pupils of that type of school are well trained to fill positions which require adaptability and breadth of mind, disinterestedness and devotion to duty." Are we quite sure, however, that these qualities have been due to that type of school? And is it not certain that they are not peculiar to that type of school? The essential point seems to be to impress the officers that guard the strings of the public purse; and we must hope that our contemporary's more extravagant pleas will not detract from the unquestionable validity of its more sober arguments.

ON the other hand, there appear to be officers in the public services that entertain a very poor opinion of the education of the schools. Here is Major A. J. Richardson, 2 E. York R., writing in the *United Service Magazine* in a tone of withering contempt for "That Idol—Education." He does think that "the young officer from the public school compares, both in peace and war, very favourably with the product of all pass-examination factories"; but still he fancies that this is "only the result of heredity, because they are sensible parents who send their sons to these establishments." The



public schools will hardly care to use his testimonial to their superior virtues—especially when they bear in mind how far their educational training is supplemented by “pass-examination factories.” “Books make brain power?” he queries. And his answer is: “The eternity of their own production is the only point on which they resemble the organ of thought. Short sight, atrophy, inaction, timidity—negative attributes all of them—such is the harvest of a faith in the printed icons of the prevalent superstition.” There is still some need for our speculators on education to unravel their ideas.

THE Educational Institute of Scotland, or at all events the *Educational News*, declares its opinion “that the Institute as an Institute will never be able to exercise the power it ought until we have a teacher member on the benches of St. Stephen’s.” Moreover, “it is not material, we believe,” adds our contemporary, “on what side of the House he may happen to be, inasmuch as his opinion will be that of the expert, and will be backed up by the great and increasing influence of the Institute, whose mouthpiece both in professional and educational matters he would be.” This view, which is not without basis, simplifies the situation considerably, and widens the area of political openings. Some three years ago the Institute considered the question, and, after study of the returns from the Branches, approved the principle of having a parliamentary representative, though at the time the aspiration was judged to be “impracticable.” Since, then, however, “there have been observed on every side numerous indications of the growth and development of a stronger professional spirit of union and of a deeper and more widespread interest in the affairs of the Institute”: 3,136 new members have joined the ranks—an average of 1,045 each year—and the funds have increased by £1,083 odd, the general funds now standing at £5,433. This plethora of capital is a temptation to “some enterprise that hath a stomach in’t.” The opportunities of the private member of Parliament nowadays are indeed somewhat exiguous, but an able and energetic man with strong backing can always make room for himself.

### SUMMARY OF THE MONTH.

THE REV. THOMAS LAW, Secretary of the National Free Church Council, speaking at the annual meeting of the East Yorks Federation of Free Church Councils at Scarborough (September 14), said the Liberal leaders were absolutely pledged to make the reversal of the education policy of the present Government their first work on being returned to power. The education proposals of the new Government would certainly include absolute popular control of all schools, and freedom from all sectarian tests. There would be no provision made for right of entry during school hours to administer denominational teaching. United Nonconformity would not for a moment agree to that. It was very probable that there would be facilities for denominational teaching before or after school hours.

At a meeting of the Executive of the Northern Counties Education League, held (September 14) at the Leeds and County Liberal Club, Leeds, the following resolution was carried unanimously:—

That this League rejoices that the proposed Manchester “Concordat” is reported to be dead, and trusts that it will never be revived, and that the friends of non-sectarian education will not consent to the

teaching of denominationalism in public elementary schools maintained out of public funds.

Under Section 13 of the Act of 1902 the proceeds of endowments left for educational objects, which it is the duty of the Education Authorities to provide for, are to be applied to the reduction of the rates. It was reported to the Executive, however, that at Killamarsh, Derbyshire, an attempt is being made to apply the money of the “Turie” and the “Pole” endowments to the establishment of scholarships, one of which scholarships is to be awarded only to a scholar who is a member of the Church of England. The opinion of the Executive was that such an application of the money should be disallowed, as contrary to Section 13. The annual meeting of the League will be held at Bolton in November.

COMMENTING on the Circular to Inspectors recently issued by the Board of Education, the *Times* writer of “Educational Notes” says:

What masters in secondary schools are keenly anxious to understand is the nature of the evidence from which the inspectors are to form opinions as to the efficiency of a master’s work. Is a teacher to be reported as inefficient or old-fashioned from a few minutes’ casual observation under exceptional conditions, or is a careful study to be made of all the results, as shown in examination results or in other ways, of the teacher’s work? Great danger is to be apprehended, under the present system of tenure of assistant masters in secondary schools, from the confidential communications between inspectors and head masters. Inspectors have on several occasions used their influence to secure the appointment of particular masters. It is reported that one of the Board’s inspectors recently advised the authorities of the new municipal secondary school at Leamington to appoint as head master a graduate of Oxford and Cambridge, ignoring all other British universities established by Act of Parliament or by Royal Charter. Enough has been said to indicate the need of further guidance to inspectors in the conduct of their important work. The President of the Board of Education, in a recent speech at Poole, advised Local Authorities to submit protests to the Board against the recommendations of inspectors which appeared to them unreasonable. The advice is passing strange, and it would not often be necessary for Local Authorities to adopt it, if inspectors were given fuller instructions as to the character of their work and the limits of their jurisdiction.

At the recent examination held by the London Chamber of Commerce 5,118 candidates were examined, of whom 3,486 were successful. A special feature has been added this year to the Chamber’s educational scheme by the institution of an examination for teachers’ diplomas in commercial subjects. Of 144 candidates who presented themselves for examination, 96 obtained diplomas, 42 of whom “passed with distinction.” The principal subjects taken at the examination for diplomas were: English, French, German, Spanish, Russian, commercial history and geography, political economy, methods and machinery of business, banking and currency, commercial and industrial law, book-keeping, drawing, shorthand, and typewriting.

THE Kensington Vacation Course, which commenced on August 12 at the Froebel Institute, was attended by seventy-seven students. The interest was deep and general, and “one of the most helpful and pleasing features,” we learn, “was the strong unity of purpose manifest in every department.” A strong desire has been expressed that the work should be continued and developed next year. This should readily be attained, seeing that the income covered all the necessary expenses, leaving a small balance, which will appropriately go to the Libraries Fund of the Froebel Institute.

MARY DATCHELOR’S GIRLS’ SCHOOL (Camberwell) again shows a long list of successes of a very gratifying character. The Training College is no less effective. Thirteen students of the Senior Division gained teaching diplomas this summer, one the London diploma and the remaining dozen the Cambridge diploma (eight in the First Class, four in the Second Class). Moreover, every student leaving the college in July (with a single exception) had obtained a good appointment before the term closed.

THE Cardiff Cymmrodorion, of which the Mayor of Cardiff is President, have forwarded to the County Councils, colleges, and Education Committees of Wales a draft circular containing the following resolution:—

That, in view of the fact that the Education Committees of the



County Councils of Wales have adopted the teaching of Welsh as a subject in their schools, this society is of opinion that the constituent colleges of the University of Wales, together with the training colleges in the Principality, should devote special attention to the teaching of the Welsh language and the history of Wales; and, in the opinion of this society, it is of extreme importance that a diploma should be issued by the aforesaid colleges to the effect that the students have shown proficiency in these subjects.

THE fight between the Universities and the examiners for the Indian Civil Service (says the *Western Daily Press*) has ended at length in the victory of the Universities. The Oxford dons tried in 1897 to raise the age of candidates for examination from 21-23 to 22-24. They failed then with Lord George Hamilton. They have tried again with Mr. Brodrick, and easily succeeded. The Universities, of course, want the Indian Service to be filled, so far as possible, with University men. It is contended that such youthful excellence in learning as is demanded by the present system can come only from a painful and harmful forcing process. Moreover, the Service is self-deprived of University men. The dons have again approached the Civil Service Commissioners. The Civil Service Commissioners have passed on the memorial to Mr. Brodrick, and the Secretary for India has accepted it because of the "advantage which will result from extending the field of selection and enabling University candidates to complete the full college course before competing."

THE Science School in association with the Salford Ironworks (Messrs. Mather & Platt), which has been of great service to many hundreds of engineers who are now scattered over Great Britain and the colonies, has ended its useful career. The school was started in 1873. At that time public provision for technical instruction as we now have it was scarcely thought of, and Sir William Mather was then first among British engineers to establish a school in which apprentices could receive in the evening theoretical instruction in relation to the work in which they were engaged in the day time. Having established his evening science school, he compelled all his apprentices to attend it. Since 1875 the classes have been held regularly in the Queen Street Institute at Salford. Now, however, when both Manchester and Salford possess magnificent municipal technical schools, the necessity for their continuation has ceased. From the opening of the classes in 1873 to the close of the session 1904-5 the number of individual students registered was 1,173. While deciding to close the school, the Committee recommend that an Education Committee be appointed to assist the apprentices in selecting proper courses of study at the Manchester and Salford Technical Institutes and elsewhere, to watch their progress, and to examine the official reports from the institutions attended. They recommend that the rule of the company making it compulsory upon every apprentice to attend courses of instruction be retained, and its observance ensured by the Committee. Also that the annual meeting for the distribution of prizes be retained in such modified form as may be found desirable, and that the students be assisted, as hitherto, in regard to class fees.

ABOUT a year ago the Langholm School Board introduced phonographs into Langholm Academy, specially with the view of teaching French pronunciation. The Government Inspector now commends the use of the phonograph for training the ear by means of records of French oratory or songs, and remarks the evident pleasure the pupils take in learning French songs. He says the device is one which might be employed in other schools through the country.

IN view of proposed educational legislation, a deputation of the Victorian State School Teachers' Union laid before the Minister of Education (July 8) all the recommendations of the Union conference on the subject of salaries, higher pay for lower class teachers, increased pay for fifth and sixth class female teachers in charge of country schools, and a scale of four-fifths pay of the male teacher for female teachers in the same class. These recommendations were spoken to by every member of the deputation. Special attention was given to the heart-breaking pay of the lower class teachers. It was urged that the pay of these might be increased. The Minister, who listened very sympathetically (says the *Australasian Schoolmaster*), stated that the request of the deputation could not be granted. The Government would not listen for a moment to any proposal for increasing the expenditure.

MR. LOUIS TYLOR died at Oakdene, Redhill, at the age of sixty-eight. For many years he took an active part in social and educational work in Bradford under Mr. W. E. Forster. In 1876 he undertook financial control of a large colliery, and was concerned in the establishment of University College, Cardiff, on popular lines, becoming its treasurer on the death of Lord Swansea. He had lived in retirement at Redhill during the past five years.

THE DEAN OF CARLISLE (the Very Rev. W. G. Henderson) died on September 24. He was born in 1819, and had been Dean of Carlisle since 1884. Previously he had been Head Master of Magdalen College School, Oxford, Tutor in the University of Durham, Principal of Hatfield Hall, Durham, and Head Master of Leeds Grammar School (1862 to 1884). He has not long survived his son Colonel Henderson, the distinguished military writer.

## UNIVERSITIES AND COLLEGES.

THE *Calendar* of the London School of Economics and Political Science for 1905-6 shows that since the school was opened in 1895 more than four thousand students have been entered on the books. In every session there has been an advance in the number of students, 1,414 being on the books for 1904-5. The *Calendar* contains the new regulations for the Economic, Political, and Commercial degrees of the University of London, by which students can gain a diploma for the degree of B.Sc. It especially calls attention to the opportunities the school affords for post-graduate study and research. The programme of classes and lectures for the coming session is given in full, and special prominence is given to the courses on what may be described as the higher commercial education. In this section of the school's work—one in which a striking advance has been made in the last year or two—courses of lectures will be given in Accounting and Business Methods, Banking, Insurance, and Transport.

THE report of the President of Queen's College, Galway. Galway, for 1904-5 states that the total number of students in attendance during the session was 106-53 from Connaught and 33 from Ulster. Of 40 scholarships awarded at the beginning of the session, 22 went to students from Connaught. The President says: "It is in a high degree encouraging that so many students from the West of Ireland are making use of the facilities for university education which the college gives; and it is to be hoped that, in the future, more such students will embrace the opportunities which it affords of receiving a liberal education."

AT the suggestion of Principal Griffiths, the Cardiff. Education Committee of the Glamorgan County Council some time ago adopted a scheme for the instruction, at the expense of the county, of fifty miners selected from all parts of the coalfield, in advanced mining subjects during a summer course of three weeks at the University College. It has been tried for the first time this year. Forty of the students were miners drawn direct from the pits, and their work has been so thoroughly satisfactory that the scheme, adopted as an experiment, is likely to become a permanent institution. Principal Griffiths has been greatly impressed with the way the miners applied themselves to their six hours' daily studies at the college and with the results they have achieved.

## PROMOTION FOR TEACHERS.

### FROM ELEMENTARY TO SECONDARY SCHOOLS.

A CORRESPONDENT writes to the *Morning Post*:—"In your interesting educational article of August 18, you contend unreservedly that elementary teachers should be encouraged to look for promotion in secondary schools. May I be allowed to point out in as few words as possible another side to the question?"

Your contention is plausible and, in a sense, theoretically sound; certainly there should be no artificial barrier to such promotion for any properly qualified individual. But, if the wide difference between the aims and possibilities of the elementary and secondary schools is properly understood, it is difficult to see how experience and training in the one type of school can be a suitable preparation for work in the other.



Social or class differences, whether they exist or not, have little to do with the question, and the fact that a large percentage of the scholars at present in secondary schools have passed through the elementary school, if it affects it, does so in a way very adverse to your argument, for, whatever may be said of the teacher, it may safely be said of the scholar that an elementary-school training is the worst possible preparation for a career in a secondary school. And this is not merely due to the fact that subjects are taught in the one school which are of necessity ignored in the other, but rather to the intellectual attitude and habits of the pupil, which are ill adapted for a course of study which demands initiative and a high sense of responsibility. The aim of the elementary school is to provide the necessary minimum of instruction without which a man can hardly earn his own living whatever be his walk in life: more than this can hardly be attempted in schools where the scholars are huddled together in classes of sixty, seventy, or eighty. It is, on the contrary, the individual child that is or should be trained in the secondary school, and it is upon the initiative and responsibility of the scholar that this training is based. If the efficiency of an elementary school may be measured by the quantity and quality of the information carried away by a pupil when he leaves, it is the pupil's habit of acquiring information, his capacity to acquire it, his power of assimilation, and his own adaptability that measure the efficiency of a secondary school. As with the scholar so with the teacher. It is the business of the elementary teacher to teach as much as possible, of the secondary teacher to teach as little as possible; the one gives his pupils the utmost he can, the other makes the utmost demand upon them. The process of teaching and the methods of the teacher are in each case distinct.

Moreover, to talk of promotion from the one school to the other is like talking of promotion from the Army to the Navy; each has its own special use, neither is of more value or service to the State than the other, and the scale of pay should be higher in the case of secondary teachers only to such a degree as represents a more costly education and training.

The claim of the National Union of Teachers to what they call promotion is most unfortunate, for nothing shows more clearly their ignorance of the meaning of secondary education.

Mr. Marshall Jackman, Chairman of the Parliamentary Committee of the N.U.T., replies in the *Morning Post*:

In reply to "C. E. T." I should like to say that so far as the wishes of the National Union of Teachers are concerned he grants the primary teachers all they require when he agrees that "certainly there should be no artificial barrier to such promotion [viz., to be allowed to teach in secondary schools] for any properly qualified individual." We primary teachers only want to secure, as you suggest in your able article of August 18, "a fair field and no favour." To particularize, we demand, and shall continue to demand, that the Columns A and B of the Teachers' Register be discontinued, and that the Register be a single list of the names of persons qualified to teach, academical qualifications being shown after the names of the teachers who possess them. It should be in the power of Local Education Authorities, governors, and managers of schools, whether primary or secondary, to select the teacher whose qualifications fit their requirements. We shall also demand that no "artificial" restrictions be placed on teachers entering the profession in order to prevent them from obtaining such academical qualifications as their abilities bring within their reach. We are glad to see that your powerful advocacy has been thrown on this side of the question.

Now that secondary schools are subsidized out of public funds all recognized schools are in a sense national, and there can be no longer any reasonable grounds for requiring persons, after passing through a training college for primary teachers, to serve for a time or continuously in primary schools, especially when we see on the other hand that university graduates who possess a teaching diploma may now be recognized as certificated teachers in elementary schools without previous experience in such schools, without passing through a training college for teachers, and without passing the Certificate Examination of the Board of Education.

Mr. G. A. Christian, Principal of the Battersea Pupil-Teachers' School, writes to the *Morning Post*:

There is some substratum of truth in "C. E. T.'s" contention that the aims of the elementary school and the secondary school are (or have been) somewhat different. The fault of this, however, was due to the Education Department (now Board of Education) in forcing upon the schools the uneducational system of "payment by results," against which, from its inception to its death, the teachers through the N.U.T. never ceased to protest. A second factor that militated against real educational work was large classes. Happily "payment by results" was abolished out of sheer shame by the Department which gave it birth, and classes are being reduced in size. If "C. E. T." will take the trouble to examine the official reports of the Board of Education's Inspectors, he will see that a newer, better, and more educational spirit is rapidly extending in the elementary schools, and that the spirit of the work is approximating more and more to that which "C. E. T." claims as the special characteristic of the secondary schools. But even under their past disadvantages the elementary schools have done remarkably good work, and have, as "C. E. T." practically admits, sent numbers of scholarship holders to the secondary schools. Many of these boys and girls have done remarkably

well, following up their success at the universities or other places of higher education.

As to whether elementary teachers are or are not capable of successfully conducting secondary schools the facts are very unfortunate for "C. E. T.'s" argument. Not a few teachers who are in the purely technical sense elementary have received the major part of their early education in secondary schools, and some of these recruit the ranks of successful secondary teachers. As to their achievements I take the London Central Foundation School (lately under Dr. Wormell), Aske's Hatcham School (lately under Mr. Barker), Aske's Hampstead School (Mr. Hinton), Dame Owen's School (Mr. Easterbrook), Colfe Grammar School (Mr. Lucas), and the Roan School (Greenwich). All of these are or were until recently under elementary trained teachers. Let "C. E. T." apply any recognized test to these places, and say whether he impugns their efficiency. To these a little research would add a host of other secondary schools and colleges officered by "elementary" teachers, and we might cite the training colleges, the pupil-teacher centres, and the higher-grade schools, all of which are engaged in secondary work carried on mainly by elementary trained teachers. The facts are incontestably against "C. E. T.'s" argument. The interests of the community even more than fair play to the individual demand that there shall be freedom of movement in all parts of the scholastic world.

Commenting on these and a number of other letters in the same strain, the writer of the "Schools and Scholars" column in the *Morning Post* remarks:

"The letters from members of the National Union of Teachers express the claim that body makes for access to the ladder which a considerable number of its members are perfectly capable of climbing by their own merit alone. To have had experience of keeping discipline and imparting information to classes of sixty scholars unfits no man for the same work in classes of twenty. And it is a fact that the methods used in teaching elementary subjects to many can be used with even greater success in teaching the same subjects to a few. But the secondary school is dominated by the requirements of examinations, and that is where such difference as there is between teaching in secondary and teaching in elementary schools arises. Under present conditions the man who has been through those examinations himself is, so far, better fitted to get boys and girls through them than the man who has not. But it is quite a different matter to train intelligence, to find out and develop the pupil's real bent.

"The demand for teachers who have been trained to teach will increase. Before many months are passed no more teachers in secondary schools will be able to get their names on to the Register without the qualification of training as well as those of experience and academic degrees. Where will the trained teachers come from? There must be one column only in the Teachers' Register. All teachers who have been trained, whether for primary or secondary work, must be admitted to it, and their academic qualifications, if any, will naturally appear against their names and influence the choice of those who have appointments to offer. The double column of the Teachers' Register is the last fortress of the vested interests of education. It will have to be carried. The Board of Education has only to give those vested interests notice to quit and the thing is done."

## INTERMEDIATE EDUCATION IN WALES.

### REPORT OF THE CENTRAL BOARD:

THE eighth annual report of the Central Welsh Board, constituted under the Welsh Intermediate Education Act, 1889, for the year 1904-1905, shows that the numbers of pupils in schools in 1904 was 9,284, as against 8,789 in 1903 and 8,322 in 1902. There are 95 schools. As to secondary education in the Principality, the Board remark:

In issuing their eighth annual report to the County Education Authorities the Central Welsh Board desire at the outset to express a hope that, amid the inevitable pressure of work in connexion with the administration of primary education, the difficult problems connected with secondary education will continue to receive close attention. In Wales the county schools administered under the Welsh Intermediate Education Act of 1889 are already, through the vast majority of their pupils, in closest touch with the elementary schools of the country, and, on the other hand, through a considerable proportion of their pupils, in similarly close relations to institutions of higher education in Wales and elsewhere. Moreover, the courses of training given by the schools, in conjunction with the certificates awarded by the Central Welsh Board for proficiency shown therein, now form, through the acceptance of these certificates by numerous public and professional bodies, the natural avenues of most able Welsh boys and girls to careers of usefulness and responsibility.

In order to secure the maximum efficiency of this system of secondary



schools it is imperative that the County Authorities, who have the requisite local knowledge, should exercise the greatest vigilance in order to see that the schools within their areas are fully meeting the needs of the communities with which they are associated. The County Authorities may rest assured that the Central Welsh Board, through its accumulated experience of the development of secondary education in the Principality as a whole, will only too gladly render every assistance in the solution of the various educational problems that arise in the course of this adjustment.

Nor should the part played by the County Education Authorities in this matter be one merely of collective action and public educational machinery. The Central Welsh Board venture to express a hope that, as has frequently been the case in the past, so also in the future, the individual members of the various Education Authorities will keep a sharp look out for boys and girls of genuine promise in their respective localities, not in the interests of these children merely, but in the interests of the community as a whole; and that they will, to the best of their ability, help to create around such children of clearly proved capacity and their parents a social atmosphere of sympathy and encouragement during the very trying and acutely anxious period which a prolonged course of education implies. The Board regard this as one of the most vital conditions of the success of any system of secondary education.

The Board mention that during the past year many of the county intermediate schools were called on to play their part in the educational training of pupil-teachers. They make the following interesting observations on the teaching of Welsh:—

From their organic relation to the life of Wales the county intermediate schools should, in the opinion of the Board, be kept in harmonious correlation with the best and most educative elements of Welsh life. It would be fatal to true educational progress in Wales if any of the county schools came to be regarded as isolated alien garrisons in the midst of an unsympathetic population. It is important, therefore, that the language, literature, and history of Wales (with especial reference to the district where the school is placed) should find their rightful place in the school curricula. Any obstacles arising from schemes or from existing curricula of school work to the attainment of this end should be carefully considered by the County Education Authorities and reported to the Central Welsh Board, so that the necessary representations may be made for their removal.

### THE BRITISH-DANISH-DUTCH SUMMER MEETING IN AMSTERDAM.

By J. S. THORNTON, B.A.

AMONGST the forty or fifty members of Miss Butlin's Summer Meeting in Copenhagen last year were nine English-speaking Dutch, who added greatly to the brightness and vivacity of the meeting. One of them, Miss Ott de Vries, the daughter of a late physician in Amsterdam, a cultivated lady of much energy and public spirit, was patriotic enough to think that what Miss Butlin was doing for Denmark she could do for Holland, using (like Miss Butlin) English only as the language in which all lectures and explanations were to be given. But what Miss Butlin has now for four summer holidays in succession been doing for Denmark is perhaps unknown to some readers of these lines; and so it may be well to repeat here a brief statement from *The Educational Times* twelve or fourteen months ago that "she has arranged with rare skill and great good fortune a rapid succession of lectures, discussions, visits, and excursions which . . . give the students of one nationality the beginnings of a first-hand exact knowledge of what another nation is doing in the way of social reform, municipal government, co-operation, education, and the like."

Miss Ott de Vries had, by her *bonhomie*, made so many friends both among Danes and Englishmen in the short ten days in Copenhagen last year that when she had, with willing help from leading citizens and men of letters at Amsterdam and the Hague, elaborated her plans and drawn up a programme, she found no difficulty in assembling twenty-four Danish and thirty-one English men and women, with two or three Americans thrown in, to the meeting that began in the early part of August last. More than that number could not be received, from a feeling that justice could hardly be done to a larger number; and so many English applicants who applied late had to have their guineas returned.

All the lectures were given in the handsome rooms of the *Vrije Gemeente* (the South Place Chapel of Amsterdam), generously placed at the disposal of the visitors, the pastor himself, Mr. Hugenholtz, being one of the lecturers (on Spinoza). Space fails for any description, however brief, of lectures dealing

with the language, literature, and fine arts of Holland, with its industries and colonies, and its "eternal struggle with the waters"; or of the visits to museums, canals, polders, factories, business resorts, social institutions, and historic sites, which seemed most suitable for the illustration of the lectures; or of the merry meetings at our various *pensions* (all near to Vondel Park), and at the *cafés*, of the dinners and the dances, the songs and the concerts—all the more joyous and free from stiffness, because more than a dozen of us were already comrades from the previous year. Not the least interesting sight to the English visitors was the congregation on Sunday morning in the English Reformed Church, which seems to be equally in touch with the National Churches of Scotland and Holland, and has met continuously in the same picturesque building in the Begijnhof since 1607.

It was indeed a "personally conducted" party; but the conductors were our comrades and friends. We were cheered on 'Change: at high market one Friday at Alkmaar, whilst we threaded our way among the cheese-laden sledges that are half dragged, half carried by porters in white hollands spotless and clean, the National Anthems of Denmark and then of England were heard pealing from the market tower, to the delighted surprise of the Danes. At Bergen, hard by, the lord of the manor put fourteen carriages at our disposal; in the evening of the same day the Tourist Association of Alkmaar, led by the member of Parliament for the town, gave us another drive in the suburbs. The excursion to Volendam was even more delightful. As one looks back upon those days, they seem to have been one long *fête*.

The gratitude of the party to its originator and leader found its fullest expression when, at the parting dinner at the Hague, Miss Ott de Vries was presented with a handsome armchair; and, being duly installed therein, was (no doubt much to the lady's surprise) hoisted arm-high by four stalwarts amongst the cheers of the company.

It is to Miss Butlin in particular that great praise must be given for devising, and making a success of, these Continental meetings. She was formerly a student at Somerville College, Oxford, and, being still a resident in the neighbourhood, has many friends and connexions there. She is, therefore, intimately acquainted with all the details of a Summer Extension Meeting in Oxford. But the idea of transplanting such a meeting to a foreign city, of taking the subjects for lectures entirely from the foreign country, and employing for the most part as lecturers English-speaking scholars of the country, was all her own. It seems to have come to her four or five years ago, whilst she was making a prolonged study of the great lock-out in Copenhagen; and the many friends she made amongst thoughtful people there readily did their best to make her idea the brilliant success it has proved to be. And now Miss Ott de Vries's success shows that the idea is capable of indefinite expansion. Educational and social work in England has often suffered from a lack of ideas, especially as compared with similar work abroad. But the success which has attended Miss Butlin's efforts gives us hope of better days—of a time, indeed, long since pictured by Miss Ott de Vries's illustrious countryman, Hugo Grotius, when "any nation shall be called upon to effect that which is wanting in another, in order that things germinated somewhere may be seen to have risen everywhere."

### VISIT TO DANISH HIGH SCHOOLS.

Mr. PERCY ALDEN, writing in the *British Friend* (September) on the August visit of the Friends' Social Union to Denmark ("to study for ourselves the present state of the agricultural and educational system, although other social movements were not lost sight of"), makes the following remarks on the Danish high schools:—

It is almost impossible to exaggerate the influence of the high schools (due to the inspiration of Grundtvig) which have re-created the Danish peasantry, and helped to make them, as Björnson says, "the most enlightened in the world." About ten of our party had the opportunity of spending the week-end at the largest of these schools, situated at Vallekilde, near Hörve, by the kind invitation of the Principal of the school, Mr. Paul Hansen, and Mr. J. S. Thornton. Although the school was not in session, they were able to meet some of the teachers and to get a general impression of a system which has been Denmark's original contribution to the theory and practice of education. There are over ninety of these schools in the country, and it is estimated that not less than



10 per cent. of the population pass through them; 10 per cent., it must be remembered, of the adults who would probably receive no further instruction but for these schools. They are directed by private enterprise, but are under Government inspection to a limited extent and receive grants in aid. There are no examinations, and for the most part the curriculum and the appointment of teachers are left to the discretion of the boards of management of the various schools. The fees for board, lodging, and instruction at these schools average nine or ten shillings per week; but to defray the expenses of the poor scholars the County Councils levy a small rate, from which fund they grant scholarships, and to this fund the State makes an equivalent grant. Such a scholar has the right to attend any one of the high schools in the country. At first it was mainly the sons and the daughters of the peasantry who availed themselves of these schools, but gradually other classes are beginning to recognize the importance of this means of education. The objects aimed at by the founder seem to have been, first, to foster a love of country and national feeling; secondly, to educate the people to make a proper use of the free constitution obtained in 1849; and, thirdly, to prepare the youth of Denmark in such a way for the battle of life that they will have a fair chance of success in any work which they may undertake, the whole spirit and feeling of the school being moral and religious. Generally speaking, it is the opinion of the Danes that the high school has had an immense effect upon the life of the people, and it is gradually transforming the peasants into a race of educated and cultured men and women.

### TECHNICAL EDUCATION IN THE COLONIES.

MR. HUBERT READE has addressed the following letter to Sir Philip Magnus:—

Travellers' Club, Pall Mall, S.W.  
September 11, 1905.

DEAR SIR PHILIP MAGNUS,—In view of our conversation, may I submit to you some suggestions as to the means of affording educated English immigrants opportunities for receiving technical education in our colonies?

As the Colonial Conference meets in 1906, I would call your attention to the question: How can Englishmen who have received an advanced education and wish to settle in our colonies be admitted to their universities and technical colleges for the purpose of receiving technical training under local conditions?

I would suggest that the University of London and Head Masters' Conference might unite in asking the Secretary of State for the Colonies to place this question on the agenda paper of the Conference. A precedent is afforded by the Educational Conference held at the request of the University of Oxford in connexion with the Conference of 1902. Subsequently the Colonial Office circulated in all our colonies a memorandum drawn up by the University of Oxford, giving all information relating to it which might be of use to colonial students desiring admission. Mr. Secretary Lyttelton promised, in answer to Sir James Rankin, that the Colonial Office would circulate such memoranda on behalf of any colonial university or technical school whose authorities applied to him to take action.

Could not the Colonial Office circulate this answer (at the request of the University of London) amongst all officers administering the government of colonies, and embody the information thus obtained in an *Imperial Universities Gazette* issued at regular intervals? A summary of such information could be given in the calendars issued by English universities, public and technical schools. Further, it would be well if the University of London and Head Masters' Conference could draw up a scheme for the admission of candidates from England, who had passed an examination held in England, to any colonial university or technical school, for submission to the Colonial Conference.

Matriculated students of any British university are, as a rule, admitted to any colonial university or technical school without further examination. An exception exists in the case of the Engineering Faculty of the McGill University of Montreal, which may require a supplementary examination in mathematics. Such provision is not made for English students.

I would suggest that such students should be eligible for admission to any colonial institution granting degrees or diplomas recognized by the Government of the colony on the production of certificates attested by the representative of the colony in London, (under the "Rules governing the Issue of Foreign Office Passports"): (1) That they held the "testamur" of a recognized qualifying examination; (2) certificates of moral character in the form required by the Civil Service Commissioners.

These qualifying examinations might, in the absence of a general final examination, include: (a) the Senior Local University Examinations, (b) the College of Preceptors Examination, (c) the Science and Arts Department, and other examinations of a similar calibre.

The standard of qualification should include, say, four *ordinary certificates* (taking the Oxford Senior Local Examination as an example) in such subjects as—(a) English, including History and General Geography; (b) one Foreign Language (Translation, Composition, Grammar) or Latin; (c) Science (the Committee should determine the qualifying subjects under this head); (d) Mathematics.

A scheme might also be drawn up for the admission of the undergraduates of any British university or admitted students of any higher technical school *ad eundem*, to be determined by the applicant's standing in England (*i.e.*, according to examinations passed, number of terms kept, &c.).

Any institution accepting any of these schemes would be free to withdraw its acceptance after a certain interval on due notification to the Secretary of State for the Colonies. Every institution would be at liberty to determine—(a) the age limit of students admitted under such a scheme, (b) if it should apply to both sexes.

It would be very desirable that colonial universities and technical institutions should afford facilities to students from England who were not desirous of taking their full degree or diploma course to attend classes in which certificates could be gained after examination. These certificates could be granted on the results of the ordinary terminal examinations. A somewhat similar plan is being considered at the Transvaal Institute, and is in force at Cirencester R.A.C. Admission to such classes might be obtained on the production of a certificate signed by the agent for the colony in London. Such certificates might be granted to persons producing an attested certificate of fitness for admission signed by the principal of the institution in which they had received their education.

A report as to the working of the scheme (if adopted) might be submitted by the Colonial Office to the Colonial Conference meeting in 1910.

This scheme includes the students of all higher agricultural colleges in England. The case of those from our normal training colleges for teachers also requires consideration.—I am yours very truly,

HUBERT READE.

### L.C.C. EVENING CLASSES.

IN about 272 school buildings, situated in every part of London, Evening Schools have just been opened for the enrolment of students. The instruction will, as a rule, be of a character preparatory to that given in the higher institutions, and will embrace commercial subjects such as Book-keeping, Shorthand, and Modern Languages, and general subjects such as Arithmetic, Geography, History, and Composition. Women and girls will be able to receive lessons in Practical Cookery, Dress-cutting and Dress-making, and Laundrywork; and instruction in Woodwork will be provided for men and boys. Gymnastics will be taught, and lectures by doctors and nurses on First Aid, Home Nursing, Health, and Infant Care will be given. Scholars under sixteen are admitted free. In 65 schools, situated in poor districts, no fees are charged to any students, but, as a rule, a charge of one shilling for the session for one or more subjects will be made to students of sixteen years and over.

In addition, there are 34 Commercial and Science and Art Centres where instruction of a more advanced character will be given, including commercial subjects, such as Accountancy, Banking and Currency, Commercial Law, Book-keeping, Commercial Correspondence, Shorthand and Typewriting, and Modern Languages; and Science and Art subjects such as Physiology, Geology, Mathematics, Chemistry, Building and Machine Construction, Drawing in Light and Shade, Model, Free-hand, and Geometrical Drawing, Painting from Still Life, &c. As in the case of Evening Schools, scholars under sixteen are admitted free. To other students, fees of 2s. 6d. in the case of Commercial Centres, and 5s. in the case of Science and Art Centres, will be charged for the Session.

Instruction of a still higher description is provided in the various Polytechnics, Technical Institutes, and Schools of Art situated in the county. In these institutions classes in Science, Art, and Technology, Music, Artistic Handicrafts, &c., have just been re-opened. The fees are nominal, and, in many cases, apprentices, learners, and improvers are admitted free. Every facility is offered to different types of students to supplement workshop, office, or studio practice by evening study under the most favourable conditions. Courses are arranged where necessary to prepare professional students for various examinations, art students for the examinations of the Board of Education, and artisans for the examinations of the City and Guilds of London Institute, &c. The Council offers annually scholarships and exhibitions to the total value of £1,500 for competition among students of Polytechnics, Technical Institutes, and Art Schools.

It is also proposed, provided the necessary number of students be forthcoming, to open certain new classes. Any persons who desire further information concerning the various classes are advised to ask for a leaflet from the Schoolkeeper of any one of the Council's schools.



COLLEGE OF PRECEPTORS.

CERTIFICATE EXAMINATION,

JULY, 1905.

THE following is the list of the successful candidates at the Colombo, Constantinople (Hasskein and Pera), Freetown (Sierra Leone), Gibraltar, Johannesburg, Lagos, Rangoon, Uitenhage, and Wei-hai-wei Centres.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

- a.* = Arithmetic.
- al.* = Algebra.
- d.* = Drawing.
- du.* = Dutch.
- e.* = English.
- f.* = French.
- g.* = Geography.
- gm.* = Geometry.
- h.* = History.
- s.* = Scripture.
- sp.* = Spanish.

The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

Bracketing of names denotes equality.

Boys.

FIRST CLASS [OR SENIOR].—PASS DIVISION.

- Edgar, W.H. *d.* Wei-hai-wei School
- Carroll, J.P. *f.du.* Marist Brothers' Coll., Uitenhage
- Brouchoud, J.J. *f.d.* Marist Brothers' S., Johannesburg
- Lorenzen, M.A. Wei-hai-wei School
- Dotto, John *sp.* Christian Brothers' Coll., Gibraltar
- Rainage, A. *f.sp.* Christian Brothers' Coll., Gibraltar
- Devins, H. *f.du.* Marist Brothers' S., Johannesburg
- Wilkrasingke, S.F. City College, Colombo

SECOND CLASS [OR JUNIOR].—HONOURS DIVISION.

- Rugeroni, J.V. Christian Brothers' Coll., Gibraltar
- Ossorio, M. *sp.* Christian Brothers' Coll., Gibraltar

SECOND CLASS [OR JUNIOR].—PASS DIVISION.

- <sup>1</sup>Bandinel, J.M. Wei-hai-wei School
- Aung, M.P. *a.* City College, Colombo
- <sup>1</sup>Dissanayaka, M.D.A. City College, Colombo
- Moller, J.P. Wei-hai-wei School
- Stark, F. Christian Brothers' Coll., Gibraltar
- Lorenzen, C.W. Wei-hai-wei School
- Jayanayake, C.A.S. City College, Colombo
- Ephraums, A. City College, Colombo
- Martins, T.A. C. M. S. Gram. S., Lagos
- Woodward, E. Christian Brothers' Coll., Gibraltar
- Nicolls, J.O. Wesleyan High S., Freetown, Sierra Leone
- <sup>1</sup>Williams, A.E.N. C. M. S. Gram. S., Lagos
- Mendis, R.A. City College, Colombo
- Roope, W.J.B. Wei-hai-wei School
- Cole, M.W. Wesleyan High S., Freetown, Sierra Leone

THIRD CLASS.—HONOURS DIVISION.

- Causse, L. *f.* Marist Brothers' Coll., Uitenhage
- Dumunier, B. *e.f.* Marist Brothers' Coll., Uitenhage
- Bonnefoy, H. *e.f.* Marist Brothers' Coll., Uitenhage
- Ruggeri, F. *e.al.* Christian Brothers' Coll., Gibraltar
- Rainage, E. *e.d.* Christian Brothers' Coll., Gibraltar
- Tauleigne, J. *f.* Marist Brothers' Coll., Uitenhage
- Dotto, Joseph. *e.f.* Christian Brothers' Coll., Gibraltar
- Gomez, S. *f.* Christian Brothers' Coll., Gibraltar
- Walker, C.C. *g.* Wei-hai-wei School
- Levy, J. *e.* Christian Brothers' Coll., Gibraltar

THIRD CLASS.—PASS DIVISION.

- <sup>2</sup>Taylor, F.B. C. M. S. Gram. S., Lagos
- <sup>2</sup>Conner, W. *s.* Wei-hai-wei School
- <sup>2</sup>Holgado, J. *d.* Christian Brothers' Coll., Gibraltar
- <sup>2</sup>Canessa, L. *sp.* Christian Brothers' Coll., Gibraltar
- <sup>2</sup>Buyers, G.A. Wei-hai-wei School
- <sup>2</sup>Williams, H.A. C. M. S. Gram. S., Lagos
- <sup>2</sup>Devadass, B.M.I. 18 Simpson Rd., Rangoon, Burma
- Pinela, G. Christian Brothers' Coll., Gibraltar
- Conner, T.C. Wei-hai-wei School
- Aruldassen, G. 18 Simpson Rd., Rangoon, Burma
- Coker, B.D. Wesleyan High S., Freetown, Sierra Leone
- Adelagun, J.A. *e.* C. M. S. Gram. S., Lagos
- Cardona, J.M. Christian Brothers' Coll., Gibraltar
- <sup>2</sup>Doherty, K.L. C. M. S. Gram. S., Lagos
- Grimble, E.G. Wei-hai-wei School
- <sup>2</sup>Lahanmi, V.R. C. M. S. Gram. S., Lagos
- Barnes, A. Christian Brothers' Coll., Gibraltar
- John, D. 18 Simpson Rd., Rangoon, Burma
- <sup>2</sup>Solomon, D. 18 Simpson Rd., Rangoon, Burma
- <sup>2</sup>Williams, M.A. C. M. S. Gram. S., Lagos
- <sup>2</sup>Francis, E.B. Wesleyan High S., Freetown, Sierra Leone
- Wright, P.W.H. Wesleyan High S., Freetown, Sierra Leone
- Cummings, E.H.T. Wesleyan High S., Freetown, Sierra Leone
- Toulmin, S.N. Wei-hai-wei School
- John, E.A. Wesleyan High S., Freetown, Sierra Leone
- Salako, J. C. M. S. Gram. S., Lagos
- <sup>2</sup>Stober, A.H. Wesleyan High S., Freetown, Sierra Leone
- daSilva, E.V. C. M. S. Gram. S., Lagos
- Roberts, I.K. Wesleyan High S., Freetown, Sierra Leone

GIRLS.

FIRST CLASS.—PASS DIVISION.

- Morton, D. *h.f.d.* English High S., Pera, Constantinople
- Binns, A.K. *f.d.* English High S., Pera, Constantinople
- Tucker, M. *f.* English High S., Pera, Constantinople
- Salerian, E. *f.* English High S., Pera, Constantinople

SECOND CLASS.—HONOURS DIVISION.

- Likiadopoulos, C. *a.gm.f.* English High S., Pera, Constantinople

SECOND CLASS.—PASS DIVISION.

- Binns, M.E. English High S., Pera, Constantinople
- Lombardo, H. *f.d.* English High S., Pera, Constantinople
- Zavaro, V. *sf.* Church of Scotland Mission S., Hasskein, Constantinople

THIRD CLASS.—HONOURS DIVISION.

- Parseghian, M. *a.f.* English High S., Pera, Constantinople
- Lander, D. *gm.* English High S., Pera, Constantinople
- Vincombe, D.C. *d.* English High S., Pera, Constantinople
- Bond, D.G.M. *e.al.* English High S., Pera, Constantinople
- Keun, W. *s.e.* English High S., Pera, Constantinople
- Isaac, M. *s.* 18 Simpson Rd., Rangoon, Burma
- Laendler, L. *f.* English High S., Pera, Constantinople
- Jugovitch, N. *e.f.* English High S., Pera, Constantinople

THIRD CLASS.—PASS DIVISION.

- Missak, A.M. English High S., Pera, Constantinople
- Michalino, C. English High S., Pera, Constantinople
- Josepovici, H. English High S., Pera, Constantinople
- <sup>2</sup>Devadass, A. 18 Simpson Rd., Rangoon, Burma
- <sup>2</sup>Fraudji, A. Church of Scotland Mission S., Hasskein, Constantinople
- Dyream, E. *a.d.* 18 Simpson Rd., Rangoon, Burma
- Abraham, K. 18 Simpson Rd., Rangoon, Burma
- Gabriel, G. 18 Simpson Rd., Rangoon, Burma

LOWER FORMS EXAMINATION.

Boys.

- Abecasis, A. Christian Brothers' Coll., Gibraltar
- Bertuchi, L. Christian Brothers' Coll., Gibraltar
- Bournes, S.A. Wesleyan High S., Freetown, Sierra Leone
- Cruz, J. Christian Brothers' Coll., Gibraltar
- Dauphin, B.H. Wesleyan High S., Freetown, Sierra Leone
- Durante, J. Christian Brothers' Coll., Gibraltar
- Escobar, F. Christian Brothers' Coll., Gibraltar
- Griffiths, E. Christian Brothers' Coll., Gibraltar
- Guzman, J. Christian Brothers' Coll., Gibraltar
- Johnson, B.M. Wesleyan High S., Freetown, Sierra Leone
- Johnson, J.M. Wesleyan High S., Freetown, Sierra Leone
- Johnson, T.C. Wesleyan High S., Freetown, Sierra Leone
- Jones, H.M. Wesleyan High S., Freetown, Sierra Leone
- Kennedy, W.J. Wesleyan High S., Freetown, Sierra Leone
- Lardner, R.E. Wesleyan High S., Freetown, Sierra Leone
- Lavagna, C. Christian Brothers' Coll., Gibraltar
- Leyva, A. Christian Brothers' Coll., Gibraltar
- Leyva, M. Christian Brothers' Coll., Gibraltar
- Ossorio, F. Christian Brothers' Coll., Gibraltar
- Renner, H.B. Wesleyan High S., Freetown, Sierra Leone
- Salami, A.A. Wesleyan High S., Freetown, Sierra Leone
- Stagnetto, J. Christian Brothers' Coll., Gibraltar
- Taylor, A.F. Wesleyan High S., Freetown, Sierra Leone
- Tham, E.E. Wesleyan High S., Freetown, Sierra Leone

GIRLS.

- Ashnam, V. English High S., Pera, Constantinople
- Bianchi, Edmée English High S., Pera, Constantinople
- Bianchi, Elfrieda English High S., Pera, Constantinople
- Furlani, V. English High S., Pera, Constantinople
- Hamson, M. English High S., Pera, Constantinople
- Keun, M. English High S., Pera, Constantinople
- Orronloglon, E. English High S., Pera, Constantinople
- Pappadopoulos, C. English High S., Pera, Constantinople
- Perkins, H. English High S., Pera, Constantinople
- Sarafoglon, L. English High S., Pera, Constantinople
- Youssouf, L. English High S., Pera, Constantinople

COLLEGE OF PRECEPTORS.

PROFESSIONAL PRELIMINARY EXAMINATION—PASS LIST.

SEPTEMBER, 1905.

THE Supplementary Examination by the College of Preceptors for Certificates was held on the 5th, 6th, and 7th of September, in London, and at five other local centres, viz., Birmingham, Bristol, Leeds, Liverpool, and Manchester. The following candidates obtained Certificates:—

FIRST CLASS [OR SENIOR].

Pass Division.

Ker, E. C.

SECOND CLASS [OR JUNIOR].

Honours Division.

- Bennett, P. L. T. *al.* Noel, H. L. C. *gm.it.*
- Carter, W. E. *l.gr.* Shearburn, Miss M. R. *e.f.*
- Hooton, W. H. *a.gm.f.* Welch, H. V. *a.al.gm.f.*
- Maurice, G. K. *al.f.l.* Wells, F. *gm.*

Pass Division.

- Appleyard, S. V. *g.* Chandler, H. W. Close, H. D. S. *h.*
- Birch, C. Charter, E. J. M. Cooper, T.
- Burch, H. J. Carruthers, N. S. Davis, H.
- Brentnall, T. C. *gm.* Cline, E. C. Evans, D. A. *gm.*

- Falkner, S. Lang, L. W. Rogers-Tillstone, H. F. *f.*
- Fenwick, A. G. B. Lendrum, F. S. Ross, J. H.
- Fenwick, P. C. C. Levy, F. *al.gm.* Scales, W. H. *gm.*
- Fisher, A. G. T. Lindsey, M. *f.* Shaw-Crisp, C.
- Foster, H. E. B. Ling, C. C. Smith, G.
- Gibson, A. Mason, H. Swire, F.
- Griffiths, H. L. S. *a.gm.* Matthews, L. C. Tanner, R. D.
- Hallinan, W. Edwd. *al.* Matthews, W. H. Tilden-Smith, Miss
- Hallinan, W. Ewart. May, G. M. E. N. *f.*
- Heath, P. A. *a.* McRae, D. *f.* Titmas, O. H.
- Hieber, A. *gm.ge.* Milton, A. C. Tucker, J. L.
- Hough, G. H. *gm.* Morgan, E. A. Tuxford, H.
- Howard Kent, T. Morgan, I. M. Tyson, J.
- Hughes, F. M. Morris, C. D. Verrall, A. G.
- Humphrey-Davy, O'N. Murphy, P. *ch.* Wallis, F. R.
- Hurst, R. C. O'Hagan, C. *gm.* Watton, G. E.
- Ivens, E. L. Parker, C. Welch, T. B. *f.*
- Jackson, T. H. Parry, F. G. *a.al.gm.* Wheeler, T. M. *gm.*
- Jenkins, G. R. Penny, C. H. G. Wild, A. S.
- Jones, G. L. Pern, A. S. Wilkinson, R. F.
- Jones, R. L. Richmond, A. I. Wright, W. E.
- Jones, W. E. *al.*

N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively:—

- a* = Arithmetic.
- al* = Algebra.
- ch* = Chemistry.
- e* = English.
- f* = French.
- g* = Geography.
- gm* = Geometry.
- ge* = German.
- gr* = Greek.
- h* = English History.
- it* = Italian.
- l* = Latin.



## MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on September 16. Present: Dr. Wormell, President, in the Chair; Prof. Adams, Mr. Armitage Smith, Mr. Barlet, Rev. Canon Bell, Mr. A. E. Butler, Mr. J. L. Butler, Mr. Charles, Miss Crookshank, Mr. Hawe, Miss Jebb, Mr. Kelland, Dr. Lawrence, Dr. Moody, Mr. Morgan, Rev. Dr. Scott, Mr. Starbuck, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Summer Examination for Diplomas had been held on August 28—September 2, and had been attended by 402 candidates. The Professional Preliminary Examination had been held on September 5-7, and had been attended by 242 candidates.

The report of the Finance Committee was adopted.

The following persons were elected members of the College:—

Mr. E. C. J. L. Addenbrooke, 13 Bourne Street, Dudley.

Mr. E. H. Butt, A.C.P., Lower School of John Lyon, Harrow-on-the-Hill.

Miss L. Counsell, 9 Park Lane, Calcutta.

Mr. C. Reddie, B.Sc. Edin., Ph.D., Abbotsholme School, Rochester.

Mr. J. R. Sisling, B.A. Lond., Newcastle Modern School, Newcastle-on-Tyne.

Mr. A. E. P. Voules, M.A. Oxon., Oxford House, South Croydon.

The following books had been presented to the Library since the last meeting of the Council:—

By the BUREAU OF EDUCATION, WASHINGTON, U.S.A.—Report of the Commissioner of Education, 1903, Vol. II.

By the GENERAL MEDICAL COUNCIL.—Minutes of the Council, Jan.—May, 1905.

By G. BELL & SONS.—Baker and Bourne's First Algebra; Tuckey's Examples in Arithmetic; York Readers, Book III.

By A. & C. BLACK.—Kirkman's *La Première Année de Française*; Mitton's *The Glory of London*; Reynolds's *Regional Geography (Europe)*.

By BLACKIE & SON.—Blackie's Commercial Course of Writing and Bookkeeping, Books I.—VI.; Little Tales for Little Folk (4 Parts); Model Readers, Books I., II., III.; Story Book Readers (Standards I., III., and IV.); The English Counties (4 Vols.); New Concentric Arithmetics, Books I. and II.; South African Script Figure Arithmetics, Standards I. and II.; Picture Shakespeare (King Henry VIII. and Twelfth Night); English School Texts, edited by Dr. Rouse (Macaulay's First Chapter, Macaulay's Second Chapter, Gipsy Stories from Borrow's "Bible in Spain," Swift's Gulliver's Travels, Tales from the Decameron of Boccaccio, Erasmus's Praise of Folly, Napier's Battles of the Peninsular War (2 Parts), Drake's World Encompassed, Lamb's Schooldays and other Essays, Plutarch's Life of Alexander, Hawthorne's Tanglewood Tales, Raleigh's Discovery of Guiana, Sindbad the Sailor, Defoe's Robinson Crusoe, Tales from the Arabian Nights, Washington Irving's Rip Van Winkle, &c., Lamb's Adventures of Ulysses, The Stories of Antonio and Benedict Mol from Borrow's "Bible in Spain," Saris and

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### CURRENT EVENTS.

At the Members' Meeting of the College of Fixtures. Preceptors on October 18, at 7.30 p.m., Professor J. W. ADAMSON will give a lecture on "The Map in the Class-room."

\* \* \*

M. ALFRED P. HUGUENET will address the Société Nationale des Professeurs de Français en Angleterre on "Les Précieuses" at the College of Preceptors on October 25, at 4 o'clock.

\* \* \*

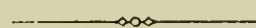
PROF. ADAMS, M.A., B.Sc., will give two courses, open to teachers without fee, on Saturday mornings at 11.30: the first, during Michaelmas term (beginning October 7) at King's College, London, on "The Nature and Origin of Ideas"; the second, during Lent term (beginning January 20), at University College, London, on "The Art of Exposition in Teaching." Application for cards of admission should be made to Prof. Adams, 9 Southampton Street, High Holborn, W.C., giving full name and address, and name and address of the applicant's school.

\* \* \*

THE inaugural lecture in the Women's Department of King's College, London, for the coming session, will be delivered by the Bishop of Exeter (Dr. Robertson, formerly Principal of King's) in the Jehanghir Hall, University of London, on October 5, at 3 p.m. Open.

\* \* \*

THE College of Hygiene and Physical Culture, Dunfermline (Carnegie Trust), will be formally opened by the Marquis of Linlithgow on October 4. The School of Music was opened on September 25.



THE University of St. Andrews have resolved to confer the honorary degree of LL.D. upon the following gentlemen on the occasion of the installation of Mr. Andrew Carnegie, LL.D., as Lord Rector of the University, on October 17:—

Hon. Whitelaw Reid, M.A., LL.D., United States Ambassador, London; Hon. Charlemagne Tower, LL.D., United States Ambassador, Berlin; the Right Rev. Henry Godman Potter, B.D., LL.D., Bishop of New York; Nicholas Murray Butler, M.A., Ph.D., LL.D., President of Columbia University; W. J. Holland, Ph.D., D.D., LL.D., Director, Carnegie Museum, Pittsburg; Hon. Lord Low, B.A., Senator of the College of Justice of Scotland; Hon. Lord Ardwall, M.A., Senator of the College of Justice of Scotland; Sir Robert Pullar, Perth; David Masson, M.A., LL.D., Litt.D., Emeritus Professor of English Literature, Edinburgh University, Historiographer Royal for Scotland.

\* \* \*

DR. JAMES A. H. MURRAY, editor of the Oxford English Dictionary, has been elected a Corresponding Member of the Academy of Sciences, Vienna.

\* \* \*

THE honorary freedom of the city of Worcester has been conferred upon Sir Edward Elgar.



MR. E. G. BAWDEN, of the Stock Exchange, has devoted £100,000 to charitable objects, including £16,000 to complete the sum necessary to effect the incorporation of

Endowments and Benefactions.



University College in the University of London, and £1,000 to the Horticultural College, Swanley.

\* \* \*

MR. W. J. LANCASTER has presented King's Lynn with a new Grammar School at a cost of £40,000. It is expected that the King, who has consented to its being named the King Edward VII. Grammar School, will open the new building.

\* \* \*

MR. ANDREW CARNEGIE has given £10,000 for the endowment of the various institutions he has presented to the University of St. Andrews during his Rectorship, chiefly for the benefit of the students.

\* \* \*

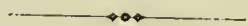
SIR DONALD CURRIE has offered £20,000 to Queen's College, Belfast, on condition that an equal sum is otherwise raised. A large portion of the necessary sum has already been promised.

\* \* \*

MR. BASIL MCCREA, a Belfast railway contractor, has given £6,000 to found a Chair of Experimental Physics in Magee College, Londonderry, and to provide two scholarships in connexion therewith, on condition of the subscription of funds for a suitable laboratory within a certain period.

\* \* \*

THE family of the late Mr. H. J. Gill have founded a Gill Memorial Scholarship in Modern Literature for Clongowes boys—£20 a year for two years, tenable at University College, Dublin.



Scholarships  
and Prizes.

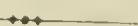
THE Drapers' Company will award in July, 1906, the following scholarships, tenable at the East London College:—4 of £40 a year for 3 years, to boys from the Coopers' Company's School, Parmiter's School, Rain's School, and the Whitechapel Foundation School; 9 (6 for men and 3 for women) of £40 a year for 3 years, on the result of the London Inter-collegiate Scholarship Examination in Science subjects to candidates between 16 and 19 years of age on October 1, 1906; and 6 (3 for men and 3 for women) of £40 a year for 3 years, on the result of the London Inter-Collegiate Scholarship Examination in Art subjects, to candidates between 16 and 19 years of age on October 1, 1906.

\* \* \*

THE London County Council will shortly hold a competition for scholarships to domestic servants (age 17 to 25), tenable at the National Training School of Cookery (14 Buckingham Palace Road, S.W.), and enabling the holders to pursue a course in household cookery for 12 weeks. The scholarships provide a maintenance grant of £5. Candidates must have been in some branch of domestic service for not less than one year previous to September, 1905.

\* \* \*

SOME free studentships are vacant at the School of Art Wood-carving, South Kensington (top floor of the Royal School of Art Needlework in Exhibition Road). Apply to the Manager.



Appointments  
and Vacancies.

PROF. EDWIN RAY LANKESTER, M.A., LL.D., D.Sc., &c., has been elected President of the British Association for 1906.

\* \* \*

DR. EDMUND J. JAMES has been elected fourth President of the University of Illinois, in succession to Prof. Draper, who has been appointed Commissioner of Education for the State of New York.

MR. WILLIAM SERVICE, M.A., B.Sc., Rector of the High School, Coatbridge, is the new President of the Educational Institute of Scotland. Miss Isabel C. Hamilton, Pupil-Teachers' Institute, Glasgow, has been elected Vice-President.

\* \* \*

THE VERY REV. DR. RIORDAN has been appointed Rector of the Irish College, Rome.

\* \* \*

MR. GEORGE GREGORY SMITH, M.A. Edin. and Oxon., Lecturer in English, Edinburgh University (since 1892), has been appointed to the chair of History and English Literature in Queen's College, Belfast, in succession to Prof. Boas.

\* \* \*

AT Queen's College, Cork, Prof. Stockley, who holds the Chair of English in the University of Ottawa, has been appointed Professor of English History and Literature; and Prof. T. P. Molohan, M.A., who holds the Chair of Classics at St. Edmund's College, Ware, and at Downside College, has been appointed Professor of Latin. The vacancies were caused by the resignation of Prof. Savage Armstrong and Prof. Bunnell Lewis.

\* \* \*

MISS CATHERINE DODD, for many years Lecturer in Education and Mistress of Method at Owens College and Manchester University, has been appointed Principal of the Cherwell Hall Training College (Church Education Corporation), Oxford.

\* \* \*

MISS MABEL FAITHFULL, Winchester, has been appointed Warden of Lady Warwick's Agricultural and Horticultural College at Studley Castle, Warwickshire.

\* \* \*

MISS GRACE CHARLOTTE POLLARD, Med. and Mod. Lang. Trip. Camb., assistant mistress, St. Lawrence School, Cromer, has been appointed Lady Principal of Riebeck College, Uitenhage, Cape Colony.

\* \* \*

MISS C. E. SPRUNT, M.A. Edin., mistress of the P.-T. Central Classes, Duchess School, Alnwick, has been appointed an assistant mistress in Perth Academy.

In addition to her M.A. degree from Edinburgh University [says the *Educational News*] Miss Sprunt has the Schoolmaster's Diploma, the Cambridge Teachers' Certificate with First Class Honours in the practical part, and, after taking her graduation classes, underwent a full course of training for secondary-school work at St. George's Training College, Edinburgh.

\* \* \*

MR. ROBERTSON, Head Master of the Lauder Technical School, has been placed in charge of the teaching of art drawing in all the schools under the Carnegie Dunfermline Trust.

\* \* \*

MR. WALTER CHARLTON COX, M.A. Lond., assistant master, Aberdare County School, has been promoted Head Master.

\* \* \*

MR. JOHN EVANS, M.A. Cantab., assistant master, Leeds Grammar School, has been appointed Head Master of Ashford Grammar School.

\* \* \*

MR. EUSTACE ARNOLD HOW, B.Sc. Lond., assistant master, Hale's Grammar School, Hertford, has been appointed Head Master of Beaminster Grammar School.

\* \* \*

MR. C. B. GUTTERIDGE, M.A., assistant master at Alleyn's School, has been appointed Head Master of the Warehousemen, Clerks, and Drapers' Schools, at Purley.

\* \* \*

MR. ARCHIBALD LANG, M.A., B.Sc., mathematical and



science master, Provanside Higher-Grade School, Glasgow, has been appointed a Junior Inspector of Schools.

\* \* \*

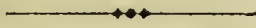
MR. FREDERICK PHILLIPS, B.Sc. Lond., has been appointed Assistant Lecturer in Mathematics and Physics in the Hartley University College, Southampton.

\* \* \*

MR. E. A. C. STOWELL, M.A. Oxon., Head Master of Kirkby Lonsdale Grammar School, has been appointed Head Master of Kingston-on-Thames Grammar School.

\* \* \*

MR. D. F. H. MACKAY, M.A. Glas., B.A. Oxon., has been appointed classical master in Kilmarnock Academy.



**Literary Items.** MESSRS. NELSON will presently publish "Trafalgar Refought," a book for boys (with illustrations), written by the late Sir W. Laird Clowes and Mr. Alan H. Burgoyne. "The authors imagine Trafalgar as it would be if refought under steam and with steel-clad ships, the tremendous weapons, and murderous possibilities of to-day."

\* \* \*

MESSRS. BLACK are issuing new cheap illustrated editions of Farrar's popular school tales, "Eric," "Julian Home," and "St. Winifred's"; and they promise for this autumn two more "Animal Biographies"—"The Cat," by Violet Hunt, and "The Black Bear," by H. Perry Robinson.

\* \* \*

MESSRS. A. & C. BLACK will also publish presently "The Adventures of Punch," by Ascott R. Hope, with illustrations in colour by Stephen Bagot de la Bere. The narrative of the hero's pitiful struggles, it is said, "may be looked on as a companion volume to Dr. Smiles's 'Self-Help.'" It is sure to be well charged with healthy humour.

\* \* \*

MESSRS. CHAPMAN & HALL have started (August) a new "Monthly Magazine for Boys and Girls," styled the *Jabberwock* (6d.), and edited by Brenda Girvan. It is attractive in form, varied in matter, and liberally and effectively illustrated. It should make room for itself.

\* \* \*

MESSRS. SIMPKIN, MARSHALL, & Co. are publishing a new edition of "The Story of Pet Marjorie," with new matter, including Dr. John Brown's "Marjory Fleming" and original illustrations by Warwick Brookes, and the newly discovered "journals" of Pet Marjorie.

\* \* \*

SIR ISAAC PITMAN & SONS are issuing cheap editions of Dean Plumtre's "Spirits in Prison," Dr. Horton's "The Teaching of Jesus" and "The Commandments of Jesus," and Prof. Stalker's "The Two St. Johns of the New Testament."

\* \* \*

MESSRS. WATTS & Co. announce a half-crown reprint of "Supernatural Religion," which made so much noise a generation ago; also a sixpenny issue of Paine's "Age of Reason," with a long biographical introduction by Mr. J. M. Robertson.

\* \* \*

THE September "Educational Number" of the *British Medical Journal* is practically an elaborate handbook to the profession, furnishing full information about courses of study, degrees, diplomas, fees, &c., at all the medical schools in the three kingdoms; with special articles on post-graduation study, tropical medicine, psychological medicine, preventive medicine, the public medical services, and dental surgery.

## CURRENT CRITICISM OF THE KINDERGARTEN.

By DR. M. V. O'SHEA,  
Professor of Education, University of Wisconsin.

[From the *School Journal*.]

### GENERAL EDUCATIONAL UNSETTLEMENT.

It may be well to acknowledge at the outset that there is no department of educational activity from the kindergarten to the university which is not under fire to-day. There has been no vital proposition made the past ten years, and affecting either curricula or methods or management, which has not had illustrious names alike for advocates and for opponents. The radicals in education, of which the number is constantly increasing, are dissatisfied with the mediæval character (as they maintain) of much of our current theory and practice, while the conservative people among us lament that we have already strayed so far from the traditions of the fathers. The times are ill at ease in all things educational. Those who view education from the standpoint of contemporary scientific thought feel that much of the philosophy that has come down to us from other times is unsound because it is founded upon a very incomplete and largely erroneous knowledge of the mind of man. The new conceptions of human nature growing out of evolutionary doctrine are producing active fermentation in all departments of teaching, and it is inevitable that they should create disaffection with the present order. Whether we like it or not, there is no escape from this situation. The innovators, having faith in the new light being shed by modern science, will be urging us forward; they will be pointing out the crudity of things as they are, while the conservative will be sounding the praises of the ancient *régime* and bemoaning the decadence of modern institutions.

### ALLEGED SHORTCOMINGS IN KINDERGARTEN.

Now, so far as I can tell, the kindergarten is not subject to more extensive or harsher criticism to-day than other departments of our educational system, though the critics have attacked it so recently that the shortcomings ascribed to it are fresh in the public mind. It is charged, in the first place, by the conservatives and disciplinarians, such as Munsterberg and Briggs, with sentimentalism; it humours its children, and does not develop in them respect for authority or habits of industry and self-control. Its pupils acquire the notion that the school is a place for fairy tales and play, and they must suffer many hard knocks in the elementary school before they learn that they should restrain their spontaneous activities and apply themselves to hard tasks. Teachers of the old school have testified that children entering the primary grade from the kindergarten are considerably worse off than their fellows who have been let run at large, for they have gained wrong notions respecting their duties and privileges in the schoolroom. They expect the teacher to entertain them, and as for learning the lessons assigned them they strenuously rebel. It should be added that these charges have all been denied by teachers of high standing, with the result that the evidence is contradictory at every point.

### WEAKNESS OF THE ALLEGATIONS.

Like all other educational questions, this one is so complex that it is impossible to do more than offer opinions upon it. We are certainly without any reliable data whatever showing that the kindergarten is spoiling its pupils in the manner indicated. The few complainants, so far as I have read them, present no evidence that would receive the slightest attention in any scientific camp. They rely upon the method of ridicule, and they imagine that when they have turned a laugh upon some practice of the kindergarten they have proved a point against it. And it is easy for many people to make merry over any of the innovations in teaching, which is equally true of everything novel. When old fogies cannot adjust themselves to changing conditions, they console and strengthen themselves in their helplessness by poking fun at all things new.

This is not to say that the criticisms of the kindergarten are without foundation, but only that the critics have not complied with the simplest principles of scientific procedure in pointing out defects. It is possible that the whole matter is purely relative any way. It is easily conceivable that when children have had much freedom and life in a kindergarten, and are then transplanted to a dry, desert-like primary grade, it will take them some time to get acclimated. I have observed very closely a situation of just this sort, and I have wondered often whether



the habits and expectations acquired in the kindergarten were not a disadvantage under the changed conditions. The children were subject to constant nagging in the new situation, and it took some time for them to learn to sit still, keep their mouths shut, learn their lessons, and always do as they were bid. But in a primary school where rigidity and militarism give place to vital, interesting activity I have observed that the kindergarten child is more completely *en rapport* with his environment than his less fortunate comrade. He has more self-confidence, is more executive, dynamic, expressive, and, from the very beginning, he reacts more effectively to the educative stimulations of the class-room. In the University of Wisconsin, during the past year, special studies have been made upon the abilities of children trained in different ways, and we are confident that the kindergarten child has himself better in hand, in all this means, than the child of the street or the home or the formal primary grade.

#### LACK OF A STANDARD TEST.

It is suggestive to note, in this connexion, that, according to my observations, children who have thoroughly enjoyed the kindergarten sometimes thoroughly dislike the restrictions and formalism of the primary grade. I realize that the disciplinarians regard this as a point against the kindergarten, for the children need, for their souls' health, to do tasks which they dislike. Now, it is needless to wrangle over this question; no one's views can be changed by argument about it. If you are a formalist, and believe in the prophylactic value of drudgery, you will find fault with the kindergarten; and you can find plenty of reasons to fortify your position. If, however, you are a naturalist and have faith in the moral worth of following lines of interest in educational work, then you will endorse the fundamental principles of the kindergarten; but you cannot demonstrate the soundness of your doctrines to those whose conception of human nature and whose temperament are the antithesis of yours. We cannot at present *prove* anything regarding this complex question; we have devised no system of experiments that will show precisely what is the motor, intellectual, emotional, and moral *status* of the kindergarten as compared with the non-kindergarten child at different stages in his development. Viewing the situation with my conceptions of human nature and education, I feel that the year or two spent under a wise kindergartner are of positive value.

#### ROOM FOR IMPROVEMENT.

But, having said this, I must hasten to add that I believe there is room for improvement in the kindergarten in respect of some of the matters we have been discussing. I fear that sentiment plays too large a part in the treatment of many children; and by sentiment is meant the desire and the effort to shield the child from all pains and penalties as a natural consequence of his experiments with people and things. The kindergartner is sometimes taught that a child comes among us fresh from the hand of the Creator, and he is pure and spiritual in his tendencies and impulses. If he never have experience with anything but gentleness and tenderness in the people about him, the divinity within him will unfold most readily. The kindergartner would save the child his trials and tribulations by taking them upon herself, little thinking that to spare the child the results of his acts now is to heap up difficulties for him in the future. So far as I can discern, all contemporary science treating of human nature suggests the conception that the child is equipped at birth mainly with impulses which are bequeathed to him from his primitive ancestors, but which are not adapted to modern society in just the way in which they are inherited. So that the education of the individual consists in no small measure in learning to inhibit his original tendencies. He can, undoubtedly, acquire these inhibitions best by forming strong attachments for modes of conduct in harmony with existing social institutions and practices, so that in the kindergarten, as elsewhere, we must aim primarily to *win* the novice in behaviour to social and moral interests and actions. But, so far as I can discover, there has never been worked out any plan by which the child can be brought into line with his social environment without having some experience with penalties for unsocial conduct. The social lessons are not learned without a struggle, and the longer they are deferred the harder they become. If the child never suffers for non-social conduct in the kindergarten, he will be likely to make it up with heavy interest farther along. Pain is, when it results from violation of social and ethical laws, a most valuable prophylactic agent if it *come early enough*, before attitudes and ex-

pectations become established. So it has seemed to me that it would be well if the kindergarten, while preserving all of its positive methods in making the child a social being, would at the same time help the child to appreciate, as a result of vital, significant experience, that it pays in terms of pleasure and pain to meet his fellows half-way, and not to trespass on their rights for his own advantage. The kindergartner ought to help in making children appreciate that a bullying attitude leads to unhappy consequences.

#### FUNDAMENTAL CONCEPTIONS.

I come now to say a word respecting the fundamental conceptions of the kindergarten, which have been vigorously assailed by certain distinguished present-day naturalists. It is charged that the Froebelian philosophy is mystical and fanciful, and that it is not founded to any extent upon exact observation of the developing human mind. It has resulted, then, that materials and processes which are artificial and formal have found their way into the kindergarten, the doctrine of symbolism being especially faulty. The child is kept at the gifts when he ought to be in contact with Nature and doing things of genuine value. To my mind, this general criticism is merited in many kindergartens. I think all we know of the functioning of the human mind as an instrument for securing adjustment to the world, to which may be added the results of experience, testify to the fruitlessness of trying to instruct babes by means of symbols. The time devoted to this work ought to be spent in dealing at first hand with real objects in the real world environing the child. Even if the gifts be used for constructive activities, the work is still apt to be more or less artificial and trivial. The spontaneous activities of the child outside of the kindergarten are apt to be considerably more energetic and significant and effective. I have seen boys of six held to activities in the kindergarten which they had outgrown at four, or, at least, their abilities at the time were quite beyond the simple and mechanical tasks they were performing. I am confident this objection will not apply to all kindergartens, but I fear that the average orthodox one has underestimated the general dynamic needs and possibilities of most of its children, while at the same time it has very greatly overestimated the generalizing powers of the young mind. Consequently some of its processes are ill-suited to the normal child of five or six.

#### REFORMS IN PROGRESS.

I think, however, that movements are already in progress which promise to bring about needed reforms in the kindergarten. In general these reforms should make its work more natural, more closely related to the life the child lives outside of school. The kindergarten, disclaiming as it does any intention to give the child a knowledge of linguistic arts, should be chiefly serviceable in furnishing models for his spontaneous activities. It should give him suggestions to guide him in his construction and play activities, so that these may be made constantly more complex and give him increasing executive skill, self control, and social insight and co-operation. The kindergarten, as I have seen it, is doing considerable in this direction now; but it might do more if it would base all its activities upon the nature and needs of the actual child, with his primitive and motor tendencies, rather than upon the idealized and metaphysical being which the Froebelian philosophy, as popularly expounded among us, does seem to construct.

#### TRAINING OF THE KINDERGARTNER.

There is space left to say but a word respecting the current criticisms of the training of the kindergartner. There is a deep-seated conviction among the naturalists that the majority, perhaps, of the kindergarten novitiates have their intellects trained too little and their emotions stimulated too much. They are, it is said, quite deficient in the ordinary subjects of mental discipline—mathematics, history, language, science. They have very slight foundation for undertaking a study of the most intricate object in the world—the developing human mind. It follows, inevitably, then, that they get a very superficial knowledge of the true nature of the child and his educational needs. They learn the traditional phrases of the cult, but they cannot employ them to guide themselves in concrete situations. It is universally acknowledged, so far as I have been able to ascertain, that the kindergartner usually has the right general attitude towards her special work; but she lacks the understanding to particularize this attitude in special situations, and to devise the most effective means to accomplish the ends which she would attain. I think it very likely that the naturalists



have some reason for their complaint, though there are signs of improvement in this respect, too. In some training schools, at any rate, the kindergartner is well grounded in contemporary biological and psychological science as a foundation for the special study of kindergarten theory and practice.

## ASSISTANT MASTERS IN SECONDARY SCHOOLS.

### CONFERENCE AT LIVERPOOL.

THE autumn meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held at the Liverpool College on August 9, Mr. G. E. S. Coxhead (Liverpool Institute) presiding.

The Chairman pointed to the gradual trend of opinion in the direction of establishing a national system of education as being undoubtedly the most important movement in education to-day, and urged on teachers in secondary schools the importance of consolidating their section of the profession, in order that it might take its proper place in a national system. It was not necessary, he said, to remind experts that secondary education was not the coping-stone of elementary education, as was too often assumed.

### THE PLACE OF SECONDARY EDUCATION.

Elementary education was in essence collectivist, with a certain amount of individualism in it, whilst secondary education was in essence individualist with a certain amount of collectivism in it. The Board of Education had recognized that difference, and had pointed out in their regulations that secondary education, equally with elementary education, could begin at eight years of age. He held that the pupil who, having previously passed through an elementary school, entered a secondary school even at the age of twelve had lost something through the absence of this four years' preliminary work in a secondary school. It was quite possible that, if the pupil was of a fine intellectual character, as he generally was (for most of such pupils entered the secondary school on a scholarship), he might make up for that loss, but he had lost something all the same. Inasmuch as they all desired that the higher intellects in the elementary schools should have an opportunity of getting secondary education, they wanted free communication between the two branches, and that free communication was being supplied—some people thought too freely supplied—by the scholarship system. What form that system would finally take did not concern them at present, but he would point out that the system was at best a means of giving bright boys an opportunity of making up the loss which they had undoubtedly sustained in not beginning in the secondary school.

### THE QUESTION OF SALARY.

Of a series of resolutions adopted by the Council of the Association the day before, embodying the policy of the Association on current questions, and now reported to the meeting, three dealt with the question of salaries. The Association heartily support the suggestion made by Mr. M. E. Sadler in one of his county reports on secondary education that joint action is desirable on the part of County and Borough Authorities as to a salary scale for teachers in secondary schools. Another resolution expresses the opinion that governing bodies should regard the augmentation of salaries where these are unduly low as the first and most necessary charge upon the grant received from the Education Authorities, and that salaries should be fixed by the governing body in consultation with the head master, and should be paid in all cases by the governing body.

### THE PLACE OF SCHOLARSHIPS.

Several other resolutions were in approval of the policy of the Board of Education. One of these was to this effect:

Believing that the improvement of secondary schools is at the present time the most important educational task that lies before the nation, this meeting highly approves of the policy of the Board of Education in diverting the funds hitherto used for providing scholarships to increasing the aid given to the schools, and in discouraging Local Authorities from undertaking large scholarship schemes before secondary schools are put in a condition of thorough efficiency and financial stability.

In commending this resolution to the Association, the Rev. J. F. Tristram said Local Authorities and private benefactors founded scholarships with the greatest good will towards the schools and the staff; but they did not always understand that an increase in the number of scholarships in itself was not

necessarily a good thing. This was seen clearly by the Board of Education, and the enlargement of the number of scholarships was being put a stop to until more serious attention had been given to the equipment of the schools themselves.

### SHOULD SECONDARY EDUCATION BE FREE?

Mr. J. V. Saunders (Hymers College, Hull) submitted a resolution in which the Council approved of the policy of the Board of Education in maintaining the desirability, in ordinary circumstances, of the payment of fees in secondary schools. Taking a broad view of European politics and the possible necessities of national defence during the next twenty years, he thought assistant masters would be living in a fool's paradise if they rested their hopes on an increase in the national expenditure on secondary education. As to local expenditure, the patience of the ratepayer was pretty nearly exhausted with his present burdens, and he did not think secondary education was going to get very much more from the rates. The only source of income they could really count on was the fees, and he maintained that here they had the most direct, the most just, and the safest way of raising the money necessary for defraying the cost of secondary education.

### INCREASED NATIONAL GRANTS.

Mr. E. G. W. Hewlett, in supporting another resolution which urged the desirability of a general increase in the grants towards secondary education, said the previous resolution on the maintenance of fees might seem to run counter to the trend of public opinion. This resolution made it clear, however, that, in the opinion of the Council, further assistance was required from Parliament. The Trade Unions Congress urged that secondary education should be provided free as well as elementary education. The Council did not think that desirable; but at the same time they did not think it practicable that secondary education should be provided at cost price. The cost was too high for that. He did not think it was for them to consider other claims on the national Exchequer as Mr. Saunders had suggested. At present the amount devoted to education was paltry in comparison with the millions spent on the Army and Navy. The Russo-Japanese War had taught us that it was of no use to pour out millions on defensive expenditure unless there was intelligence behind it, and, for his part, he believed that, even from the point of view of national defence itself, the most profitable expenditure at present would be on secondary education.

### THE VALUE OF LATIN.

Among the other resolutions reported was the following:—

That, inasmuch as it is at the present time desirable to encourage the utmost possible diversity of type in the curricula of secondary schools, equal encouragement should be given to the teaching of (1) Latin and one modern language; (2) two modern languages; and (3) in schools with a scientific curriculum one modern language.

Closely bearing on the same subject was a resolution which Mr. G. H. Clarke (Hymers College, Hull) moved as an expression of opinion on the part of the general meeting:

That this meeting deprecates the excessive importance accorded to Latin in the Secondary-School Regulations, and considers that greater encouragement ought to be given to modern languages.

Mr. Clarke, in proposing it, quoted the Regulations, in which the Board say that before sanctioning the omission of Latin from the curriculum they would require to be convinced that the omission is for the educational advantage of the school. He did not think there was much chance of convincing the Board, and the result would be that Latin would have an important place in the education of many boys who would derive no benefit from it, but who might profit from a study of English, German, or some other subject. He urged the claims of German as an alternative subject of study. Mr. J. V. Saunders, in opposing the motion, admitted that Latin in itself might not be of much use to a boy in after life, but said the great value of the study was to be found in the fact that the language possessed characteristics which made it exceedingly well adapted for conveying to boys elementary grammatical notions.

Mr. G. F. Bridge (St. Olave's School, Southwark) said that the study of Latin and Greek formed an admirable basis for the intellectual work of those who were concerned in one way or another with the study of thought, and with the expression of thought in words, such as the lawyer, the teacher, the journalist, the clergyman, and the administrator. But it had not been proved for one moment that a classical education formed a valuable basis for the work of those who were concerned with



the expression of thought in things, such as the architect, the engineer, and the doctor. It must be remembered that the proportion of men who were concerned with things, and not with words, was increasing. A number of schools did not wish to give up Latin; but they had cut the time down to two hours a week. Latin done under such conditions was of very little educational value indeed. Mr. C. Browne (Christ's Hospital), in supporting the resolution, urged that Latin ought to be a perfectly optional subject. Mr. J. Thompson (Plymouth College), whilst in substantial agreement with many who supported the resolution, thought that such a phrase as "this meeting deprecates the excessive importance of Latin" would give the public quite a wrong impression of the attitude of the Association. It would suggest that they thought the time given to Latin ought to be cut down. Such a curtailment would simply mean that the teaching would be inefficient. Mr. Clarke's motion was negatived by twenty votes to seven.

#### THE TEACHERS' REGISTER.

The following resolution, proposed by Mr. Hewlett, was agreed to:—

That this meeting deplores the unsatisfactory outlook for the Teachers' Register. It records its conviction that the system of training and registration of teachers designed in the Orders in Council on Registration are urgently necessary in the interests of secondary education, and affirms its belief that the success of the movement depends mainly on (1) the recognition of the Register by the Board of Education and other Education Authorities; (2) the provision of such salaries and the offer of such prospects as are suitable for teachers who have undergone a lengthy and expensive course of preliminary preparation for their work.

Prof. Elton, of Liverpool University, read a short paper, in which he communicated some interesting notes on the academic side of the teaching of English literature.

### THE TRADE UNION CONGRESS.

#### EDUCATION—PHYSIQUE—HOUSING.

##### THE EDUCATION QUESTION.

At the meeting of the Trade Union Congress, at Hanley, Mr. W. A. Appleton (Lacemakers, Nottingham) moved:

That this Congress condemns the educational policy of the Government as laid down in the Act of 1902 and in the subsequently issued minutes and regulations, and demands the formulation of an educational programme based upon the principle of equal opportunities for all, such programme to aim at securing

(1) That all grades of education shall be free and State-maintained. (2) That attendance in primary and secondary schools shall be compulsory, and that adequate provision be made for children to continue at school until the age of sixteen years, or until such age as the university course begins. (3) That provision be made to continue the education of capable students through the university courses. (4) That the standard of capacity shall be judged by work previously accomplished, and not by competitive examination. (5) That the education in all State-supported schools shall be secular. (6) That all State-supported schools shall be under the control of, and their affairs administered by, the directly elected representatives of the people. (7) That each educational district shall be required to train the number of pupil-teachers demanded by local needs, and for this purpose to establish training colleges, preferably in connexion with universities or university colleges. (8) That the cost of the before-mentioned reforms shall be borne by the National Exchequer out of revenue obtained through broadening the basis of taxation, and by the restoration and democratic administration of valuable misappropriated educational charities and endowments. (9) That it be an instruction to the Parliamentary Committee of the Trade Union Congress to formulate these proposals in a Bill to be laid before Parliament during the forthcoming Session. (10) That no Parliamentary candidate receive the endorsement of the Parliamentary Committee unless he is prepared to accept and promote the educational policy of the Trade Union Congress.

Mr. Appleton said that what was to be desired was such a system of education as would afford equal opportunities to the children, and the experiences of the last few years had enabled them to eliminate some of the matters about which they used to differ, and to agree upon the broad principles. First, they agreed that all education should be absolutely free and State-maintained rather than locally maintained. A child would become a more or less efficient unit of the State, and not the unit of any particular locality. Therefore the State should make adequate

provision for the education of the children. They were anxious for compulsory attendance at the primary and secondary schools, and that provision should be made for the attendance of children at university colleges. He went on to speak of each of the clauses; and, in objection to special competitive examinations, he said that the smartest child might be nervous under examination and lose the chance of progress; therefore it would be wiser to take the average work over a period of a year than to make a child's advancement dependent upon a particular examination. They claimed that education in all State-supported schools should be secular. They had been driven to that conclusion by the difficulty of shaping any form of dogmatic teaching which would be acceptable to the different denominations. No man breathing could shape such a dogmatic teaching as would be acceptable to the Roman Catholic, the Anglican, the Wesleyan, and the Jew; yet they were all ratepayers, and were entitled to have their rights protected and enjoy all the educational advantages which could be given. None wished to stand in the way of any reasonable attempt to develop character, because they were as anxious to develop character as intellect; but he did not want to be a party to assisting in the development of intellectual prigs. Further, they claimed to have the control of the education of the children and to be able to have representation on the bodies in charge of educational work. They were anxious that Congress should now inaugurate a constructive policy. So far as that Congress was concerned, most of the things they had striven for would be realized, if the people were only educated. They had plenty of force in the Labour movement, but it was latent force, lacking intelligence. If they could only awaken the strength which lay in their movement and cause it to be intelligently directed, all the reforms the movement had striven for would be brought within the region of practical politics.

Mr. J. C. Gordon (Tinsplate Workers, London) seconded. As trade unionists, he said, they should approach the question from the standpoint that the children should have the best education it lay in their power to give.

Mr. J. Stokes (Glassblowers, London) suggested that for clause 2 there should be substituted the following clause in the resolution originally presented by the Lacemakers' Society, as follows:—

That all education shall be free, and that secondary and technological education be placed within the reach of every child by the granting of bursaries or maintenance scholarships to all children whose usefulness would be enhanced by such extended education. Further, that adequate provision be made for children to continue at school until the age of sixteen years, or until such age as the university course begins.

Mr. Appleton said he would be delighted to accept the second clause of the resolution submitted by his own (the Lacemakers') Society, instead of that in the resolution.

The resolution with the substitution, which had been accepted, was then agreed to.

##### PHYSICAL DEVELOPMENT.

Mr. Will Thorne (Gasworkers' Union, London) proposed:

That, in view of the findings of the Departmental Committee on Physical Deterioration, this Congress declares in favour of the principle of State maintenance of children, and urges, as a means of checking the evils revealed in the Committee's report,

(1) That immediate provision be made for giving at least one free meal per day to all school-children; (2) that free medical advice and inspection be placed within the reach of all children; (3) that efficient physical training shall become a necessary feature of school life; (4) that the administration of the reforms indicated in the foregoing clauses shall in no way be associated with charity or the administration of the Poor Law; (5) that the Board of Education provide a statistical department charged with the collation and periodic publication of statistics relating to the health and mortality of school-children; (6) that the Parliamentary Committee place these recommendations before all municipal councils in the United Kingdom; (7) that it be an instruction to the Parliamentary Committee of the Trade Union Congress to incorporate these proposals in a Bill to be brought before Parliament during the forthcoming Session; (8) that no Parliamentary candidate receive the endorsement of the Parliamentary Committee, unless he is prepared to accept and promote the proposals contained in the foregoing paragraphs.

Mr. Thorne said that it was no doubt right that all children should be properly educated, but we must first give them a good foundation on which to build education by feeding them properly. It was not creditable to know, as was the fact, that convicts were better fed and better housed than numbers of the working classes.



He desired to impress on municipalities the absolute necessity of having medical officers to attend schools and of having every child examined, both when first admitted to school and at periodical intervals afterwards. Mr. J. O'Grady (Furnishing Trades, London) formally seconded the resolution, and it was adopted.

#### THE HOUSING QUESTION.

Mr. C. F. Davis (Compositors' Society, London) moved :

That the Congress again urges the local labour organizations to bring pressure to bear on their administrative bodies to build houses for the people requiring them, and also suggests that in every constituency the organized workers should press upon both members of and candidates for Parliament the urgency of money aid from the central Government for that purpose being given to the Local Authorities. In view of the great growth of population in our large centres of industry, and the consequent pushing out of the homes of the workers from the centre to the outskirts, which necessitates cheap and rapid transit to and from the various places of employment, it instructs the Parliamentary Committee to take such steps as may be necessary to induce Parliament to give effect to any recommendations in the report of the Select Committee of the House of Commons on the Amendment of the Cheap Trains Act as will lead to the provision of a cheaper and better service of workmen's trains on the various railways.

Bad housing, Mr. Davis pointed out, was a great factor in the physical deterioration of the people. The burden of finding funds should be placed upon the Imperial Exchequer. Local rates in many places were so heavy that the municipalities could not see their way to deal with the questions as they ought to do. Mr. H. Gosling, L.C.C. (Watermen, London), seconded the resolution. Mr. Shaw (Typographical Society, Sheffield) spoke of the serious difficulty in large towns caused by the creation of districts that would become worse slums than those that were being removed. He wished that the resolution had dealt with this difficulty, but hoped the Parliamentary Committee would do what they could to prevent the modern slum from being constructed. They would have to see that their efforts at reform were not counteracted by the land jobber and the speculative builder and people who wanted to get as much as they could out of jerry-built houses. The resolution was adopted unanimously.

#### MINUTE ON SCOTTISH EDUCATION.

##### TRAINING OF TEACHERS AND TECHNICAL EDUCATION.

A MINUTE of the Committee of the Council on Education in Scotland providing for the distribution of the sums carried to a suspense account in terms of article 3 of the minute of April 25, 1904, and article 5 of the minute of February 16, 1905, just published, bears that it was resolved that the sums carried to a suspense account in terms of the articles shall be applied towards the making of grants in aid of capital expenditure incurred for the following purposes :—

(1) In providing buildings or equipment approved by their lordships in terms of their lordships' minute of January 30, 1905, as necessary for the purpose of training teachers in accordance with the provision of the said minute.

(2) In providing buildings or equipment necessary for the purpose of giving advanced technical instruction in any recognized central institutions or in any institution devoted solely to the purpose of giving technical instruction, the benefits of which are in their lordships' opinion available for the population of a sufficiently wide area, provided that in either case the objects of the expenditure shall be approved by their lordships, and that there shall be an adequate local contribution towards the purposes for which the grant is made.

(3) In providing such initial equipment as may be required for supplying industrial training to boys and girls in the island of Lewis in accordance with the proposal contained in the reports of the Lewis Local Committee in 1903, or such other proposals of Local Authorities in that island as may be approved by the Department, and for making, subject to the approval of the Department, similar provision in such other of the districts of the Congested Districts Board as the Board may recommend.

Applications for grants under this minute should be lodged before March 1, 1906. Further applications will be considered in each year till the sum at the credit of the account is exhausted.

#### EXPLANATORY MEMORANDUM.

In an explanatory memorandum issued with the minute it is stated that the distribution of general aid grant, which repre-

sents the amount given to Scotland as an equivalent for certain new grants made to Educational Authorities in England under the Act of 1902, has been annually provided for by minutes of the Scotch Education Department. The minutes of 1904 and 1905 contained a clause providing that any balance of the grant remaining after certain specified payments had been made should be carried to a suspense account to be distributed according to further minutes of the Department. At March 31, 1905, the unexpected balance stood at £111,530, and it is estimated that a further balance of about £100,000 may be available in respect of the year 1905-6.

Under the Education Bill of this year these balances, amounting in all to about £211,000, would have been carried to the proposed Education (Scotland) Fund, first payments out of which would have been made in aid of capital expenditure incurred in connexion with advanced technical instruction as given in what are known as central institutions. Owing to the withdrawal of the Bill it has now become necessary to make other arrangements for the disposal of the balances in question. Their distribution is accordingly dealt with in the minute which will be laid before Parliament in due course. In view of the fact that the whole of the moneys thus available were derived from unexpended balances it seemed best to devote them to assisting capital expenditure. Their lordships have, therefore, after full consideration of all circumstances, decided to assign the larger part of the amount at their disposal to the purpose to which the Education (Scotland) Act Fund was in the first instance to have been applied.

In consequence, however, of the withdrawal of the Congested Districts (Scotland) Bill during the past Session, the question of making provision for industrial training in the island of Lewis and other parts of the congested districts of Scotland has become a matter of great urgency. The present opportunity has accordingly been taken advantage of to offer some measure of assistance in that direction. It will be observed that this minute relates merely to the distribution of the balance of sums already voted, and that it in no way affects or prejudices the application of the aid grant that will fall to be distributed in future years.

#### EDUCATION AND PHYSICAL CONDITIONS.

##### SPEECH BY SIR JOHN GORST.

A MEETING of the National Union of Gas Workers and General Labourers' Society was held in the Victoria Hall, Hanley (September 3), when Mr. Pete Curran (Labour candidate for Jarrow) moved, and the Countess of Warwick seconded, a resolution, which was unanimously adopted, calling upon the Government to introduce legislation to provide for the adequate maintenance of children attending State-supported schools, especially in regard to free meals and free medical attendance. Mr. Enoch Edwards (Labour candidate for Hanley), in moving a resolution dealing with the question of physical deterioration, urged that the Board of Education should extend and organize the physical side of popular education so as to secure records not only of the mental development, but also of the physical development, of children attending State-supported schools, thus providing valuable data as a basis for future reform. Sir John Gorst, M.P., seconded the resolution.

What he wanted to impress upon his audience was how much we in our collective capacity neglected the individual well-being of the population from a health point of view. While the children of the rich were carefully attended to in every respect, the children of the poor from their very birth were robbed of that real expert aid which was necessary to their being successfully reared in health and strength. The state of things had at last got so bad that it had actually attracted the attention of the Government, and inquiries were being made into the causes of the excessive rate of infant mortality. For his part, he did not believe a stop would be put to the excessive death-rate until some drastic reform was made in the habit of allowing the mothers to return too soon to work after confinement. He thought, too, that beneficial results would follow if young women were trained in the proper management of children. It was in poor, ill-fed hungry children that the seeds of tuberculosis developed, and therefore it was of the utmost importance that school-children should be provided with adequate medical examination. In Germany every child was examined when it first entered school, and this examination was repeated every year. Ailing children were so carefully attended to that in many cases they were taken to the pure air of the country in the morning and at the end of the day were brought back to the towns. In Germany, too, every man and woman was entitled to cure and relief in the hospitals without payment. How could we expect to carry on with success the



friendly rivalry in trade and manufactures existing between Great Britain and Germany unless very speedily such a social reform was carried out in this country as would put us on something like an equal footing with Germany? As a nation, we had been culpably neglectful of the health of our poor people. What we wanted was not inquiry, but action and immediate reforms, especially in the matter of poor relief. The administration of the existing law was carried out by Town Councils and boards of guardians, and, if the people let it be known that no persons should be elected who did not pledge themselves to attend to the physical wants of the people, it would be their own fault if they were not returned. At the present moment they had in Mr. Gerald Balfour a President of the Local Government Board who was very anxious to look into this question and make reforms. Let them make the best of him while they had got him—he did not think it would be for long—but while he was there he was capable of initiating a great number of reforms which his successor would be able to carry out.

The resolution was carried by acclamation, as also was one calling upon the meeting to support the trade union education programme advocating “free and secular education from the primary school to the university along with such maintenance scholarships as will place the highest educational advantages within the reach of all.”

## REVIEWS.

### HOW TO TRANSLATE HOMER.

*On Translating Homer.* By Matthew Arnold. New Edition, with Introduction and Notes by W. H. D. Rouse, M.A., Litt.D. (2s. 6d. Murray.)

Mr. Murray lays all students of Homer under obligation by republishing at a popular price and in an agreeable form Matthew Arnold's admirable essay on the problem of translation. Dr. Rouse furnishes a most interesting and thoughtful Introduction, boldly and fairly critical, and adventuring fresh suggestions on a basis of genuine study. For the most part we are in agreement with his contentions. Let us leave on one side Arnold's heresy “in championing the unity of the Homeric poems”; for this is but an incidental issue, though proper for comment by the editor; and Arnold himself advises the translator to have nothing to do with the question “whether the poet of the ‘Iliad’ be one or many,” or “whether the ‘Iliad’ be one poem or an ‘Achilleis’ and an ‘Iliad’ stuck together” (page 37). The four characteristics of the Homeric style enumerated by Arnold Dr. Rouse regards as “a quite satisfactory summary”; but he makes a tenable advance in showing that, though we cannot now say exactly how Homer's verse sounded in Greek ears, yet “we can tell even this more nearly than Matthew Arnold imagined.” As to the court of final appeal on the question of translation—whether the English reader that knows no Greek or (as Arnold holds) the scholar—Dr. Rouse decides rightly for a joint tribunal: “We ought rather to say that the translation must be judged by both, each testing that part in which he is competent”—trial by judge and jury. “The scholar,” indeed, “is the more competent of the two as a whole, but he cannot disregard the verdict of the ordinary reader.” After an instructive, and rather indulgent than severe, review of a number of translations, Dr. Rouse concludes that, “good as some of them are, they all come short, not only of the ideal, but of the possible best.” About that there can be no doubt at all. By the way, should not “that eccentric genius” be Samuel Butler, and not Mr. A. J. Butler? (Page 20.)

How, then, is a translator to attain the best possible results? “In the first place, the syntax must be simple and natural.” But, if the present age is to have its translation of Homer, is it safe to advise that “for models the student can find nothing better than the English Bible, Chaucer, Latimer, Bunyan, and other writers who have lived not amongst books but in close contact with human life and with Nature”? The degree of archaic element is a very ticklish matter; and, for a present-day translation, are there not reasonably adequate capabilities in the present-day language, if the translator only knew how to handle it? Is there not in these days, as well as in the Elizabethan age, “a vocabulary as full and rich as can be desired, without need of using words that would seem unnatural or affected”? “There is also the vocabulary of the local dialects which still survive—a vocabulary of amazing range and minute detail, especially for expressing ideas connected with country life.” There is; but how shall the translator dare to patch his page with this very special vocabulary? “A skilful use of these two

elements,” Dr. Rouse thinks, “might produce a living style, very different from the archaism of Morris or the affected medley called ‘Wardour Street English.’” Yes, but “great skill would be necessary, and no one could use such a style with effect who had not made it natural to himself by complete familiarity.” But, more than this, does not Dr. Rouse forget his jury? The translator would require not only to “make it natural to himself,” but to give preliminary instruction to his public—perhaps even to the scholar—so as to “make it natural” also to his readers and judges. Here, we take it, the ground is suspicious, if not positively unsound and dangerous; and we cannot but think that Arnold is far safer when he advises the translator “not to trouble himself with constructing a special vocabulary for his use in translation” (page 37). “A fine style, noble yet simple, is not impossible to hope for.” We will add that it is fairly attainable on Arnold's principle, and almost certainly unattainable by the amalgam recommended by Dr. Rouse, however skillful the operator.

“The real difficulty is the verse.” Dr. Rouse reviews the experiments in various metres, again indulgently; and it is well to err on the side of indulgence. “Not a Chaucer, or a Dryden, or a Chapman could do away with the check of the rimed couplet”; nor yet, we will add, with the check of the Omar Kháyyám verse, or even of the Spenserian stanza. “Not even a Milton could make blank verse go more with speed”: yet, it may be, a lesser poet than Milton might bring a more nimble spirit to the effort. We certainly do not regard blank verse as a very hopeful medium, but the instrument has not yet been tried to its capacity. There is nothing to say for “the gabble-metres,” properly or improperly treated, rimed or unrimed: Homer never “gabbles.” “There remains the question whether a new metre can be devised; or, in particular, whether it is possible to devise an English hexameter.” A recent writer in a leading literary review, if we mistake not, decided offhand against the hexameter; and undoubtedly, as Dr. Rouse says, without much exaggeration, “the usual type, which is extreme in ‘Evangeline,’ is intolerably monotonous, besides being a gabble.” Still, “Matthew Arnold quotes one or two excellent hexameters, and his own essay is not unpleasing to the ear.” We disagree entirely on this estimate of Arnold's “own essay”: his hexameters, without straining them beyond their professed and reiterated purpose, seem to us perfectly incredible if they did not in sober fact exist. But the admission that one or two excellent hexameters are to be found suggests that more might be devised, if the writer would but take the necessary trouble. The technical difficulties are varied and serious; Dr. Rouse does not deal with them at all exhaustively: yet we must hold that no other English verse has yet been devised that exhibits anything like equal capacity for Homeric translation. But then the difficulties must be seriously grappled with. Dr. Rouse, however, seems to anticipate the most hopeful results “in the metre which Mr. Worsley has devised” and exemplified (in the preface to Books XIII. to XXIV. of his “Odyssey”). We do not believe that this metre will serve: it creates an unfamiliar and hesitating rhythm, and it does not obviate the most trying obstacles. It might make an interesting poem, like Mr. Worsley's or Mr. Way's “Odyssey,” but that poem would not be Homeric in spirit. It is the development of the hexameter that alone can effect the nearest approach to an English Homer.

### ILLUSTRATIVE HISTORICAL DOCUMENTS.

*Select Documents illustrating Mediæval and Modern History.*

By Emil Reich, Doctor Juris. (21s. net. King.)

Dr. Reich's notion of what he calls “General History,” so far as we can understand it, does not seem to be any novel discovery, although his insistence upon it appears to convey some such claim. Everybody, we take it, recognizes that there are large, general, and widely influential facts, and also smaller, particular, and narrowly operative facts; and probably no historical student would disagree with his statement that “general facts are not the arithmetical sum of particular facts,” but “are, to continue the mathematical phraseology, their integration.” However, we shall, no doubt, have further light on the matter when his promised “General History” is published—a concrete exemplification of his theory. It is enough for the present that his object is “to state and account for those general facts” that, in his opinion, are “the dominating powers in all European history.” We will not furnish him the luxury of either “scolding” or “censure” for his choice; for there is no definite mark of a “principal” document, and there is not one of his series,



filling more than seven hundred pages, that we should have wished him to leave out, and it might appear ungrateful to grumble for more than he has given. His plan is this:

Given that general facts do in reality govern particular events, it was indispensable to observe in the present work the order from general to less general facts. The most general facts are the International Treaties; almost equal to them in their wide effect on the generality of white humanity is the Catholic Church, and accordingly much space has been devoted to the institutions, events, and personalities of the Catholic Church, which, it must be repeated, is still one of the world's great factors, and which, up to the first half of the sixteenth century, was of all the factors of European history the most decisive. Next to them rank, in point of general effect in the Middle Ages, the Holy Roman Empire and the Byzantine Empire, together with some institutions which were in mediæval times much more uniform than European institutions are at the present day. After these very general influences in mediæval Europe, the Italian City-states must be considered as among the most generally influential polities in the Middle Ages. After these follow the various great countries of Europe and America, the principal documents of which are likewise selected according to their degree of greater or lesser general influence on history.

Such is the plan. There are nineteen divisions or parts. Under the "International Treaties" division there are ten documents, dating from 1648 (the Treaty of Westphalia) to 1815 (Second Peace of Paris); under "Church History," more than forty, from 313 (Edict of Milan) to 1870 (Papal Infallibility Bull); under "General Institutions of the Middle Ages," a dozen, from 877 to 1312; under "Holy Roman Empire," ten; under "France," nearly thirty. England is represented by Domesday Book, Magna Carta, the Petition of Right, the Navigation Act (1651), the Habeas Corpus Act, the Bill of Rights, and the Act of Settlement—nothing later than 1700. America has six documents, and all the other countries have fewer: Holland, Hungary, Switzerland, Turkey, and Sweden-and-Russia being represented by one each. There is an appendix on "Calvin's Hierarchy and Doctrine of Predestination." In many cases, only excerpts—not the full documents—are presented; and we do not know why such sections of the Rule of St. Benedict as are given are rearranged and not set down consecutively. The very brief introductions, with a note of the source of the text and a selection of illustrative works, prefixed to each of the documents or excerpts, furnish very useful guidance.

The documents are left in their original languages—Latin, Greek, English, French, German, and Dutch; and the German and Dutch are translated, for the most part very well, though a closer adherence to the originals might have been effected in not a few cases, and in one place (the end of Section I. of "The Union of Utrecht," page 607) we lack translation of five lines of the Dutch—probably owing to an obvious and not unnatural cause of oversight. The Greek—a very limited quantity indeed—should also have been translated: technical Greek of the tenth century is more difficult than Dutch. In any case, the important thing is to have the actual document: no translation can supersede that. The volume will be very welcome to all students of history, so far as it goes. It will be a very useful companion to Dr. Ernest F. Henderson's "Select Historical Documents of the Middle Ages" in Bohn's Antiquarian Library (Bell). The two volumes may be said to be mutually complementary, so little have they in common, though both profess substantially the same purpose; that is, of course, so far as the Middle Ages are concerned. Dr. Henderson, by the way, translates all his documents—a very valuable aid, if only for suggestion—and leaves his readers to seek the originals elsewhere.

#### CO-ORDINATION OF MATHEMATICAL TEACHING.

*Arithmetic and Geometry: a Scheme for Teachers and Plea for Educational Reform.* By C. T. Millis, M.I.Mech.E. (9d. net. Educational Supply Association.)

In the capacity of Educational Principal of the Borough Polytechnic Institute, Mr. Millis has had excellent opportunities for noting many of the points in which reform is needed in the education given both in our elementary and continuation schools and in our technical institutes. We have in the volume now before us a serious attempt to remedy what experience has shown to the author to be one of the deep-seated causes of much of the difficulty encountered by institutions whose duty it is to provide for the more advanced instruction of elementary students about to train for an industrial or commercial career. He ascribes a great deal of the trouble to the want of connection in any given school between the teaching of one subject and that of others of

kindred nature, and, again, to the absence of that co-operation by which the study of a particular subject might be made as far as possible a continuous course in the schools of various grades through which an individual student is likely to pass. With much clearness, Mr. Millis points out the great advantage to be derived from the intimate association of the study of arithmetic, geometry, and mensuration, propounding a scheme of combined instruction, which is well worth the careful consideration of the teachers in elementary and continuation schools. The scheme set forth here and the preliminary "plea for reform" are already familiar to those who attended in June, 1904, the Guildford meeting of teachers, at which, by the invitation of the Surrey County Council, Mr. Millis read a paper. An outline of the scheme was also communicated by the author to an audience of fellow professionals at the London County Council Conference of Teachers. From the schedules given in the volume under review, it is not quite clear how far Mr. Millis intends position on the same horizontal line to be understood as implying concurrence of time, but it would appear probable from the tables that in the earlier stages the scheme provides for the *consecutive* teaching of allied portions of geometry and arithmetic rather than for absolutely concurrent instruction in the two subjects. It is in the more advanced work that *simultaneous* courses, each bearing on and assisting the other, are specially in evidence. We observe, too, that it is these later courses which the author has so thoroughly tested, with satisfactory results. The suggested instruction in each individual branch forms an interesting syllabus, and one of practical utility. The proposed scheme of study in its entirety constitutes the first two of the three tables in the volume. A third schedule exhibits in parallel columns the Scheme B Arithmetic as at present used in our elementary schools and the combined course of arithmetic and geometry which the author recommends. It is at once evident on comparison that the latter embraces a far wider field than the former, and that, as a preliminary training for the students whose requirements it considers, its efficiency is greater, provided (and this is essential) that the time at the disposal of teacher and pupil is sufficient to admit of equal thoroughness in either.

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## GENERAL NOTICES.

## MATHEMATICS.

*Elementary Algebra.* By W. M. Baker, M.A., and A. A. Bourne, M.A. (With or without Answers, 4s. 6d. Or, in two Parts: Part I., with Answers, 3s.; without, 2s. 6d. Part II., with or without Answers, 2s. 6d. George Bell.)

A valuable class-book, embracing a comprehensive course in elementary algebra. The explanations are in general satisfactory, and are never dry. The beginner learns to compare algebra with arithmetic at every step. Graphs and their uses occupy an important position, and form an interesting feature of the text. The work consists of two Parts, of which the earlier deals with the subject as far as the theory of quadratics, whilst the Second Part includes amongst its later chapters sections devoted to the Exponential Series, to Interest and Annuities, and to Indeterminate Coefficients, with their application to Partial Fractions. A special teachers' edition of each part has been published, and will certainly prove attractive, owing to the convenience for use in class which has been secured by the novel arrangement of corresponding sets of questions and answers.

*Grammar School Algebra.* By David Eugene Smith, Ph.D. (2s. 6d. Ginn.)

Both for the lad who is to learn algebra merely because its methods will help him to solve practical problems and for the young student about to pursue the study of algebraic science for its own sake Dr. Smith's "Grammar School Algebra" will be an excellent guide. It teaches the first principles of the science simply and effectively, and gives a valuable minimum of theory combined with material for practice which is not only much in itself, but is also suggestive of the way to add to its quantity. The matter is arranged so as to provide for about a year's work late in the school course, the entire contents to be employed in the year, unless arithmetic is taught simultaneously, in which case the first two out of the three chapters will probably be sufficient for the twelvemonth's work.

*Heuristic Geometry.* By the Rev. George Harris, M.A. T.C.D. (9d. Meiklejohn & Holden.)

A series of simple exercises affording a useful introduction to the study of practical geometry. The value of the material composing the little book has been sufficiently proved by the success attending its use at Christ's Hospital during a period of five years. The volume is for the scholar rather than the teacher, and the author encourages independent thought and original discovery by proposing questions to which the average pupil may in a large proportion of instances himself furnish the solutions.

*A Handy Book of Logarithms.* (2s. Blackie.)

Messrs. Blackie & Son have issued a varied, compact, and carefully compiled volume. The tables of which the main portion consists are preceded by a brief description of their constitution and a helpful summary of the rules governing their use. A number of the tables are calculated to six places of decimals; the degree of accuracy adopted is, however, not always equally close. The volume also contains, in the form of a useful appendix, many leading problems in the practical geometry of the straight line, circle, and conic sections. The methods of solution are indicated, but the demonstrations are left to the reader. The mensuration of plane areas and of the surfaces and volumes of various well known solid figures is also considered. Attention should be drawn to the paragraph on page 9 in which the student is told how to find the sine or other element to odd minutes. The final line of this paragraph is either hopelessly involved or else inaccurate. Also, by a curious misprint in the third line of page 8, natural logarithms are styled Neperian. Apart from such isolated instances of error, the book appears to be thoroughly reliable, and it has the uncommon feature of furnishing six-place logarithms.

## ENGLISH LITERATURE.

*The Diary of Samuel Pepys.* Globe Edition. Edited by G. Gregory Smith. (3s. 6d. Macmillan.)

A most welcome addition to the series. Mr. Gregory Smith has bestowed much sympathetic care upon the biographical and literary introduction and upon the incidental explanation of numerous references, at the same time reproducing many of Lord Braybrooke's notes. The text follows Lord Braybrooke's fourth edition of 1854, and the reprint, "the fifth," in the same year, with two important modifications: (1) the incorporation of the corrections made by the late Mr. Mynors Bright in his revised text of 1875-79 (with permission of Messrs. George Bell & Son), and (2) the reduction of the few antique spellings to modern usage. "Intense curiosity and the sheer joy of living, these are the main elements of Pepys's character. The 'Diary' may be said to be a commentary on these; and they explain the 'Diary.'" "Speculation on his character and on the meaning of the 'Diary' will be most profitable when it leads us to see how absolutely Pepys reflects the spirit of the England of the Restoration." The type is small, but very clear; the page is divided into two columns; and, happily, there is a very full index. There are 832 pages in the volume. It is most ably edited and

admirably produced, while the price is amazingly low, even in these days of cheap literature.

*The Poetical Works of Percy Bysshe Shelley.* Oxford Edition.

Edited by Thomas Hutchinson, M.A. (Frowde.)

A handsome and tasteful volume containing all Shelley's ascertained poems and fragments of verse that have hitherto appeared in print, and "including materials never before printed in any edition of the poems." Mr. Hutchinson has worked "as far as possible on the principle of recognizing the *editio princeps* as the primary textual authority"—a principle, however, that needs to be carried out with great discretion, especially in the case of an author that was so careless of the minor and mechanical matters of literary craftsmanship as Shelley was. However, "the present text is the result of a fresh collation of the early editions; and in every material instance of departure from the wording of those originals the rejected reading has been subjoined in a footnote." The reader is thus put in possession of an adequate critical apparatus. The punctuation and the spelling occasion not a little difficulty, especially the punctuation. Mr. Hutchinson has most diligently laboured to present a complete text of every scrap of Shelley's work, and he has added textual notes of much value. The volume runs to 935 pages, and yet it is quite handy. The paper and the type are excellent, and the binding is substantial and flexible. Prefixed is a portrait of Shelley from a painting made at Rome in 1819 by Miss Curran. This will for many a day be the standard and popular edition.

Cambridge English Classics.—*The Poems of Abraham Cowley.* The Text edited by A. R. Waller, M.A. (4s. 6d. net. Cambridge University Press.)

The poems included in the present volume are: Miscellanies, "The Mistress," Pindarique Odes, "Davideis," and Verses written on several occasions. The text follows the first collected edition of Cowley's works, the folio of 1668, the year after his death. At the end of the book are placed the variations Mr. Waller has noted in a collation of the 1668 text with the 1656 folio, the 1663 volume, and the 1647 edition of "The Mistress." Mr. Waller has dealt with the text in the judiciously conservative way of his previous work in the series. All earnest students of English literature will be very grateful for this convenient and agreeable volume. A companion volume is in the press: it will contain Cowley's prose, his fugitive juvenile writings, and his English plays, and will thus complete his English writings.

## SCRIPTURE.

*The Century Bible.* (1) *I. and II. Samuel.* Edited by the Rev. A. R. S. Kennedy, M.A., D.D., Professor of Hebrew and Semitic Languages in the University of Edinburgh. (2) *Job.* Edited by A. S. Peake, M.A., Professor of Biblical Exegesis in the University of Manchester. (2s. 6d. net each. Jack.)

(1) In view of the paramount importance of Samuel for the study of early Hebrew religion and for the historical development of religious thought, it is fortunate that these books have fallen to be treated by so sound and cautious a scholar as Dr. Kennedy. The introduction is exceptionally full, frank, and instructive. It deals with the place of Samuel in the Canon, its arrangement and contents, characteristics of the older historical literature, sources (with distinctive positions of the editor's own), the Deuteronomic edition and post-Deuteronomic redaction and later additions, the text of Samuel and the value of the Greek version, the historical value and the chronology of Samuel—altogether a very careful and luminous conspectus of the results of modern scholarship. The notes are judicious and tolerably full. There are two maps—Palestine in the eleventh century and modern Jerusalem. (2) Mr. Peake devotes his able introduction to an analysis of the problems of the book, a critical examination of the contents, the questions arising on the text (regarding adversely Bickell's theory and Dillon's presentation of it in English), the date (about 400 B.C.), the art of the book and the author of it, with a selection of the literature for students. The notes are full and very instructive. Both volumes are conspicuously able and opportune contributions to the popular understanding of the critical investigations of their subjects, and throw floods of light upon the texts. They are extremely handy and delightfully got up.

*Handbook to the Pentateuch, Vol. II.* By the Rev. H. C. Batterbury, B.A. (2s. net. Rivingtons.)

Mr. Batterbury's experience as Diocesan Inspector of Schools has stood him in good stead in the expository footnotes and the lessons appended to the various chapters. To some extent the text is rearranged so as to bring kindred matters into connexion. The brief marginal notes will be helpful both for explanation and for reference. The work is thoroughly well done, and cannot fail to be very instructive, whether to examination candidates or to general readers. The maps (three), diagrams (five), illustrations (three), and ground plan of Tabernacle and court, all add to the practical usefulness of the volume.

*The Twentieth Century New Testament.* (2s. 6d. net. Horace Marshall.)

A revised edition, so thoroughly revised as to be "virtually a new translation." The translators—a committee of anonymous scholars—have rendered the Greek independently and directly from Westcott and



Hort's text into current idiomatic English. At not a few points one regrets the absence of the familiar version, but undoubtedly the general result is to bring home the meaning of the text to the modern mind with freshness and force. The work will be a valuable companion to the Authorized and Revised Versions.

## BIOGRAPHY.

*Memoir of Rosamond Davenport-Hill.* By Ethel E. Metcalfe. (2s. 6d. net. Longmans.)

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Little Biographies.—*Johann Wolfgang Goethe.* By H. G. Atkins. (3s. 6d. Methuen.)

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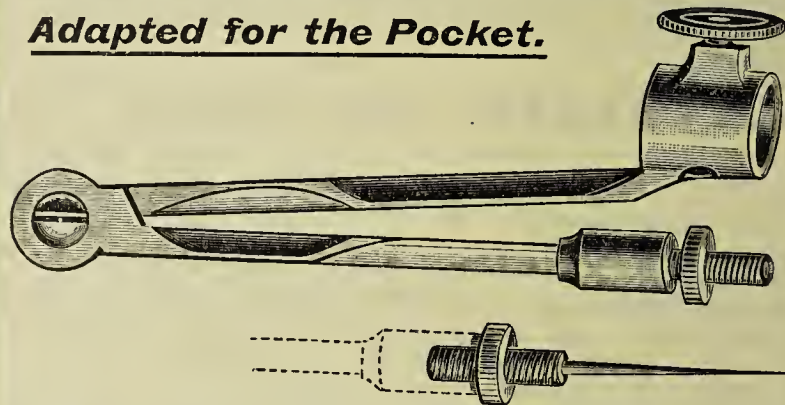
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**MATHEMATICS.**

10596. (Professor DÉPREZ.) — Soient  $a, b, c$  les côtés d'un triangle sphérique ABC;  $r$  le rayon du cercle inscrit;  $x, y, z$  les distances d'un point de ce cercle aux côtés de ABC. Démontrer la formule

$$\cos \frac{1}{2}A (\sin y \sin z)^{\frac{1}{2}} + \dots = 2 \tan r \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C.$$

*Solution by E. W. MIDDLEMAST.*

Taking OA, OB, OC as oblique axes, let  $\lambda, \mu, \nu$  be the direction cosines of the point P. Let  $n$  have its usual meaning for the triangle ABC and let  $n_1, n_2, n_3$  have similar meanings for BPC, CPA, APB, so that  $2n_1 = \sin x \sin a, \dots$ . Now, projecting OP on the perpendicular to the plane OBC,  $\sin x = \lambda \sin AD$ , where AD is perpendicular to BC; whence  $n_1 = n\lambda, \dots$ . Hence

$$n^2 = \sum n_1^2 + 2 \sum n_2 n_3 \cos a \dots \dots \dots (1).$$

If  $\lambda', \mu', \nu'$  be the direction cosines of I the in-centre,  $\lambda' = (\sin a \sin r)/2n, \dots$ . Hence

$$\cos r = \cos IP = \sum \lambda \lambda' + \sum (\mu \nu' + \mu' \nu) \cos a = \sum \lambda (\lambda' + \mu' \cos b + \nu' \cos c) = (\sin r/2n^2) \sum n_1 [\sin a + \sin (b+c)] = (\sin r/n^2) \sum n_1 \sin s \cos (s-a),$$

and, since  $\tan r = n/\sin s,$   
 $\sum n_1 \cos (s-a) = n \dots \dots \dots (2).$

From (1) and (2) it follows that

$$\sum n_1^2 \sin^2 (s-a) - 2 \sum n_2 n_3 [\cos a - \cos (s-a) \cos (s-b)] = 0$$

or  $\sum n_1^2 \sin^2 (s-a) - 2 \sum n_2 n_3 \sin (s-b) \sin (s-c) = 0$

or  $\sum \sqrt{[n_1 \sin (s-a)]} = 0;$

therefore  $-n_1 = \sqrt{[n_1 n_2 \frac{\sin (s-b)}{\sin (s-a)}]} + \sqrt{[n_3 n_1 \frac{\sin (s-c)}{\sin (s-a)}]}, \dots;$

therefore

$$-n = -\sum n_1 \cos (s-a) = \sum \sqrt{(n_2 n_3)} \left\{ \sqrt{\left[ \frac{\sin (s-b)}{\sin (s-c)} \right]} \cos (s-c) + \sqrt{\left[ \frac{\sin (s-c)}{\sin (s-b)} \right]} \cos (s-b) \right\}$$

$$= \sum \sqrt{(n_2 n_3)} \frac{\sin a}{\sqrt{[\sin (s-b) \sin (s-c)]}} = \sum \frac{\sqrt{(n_2 n_3)} \sin a}{\sin \frac{1}{2}A \sqrt{(\sin b \sin c)}}$$

$$= \frac{1}{2} \sum \sqrt{(\sin y \sin z)} \frac{\sin a}{\sin \frac{1}{2}A} = \sum \sqrt{(\sin y \sin z)} \frac{\sin a}{\sin A} \cos \frac{1}{2}A$$

$$= \frac{n}{N} \sum \sqrt{(\sin y \sin z)} \cos \frac{1}{2}A;$$

therefore

$$\sum \sqrt{(\sin y \sin z)} \cos \frac{1}{2}A = -N = -2 \tan r \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C$$

(McClelland and Preston, chap. VI., Section 78).

The signs of the radicals have to be determined with reference to the three arcs of the in-circle separated by the three points of contact with the sides. For the arc which lies nearest the vertex A the true statement will be

$$-\sqrt{(\sin y \sin z)} \cos \frac{1}{2}A + \sqrt{(\sin z \sin x)} \cos \frac{1}{2}B + \sqrt{(\sin x \sin y)} \cos \frac{1}{2}C = 2 \tan r \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C.$$

*Note on Curvature.*

*By A. W. T.*

If  $(x, fx)$  be a point on  $y = f(x),$

$$(X-x)^2 + (Y-fx)^2 = \lambda [(Y-fx) - f'x(X-x)]$$

represents a circle touching the curve at  $(x, fx);$  for it passes through the two consecutive points in which the tangent at  $(x, fx)$  cuts the point circle  $(X-x)^2 + (Y-fx)^2 = 0.$

If it pass through a consecutive point  $x+h, f(x+h),$

$$h^2 + (hf'x + \dots)^2 = \lambda \left( hf'x + \frac{h^2}{2!} f''x + \dots - hf'x \right);$$

therefore  $\lambda = 2 \{ [1 + (f'x)^2]/f''x \}$  in the limit. Hence the circle of curvature is determined. Similarly, by taking

$$(X-x)^2 - 2h(X-x)(Y-fx) + (Y-fx)^2 = \lambda [(Y-fx) - f'x(X-x)]$$

to be one of a series of rectangular hyperbolas having one-point contact with the curve, we can find the rectangular hyperbola of closest contact. Similarly with the other conics.

15828. (Communicated by K. DEVA RAO, B.A.)—A square board is divided into 16 equal squares by vertical and horizontal lines. In how many ways can 4 of these squares be painted white, 4 black, 4 red, and 4 green, without repeating the same colour in the same vertical or horizontal row?

[This familiar question is solved in a variety of ways. But the answer (576) may not be right.]

*Solution by D. BIDDLE.*

That 576 is the correct answer seems clear from the following considerations:—The colours of the top row can be arranged in  $4!,$  or 24,

different ways. Let the colours in any one of these 24 arrangements be designated by 1, 2, 3, 4 in order. Then the initial colours of the succeeding rows will be 2, 3, 4 variously arranged in  $3!,$  or 6, different ways. For any one such arrangement there are four ways of filling in the remaining squares, as represented below:—

|         |         |         |         |
|---------|---------|---------|---------|
| (i.)    | (ii.)   | (iii.)  | (iv.)   |
| 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 |
| 2 3 4 1 | 2 4 1 3 | 2 1 4 3 | 2 1 4 3 |
| 3 4 1 2 | 3 1 4 2 | 3 4 1 2 | 3 4 2 1 |
| 4 1 2 3 | 4 3 2 1 | 4 3 2 1 | 4 3 1 2 |

As we have seen, the second, third, and fourth rows can be transposed in 6 different ways, each as a whole. Therefore the total number of ways in which the colours can be arranged, according to the conditions, is

$$24 \cdot 6 \cdot 4 = 576.$$

9019. (ASPARAGUS.)—In a given ellipse is inscribed a triangle ABC of maximum perimeter ( $2s$ ): prove that, if  $\rho_1, \rho_2, \rho_3$  be the radii of curvature of the ellipse at A, B, C,

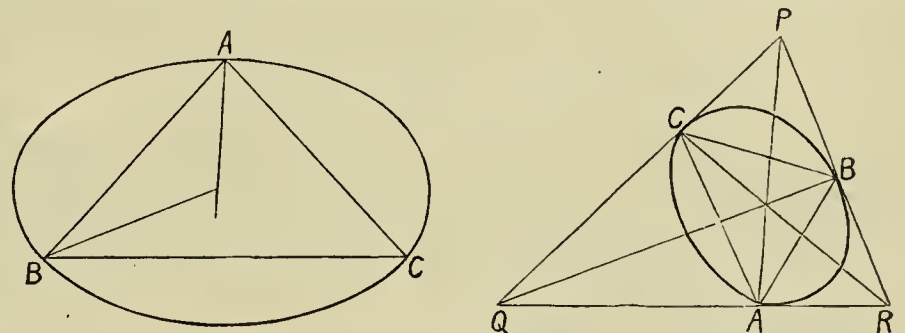
$$\rho_1 \cos^3 \frac{1}{2}A = \rho_2 \cos^3 \frac{1}{2}B = \rho_3 \cos^3 \frac{1}{2}C = s, \quad \rho_1 \rho_2 \rho_3 = 8s^3,$$

$r$  being the radius of the circle inscribed in the triangle ABC.

[For  $s$  in the last line but one read  $2s\pi \sin \frac{1}{2}A$  (*vide* Solutions).—ED.]

*Solutions (I.) by W. C. FLETCHER; (II.) by F. P. ANDERSEN and SARADAKANTA GANGULI, M.A.*

(I.) If the perimeter of ABC is a maximum, an ellipse whose foci are B, C and which passes through A will touch the given ellipse at A; *i.e.*, AB, AC are equally inclined to the normal at A; therefore the normals



at A, B, C are concurrent, and, if the tangents at A, B, C meet in P, Q, R, the latter are the escribed centres, or ABC is the pedal triangle of PQR.

Using trilinear co-ordinates and PQR as triangle of reference, the equation to the ellipse is

$$\alpha^2 \cos^2 P + \beta^2 \cos^2 Q + \gamma^2 \cos^2 R - 2\beta\gamma \cos Q \cos R - \dots - \dots = 0.$$

Transform this to Cartesian co-ordinates referred to AR, AP as axes by writing  $y$  for  $\alpha,$

$$h \cos R - x \sin R - y \cos R \text{ for } \beta, \text{ and } h \cos Q + x \sin Q - y \cos Q \text{ for } \gamma,$$

and it reduces to the form  $ux^2 + vxy + wy^2 - \lambda y = 0,$

where  $u \equiv \sin^2(Q+R), \quad \lambda = 4h \cos P \cos Q \cos R.$

But  $\rho,$  the radius of curvature at A, is  $\lambda/2u = 2h \cos P \cos Q \cos R/\sin^2 P,$  where  $h = AP;$  therefore

$$\rho \sin^3 P = 2h \sin P \cos P \cos Q \cos R = \frac{1}{2}D \sin 2P \sin 2Q \sin 2R,$$

where D is the diameter of the circle PQR. But the diameter of the circle ABC =  $\frac{1}{2}D$  and  $A = \pi - 2P, \dots;$  therefore

$$\rho \cos^3 \frac{1}{2}A = R \sin A \sin B \sin C;$$

therefore  $\rho_1 \cos^3 \frac{1}{2}A = \rho_2 \cos^3 \frac{1}{2}B = \rho_3 \cos^3 \frac{1}{2}C = R \sin A \sin B \sin C.$

This, however, is not equal to  $s;$  as stated.

That the problem as stated is incorrect may be seen by taking the case of a line ellipse. In this case the triangle of maximum perimeter is a line, not a point, triangle; therefore  $s$  does not vanish. But, as  $\rho_1$  may be the radius of curvature at the end of the line,  $\rho$  may vanish; so agreeing with the result  $R \sin A \sin B \sin C,$  but not agreeing with the stated result  $s$  or  $4R \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C.$

A simple solution of the correct part of the problem is as follows:—The centre of the ellipse is the intersection of the lines through P, Q, R bisecting BC, CA, AB respectively; *i.e.*, the symmedian point whose co-ordinates are  $\sin P : \sin Q : \sin R.$  But, using the conventional lettering of geometrical conics,  $\rho = CD^2/PF = a^2b^2/PF^3;$  therefore

$$\rho_1 : \rho_2 : \rho_3 = 1/\sin^3 P : 1/\sin^3 Q : 1/\sin^3 R = 1/\cos^3 \frac{1}{2}A : 1/\cos^3 \frac{1}{2}B : 1/\cos^3 \frac{1}{2}C.$$

Lastly,  $\rho_1 \rho_2 \rho_3 = R^3 8 \sin^3 \frac{1}{2}A 8 \sin^3 \frac{1}{2}B 8 \sin^3 \frac{1}{2}C = 8r^3.$

[Rest in Reprint.]

15792. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Sum to  $n$  terms the series  $1 + 24 + 162 + 640 + 1875 + \dots$

*Solutions (I.) by R. W. D. CHRISTIE; (II.) by JAMES BLAIRKIE, M.A., KELA DEVA RAO, B.A., and F. W. REEVES, B.A.*

(I.) The general term of the given series is  $\frac{1}{2} [n^4 (n+1)] = \frac{1}{2} (n^5 + n^4).$  Consequently the sum is  $\frac{1}{2} (\sum n^5 + \sum n^4).$  Now, using the method I gave in



Knowledge, 1889, and in Vol. XLIX., *Educational Times*, we have, starting from  $\Sigma n^3 = \left\{ \frac{1}{2} [n(n+1)] \right\}^2 = \frac{1}{4} (n^4 + 2n^3 + n^2)$ , the following rule:—Multiply by index of the highest power 4; then integrate and finally equate to unity when  $n$  is unity: thus  $\int (n^4 + 2n^3 + n^2)$  becomes  $\frac{1}{5}n^5 + \frac{1}{2}n^4 + \frac{1}{3}n^3 - \frac{1}{30}n = \Sigma n^4$ .

Again  $\int (n^5 + \frac{5}{2}n^4 + \frac{5}{3}n^3 - \frac{1}{6}n)$  (after multiplying by index 5) becomes  $\frac{1}{6}n^6 + \frac{1}{2}n^5 + \frac{5}{12}n^4 - \frac{1}{12}n^2 = \Sigma n^5$ .

Consequently the required sum is

$$\left[ \frac{1}{2} (\Sigma n^5 + \Sigma n^4) \right] = \frac{1}{12}n^6 + \frac{7}{60}n^5 + \frac{1}{24}n^4 + \frac{1}{6}n^3 - \frac{1}{24}n^2 - \frac{1}{60}n.$$

$$(II.) 1 + 24 + 162 + \dots = \frac{1}{2} (2 + 48 + 324 + \dots) \\ = \frac{1}{2} (1 + 16 + 81 + \dots) + \frac{1}{2} (1 + 32 + 243 + \dots) \\ = \frac{1}{2} (\Sigma n^4 + \Sigma n^5),$$

which is known.

15826. (J. A. C., M.A.) — Solve, in integers,  $x^2 + y^2 = 5z^2$ ; and generally solve  $x^2 + y^2 = Az^2$ , where  $A$  is not a square number.

Solutions (I.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.; (II.) by ALEXANDER HOLM, M.A.

(I.) Take the general case  $x^2 + y^2 = Az^2$  first. The possibility of this requires that  $\tau^2 - Av^2 = -1$  should be possible, and the actual solution  $(x, y, z)$  requires that  $\tau, v$  should be known. Take  $y', z'$  so that  $y'^2 - Az'^2 = x^2$ . The general solutions of this Diophantine are known to be of two kinds:

$$y' = \frac{1}{2}(t^2 + Au^2), \quad z' = tu, \quad x = \frac{1}{2}(t^2 - Au^2) \dots\dots\dots (i.); \\ y' = t^2 + Au^2, \quad z' = 2tu, \quad x = t^2 - Au^2 \dots\dots\dots (ii.).$$

Here in (i.)  $t, u$  must be both odd or both even integers; whilst in (ii.)  $t, u$  may be any integers. Also  $(y'^2 - Az'^2)(\tau^2 - Av^2) = -x^2$ , i.e.,

$$(\tau y' \mp Avz')^2 - A(\tau z' \mp vy')^2 = -x^2 = y^2 - Az^2,$$

whence  $y = \tau y' \mp Avz', z = \tau z' \mp vy'$  [ $y', z'$  as in (i.) or (ii.) above]. These are the general solutions [using both +, or both -, signs in above].

Example.—Take  $A = 5$ ; then  $2^2 - 5 \cdot 1^2 = -1$ ,  $\tau = 2, v = 1$ . The general solution is  $y = 2y' \mp 5z', z = y' \mp 2z'$ , where  $y', z', x$  are given by either set of

$$y' = \frac{1}{2}(t^2 + 5u^2), \quad z' = tu, \quad x = \frac{1}{2}(t^2 - 5u^2) \dots\dots\dots (i.); \\ y' = t^2 + 5u^2, \quad z' = 2tu, \quad x = t^2 - 5u^2 \dots\dots\dots (ii.),$$

$t, u$  being integers as above stated.

(II.) Assuming  $x$  and  $y$  to be prime to one another, the solution in integers of  $x^2 + y^2 = Az^2$  is possible only when  $A$  is a square or the sum of two squares. For,  $A$  being a factor of  $x^2 + y^2$ , the sum of two prime squares must be a square or the sum of two squares (Fermat). Taking  $A = a^2 + b^2$ , we have  $x^2 + y^2 = (a^2 + b^2)z^2$ ; therefore

$$a^2 - b^2z^2 = a^2z^2 - y^2 \quad \text{or} \quad (x + bz)(x - bz) = (az + y)(az - y);$$

therefore

$$(x + bz)/(az + y) = (az - y)/(x - bz) = \text{ratio of two integers} = m/n \text{ (say);}$$

therefore

$$nx - my + (-am + bn)z = 0 \quad \text{and} \quad mx + ny - (bm + an)z = 0;$$

therefore

$$x/[a(2mn) + b(m^2 - n^2)] = y/[b(2mn) - a(m^2 - n^2)] = z/(m^2 + n^2) = l \text{ (say).}$$

This might be deduced from the solution in integers of  $x'^2 + y'^2 = z^2$ . For then we would have

$$(a^2 + b^2)(x'^2 + y'^2) = (a^2 + b^2)z^2 \quad \text{or} \quad (ax' + by')^2 + (bx' - ay')^2 = (a^2 + b^2)z^2.$$

In the particular case  $a = 2, b = 1$ .

13986 & 15797. (13986.) (Professor NANSON.) — If  $t_1, t_2, \dots, t_m$  are the  $m$  tangents and  $n_1, n_2, \dots, n_{m+1}$  are the  $m + 1$  normals from any point to the curve  $y^m = ax^{m-1}$ , prove that  $m^m n_1 n_2 \dots n_{m+1} = at_1 t_2 \dots t_m$ .

(15797.) (Communicated by M. V. A. SASTRY, B.A.) — If  $n_1, n_2, n_3, n_4$  be the lengths of the four normals and  $t_1, t_2, t_3$  the lengths of the three tangents drawn from any point to a semi-cubical parabola  $ay^2 = x^3$ , then will  $27n_1 n_2 n_3 n_4 = at_1 t_2 t_3$ . [An elegant solution wanted.]

Solution by Professor NANSON.

The points of contact of the tangents and the feet of the normals from

$$\xi\eta \text{ to} \quad x^{m+n} = a^m y^n \dots\dots\dots (1)$$

$$\text{lie on the conics} \quad (m+n)y(x-\xi) - nx(y-\eta) = 0 \dots\dots\dots (2),$$

$$(m+n)y(y-\eta) + nx(x-\xi) = 0 \dots\dots\dots (3),$$

respectively. To find the lengths and directions of the tangents and normals, let  $\rho = z - \zeta$ , where  $z = x + iy, \zeta = \xi + i\eta$ . Thus (1), (2), (3) become

$$i^n x^{m+n} - a^m (\rho + \zeta - x)^n = 0 \dots\dots\dots (4),$$

$$mx^2 - [m(\rho + \xi) + (m+n)\zeta]x + (m+n)(\rho + \zeta)\xi = 0 \dots\dots\dots (5),$$

$$mz^2 - [2(m+n)\rho + m\xi + (m+n)\zeta]z + (m+n)(\rho + \zeta)(\rho + \xi) = 0 \dots\dots\dots (6).$$

By substituting for  $x$  in (4) the two roots of (5) or (6) and multiplying the results, we get an equation of the form  $P_s \rho^s + \dots + P_0 = 0$  for the determination of the  $\rho$  of a tangent or normal. Now, since (5), (6) are

identical when  $\rho = 0$ , it follows that  $P_0$  is the same in the two cases. To find  $P_s$  we take  $\rho$  infinite. The values of  $x/\rho$  given by (5) are then 1 and 0. Hence for the eliminant of (4), (5) we have

$$P_s \rho^s \equiv i^n \rho^{m+n} (-a^m \rho^n);$$

and therefore  $s = m + 2n, P_s = -a^m i^n$ . Again, when  $\rho$  is infinite the two values of  $x/\rho$  given by (6) are finite both ways and their product is  $1 + n/m$ . Hence for the eliminant of (4), (6), we have

$$P_s \rho^s = i^{2n} \rho^{2(m+n)} (1 + n/m)^{m+n};$$

and therefore  $s = 2m + 2n, P_s = i^{2n} (1 + n/m)^{m+n}$ . Hence, if  $T_\rho, N_\rho$  are the products of the  $m + 2n, 2m + 2n$  values of  $\rho$  given by the two eliminants,

$$T_\rho : N_\rho = (1 + n/m)^{m+n} : (-1)^{m-1} i^n a^m.$$

Now, amongst the values of  $\rho$  given by each eliminant are  $n$  values drawn to the origin because the conics (2), (3) each cut (1) in  $n$  points at the origin. Hence, if  $T, N$  are the products of the  $m + n$  tangents and the  $m + 2n$  normals drawn to ordinary points of (1), then

$$(1 + n/m)^{m+n} N = a^m T.$$

Also, if  $\tau, \nu$  are the sums of the angles made with the axis of  $y$  by the tangents and normals respectively, then  $\nu - \tau = (4k + m + n - 2) \frac{1}{2} \pi$ , where  $k$  is an integer. Taking  $m = 1$ , we get 13986; taking also  $n = 2$ , we get 15797; whilst  $n = 1$  gives well known results for the common parabola.

15832. (Professor NEUBERG.) — Le centre  $A$  d'une sphère de rayon constant  $R$  parcourt une droite donnée  $d$ . Trouver (1) l'enveloppe du plan polaire  $\pi$  d'un point fixe  $P$  par rapport à la sphère mobile  $A$ , (2) la surface engendrée par la circonférence suivant laquelle le plan  $\pi$  coupe la sphère.

Solution by S. C. BAGCHI, B.A., and C. M. ROSS.

The centre of the sphere has a single degree of freedom. Its variability in position will, therefore, be expressed by the presence of a single parameter in its equation. Take the origin  $O$  coincident with one point of  $d \equiv OZ$ . Now the polar plane will contain a variable parameter in the second degree. Therefore the envelope itself will be a surface of the second degree.

(1) The sphere is given by

$$x^2 + y^2 + z^2 - 2az - R^2 + a^2 = 0 \dots\dots\dots (b).$$

The polar plane with regard to  $P(\xi, \eta, \zeta)$  is

$$x\xi + y\eta + z\zeta - a(z + \zeta) + (a^2 - R^2) = 0 \dots\dots\dots (a).$$

The condition that (a) may have two equal roots in  $a$  is given by

$$(z + \zeta)^2 = 4(x\xi + y\eta + z\zeta - R^2),$$

which is the envelope required, a parabolic cylinder.

(2) The surface engendered by the circle is a tubular one which is obtained by eliminating  $a$  between (a) and (b). It has for its equation

$$(x^2 + y^2 + z^2 - x\xi - y\eta - z\zeta)^2 \\ = (\zeta - z) [2z(x\xi + y\eta + z\zeta - R^2) - (z + \zeta)(x^2 + y^2 + z^2 - R^2)].$$

A short way of finding the Recurring Decimal Fraction equal to a given Vulgar Fraction.

By W. D. ROSS.

Let  $m/n$  be a fraction such that  $n$  is not a multiple of 2 or of 5. Find, by inspection,  $x$  and  $y$  such that  $nx = 10y - 1$ . Then

$$m/n = mx/(10y) + mx/(100y^2) + mx/(1000y^3) + \dots \text{ ad inf.}$$

This gives a practical rule. The first figure of the decimal will be the highest integer less than  $mx/y$ . Multiply the remainder by 10 and add the first figure, and divide the sum by  $y$ . The highest integer less than this quotient will be the second figure of the decimal fraction, and so on. Divide always by  $y$ , e.g.,  $\frac{3}{19}$ . Here  $m = 3, n = 19, x = 1, y = 2$ . Hence  $\frac{3}{19} = .157894736842105263$ . Each figure is got by dividing by 2, not as in the ordinary method by dividing by 19.

We can, with equal ease, start from the right-hand figure. This figure is  $mx$ , or, if  $mx$  is greater than 10, it will be the unit figure of  $mx$ . Divide the remaining part (if any) of  $mx$  by 10, add in the right-hand figure, and multiply the sum by 10. The product, or the unit figure of the product, will be the second figure of the decimal (counting from the right-hand), and so on. Multiply always by  $y$ , e.g.,  $\frac{3}{7}$ . Here  $m = 3, n = 7, x = 7, y = 5$ . Hence  $\frac{3}{7} = .428571$ .

These processes are much simpler in practice than they look when described abstractly. When the numbers are large the method saves much labour, especially when the denominator ends in 1 or in 9. Such a fraction as  $\frac{153}{99}$  can be written with ease to as many places as are wanted:  $x = 1, y = 9$ —

$$\frac{153}{99} = .1460674157\dots$$

or, from the end,

$$\dots 2696629213483.$$

15780. (D. BIDDLE.) — PQ is a chord of a given circle; LOM is an intercept of the ellipse which, having P, Q as its foci, passes through O,



the centre of the circle, L, M being on the circumference. (1) Find the position of PQ when the equal triangles PQL, PQM are maxima; and their area, as such. (2) Consider similarly the cases in which the ellipse cuts the circumference in S, T as well, on the opposite side of P, Q, and in which (for the limited range) PQS, PQT exceed in area PQL, PQM, the corresponding triangles previously considered.

*Solution by L. ISSERLIS.*

(1) Draw ONC at right angles to PQ, LM.

$a$  = radius of circle,  
 $b$  = OC.

Then  $PC^2 = a^2 - b^2$ ,  
 $LN^2/a^2 + CN^2/b^2 = 1$ ,  
and  $LN^2/a^2 + ON^2/a^2 = 1$ ;  
therefore

$$\begin{aligned} CN &= (b/a) ON \\ &= (b/a)(b - CN) \\ &= b^2/(a + b); \end{aligned}$$

therefore  
(area of  $\Delta PQL$ )<sup>2</sup>  
=  $PC^2 \cdot CN^2 = [(a - b)/(a + b)] b^4$   
= maximum.

Therefore, differentiating logarithmically,  $1/(a - b) + 1/(a + b) = 4/b$ ;  
therefore  $2b^2 + ab - 2a^2 = 0$ ; therefore  $b = \frac{1}{2}(\sqrt{17} - 1)a$  when the area is a maximum, and area =  $\sqrt{[(a - b)/(a + b)] b^2}$ .

$$\begin{aligned} (2) CN &= (b/a) ON \\ &= (b/a)(b + CN) \\ &= b^2/(a - b); \end{aligned}$$

therefore  
 $PC^2 \cdot CN^2 = [(a + b)/(a - b)] b^4$ ,  
giving similarly

$$\begin{aligned} 2b^2 - ab - 2a^2 &= 0 \\ \text{or } b &= \frac{1}{2}(\sqrt{17} + 1)a, \end{aligned}$$

and area =  $\sqrt{[(a + b)/(a - b)] b^2}$ .

15803. (Professor NEUBERG.)—ABCD étant un rectangle donné, trouver sur le côté AD un point X tel que les volumes engendrés par le triangle ABX et le trapèze BCDX tournant autour de la droite BX aient un rapport donné  $k$ .

*Solution by A. M. NESBITT, M.A.*

The volumes of the solids generated respectively by the revolutions of the triangles ABX, BCY, XDY about BY are proportional to the cubes of AX, BC, XD.

Hence, if  $AX = x$ ,  $AD = a$ ,

we have at once

$$x^3 = k[a^3 - (a - x)^3],$$

yielding the quadratic

$$x^2(1 - k) + 3kax = 3a^2k.$$

The positive root gives the value sought for  $x$ .

15811. (R. CHARTRES.)—From a variable point within a triangle perpendiculars are drawn to the sides. Find (1) the maximum value. (2) the mean value of the product of the perpendiculars, and (3) the mean value of the area of the triangle formed by joining the feet of the perpendiculars. [Elementary proof.]

*Solution by the PROPOSER.*

Let the triangles BPC, CPA, APB be denoted by  $\alpha, \beta, \gamma$ .

(1) Since  $\Delta = \alpha + \beta + \gamma$ ,

therefore the maximum value of  $(\alpha\beta\gamma)$  is when  $\alpha = \beta = \gamma$  or the maximum value of  $xyz$  is at the centroid.

(2)  $\Delta^3 = (\alpha + \beta + \gamma)^3$ , having ten terms; therefore

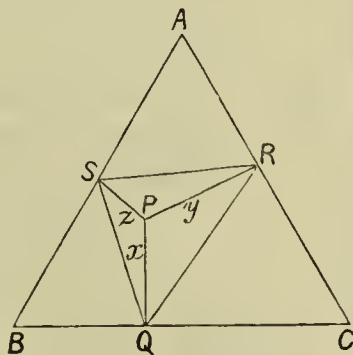
$$M(\alpha\beta\gamma) = \frac{1}{60}\Delta^3;$$

therefore

$$M(xyz) = \frac{1}{60}\Delta^3 \cdot \frac{1}{8}abc = \frac{2\Delta^3}{15abc}.$$

(3)  $\Delta^2 = (\alpha + \beta + \gamma)^2$ ; therefore

$$M(\beta\gamma) = \frac{1}{12}\Delta^2;$$



therefore  $M(RPS) = \frac{1}{2}(\sin A) Myz = \frac{1}{12}(\Delta \sin^2 A)$ ,  
or  $M(QRS) = \frac{1}{12}\Delta \cdot \Sigma(\sin^2 A)$ .

QUESTIONS FOR SOLUTION.

15841. *Correction.*—In line three from the bottom, "their speed" should read "Jack's speed."—PROPOSER.

15858. (W. J. DOBBS, M.A.)—A piece of lattice work is formed of laths of equal breadth jointed together in the usual manner. When it is pulled out so that the laths cross at right angles it is 2 ft. high and extends horizontally for a length of 10 ft. Determine the height of the lattice when its length is 6 ft., and, to the nearest degree, the angle at which the laths then cross. If it is 2 ft. long when quite shut up, show that it cannot be pulled out to a greater length than 14 ft., and, if there are ten joints on each complete lath, including one at each end, show that the breadth of each lath is rather more than 1 in., and that the total length of the laths is about 127 ft.

15859. (A. E. MITCHELL.)—When a coin is thrown at random a number of times in succession it is well known that "runs" or sequences of heads and tails of various lengths occur. Find the mean (or average) value of all the sequences in an infinity of throws. ["Head" preceded and followed by "tail" is to be considered a sequence of 1, and so also with "tail" preceded and followed by "head."] N.B.—A rough experimental determination (300 throws) gave approximately 1.83 for the mean value.

15860. (Professor NANSON.)—If  $a, b, c$  be the roots of the cubic  $x^3 - px^2 + qx + r = 0$ ,

prove that the quotient of the determinants

$$\frac{\begin{vmatrix} 1 & (b+c)^2 & b^2c^2 \\ 1 & (c+a)^2 & c^2a^2 \\ 1 & (a+b)^2 & a^2b^2 \end{vmatrix}}{\begin{vmatrix} 1 & b+c & bc \\ 1 & c+a & ca \\ 1 & a+b & ab \end{vmatrix}}$$

is  $pq + r$ .

15861. (ALEXANDER HOLM, M.A.)—If  $x = p, y = q$  is any particular integral solution of  $x^2 - Cy^2 = \pm D$ , where  $C$  is a positive integer not a perfect square, and  $D$  any integer, then all the integral solutions are furnished by  $x - y\sqrt{C} = \pm(p - q\sqrt{C})(r - s\sqrt{C})^n$ , where  $n$  is any integer positive or negative, and  $x = r, y = s$  any particular integral solution of  $x^2 - Cy^2 = +1$ . [Note.—This theorem will often enable one to dispense with Lagrange's chain of reductions for the case when  $D > \sqrt{C}$ .]

15862. (F. N. MAYERS, M.A.)—Discuss the possibility or otherwise of the congruence  $2^{p-1} \equiv 1 \pmod{p^2}$ .

15863. (D. BIDDLE.)—Find integral values for  $N_1, N_2, N_3, N_4$  to satisfy the following triple equation:—

$$\begin{aligned} 500(N_1^2 - N_2^2) + r(N_1 - N_2) &= 500(N_3^2 - N_4^2) + r(N_3 - N_4) \\ &= 500(N_3^2 - N_4^2) + r(N_3 - N_4), \end{aligned}$$

where  $r$  is a selected integer (of sufficient magnitude), by preference an odd number.

15864. (ROBT. W. D. CHRISTIE.)—Prove that the Pellian equation  $X_n^2 - PY_n^2 = 1$  can be put into a trigonometrical form, and give the general solution. *E.g.*,

$$\begin{aligned} X_3 &= \cos 3\theta = 4 \cos^3 \theta - 3 \cos \theta = 4x^3 - 3x, \\ Y_3 &= \sin 3\theta = (4 \cos^2 \theta - 1) \sin \theta = 4x^2y - y, \end{aligned}$$

$x$  and  $y$  having integral or fractional values.

15865. (J. J. BARNIVILLE, B.A., I.C.S.)—Having

$$\begin{aligned} A &= 0, 1, 4, 15, 56, 209, \dots; & B &= 1, 2, 7, 26, 97, 362, \dots; \\ C &= 1, 3, 11, 41, 153, 471, \dots; & D &= 1, 5, 19, 71, 265, 989, \dots, \end{aligned}$$

the scale of each series being  $x^2 - 4x + 1$ , prove that

$$\begin{aligned} b_n^2 &= 3a_n^2 + 1, & d_n^2 &= 3c_n^2 - 2, \\ b_{2n} &= a_n^2 + 1 = 3c_n^2 - 1, & b_{2n-1} &= 2b_n^2 - 1 = 6a_n^2 + 1, \\ a_n^2 + a_{n+1}^2 &= 2c_n^2 - 1, & a_{n+1}^2 - a_n^2 &= c_n a_n. \end{aligned}$$

15866. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—If the series

$$\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots, \quad \frac{1}{1^4} + \frac{1}{2^4} + \frac{1}{3^4} + \dots$$

be denoted by  $S^{-2}, S^{-4}$  respectively, show that  $5S^{-4}/3S^{-2} = (\frac{2}{3}\pi)^2$ .

15867. (Professor SANJANA, M.A.)—Factorize completely  $54^{18} + 1$  and  $65^4 + 1$ . (Suggested by Lt.-Col. Allan Cunningham's Question 15481.)

15868. (Professor NEUBERG.)—On permute les lettres du mot *éducatif* de toutes les façons possibles. On demande (1) le nombre des permutations où se rencontre *duc*; (2) celui des permutations où 3 voyelles, et seulement 3, se suivent; (3) celui des permutations où 3 consonnes, et seulement 3, se suivent; (4) celui des permutations qui sont terminées en *al*.

15869. (Professor NANSON.)—Given four planes and two points, the four quadric cones which pass through the points and through the meets of three of the planes pass also through a twisted cubic, and the five



twisted cubics so determined by five given planes pass through two fixed points.

15870. (Professor NEUBERG.)—On donne deux plans  $P, P'$  qui se coupent, et un point  $A$ . Une droite quelconque menée par  $A$  coupe  $P$  en  $B$  et  $P'$  en  $B'$ . Sur cette droite on prend le segment  $B'M = AB$ . Étudier la surface lieu du point  $M$ .

15871. (Professor SANJANA, M.A. Suggested by Question 15748.)— $A, B, C$  are three fixed points on a conic, and from another fixed point  $K$  a chord is drawn terminated by the curve at  $P$  and  $Q$ . Find the locus of the intersection of  $AQ$  and  $BP$ , and investigate when it is of the first degree.

15872. (W. H. L.)—To find the radius of curvature of a conic by Euclid, Books I., II., and III.

15873. (A. M. NESBITT, M.A.)— $EF$  is a common tangent to two circles  $ADBE, ADCF$ ;  $CDB$  is drawn parallel to  $EF$ , and  $G$  is the harmonic conjugate of  $D$  with respect to  $BC$ . If the circles  $GDA$  and  $EDF$  cut in  $H$ , then  $DH$  is perpendicular to  $BC$ .

15874. (N. PARAMESWARA MENON.)— $ABC$  is a given triangle; through  $A, A_1B_1$  is drawn parallel to the perpendicular from  $B$  on  $AC$ ; through  $B, B_1C_1$  is drawn parallel to the perpendicular from  $C$  on  $AB$ ; and through  $C, C_1A_1$  is drawn parallel to the perpendicular from  $A$  on  $BC$ . Find (i.) the area of the triangle  $A_1B_1C_1$  in terms of that of the triangle  $ABC$ ; (ii.) the circum-radius of the triangle  $A_1B_1C_1$ ; (iii.) the area of the pedal triangle of  $A_1B_1C_1$  in terms of that of the pedal triangle of  $ABC$ ; and (iv.) show that, if  $A_1B_1$  cut the circum-circle of  $ABC$  in  $A_3$ , and  $B_3, C_3$  are the two other points obtained in the same way, the triangle  $A_3B_3C_3$  is identically equal to the triangle  $ABC$ .

15875. (Professor COCHEZ.)—Construire un triangle connaissant le côté  $a$ , la somme  $b+c$  des deux autres côtés et la somme  $m_b + m_c$  des médianes issues de  $B$  et  $C$ .

#### OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10319. (Professor RAMASWAMI AIYAR.)—The density at any point of an arc of a logarithmic spiral varies inversely as the distance of the point from the pole. Determine the centroid of the arc geometrically.

10386. (Professor MORLEY.)—Prove that all maximum triangles in a given ellipse have equal Brocard-angles.

10392. (ARTEMAS MARTIN, LL.D.)—A coin of unknown radius is

dropped horizontally into a circular box, radius  $r$ ; find the probability that the centre of the bottom of the box is covered by the coin.

10458. (D. BIDDLE.)—Prove that the proper angle at which to cross a street when a person wishes to continue his course on the other side, and the roadway is  $n$  times as muddy as the pavement, is that of which the sine is  $(n^2 - 1)/(n^2 + 1)$ .

10641. (MORGAN BRIERLEY.)—A boy's top of given dimensions is set spinning at such a rate that it stands perfectly upright, and, as boys say, "sleeps." Supposing it to be an indefinitely small weight heavier on one side than on the other, what will be its rate of speed when it begins to oscillate in its revolution?

11051. (Professor HUDSON, M.A.)—The density of a fluid varies from point to point: considering directions proceeding from a given point, prove that (1) the density varies most rapidly along the normal to the surface of equal density containing the point; and (2), of directions in the tangent plane to this surface, the tangents to its principal sections are those in which the rate of variation of density is greatest and least.

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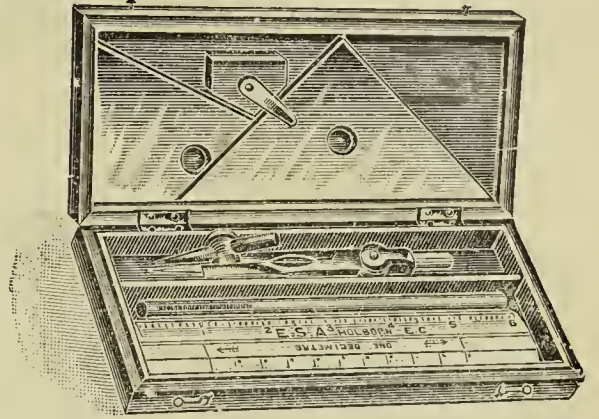
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## COLLEGE OF PRECEPTORS.— (Bloomsbury Square, W.C.)

The next Monthly Meeting of the Members will take place on Wednesday, the 15th of November, at 7.30 p.m., when F. STORR, Esq., B.A., will read a Paper entitled "To whom shall we teach Latin and Greek, and how shall we teach them?"

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## COLLEGE OF PRECEPTORS.— EXAMINATIONS, 1905.

1. DIPLOMAS.—The next Examination of Teachers for the Diplomas of the College will commence on the **1st of January, 1906**.

2. PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.—The next Practical Examination will be held in **February, 1906**.

3. CERTIFICATE EXAMINATIONS.—The Christmas Examination for Certificates will commence on the 5th of December.

4. LOWER FORMS EXAMINATIONS.—The Christmas Examination will commence on the 5th of December.

5. PROFESSIONAL PRELIMINARY EXAMINATIONS.—These Examinations are held in March and September. The Spring Examination in 1906 will commence on the 6th of March.

6. INSPECTION AND EXAMINATION OF SCHOOLS.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

### PRIZES.

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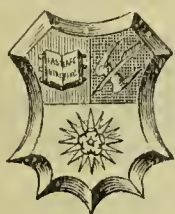
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The Educational Times.

Private Schools.

LAST month, in noting Prof. Sadler's reports, we reserved the question of private schools for a separate article. These reports

enable us not only to see "tanquam in speculo" their present condition, but also to read, as it were, their future prognosticated by an expert crystal-gazer.

No objection can be taken to the "common form" with which Prof. Sadler prefaces his several reviews. Private schools are of various types and of very different grades of efficiency. Some are of high excellence, several do meritorious work; others, again, are an element of weakness in our educational system.

Likewise, all save a few individualist doctrinaires will agree that the supply of secondary education cannot be left wholly to private enterprise. The State is ultimately responsible, and has now acknowledged its responsibility, for every grade of education. If the provision of secondary education were relegated to private enterprise, poor and scattered districts would be left out in the cold. Moreover, private schools are, in the nature of things, lacking in permanence, and continuity is an essential element in the full and vigorous life of a school.

From these premisses it might be argued that private schools should be gradually superseded by public foundations and condemned to painless extinction as a survival of an unlettered and uncivilized age; but it is needless to say that so rash a conclusion, warranted neither by history nor by philosophy, is not drawn by Prof. Sadler. "It is expedient to preserve every efficient form of private enterprise and of varied initiative in our national education."

We have dwelt, perhaps, too long on generalities; but our object was to show that Prof. Sadler approaches the problem in a very different spirit from that of the Board of Education and other public bodies that might be named. He lays down at starting as axiomatic that, in point of curriculum, secondary education should not be all of one mould; that different temperaments and different types of mind have a natural affinity for different courses of study; that the

multiplication of secondary schools of the present grammar-school type will not satisfy present needs; that the widened range of professional, commercial, and industrial life calls for a greater variety of schools than in the past to suit special localities and special circumstances. These are sound principles; but their virtue lies in the application, and we cannot do better than take the report on Hampshire to see how they are applied over a large area.

There are in Hampshire 79 secondary private schools (not counting 10 where the education is pronounced to be mainly elementary) containing 2,598 pupils—1,530 boys and 1,068 girls. Three-fourths of the boys and five-sevenths of the girls above the elementary stage are in private schools.

With the preparatory schools for Winchester and other public schools we are not here concerned. They are highly commended, and the only fault found with them is that they are hampered in their teaching by the conservative curriculum of the public schools. These schools are, in fact, extra-territorial, and as little affected by any action of the County Authorities as Winchester itself. As to the remaining private schools of the county, not only has Prof. Sadler taken account of them in his purview, but he recommends that they should, where possible, be utilized for the public supply of secondary education, and in other cases be recognized under certain conditions and to a limited extent be subsidized. Thus, at Andover, it is recommended that a private girls' school be taken over by the County Council, enlarged, subsidized, and run as a County High School under its present head mistresses. In another case it is suggested that the head mistress of a private girls' school be invited to transfer her pupils to a school to be established in the town by the County Council, in which she would be offered an assistant mistress-ship and the headship of a boarding house. In either case it is urged that there is not room for two girls' schools, and that competition would be both unfair and impolitic.

These are exceptional instances, and we cannot help thinking that more than two schools out of seventy-nine might have been selected as suitable and worthy to be offered the option of serving as County schools. But our chief interest lies in the proposed treatment of private



schools which retain their present name and character. In order that they may be recognized by the County Authority, Prof. Sadler lays down two conditions: (1) that they must submit to public sanitary inspection, (2) that they must give evidence that their staff are properly qualified to teach. If they satisfy these conditions, they are offered in return (1) public recognition, *i.e.*, they will be included in the educational directory which the County Council will issue annually; (2) they will be entitled to receive pupil-teachers and scholars selected by the Council; (3) we may add, from the report on Exeter, the loan of books, apparatus, &c.

This appears to us a fair bargain, and we regret to learn from Prof. Sadler that very few of the private schools of Hampshire have, so far, availed themselves of the County Council's offer to share the expenses of a University or Board of Education inspection.

There has, it is true, been in the past sufficient excuse for declining inspection. Apart from the cost, it has been often unsympathetic and, in a few cases, unjust and inquisitorial. Now that secondary inspection has been organized as a branch of the public service, and that half the expense (in some cases the whole) is borne by the Local Authorities, these objections are fast disappearing, and it is not reasonable for those who still maintain (as did the great public schools till within the last year) that an Englishman's school is his castle to expect any grace or favour.

We will conclude with an excerpt from Mr. Holland's able report on Monmouth, pointing out what, in his opinion, is the proper sphere for private schools in the future. His statistics show that the development of Intermediate Schools has not, as was anticipated, killed private enterprise in Wales. But with present standards it is no longer possible for a small school without endowment to educate pupils of any age from eight to twenty. "It is mainly in the capacity of preparatory schools to the intermediate that the private schools will come into the sphere of the Education Committee."

In England private schools have, and will continue to have, a far wider sphere; but they must recognize, as all the best of them already do, that to submit themselves for inspection, whether by the Board of Education or the universities or the College of Preceptors, involves no sacrifice of their private liberties or their powers of initiative.

### NOTES.

LORD LONDONDERRY, speaking the other day at Bradford, incidentally resuscitated the Charlottenburg question. He is reported to have said:

Then there was a very important question affecting the higher education of those who had to take prominent part in the commercial and other interests of the country. All educationists had long realized that there ought to be in this country a college of the character of that at Charlottenburg, in Germany. He had carefully considered this question and a large amount of money had been voluntarily contributed for the work of such a college. A committee was dealing with the matter, and he believed the time was now not far distant when England would have a college on the Charlottenburg system to provide the highest class of education for those who were bound to bear the great commercial responsibilities of the country.

It is difficult to discern anything fresh in this deliverance.

We should have been more reassured if Lord Londonderry had spoken not of "a college on the Charlottenburg system," but of a college bearing the relation to the English educational system and English educational needs that the German institution bears to the German educational system and German educational needs. As we have already seen, too, the utmost importance attaches to the process of fitting the new college into the system of the University of London. It is good to hear of large voluntary contributions of money to the project; but have there been any such windfalls (except £20,000 a year from the Treasury) since the meagre preliminary report of the Committee, on which we had something to say in our August number? The Commissioners of the 1851 Exhibition offer a site, but what of the other half-dozen conditions of success enumerated by the Committee?

THROUGHOUT Sir William Anson's address at Leeds University there was a persistent recurrence of the distressful note of impecuniosity. Scholarships are excellent; but we want an ample variety of secondary schools to hold the scholarships at; and "the sum spent in secondary education is out of proportion and ridiculously small in comparison with the sum spent in elementary education." "Since the Education Act came into force, there has been great financial pressure": "more would be done if there was the money to bestow." So Sir William had copious laments for his pecuniary limitations, and inexpensive sympathy for the needs of education; and he could discern no help for it but to hope for relief of the "financial pressure." Then, indeed, we may expect something. It may occur to educationists, however, that secondary education is thus placed in the position of the rustic that sat down on the river bank to wait till the water ran past. The "financial pressure" is permanent where education is concerned. If it were the Army or the Navy, the money would soon be found: the expenditure on these two services has been more than doubled in the last ten years; in the last six years no less than £23,000,000 a year of increase has been provided out of taxation. Yet secondary education, which would be happy with a twentieth part of the sum, is helplessly told to wait for the passing of the "financial pressure," as if its national importance were less than a twentieth of the necessity for military expenditure. It is not money that is lacking: what is lacking is capacity to administer the money. And even that rarity might be discovered by adequate educational pressure on the authorities.

MEANTIME Sir William Anson, speaking on the same day at the Saltaire Institute, Shipley, put the fundamental question: "What do we want the school to do for the boy or girl?" His answer was this:

My view of the school is: how can we make the boys and girls love learning, understand its value, and leave the school with the desire and capacity to increase their store of learning, and that we should endeavour to fit the teachers for their great profession by inspiring them with a sense of its dignity and value, and giving them such instruction as can be given—and I am afraid it is of very limited character—in the art and mystery of the teaching profession.

The first object is of the very last importance, but the attainment of it is dependent on two things: first, the



character and qualification of the teacher; and, secondly, the liberty and opportunity of the teacher to deal with the particular pupils. The first consideration partly involves the second of Sir William's objects—the training of the teacher, which must wait till the “financial pressure” is relieved. The second consideration has been already recognized, and probably, as teachers rise in official estimation, the red tape will be further relaxed, so that they may do their best in the circumstances, which they inevitably appreciate much better than a casual Inspector that has almost certainly never had any such personal experience. We are pleased to note that Sir William recognizes “that too much is expected of the school”—that the extra-school life of the pupil may not only not second the teacher's efforts, but even in varying degrees counteract them. It is difficult enough for Inspectors to measure these adverse influences, but no doubt Sir William will instruct them to keep such elements of the case in careful recollection.

MR. A. C. BENSON, writing in the *Speaker*, from the standpoint of one who “has had twenty years' experience of teaching in a classical school, who began to teach with a firm belief in the virtue of the classics, and who has sadly convinced himself by observation that we are on the wrong tack altogether,” says he would like to see a trial of the experiment of making French the linguistic staple of boys' education:

Then I would teach the boys, as thoroughly as I could, the history of England in the last two centuries; and the history of Europe, in less detail, for the same period. I should try to give them a very general idea of the course of history before that time, but only in the barest outline. I should teach them arithmetic very carefully, and see that every boy could calculate with rapidity and accuracy. I should try to give all boys, by popular lectures, some general conception of science; and I should instruct them in the simple outlines of Biblical religion. I should also teach them in careful detail the geography of the World; and I should make English a very important subject, trying to acquaint them, not philologically or grammatically, but with a view to literary appreciation, with the masterpieces of English, and to train them to use their own language with ease and precision. I do not think that this would be an impossible curriculum, and I have no sort of doubt that a boy trained on these lines would have a very good chance of being a well educated man. He would be well equipped for practical life; he would have some intellectual interest.

THE scheme does not carry instant conviction. True, it eliminates things that are not obviously of direct utility—if that be necessarily an advantage. But, after all, do we not really still lack a damnatory analysis of the classics as a subject of school work? If the classics cannot stand on their merits, away with them; but the condemnation of them ought not to rest upon demerits that are accidental and not inherent in the subjects. Mr. Benson is just the critic that might be expected to analyze the question. May we not venture to assume that it is worth while to teach the classics to some students at least? Well, now, what students should be taught classics, and what students had better be taught something else instead? Then, how should classics be taught to those students, and at what age? We cannot resist the impression that, if classics, or at least Latin, were taught to the right students at the right age and on rational methods, there would be ample room for them (or it) and for French (or another modern language)

as well. Do we discern in Mr. Benson's handling of the other subjects a certain concession to modern clamour in point of thoroughness or of scope? Moreover history, as history is written for schools, has its pitfalls for all but the very exceptional teacher, and is, perhaps, not a fundamental educative subject; and a training in the use of English with ease and precision will probably involve difficulties of its own as well as difficulties not dissimilar to those that the classics suffer from, although that is no reason why the attempt should not be made in good earnest.

THE Governments of France and Prussia, having recently developed the idea of attaching young masters in English secondary schools to certain of their own secondary schools for a year or so, are now, according to a Board of Education Circular (No. 615), “most anxious to extend the scheme, and to find similar opportunities in suitable English secondary schools for young graduates who would afterwards be employed in their State schools.” The Board of Education like the idea, and believe that, under careful arrangements, “the presence of such teachers on the staff of a school might add materially to the effectiveness of the modern language teaching.” Very much, we take it, depends upon the quality of the modern language masters. The Board's view is that the main usefulness of the foreign youth “will lie in the direction of immediate contact with the boys in order to develop their powers of conversation”; that the “conversation-groups” should be limited to half-a-dozen pupils generally over fourteen; that attendance should be “quite voluntary and regarded as a privilege, and in some measure as a reward for good progress in the ordinary class work”; and that “the chief object is to induce the boys to talk rapidly on subjects within their grasp in a manner which is not possible in the class-room.” Very well; “soluitur ambulando.” But it does seem difficult to understand why boys should not talk as rapidly in the class-room as out of it, whether there be half a dozen or a whole dozen of them; or why the master could not be in as “immediate contact” as the foreigner; or why there should be any question of reward or privilege in the matter. Either the master knows his business or he does not. If he does not, he must, we suppose, submit to being supplemented.

IN a farewell address to the Directors of Public Instruction at Simla, Lord Curzon expatiated very soundly on the vital importance of education, and declared that “in a country like India in its present state of development it is perhaps the most clamant necessity of all”; indeed, “the man in India who has grasped the education problem has got nearer to the heart of things than any of his comrades, and he who can offer to us the right educational prescription is the true physician of the State.” Undoubtedly. But where is the use of the prescription unless the medicine be prepared and administered? We have had the great despatch of 1854, the great Commission of 1882, and Lord Curzon's own prescription. Yet four out of every five Indian villages are without a school; three out of every four Indian boys grow up without education; and perhaps



one girl in a hundred and fifty gets elementary instruction. Why is this? How is burning zeal for education to be reconciled with such beggarly, not to say scandalous, results? Lord Curzon speaks of "a deplorable lack of co-ordination," "a vagueness as to fundamental principles," the creeping in of "slakness," "standards depreciated," and so forth; but he denies "deliberate or conscious neglect." If this is not easuistry, we should like to know what the educational officers have been doing and why their shortcomings have been overlooked by their superiors. Lord Curzon himself set everybody by the ears by making the universities annexes of the Government, and by disrupting and discouraging private—almost the only—enterprise in higher education; and, while he has given "a very large permanent annual grant of 35 lakhs" (something over £233,000—just over 1½d. per child of school age!) for primary education, we have high official authority for the statement that the first result of financial pressure is a reduction of the Education Estimates. Efficient education in India is an extremely simple question of policy—and of fearless discharge of the plainest duty.

### SUMMARY OF THE MONTH.

A COMMITTEE has been appointed to inquire into the expenditure on public education in England and Wales from Exchequer grants, local rates, and other sources, with a view to ascertaining the various causes for the existing diversity in the amount of rate levied for education by Local Authorities and the varying relations which this amount bears to the total local rates in each area. The following are the members of the Committee:—Sir Henry Primrose, K.C.B., Chairman of the Board of Inland Revenue (Chairman); Mr. W. Blain, Treasury; Mr. G. H. Tripp, Home Office; Mr. J. Bromley, C.B., Accountant-General, Board of Education; Mr. W. F. Sheppard, Board of Education; Mr. T. Pitts, C.B., Local Government Board. Mr. G. L. Barstow, of the Treasury, will act as secretary to the Committee.

LORD LONDONDERRY, President of the Board of Education, wrote (October 6) to Lieut.-Colonel Pryce-Jones, M.P.:

In answer to your query, I can certainly say without hesitation that there is a serious misapprehension if those who, as you tell me, are talking of closing the Council elementary schools in Montgomeryshire are doing so in the belief that the discontinuance of those schools will prevent the Board of Education from making use of the Default Act as hitherto for the continued maintenance of voluntary schools which the Montgomeryshire Authority declines to maintain. It is our duty to provide for the maintenance of the voluntary schools if the Montgomeryshire County Authority unfortunately refuses to carry out its duties in this respect, and we shall continue to do so under the Default Act should the need arise; so a refusal on the part of the Montgomeryshire Authority to do its duty in respect of the Council schools will not hamper the Board of Education in this regard. If their motive or their aim in thinking of discontinuing the Council schools be as is suggested, they will indeed be failing in a very serious manner to carry out their duties for the education of the children in the county without even attaining the particular purpose which, as I understand, it is suggested they hope for.

THE *Times*, discussing the Regulations of the Board of Education for Secondary Schools, says:

Both for special and for general reasons the need is urgent for a large increase of public aid to secondary education, and it is satisfactory that both the President and the Parliamentary Secretary of the Board of Education have expressed their sympathy with this opinion. It is surprising that the *personnel* of the Interdepartmental Committee to inquire into the finance of education in relation to local rates should be restricted to public officials. The special knowledge of one or more representatives of Local Education Authorities would certainly have been of value to the Committee. Both the qualifications of the members of the Committee and the published terms of reference suggest that the Committee's deliberations will be confined to questions of rating rather than to wider educational questions. It is to be hoped that the Committee will interpret the terms of reference in a liberal sense, so that such important questions as the relation between the amounts contributed by Parliament

to elementary, secondary, and technical education will not be excluded. It seems anomalous that the Board should expend about £10,000 a year in aid of evening classes in the single subject of shorthand, whereas the total grant to secondary schools is only about £200,000. And it may be questioned whether, in view of the new conditions created by the recent Acts, the annual expenditure of nearly a quarter of a million on the inspection and examination of schools is fully remunerative.

THE Board of Education have issued circulars to public libraries and Local Education Authorities recommending the aims and methods of the National Home-Reading Union. Since its foundation in 1859 one of the principal aims of the Union has been to encourage children to read books for themselves under competent guidance. Its efforts have thus been directed to broadening, prolonging, and confirming the influence of school education. The sympathetic co-operation of library and Education Authorities with the Union would, accordingly, be viewed with approbation by the Board of Education. The Union has briefly outlined the methods of such co-operation. Librarians, on payment of 10s. 6d. a year, become honorary members of the Union, receiving gratis the selected list of books, &c. Most of the books are, as a rule, already stocked by the libraries. The card supplied by the Union should be displayed in the library, and the librarian might organize "reading circles." Teachers in elementary schools and pupil-teacher centres might become members on payment by the Local Education Authorities of 1s. 6d. per annum, and might then form "home-reading" circles under their supervision. The selected books of the Union might be adopted as class readers, children being allowed to take them home. The experiment deserves every encouragement, and it is to be hoped that the Board of Education's circular will have the desired effect. The secretary of the National Home-Reading Union (Surrey House, Victoria Embankment, W.C.), Mr. Vere Collins, is open to confer with librarians and education officers as to the best means of bringing the work of the Union into relation with the needs of their particular districts.

At the half-yearly meeting of the Joint Scholarships Board, held at the College of Preceptors, Sir Philip Magnus, Chairman of the Board, in the chair, the reports of the Examination Committee showed a large increase in the number of candidates for the various scholarships offered by the Local Authorities throughout the country. The report of the Minor Scholarships Committee indicated a decrease in the proportion of candidates who reached scholarship standard, adding that: "This unsatisfactory result is to be attributed largely to the want of judgment shown in entering candidates (the majority girls) entirely unfit for such a test, many failing in every subject at the preliminary, and several not scoring a single mark throughout."

PROF. JUDD, distributing the medals and prizes of the past session at the Royal College of Science (October 5), acknowledged the uniform courtesy and consideration he had received from colleagues and students alike during his forty-five years' experience in connexion with the school. Nearly two-thirds of that period had been spent in the position of one of the teachers. He congratulated them on the expansion and development which was now promised, and expressed the hope that the change would lead to even greater successes in the future than had been attained in the past. Mr. R. L. Morant, Permanent Secretary of the Board of Education, in moving a vote of thanks to Prof. Judd, said that Lord Londonderry had asked him to express his regret at his inability to be present. He thought the successes of the past were only an earnest of that which would be done in the future under the new organization. The Board of Education was deeply indebted to Prof. Judd for his work in connexion with the college and school, and for all that he had done in the furtherance of science itself.

IN view of the rapid increase in the number of openings for the work of properly qualified women teachers in theology, the Archbishop of Canterbury is inaugurating a scheme for the training and testing of such teachers. The Archbishop has decided to institute a diploma or licence in theology (L.Th.) to be conferred upon such candidates as satisfy the three-fold test of (1) systematic study, (2) proficiency as shown by examination or otherwise, and (3) teaching capacity. His Grace has commissioned the Bishop of Gibraltar to supervise the testing of the candidates, and has nominated a committee of highly qualified ladies to take charge of the details under his direction. The



scheme will come into operation as soon as possible, and all information respecting it may be obtained from Miss Beran, 61 Egerton Gardens, London, S.W., who has undertaken to act as hon. secretary to the committee.

MANCHESTER is steadily working its educational ladder. Sir James Hoy, the Chairman of the Manchester Education Committee, on the occasion of the recent distribution of certificates of free admission to the five higher elementary schools of the city to 251 children attending the ordinary elementary schools, said this particular scheme linked up the work of the elementary school with the first stage of what was part of the higher education scheme of the Committee.

The whole of those who were to receive certificates were between the ages of ten and twelve. There had been a selection before the examination which was a part of this portion of the scheme, by the teachers in the ordinary elementary schools, of those who were likely to be able to pass the examination, which was of a simple character and which could in no sense be considered a strain upon young children. The number of candidates was 401, and of that number 251 had been accorded free admissions. As the scheme had not been in force in its present form more than two years, the whole of the places were not yet filled up. More certificates could have been given if the scholars who were sent forward had been able to pass the examination. It might be said without exaggeration that the scholars present were the cream of the elementary schools, and the gathering was of special interest because the children would carry away certificates which showed that they had in their first little struggle obtained a position which in their future lives could not but be of the greatest benefit to them. In passing this examination it was expected that the parents and guardians of the children would enter into an agreement that the children would work out their time up to the age of fifteen in the higher elementary schools free of charge. They could, however, enter into competition for any of the scholarships that were offered, and they were likely to be more successful than those who had not made so good a start.

Sir James Hoy pleaded that a wider interest should be taken in the affairs of the Education Committee, and that there should be a fuller appreciation of the educational advantages that were provided.

An important meeting was held at Birmingham (October 5) to consider proposals for establishing a Birmingham and Midland Counties Branch of the Classical Association of England and Wales. The Bishop of Birmingham (Dr. Gore), who presided, spoke strongly in favour of the double object of the Association—the object of maintenance and the object of reform. The resolution for the establishment of a local Branch was proposed by Mr. Cary Gilson and seconded by Prof. Postgate, an Old Edwardian, and it was vigorously supported by the Rev. S. R. James (Malvern). Sir Oliver Lodge recalled how Mason College was opened a quarter of a century ago by Prof. Huxley as a purely science college—a condition that did not last long; and he said that, while they did not wish to make everybody take classical studies, yet they wished to have such studies available for those that could receive them. The resolution was carried unanimously, and details of the constitution of the local Association were arranged. The Bishop of Birmingham was appointed president, Mr. E. A. Measures hon. secretary, and Mr. C. D. Chambers hon. treasurer.

SIR OLIVER LODGE presided over an important conference on the higher education of workpeople at the Midland Institute on October 14. The conference was convened by the Association to promote the Higher Education of Working Men, and was attended by representatives of universities, Education Authorities, co-operative societies, trade unions, trade councils, adult schools, friendly societies, and branches of the Association. Mr. Richard Bell, M.P. for Derby and General Secretary of the Amalgamated Society of Railway Servants, moved, and the Bishop of Birmingham (Dr. Gore) seconded, the following resolution:—

That the higher education of workpeople in the Midland districts of England will be best furthered by joint action on the part of the universities, educational and working-class organizations, and that a committee, consisting of representatives from the following bodies, with power to add to its number, be convened by the Association to promote the Higher Education of Working Men, and charged with the duty of making recommendations to a conference to be called hereafter:—the Universities of Oxford, Cambridge, and Birmingham, the University College of Nottingham, the Midland section of the Co-operative Union (Limited), the National Home-Reading Union, the Midland Co-operative Educational Committees' Association, the Trades Council of Birmingham, Ruskin College, the Leicester Working Men's College, the National

Union of Teachers, the Birmingham and Midland Association of Adult Schools, the Women's Trade Union League, the Midland Institute, and the Birmingham Sunday Lecture Society.

A lady representing the Wolverhampton Co-operative Society, said that from reading the resolution before the meeting one might imagine the British Empire was populated only by men and boys. She proposed that the words "and women" be added to the name of the Association. In education, as in other matters, men and women must rise or fall together. The Chairman agreed to add the words "and women," and the resolution was carried unanimously.

THE members of the Cardiff and District Teachers' Association discussed (October 14) the attitude of Principal Griffiths towards elementary-school masters, and criticized his remarks at a recent meeting of the Cardiff Education Committee on the value of teaching experience in schools compared with the value of a university degree. Mr. F. W. Pepperell, who presided, observed that Principal Griffiths, among other things, said that years of experience, so far from being a qualification, were often a disqualification. Mr. Pepperell said that these ideas, excusable in the principal of a college, to whom a university training might appear to be the most perfect means of education, were strangely narrow and unsuitable in one who sat as an educational expert upon a body which had been created for the purpose of controlling and co-ordinating all grades of education. They did not seek to discourage the taking of a university degree. But, with beautiful contradiction, Principal Griffiths himself declared that it was not the degree itself which he valued, but the qualities—mental ability and perseverance. There were many ways in which teachers exercised those qualities. Was it wise, right, or fair that only one of those ways should be recognized or rewarded? In order to mark their disapproval of Principal Griffiths's action, he moved:

This Association again records its opinion that in the formation of any promotion list for teachers the essential qualifications of candidates should be the possession of the First Teaching Diploma and experience in teaching. It condemns the action of Principal Griffiths in seeking to belittle the value of years of service in schools and to magnify the value of a university qualification, and is of opinion that his attitude on this question evinces a lack of acquaintance with the system of elementary education.

Mr. A. Sampson seconded, and the resolution was carried by 31 votes to 5.

At a meeting of the Irish Association of Women Graduates and Candidate-Graduates held in Dublin (September 29), Dr. Mulvany in the Chair, the following resolution was passed unanimously:—

That the Committee of the Irish Association of Women-Graduates and Candidate-Graduates desire to express their satisfaction with the announcement that the Bishops of the Catholic Church have established University scholarships for men and women students, to be held at University College and the Women's Colleges of Loreto and St. Mary's. They trust that the lectures of the Fellows of the Royal University delivered at University College will be open to the women scholars, as otherwise their scholarships would not give them the benefit of University education in the fullest sense.

After discussion of the results of the recent Intermediate Examinations, the following memorial was drawn up to be laid before the Intermediate Board:—

That the Committee of the Irish Association of Women Graduates deprecate the want of encouragement given to girl students taking the classical and mathematical courses in the Intermediate Examinations, as shown by the limited awards in exhibitions or prizes given to the best students in these courses in the present year. It is obvious that the "main objects" in these courses are educationally more valuable and much more difficult than in the remaining courses. Further, they are essential for women who are proceeding to the Universities. As an illustration of this lack of encouragement we beg to direct your attention to the case of . . . This Association, watching the interests of University education of women, feels bound to appeal to the Board not to discourage unduly the study of the subjects required for University education.

THE suggestion to establish a University College at Sunderland has aroused considerable interest amongst those who are anxious to see the educational facilities of the town developed to the highest possible point, and, although the Committees concerned do not appear to have yet definitely adopted the idea, there is a general hope that the scheme will be brought to a successful issue. The fact that the proposal has been made,



taken in conjunction with the recent steps in the direction of a day training college and the movement for higher commercial education, proves that the educational authorities are, at any rate, alive to the requirements of the town, and fully realize the direction in which they ought to move. It is not anticipated that the proposal could be carried out immediately, but the Education Committee will no doubt shape their policy in this direction, so that when the College is decided upon it can be fitted without difficulty into their educational scheme.

PRINCIPAL BEBB reports on St. David's College, Lampeter, that the average number of students in residence last year was 116, which is less than in the previous year. The number of students who joined the college was 40, 25 taking the three years' course for the B.A. and 15 the two years' course. In number and in quality the year has proved somewhat lean, though in both respects the prospect is brighter for the immediate future, there being at the present time no less than 62 candidates for admission. The external examiners testify to the general "excellence of the teaching and to the great amount of solid, conscientious work done throughout the college." In particular, they have noticed that there are no failures among the candidates for the B.A. degree, which they call a "very noticeable fact." For the first time for some years there has been an honour course in Welsh, in which, according to the examiner's report, the work done reflects credit on pupil and teacher.

At the October meeting of the Worcestershire Education Committee, which consists of all the members of the County Council and a score of educational experts, including women, a Special Sub-Committee on Higher Education recommended that each secondary school include boys and girls. This was agreed to. It was also proposed

That in schools established or aided by the Council, subject to any existing scheme, as far as possible, the principal teacher shall in all cases be a man, and the first assistant a woman.

Counsellor Joseph Malins opposed the recommendation, and hoped the ladies present at least would join him in voting against it. He did not believe those termed the weaker sex should be handicapped in the race. There were many women who were greatly gifted, and, on the other hand, there were lots of men who were "old women." Alderman Tomkinson (Kidderminster) said he did not see why such a disability should be thus laid down, and he would support it being left open for the Committee to have a free choice. The Chairman, Mr. Willis Bund, expressed his willingness for the Committee to be able to decide each case on its merits, and the recommendation was struck out.

THE Lancashire Education Committee have had before them the proposals of the Scholarships Sub-Committee, whereby 250 junior scholarships will be offered, restricted to children in attendance at public elementary schools, together with 100 junior open exhibitions. Last year only 120 exhibitions were given. Although 350 seems a large number, it is only one exhibition for every thousand children in attendance at the elementary schools. Special scholarships are offered to women for Domestic Economy and Midwifery.

PROF. DARROCH, in his introductory lecture to the Class of Education in Edinburgh University, said that Rector Mulcaster, the first Head Master of the Merchant Taylors' Company School in London more than three hundred years ago, had insisted on the great importance to the community of an efficient body of teachers, and had advocated the university training of teachers. Mulcaster declared that this was of importance, since teachers were the men "to make or mar the whole pay of the State," and on account of the fact that the teaching profession, in numbers and in necessity to the community, were of equal value with the other professions. Mulcaster's reforms, translated into terms suited to our modern conditions, would involve—(1) that every teacher should first of all be required to pass through a course of university study qualifying him for graduation in arts and science; (2) that a separate college or faculty should be established in each university for the training of teachers; (3) that the professional training of the teacher should be undertaken only after he had completed his general education. Prof. Darroch held that it was upon the lines so clearly laid down by Mulcaster that we must proceed in the future. But in carrying out such a reform there were many difficulties. In the first place, it was doubtful whether, under modern conditions, it was possible or

advisable to have every teacher trained at the universities, although it was expedient that as large a number as possible should enter the universities and go forward to a degree. Meantime, we could do two things for the betterment of the teaching profession. By shortening the term of apprenticeship, by lessening the practical work of the teacher during that period, and by bettering the means for his education, we could strive to increase the number and quality of those fitted to enter upon a university course. But, if this was to be effected permanently, it could only be accomplished, as Mulcaster said clearly, by increasing the reward of the teacher, or by the general social recognition of the worth and dignity of the teaching profession to the community. We could also abolish the untrained teacher, and insist on the necessity of some measure of training for all entering upon the work of teaching.

PROF. MAIR, in his introductory lecture to the Greek class in Edinburgh University, maintained that, if Greek were decadent, then the chief fault must lie in the prevalent methods of Greek teaching. He was not surprised that Greek was crowded out of school curricula, but he believed this was because Greek was badly taught, and because the school was overwhelmed with useless teaching. He had no hesitation in saying that at present quite one half of a boy's school time was unmitigated waste. A favourite subject of educationists to-day was geography. In his opinion, it was time enough to learn geography when you wanted to get to a particular place. He remembered learning in his youth the entrancing rhyme "Edinburgh, Leith, Portobello, Musselburgh, and Dalkeith." Well, to-day he had not the least idea where Portobello was; but he knew where to find a Portobello car, and that was enough. Nowadays commercial geography was a pet subject. That seemed to him based on the assumption that we are all to be tobaccoists or the like. Similarly in history. He had met a gentleman at Killiecrankie who knew that "twelve miles north of this Dundee fell," but had no notion where "this" might be, who Dundee was, or what induced him to fall. If he were teaching history, he would teach chiefly of heroes and of battles. The modern idea of constitutional history was quite useless for young minds. Bad teaching was not so much due to bad teachers as to wrong demands by ignorant Boards. Nor were His Majesty's Inspectors free from blame. He had been told of a school Inspector who entered a school in Aberdeenshire, and, after hearing a lesson on the bee, asked his infant class: "What is the meaning of the verb 'to be'?" Whereon an infant said: "Cogito; ergo sum." Languages rightly taught could be picked up in no time. Enough Hebrew for the B.D. degree could be learned—in deference to clerical members of the audience—in six weeks. In teaching Greek, modern Greek had been strangely overlooked. (But, if you can learn it in no time, why not wait till you are taking the car to Athens?)

MISS FLORA STEVENSON, LL.D., who has just died at the age of sixty-five, had been, since the passing of the Scottish Education Act of 1872, continuously a member of the Edinburgh School Board. In 1900 her unanimous election to the chairmanship of the Board was a striking tribute to her educational zeal and her administrative ability, and she remained chairman till her death. For many years she also represented the School Board on the governing body of George Heriot's Trust. She had a good deal to do with the passing of the Industrial Schools Act of 1893; in 1894 she was appointed to the Departmental Committee on Habitual Offenders and Juvenile Delinquents; in 1898, by the desire of Lord Balfour of Burleigh, she served on the Departmental Committee to consider the rules for inebriates' reformatories. Miss Stevenson took a deep interest in all questions affecting the working classes, and was a director of the Royal Blind Asylum and School, and Vice-President of the Women's Free Trade Union and of the National Union of Women Workers. She was an honorary Fellow of the Educational Institute, a member of the Edinburgh Educational Trust, and a Director of the Edinburgh Philosophical Institution. Two years ago the University of Edinburgh conferred on her the honorary degree of LL.D.; and in April last she received the freedom of the city of Edinburgh—an honour never conferred on any other lady, except the Baroness Burdett-Coutts.

THE Berlin correspondent of the *Daily Telegraph* reports:

Teachers in the grammar schools in Mecklenburg-Schwerin who enjoy the title of *Professor* are swollen with pride at the publication of a Government rescript which permits them on State occasions to wear a



brilliant uniform. This consists of a bright blue coat with crimson collar and cuffs, embroidered with gold. Both coat and waistcoat have gold buttons ornamented with the crown and initials of the Grand Duke. The trousers are white, with a broad gold stripe down the sides. On his head the Mecklenburg schoolmaster will wear a cocked hat, with the cockade in the colours of the Grand Duchy, from which a gold tassel will depend. Finally, as a finishing touch, he will carry a rapier with a gold hilt. As the Mecklenburg teachers are the worst paid in the Fatherland, many of them not earning more than £20 per annum, permission to wear this brilliant uniform may smooth away much of the existing discontent. I had almost neglected to add that, should the professor be of noble birth or extraction, he may wear, in addition, a pair of heavy gold epaulettes.

## UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

WE came back to find Oxford little changed externally. There have not been many additions to our buildings. The new house for the Warden of Merton is only in its initial stage, and some time will elapse before the new President of Corpus will move from his old home into College. The bridge between University College and its new buildings, over Logic Lane (the lane over which there was so expensive a legal dispute between the College and the City Fathers), is now an accomplished fact, but the City, having in the case a right to accept or refuse, has now definitely decided against the Hertford Bridge of Sighs, and, while some approve, many think that the bridge of Mr. Jackson's designing would have added to our architectural beauties.

The Vacation has robbed us of another Head of a House, and in Dr. Monro (he had received his Doctorate on the occasion of Lord Goschen's installation as Chancellor) the University has lost a scholar of European reputation. His successor, Dr. Shadwell, is a man of affairs as well as legal learning, and has served many offices in the University, and takes no small interest also in civic affairs. His knowledge of finance will, at any rate, do something to remove the impression that the Fellows of Oriel are—to use Mr. Cecil Rhodes's remark—children in finance.

We must also lament the death of Captain (and Professor) Montagu Burrows. It is not often that a sailor becomes a professor and so distinguished in his subject. Furthermore, there seems no doubt now that Mr. Simcox, of Queen's, has lost his life, though how and under what circumstances remains to be discovered.

Just before term we had two interesting meetings, both held at New College. The former was for astronomical discussion, and we had visitors—experts in their subject—from almost every European country, to say nothing of America. The latter was the annual New College Gaudy, made memorable on this occasion by the visit and speech of Lord Milner, a Fellow of the College. The key-note of his speech was a plea for instruction in constructive “political theory.”

Just before term, too, arrived the latest batch of Rhodes scholars, the number now reached being nearly one hundred and fifty. From some places no candidates came, as there were either none competing or none with the necessary qualifications. The list of their “home states” is interesting reading, and Oxford becomes cosmopolitan.

The *Oxford Magazine* has not yet published its annual list of the “previous performances,” schools, &c., of the candidates successful in the last Civil Service Examination, but there is no doubt this year that, even if we can claim thirty-six from the total number, our performances are much less noticeable than they have been in some previous years, while Edinburgh covers itself with honour by monopolizing the three first places.

Such other information as may be of interest falls rather into disconnected items. There are first the appointments in College. Mr. Sedgwick (son of his father) is the new Fellow of University, and as, besides his two classical firsts and three mentions for the Craven, he obtained a First in Mathematical Mods., there is no question of his inherited ability. Mr. Murray, of Christ Church, is the selected of Merton. Mr. Tiddy (already a Prize Fellow of University) has been translated as a Tutorial Fellow to Trinity, while Mr. Streeter has been restored by Pembroke to Queen's. Next we have the establishment of the Indian Forestry Department here, and a course of instruction has already been arranged by Dr. Schlieb and Prof. Fisher. The candidates who have already come to us from Coopers Hill have, we believe, completed their “practical forestry” at Windsor, but new candidates will have their teaching here. Just at the present moment

there seems rather a dearth of candidates. Then, again, we have the appointment as Lecturer in Military History of Sir F. H. Cunliffe, better perhaps known without his title as one of the best bowlers the University has had. When All Souls elected Mr. Cunliffe a Fellow some years ago there was a certain amount of outside comment, but the election has been fully justified by the results.

It seems—to continue the items—that we may regard the abolition of horse trams in the streets as certain to happen within a couple of years. At first there was a chance that the rails would be removed, and motor buses substituted for tram-cars; now, apparently, the decision is to have electric trams, but in the main thoroughfares the surface contact system is to be adopted, and we are not to have iron standards and overhead wires.

Lastly—though in due order it should appear first—it is a pleasure to record that the fears that the Vice-Chancellor, Dr. Merry, would find the cares of his office too arduous for long performance have been belied by facts. Indeed, Dr. Merry “vires acquirit eundo,” and in his speech at the beginning of the academical year he showed himself the same vigorous master of epigrammatic phrase.

(From our own Correspondent.)

THE appointment of Dr. Chase to the Bishopric of Ely was duly foretold in these notes, and is now, as all the world knows, an accomplished fact. A large concourse of Cambridge friends journeyed to London by special train to witness the consecration of the new Prelate. The new Bishop came up to Cambridge thirty-three years ago, and, with one break of three years, during which he was at Sherborne, has spent the whole of his time in residence among us. It was peculiarly fortunate that he happened to be Vice-Chancellor at the time of the King's visit to Cambridge, when, in the absence of the Chancellor, the honours had to be done by as fitting a person as ever represented our University.

The Vice-Chancellorship of Mr. Beck continues for another year; but, according to ancient usage, the usual valedictory address was given at the termination of the first year of office. One passage is so striking that no apology is needed for its reproduction here. *A propos* of the Greek question:

If we have charge of the treasures of the past and of the accumulating discoveries of the present, we have also a yet graver responsibility. We are the guardians not only of the ablest, but of all who come to us for life and light. We are the guardians of the young minds that shall mould the future. We dare not starve them on one food. Your single-food product is apt to become an intellectual freak and a barbarian. But the mind and soul of man is too fine an organism. It cannot live on physical facts alone. Its nurture must also be the spiritual ambitions, the memories of the race, forgiveness, pathos, humour, some sympathy, at any rate, with some of the best of those influences which through the ages have made it what it is. We have not yet said that men must choose between the two halves of a mutilated education. Our aim is, and ought to be, to give, preserve, and transmit some intelligent notion of a complete education, and some sympathy with the idea of it.

We have a record entry of Freshmen; Trinity, of course, heads the list with about two hundred, while Pembroke and Emmanuel have the very respectable totals of 76 each. Caius is once more encouraging medical students, and has 87 new names on its books in consequence. Downing has a very remarkable list, but the 39 names contain some which indicate an Oriental origin. There is still the same unhealthy craving after numbers. Over and over again has it been pointed out in these notes that it is beneath the dignity of an ancient foundation to encourage entries merely for the sake of the accompanying fees. The system of allowing college officers to marry has resulted in two things: firstly, that there has been a stagnation in the flow of promotion; and, secondly, quantity and not quality has been attracted to the place. It is doubtful whether with our numerical superiority over Oxford we are any the richer in mental or moral material.

There is a vacancy on the Council; this has been patent to us all for some time.

Nothing has yet leaked out as to who is to be the new President of Queens', the appointment is far from being a plump one, and no one without private means or a professorship could think of accepting it. In case the electors think fit to go outside the college they might do worse than choose Mr. Boughey, of Trinity, who has proved himself acceptable to all men of his college both as tutor and Dean. Canon Parry, of the same college, is also mentioned in connexion with the post, but, in the



end, it is probable that Dr. Wright, of Queens', will be induced to accept the Presidency.

The Examiners for the General last June were abnormally severe in one paper—Mechanics. A new schedule wrought havoc with the candidates, and the grumbling is loud and deep. The perfunctory lectures delivered at some colleges doubtless had much to do with the disaster, but the despised coaches are indulging in a quiet chuckle. The new scheme was invented to defeat cram; it has done so.

Many of our residents have come back from their trip to South Africa with the British Association, much refreshed in mind and body. Cambridge people, above all others, require to be taken out of the rut, as under modern conditions residence up here is rapidly tending to become continuous.

It is proposed that the University should grant a Diploma in Forestry. At present, probationers for the Indian Forest Service have to enter at Oxford, spending two years at that University and a year on the Continent learning the practical side of their profession. A Cambridge graduate would, if selected, have five years at least of University life, and if the new scheme is adopted the time would probably be shortened. At any rate, there is no reason why Cambridge should not be put on an equal footing with the sister University in respect of this matter.

The vacancy in the Trinity tutorship caused by the resignation of Mr. Rouse Ball has been filled by the election of Mr. Walter Morley Fletcher. Mr. Ball was extremely popular among his pupils, and he will be much missed. Mr. Fletcher, being himself a distinguished athlete, still able to show the way to any member of the College over hurdles, will command a certain amount of respect for this alone, and his high scientific acquirements will make him a really valuable adviser to his side. The last three appointments at Trinity have been eminently successful, Mr. Duff, Mr. Sedgwick, and Mr. Fletcher all being men to command the respect and admiration of the undergraduate. It is not thus everywhere else.

Our athletic prospects are not as bad as the sporting papers would make out. Never before have we had so many promising recruits from the public schools in the various departments of sport. It is true that our Rugby football team has suffered defeat on three occasions, but it is inevitable with university teams that they should not shake together early in the season. Tubbing goes on merrily on the river, and the weather is all in favour of the promising freshmen going on with the game they have selected. Our golf team, aided by the amateur champion, A. G. Barry, and his brother, will be abnormally strong.

The place is alive with motor buses, noisy, but withal convenient.

The politicians are waking up, but it is hoped they will postpone their larger meetings till the Vacation. A mass meeting is the undergraduates' opportunity.

Mr. W. Durnford, late of Eton, and now of King's, is the new Mayor of Cambridge.

At a meeting of Convocation, Sir Edward H. Busk in the chair, a communication was considered from the University College Transfer Commission, inquiring whether Convocation was desirous of making any representations to the Commissioners in reference to the business devolved upon them by the University College (London) Transfer Act, 1905. After a statement by the chairman, it was resolved that the communication be referred to the Standing Committee for consideration and report, with power to confer with the Senate or any Committee thereof.

The House also passed the following resolutions:—

That Convocation would welcome the formation of a University Union on the lines of those existing at Oxford and Cambridge, and desires the Standing Committee to consider what steps can be taken towards the inauguration of such a society.

That Convocation welcomes the formation of the society which it is proposed to call the University of London Musical Society, as tending to increase that corporate spirit amongst members of the University which it has been the aim of Convocation to foster and develop.

Under arrangements made with the Westminster Hospital Medical School the students of that school have been transferred to King's College for their preliminary and intermediate medical studies; and under arrangements made by the University of London with University and King's Colleges a number of the students of St. George's Hospital Medical School have also entered King's College for the same purpose. These students will, on the completion of their intermediate course, return to their own medical schools for their advanced studies. In order

to assist the University in thus beginning the concentration of the earlier medical studies the Council of King's College have spent a considerable amount of money during the long vacation in extending and further equipping the laboratories.

The Goldsmiths' College at New Cross was opened by Lord Rosebery, who discoursed on the new attitude towards the University question during the past twenty years, as seen in the newer Universities. University education has been decentralized and brought into close and organic relation with Local Authorities. By all means let the practical be the essential aim, but let it also be recognized that this aim can only be achieved by means of the breadth and clearness of vision that a liberal education ensures.

The Bishop of Exeter delivered the inaugural lecture of the Michaelmas term of the Women's Department of King's College in the Jehanghir Hall of London University—a most interesting lecture upon the life and writings of Richard Hooker. Last session closed with 516 students on the rolls, representing 2,733 entries, of which 2,171 were in the Faculty of Arts, 276 in the Faculty of Science, 95 in the Art School, 96 in music, and 95 for additional subjects. The totals exceed those of any other year, a fact of great satisfaction, since, lacking endowment, the college depends to a great extent upon students' fees. The Department is free from debt, and in this boasts a unique position among women's university colleges. Recently the grant allotted by King's College to the Women's Department was increased from £200 to £500, but, in view of the proposal of the Chancellor of the Exchequer to again augment the grant to university colleges, it is hoped that a still further increase may soon be obtained. Special plans which this increase would affect are the provision of a large students' hall and special additions to the library.

At an informal meeting of the University to Manchester. discuss the desirability of instituting courses of University Extension lectures for ex-pupil teachers and others who are unable to obtain places in training colleges, the Secretary of the University Extension Committee (Mr. S. Waterlow) stated that he had reason to believe that any well considered scheme by which the University should undertake the instruction and subsequent examination of uncertificated teachers in certain subjects, such as English language and literature, history and geography, in lieu of the corresponding subjects in the Certificate Examination of the Board of Education, would be favourably considered by the Board. Mr. Cann (Principal of the Bolton Pupil-Teacher Centre) expressed the opinion that the problem of the instruction of uncertificated teachers was a very pressing one; at the present moment few opportunities were put in their way of making themselves better qualified, and he had no doubt that any scheme to remedy this defect would be welcomed by Education Authorities. Other speakers emphasized the importance of maintaining the link which had hitherto existed between pupil-teacher centres and the University.

THE inaugural address for the session was delivered by Prof. Henry Jones, of Glasgow.

Speaking on "The Function of the University in the State" as it concerns the Principality, he said there were many reasons which indicated that the conversion of the Welsh University and the national Colleges into State institutions might be easy of fulfilment. They were comparatively small, were not rooted in ancient traditions (as were some of the English universities), and were also much more democratic in character. Above all, the Welsh people, in reference to secondary education in particular, had given an impressive example to the rest of the Empire of their willingness to be taxed for these public purposes. During the last twenty-five years they had offered a practical demonstration, unsurpassed in its clearness, of their readiness to pledge themselves to educational ends, and it seemed to him a warranted inference that, if Wales had the power to do as it had the will, one of its first legislative acts would be to place the National Colleges on a proper financial basis, to bring the strength of the whole people to their support. He believed that on the part of the Welsh people there would be raised something like a unanimous cry for the liberty and the power to impose upon themselves, if they so pleased, obligations to support the National Colleges similar to those which had secured for them their admirable system of secondary schools.

Belfast—  
Queen's.

THE REV. DR. HAMILTON, the President of Queen's College, in a letter to the press in reference to Sir Donald Currie's offer of £20,000



for the better equipment of the College, provided that an equal sum be contributed before Christmas, says: "The response to my appeal has been most gratifying. It has been truly delightful to see the high place which Queen's College evidently has in the confidence and affections of our community. From all sorts and conditions of people offers of help have come. Some of the letters have been very touching. One from the venerable Lord Kelvin, the most eminent of living scientific men, ought, I think, to be mentioned. He is keenly interested in the effort to equip more fully this seat of learning in the city which gave him birth, and with his very warm wishes sends a solid proof of his good will. It is almost pathetic to see how two old Belfast men—Lord Kelvin and Sir Donald—who lived here long before most of us were born, and have conferred undying lustre upon our city by the eminence to which they have risen, look back in the evening of life upon the home of their childhood and seek before they leave the world to help Belfast to obtain better equipment for that higher education the value of which both have proved in their own long experience."

### THE UNIVERSITY OF WALES.

#### THE LINE OF ITS GROWTH.

ADDRESS' BY PROF. HENRY JONES, LL.D., D.LITT.

THE inaugural meeting of the Cardiff Cymmrodorion and the Cardiff Educational Society (October 3) was distinguished by a long and able address delivered by Prof. Jones, of Glasgow University, on the future policy and administration of the University of Wales. Prof. Jones pleaded for peaceful evolution instead of violent changes.

#### THE QUESTION OF THE "WORKING HEAD."

These considerations seemed to him to apply to the question of appointing a Principal, Dean, or Rector of the University, to perform, amongst others, the function now entrusted to the Principals of the colleges, acting in rotation, as Vice-Chancellors. In this matter the authorities of the University were given the choice between a radical change in the administrative structure of the University and, on the other hand, an unpretentious attempt at a readjustment of certain duties. No clear distinction had been drawn between difficulties that are temporary and in a manner accidental and those that are permanent and intrinsic to the situation. In a recent description of the present state of the University he had read: "To-day we have the anomalous, and not by any means dignified, spectacle of a University whose atoms of management (so to speak) are scattered to the four winds of heaven. The Senior Deputy-Chancellor is the Principal of a Newcastle Science College. The Junior Deputy-Chancellor is a Registrar of the University of London. The Vice-Chancellorship is a triennial office without fixed and permanent abode, resting three years in Cardiff, three in Aberystwyth, and three in Bangor." It was obvious that the first of these evils, if evils they be, are quite temporary: they had simply to appoint other Deputy-Chancellors. They might resolve that in future residence out of Wales or official connexion with other Universities should be held to disqualify—provided they were so unwise as to create disabilities and limit the range of their own future choice. The argument was rhetorical and frivolous. There was substance, however, in the contention that disadvantages accrued from imposing the duties of the Vice-Chancellorship on the Principals of the Colleges, but he believed that the office of Principal, Dean, or Rector of the University was entirely unnecessary, and that the difficulties of the present situation could be met in another and much simpler way. They were actually met in another way in all the other Universities that he knew. Vice-Chancellors had not the monopoly of intelligence and reliability, as the Welsh regulations seemed to imply. The greater part of the duties now devolving upon the Vice-Chancellors could be performed better by the Registrar and his clerks, and the remainder by the Principals of Colleges, and by professors specially appointed for such particular purposes as presiding over the several examining boards. Once these details of management were placed in the proper hands the administrative situation would be relieved. The very attempt to appoint a "working head" of the University would bring serious dislocation. The truth was that the conception of a "working head" would not bear close analysis or practical investigation. It seemed to him that something like German barm has been "working" in the "heads" of those who projected it. The proposal was ill-considered, unnecessary, wasteful, and mischievous, and would meet with the fate it deserved. It was too soon to pull to pieces the administrative methods of the University, which were the product of prolonged conference and of the most loving care of some of the best minds of the Principality. No doubt the difficulties of administration were real, but they could in by far the greater part be removed by the simple methods of readjustment.

#### CYMRU'N UN.

The promoters of this change had raised the cry of "Cymru'n Un," but they were employing the wrong methods by promoting an academic

scheme which would neither improve the University nor make for a united Wales. It would not promote unity within the University itself. This attempt at greater centralization would disturb the balance of the federated constituents, and tend to the disruption of the University. Each of the parts of the Principality, jealous for the rights and privileges of its own college, would rally in its defence, and the result would be, not a "Cymru'n Un," but a country divided on one issue more. His critics had accused him of being in favour of this disruption—of having advocated the breaking up of the University of Wales into three Universities. "I admit," continued the speaker, "that a scheme which involves Universities at Cwmsewt and Pentrecagal and Llanbabo is very absurd. But, all the same, it is not mine. I cannot expect that all my critics will allow me to state my own motives; but they will perhaps permit me to state my own opinions. And my opinion is that the University of Wales, so far as its constitution is concerned, should be left for the present precisely as it stands. I deprecate all such tampering with it, because it requires time to develop whatever possibilities lie within it. In the second place I venture to believe that, if, and in so far as, its possibilities of development are great, that development will be in the direction of converting its colleges into relatively independent Universities. Absolutely independent, however, they would not be, any more than are the Universities of Manchester, Liverpool, and Sheffield. They would have common preliminary examinations, uniform regulations as to the number of academic years requisite for graduation, as to their post-graduate policy, and so on. In the third place I condemn this particular scheme for increased centralization because it not only forestalls the question of the future development, but either tends to determine that development in a false direction, or, as is more likely, to break up the University prematurely and by violent methods. The time for

#### THREE UNIVERSITIES IN WALES

has not come. But neither has the time for changing its constitution with the view of greater centralization, either academic or political. What the time calls for is peace; peace for the University to make its power felt and the reputation of its degrees more widely recognized; peace for the colleges to erect their buildings, and to strengthen their staffs: peace for its professors to give freely their best powers to the education of the youth of Wales, and to make themselves and their University renowned for extending the boundaries of human learning. But, given this peace for quiet labour and continued growth, I believe that the time may arrive when the conversion of the three colleges into three Universities will be the next natural step in their evolution. The change will come, not as the result of disruption, but with the matured consent of the whole people, as unconstrainedly as the falling dew." The ideal of three Universities, he continued, was not at war with the ideal of "Cymru'n Un." Could they point to any country in the world whose unity was endangered by having more than one University? Had the peace of Lancashire been broken by the substitution of Universities for federated colleges? Or would the unity of Scotland be deepened if the Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh were bound to one another and subjected to a "working head"? He thought not. Wales to-day would be religiously and educationally more united were it more free. There was a unity sometimes which was the result of constraint, and which was of little value, and eventually unstable; and there were bonds which did not unite, but irritated—a truth sometimes forgotten by the advocates of artificial centralization.

#### AN OBJECT-LESSON FROM FRANCE.

Napoleon converted the Universities of the provinces into "faculties" in the University of France, but in 1896 the French Government completed the process of converting them back into independent Universities. And what was the result? Under the law of 1896, fifteen of the former faculty groups had been organized into independent Universities. They registered 29,377 students in 1900, an increase of 11,772, or 68 per cent. above the number enrolled in the faculties in 1888. The increase in the number of students had taken place in every one of the Universities, and before they were thus made independent more than one-half of the Universities of France contained fewer students than the College of Cardiff did that day. He did not, however, cite those facts as a reason for immediate change. He advocated no immediate change. He pleaded against a change, and especially against a change which militated against the natural evolution of their institutions for higher learning and involved the sacrifice of an ideal of which he believed Wales would yet prove itself worthy.

#### CIRCULAR TO THE GUILD OF GRADUATES.

A circular has been sent to the members of the Guild of Graduates of the University of Wales drawing attention to the burning questions of the administration and development of the University. The signatories are Sir T. Marchant Williams; Prof. Edward V. Arnold, Bangor; Mr. Charles Morgan, Penarth; Prof. Thomas Rees, Brecon; Prof. A. H. Trow, Cardiff. The circular says:

There appear to be two questions which involve the principal issues:



- (1) Should there be appointed a working head of the University?  
 (2) Should the administration of the University be so regulated as to lead up, in course of time, to a dissolution of the University and its replacement by three separate Universities?

The first of these questions is of immediate importance, and we deprecate its subordination to the comparatively remote issue suggested by the second.

With regard to the working of the University, we suggest that the main points to be kept in mind are simplicity and efficiency. We do not think that the machinery of the University has broken down, that vital provisions of the Charter need to be reconsidered, or that the freedom at present enjoyed by the Colleges ought to be restricted. We would draw your attention to considerations of a strictly practical kind. The administration of the University is at present centred in the Vice-Chancellor, that is, in an officer whose immediate duty is to the College which has appointed him, and who cannot devote continued attention to the affairs of the University without being distracted from his proper work. Further, no Vice-Chancellor holds office for more than two years in every six, and therefore the continuity of administration is frequently broken. The University, it is true, has many other officers, but they are all honorary officers having other important duties, mostly at a great distance from Wales. The only exception is the Registrar, whose status and duties are so defined (Charter, xix.) as to indicate that they are intended to be strictly formal and impersonal. It is admitted on all hands that the growing work of the University is carried on under an increasing sense of strain. Under the circumstances we think it very natural that public opinion should look to the example of the University of London, which, having a constitution and a Charter almost identical with our own, has resorted to the appointment of a Principal of the University. We therefore hope that the suggestion of a working head for the University of Wales will receive fair consideration from the Court. . . .

The dissolution of the University has of late been advocated as a high ultimate ideal which should be a guiding light to our present action. We are not concerned to deny that future generations may look upon such a proposal with different eyes from our own, and may find it possible to reconcile it with the principle of *Cymru'n un*. On the other hand, we are not prepared lightly or frivolously to part with an ideal which to a large extent has been actually realized by the efforts of the generation whose work is our inheritance—that of the educational unity of Wales, a stimulus to progress and a check upon waste. . . .

In placing these considerations before you we do not desire to form a party or to crystallize a programme. We invite you to join with us in order to secure the enlightened discussion of these questions and to raise them above the personal and local issues with which they have been so unhappily entangled.

### A NATIONAL SYSTEM OF EDUCATION.

At the Thirteenth Annual Conference of the National Federation of Assistant Teachers, held at Hull (Sept. 29–30), Mr. F. W. Goldstone moved a resolution expressing the opinion of the Conference that a satisfactory solution of the education question in accordance with sound constitutional and educational principles can only be found in such an amendment of the law as shall secure for the country a national system of education based upon popular control, and freed from all tests but those of character and capacity.

The resolution, he claimed, justified them in the contention that, though they were class teachers, they were also educationists who were allying themselves with a national movement in education. They could not put primary education in a water-tight compartment, and keep it apart from secondary education; and they could not keep secondary education apart from University education. They must have a pyramid whose base was primary education, tapering to University education at the top. They desired a basis of education which would permit a well qualified teacher in a primary school to pass on to a secondary school, and that it should not always be necessary to have the hall-mark of the University as distinct from the hall-mark of ability and culture. There should be no class distinction. The day of denominationalism was gone, and the time had come when they must make provision that would satisfy the Jew, the Unitarian, and every type of denominationalists. If they did not accept that, there was one alternative, and that was that the State must finance all, and must make such provision that every scholar's parents might have the choice. It was either the State recognition of all or the State recognition of none. They looked for a change in the present Act which should make those that pay control the things they pay for. If a national scheme of education was to come, it must be not only by equalizing the opportunities for children, but by equalizing the cost to the ratepayers. To do that they would have to increase the amount drawn from the national Exchequer, as it seemed to him they could equalize things better through taxes than through rates. They were distinctly against any system of education which would tend to localize the teacher. As long as there was a big margin of local cost expended in the training of teachers, the training

district had the first call on the teachers they trained. They must also abolish the system which allowed promotion to go to those who were prepared to call themselves by a particular faith. That was a direct incentive for men to call themselves things they were not, and he thought the irreligious would be prepared to give themselves a denominational ticket in view of promotion that might come.

Mr. Carr seconded the motion, which was unanimously adopted.

Alderman Sir Alfred Guelder, Chairman of the Hull Education Committee, speaking at the Conference dinner, referred to this resolution, and thought they must have carried it unanimously. (Cries of "We did.")

He thought that was a very wise resolution. They were only asking that justice and fair play should be meted out to them in their profession. No teacher should be penalized for his religious convictions. Coercion, wherever it had been tried, had never been a success. It had often made hypocrites, but it had never produced men or women. Why should there be tests in their profession which there were not in others? Why, even in the National Church there was very little of tests! A clergyman might be an extreme Calvinist on the one hand, or a Ritualist bordering on Rome on the other hand, and yet not be excluded from his calling. They were told the results might produce a Godless education. He had sufficient faith in the teachers of the country to know they would not betray their trust, or teach the child anything which was detrimental to its highest and noblest and best interests. He would not speak to them as a party man, but would take a broader aspect. Politics had done more to injure the prospects of teachers than any other consideration. He said: Perish politics, and even perish party, and even suppress creeds, so long as the truth was taught, so long as nobility of character was inculcated in the minds of the children. The Churches and the Sunday schools would be the more ready to do their work when they felt the great responsibility of the religious life of the country rested upon themselves. There was no evidence in America or Scotland that the best interests of Christianity had suffered in any sense, and he did not think they would in this country, by the abolition of tests.

Concluding, Sir Alfred said that, in his opinion, teaching was equal to the noblest profession, and the teacher had even more to do with making empires than those who had gone to other shores to increase the domains of the British Crown.

### MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on the 21st October. Present: Dr. Wormell, President, in the Chair; Prof. Adams, Mr. Barlet, Mr. Baumann, Rev. Canon Bell, Mr. Bowen, Mr. E. A. Butler, Mr. Charles, Miss Dawes, Mr. Easterbrook, Mr. Eve, Mr. Hawe, Mr. Holland, Dr. Lawrence, Rev. G. E. Mackie, Mr. Millar Inglis, Bishop Mitchinson, Dr. Moody, Mr. Morgan, Miss Punnett, Mr. Rule, Rev. Dr. Scott, Mr. Starbuck, Rev. J. Stewart, Mr. Storr, Rev. J. Twentyman, Mr. Vincent, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

Diplomas were awarded to the candidates who had passed the required examination (see List, page 472). The Prize of £5 for Natural Sciences was awarded to Mr. W. E. Whitehouse.

The report of the Finance Committee was adopted.

The report of the Examination Committee was adopted.

The present position of the Federation question was considered, and the further consideration of a proposal for the formation of a Joint Committee was deferred to the next meeting of the Council.

The following persons were elected members of the College:—

Miss E. O'M. Jeffkins, A.C.P., Marrowells, Springfield, Chelmsford.

Mr. T. P. Oakley, B.Sc. Lond., L.C.P., The Square, Bromyard, Worcester.

Mr. G. C. Rogers, Christ Church School, Bhusawal, Bombay.

Mr. S. E. Baynes-Smith, B.Sc. Lond., L.C.P., Holmo Leigh, Riddington, Notts.

The following books had been presented to the Library since the last meeting of the Council:—

By THE AGENT-GENERAL FOR NEW SOUTH WALES.—Annual Report of the Department of Mines, New South Wales, for the year 1904.

By EDWARD ARNOLD.—Henry's Livy, Book XXVI.

By G. BELL & SONS.—York Reader, Book IV.

By THE CLARENDON PRESS.—Herbertson's Junior Geography.

By W. B. CLIVE.—Matriculation Directory, No. XLI., September, 1905.

By METHUEN & Co.—Whiteley's Elementary Text-book of Inorganic Chemistry.

By RIVINGTONS.—Benbow's First Book of Latin Verse Unscens; Hartog's

Merimée's Mateo Falcone, &c.; Longland's Easy Latin Unscens, Book I.; Martin and Jones's Three Years' Course of Practical Chemistry (First and Second Years);

Prior's French Exercises; Ransome's Primary History of England.

Calendars of the University of Leeds, London School of Economics, University of Aberdeen, Victoria University, University of Birmingham, Royal College of

Surgeons of England.

Incorporated Accountants' Year-Book.



COLLEGE OF PRECEPTORS. TEACHERS' DIPLOMA EXAMINATION.

SUMMER, 1905.

THE Summer Examination commenced on the 29th of August and was held in London and at the following Local Centres:— Birmingham, Bourke (New South Wales), Bristol, Colchester, Hankow (China), Leeds, Liverpool, Manchester, Middelburg (Transvaal), Newcastle-on-Tyne, Oyo (West Africa), Plymouth, Sierra Leone, South Molton, West Hartlepool.

The total number of candidates examined was 400.

The following are the names of the candidates who passed in the various subjects: (*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject:—

**Theory and Practice of Education.**

- FELLOWSHIP.**  
Phillips, G. F. T.
- LICENTIATESHIP.**  
Bailey, Miss M. A. M.  
Bailey, Miss M. E.  
Barratt, E. C.  
Barratt, T.  
Bedford, W.  
Bennett, J.  
Billowes, H.  
Budd, H. H.  
Carroll, Miss M. E.  
Clements, F. J.  
Dale, E.  
Dicks, A. J.  
Diggins, A. E.  
Dockerill, W. H. A.  
Fawcett, Miss E. M.  
Felton, Miss M. M.  
Ffrench, Miss E. M.  
Gawler, R.  
Gordon, T. W.  
Harris, Miss D. C.  
Harris, Mrs. M. O'B.  
Hunnybun, Mme. J.  
Irving, T. J.  
Lambert, E. A.  
Meagher, Miss D.  
Morris, E.  
Naesseth, A. L. T.  
O'Byrne, Miss E. M. A.  
Page, Miss L. E.  
Rodham, J. S.  
Rogers, T. A.  
Saunderson, W.  
Scarborough, Miss A. M.  
Seaborne, E.  
Smith, Miss Ethel M.  
Smith, Miss M. A.  
Taylor, J. G.  
Towle, F. W.  
Tullett, A. W.  
Tustin, R. B. B.  
Voy, Miss H.  
Wagstaff, S.  
Ware, Miss M. K.  
Whitehouse, W. E.  
Williams, C. A.

- ASSOCIATESHIP.**  
Atterton, R. M.  
Baker, E. P.  
Barlow, S. J.  
Bennett, Miss L.  
Borlase, W.  
Bowen, D.  
Brown, J. W. H.  
Bruton, J. E.  
Burgess, Miss F.  
Clarke, J. E.  
Cook, J. T.  
Cook, Miss G. A.  
Corbridge, H. F.  
Crockford, Miss A. E.  
Cross, Miss B. M.  
Cunliffe, Miss H.  
Davey, J. G.  
Davies, D.  
Davies, J. A.  
Day, Miss J.  
Deakin, R.  
Ellson, P.  
Farrow, Miss M. A.  
Fisher, W. H.  
Foster, W. H.  
Frankton, Miss F. L.  
Fuller, Miss F. A.  
Galbraith, M. H. A.  
Gallagher, M. J.  
Garlick, J. P.  
Gascoyne, J.  
Goddard, C.  
Goodson, W. C.  
Grainger, Miss L. E.  
Gray, F. C.  
Greenshields, J. B.  
Gregg, Miss A. D. G.  
Grehan, Miss R. M.  
Hall, Miss J. E.  
Harding, Miss D. J.  
Harding, W. H.  
Harrison, F.

- Hart, Miss F. E.  
Harvey, A.  
Hill, Miss C. A.  
Hillier, Miss R.  
Hodge, W.  
Hogg, G. S.  
Hollingdale, Miss E. P.  
Irlam, W. E.  
Jackson, Miss A. L.  
Jeffery, F. G. F.  
Jenkins, E.  
Joisee, R.  
Jones, Miss F. L.  
Jones, W. H.  
Kerridge, A. A.  
Lake, Miss A. N.  
Lancaster, C.  
Little, T. W.  
Livesay, Miss C. G. B.  
Long, T. W.  
McCoy, W. G.  
McGraw, Miss C. E.  
McGregor, Mrs. H. L.  
Merrick, Miss A. G.  
Miller, W.  
Ogden, S.  
Paling, E. S.  
Pegg, E. W.  
Powell, Miss M. E.  
Pugh, J. V.  
Rayner, Miss M. L.  
Read, F.  
Reid, Miss M. N.  
Renwick, J.  
Rutherford, R. G.  
Sage, S. G.  
Satchwill, Mrs. M.  
Seabourne, Miss M.  
Sisson, R.  
Smiter, H.  
Smith, Miss A. F.  
Smith, Miss A. W.  
Smith, Miss L. L.  
Smith, S. J.  
Snowden, T.  
Stapleton, A. F. St. C.  
Steel, Miss A. C.  
Stock, E. J.  
Sutton, Miss W. H.  
Taylor, Miss A. E.  
Thomas, J. D.  
Thorne, F.  
Thornton, R.  
Train, H.  
Wallace, Miss D. V.  
Walton, J. G.  
Webster, Miss M. E.  
Whalley, Miss A. L.  
Wilson, A.  
Windebank, Miss K. M.  
Windsor, J.  
Woodall, M. H.  
Woodger, F. H.  
Wright, Miss Lucy Elizabeth  
Youens, F. A. C.

**English.**

(Subject No. 1.)

- Beard, Miss A. E.  
Bird, M.  
Bishop, Miss O. M. M.  
Borlase, W.  
Bray, Miss E. B.  
Browning, Miss M.  
Cahill, Miss V. B.  
Card, Miss C. A.  
Castle, Miss C. J.  
Christopher, H. E.  
Fuller, Miss F. A.  
Galbraith, M. H. A.  
Gallagher, M. J.  
Garlick, J. P.  
Gascoyne, J.  
Goddard, C.  
Goodson, W. C.  
Grainger, Miss L. E.  
Gray, F. C.  
Greenshields, J. B.  
Gregg, Miss A. D. G.  
Grehan, Miss R. M.  
Hall, Miss J. E.  
Harding, Miss D. J.  
Harding, W. H.  
Harrison, F.

- Irlam, W. E.  
Irving, T. J.  
James, G.  
Jones, H. J.  
Kerridge, A. A.  
Kirkham, Miss L.  
Ladds, C. J. W.  
Le Pévedic, J.  
Livesay, Miss C. G. B.  
Marsden, Miss G. A.  
May, F.  
McCoy, W. G.  
Merrick, Miss A. G.  
Naylor, Miss L.  
Powell, Miss M. E.  
Pugh, J. V.  
Read, F. (*hon.*)  
Rogers, Miss E. D.  
Senior, A.  
Smiter, H.  
Smith, Miss K. L.  
Spencer, W.  
Teece, T. F.  
Thurston, H. G.  
Tipper, H. J.  
Turton, W.  
Vaughan, J. J.  
Wagstaff, S.  
White, B. C.  
Whitehouse, W. E.  
Willis, J.  
Woodall, M. H. (*hon.*)  
Yates, Miss E. M.

**English History.**

- Barnes, O. H.  
Beard, Miss A. E.  
Bennett, Miss M. H.  
Bernard, Miss J.  
Bird, M.  
Bishop, Miss O. M. M.  
Borlase, W.  
Bray, Miss E. B.  
Browning, Miss M.  
Burgess, Miss F. (*hon.*)  
Cahill, Miss V. B.  
Card, Miss C. A. (*hon.*)  
Clarke, J. E.  
Close, R. B. M.  
Cobbett, C. W.  
Conradie, A. F.  
Cook, Miss G. A.  
Craig, M. A.  
Gard, F. W.  
Day, Miss J.  
Emery, J. A.  
Fisher, W. H.  
Forrest, T.  
Friend, Miss E. A.  
Gard, F. W.  
Gaskin, H.  
Goodson, W. C.  
Gregory, Miss M. A.  
Harding, Miss D. J.  
Hare, C.  
Harris, Miss D. C.  
Harrison, F.  
Harrison, Miss K. H.  
Harvey, E. G. H.  
Henderson, Miss C. M. S.  
Hobbs, Miss C. A.  
Hunt, G. N.  
Irlam, W. E.  
Irving, T. J.  
Jacob, Miss M.  
James, G.  
Jones, H. J.  
Kenyon, E.  
Kerridge, A. A.  
Kimber, Mrs. F. C.  
Ladds, C. J. W.  
Le Pévedic, J.  
Lloyd, C.  
Maggs, C. J.  
McCoy, W. G.  
McDermott, Miss M. J.  
Merrick, Miss A. G.  
Moynan, Miss N.  
Naylor, Miss L.  
Powell, Miss M. E. (*hon.*)  
Puddephatt, Miss O.  
Pugh, J. V. (*hon.*)  
Read, F.  
Renwick, J.

- Rogers, Miss E. D.  
Sackville, Miss E.  
Senior, A.  
Simcoe, Miss G. E.  
Smiter, H.  
Smith, Miss K. L.  
Smith, W. T.  
Snowden, T.  
Teece, T. F.  
Thompson, Miss F. F. M.  
Thurston, H. G.  
Tipper, H. J.  
Train, H.  
Turton, W.  
Unwin, H. J.  
Vaughan, J. J.  
Vyle, Miss L. E.  
Wagstaff, S.  
Walton, Miss M.  
Warne, Miss A. J.  
White, B. C.  
Whiting, Miss R. E.  
Willis, J.  
Woodall, M. H.  
Woodger, F. H.

**Geography.**

- Amery, J. H.  
Beard, Miss A. E.  
Bird, M.  
Borlase, W.  
Bray, Miss E. B.  
Browning, Miss M.  
Burgess, Miss F.  
Card, Miss C. A.  
Clarke, J. E.  
Close, R. B. M.  
Cobbett, C. W.  
Cook, Miss G. A.  
de Saint-Ange, Miss I.  
Dawe, H. R.  
Day, Miss J.  
Emery, J. A.  
Finney, L. J.  
Fisher, W. H.  
Fox, J. H.  
Gaskin, H.  
Goodson, W. C.  
Hare, C.  
Harrison, Miss K. H.  
Harding, Miss D. J.  
Harvey, E. G. H.  
Hervouët, Mme. L.  
Irlam, W. E.  
Irving, T. J.  
James, G.  
Jones, Miss E. I.  
Jones, H. J.  
Kenyon, E.  
Keogh, Mme. M.  
Kerridge, A. A.  
Ladds, C. J. W.  
Leach, Miss M. P.  
Lee, R. W.  
Livesay, Miss C. G. B.  
Lloyd, C.  
Lucas, Mrs. N.  
McCoy, W. G.  
Moynan, Miss N.  
Murray, Miss J.  
Naylor, Miss L.  
Petit, Mme. J.  
Poussin, Mme. B.  
Powell, Miss M. E.  
Puddephatt, Miss O.  
Pugh, J. V.  
Read, F.  
Renwick, J.  
Senior, A.  
Simcoe, Miss G. E.  
Smiter, H.  
Smith, Miss K. L.  
Snowden, T.  
Teece, T. F.  
Thurston, H. G.  
Train, H.  
Turton, W.  
Vaughan, J. J.  
Wagstaff, S.  
White, B. C.  
Wilkin, G. F.  
Willis, J.  
Woodall, M. H.  
Woodger, F. H.

**Arithmetic.**

- Amery, J. H.  
Barker, Miss E.  
Barnett, Miss L.  
Beard, Miss A. E.  
Bennett, Miss M. H.  
Bickley, J. T. W.  
Bird, M.  
Bishop, Miss O. M. M.  
Borlase, W.  
Bray, Miss E. B.  
Briscoe, Miss E. M.  
Cahill, Miss V. B.  
Card, Miss C. A.  
Castle, Miss C. J.  
Chapman, E. F. G.  
Clarke, J. E.  
Close, R. B. M.  
Cobbett, C. W.  
Colville, Miss E. C.  
Conradie, A. F.  
Cook, Miss G. A.  
Crockford, Miss A. E.  
Dawe, H. R.  
Dawson, R.  
Day, Miss J.  
Delany, Miss M. A.  
de Saint-Ange, Miss I.  
Emery, J. A.  
Farrow, Miss M. A.  
Fisher, W. H.  
Fox, J. H.  
Gale, W. J. M.  
Gaskin, H.  
Giddens, Miss L. E.  
Goodson, W. C.  
Gregory, Miss M. A.  
Harding, Miss D. J.  
Hare, C.  
Harris, Miss D. C.  
Harrison, F.  
Hart, Miss F. E.  
Harvey, A.  
Harvey, E. G. H.  
Hodgson, Miss A.  
Hunt, G. N.  
Ide, Miss E.  
Irlam, W. E.  
Irving, T. J. (*hon.*)  
James, G.  
Jones, H. J.  
Kane, Miss M.  
Kerridge, A. A.  
Kimber, Mrs. F. C.  
Kirkham, Miss L.  
McCoy, W. G.  
Molyneux, Miss A. C.  
Naylor, Miss L.  
Nicholson, Miss I. J.  
Norris, Miss E.  
O'Donnell, Miss W.  
Ormsby, Miss H. M. E.  
Petit, Mme. J.  
Powell, Miss M. E.  
Pugh, J. V.  
Renwick, J.  
Read, F.  
Sackville, Miss E.  
Senior, A.  
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## REMUNERATION AND TENURE CONDITIONS OF TEACHERS IN SECONDARY SCHOOLS.

### MEMORANDUM BY THE TEACHERS' GUILD.

THE Council of the Teachers' Guild have, for some time past, viewed with anxious concern the short supply of men and women now entering the teaching profession, especially of those who possess good academic qualifications; and being convinced that this evil, if unchecked, is likely to carry with it serious consequences to the nation at large, they desire to invite attention to the following statement:—

#### INSUFFICIENT SUPPLY OF QUALIFIED TEACHERS.

It is in secondary schools that this deficiency in the supply of qualified teachers is most grave. The number of University graduates with good qualifications who offer themselves for vacant posts in these schools is wholly insufficient. The career of the teacher does not hold out adequate inducements to men and women of energy and intellectual capacity; the former, in an ever-increasing degree, are diverted into other professions which offer better and more assured prospects. There is a real danger that the shortage in the supply of teachers will be met by the acceptance of a lowered standard of intellectual equipment and general culture. Two main causes are, in the opinion of the Council, responsible for this state of things.

#### SALARIES ARE TOO LOW.

First, the salaries paid at present are too low as compared with the remuneration which prevails in other professions. Those who by a long, and in many cases expensive, course of preparation have been fitted for the responsible and exacting duties of the teacher, and upon whom great and growing demands are made both in the way of intellect and of character, may reasonably look for a life of modest comfort. But with the existing rates of payment even this prospect is too often absent; while any provision for the future is almost, if not altogether, beyond their means.

The Council accordingly suggest that the rates of salary should, as soon as possible, be the following:—

(1) For men, registered, or qualified for registration, in Column B of the Register of Teachers, and teaching in secondary schools,

an initial salary (non-resident) of £150, rising to a maximum of from £250 to £350.

(2) For women, correspondingly qualified, and teaching in secondary schools, the initial salary should be not less than £120, rising to a maximum of from £200 to £250.

Teachers with special qualifications, or occupying posts of special responsibility, should receive salaries on a higher scale. In fixing the salary of any teacher, previous experience should be taken into consideration. In the opinion of the Council these are the lowest terms that should be offered if teachers are to be found who will be fitted to carry out their responsibilities in the immediate future.

The Council are further of opinion that the salaries of assistant teachers should, in all cases, be fixed and paid directly by the governing body; also that when salaries are not paid by the term, or half-term, the contracts should be so drawn that the teachers should not suffer any detriment thereby, *i.e.* they should in all cases receive at the rate of a third of the annual salary for a term's work.

Provision should also be made for retiring pensions, both for heads of schools and for assistants, in all cases by joint contributions from teachers and governing bodies.

#### TENURE IS HIGHLY UNSATISFACTORY.

But, in the second place, it is not only the rate of remuneration, but also the conditions of tenure which are highly unsatisfactory. Under this head the Council hold to the views which they have already published. They are of opinion that, for the dignity and general welfare of the profession, and in recognition of the fact that an assistant teacher works for the community rather than for an individual, it is desirable that he or she should be *selected* by the head master or head mistress of a school for one (or two) years of probation, and, if recommended by the head master or head mistress for a permanent appointment, should be *elected* to it by the governing body of the school. Dismissal should be at the hands of the same body, and an appeal should lie either to the local educational body or to the Board of Education. An appeal should also lie to one or other of these bodies in the case of the dismissal of a head master or head mistress. The Council hold that, in all cases, both heads and assistants should be engaged under written and stamped agreements. Finally, they are of opinion that the clauses in the schemes of endowed schools whereby heads and assistants are dismissible "at pleasure" are objectionable, and that in their place should be substituted clauses designed to carry out the views already expressed by the Council.



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### CURRENT EVENTS.

At the Members' Meeting of the College of Fixtures. Preceptors, on November 15, at 7.30 p.m., Mr. Francis Storr, B.A., will give a lecture on the following subject:—"To whom shall we teach Latin and Greek, and how shall we teach them?"

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M. L'ABBÉ MARGUERÉ will address the Société Nationale des Professeurs de Français en Angleterre on "Lacordaire" at the College of Preceptors, on November 25, at 4 p.m.

\* \* \*

MEETINGS of the Parents' National Education Union will be held: November 13 (3.30 p.m.), at 49 Harley Street, when Lady Campbell will read chapters from "Home Education"; and November 23 (5 p.m.), at 77 Gloucester Place, when Dr. Savage will lecture on "Backward Children."

\* \* \*

THE Teachers' Guild will discuss "What is the Educational Effect of Fairy Tales and Legends?" at a Central Guild meeting on November 17; and will continue the discussion of the question, "Should Infant Schools be continued as a compulsory section of Education?" at 74 Gower Street on November 28.

\* \* \*

At an ordinary meeting of the Sociological Society, at the School of Economics and Political Science (Clare Market, W.C.), on November 20, at 8 p.m., Mr. A. E. Crawley will lecture on "The Origin and Function of Religion." At a research meeting on November 23, at 4 p.m., Dr. J. L. Tayler will discourse on "The Study of the Individual."

\* \* \*

THE lectures and discussions arranged by the Childhood Society and the British Child-Study Association, to be delivered in the Parkes Museum, Margaret Street, W., during the month, are: November 2 (8 p.m.), "A Quantitative Study: Children's Attitude toward History," by Prof. Earl Barnes, M.A.; November 9 (8 p.m.), "Speech Training of Feeble-minded Children," by M. Friederberger, Ph.D.; November 16 (8 p.m.), "Physiological Child Life," by Prof. W. D. Halliburton, M.D., F.R.S.; November 30 (8.15 p.m.), "Training of Teachers for the Care of the Feeble-minded," by Francis Warner, M.D., F.R.C.P.

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THE Moral Instruction Circle (19 Buckingham Street, Strand, W.C.) will hear a Moral Lesson (subject, "No!") by F. W. Rowe, on November 13 (7 p.m.); and will hold a conference on Mr. E. H. Griggs's book "Moral Education," on November 27 (7 p.m.).

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THE L.C.C. free popular Saturday (4 p.m.) lectures for the month at the Horniman Museum (London Road, Forest Hill, S.E.) will be: November 4, "Domestic Life of Animals," by Mr. F. Slade; November 11, "Mimicry and Protective Odours in Animals," by Mr. F. Slade; November 18, "Man and his Relations," by Dr. Harrison; and, November 25, "Mountains and their Plant Life," by Mr. E. Lovett. Tickets, limited to about 60 each lecture, to be obtained at the Museum entrance after 2 p.m. on lecture day, and 2-9 p.m. on day preceding.



PROF. DAVID EUGENE SMITH, Ph.D., of Honours. Teachers' College, Columbia University, has received the degree of LL.D. from Syracuse University in recognition of his services in improving the teaching of mathematics in America.

"Prof. Smith [says the *School Journal*] is librarian of the American Mathematical Society, and is a member of the committee of publication of the English Mathematical Association and of the German Mathematiker-Vereinigung. He is also mathematical editor of the new 'International Encyclopedia.' He is deeply interested in the historical side of the science. Recently he purchased the library of Prof. Ferdinando Jacobi, of Venice, which he has added to his own collection for the use of his students. He has also made available for study a rare collection (the largest of its kind) of portraits and manuscripts of celebrated mathematicians. It includes letters of Leibniz, Euler, the Bernoullis, Legendre, Laplace, Monge, and many others of equal rank, together with a brief manuscript of Newton." He has written numerous textbooks and treatises, "The Smith Arithmetics" being very widely used.

\* \* \*

MR. CECIL BENDALL, M.A., Professor of Sanskrit in the University of Cambridge, previously Professor of Sanskrit in University College, London, and some time assistant in the Oriental Department of the British Museum, has been elected to an honorary Fellowship of Gonville and Caius College, Cambridge.

\* \* \*

SIR H. ISAMBARD OWEN, M.A., M.D., F.R.C.P., Principal of Armstrong College, Newcastle-upon-Tyne, Senior Deputy Chancellor of the University of Wales, &c., has received the honorary degree of D.C.L. from the University of Durham.

#### Endowments and Benefactions.

MR. T. H. YATMAN, M.A., Bournemouth, has founded at Gonville and Caius College, Cambridge, an exhibition of about £30 a year, for a student for holy orders. It is not to be awarded by competitive examination.

\* \* \*

THE Council of University College, Dundee, have declined Mr. J. K. Caird's gift of £16,000 for the erection of a Physical Laboratory on the College grounds, judging Mr. Caird's conditions to harmonize neither with the needs of the College nor with the general plan of building construction.

\* \* \*

MR. CARNEGIE has given 25,000 dollars towards a fund of 100,000 dollars for establishing a Chair of Political Economy in Western Reserve University in memory of the late Mr. Mark Hanna.

\* \* \*

THE late Dr. Goburreck, a German medical man, has left 250,000 marks (£12,500) to assist women students of medicine. The interest is to be lent free.

#### Scholarships and Prizes.

A COMBINED examination for 62 entrance scholarships and various exhibitions will begin at Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel Colleges, Cambridge, on December 5 next. Pembroke: 2 scholarships of £80, 3 of £60, and 4 of £40. Gonville and Caius: 2 scholarships of £80, 3 of £60, and 5 of £40. King's: 2 scholarships of £80, 2 of £60, 3 exhibitions of £40, and 5 Eton Foundation Scholarships, open to all candidates receiving education at Eton School, whether on the foundation or not. Jesus: 2 scholarships of £80, 2 of £60, and 4 of £40. Christ's: 1 scholarship of £80, 3 of £60, and 3 of £40. St. John's: 3 scholarships of £80, 5 of £60, and 3 of £40. Emmanuel: 1 scholarship of £80, 3 of £60, 4 of £40, and 2 subscholarships (no age restriction). Candidates must be not over 19 on October 1, 1905. Forms of application and

further information from Mr. W. S. Hadley (Pembroke), the Master (Christ's and Emmanuel), Mr. W. H. Macaulay (King's), Mr. A. Gray (Jesus), Rev. J. W. Cartmell (Christ's), Dr. Donald MacAlister (St. John's).

\* \* \*

EMMANUEL COLLEGE, Cambridge, offers a studentship of £150 for research in any branch of study, open to graduate members of the University not over 28 on January 1, 1906. Apply to the Master by November 20.

#### Appointments and Vacancies.

DR. CHARLES LANCELOT SHADWELL, D.C.L., honorary Fellow, has been elected Provost of Oriel College, Oxford, in succession to the late Dr. Monro.

Dr. Shadwell, who is a grandson of the late Vice-Chancellor Shadwell, was a Queen's Scholar of Westminster and a student of Christ Church; took his degree in 1863, First Class in Moderations and in Finals; and became a Fellow of Oriel in 1864. On resigning the Fellowship, he was made an honorary Fellow of the college. He was for a number of years Law Lecturer and Treasurer of the college, and was Proctor in 1875. He was called to the Bar in 1872. He is a Fellow of Winchester College, Controller of University Lodging Houses, Delegate of the Press, Curator of the University Chest and of the Botanic Garden. He is the author of numerous publications, among them "Select Titles from the Digests" (edited with Professor Holland), "Registram Oriense," and a verse translation of the "Purgatorio" of Dante, and has edited various works of his friend the late Mr. Pater. Dr. Shadwell is an alderman of the city of Oxford.

\* \* \*

THE Council of King's College have made the following appointments to fill up vacancies and to increase the staff:—The Rev. H. J. White, M.A., Fellow of Merton College, Oxford, to be Professor of New Testament Exegesis, in succession to Canon Knowling; Mr. E. P. Harrison, Ph.D., B.A., and Mr. H. S. Allen, M.A., B.Sc., Assistant Lecturers in Physics; Mr. C. F. Russell, B.A., Assistant Lecturer in Mathematics; Mr. L. Hinkel, Assistant Demonstrator in Chemistry; Mr. W. Woodland, Demonstrator in Zoology; Mr. O. S. Sinnatt, B.Sc., and Mr. R. Wolfenden, B.Sc., Demonstrators in Engineering; Mr. J. E. S. Frazer, F.R.C.S., transferred from St. George's Hospital to King's College as Demonstrator in Anatomy.

\* \* \*

AT Manchester University, Mr. C. G. Hewitt, B.Sc. Man., has been appointed Assistant Lecturer and Demonstrator in Zoology; and Mr. A. Stephenson, B.Sc. Wales, Lecturer in the Technical College, Sunderland, Assistant Lecturer in Mathematics.

\* \* \*

AT University College, Cardiff, the following appointments have been made:—Lecturer in Political and Commercial Science, Mr. Thomas Jones, M.A., Glasgow; Assistant Lecturer in Latin, Mr. G. A. P. Davies, Universities of Wales and Oxford; Assistant Lecturer in English, Mr. Arnold W. Smith, University of London; Assistant Lecturer in the Normal Department, Mr. C. Birchenough, B.A. Oxford; Assistant Lecturer in History, Mr. E. Hughes, University of Wales; Assistant Lecturer in French, M. Maurice Lenoire, University of Bordeaux; Assistant Lecturer in Zoology, Mr. G. H. Berlind, B.A., Universities of Cambridge and London; Administrator and Assistant Lecturer in Geology, Mr. A. Longbottom, University of Cambridge.

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SIR J. HALLIDAY CROOM, M.D., has been appointed to the chair of Midwifery in the University of Edinburgh, in succession to Prof. Simpson.

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THE REV. C. A. B. BROCKWELL, M.A. Oxon., Curate of Cheshunt, has been appointed to the new Alexandra Professorship of Divinity in the University of King's College, Nova Scotia.



MR. A. E. CHAPMAN, LL.D., M.A., has been appointed Lecturer in Law in the University of Leeds.

\* \* \*

MR. J. M. ANGUS, M.A. Cantab., Professor of Latin and Comparative Philology in the University of Wales, Aberystwyth, succeeds Mr. Ivor James as Registrar of the University of Wales.

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MR. A. G. COOKE, M.A., Head of the Electrical Department, Battersea Polytechnic, has been appointed Principal of the Paddington Technical Institute.

\* \* \*

DR. ALEXANDER MCKENZIE, M.A., D.Sc. St. Andrews, Ph.D. Berlin, Lecturer and Senior Demonstrator in the University of Birmingham, has been appointed Head of the Chemical Department at the Birkbeck College, in succession to Dr. John E. Mackenzie, D.Sc. Edin., Ph.D. Strassb., who has accepted the appointment of Principal of the Technical Institute, Bombay.

\* \* \*

MISS ALICE B. REID, B.A. Lond., of Cheltenham Ladies' College, has been appointed Head Mistress of the High School for Girls, Glasgow, in succession to Dr. Milligan.

Miss Reid was educated at the North London Collegiate School, and at Bedford College, London, was a mistress in the Bromley High School (Girls' Public Day School Company), and was a lecturer in the Darlington Training College before passing to Cheltenham.

\* \* \*

SIR FOSTER H. E. CUNLIFFE, Bart., M.A., Fellow of All Souls', has been elected Lecturer on Military History in Oxford University.

\* \* \*

MISS ROBERTS, who has had six years' experience at the Physical Training College, Halesowen, Worcestershire, and the South-Western Polytechnic, London, has been appointed Warden of the College Hostel, Dumfermline.

\* \* \*

MISS A. M. FERGUSON, Edinburgh, has been appointed Organizing Inspector of Domestic Subjects under the Somerset Education Committee.

\* \* \*

REV. F. A. HIBBERT, M.A. (Cantab.), Head Master of Worksop College, has been appointed Head Master of Dentstone College.

\* \* \*

MR. G. H. CLARKE, M.A. (Cantab.), second master at Hymers College, Hull, has been appointed Head Master of Acton County School.

\* \* \*

MR. T. R. BURNETT, B.Sc. (Viet.), Ph.D. (Basel), assistant master at Lincoln Grammar School, has been appointed Head Master of Kirkby Lonsdale Grammar School, Westmorland.

\* \* \*

MR. R. S. W. HAYDON, M.A. (Cantab.), second master at Dewsbury Grammar School, has been appointed Head Master of Helston Secondary School, Cornwall.

\* \* \*

MR. R. NORWOOD, B.A. (Dublin), assistant master at Isleworth County School, has been appointed Head Master of Lutterworth Grammar School.



Literary Items. *Het Schoolblad* (Groningen) of October 3 has a very interesting supplement containing the full official report of the proceedings of the sixtieth General Meeting of the Netherlands Teachers' Association (*Handelingen der Zestige Algemeene Ver-*

*gadering van het Nederlandsch Onderwijzers-Genootschap*) held at Amsterdam, July 24, 25.

\* \* \*

MR. HENRY FROWDE, of the Oxford University Press, has taken over "The World's Classics"—a series of 65 volumes, and is preparing to add largely to the number. He has also acquired "The Boys' Classics" and "The Parson's Handbook" series.

\* \* \*

MESSRS. A. & C. BLACK issue a fresh volume of Indian travel—"India of To-day," by Mr. Walter Del Mar.

\* \* \*

IN connexion with the Trafalgar Centenary, Messrs. Sampson Low, Marston, & Co. are re-issuing a 6d. edition of the late R. D. Blaekmore's "Springhaven," a tale of the great War.

\* \* \*

MR. FISHER UNWIN is publishing a series of German Classics, with introduction and notes, in neat and attractive form: Goethe in 16 volumes, Schiller in 8, Heine in 7. To be sold in sets only.

\* \* \*

"THE Country Press" (17 and 19 Ball Street, Kensington, W.) has been established with the special object of publishing moderately priced volumes "on all matters relating to the country and to country pursuits." The first publication will be a reissue of Mr. Francis George Heath's "The Fern Paradise"—an "author's edition"—in less expensive form.

\* \* \*

THE "Harmsworth Self-Educator" is spaciously designed "to provide courses of instruction in every conceivable branch of useful knowledge." "All knowledge and industry is divided into 29 groups," each with numerous subdivisions; and "each subject, or each section of a subject, is the work of an expert." The list of contributors contains many names of eminence; yet nothing in the work is to be "above the head of the average man." It is to be issued in 48 fortnightly parts.

\* \* \*

"LIFE at Loretto School" is excellently illustrated in the *October Captain*.



General. THE London County Council are opening classes this session for the teaching of Irish Lace-making and Design at the Central School, 316 Regent Street, W., and at the Hammersmith School of Arts and Crafts, as well as at the Royal Female School of Art, 43 Queen Square, Bloomsbury.

\* \* \*

PROF. CASE, the new President of Corpus Christi College, Oxford, is rebuilding partially his official residence. "A learned quip," says an Oxford correspondent of the *Manchester Guardian*, "is going the round of Oxford, as from the President of Magdalen, to the effect that Dr. Case was beginning, as a Professor of Moral and Metaphysical Philosophy very properly should, 'by constructing Major Premises.'"

\* \* \*

WE bring together two paragraphs from the *School Journal*. September 16: "More than forty of the Chicago women teachers were married during vacation." September 23: "The Jersey City (N.J.) Board of Education has rescinded the rule that forbids the employment of married women as teachers in the city schools. This was done because of the growing lack of competent teachers in the public schools."

\* \* \*

THE number of boys at Eton this term under the new Head Master, it is stated, is greater than ever before.



### THE MAP IN THE CLASS-ROOM.

At the Evening Meeting of the members of the College of Preceptors on October 18, Mr. JAMES WILSON, M.A., in the Chair, Prof. J. W. ADAMSON, B.A., read a paper on "The Map in the Class-Room." He said:

A well known book on teaching asserts that "in reading and writing there is at least a sequence of difficulty, in grammar and arithmetic a philosophical sequence, and in history the sequence of chronology; *but in geography there is no sequence at all.*" With this dictum of a popular authority may be compared the belief, sometimes expressed and very frequently acted upon, that geography is taught to assist learners in the reading of newspapers. Views such as these sanction a casual sort of instruction not quite destitute of value, but where they direct practice there can be no real teaching of geography.

The proper place for this desultory kind of work is in a stage preliminary to geographical teaching, and its purpose is to touch imagination and to arouse a sympathetic curiosity concerning the men and the lands "beyond the mountains." The staple of it will be made of stories of travel, descriptions of foreign customs, of striking examples of the operation of natural forces; everything being vivified by pictures and the like illustrations. Whether this is work for the school depends on circumstances. Obviously it is best done *obiter* and in the home. But some homes just as obviously afford neither inspiration nor material for intelligent intercourse of this kind; and such homes are not confined within narrow social limits. For the children who come from them, there is the desultory teaching, the imaginary journeys, and the benevolent, loquacious uncle of the "Geographical Reader"; but such divagations are not geography, and they are suitable only for the younger pupils.

#### THE FUNCTION OF THE MAP.

It is the map which makes true geographical teaching possible, which gives sequence, coherence, and unity to the instruction. For what is to be learned from a good map, beyond the position and size of a country and such of its political divisions as are of significance in the pupil's education? A good map depicts the configuration of the surface, the characteristic slopes and their allied water-systems, the physical character of the sea-coast or of the land-frontier, the distribution of population and the direction of the lines of communication between one centre and another. Even climate, natural productions, industries, and commerce are foreshadowed, though not stated. The good map displays the morphology of a region; and mastery of the morphology, with the corollaries as to human activity, make up the study of geography. The good map is the best of geographical texts, to which the ordinary text-book can only be subsidiary. For the most part, the text-book is best employed when it is used as a succinct re-statement of what has been learned elsewhere; those are text-books above the ordinary level which throw light upon problems raised in the course of a close study of the map. In short, his map is to the geographer what his "subject" is to the anatomist: the dissection of maps is in a large measure the study of geography.

In comparison with this use of the map, the mere discovery of names on its surface is a triviality. The point was thus expressed long ago by a great geographer: "I am convinced that no German child of ten, after a two years' course in physics and geography, is in a position to find his way by means of a plan without losing himself in his father's garden; yet these are the learned little people who know where lie Pekin, Ispahan, Mexico, and all the countries of the world."

#### THE KINDS OF MAP REQUIRED.

The term "the good map" does not mean that one kind of map will meet all requirements. For school purposes maps may be divided into three great classes, each being distributed into such sub-classes as physical, political, historical, economic, &c. The first great class would consist of topographical wall maps for the use of the more advanced pupils, the second of wall maps prepared for a more elementary stage, and in the third class would be included sketch maps and similar diagrammatic representations made by the teacher, with "blank" or outline maps ("dumb maps" as foreign teachers call them) which are filled in as occasion demands.

The well known work on method quoted at the opening of this paper has probably done much harm to the teaching of geography through its ill-considered statement that "the best

maps are outline maps on a large scale without names; and best of all those which are drawn in outline by the teacher himself on a blackboard and filled in item by item." The author, perhaps, did not expect that his statement would be taken absolutely. But there is evidence that his words encourage a belief in the transcendent value of hastily improvised maps and a neglect of the indispensable good topographical map, which, of course, cannot be improvised. The map which serves best for teaching represents physical features with fulness: given such a representation, it is a mere exercise for the pupils to infer much that is set down in their text-books. But these exercises are only possible for those pupils who habitually regard a map as a conventional mode of representing a region, not in two dimensions, but in three: not only length and breadth, but height also, are read by these pupils, with scarp and counterscarp and the relative steepness of different parts.

How best to awaken this consciousness of relief is one of the difficult problems of the school map maker. Experiment seems to show that the most satisfactory solution is found in the adoption of different devices for different classes of map. Taking the three great classes just enumerated, for the earlier stage of geographical teaching the map is best when it most nearly resembles a model in relief. This form may be secured either by means of a photograph of an actual relief, or by colour arranged to show average elevation, all ground whose height is, for example, between 1,000 and 1,500 ft. being painted one colour, and so on. Both plans are now fairly familiar in our class-rooms. But such representations of contour are not sufficiently accurate nor detailed for the more advanced work which has been called "dissection." The maps required at this later stage should convey the impression of relief by means of contour lines, as is done in the maps of the Ordnance Survey. It is possible, of course, to combine in the same map the use of contour lines and of light and shade representing configuration. The fine Federal map of Switzerland by Kümmerly is a triumphant example of this combination, which is also a feature of the Siegfried atlas so popular amongst Alpine climbers. Some of the maps recently issued by the Ordnance Survey for school use show the same combination.

Sir Archibald Geikie has condemned the use in junior classes of maps which mark differences of elevation by change of tint, on the ground that they are "so glaringly diagrammatic"; on the other hand, he thinks that they "are useful in teaching more advanced pupils who have already learnt the meaning and use of the map." Whoever ventures to differ from Sir Archibald on such a point must do so with great diffidence. But it is important to regard the matter from the boy's standpoint. His eye must be trained from the first to see in the map not only length and breadth, but height or depth also; and this is so important that it should be secured even at the cost of some early mistakes consequent on exaggerations of uniformity in level inseparable from the diagrammatic coloured map. The severe method of contour lines is in itself too abstract in its conventions to appeal to the younger pupil, in spite of the fact that it is truer to Nature than is the other method. Here, as always, the teacher does well to be content with a stage of less precision at the outset, provided no glaring perversions follow. On the other hand, it would seem superfluous to engage the attention of the pupil who has "already learnt the meaning and use of the map" with the less exact coloured type.

The two classes of map so far described are wall maps, the work of professional cartographers. In such maps the use of thick black lines to indicate mountain-ranges is greatly to be deprecated, as these hard lines only confirm the erroneous notions of those who are unfamiliar with regions of great altitude. But in the third class of map, the sketch by teacher or pupil on blackboard, or paper, the thick line may be employed to represent the watershed, when the pupils are advanced enough to appreciate its abstract character. Caterpillars or herring-bones masquerading as *hachures* only confuse when used in sketch maps.

#### SKETCH MAPS.

Not everything which belongs to the geography of a region should be crowded into one and the same map. A map of Germany, published in Berlin, employs thirty-five colours, or arrangements of colour, and thirty-eight different marks showing differences in towns, rivers, &c. The intention is to convey information concerning the agriculture, industry, and commerce of the country: the effect must, in many cases, be bewilderment only. Thus, each of the classes of map enumerated must have



its sub-classes, and the sketch map, highly diagrammatic and, therefore, unsuited to young learners, is justified as a means of emphasizing a particular group of facts for older pupils. But, inasmuch as physical features are the basis of the study, all varieties of map should at least indicate configuration, even though roughly. A railway map which omits every token of rising ground belongs to a type radically bad for the class-room. Adherence to this rule will limit the employment of improvised blackboard maps. What is needed is a supply of prepared outline and configuration maps, the work of teachers and pupils, or of publishers, in which the sketch can be drawn in chalk and kept or erased as occasion may require.

#### COLOURING.

It should be the aim of the colouring to bring out the physical rather than the political facts: the contrary is a peculiarity of British practice. The true map of our islands is unfamiliar to English schoolchildren, because it lies concealed beneath the elaborate tinting of the county divisions, whose boundaries are often of more historical than geographical significance. A complete contrast to this kind of map is the Federal map of Kümmerly already mentioned.

To these *desiderata* of a good map may be added this, that every published map should bear the date of the survey on which it is founded, as well as the date of its publication or reprint. The maps of the Ordnance Survey now carefully supply such details.

It will be objected that maps such as described are not supplied by the publishers, and that the Ordnance Survey maps do not include foreign lands. But whose fault is it that publishers do not furnish the best apparatus for geographical teaching? A country, we are often told, has the government, or the system of education, or the newspaper press, which it deserves: teachers get from publishers the maps which they demand. Once convince the publishers that such and such maps are really required in schools, and the maps will be produced. The extraordinary improvement in road maps to meet the demands of cyclists is sufficient proof of this; how great the improvement which will follow the demands of the motor driver can scarcely be guessed. The truth is that teachers themselves must accept the responsibility for the badness of the average school map.

What have been named above two great classes of school maps correspond with two great stages in the pupil's progress. In the first the aim is to get boys and girls to understand maps; in the more advanced stage, or geography proper, maps are dissected. The elementary stage begins in home geography, it being understood that the preliminary appeal to sympathy and imagination is also maintained. What should form the material of the lessons in home geography is, of course, a very familiar consideration. The local configuration, with its dependent water-system, elementary notions concerning the measurement of time (day, month, season), of weather and climate; according to circumstances, the distribution of inhabitants, buildings, vegetation, fauna; the local occupations, means of communication by river, canal, road, rail. Throughout the course, the employment of direct observation of Nature is the cardinal principle, and many geographical ideas are thus gained at first-hand.

#### HOME GEOGRAPHY AND ANALYSIS OF MAPS.

The making of plans, always with an eye on the locale, is the beginning of the pupil's study of maps; and of plan-making the three chief notions to be acquired by the school boy are the difference between a plan and a picture, the ideas of scale and of direction. Some out-of-doors work is essential, not only to note changes in surface-level, but also to observe the Sun's apparent movement and to practise the use of the compass. The narrow range of the playground scarcely gives scope enough; the open country is the best field of operation. Most Londoners are within reach of Hampstead Heath or Epping Forest or the Surrey or Kentish commons, and it is the town-bred child whose attention most requires to be fixed upon the Sun's movements, or to be shown what a serviceable thing a pocket compass is.

The general practice seems to be to commence with plans, so-called, of the schoolroom and school premises, passing on to the immediate surroundings of the school-house. The practice may be defended as one which assists children in grasping the notion of a plan; but, since neither class-room nor school-house is a geographical fact, no more time than is absolutely necessary for this purpose should be expended upon their representation, and the approach to the map form should be hastened. The true

benefit of this kind of work is only secured when the ground covered by the plan extends some little distance from the school as centre, but not so far as to lie beyond easy walking distance. Much of the early plan making will be done upon the blackboard, teacher and pupils collaborating in setting down the results of their observations out of doors. Drawing by the scholars will be less frequent. These exercises will provide opportunities for learning the meaning of the conventional signs most commonly used in maps.

As the ground represented becomes more extensive, these blackboard drawings become rough maps of the district; they will be the better adapted to the purpose of this stage of the teaching if they delineate not a mere administrative area, but a miniature geographical region. A rough map of the basin of a small stream and its affluents will teach a great deal more geography than can one of a local government district, which either exhibits the minimum of topographical change or is made up of scraps of several different geographical "units."

This would seem to be the point at which children may with profit first be introduced to the rough model in relief which sometimes makes a premature appearance in the class-room. The knowledge of the topography which they have acquired out of doors, and the practice in delineating it in their plans, will give an actuality to the relief, provided the disparity between its horizontal and vertical scales be not too great; on the other hand, the making of a model, or watching its making, will, in these circumstances, prove helpful to the scholar in his attempts to understand the meaning of a map. But moulding little sugar-loaves and making a mess with watering-pot and sand-tray without reference to anything outside the schoolroom never yet conveyed a geographical idea to any one, though they have, no doubt, hindered many.

So soon as the pupils can appreciate the rough map, the time is ripe for the introduction of the Ordnance map of the district, which should thenceforth largely replace the less accurate representation. Sir Archibald Geikie suggests that the teacher whose scholars are ready to make the transition from plan to map should bring before them in succession the 25-inch parish map, the 6-inch county map, and the 1-inch general map, attention being fixed upon the shrinkage of the parish area as the scale gets smaller. The suggestion is realized in an atlas, very popular in Swiss schools, which by means of a dozen drawings on one page shows this particular effect of the diminution of the scale. First is shown the immediate neighbourhood of a well known Zurich school on a scale of 1 in 2,500, then follow town plans on scales of 1 in 10,000, 1 in 25,000, 1 in 50,000, in the last of which the school and its environment cease to be separable. Then come eight small maps whose scales run from 1 in 100,000, where we have Zurich and the lower end of its lake, with roads in the country and the main arteries of the city, up to 1 in 40,000,000, where Zurich is but a dot in Central Europe.

In the earlier steps it will be advisable occasionally to place the class-room map in a horizontal position, and it is a good thing to orient it by the compass; both devices are matters of course in the open-air lessons which, it is assumed, are still continued. The close conning of the map in association with observation of the country mapped is the fruitful soil of later geographical study.

With the county Ordnance map, or some of its sheets, or with the Ordnance general map, the pupils should become thoroughly acquainted, learning the import of such of the more generally employed signs as they did not learn from their plan-making, giving particular attention to the manner in which differences of altitude are shown, working simple exercises and little problems involving a knowledge of the meaning of the scale and other conventions. For variety's sake, such exercises as these may be used with maps on smaller scales and with maps of foreign lands.

Supposing that the pupils begin their lessons on home-geography about the age of seven, and continue those lessons for some two years, the stage thus described, in which they learn to read a map, will occupy them between the ages of nine and eleven, or later. The more advanced stage, in which maps are dissected with the aim of discovering the geography of the region mapped, is best taken after the age of twelve, and work of this sort may be prolonged beyond the schoolroom to the studies of the university. Still, the getting to understand a map and the application of that understanding to the dissection of maps are stages which easily coalesce, and it is, therefore, inadvisable to attempt a strict demarcation. It is assumed that map reading and the analysis of maps are supplemented by



lessons in descriptive geography, the use of reference books and, in the advanced stage, the study of physiography or, at least, of so much physics and chemistry as will make physical geography intelligible.

#### DISSECTION OF MAPS.

To pass to the more advanced stage at which the map becomes a true geographical text. The pupil who has learned to read his map will readily recognize so striking a feature of a region's relief as the direction and steepness of its chief slopes. Knowing the latitude and altitude, the general character of the crops under cultivation becomes largely a question of the aspect, north or south, or a point between, of these chief slopes; and around the staple cultivation of a region clusters a congeries of facts, social and economic as well as physical. With the slopes the water-systems are necessarily associated; from a good topographical map the pupil may learn the character of the rivers, the rapidity of their descent, their freedom, or otherwise, from falls and cataracts, their volume, and navigability; in favourable circumstances, he may even hazard a guess as to the clearness or foulness of the water, and the chances of good fishing in the streams. In noting the varying altitudes of the relief, he will have an eye for the engineering possibilities of the country; the position of its roads, railways, canals, and bridges will be perceived as determined by the configuration. Only those who have tried them can believe how surprised uninstructed children are to learn that a map can exhibit so much good sense. The same consideration of cause and effect will lead the pupil to study the distribution of population as indicated by the conventional signs upon his map, where he will also discover the facts which determine the situation of great sea-ports, or forbid their creation, with other similar illustrations of the dependence of man upon geographical conditions.

Necessarily there will be much use of the scale to realize horizontal distance if the relief is to be duly appreciated. Special scale exercises are scarcely needed at this stage. Neither are these pupils likely to lose the significance of latitude and longitude, since they will be expected to make inferences as to climate and to work exercises in the variation of local time and problems arising out of astronomical phenomena. Both these last belong to that wrongly neglected art of the old-fashioned ladies' school—"the use of the globes."

#### PROFILES.

The elder and abler of the pupils here in question will require maps which set forth topography in greater detail; for them relief is, perhaps, best signified by means of contour lines, which their previous experience has helped them to apprehend more thoroughly. The drawing of vertical sections of country—"profiles" as they are sometimes called—is a mode of dissecting such a map which compels close attention to the relief and gives greater exactness to all the details previously studied. Two points in a map being selected, the straight line joining them is the range of the profile; the map indicates the varying heights of the surface along this straight line. A piece of paper ruled with parallel straight lines, the distance between any two of which represents a given vertical height of so many hundred or thousand feet, furnishes the ground of the profile. Reading from the map the heights marked along the course of the straight line, these heights are inserted, according to scale, as points on or between the parallel lines of the prepared paper. By joining the points, a vertical section of the country is made, which is the more exact the greater the number of points inserted—that is, the greater the detail as to contour furnished by the map—and the closer the identity of the vertical and horizontal scales of the profile itself. Where the region delineated has great differences of elevation within a short range, it is possible to make use of one scale for both dimensions. The Swiss school atlas already mentioned shows a profile having a range of about 35 kilometres (say 21 miles) from a point N.W. of Interlaken to the other side of the Bernese Alps, and including the summit of the Wetterhorn and the bottom of the Lake of Brienz; the same scale (1 in 200,000) measures the vertical and the horizontal distances. Where the elevations are not so considerable a compromise is necessary. Sometimes the horizontal is to the vertical scale as 1 to 3, sometimes as 2 to 5. Where the gradients are trifling over a long stretch of country the "profile" is indistinguishable from a horizontal line; but nothing is gained by attempting a vertical section of such a region.

It is obvious that the drawing of these profiles very materially

assists a boy to realize the three dimensions portrayed in a good map, and makes more actual his grip over the topographical details of the region he is studying. Where there is great disparity between the vertical and horizontal scales, and consequent exaggeration of height, there is, of course, a limit to these advantages, and a risk that the pupil may forget the diagrammatic character of his profile. To many parts of the Earth's surface profile-drawing may be applied with confidence, and the advantages are so many that it seems worth while to trust, in other cases, to the correcting power of the pupil's "map sense," whose establishment is the aim of this kind of instruction.

It is a far cry from the bald relief of the map to the rich detail of a landscape. But a study of the topographical and geological maps in close association will prepare pupils to whom the leading conceptions of physiography are known for the appreciation of such books as Lord Avebury's "The Scenery of England and the Causes to which it is due," or Mr. Marr's "Scientific Study of Scenery." Their later study of maps must necessarily be enriched by such reading.

#### MAPS AND HISTORY.

But neither at this advanced stage nor at any other need the analysis of maps be confined to purely physical considerations, to the neglect of the human aspect of geography. The connexion between these two sides is necessarily close and continuous, and there will, therefore, be very many opportunities in the course of map reading for suggesting new and fruitful lines of thought. For example, the teaching which began in tracing the directions of existing engineered roads as determined by relief will, in due course, reveal to the boy who is reading history the fact that the great migrations of men have followed the lines of least resistance which might be styled "natural roads," and that along them the invading armies have marched to victory or defeat. The study of a river basin as shown on the map explains, in striking fashion, the existence of towns of ancient foundation at the confluence of a tributary with the main stream, or near the tidal limit of the latter; topographical study gives the best explanation of the strength of a natural fortress and its consequent occupation from early times, just as the map best demonstrates the accessibility of a sea-coast and accounts for the long history of the settlements made upon it. In similar fashion, close attention to a good map gives the reasons for the distribution of population in a particular region, whether the explanation be safety from attack, facility for trading or for manufacture, and so on. There is a well known passage in Geikie's "Geography of the British Isles" showing the extremely advantageous position for commerce on the great scale of Great Britain, and of London particularly; others than schoolboys and schoolmasters might reflect that it is possible to read "Antwerp" for "London" in that passage without greatly damaging the argument. Practical consequences of a kind very important to London might be expected to follow if that reflection were carried from the geographical to the historical sphere, so actual and serviceable a thing is the analysis of a map. Our supposed thinker would remember that Antwerp was once London's superior as a trading centre, and that it then suffered for some three centuries from political disabilities which have been removed within the last fifty years: these thoughts would give a new meaning to the fact that to-day Antwerp is outdoing London in its accommodation for the berthing of modern ships of great draught. The union by canal of Bruges with the sea is another recrudescence which the geographer, at least, is not likely to pooh-pooh because all the guide-books say that ancient city is dead.

The connexion between history and geography is vital, and the invariable presence of a map or maps in the history lesson should be a sign of that fact. History can only be taught where maps are used. But the studies are not everywhere coterminous. Those who most strongly insist that history and geography should be taught in association are apt to sacrifice the latter study altogether as a distinct entity: the "assimilation" is so complete that, as in the case of the lady and the tiger, one traveller only is seen to return. The independent study of good maps makes impossible this as well as other forms of desultoriness.

#### "REGIONS" AS GEOGRAPHICAL UNITS.

Another safeguard of the independence of the study lies in the selection of a true geographical region, rather than a purely political division, as the unit, so to say; the configuration, hydrography, climate, soil, industries, and lines of internal and external communication of a region throw mutual light one upon



another which is obscured or lost when the area is taken as a whole "country," or other politically determined portion of territory which may contain more than one geographical region or parts of such. From the map teacher and pupils work out at blackboard and desk the several details of the region as the result of analysis. It is not always advisable, or even possible, to keep political divisions in the background; but there is no doubt of the need of keeping them in due perspective. Many of us find it exceedingly difficult to marshal the geography of Germany before our minds because of the prominence which was given to the complicated political divisions in the years before the German Empire of to-day was constituted. The chaos of principalities, duchies, kingdoms, &c., may or may not have remained with us; but a clear picture of Germany as Nature made it is wanting.

#### PUPILS' MAP DRAWING.

Nothing has been said so far about the maps drawn by the pupils, although it has been assumed that profiles, sketch-maps, and other geographical diagrams will be made by them as well as by their teacher. The barrenness, viewed as geographical study, of the full-dress maps executed by scholars is now pretty generally recognized, and boys and girls no longer waste time in elaborating them. It may be expected that in due course it will also be agreed that the "outline" is not the sole nor even the chief thing in a map which calls for accuracy in drawing. Again, in a geography lesson of any kind, whether it be map drawing or not, the first consideration is geography, and it must not be displaced by inopportune æsthetic considerations, or regard for that fetich of the schoolroom, neatness. No time should be wasted in the selection and working up of harmonious tints, nor on "printing" or "framing," since these are not geographical phenomena. Maps need not, as a corollary to this argument, be hideous, though the colouring of some foreign maps of recent date deserves that reproach, so crude and sharply contrasted are the colours used to indicate relief.

The practice of requiring pupils to draw maps from memory has suggested several devices intended to serve both as construction lines when the pupil is copying the map, and also as a scheme of associations by whose help he may recall its features when attempting to reproduce it from memory. The lines of latitude and longitude would seem to be, by virtue of their proper function, the natural construction lines; but the exaggerated importance attached to accuracy of mere outline and harmony of colour has thrust purely geographical merits into the background, and latitude and longitude are very frequently ignored in pupils' own maps. The fact is also to be accounted for by the difficulty of accurately drawing the curves which these lines take in some maps and on some projections. It has been recommended that all maps reproduced by pupils should follow Mercator's projection, in which the lines of latitude and longitude become straight lines. Others would discard these co-ordinates altogether in favour of a different system, while some use but one meridian and one parallel in each map, referring all positions to these. The last seems a feasible compromise with much in its favour.

Some teachers cover a map with a more or less arbitrary network intended to serve as construction lines, the outline of each country thus being made to approximate to a particular geometrical figure, or to some other definite shape. The form is associated in the pupil's mind with one map only; when he is asked to draw that map, he begins by drawing the figure, by whose suggestions he recalls the different features to be reproduced. Of all devices which dispense with lines of latitude and longitude, the most accurate is that associated with the name of Matzat. He argues that the astronomical and mathematical conceptions involved in the system of meridians and parallels are too difficult for all but the most advanced pupils to use intelligently, and he would substitute a system which arises naturally from the first exercises in plan-making during the study of home geography. That is, he bases his map upon the ideas of direction and relative distance, just as the plans or first rough maps were constructed by teacher and pupils with the help of a compass and the knowledge of the distances of places from the school or other fixed point. The pupil associates such a point with all maps which he is required to draw, and, taking that point as a centre, he draws several concentric circles, whose radii stand for ascertained distances. On these circles he notches such landmarks as coincide with points on their circumferences, orienting them by reference to their compass-bearings; from these standards of reference he gradually builds his map.

These various modes of teaching pupils to draw maps bring out the fact that, for due understanding, lessons in cartography are needed. Of course, all attempts to read or otherwise to interpret a map involve something of the art, and much of it would be picked up casually by scholars taught in the fashion which has been described. But mere teaching, by the way, will not do much to make a boy comprehend the difficult subject of projection, in which systematic lessons are necessary. Such lessons must naturally be postponed till he has mathematical equipment to follow them.

#### THE GLOBE.

No class-room is properly furnished for lessons in geography unless it has a terrestrial globe, which should be regarded as the close ally of the map. Leaving aside the very practical exercises, partly geographical, partly astronomical, which this apparatus makes possible, even young pupils must frequently be referred to the globe in order to correct the confusion with respect to the relative size of countries engendered by looking at maps drawn to varying scales. Pupils much more advanced than these do not always remember that a map is a conventional representation in the flat of what is, in truth, a curved surface; and there is no better corrective than the globe for this, as for the many other errors flowing from the failure to understand projection.

#### "WALL" MAPS.

In conclusion, it may be said that one of the correct uses of the map in the class-room is in due course to take it out of the class-room. The name, "wall map," must not be suffered to mislead. A map is not necessarily decorative; very few are so, and all lose whatever comeliness they once possessed after the wear and tear of use or the dust accumulated in idleness. There does not seem much ground for the belief that they will be impressed upon the pupil's memory if they are always before his eyes, much less if they are hanging at his back. He remembers that to which he attends. A wall map to which he gives no geographical attention is almost geographically non-existent, though it may be a great eye-sore. Therefore a map not in use is best ensconced in a map-stand or rolled up carefully in a cupboard, and a bare wall, if clean, is a more engaging prospect than a tattered demoralizing company of maps and diagrams. One exception should be made on the score of its perennial usefulness: the Ordnance map of the district ought always to be accessible to members of the school, even though the consequent wear and tear and cost of renewal be noticeable.

The CHAIRMAN, in expressing his entire agreement with the views of the lecturer, said that young children had considerable difficulty in understanding what a map really was. This difficulty was largely due to the necessity of reproducing on a flat surface a space of three dimensions, and he thought that the present improved and more general teaching of model and perspective drawing would help children to understand the way in which heights and profiles were represented on a flat surface. It was also important that the pupils should understand what was meant by the scale of a map. There must, of course, be gradation in these studies, and it would be wise to begin with a very simple map and not to burden the pupils with things they could not understand. With regard to the connexion between history and geography, Dr. Arnold was a great advocate of teaching the two together, and Richard Cobden had expressed a wish to found a Professorship of Geography at the University. The latter had pointed out that ignorance of geographical problems had led English statesmen into great errors.

Mr. BAKER said the only point on which he was not in accord with the lecturer was the question of the object from which the pupils should learn to understand contour. He had himself derived very valuable help from the simple apparatus described by the lecturer. The proper order of progress was from the object to the contour, from the contour to the profile. Great care must be taken to see that the children were able to interpret the map correctly, and it was therefore advisable to begin with the object itself and then pass on to the map. In teaching geography, much might be done by combining the study of a geological map with that of an Ordnance survey map.

Mr. ORCHARD was much pleased with the idea mentioned by the lecturer of orienting the map by compass, and he thought all would agree with Prof. Adamson's remarks as to the connexion between history and geography. History could not be taught without the map, nor could geography be properly taught without history. At the same time, he thought the lecturer had rather overrated the function of the map in the teaching of geography: the map should not supersede the text-book, and it might easily be made too complex. He did not think



it desirable for very young pupils to begin with drawing to scale and making reliefs. It was necessary that they should have good models, and, if possible, illustrations from Nature, and it was important that they should first obtain a correct understanding of the meaning of geographical terms, and be made to draw examples of islands, capes, peninsulas, and the like.

Prof. ADAMSON having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

### EDUCATION IN NORTHERN EUROPE.

#### THE STATE AND THE PRIVATE SCHOOL.

By J. S. THORNTON, B.A.

THE quinquennial School Meeting of teachers of every grade from the four countries in the North of Europe, which was held five years ago in Christiania (*The Educational Times*, October, 1900), was held for the ninth time last August in Copenhagen. It was more numerous than ever, there being more than seven thousand teachers present, as against five thousand in 1900. The increase was the more surprising because it was feared that the differences between Norway and Sweden would lead to many abstentions on the part of Swedish teachers: it had, indeed, been proposed that the meeting should be deferred until another year. The absence of eight or ten of the men and women whose names come first to the mind when one thinks of education in Sweden could not fail to be felt; but it seemed as though those of a more democratic way of thinking, who, if they did not actually welcome the action of Norway, yet regarded it as inevitable, by their numbers made up to some extent for the loss of weight and dignity caused by the absence of their distinguished countrymen.

To the general account given five years ago of the composition, methods, aims, and results of such a meeting there seems no necessity to make any addition now. One such meeting is very like another. But at this ninth meeting Copenhagen had in Tivoli a series of halls and gardens more than usually adapted to the needs of such a huge gathering. Of the papers and discussions there will appear at the end of the year a full authoritative report. In the meantime, with the help of one document already issued—"A Compendious Account of School Affairs in the Northern Lands from 1900-1905"—I propose to give some account of educational progress in the four lands since the previous meeting five years ago, confining myself for the most part to secondary schools, and glancing only at the salient features.

#### EDUCATIONAL PROGRESS IN NORWAY.

Of Norway and Finland there is not much to tell. It is not in such unhappy times as Finland has experienced since 1900 that important educational developments can take place. And, with regard to Norway, the secondary-school development in the previous five years had been so radical, so startling, that it becomes just impossible that in the next five years there can be anything to record at all approaching in importance thereto. By the new law of 1896, (1) an organic connexion was established between the primary and secondary schools; (2) co-education (with some trifling exception) Latin were relegated to the University; and (4) Sloyd became an obligatory subject in secondary schools to the age of fifteen. Developments of this kind and degree are of importance not only for Norway, but also for their influence on legislation first in Denmark and then in Sweden. But before leaving Norway it may be well to note two features in the new law which, notwithstanding the great majorities by which it was passed, have remained practically a dead letter. The law, whilst making the first year of the secondary school continuous with the fifth year of the elementary school, still left it theoretically possible for the pupil to pass from the seventh or last year of the elementary school to the third year of the secondary school. In this way the organic connexion between the two schools would have been complete; and the situation would have been almost exactly similar to that which was created in certain English higher-grade schools when four ex-standard classes were erected (contrary to the law as expounded by Mr. Justice Wills) on the top of the seventh standard. But before such a step can be taken in Norway a School Board has to satisfy the Department (which in such matters always confers with the Consultative Committee or *Undervisningsraad*) that the two highest classes of the elementary school are able to do work that corresponds in quality to that of

the first two classes of the State secondary school. Otherwise it was felt that the new law, instead of lifting the elementary school to a higher level, would only pull down the secondary school to its own. The consequence has been that, with one exception of a very special character, every such attempt has failed. The exception is to be found in the capital, where the social democrats are exceedingly strong. Here a very interesting free school has been erected by the municipality upon the seventh or last year of the elementary school. It serves as a reward school for the brighter children in the elementary schools. But it is very costly; and it has moreover had a most prejudicial influence on—indeed, has almost led to the extinction of—one large private school of six or seven hundred pupils, hitherto aided both by State and municipality, which has achieved within its limits a greater amount of success than any other school, public or private, in the country. It is a poor kind of progress that destroys as much as it creates. Mr. John Morley somewhere says "Democracy is spendthrift." It certainly is so in Christiania.

The other part of the law that remains a dead letter refers to Landsmaal, as the special Norse language, artificially developed out of the western dialects, is called. By a law passed in 1885 the Storting determined by a majority of more than two to one that this Landsmaal should be put on entire equality with the Norse-Danish, which had been the usual medium of intercourse amongst educated people for five hundred years. To be able to read the beautiful lyrics and idyls written in Landsmaal is the duty of every patriotic Norseman, and should, therefore, be included in the work of every school; but to put it on a footing of equality with the established Norse-Danish is another thing. The Storting might as well ordain that on certain set occasions water should flow uphill. Accordingly, when by the new law pupils are allowed to write the essay either in Landsmaal or in the ordinary Norse-Danish, we are not surprised to find that hardly 1 per cent. of the candidates choose the former.

#### THE PRIVATE SCHOOL IN DENMARK.

In 1902 the yearly contribution of the State to the Danish *Folkehøjskoler*, all of them private, was increased from 300,000 kr. to 430,000 kr. Englishmen, last year and this, are visiting these schools in much larger number than before, to see for themselves whether what they have read of them is true. But, fortunately, no humdrum legislator, no routine administrator, was among their number. The shock might have been fatal! When told that liberal supplies of history and literature to working folks have actually increased the productiveness of labour they might, perhaps, have survived. But when assured in the next breath that large grants of public money were given to schools that claimed and received absolute freedom from control and an undivided responsibility they must have had an apoplectic fit. But wisdom is justified of her children. Even dear, sleepy, honest old John Bull, *if you will give him time*, may think there is something after all in these schools when, by slow degrees, it dawns on him that nine-tenths of the managers of the 1,100 co-operative dairies in Denmark and one-third of the members of Parliament in the Upper and Lower Houses have imbibed literature and history in these boarding schools for adults that cost their students for board, lodging, and instruction some nine shillings a week!

In the same year the State grants to the private recognized secondary schools were increased 50 per cent.; and a pension fund for teachers in these schools was set on foot, to which the State, the teachers, and the school each have to make contributions, participation in the fund being one of the conditions of State recognition. But, perhaps, my readers are aghast at such payments to private schools, and ask how any State can bear such a drain on its resources. Well, let us see. A training college for elementary teachers is not very different in its range of subjects from a secondary school for boys or girls. And in Denmark (and Norway) there are recognized private training colleges, just as there are recognized private schools. And in 1902 the 4 State seminaries sent out 88 young schoolmasters, whilst the 13 private seminaries passed 127 men and 89 women, the privately trained teachers occupying positions at the examinations slightly higher than the others—that is, the private seminaries passed 71 per cent. of the entire number (all the women and more than half the men), at an expense to the State of 51,000 kr.; whilst the 29 per cent. cost the State 145,000 kr. And such examples may easily be multiplied. The State-recognized private school or training college is, in fact (as some of our legislators are beginning to acknowledge), at once the



most efficient and the most economical instrument the statesman can employ.

#### NORWEGIAN INFLUENCE ON DANISH EDUCATION.

In 1903 another secondary-school law was passed, of a broader and more general character, and here the influence of Norway was distinctly felt. The preliminary inquiry in Norway by the Royal Commission had been so thorough and searching as almost to suffice for Denmark also. So at any rate it would seem. For the Bill embodying in the main the same four changes as in Norway seems to have been somewhat rushed (at any rate, in comparison with the pace in the two sister countries) through the Houses of Parliament.

It is only the first of the four proposed changes that needs to be dealt with here at any length—the attempt to graft as much as possible of the secondary school on the primary. Various rearrangements were devised (the Landsting prevented them from going quite so far as was designed) by which it became much easier than before to erect four stories on the top of the elementary school; and pressure from the Department was sometimes brought to bear upon the municipalities in order to make these first four years of the secondary school as free from fees as the elementary school. Some moderate increase of municipal activity in the direction of cheaper secondary education can be of good service, if it be at the expense of the weaker, unrecognized, somewhat irresponsible private schools, which in Denmark are four times as numerous as in Norway, though the population is not much greater. But it may also be at the expense of the recognized private schools, which are obliged to charge a fee not much less than the prime cost, and to which, far more than to any other agency, is due the enormous increase in the number of secondary-school pupils during the last twenty-five years. But even the most ardent advocates of greater municipal activity in Denmark acknowledge that in the face of free secondary schools the grants to private recognized schools must become correspondingly greater than before.

#### SECONDARY SCHOOLS IN SWEDEN.

Sweden, in 1904, was the last of the three countries to put her secondary schools in order. Her Commissioners, appointed late in 1899, reported at the end of 1902; and their recommendations, practically without alteration or diminution, were embodied in legislation in the spring of 1904. The Commissioners are therefore to be congratulated above those of Norway (where the Storting made some dramatic changes), above those of Denmark (where the solution arrived at by a committee, not to be dignified by the name of a Commission, has left people at loggerheads), above those of England (where after ten years there seems no immediate prospect of the Commissioners' recommendations being carried out in their entirety), on the closeness with which their recommendations have been followed, on the speed with which they have reached their goal, on the far-reaching and beneficent effect of their reforms, and on the unanimity (all things considered) with which their findings have on all hands been received.

Sweden has, at last, followed the example of her two neighbours on the west in instituting an intermediate State leaving-examination for those going out into the business of life at the age of fifteen or sixteen. And so the secondary school now consists of a six years' *Realskola*, in which no dead language is taught; and of a four years' *Gymnasium* (ten years altogether), where the student has the option of three different lines—a Latin and Greek line, Latin without Greek, and a modern line with neither (a much less hard and fast solution than that reached by Norway).

It will be convenient to indicate most of the other reforms under the same four heads we considered under Norway:—(1) With regard to the organic connexion between primary and secondary school, great care has always been taken that the first class of the secondary school should be continuous with a certain clearly defined class in the elementary school. But no attempt has been made to graft any portion of the secondary school on the primary, if only for the very good reason that the fees at the State secondary school are almost nominal, perhaps not more than one fourth of those in Norway and Denmark. A corollary of this is that when the State recognizes a private secondary school its subvention is on a much handsomer scale than in the sister countries.

(2) The State in Sweden for the first time accepts the principle of co-education, but applies it less widely than her neighbours. Nineteen State *Samskolor* are to be created in places where there

are only just enough boys and girls together to make one good secondary school, from which it will be seen that it is only the economical reason for co-education which has had much weight with the Commissioners.

(3) With regard to Greek and Latin, they are not extruded from the secondary school, but (as in Denmark) delayed to a later age. Latin is begun in the first year of the *Gymnasium*, Greek two years later.

(4) Sweden is regarded in England as the home of *Sloyd par excellence*. But in secondary schools there is much less of it than in Norway and Denmark. Provision is made for it in many schools; but it is pursued as a hobby out of school hours. It is on the one hand as voluntary as Otto Salomon would desire; but no special pains are taken to make it attractive to boys.

One further beneficent change, very late in the making, is that the Bishop and his Consistorium are replaced, as the inspecting and appointing authorities, by an *Öfverstyrelse*, specially constituted of able salaried experts, who are appointed for five years at a time, and may then return to the posts they previously occupied in the State schools.

The ninety-one recognized higher girls' schools in Sweden, with a total of about twelve thousand pupils, have increased in the five years to one hundred and fourteen. Not one of them is a State school, but all are aided by the State and some Local Authority in equal measures. Some of them are private schools, some company schools, and some municipal. The earliest, the largest, and the most important are the property of individuals. The State does not make it a condition of help that they shall all take on one type—that private and company schools shall divest themselves of their proprietary character. As the State finds them, so they remain. The same set of regulations is found sufficient for all alike. Is the school efficient?—that is the only question the State cares to ask. It may be presumed that neither the Board of Education nor the Girls' Public Day School Company, in the negotiations of last year that are now resulting in the quite needless and possibly mischievous transformation of the Company, knew of these experiences, now thirty years old, that have been accumulating for their benefit in Sweden.

There is one truth that lies on the surface in all these countries—that new ideas and developments and needed reforms come in almost entirely through the private schools. This is only another way of saying that the private school is needed even more for the sake of the public school than for its own. It is just as much a truth in our own country, but it can hardly be said to lie on the surface. Though it is not possible to make a general statement with regard to four different countries that shall be true in the same degree of each, this at least may safely be said: It is the private school that gives guarantees, and reaches a prescribed standard, but yet is allowed as the essence of its existence and the condition of its success to retain as much as possible of its freedom, which in Denmark and Norway, in Sweden and Finland, has won the chief educational triumphs in the last fifty years.

#### OBITUARY—THOMAS WETHERHERD SHARPE.

At the Midsummer General Meeting of members of the College of Preceptors the death was announced of the Rev. Thomas Wetherherd Sharpe, C.B., late President of the College of Preceptors and formerly Senior Chief Inspector of the Board of Education. The announcement was received with expressions of appreciation of his life's labours and of deep regret at his death.

Mr. Sharpe was born in 1829, his father being the Rev. Canon Sharpe, Vicar of Doncaster. He received his school education at Rossall at a time when that school was rapidly rising in repute. He passed on to Trinity College, Cambridge, and gained the Bell Scholarship. He graduated in 1852 as a double First, being twelfth Wrangler in a very strong year, and eleventh in the First Class of the Classical Tripos. He was immediately elected to a Fellowship at Christ's, where he remained as tutor and lecturer for six years. He was ordained deacon in 1853 and priest in 1854. In 1857 he was appointed one of H.M. Inspectors of Schools, and in this position he advanced in influence and favour until he became Chief Inspector, specially charged with the inspection of training colleges for men, and then in 1890 Senior Chief Inspector. He retired in 1897.

As an Inspector of schools and colleges he was always welcomed by teachers, scholars, and managers. His cheery countenance and florid complexion indicated a cheerful and kindly tempera-



ment, and first impressions of his generous and genial inclinations were more than confirmed on closer acquaintance. He was made Companion of the Order of the Bath by recommendation of Lord Rosebery, and was understood to be the only clergyman in the whole country bearing this honour.

Although elementary education necessarily absorbed most of Mr. Sharpe's time and energy, he often found time to lend a helping hand to secondary and higher work, and his broad sympathies led him to become associated with many movements. In 1893 he allowed himself to be named as the Principal of Queen's College, Harley Street, and brought his geniality and experience very heartily to bear on the work of the Council.

For twenty years he was a member of the College of Preceptors, and often laboured to secure for the College that recognition in official quarters which, in his opinion, the College had earned. He joined in 1885, became a member of the Council in 1899, was elected President in 1902, and re-elected in 1903. He gave several evening lectures, and in 1835 and 1836 he gave complete courses of lectures to teachers on the Practice of Education.

It is not possible for any one outside the official Department duly to estimate the influence of his counsels, but it is well known that many important changes and advances followed speedily on the receipt of his recommendations, and he is reputed to have been the author of some of the broadest and best improvements in the methods and curricula of training colleges, in the modes of inspecting schools, and in the aims and conditions of the pupil-teacher system, in connexion with which he is thought to have taught Mr. Morant how to produce a revolution. In all these respects it was given to him to see the fruits of his labours and the partial realization of most of his high ideals.

### SIR W. ANSON ON SECONDARY SCHOOLS.

SPEAKING at the distribution of awards of county scholarships in connexion with the West Riding County Council, at the University of Leeds (September 28), Sir W. Anson said that in regard to secondary education they were all agreed as to the end at which they should aim. A large scheme of scholarships was an excellent thing, but it was not all, because they had not yet got that which they hoped to have—an ample variety in the number of secondary schools at which those scholarships might be held. It was very true that more money was wanted for help to the secondary schools from the Board of Education, which was charged with parsimony in not giving larger grants. He admitted that the sum spent in secondary education was out of proportion and ridiculously small in comparison with the sum spent in elementary education. But since the Education Act came into force there had been great financial pressure, and when the income tax was a shilling in the pound or more it was not easy to get money for any purpose. As soon as the financial pressure was over, the first claims on the Treasury would be the demands of the secondary schools and assistance towards the training of pupil-teachers. He maintained that the grants made were given to better purpose than formerly. A definite course of study and a higher character and aim than that of the elementary school were kept in view. The object was to give a generous and liberal education, and the object of the Board was to strive to restore the balance in regard to the school in receipt of the "A" or science grants, and to see that no schools should be placed on that footing hereafter unless special circumstances justified it.

There must be many schools and children to whom the study of foreign languages was more important than the study of science; and it was hoped that, by enabling the schools to develop in the two directions—on the lines of science and the lines of languages, the schools would be rendered more useful. One result had been that the number of schools coming in for grants had been nearly trebled, and the amount of the grants to the beginning of this year had doubled. More would be done if there was the money to bestow.

The Education Committee had recommended the Board to insist that teachers in secondary schools should be placed upon the Register of Teachers before the school they represented was entitled to Parliamentary grants. That was a matter requiring serious consideration. The Register of Teachers was not in the working order they would like to see it. Another suggestion was a reduction in the number of examinations. He was not one of those who would "call" examinations, and say they were an injury to education. They were useful in their way, but he agreed with the Education Committee that the examinations

should be largely diminished in number. He was sure the Board would second any efforts in that direction. It had always seemed to him that the future of a boy or girl should not depend upon the result of a single examination or performance, but that a certain period of time should be looked at. If he thought that the withdrawal of the contributions to the scholarships would go to the withdrawing of a single penny that the Board spent on secondary education, he should oppose it to the utmost of his power; but, if they had the money to spend on secondary schools, it was considered it could be used to better advantage in improving the condition of the school. He felt great sympathy with the demands made for larger contributions from the Treasury towards the training of teachers. This seemed to him a subject which should be largely taken up by the Exchequer and the Central Authority.

## REVIEWS.

### A NEW HISTORY OF ENGLAND.

*The Political History of England.* In Twelve Volumes. Vol. X.: 1760-1801. By William Hunt, M.A., D.Litt., President of the Royal Historical Society. (7s. 6d. net. Longmans.)

There is abundant room for this bold and fresh enterprise in the improvement and popularization of historical study. We have, indeed, countless works on the history of England on various scales and of various quality, many of them excellent, yet the more notable of them appealing chiefly to professed historical students, while the schools are too often served by scrappy compilations not always drawn from the best sources or framed in the historical spirit. The names of the general editors of the present work—the Rev. William Hunt, D.Litt., President of the Royal Historical Society, and Mr. Reginald Lane Poole, Ph.D., editor of the *English Historical Review*—furnish an adequate guarantee that the contents will be in close relation with the original authorities. The distribution of the labour among a dozen specialists in the different periods provides a further assurance of really competent treatment: indeed, such co-operation is not only advisable, but practically necessary, in consequence of the vast number and extent of the authorities in print and in manuscript. The primary aspect is political—the evolution of events and the conduct of affairs of a State or body politic; but the complexity of national life involves also the presentation of the religious, social, intellectual, and economic forces in constant and important action. While reasonable fullness and substantial accuracy in the record of objective facts are to be expected, there will necessarily be occasions of difference of interpretation, and here will lie the real test of the historical capacity of the writers. It may be answered that the writers are all selected for the very reason that their historical capacity is tried and proved; and in a sense that is true, but the answer is not complete, nor conclusive within its limits. Only the field of interpretation must be left so far open: we cannot all think precisely in the same grooves, and a certain degree of reasoned difference must be admitted. The enterprise is most praiseworthy. The volumes are in handy form, demy octavo, about 500 pages each, and each is to have its own good index and two or more maps. The publishers furnish forth the work in a style wholly worthy of their great reputation.

The first volume issued is the tenth, covering the forty odd years from the accession of George III. to the close of Pitt's first administration (1760-1801). The writer is Dr. Hunt, one of the general editors; and accordingly the volume may be regarded as representing the standard in the minds of the projectors. In the general view, it rises ably to the conception suggested by the editorial statement of objects. The narrative is lucidly disposed, presented in proportionate and adequate fullness, and written in a clear, scholarly, and attractive style. The useful list of authorities appended, the occasional footnote references, and the silent internal evidences of the text all point to laborious first-hand work both on published treatises and documents and on sources unhappily still lying in manuscript. Dr. Hunt has striven very strenuously to get at the positive facts of his period: we make no account of an occasional slip—like November 7 (page 61) for October 7, 1765, as the date of the New York Congress on the Stamp Act. While he has placed some of the leading men in English political life in a more critical light than usual—for example, Pitt and Fox—we should have liked a more decisive opinion on Clive and Hastings, and a far more stringent handling of Burke, especially as to his egregious performances



in the trial of Hastings. With regard to the quarrel with America, the analysis seems to indicate what might almost be called prejudice against the colonists: the colonial case is by no means adequately set forth, and the treatment of Samuel Adams in particular does not satisfy our sense of justice. It may be that sooner or later the quarrel must have come; yet it may not be. We think it adventurous to say that "the spirit which underlay it can be traced with growing distinctness since 1690." It no doubt was "a spirit of independence, puritan in religion and republican in politics, impatient of control, self-assertive, and disposed to opposition"; but it required extreme and persistent folly to work it up to open revolution. The dissatisfaction for some three-quarters of a century after 1690 appears susceptible of ample explanation on grounds far removed from ideas of separation. At the present day we have a miserable analogy in the conditions of our government of India—"Absit omen!" An official historian of India would trace Indian dissatisfaction to revolutionary motives; an independent historian would probably find adequate causes in the action of the Government, and pronounce any revolutionary appearances as counsels of despair. Consider, also, our recent differences on the Boer War. It is so difficult to do justice to the other side when one's patriotic feelings are engaged as in some real sense parties to the opposing contention. But when the case has gone into history for more than a century the patriotic bias should be at a minimum. The handling of this great episode is the chief count we have against Dr. Hunt. The case of the "fearful conflict" with France is somewhat similar, though not quite so open to dissent. Pitt, we are told, "was called on to give England what was infinitely more important than liberal measures—the preservation of its constitutional and social life from the danger of revolution." That statement gives the underlying principle of interpretation; but the actual conditions in England and the subsequent changes might have induced a grave doubt as to its validity. However, the Continental involvements of the country and the views of the governing classes have to receive due weight, whatever may be thought of the Government policy from the point of view of the period or from the point of view of the present day. The "insolence" of France was certainly irritating, and Pitt had undoubtedly been patient and reluctant, though Grenville had been anything but prudent. We do not accept the justice of the censure implied in saying that Fox "was one of those—in England there are always such—who rate the cause they love above their country's cause": the first allegiance is to the justice of the case, and Fox had ample grounds for an honest belief in his attitude, however reckless he may have been in expression. That England, after all, proved "finally the saviour of Europe" is an extremely disputable proposition. The treatment of Irish questions, in like manner, leaves a sense of inadequate probing; but Ireland we always have with us, just for that reason.

The points we have indicated are, of course, points on which Dr. Hunt will probably have the majority with him. In any case, they constitute elements of inevitable dispute: you must take one side or the other. The volume, on the whole, must be regarded as the best now available on its period; and, if it be rather expansive for a text-book, it ought to be in the school library, ready to extend and clarify the ordinary history. Students will require no compulsion to read it once they have dipped into it; and to the general reader it will be most welcome. There are three excellent maps—(1) Great Britain, showing the Parliamentary representation of Great Britain at the time; and (2) and (3) the United States of America, northern and southern sections, illustrating the War of Rebellion and the Treaty of September 3, 1783.

#### "HELLENISM."

*The Progress of Hellenism in Alexander's Empire.* By John Pentland Mahaffy, C.V.O., D.D., D.C.L., some time Professor of Ancient History in the University of Dublin. (5s. Chicago: University Press. London: Fisher Unwin.)

By Hellenism Dr. Mahaffy means, not (as Grote means) the high culture of Athens, but (as Droysen means) "that diffusion of Greek speech and culture through Macedonia and the nearer East which, while it extended the influence, could not but dilute the purity, of Hellenic civilization." Perhaps, he says, he should have coined "Hellenicism," to correspond to "Hellenistic." He should; though, after all, the comparison would be maintained by "Hellenist." However, he specifies clearly what he means, and that should obviate the whole difficulty. The customary

dating of the origin of this Hellenism (or Hellenicism) from the reign of Alexander he regards as a superficial view, and he devotes the first of his six lectures—lectures delivered in the University of Chicago—to show that "it began from the moment that Athens ceased to be the dominant centre of Greece in politics as well as in letters." In this first lecture he treats of Xenophon as the precursor—the Attic bee that gathered honey, "not merely from the thyme of Attica and the cistus of the Peloponnese, but from the rose gardens of Persia and the sun-flowers of Babylonia"; and through a series of details he supports his contention that, "in the main features of his life and teaching, Xenophon represents the first step in the transition from Hellenedom to Hellenism" (that is, from Hellenism to Hellenicism). The most important point he dwells on is Xenophon's firm belief in the expansion of the Hellenic race.

It was, however, to Alexander that the first great spread of Hellenism was directly due. The customary date of origin therefore fixes the substantial rise of the movement, and, in going back to Xenophon, Dr. Mahaffy only seems to indicate the most striking of the earliest tendencies, which the ordinary chronology might fairly be taken to presume, such events as Alexander's Eastern expedition not occurring without preliminary. Perhaps, indeed, it is well to point out the first traces explicitly, and, in any case, the lecture on Xenophon is fresh and attractive, presenting a familiar figure in a less familiar attitude. If Alexander had fallen in his first *mêlée* at the Granikos, "the whole history of Hellenism would have been changed, and its progress delayed till some other organizing and conquering genius had arisen." True; and what is this but further emphasis on the ordinary date of commencement of the period? How far, and in what ways, the history would have been changed, and how long the genius would have been in arising, is futile speculation; but it seems somewhat contemptuous of Alexander's generals to assume that none of them would have had the pluck, the capacity, and the ambition to carry forward the plan of conquest. In any case, it is surprising that Dr. Mahaffy should turn aside to stigmatize as absurd "the now somewhat fashionable theory that national movements are everything and individuals nothing in history"—a theory, if there be such a theory, that needs more careful statement or else deserves no notice whatever. But Dr. Mahaffy is an outspoken hero-worshipper, who does not shrink from justifying even "tyrants"—at least, when they are Greek—and has no patience with a dominant power that is weak enough to permit any such "nonsense" as home rule, or any such "mere fooling" as talk of liberty, or with politicians that argue "that present legislation should direct itself to the atonement of hypothetical crimes committed against the mythical ancestors of imaginary descendants." "If you knew how powerful a factor this social question has been in the modern difficulties of Ireland with England, you would attach great weight to this remark." And, moreover, if you knew some other sides of the question, you would attach great weight to certain very different remarks that Dr. Mahaffy has not made. Yet, in spite of the Irish colouring of Macedonian and Greek relations, Dr. Mahaffy's sketch of the Antigonids and the government of Greece by Macedonia is remarkably vivid and instructive.

The history of Egypt as a Hellenistic kingdom is less complicated, but not less important, and Dr. Mahaffy deals with it mainly upon the social and intellectual side. "Think what we owe to Alexandria!"

First of all, the Greek version of the Old Testament. Secondly, the development of pure mathematics and of mechanics, which led the way for the great men of Europe—Descartes, Pascal, and Leibniz—when they set out upon that great voyage of discovery in science which has revolutionized modern life, and of which the immortal Euclid is still the first great name. Thirdly, that first great essay in really religious philosophy which, under the name of Neo-Platonism, passed to the Mystics of the Middle Ages, and has been the parent of the deepest and purest elements in all our modern religions, humanly considered.

As for literature, "the influence of Alexandria was of a very peculiar kind: indirectly, enormous and permanent; directly, you might well think it an epoch of decadence but for the idylls of Theocritus." Yet "it is most melancholy, and very curious, that we have not a single picture of social and literary life at Alexandria all through its great period." And, as for the general influences, "it was the Ptolemies who became Egyptian, not the Egyptians who became Hellenistic." The external policy of the Ptolemies is also briefly, but pointedly and interestingly, described. The sketch of the heterogeneous and misnamed



kingdom of Syria, of the Seleucid and the Attalid kings, though necessarily disconnected, is yet an integral part of the picture. The last two lectures—general reflections on Hellenism, and Hellenistic influences on Christianity—are striking examples of lucid compression and vivid presentation. They sum up worthily the results of twenty years' special study, and are full of suggestion, as well as instruction. The volume is indispensable to the student of the period, and it will send the general reader to wider supplementary studies.

#### A BRILLIANT MATHEMATICAL MONOGRAPH.

*Kummer's Quartic Surface.* By R. W. H. T. Hudson, M.A., D.Sc. (8s. net. Cambridge University Press.)

In approaching the consideration of this work, a thought of Milton's "Lycidas" arises unbidden in the mind, and something more than a passing sense of the pathetic is awakened by the circumstances which preceded the appearance of Dr. Hudson's brilliant contribution to the store of mathematical literature. By his untimely death, the young author left unpublished, though fortunately not unfinished, the manuscript of this, his most important written work. The treatise professes to be a dissertation on a special geometrical surface, but the many-sided mode of treatment calls for the discussion of portions of the theory of various mathematical subjects more or less directly related to the principal theme. The marked skill with which each new point is handled bears abundant testimony to the high order of the writer's mathematical ability as well as to the width of his reading; and the thought suggests itself that in all probability much important literary work in the field of mathematics would, under normal conditions, have been the fruit of mature years. The opening chapter is introductory to the discussion of the 16-nodal quartic surface. Here the reader is first occupied with a brief description of some of the chief properties of the pair of tetrahedra formed by properly combining the twelve diagonals of the faces of the simple cube. The *proper* method of combination is perhaps not made sufficiently obvious in the text, but it consists in selecting for the edges of either tetrahedron six diagonals such that the pair derived from parallel faces of the cube are not themselves parallel. The two figures thus obtained are shown to imply the existence of a third, and the three together constitute a desmic system, a configuration important in the theory of quartic surfaces and possessing remarkable characteristics, amongst which may be noted the property that any two of the three figures are in fourfold perspective. Next follows a definition and short account of what is to be understood by a *group* of operations. Such *groups* play an important part in algebraic analysis, and many of them are capable of geometrical interpretation: the one discussed by the author is fundamental in its bearing on the theory of the configuration with which his treatise is concerned. It is in the second chapter that Dr. Hudson turns to the theory of the quartic surface proper, and enters on a most interesting investigation, in which, after a few preliminary remarks respecting the general surface, he institutes a detailed inquiry into the 16-nodal variety, viewing it from a geometrical and from an analytical standpoint. In the successive chapters of the work the main theme is ably treated, and there are, in addition, very interesting digressions of varied character, all introduced for the sake of completeness. It would obviously be impossible within the limits of a brief review to follow in detail the contents of the many chapters and sections; we must be content to call attention to the intrinsic value and interest of the volume and to dwell on the special importance attaching to a connected treatise on a subject the literature of which exists to so large an extent only in memoirs scattered through the principal English and foreign mathematical periodicals.

## GENERAL NOTICES.

### CLASSICS.

*Greek Reader, Vol. I.* By E. C. Marchant, M.A. Oxon. (2s. Clarendon Press.)

The text is selected from the "Griechisches Lesebuch" prepared by Prof. von Wilamowitz-Moellendorf, acting for a committee appointed in 1900 by the Prussian Minister of Education. The original choice of passages "was guided solely by consideration of the interest and importance of their subject-matter." They make excellent reading for beginners, and they are adequately explained by the introductory remarks and the appended notes. This will be an attractive and serviceable reading-book, no doubt; the Greek is good enough, and

the complaints of the purists may safely be neglected. But we do not agree with Mr. Marchant in his denunciation of the parasangs of Xenophon or in his estimate of the youthful incomprehensibility of the feelings of Euripides.

We welcome the second edition of *Septem Psalmorum Pœnitentialium Versio Elegiaca*, by R. Johnson Walker (5s. net; to be had of the Bursar of St. Paul's School). It has the Hebrew and the Latin on opposite pages, and it is very tastefully got up.

Mr. Fisher Unwin publishes a cheap edition of *Augustus*, by E. S. Shuckburgh, M.A., Litt.D. (5s. net)—a substantial piece of work (as we have already seen), deserving to be widely studied by classical students.

### MATHEMATICS.

*An Introduction to the Calculus.* By George A. Gibson, M.A., F.R.S.E. (3s. 6d. Macmillan.)

Many students find the ideas of the differential and integral calculus difficult to assimilate. To these more especially, though not by any means to them alone, Mr. Gibson's new work will be a very acceptable text-book. Its pages unfold the theory of the subject in a manner so closely allied to that in which a teacher might explain it orally that the beginner is materially assisted in the effort to realize the meaning of each fresh principle as it is introduced. The initiated reader also will, we are sure, form a high opinion of the instruction given and of the mode of exposition, and will be ready to accept without demur the statement of the preface that courses on similar lines used by the author in his own large classes of evening students have stood well and repeatedly the test of experiment. Whilst engaged on the first half of the volume, the reader is occupied merely with algebraic functions and the more elementary applications of the calculus, and has, therefore, every facility for becoming conversant with the first principles of the subject of study itself before he is called upon to attack it in its relation to trigonometrical and exponential series. There appears to be much force in the argument advanced by the author in favour of the order selected, namely, that often the trouble experienced by the student of the ordinary text-book when the above named series are discussed arises from a defective knowledge of trigonometry rather than from the difficulties of the calculus itself. The writer dwells on the necessity for thorough familiarity with trigonometry before it is considered in connexion with the calculus. Mr. Gibson uses graphs freely, but he employs the method of limits as the basis of his work throughout. The value of independent effort is duly recognized by the frequent introduction of sets of exercises, and the many fully worked examples give the necessary insight into the principles generally valuable in an attempt to solve any problem.

*The Elements of Trigonometry.* By S. L. Loney, M.A. (3s. 6d. Cambridge University Press.)

The author's treatise on "Plane Trigonometry" (now in its sixth edition) is sufficiently well known to both teachers and students of mathematics. The contents of the present volume are culled from the larger work, and include all those simpler portions of it that are requisite in order to produce a text-book suitable for the beginner. Some variations of sequence have been made, principally with a view to distributing the difficulties that would tend to hamper progress if met with in close succession. It is, perhaps, as well to direct notice to the tables of four-figure logarithms given at the end of the book, and to call attention to the fact that they are reproductions of those used by the Cambridge Local Examinations Syndicate for their examinations.

Mr. Henry Frowde (Clarendon Press) issues a second edition of *An Elementary Treatise on Pure Geometry* (9s. net), by John Wellesley Russell, M.A., Mathematical Lecturer of Balliol and St. John's Colleges, Oxford, sedulously revised and improved; and a third edition of *An Experimental and Theoretical Course of Geometry* (2s.), by A. T. Warren, M.A., second master at the William Ellis Endowed School, N.W., with useful additions. Both works are thoroughly practical and efficient.

Messrs. Longmans publish a second enlarged edition of *Higher Mathematics for Students of Chemistry and Physics*, with special reference to practical work, by J. W. Mellor, D.Sc. (15s. net). We had a very high opinion of the first edition, and are glad to note the searching revision that it has undergone for its further improvement. "The subject-matter has been re-written, and many parts have been extended in order to meet the growing tendency on the part of physical chemists to describe their ideas in the unequivocal language of mathematics."

### FRENCH.

(1) *The Moscow Expedition* (Thiers), edited by Hereford B. George, M.A. (5s.)—(2) *Voyage aux Pyrénées* (Taine), edited by William Robertson, M.A. (2s. 6d.)—(3) *Une Ténébreuse Affaire* (Balzac), edited by Marie A. Péchiné, B.A. (2s. 6d.) (Clarendon Press.)

(1) Mr. George's selection recalls the late Mr. E. E. Bowen's four admirable Napoleonic volumes, and may be placed by their side. Omitting the earlier portion of the campaign, Mr. George begins with the eve of Borodino. The expedition "has a dramatic unity and complete-



ness that has scarcely a parallel in history, and it is narrated by Thiers with a vividness which might well make less eventful history attractive." The narrative occupies 258 pages; the notes about 50, explaining the matter and furnishing many historical corrections, the work being "rather a prose epic than sober history." There are six opportune and excellent maps. (2) and (3) are new volumes of the Oxford Modern French Series, both presenting the excellent qualities that we have already noted in their dozen predecessors.

The 57th edition of the *New Grammar of French Grammars*, by Dr. V. de Fivas, M.A., F.E.I.S. (2s. 6d., Crosby Lockwood & Son), shows a most thorough revision, with considerable enlargement, some 80 additional pages being due to the fresh insertion of 258 graduated French preparatory texts in prose and verse, one before each of the original exercises, for use in reading and translation. The work thus presents a very adequate combination of theory and practice. It is beautifully printed, and agreeably and substantially got up. Its new lease of life will be a very long one.

#### ENGLISH LANGUAGE AND COMPOSITION.

*Elementary Guide to Literary Criticism.* By F. V. N. Painter, A.M., D.D., Professor of Modern Languages in Roanoke College. (3s. Ginn.)

Prof. Painter first treats briefly of the nature of criticism, the relation of the author to his work, and the æsthetic principles underlying literary art, presenting main facts and principles with a view to giving "a clearer and deeper insight into the nature and processes of criticism." It may be that teachers will prefer to take this section last. The second Part deals with rhetorical elements—words, sentences, paragraphs, figures of speech, and style. The third Part considers the nature, structure, and kinds of poetry, and the nature and forms of prose, with more particular reference to essays, oratory, and fiction. Appended to each chapter is a selection of review questions, and of illustrative and practical exercises. The exposition is lucid and simple, but we should have liked more practical direction on important points: the treatment of the sentence seems very inadequate, and the generalities upon narration should have been supported by detailed consideration of the particular means of attaining the desired results. Indeed, we are inclined to think that Prof. Painter should have taken for granted the subjects of his second and third Parts, and handled the matters pertinent to literary criticism independently and much more fully. At the same time, the volume gives a clear and sensible general sketch of the three departments in an agreeable form. It is nicely printed and tastefully got up.

*A Grammar of Late Modern English.* By H. Poutsma, English Master in the Vierde Hoogere Burgerschool met Driejarigen Cursus, Amsterdam. Part I.: The Sentence. Section 1: The Elements of the Sentence. (Fl. 2.75. [say 4s. 6d.] Groningen: P. Noordhoff.)

Mr. Poutsma has read his English authors with minute and critical diligence, and with full understanding: the only qualification we care to add is that he makes no serious attempt to discriminate between different authors in point of authoritative value. Derivation, word formation, and phonetics lie outside his programme; and he draws no line of separation between accident and syntax. His object is "to give a survey of the most striking features of Late Modern English, as it presents itself to Continental—especially Dutch—students who have passed the elementary stage." By Late Modern English he means the English of the last two hundred years, but "it is especially the literature of this and the previous generation that has been subjected to closer investigation." He lays out his subject on a well considered system, and illustrates in detail by an immense collection of examples. The work cannot but be extremely useful to Continental students; and there is not enough Dutch in it—there is none at all except for occasional comparison—to deter English teachers from taking advantage of its abundance of illustrative matter.

#### HISTORY AND GEOGRAPHY.

*Regional Geography.* (1) *The British Isles.* (2) *Europe and the Mediterranean Region.* By J. B. Reynolds, B.A. (2s. each. Black.)

The purpose is to give a good grasp of the physical facts and principles, and at the same time to show the special bearing of these upon the scenery of the countries and the life of the peoples. Questions and suggestions are appended to the various sections. In (1) there are 20 maps and diagrams and 65 illustrations; in (2) some 60 maps, diagrams, and tables, and 17 illustrations. The outlines are clearly presented, and details are furnished in judicious selection. The illustrations are sometimes more pictorial than geographical; but the maps and diagrams are always pertinent and instructive. An able and useful work.

The *Ninetieth* (Memorial) Edition of Cornwell's *School Geography* (Mathematical, Physical, Commercial, and General), revised by Ben Jonson and edited by J. Cornwell Round, M.R.C.S., is beyond the praise or the blame of the critic. It maintains the well known form, and includes 51 coloured maps (physical and political), 6 star maps, 94 maps in black and white, and 64 diagrams (3s. 6d. Simpkin,

Marshall, & Co.). So we need but mention the *Seventieth* edition of Cornwell's *Geography for Beginners*, revised, edited, and published by the same hands (1s. 9d.). The vitality of these geographies, old-fashioned as they may seem, implies a sound original constitution and continuous and discriminating supervision.

Mr. Murray has just issued a second and cheaper edition (5s.) of Mr. C. R. L. Fletcher's fresh and vigorous *Introductory History of England*, from the earliest times down to the close of the Middle Ages.

#### MAPS—CHARTS—DIAGRAMS.

Messrs. Ruddiman Johnston & Co. have issued an admirable *Map of the British Empire* on Mercator's projection (18s., including a descriptive handbook, which is published separately at 6d.). It measures 72 × 63 inches, and is varnished and mounted on strong linen and rollers. While the British Empire is coloured red, each European country (with its foreign possessions) is also indicated by a distinctive colour; so that the map is printed in eleven colours. The map shows the present extent of the British Empire, and marks the comparative areas of the different portions; two inset maps give for comparison the extent as at 1760 and 1860; and a corner is provided for a considerable collection of well chosen information as to the magnitude and wealth of the Empire—area, population, imports, and exports. The mountain chains and other physical features are represented; and special attention has been given to the great mercantile ports, British and foreign, the principal sea and railway routes connecting them (the distances being often noted), the positions of the more important submarine cables, the naval stations (with the disposition of the various squadrons of the fleet), the naval and mercantile coaling stations, &c. The workmanship is excellent, and the map ought to prove exceedingly useful as well as attractive.

Messrs. W. & A. K. Johnston's *Simplex Wall Atlas of the British Empire* (21s.) contains six sheets, 30 × 40 inches, mounted on cloth, with metal rimming at the bottom to prevent curling up, the whole securely fastened, in ornamental covers, to one roller, with suspenders for the blackboard. The subjects are disposed thus: (1) Central and South Africa, (2) Australia, (3) New Zealand, (4) Canada and the West Indies, (5) India, and (6) the British Empire in 1837, and again in 1903 (showing means of communication). The physical features are strongly marked, and the colouring is bold and attractive. Only important names and features are delineated, the names being visible to the teacher only. The series is capitally executed. The same publishers have also produced an excellent *Commercial Library Map of Scotland* (6s.), showing the main roads, steamer routes, railways, and all railway stations, compiled from the latest Survey, eight miles to one inch. In corners are specially given the environs of Glasgow and of Edinburgh, and the Orkney and Shetland Islands. The names are extremely full, but also extremely clear; and the map is remarkably cheap.

Messrs. Philip have provided a new edition of their *Chart of Geographical Terms*, illustrating clearly and simply the initiatory steps in the study of geography. It has, in fact, been entirely redrawn, and is thus greatly improved. It is available either in a single sheet, 64 × 54 inches, mounted on cloth, with rollers, and varnished, or, if preferred, as a wall-atlas (Philips' Comparative Wall-Atlas, Set I.) in four sheets, each mounted on cloth, with wooden ledge to turn over (14s. in either form). The four sheets show (1) a historical landscape, illustrating graphically the chief features—land and water; (2) a map corresponding with the landscape and illustrating geographical terms, political and physical; (3) pictures and plans of school and neighbourhood; and (4) elements of mathematical geography (picture illustrating method of ascertaining direction by the Sun, map of the World illustrating the points of the compass, map of the World showing divisions of land and water, zones, &c., and the World in space). The design is comprehensive, and it is worked out agreeably and effectively. The workmanship is thoroughly good. The Chart (or Wall-atlas) will form a very attractive and efficient introduction to the study of geography.

Messrs. Asher & Co. publish Schröder and Kull's *Biological Diagrams for the Teaching of Zoology* (3s. each plate; or, mounted on rollers and varnished, 5s.). No. 1, the Common Squirrel, is variously exhibited in characteristic surroundings and attitudes double life size, and round the margin are shown, also on double scale (in two cases, four times life size), the more important parts. The plate is 34 × 42 inches, and is designed, reproduced, and coloured very artistically. It ought to prove very serviceable as "an object-lesson in the truest sense of the word."

#### ART—DESIGN—DRAWING.

Messrs. Thomas Nelson & Sons have now published Stage V. of their *New Drawing Course*, consisting of ten sheets (20 × 25 inches) printed on both sides—one side outline, the other in colour—on stout cards in strong cloth portfolio (15s.). The course aims at furnishing a complete series of examples in (1) Outline Drawing from Nature and Objects, (2) Brush Drawing from Nature with adaptations to Pattern, (3) Clay Modelling, (4) Mechanical Drawing, and (5) Cardboard Modelling, and treats all the branches in correlation, not separately. Each sheet



provides work covering a definite period in all the branches. An accompanying Handbook deals very fully with the educational and practical side of each subject, with abundant illustrations. The preceding four Stages (with Handbooks), we understand, have been adopted by the L.C.C. Education Committee, and Stage V. is worthy to keep them company. The whole series is admirable. The author, Mr. J. Vaughan, was formerly an Art Master under the London School Board, and is now Director of Drawing and Manual Training under the School Board of Glasgow.

Messrs. Blackie & Sons offer *A Complete Course of Free-Arm and Industrial Drawing*, by J. W. Topham Vinall, A.R.C.A. Lond., Art Specialist to the L.C.C. Education Committee and Inspector of Drawing (12s. 6d. net). There are 52 plates, many of them elaborately coloured, ranging from simple exercises, adapted to children of three to five, up to work suitable for pupils of fourteen and upwards. The plates are very fully described, with ample directions, cautions, &c. The Introduction deals with the equipment of the art side of secondary schools, and particularly with the equipment of a drawing class-room for 25 secondary-school pupils, with free-hand, memory drawing, apparatus, ambidexterity, &c. The work is not intended merely to supply a set of drawing copies: "its appeal is direct to the teacher; it is, in short, a text-book and guide to enable class teachers to know how best to translate modern drawing schemes into practical lessons, how best to use the charts, how to devise their own copies to meet certain emergencies, how to deal with Nature drawing—what, in a word, should be the aim of the teacher in each given lesson." The examples have been thoroughly tested in London schools by the author and by teachers that have attended his lectures. The work has been thought out and worked out with great ability and much labour.

*Blackie's Brush Drawing Sheets*, by J. W. Nicol, Art Master at the Hanson Higher Grade School and School of Science, Bradford, are in three sets, each set containing 15 sheets (12s. 6d. per set). The sheets measure 28 x 30 inches, and they are graduated with marked care and beautifully coloured. They afford a thoroughly well conceived and executed course of varied and progressive work in a most attractive form. Set I. is suitable for Standards I. to III.; Set II., for Standards IV. and V.; and Set III. for Standard VI. and higher classes.

## CHRISTMAS BOOKS.

### I.

#### HISTORICAL TALES.

In *Smouldering Fires, or The Kinsmen of Kinthorns* (5s., Nelson), Miss Evelyn Everett-Green presents her sixteenth annual romance of history. She works the story of a bitter family feud—"the feud betwixt Red and White"—into the catastrophic events that occurred in Martinique at the time of the eruption of Mont Pelée. She acknowledges her indebtedness for the main part of the facts and descriptions in the story to M. Angelo Heilprin's book on "Mont Pelée and the Tragedy of Martinique" (Lippincott). M. Heilprin visited the island twice—"once immediately after the first eruption in May, 1902, and again in the summer of that year, making his ascent on the very day of the second eruption, and narrowly escaping from the death-blast that same evening." The local colour is strong, and the story is told with Miss Green's habitual charm. Six coloured illustrations by E. Shepard.

*Red Dickon*, by Tom Bevan (2s. 6d., Nelson), is a stirring narrative of the period of Wat Tyler's rebellion. Red Dickon's father was unjustly condemned to death by the Abbot of St. Albans and duly executed; so the hero soon found himself in a camp of outlaws, and in the company of John Ball, Wat Tyler, and like malcontents. Adventures follow briskly, including the insurrection in the home counties. Eventually King Richard does justice at St. Albans, and even exhibits generosity; and all is well that ends well. The story is written with vividness and spirit, and will give a good idea of the time and circumstances. Two coloured illustrations by Walter G. Grieve.

*His most Dear Ladye*, by Beatrice Marshall (5s., Seeley), is a charming story of Mary Countess of Pembroke, sister of Sir Philip Sidney, "the most gracious and sweetest of great ladies." Many references to well known men of the time and to the literature of the period are deftly interwoven with the personal narrative. A delightful book, beautifully printed and illustrated, and attractively got up.

*A Goodly Pearl*, by Mary H. Debenham (2s. 6d., National Society's Depository), tells "the story of the Queen and Saint whom England gave to Scotland," and whom her contemporary biographer calls a "precious Pearl." While displaying the benign influence of a good woman, the story is full of brisk interests, and conveys a very fair idea of the life and conditions of the period. Miss Debenham is becoming voluminous, but the book implies long and patient and careful work.

#### STORIES OF ADVENTURE.

*The Blue Adventure Book* and *The Black Adventure Book*, both edited by A. T. Quiller-Couch (5s. each, Cassell), contain a series of stories from

"The World of Adventure," with a profusion of illustrations and half a dozen plates apiece. You may trust the editor's taste for the selection: it is amply varied, and there is not a dull page in either volume. Indeed, what boy or girl ought not to read both volumes from one end to the other? Only give them the chance.

Mr. Fisher Unwin's "popular edition" of *The Voyages and Adventures of Ferdinand Mendez Pinto, a Portugal* (3s. 6d.), in the "Adventure Series," may well serve as a modest Christmas gift-book. The veracious Pinto records "his travels for the space of one-and-twenty years in the kingdoms of Ethiopia, Tartaria, Cochinchina, Calaminham, Siam, Pegu, Japan, and a great part of the East Indies, with a relation and description of most of the places thereof—their religion, laws, riches, customs, and government in the time of peace and war—where he five times suffered shipwreck, was sixteen times sold, and thirteen times made a slave." The book is an abridgment of Henry Cogan's translation of 1663 (by omission of the less interesting matter), the most adventurous and curious passages of Pinto's narrative being retained and forming a thick volume of well on to five hundred pages. Prof. Vambéry furnishes an introduction, and there are six illustrations from Linschoten.

*Archibald's Amazing Adventure, or The Tip-Top Tale*, by Harry Rountree and S. H. Hamer (1s. 6d., Cassell), if probably less historical than Mendez Pinto, will be more to the minds of smaller folk. Its fun tends to be riotous, and perhaps that will not tell against its popularity with irresponsible youth. There are four coloured plates, and illustrations galore.

#### YARNS OF THE SCHOOL.

In *The Schoolboy Abroad* (5s., Black), Ascott R. Hope proceeds on a fresh line of exceptional interest. He takes his readers abroad, and introduces them to the multifarious aspects of the school life of Europe. It is not by any means so easy as it may look at first blush to find the necessary materials, but Mr. Hope has patiently and indefatigably pieced together connected and very engaging descriptions, chiefly from autobiographies in different languages. "Most of the matter," he says, "must bear the reproach of being matter-of-fact"—as it ought to be; but the play of invincible humour sparkles over every page, and the book will be found to be quite as amusing as if it had been a formal story. "Some of it," he thinks, "might prove instructive not only to schoolboys, but even to such schoolmasters as are not above instruction or amusement." Certainly; and even schoolmasters will miss it at their proper peril. The matter is extremely varied, and everywhere interesting and instructive, and the style is free, genial, and delightfully humorous. Rare indeed are such verve and buoyancy, such healthy play of humour in the presentation of facts, and such wide accomplishments borne "lightly as a flower" in the adornment of the narrative. In point of literary quality, as well as of fresh and abounding interest, here is one of the very foremost books of the season.

Two of Andrew Home's school stories—*From Flag to Monitor, or Fighting to the Front* (3s. 6d.), and *Exiled from School, or For the sake of a Chum* (2s. 6d.)—are reissued by Messrs. A. & C. Black, each with eight illustrations in colour, by John Williamson. They will be quite as good as new to fresh readers, and they deserve their new lease of popularity.

#### MARVELS OF SCIENCE.

*The Romance of Insect Life*, by Edmund Selous (5s., Seeley), offers most interesting descriptions of strange and curious inhabitants of the insect world, sure to excite inquiry and to foster observation. There are ants white and yellow, locusts and cicadas, bees and butterflies, spiders and beetles, scorpions and cockroaches—and especially ants—with a really scientific investigation of their wonderful habits, not in dry detail, but in free and charming exposition and narrative. An admirable book to put in the hands of a boy (or a girl) with a turn for natural science—and whether or not. Twenty-one capital illustrations by Lancelot Speed and Carton Moore Park; and very attractive get-up.

*The Romance of Modern Mechanism*, by Archibald Williams (5s., Seeley), in like manner gives most interesting non-technical descriptions of wonderful machinery and mechanical devices, marvellously delicate scientific instruments, and so forth. There are watches and chronometers, calculating machines, workshop tools and other furniture, engines used for the most diverse purposes and worked by various means, motors by land and by water, the machinery of ships, of agriculture, of commerce, of dairying, of lifts and elevators, of diving and of raising sunken objects, of ropeways and cableways, pneumatic mail tubes, sculpturing machines, and what not. A book of absorbing interest for the boy with a mechanical turn, and, indeed, for the general reader, written in simple and lucid style, furnished with thirty excellent illustrations, and most agreeably got up.

*The Romance of Modern Electricity*, by Charles R. Gibson, Associate of the Institute of Electrical Engineers, similarly describes in non-technical language what is known about electricity and many of its interesting applications, with thirty-four illustrations and eleven diagrams (5s., Seeley). Mr. Gibson inquires what electricity and magnetism are, explains how we came to know about electricity and how it is related to magnetism, tells about the telegraph and how it is worked, and follows out the applications of electricity in railways, in coal-mines,



in the observatory, in medical practice, in chemistry, and in many other practical applications; and he looks forward to still more developments in the service of man. An exceedingly interesting and instructive volume for general reading as well as for boys that look to some branch of electrical work as a profession.

*Nature through Microscope and Camera*, by Richard Kerr, F.G.S., F.R.A.S., with sixty-five photo-micrographs by Arthur E. Smith (6s. net. Religious Tract Society), is a striking revelation of wonders of Nature—exquisite forms set forth with minute accuracy and with exceptional skill in the use of the instruments. The subjects are judiciously selected from a wide range, and, as Prof. Sims Woodhead says in his appreciative introduction, "any one who will take the trouble to examine a single one of the photographs will be anxious to cover the whole ground." The descriptions and explanations of the plates, though concise, always go to the point. An extremely interesting and suggestive volume.

*Familiar Wild Flowers*, figured and described by F. Edward Hulme, F.L.S., F.S.A., has been extended to an eighth series (3s. 6d., Cassell). It contains some forty additional plants, beautifully represented in colour and described in popular terms, with a scientific summary prefixed. The treatment, as in the preceding volumes, is attractive and instructive, and the get-up is tasteful and agreeable.

#### HISTORICAL AND DESCRIPTIVE.

In their "Silver Library" Messrs. Longmans issue new impressions of (1) *Selections from the Writings of Lord Macaulay*—historical, literary, miscellaneous, and poetical—edited, with occasional notes, by the Right Hon. Sir George Otto Trevelyan, Bart., and (2) *Selections from the Writings of James Anthony Froude*—historical scenes, historical portraits, historical sketches, miscellaneous—edited by P. S. Allen, M.A. (3s. 6d. each). The volumes are substantially and tastefully got up, and the matter is of permanent interest and value.

Mr. Fisher Unwin publishes a second impression of *Rome and Pompeii: Archaeological Rambles*, by Gaston Boissier, of the French Academy, translated by D. Havelock Fisher, with eight maps and plans, at the astonishing price of 2s. 6d. net. The reprint is complete, and the get-up is tasteful. This delightful and instructive work should have a very wide circulation in the present form.

*Short Lives of Great Men*, by W. F. Burnside and A. S. Owen, Assistant Masters at Cheltenham College (3s. 6d., Edward Arnold), consists of forty-five biographies from English history—from King Alfred down to Gordon. The selection is determined by the figures filling a reded erected in Cheltenham College Chapel in memory of the Old Cheltonians that fell in the South African War; but the sketches ought to be generally read, and to be available in secondary schools to accompany the history text-book. They are well and interestingly written. Eight very good illustrations.

*Oxford*, by Andrew Lang, M.A. (6s., Seeley), appears in a new edition, with 50 fine illustrations, representing very fairly the aspects of greater interest. The descriptions, according to Mr. Lang's disclaimer, "do not profess to sketch the outlines of a history of Oxford: they are merely records of the impressions made by this or that aspect of the life of the University as it has been in different ages." All the same, they will serve very well to begin with, or for the general instructed reader. They are charmingly written, with the affectionate allegiance of a distinguished son of the University.

*Oxford*, again, this time described by Robert Peel and H. C. Minchin (6s., Methuen), is not meant to compete with existing guide-books, for "it is not a guide-book in any formal or exhaustive sense." The object is "to show forth the chief beauties of the University and City, as they have appeared to several artists, with such a running commentary as may explain the pictures and may indicate whatever is most interesting in connexion with the scenes which they represent." There are 100 excellent illustrations in colour, all reproduced from the paintings of living artists, with the exception of six, which come from Ackermann's "Oxford." The work is most interesting pictorially, and the letterpress is convenient for explanation. A very attractive volume.

#### THE BATTLE AND THE BREEZE.

There will no doubt be vast interest in *Trafalgar Refought*, by the late Sir William Laird Clowes and Alan H. Burgoyne (6s., Nelson). The object of the authors has been "whilst losing none of those subtle touches of history which have made the Trafalgar campaign such entrancing reading to all Britons, to produce a vivid picture of likely happenings at sea had Nelson lived in this present year of grace." The work is ably done. Yet we confess to a feeling that history and fancy should not be mixed up, and that the modern conditions of naval warfare had better have been embodied in scenes independently imagined. The voracious boy, however, will scarcely stay to consider the sanctity of history, and so we fancy the volume will be overwhelmingly popular, as it is distinctive and picturesque. There are twenty vigorous full-page plates and several plans.

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(Continued on page 490.)

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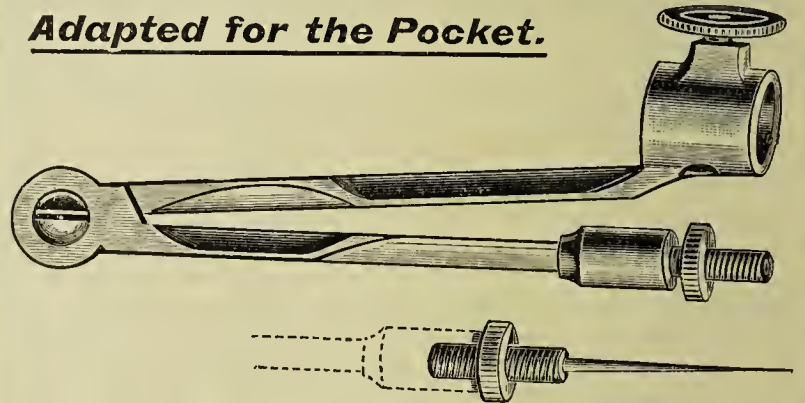
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MATHEMATICS.

Editorial Note.

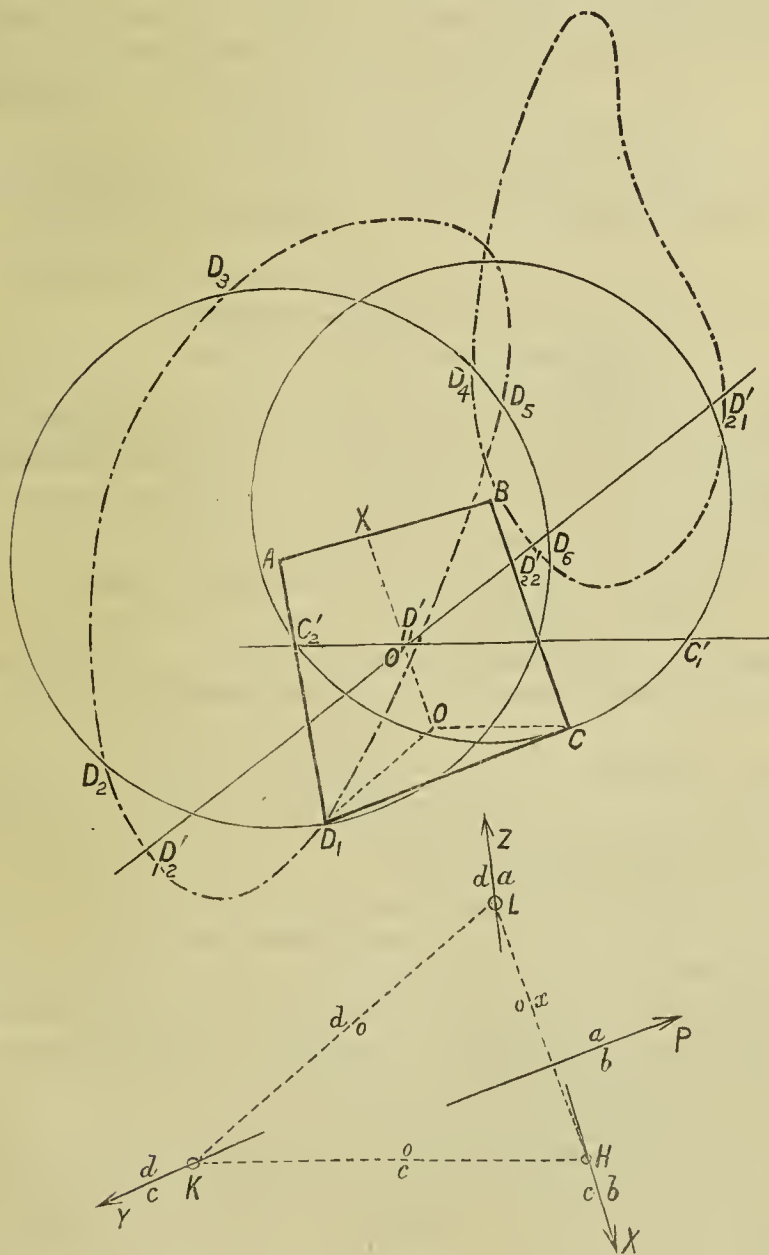
In our last issue we published an interesting theorem connected with recurring decimals and from the pen of Mr. W. D. Ross. The theorem, we find, must be added to the list of those which from time to time have been discovered independently by more than one mathematician, for Mr. R. W. D. Christie writes that the same theorem appeared as one of a series which he contributed to *Knowledge*, "Some Properties of Numbers," Feb. 1, 1890. Cf. *Reprint*, 1st Series, Vol. LXIX., p. 104, &c.

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Solution by the PROPOSER.

If the given force is reversed, it forms with the other three a system in equilibrium. The problem therefore is equivalent to the following:—Four co-planar forces P, X, Y, Z are in equilibrium. The force P is represented by a given line AB and acts along a given line ab. The forces X, Y, and Z are of given magnitudes and act through given points H, K, and L respectively. It is required to determine the directions of X, Y, and Z.

Suppose that BC, CD, and DA represent X, Y, and Z respectively, so that the lengths of these three lines are given. Divide AB in X, so that AX/XB = the ratio in which HL is divided by the straight line ab. Then the force P is equivalent to AX at L and XB at H. The system of four forces is therefore equivalent to DX at L, XC at H, and CD at K, and it is sufficient for equilibrium that straight lines XO, CO, and DO, parallel



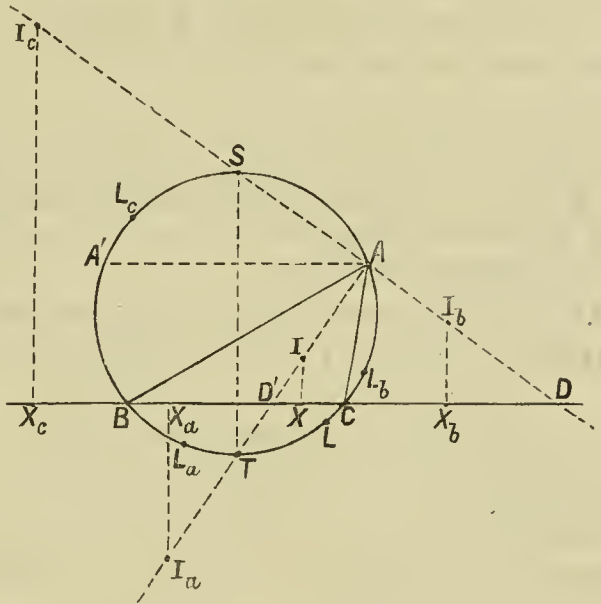
respectively to LH, HK, and KL, should be concurrent at O. The point X being known, the straight line XO can be drawn parallel to LH, and in it can be taken any point O'. Then O'C' can be drawn parallel to KH to meet the circle centre B and radius X in the point C'. This gives two possible positions of C', marked C'1 and C'2. Draw O'D' parallel to LK, taking C'D' equal to Y. This gives four possible positions of D', marked 1D'1, 2D'1, 1D'2, and 2D'2. By varying the position of O' we can construct the locus of D'. It is marked — · — · — · — in the figure. The position of the point D is determined by the intersection of this locus with the

circle centre A and radius Z. This apparently gives eight possible positions of D, of which in the case taken six are real, marked D1, D2, D3, D4, D5, D6. The figure is then easily completed, and the directions of X, Y, and Z determined.

15274. (A. J. MURPHY.)—I, Ia, Ib, Ic are the centres of the in- and ex-circles of a triangle ABC, and these circles touch the side BC in X, Xa, Xb, Xc respectively. The internal and external bisectors of the angle A meet the circum-circle in T and S respectively, and SI, SIa, TIb, TIc meet the circum-circle in L, La, Lb, Lc respectively. Show that LX, LaXa, LbXb, and LcXc meet on the circum-circle and determine the position of the point of concurrence. Show also that L, La, Lb, Lc are the points of contact of the circum-circle with the four circles that can be described to touch the circum-circle and the sides AB, AC.

Solution by C. E. YOUNGMAN, M.A.

Transform the figure by symmetric inversion from A, that is, first invert with centre A and radius  $\sqrt{bc}$ , and then reflect the result in the



bisector AITLa. This changes B into C, and C into B, and therefore the circle ABC into the line BC; and S into the point D, where AS meets BC. The circle BICIa will remain unchanged, because it must still go through B and C and cut AT orthogonally; therefore I becomes Ia. The line SIL therefore becomes the circle ADIa; and this cuts BC again at Xa, because IaXaD = 90° = IaAD; therefore Xa is the inverse of L. But BC touches at Xa one of the circles which touch AB, AC, and BC; therefore the circle ABC touches at L one of the circles that touch AC, AB, and the circle ABC. Also AT bisects the angle LAXa. Similar reasoning holds with X and La, Xb and Lc, Xc and Lb.

In the circle ABC draw the chord AA' parallel to BC. Then the triangles A'CB, ABC are equal, and

$$\angle BA'Xa = \angle CAX = \angle BALa = \angle BA'L_a;$$

therefore A'XaLa is a straight line; and similarly A'XL, ... Indeed, so long as points x, x' on BC are equidistant from its mid-point, the lines joining each to the inverse of the other must meet at A'. Also the circle Axx' evidently goes through A'; therefore the line ll', joining the inverses of x, x', cuts BC at a fixed point. Further, the circles ABx, ACx' meet again on the median from A; therefore Cl, B'l' meet on the symmedian.

15843. (OTTO MEISSNER.)—Required to show, by a single trial, that 20857 is a prime.

Solutions (I.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.;  
(II.) by the PROPOSER.

(I.) It is not quite clear what is meant by "a single trial." The following solution requires very little tentative work. Since

$$N = 20857 = 8 \cdot 3 \cdot 11 \cdot 79 + 1 = 7 \cdot 9 \cdot 331 + 4,$$

therefore (if N be prime)  $\pm 2, \pm 3, \pm 7, \pm 11$  are 2-ic residues of N; therefore  $\pm 8 \cdot 3 \cdot 7 \cdot 11 = \pm 1848$  is a 2-ic residue of N; therefore N is expressible in form  $(t^2 + 1848u^2)$ . On trial it is found that

$$N = 65^2 + 1848 \cdot 3^2,$$

and that  $u \neq 1, 2$ , and cannot be  $> 3$ , so that this is the only partition of this kind. Hence N is prime (because 1848 is one of Euler's idoneal numbers, i.e., is such that, if N have only one partition of the kind, it cannot be prime, or a power of a prime).

$$(II.) \quad 2^{53} + 1 = (2^{11} + 1)(2^{22} - 2^{11} + 1) = 2049 \cdot 4192257 \\ = 3 \cdot 683 \cdot 3 \cdot 1397419.$$

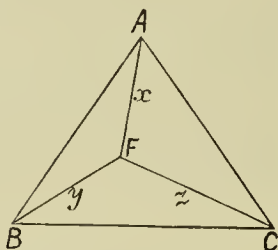
The last factor has no other divisors but such of form  $66x + 1$ , that is 67, 199, ... We have now  $1397419 = 67 \cdot 20857$ , and therefore 20857 is prime, because it is not divisible by 67 and the next divisor, 199, is  $> \sqrt{20857}$ , which lies between 144 and 145.



15842. (C. BICKERDIKE.)—Three motorists start from three different towns and meet at a junction and, on comparing notes, find that the sum of the distances travelled was a minimum, the distance of the places from each (as the crow flies) being  $a, b, \text{ and } c$  miles respectively. Find the speed of each car, all starting and meeting at the same time, the time from starting to meeting being  $n$  hours.

Solution by R. CHARTRES.

Let  $d = x + y + z = a$  minimum ;  
then F is Fermat's point, and  
 $d = \sqrt{[\frac{1}{2}(a^2 + b^2 + c^2) + 2\sqrt{3}\Delta]}$ ,  
and  $x = (b^2 + c^2 - a^2 + 4\Delta/\sqrt{3})/2d, \dots$   
Divide by  $n$  to get the speed per hour.



15805. (A. H. BELL.)—Is 9462853 a prime number?

Another Solution by Professor E. B. ESCOTT.

The number may be written  $3133^2 - 594^2 = 3727 \cdot 2539$ . These factors are prime.

15852. (M. V. A. SASTRY, B.A.)—The normals at the points P, Q, R, S of an ellipse pass through the same point O and cut the ellipse again at P', Q', R', S'. If these points be concyclic, show that O lies on a hyperbola which cuts orthogonally all conics passing through the extremities of the axes of the ellipse.

Solutions (I.) by W. J. GREENSTREET, M.A. ; (II.) by K. S. PATRACHAN.

(I.) Let O be  $(\alpha, \beta)$ , P  $(x_1, y_1)$ , P'  $(\xi, \eta)$ . The ellipse is  $x^2/a^2 + y^2/b^2 = 1$ .  
 $x_1 = (\xi + \lambda\alpha)/(1 + \lambda), y_1 = (\eta + \lambda\beta)/(1 + \lambda)$ .

Eliminating  $x_1, y_1$ , and  $\lambda$  from these equations, and from  $x_1^2/a^2 + y_1^2/b^2 = 1, c^2x_1y_1 + b^2\beta x_1 - a^2\alpha y_1 = 0$ ,

we obtain the relation

$$2\alpha\beta(x^2 - y^2) + [c^2 - (c^2 + b^2)(a^2/a^2 - \beta^2/b^2)]xy + \dots = 0,$$

an equilateral hyperbola through P', Q', R', S'. The general equation of a conic through these points is

$$K(b^2x^2 + a^2y^2 - a^2b^2) + 2\alpha\beta(x^2 - y^2) + [c^2 - (a^2 + b^2)(a^2/a^2 - \beta^2/b^2)]xy + \dots = 0.$$

If this represents a circle, the coefficient of  $x, y$  vanishes, and we have

$$(a^2 + b^2)(a^2/a^2 - \beta^2/b^2) = c^2;$$

so that the locus of O is  $b^2x^2 - a^2y^2 - a^2b^2c^2/(a^2 + b^2) \dots \dots \dots (1)$ ,

an equilateral hyperbola with axes parallel to those of the given ellipse, and cutting orthogonally the conics stated.

The Apollonian hyperbola  $c^2xy + b^2\beta x - a^2\alpha y = 0$  has centre given by  $c^2y + \beta b^2 = 0, c^2x - a^2\alpha = 0$ ;

so that, if P', Q', R', S' are concyclic, the locus of this centre is a concentric and coaxial ellipse  $c^2(a^2 + b^2)(b^6x^2 - a^6y^2) = a^6b^6$ . The equation  $c^2xy + b^2\beta x - a^2\alpha y = 0$ , with the condition  $a^2/a^2 - \beta^2/b^2 = c^2/(a^2 + b^2)$ , gives for determining the envelope of the Apollonian hyperbola

$$b^2x(d\beta/d\alpha) - a^2y = 0, d\beta/d\alpha = b^2\alpha/a^2\beta, b^4x\alpha = a^4y\beta,$$

whence the envelope is the quartic  $a^6y^2 - b^6x^2 = c^2(a^2 + b^2)x^2y^2 = 0$ .

This problem appeared some years ago, I think in *Mathesis*, or in the *Revue de Mathématiques Spéciales*.

[Rest in Reprint.]

15848. (R. F. DAVIS, M.A.)—Solve the equations

$$(x^3 - 3acx)^2 = 4a^3c^3, a^3x^6 + (b^3 - 3abc)x^3 + c^3 = 0 \dots \dots (i., ii.).$$

Solutions (I.) by JAMES BLAIKIE, M.A. ; (II.) by R. J. WHITAKER.

(I.) The first equation may be written  $x^6 - 6acx^4 + 9a^2c^2x^2 - 4a^3c^3 = 0$ . The left side breaks up into the factors  $(x^2 - 4ac)(x^2 - ac)^2$ . Thus the roots are  $\pm\sqrt{ac}$  and  $\pm 2\sqrt{ac}$ . The second equation may be written

$$a^3x^6 + b^3x^3 + c^3 - 3abcx^3 = 0 \text{ or } (ax^2)^3 + (bx)^3 + c^3 - 3(ax^2)(bx)c = 0.$$

As is well known, this breaks up into the terms

$$(ax^2 + bx + c)(ax^2 + \omega bx + \omega^2c)(ax^2 + \omega^2bx + \omega c),$$

where  $\omega$  satisfies the equations  $\omega^3 - 1 = 0, \omega^2 + \omega + 1 = 0$ . The second and third factors may clearly be written in the form

$$a(x/\omega)^2 + b(x/\omega) + c, a(x/\omega^2)^2 + b(x/\omega^2) + c.$$

If, then,  $\alpha = [-b + \sqrt{(b^2 - 4ac)}]/(2a), \beta = [-b - \sqrt{(b^2 - 4ac)}]/(2a)$ ,

the roots of  $ax^2 + bx + c = 0$ , the roots obtained from the other factors are  $\omega\alpha, \omega\beta, \omega^2\alpha, \omega^2\beta$ .

(II.) (i.) becomes  $x^6 - 6acx^4 + 9a^2c^2x^2 - 4a^3c^3 = 0$ ,

$$i.e., (x^2 - ac)^2(x^2 - 4ac) = 0;$$

therefore  $x = \pm\sqrt{ac}$  or  $\pm 2\sqrt{ac}$ .

(ii.) may be written  $x^6 - [(3abc - b^3)/a^3]x^3 + c^3/a^3 = 0, i.e.,$

$$x^6 - (a^3 + \beta^3)x^3 + \alpha^3\beta^3 = 0,$$

$\alpha, \beta$  being the roots of  $ax^2 + bx + c = 0$ ; therefore

$$x = \alpha, \omega\alpha, \omega^2\alpha, \beta, \omega\beta, \omega^2\beta,$$

$\omega, \omega^2$  being the imaginary cube roots of unity.

Note.—If  $b$  be substituted for  $x$  in (i.), the result is the condition that (ii.) may have pairs of equal roots.

15854. (The late R. TUCKER, M.A.)—ABC is a triangle; D, E, F are the points of contact of the ex-circles with the sides BC, CA, AB. Find (i.) area of DEF, (ii.) the Brocard angle of DEF. Prove also that the equation to the circle DEF is

$$2\Sigma\alpha\beta\gamma = \Sigma\alpha\alpha\Sigma\left(\frac{a\cos^2\frac{1}{2}A - (b+c)\sin^2\frac{1}{2}A}{s-a}a\right).$$

Solution by C. M. ROSS and others.

Since  $BD = s - c, CD = s - b; CE = s - a, AE = s - c;$

$$AF = s - b, BF = s - a,$$

the sum of the areas of the triangles DCE, EAF, BFD

$$= \frac{1}{2}[(s-a)(s-b)\sin C + (s-b)(s-c)\sin A + (s-c)(s-a)\sin B]$$

$$= \frac{1}{2}(\sin C/c)[a(s-b)(s-c) + b(s-c)(s-a) + c(s-a)(s-b)].$$

(i.) Therefore the area of the triangle DEF

$$= \frac{1}{2}ab\sin C - \frac{1}{2}(\sin C/c)[\Sigma a(s-b)(s-c)]$$

$$= \frac{1}{2}ab\sin C[1 - (\sin^2\frac{1}{2}A + \sin^2\frac{1}{2}B + \sin^2\frac{1}{2}C)]$$

$$= \frac{1}{4}ab\sin C(\cos A + \cos B + \cos C - 1)$$

$$= \frac{1}{2}ab\sin C(2\sin\frac{1}{2}A\sin\frac{1}{2}B\sin\frac{1}{2}C)$$

$$= \frac{1}{2}ab\sin C[2(s-a)(s-b)(s-c)/abc]$$

$$= \Delta(2\Delta^2/sabc) = \Delta r/2R,$$

where  $r, R$  are in- and circum-radii of ABC.

(ii.)  $\cot \omega = (EF^2 + FD^2 + DE^2)/4\Delta_1$  (Nixon's *Trigonometry*, p. 266)

$$= (EA^2 + AF^2 - 2EA \cdot AF \cos A + FB^2 + BD^2$$

$$- 2FB \cdot BD \cos B + DC^2 + CE^2 - 2DC \cdot CE \cos C)/4\Delta_1$$

$$= [\Sigma(s-a)^2 - \Sigma(s-b)(s-c)\cos A]/2\Delta_1$$

$$= [\Sigma(s-a)^2 + \Sigma(s-b)(s-c) - 2\Sigma(s-b)(s-c)\cos^2\frac{1}{2}A]/2\Delta_1$$

$$= [\Sigma(s-a)^2 + \Sigma(s-b)(s-c) - 2\Delta^2(a+b+c)/abc]/2\Delta_1$$

$$= [3s^2 - 2s(a+b+c) + \Sigma a^2 + 3s^2 - 2s(a+b+c) + \Sigma bc - 2\Delta^2(a+b+c)/abc]/2\Delta_1$$

$$= [-\frac{1}{2}(a+b+c)^2 + \Sigma a^2 + \Sigma bc - 4s\Delta^2/abc]/2\Delta_1$$

$$= (\frac{1}{2}\Sigma a^2 - s\Delta/R)2\Delta_1 = \Sigma a^2/4\Delta_1 - s\Delta/2R\Delta_1$$

$$= R\Sigma a^2/2r\Delta - s/r,$$

which is the magnitude of the Brocard angle of the triangle DEF.

[Rest in Reprint.]

15827. (ROBERT W. D. CHRISTIE.)—Factorize 9,702,044,791, and show the principle is general for a certain class of numbers.

Solution (I.) by the PROPOSER; (II.) by H. L. LITTLE.

(I.)  $A$ . Let  $N = (10^n x + a)(10^n x + b) = 10^{2n}x^2 + 10^n x(a+b) + ab$ .

Assume  $a+b = 10^n$ ; therefore  $N = 10^n x[10^n x(x+1)] + ab$  where  $n, a+b, ab$  are supposed given. In the proposed example we have

$$N = 9702044791;$$

thus  $10^n x[10^n x(x+1)] = x^2 + x = 9702, a+b = 10^n = 10^3 \dots (1, 2),$

and  $ab = 044791 \dots \dots \dots (3)$ . (1) is an ordinary quadratic giving  $x = 98$ ; (2) and (3) find  $a = 593, b = 047$ . Consequently the factors are

$$10^n x + a = 10^3 \cdot 98 + 953 = 98953 \text{ and } 10^n x + b = 10^3 \cdot 98 + 047 = 98047.$$

Various aids and devices may be used to shorten the work.

$B$ . Or thus:

$N = (10^n x + a)(10^n x + b) = [10^n \frac{1}{2}(a+b)] - [\frac{1}{2}(a-b)]^2 = N^{\frac{1}{2}} - \text{remainder}$ , and the factors are  $[10^n x + \frac{1}{2}(a+b)] \pm \frac{1}{2}(a-b)$ , i.e., sum of square root and root of remainder. Here

$$N = 9702044791 = (10^3 x + a)(10^3 x + b)$$

$$= (10^3 x + 500)^2 - [\frac{1}{2}(a-b)]^2 = N^{\frac{1}{2}} - \text{remainder} = 98500^2 - 453^2.$$

Thus, since  $a+b = 1000$  assumed and  $\frac{1}{2}(a-b)$  found, we have  $a = 593$  and  $b = 047$ , whence the factors are  $10^3 x + a = 10^3 \cdot 98 + 953$  and  $10^3 \cdot 98 + \dots + 047$  as before.

(II.) Now there must be at least two factors, one of which is prime. Let  $6n \pm 1$  represent the prime factor, and then  $6(n+d) \pm 1$  will represent the other factor, i.e.,  $z$  and  $z+6d$  will represent the two factors; therefore  $z(z+6d) + 9d^2 = z^2 + 6zd + 9d^2 = 9702044791 + 9d^2 = \square$ . Hence it remains to find two squares whose difference is 9702044791. These square numbers are (by the Diophantine analysis) easily shown to be  $(98500)^2$  and  $(453)^2$ . Hence the factors are  $(98500 + 453)(98500 - 453)$ , i.e., the required factors are 98953 and 98047, which are primes. Also one factor



at least must have 1 or 3 for the units digit in the above. The rule is of general application.

10693. (Professor LAMPE, LL.D.)--Find all the values of  $x$  that satisfy the equation  $64 \sin^2 x \sin^2 2x \sin^2 3x = 7$ .

Solution by A. H. BELL.

Bringing the factors to the same arc,

$$\begin{aligned} \sin^2 2x &= 4 \sin^2 x \cos^2 x = 4 \sin^2 x (1 - \sin^2 x) \dots\dots\dots (1), \\ \sin 3x &= 2 \sin x \cos 2x + \sin x = 3 \sin x - 4 \sin^3 x. \end{aligned}$$

Squaring,  $\sin^2 3x = 16 \sin^6 x - 24 \sin^4 x + 9 \sin^2 x \dots\dots\dots (2)$ .

The given equation may therefore be written

$$4 \cdot 16 \cdot 64 \sin^{12} x - 4 \cdot 40 \cdot 64 \sin^{10} x + 4 \cdot 33 \cdot 64 \sin^8 x - 4 \cdot 9 \cdot 64 \sin^6 x + 7 = 0 \dots\dots\dots (3)$$

Let  $\sin^2 x = y$ ; then

$$4096y^6 - 10240y^5 + 8448y^4 - 2304y^3 + 0 - 0 + 7 = 0 \dots\dots\dots (4)$$

$\frac{1}{4096}, \frac{1}{10240}, \frac{1}{8448}, \frac{1}{2304}, \frac{1}{4}, \frac{1}{16}, \frac{1}{7}$ , is a geometric series.

Putting  $y = \frac{1}{4}z$ , equation (4) becomes

$$z^6 - 10z^5 + 33z^4 - 36z^3 + 7 = 0 \dots\dots\dots (5)$$

Since  $\frac{1}{4}z = y$ , therefore  $\frac{1}{2}\sqrt{z} = \sin x$ . The law of the signs would indicate three positive roots for equation (5): one is

$$z = 2.445 +, \quad \sin x = 0.7818 +, \quad \text{arc } x = 51^\circ 26'$$

nearly. One or more roots are between  $z = 0$  and 1, balance  $z = 2$  and 4; no negative roots.

15825. (B. C. WALLIS, F.C.P., B.Sc.Econ.)--What are the general formulæ to express the relationship between the lengths of the sides of a right-angled triangle in terms of one number  $n$ ? *E.g.*, when the smallest side is an even number of units long the formula  $(n+1)^2 = (n-1)^2 + 4n$  holds when  $n$  is a perfect square; also when the smallest side is an odd number of units long the formula  $n^2 = (n-1)^2 + (2n-1)$  holds when  $n$  is such that  $2n-1$  is a perfect square. These two formulæ enable us to write down a table showing the lengths of the sides when the short sides are the consecutive numbers beginning with 3.

Solutions (I.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.;

(II.) by ALEXANDER HOLM, M.A.

(I.) Let  $x, y, z$  be the sides of a right-angled triangle, so that  $z^2 = x^2 + y^2$ . The general solutions of this Diophantine are known to be of two kinds.

$$\begin{aligned} x &= \frac{1}{2}(t^2 - u^2), \quad y = tu, \quad z = \frac{1}{2}(t^2 + u^2) \\ &[t, u \text{ both odd or both even integers}] \dots\dots\dots (i), \end{aligned}$$

$$x = (t^2 - u^2), \quad y = 2tu, \quad z = t^2 + u^2 \quad [t, u \text{ any integers}] \dots\dots\dots (ii).$$

Dividing through by  $u^2$ , and writing  $x/u^2 = \xi, y/u^2 = \eta, z/u^2 = \zeta, t/u = n$ . Then  $\xi, \eta, \zeta$  may be taken to represent the sides, and are given by either

$$\xi = \frac{1}{2}(n^2 - 1), \quad \eta = n, \quad \zeta = \frac{1}{2}(n^2 + 1) \dots\dots\dots (i),$$

$$\text{or} \quad \xi = n^2 - 1, \quad \eta = 2n, \quad \zeta = n^2 + 1 \dots\dots\dots (ii).$$

(II.) If the sides are  $x, y, z$ , then  $x^2 = y^2 + z^2$ ; therefore  $x^2 - y^2 = z^2$  or  $(x+y)(x-y) = z^2$ ; therefore

$$(x+y)/z = z/(x-y) = \text{a rational number} = n;$$

therefore  $x+y-nz = 0$  and  $-nx+ny+z = 0$ ; therefore

$$x/(n^2+1) = y/(n^2-1) = z/2n,$$

where  $n$  is any rational number.

15795. (S. C. BAGCHI, B.A.)--The picture of a system of latitude and longitude obtained by orthogonal projection on one of the polar-tangent planes is the same as that (on any plane) obtained by inversions from properly chosen centres.

Solution by the PROPOSER.

The system may be regarded as made up of a sphere, a set of co-axial diametral planes, and a set of parallel planes. Now invert with respect to a sphere whose centre is on the given sphere. We get a plane into which the given sphere inverts, a system of spheres touching at a point into which the parallel planes which determine the circles of latitude invert, and a system of co-axial spheres, these being the inverses of the diametral planes determining the longitudes. Thus for the inverse figure we get a system of co-axial circles together with another system of co-axial circles passing through the limiting points of the former. Now inverting with respect to one of these limiting points, we get a system of concentric circles and concurrent diameters.

2664. (T. COTTERILL, M.A.)--(1) Five points (no three in the same line, and no four in the same plane) determine, by the lines and planes through them on a plane, a system of ten points and ten lines, the points lying in threes on the lines and the lines passing in threes through the points (Cayley). Show that the figure is its own polar reciprocal to a conic; and that, if a conic and triangle in its plane are given, the rest of the figure can be constructed. (2) A quadric through the five points cuts the plane in a conic containing triangles conjugate

to the fixed conic. There is a quadric passing through the fixed conic, to which one of the five points and the plane are pole and polar, the remaining four points forming a self-conjugate tetrahedron.

Solution by Professor NANSON.

The ten coefficients of the point equation of any quadric through five points 1, 2, 3, 4, 5 are connected by five linear equations, and therefore the six coefficients  $a, b, c, f, g, h$ , say, of the point equation of the section of the quadric by a fixed plane  $w = 0$  are connected by one linear equation. Denoting this linear equation by

$$Aa + Bb + Cc + 2Ff + 2Gg + 2Hh = 0,$$

it follows that the section in question is harmonically circumscribed about a fixed conic whose tangential equation is  $(ABCFGH)(\xi\eta\zeta)^2 = 0$ . Now the plane through the points 1, 2, 3 and an arbitrary plane through the points 4, 5 form a quadric through the five points. If, then, we denote the meets of  $w$  with the plane through 1, 2, 3 and the line through 4, 5 by 123, 45 respectively, it follows that the line 123 is conjugate, with respect to the fixed conic, to any line through 45 in the plane  $w$ . Hence, then, 123 is the polar of 45 to the fixed conic. Thus, then, the system of ten points and ten lines is such that any point or line is the pole or polar of the complementary line or point, *i.e.*, the system is its own polar reciprocal with respect to the fixed conic.

Given the conic and a triangle with vertices 14, 24, 34 and sides 234, 314, 124, the polar triangle with sides 235, 315, 125 and vertices 15, 25, 35 is known. The points 23, 31, 12 are then given as the collinear meets of corresponding sides, and the lines 145, 245, 345 are given as the concurrent joins of corresponding vertices, the line 123 being the axis and the point 45 the pole of the homology.

There is one quadric  $Q_5$  self-conjugate to 1, 2, 3, 4 which has 5 for the pole of the given plane  $w$ . The meet of  $w$  with the plane through 1, 2, 3 is clearly the polar line of the join of 4, 5 with respect to  $Q_5$ . Hence the point 45 has the line 123 for polar with respect to the conic in which  $Q_5$  cuts  $w$ . Since the points 15, 25, 35 similarly have given polars in regard to the conic  $Q_5w$ , that conic must be identical with the fixed conic.

15740. (S. C. BAGCHI, B.A.)--Supposing that  $\phi(\xi_1, \xi_2, \dots, \xi_n)$  gives the most probable value of a magnitude which is observed to have values  $\xi_1, \xi_2, \dots, \xi_n$  for  $n$  different observations successively such that  $\xi_2 - \xi_1 = \delta_2, \xi_3 - \xi_1 = \delta_3, \dots, \xi_n - \xi_1 = \delta_n$ , show that a particular solution of the general differential equation for  $\phi$  satisfies

$$n(\phi - \xi_1) = (n+1) \sum_{r=2}^n \delta_r.$$

Solution by the PROPOSER.

Adopting the method of Gauss, we represent by  $\phi(\delta) d\delta$  the probability that an error should lie between  $\delta$  and  $\delta + d\delta$ . Hence in the present case the most probable value of  $\phi$  will be that which will render maximum the product  $\psi(z - \xi_1) \psi(z - \xi_2) \dots \psi(z - \xi_n)$ , if  $z$  be the value of the magnitude measured, and  $\psi(\delta)$  denotes the function of  $\delta$  which is proportional to the error  $\delta$ . Thus after certain easy reductions we get the differential equation

$$\partial\phi/\partial\xi_1 + \partial\phi/\partial\xi_2 + \dots + \partial\phi/\partial\xi_n = 1,$$

and we see a particular integral of this evidently satisfies

$$n(\phi - \xi_1) = (n+1) \sum_{r=2}^n \delta_r,$$

if we take the function in the general solution to denote a summation only.

15793. (Professor NANSON.)--Eliminate  $x, y, z, x', y', z'$  from

$$lx + my + nz = 0, \quad lx' + my' + nz' = 0;$$

$$(abefgh)(xyz)^2 = 0, \quad (abefgh)(x'y'z')^2 = 0, \quad (abefgh)(xyz)(x'y'z') = 0.$$

Solution by the PROPOSER.

The first four equations show that  $x : y : z, x' : y' : z'$  are the two sets of values of  $X : Y : Z$  given by

$$(abefgh)(XYZ)^2 = 0, \quad lX + mY + nZ = 0 \dots\dots\dots (1, 2).$$

Now, eliminating  $X$  from (1), (2), we get  $CY^2 + BZ^2 - 2FYZ = 0$ , where  $A, \dots, F, \dots$  are the co-factors of  $a, \dots, f, \dots$  in the bordered discriminant  $\Delta$  of (1) and (2). Hence

$$xx : yy' : zz' : yz' + yz' : zx' + z'x : xy' + x'y = A : B : C : 2F : 2G : 2H;$$

and therefore, from the fifth given equation,

$$Aa + Bb + Cc + 2Ff + 2Gg + 2Hh = 0.$$

Since the first member is  $2\Delta$ , the required result of elimination is  $\Delta = 0$ , and this is geometrically obvious, since two points of a conic cannot be conjugate unless they coincide.

QUESTIONS FOR SOLUTION.

15876. (D. BIDDLE.)--A rotary chandelier, suspended from the ceiling, has three equal gas-jets, the horizontal distance of each from the axis (around which they are uniformly arranged) being 1 foot. A blotting pad, at which a person is writing, is 2 feet 6 inches below the level of the jets, and its centre is 4 feet from the axis. Supposing the jets to remain at their present level, find how to place them so as to cast most light on the pad. Also, this position being assumed to be fixed, draw an isophotal line around the axis at the given level.



15877. (P. E. B. JOURDAIN.)—If  $T$  represent the kinetic energy of a material system,  $q_1, q_2, \dots$  are the generalized co-ordinates, and the rectangular co-ordinates  $(x_r)$  of the system may contain  $t$  explicitly, then

$$2T = \sum_r m_r \dot{x}_r (\partial x_r / \partial t) + \sum_n \dot{q}_n (\partial T / \partial \dot{q}_n).$$

15878. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Find some examples of  $\varpi(x) \mp \varpi(y) \equiv 0 \pmod{p}$ , where  $\varpi(x)$  denotes 1.2.3.5.7... $x$ , and  $x, y, p$  are unequal primes, and  $x, y$  non-adjacent primes.

15879. (C. E. YOUNGMAN, M.A.)—Four persons about to play whist draw for partners, high  $v.$  low. Find the probability ( $a$ ) that the first drawing settles it; ( $b$ ) that three of the party draw equal cards, and then (without putting these back) draw fresh cards which, with the fourth already drawn, prove decisive.

15880. (Professor NANSON.)—Prove that

$$\begin{vmatrix} y+z-2x & x^2-yz & 2xyz-x^2(y+z) \\ z+x-2y & y^2-zx & 2xyz-y^2(z+x) \\ x+y-2z & z^2-xy & 2xyz-z^2(x+y) \end{vmatrix} = 0.$$

15881. (ROBERT W. D. CHRISTIE.)—Solve generally, in integers, the Diophantine equation  $y^2 = ax^2 + ay + 1$  when  $a$  is arbitrary: e.g.,  $a = 11$ ; then  $155^2 = 11 \cdot 13^2 + 11 \cdot 13 \cdot 155 + 1$ .

15882. (ALEXANDER HOLM, M.A.)—Prove that the sides of a rational right-angled triangle can be represented in the most general way possible by  $(m^2+1)/n, (m^2-1)/n, 2m/n$ , where  $m$  and  $n$  are positive rational numbers,  $m$  being  $> 1$ .

15883. (Professor LANGHORNE ORCHARD, M.A., B.Sc.)—Sum to  $n$  terms the series  $1 + 4 + 19 + 52 + 109 + \dots$

15884. (J. J. BARNVILLE, B.A., I.C.S.)—Having  $u_n + u_{n+1} = u_{n+3}$ , prove that

$$\frac{1 \cdot 1 \cdot 4}{1 \cdot 2 \cdot 2 \cdot 3} + \frac{2 \cdot 2 \cdot 6}{1 \cdot 3 \cdot 3 \cdot 5} + \frac{2 \cdot 3 \cdot 7}{1 \cdot 3 \cdot 4 \cdot 6} + \frac{3 \cdot 3 \cdot 10}{2 \cdot 5 \cdot 5 \cdot 8} + \dots = \frac{8}{3},$$

$$\frac{1 \cdot 3 \cdot 3}{1 \cdot 2 \cdot 4 \cdot 5} + \frac{1 \cdot 3 \cdot 4}{2 \cdot 3 \cdot 5 \cdot 6} + \frac{1 \cdot 5 \cdot 5}{2 \cdot 3 \cdot 7 \cdot 8} + \frac{2 \cdot 6 \cdot 7}{3 \cdot 5 \cdot 9 \cdot 11} + \dots = \frac{7}{12}.$$

15885. (W. F. BEARD, M.A.)—If

$$\frac{a}{b-c} + \frac{b}{c-a} + \frac{c}{a-b} = 0 \dots\dots\dots (a),$$

then  $\frac{a}{(b-c)^3} + \frac{b}{(c-a)^3} + \frac{c}{(a-b)^3} = \frac{a+b+c}{(b-c)(c-a)(a-b)} \dots\dots\dots (i),$

$$\frac{a^2}{(b-c)^3} + \frac{b^2}{(c-a)^3} + \frac{c^2}{(a-b)^3} = \frac{2(bc+ca+ab) - a^2 - b^2 - c^2}{(b-c)(c-a)(a-b)} \dots\dots\dots (ii).$$

15886. (Professor NANSON.)—The planes through  $O$  perpendicular to  $OA, OB, OC, OD$  meet the corresponding faces of  $ABCD$  in lines which are generators of a hyperboloid.

15887. (Professor F. ROGEL.)—To find directly the common tangents of two conic sections having a common focus.

15888. (W. AUSTIN SLEIGH, B.A. Suggested by Question 15801.)—PK cuts the major axis in G. Prove, geometrically, that the circum-circle of the triangle NGK touches CK.

15889. (SARADAKANTA GANGULI, M.A.)—From any point in the plane of a parabola, normals are drawn to it. Show that the locus of the centroid of the triangle formed by joining the feet of the normals is the axis of the parabola.

15890. (Professor NEUBERG.)—Sur les côtés d'un triangle ABC on construit trois rectangles quelconques BCDE, CAFG, ABHK. Démontrer: (1) que les triangles EGK, DFH ont même centre de gravité; (2) que  $(EG)^2 + (GK)^2 + (KE)^2 = (DF)^2 + (FH)^2 + (HD)^2$ ; (3) que pour tout point M on a  $(ME)^2 + (MG)^2 + (MK)^2 = (MD)^2 + (MF)^2 + (MH)^2$ .

15891. (Professor SANJANA, M.A.)—P is any point in the plane of two parallel straight lines X and Y: construct an isosceles triangle having a given vertical angle at P with its base resting on X and Y. Also solve the problem when P is not in the plane of X and Y. Are there any limits to the magnitude of the vertical angle?

15892. (Professor COCHEZ.)—Construire un triangle, connaissant la hauteur  $h_a$ , la bissectrice  $a$  issue de A et le rapport  $b/c$  des côtés comprenant A.

15893. (Communicated by A. E. DAVIES.)—An army is 25 miles from van to rear, and marches 50 miles in one day (number of hours not necessary). A man starts from the rear with a message to the front and reaches the rear again just as the army has completed its 50 miles. How many miles has that man walked?

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

7867. (Professor SYLVESTER, F.R.S.)—If  $x, y, z$  be positive quantities connected together by the equation  $x^3 + y^3 + z^3 + \mu x^{\frac{1}{2}} y^{\frac{1}{2}} z^{\frac{1}{2}} = 0$ , show that the ratio of the greatest of them to the one next in order of magnitude cannot exceed a certain limit (a discontinuous function of  $\mu$ ), and give rules for determining the value of this limit as  $\mu$  passes from positive to negative infinity.

7884. (ALPHA.)—If  $ay = \lambda z$ , prove that

$$\int_0^\infty \frac{\cos^n y}{\lambda^2 + y^2} e^{a \cos z} [\lambda \cos(ny + a \sin z) - y \sin(ny + a \sin z)] dy = \frac{1}{2^{n-1}} \frac{\pi}{\lambda}.$$

7926. (Professor HAUGHTON, F.R.S.)—If a cylindrical vessel contains a given mass of air, which revolves round its axis with a uniform angular velocity, find (1) the density at any point, and (2) the whole pressure on the curved surface of the cylinder, neglecting the effect of gravity.

7927. (Professor MINCHIN, M.A.)—The axes of three coplanar screws of pitches  $p_a, p_b, p_c$  form a triangle whose sides are  $a, b, c$  respectively; prove that the pitches of the two screws (other than that perpendicular to their plane) that can be drawn reciprocal to them through any point  $O$  in their plane are the roots of the equation

$$ap/(x+p_a) + bq/(a+p_b) + cr/(x+p_c) = 0,$$

where  $p, q, r$  are the perpendiculars from  $O$  on  $a, b, c$  (reckoned all positive when  $O$  is inside the triangle).

7983. (HUGH MCCOLL, B.A.)—Three random points P, Q, R are taken in the perimeter of a square. Find the respective chances of the straight lines PQ, QR, RP forming an acute-angled triangle, an obtuse-angled triangle, or no triangle.

8079. (The late Professor CLIFFORD, F.R.S.)—Using the definition

$$gd u = -i \log \tan(\frac{1}{4}\pi + \frac{1}{2}ui),$$

prove that

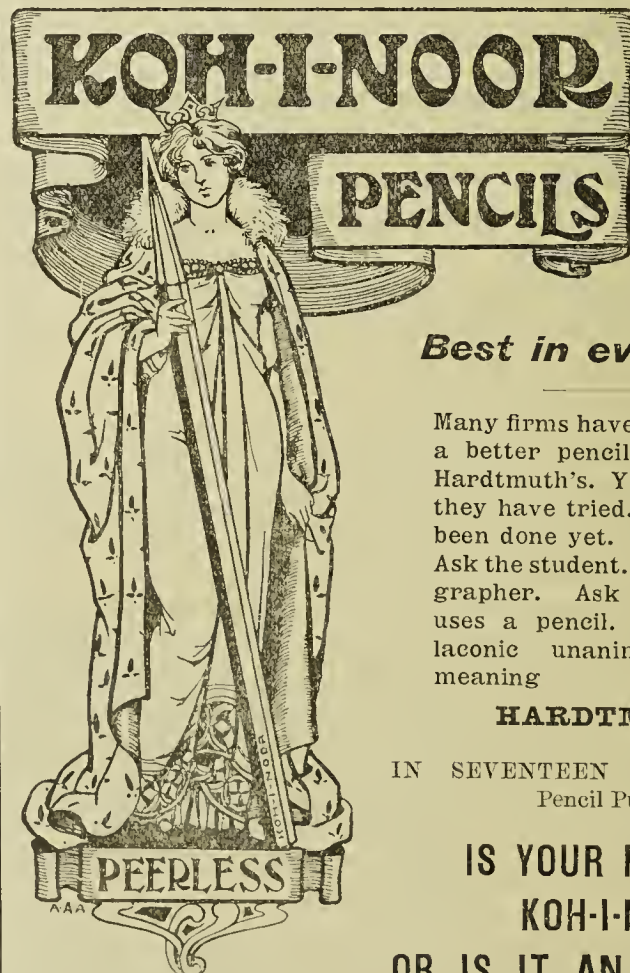
$$am(x, k') = gd am(ix, k).$$

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
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## The Educational Times.

*Private Schools and the Board of Education.*

IN our November issue an important remark by Prof. Sadler is quoted : " It is expedient to preserve every efficient form of private enterprise and of varied initiative in our national education." Contrast with this one item of the conditions of recognition in the official Regulations for Secondary Schools (§ 20) : " The school must not be conducted for private profit." To begin with, the phrase " conducted for private profit," though evidently intended to apply to all private and proprietary schools, is not really a true description of the best of such schools—as far, at least, as their day scholars are concerned. It is very doubtful whether, from day scholars, any principal or proprietary body of a school where the assistants are decently paid makes more than a very moderate return on invested capital *plus* reasonable wages of superintendence. Profit is really derived from boarders ; and in this respect public and private schools are equally open to the oft-repeated, but grossly unjust, reproach that they are, in fact—whether conducted on the hostel or on the boarding-house system—carrying on the trade of hotel-keepers.

The Regulations above mentioned constitute an intelligent effort to organize secondary education in the limited field which they cover. They provide for the schools under their control being carried on under wholesome conditions, both physical and intellectual. The sanitary inspection of the school buildings is an obvious precaution ; the requirement of a four years' *course* approved by the Inspector is intended to secure a continuous, progressive, and sufficiently wide curriculum. At the back of these provisions is the power of the purse : grants on account of scholars taking the regular course are made on a liberal, but not extravagant, scale, and no charge is imposed for inspection. Under these conditions we may expect to see a marked improvement in endowed and municipal secondary schools, and the private schoolmaster will be more than ever handicapped in competition with them, while he will be debarred from the incidental advantages of being in touch with the best edu-

cational traditions. In other words, schools in which the conditions leading to initiative and exceptionally thoughtful management are most likely to be present are discouraged. Governing bodies and municipalities generally contain a considerable proportion of Philistines ; unless dominated by the head master or by some devoted member of the body who is himself an experienced educationist, they are apt to trust entirely to officials, who may or may not be competent to take an enlightened view. On the other hand, a competent principal with adequate capital—and such men are to be found occasionally—is able at once to see what is wanted in the way of improvement and to carry it out without the delays incident to the action of a public body. Such men have been, in past times, the life and soul of education, and it is in the public interest that they should still be tempted to throw their energies into school work.

Nor should it be assumed that the earning of a livelihood is the only motive operating on the founder of a private school. It is, indeed, one motive, as in the case of men entering the Christian ministry ; but the realization of a high ideal is often a concurrent inducement, possibly the dominant one. Loretto, Abbotsholme, and Bedales are examples in our own time. And our great novelist, George Meredith, gives us an excellent specimen of a private schoolmaster of the higher type in Matthew Weyburn, the hero of " Lord Ormont and his Aminta." Again, it would be possible to name schools founded as public schools, with a governing body, which have gained considerably by passing practically into the hands of a competent and energetic head master, while nominally retaining their position as public schools.

It seems, then, to follow that private schools fulfilling the conditions imposed upon public schools should be eligible for the public recognition materialized in Treasury grants, so far at least as they educate the children of the neighbourhood in which they are situated. Inspectors would be able not only to ascertain their efficiency, but also, by revising their accounts, to secure the proper payment of their assistants, and to discover whether the principal himself was exploiting them to an extent which would be impossible under a governing body. Government grants have been given freely for many years to denominational elementary



schools conducted mainly for purposes not strictly national, and educational reformers look upon such grants as entirely distinct from local aid in the shape of rates. No doubt the receipt of public money means, or ought to mean, public control; and a private schoolmaster would probably be willing to accept the direct control of the State in return for incorporation in the national system of secondary education. Once recognized in this way by the Central Authority, their relation to Local Authorities would be simplified. There are signs that some Local Authorities are prepared to look upon private schools as part of the educational machinery of the districts in which they are working. Were there any system of effective recognition on the part of the Board of Education, Local Authorities would be practically compelled to follow suit.

There are precedents abroad for establishing direct relations between the Central Authority and private schools. Mr. J. S. Thornton, who has done so much to make the educational system of Northern Europe known to Englishmen, contributed to our last number an interesting paper on the State and the private school in these countries. He points out that in Denmark the annual grant to a group of private schools was increased from about £15,000 to about £22,000 in the year 1902, and that in the same year the private seminaries for teachers passed 70 per cent. of the whole number of successful candidates—and that at a much smaller expense to the State than the other 30 per cent. trained in its own seminaries. In Sweden not one of the higher girls' schools is a State school, but all are aided alike by the Government.

We are at a crisis in the educational history of the country. Local Authorities have had thrown upon them far more work than they can do justice to. If they establish—as they are establishing, and in some places are bound to establish—fresh secondary schools, they will find it hard to secure efficiency, especially with low fees, and meanwhile a great deal of the force of private initiative may run to waste. It is high time for our legislators to take a lesson from Scandinavia.

### NOTES.

MR. J. S. THORNTON'S paper on the schools of the Northern countries of Europe, published in our last issue, has been welcomed by the *Manchester Guardian* as "a suggestive contribution to the subject of education." Our contemporary points out that the attitude of the Local Authorities towards the private secondary school is one of the important questions that they will have to decide. Is the private secondary school "to be eliminated and replaced by municipal institutions, or is it to be recognized by the State and encouraged by grants to develop side by side with the public school?" The writer proceeds:

The important consideration here is not the same as in the case of elementary education. Primary instruction is of necessity cast along pretty definite lines: in the secondary school there is the opportunity and the necessity for variety, flexibility, freedom to experiment. It cannot be denied that a State system makes for uniformity. In Scandinavia the various Governments have treated the private schools with the utmost liberality. They make those which are efficient large grants, while leaving them complete administrative independence; and the conclusion of an expert is that "new ideas and reforms come almost entirely

through the better private schools." That is a weighty judgment, and not to be lightly contemned. In comparison with this central question of principle such questions as co-education, the co-ordination of the primary with the secondary school, the day *versus* the boarding school, are of minor importance, but on all of them we may learn from Scandinavian experience. How valuable the lesson can be may perhaps be brought home to us by the fact that Denmark has evolved a system of boarding schools which has educated nine-tenths of the managers of her co-operative dairies and one-third of her M.P.'s at the inclusive cost of 9s. a week.

IN his distinctive address at the Conference of Head Mistresses Prof. Sadler once more took occasion to urge the public recognition of "efficient and highly trained enterprise" within "the whole area of public organization." He also lifted the whole subject of education to a higher point of outlook, insisting on the national aspect, and on the importance of liberty. "The secret of the greatness of England," he said most truly, "lies in the liberty to develop—liberty to speak our mind, combined with a preference for established social order." "The higher type of secondary education seemed to him the most precious thing England possesses"; and this type—this attitude of mind—ought to be diffused till the whole of the educational system was leavened. He said:

All school education should be regarded from the national point of view, and there should be a common education in aims, curriculum, and spirit up to the age of fifteen for the whole nation. If Educational Authorities would make experiments, especially in careful training in the mother tongue, they would confer a great boon on England. In carrying out the resolution just accepted (in approval of the greater elasticity of the new Code), it would be found possible for the Local Authorities to persist in the view that national education consists of far more elements than simply schools under the direct management of public bodies. If our national system was to reflect the authority of tradition in our national life, we must find place within the whole area of public organization for the public recognition of schools which represent ancient ways of life, and also for efficient and highly trained private enterprise.

WE are not so sure that "it is easy enough to get money for technical education," but we can agree with the *Independent Review* that "it is by no means easy to persuade the English public of the need for more opportunities of general culture," and that "it would be worth the while of our public authorities to foster by larger grants such institutions as" offer facilities for improving the education of working men and working women. "The students come, in almost all cases, from a love of study; for, though the subjects at which they work are often suggested to them by their trade or occupation, the majority of the men are artisans and mechanics, and they do not, except in a few cases, work for the purpose of technical training." It is quite certain that the man with the more liberal education will be the better workman, and also the better citizen.

IN the same *Review* the Head Master of Dulwich sets forth the importance of educators, and comments instructively upon the two main divisions of the subjects of education. Though schoolmasters "are neither the only nor the chief educators in the country," yet they "do much to educate" the young people, and so rank among "the most important people" in it—namely, "those who educate its inhabitants." Perhaps this is no new discovery; but it is a fact that may be usefully insisted on. So it seems obvious enough that "all schools should provide in full measure opportunities for both classes of minds"—the predominantly scientific and the predominantly literary—and recognize



that each of the two great sets of subjects "is a complement of the other"; yet the general theoretical admission of the argument does not preclude the necessity of emphasizing it in view of practice. We do not always see eye to eye with Mr. Gilkes in details; but we like his breadth of view on general principles. "Probably," he concludes, "he best serves the cause of education who keeps his mind open and his eyes fixed upon the individual character of boys, trying humbly to follow the lead that Nature has given, and thus to solve the problem that no nation has yet solved—not England, and not Greece, and not even Germany." True; but what of the practical obstacles? Let Mr. Gilkes now break a lance with some of the obfuscated giants that still bestraddle the path.

THE birth of the British Science Guild after a prolonged incubation ought to mark an epoch in British intellectual and material progress. The institution represents a great and worthy conception, which there is room enough to develop and to realize. It does not trench on the objects of the Royal Society or of the British Association—the promotion of natural knowledge; nor does it invade the sphere of the Society of Arts—the encouragement of arts, manufactures, and commerce. "Its purpose is to stimulate, not so much the acquisition of scientific knowledge as the appreciation of its value, and the advantage of employing the methods of scientific inquiry, the study of cause and effect, in affairs of every kind." Such appreciation requires a certain preliminary cultivation, or at least teachableness; and it is no easy matter to dethrone the rule of thumb among a people that boast themselves above all things "practical." The scientific spirit should not, however, in these days, be "often sadly lacking in some of those who are responsible for the proper conduct of many of the nation's activities." Such a lack should be a fatal barrier to tenure of any such position, and the Guild will perform an incalculable national service if it succeed in rendering such ignorance impossible.

THE Guild will, of course, have no politics. Its objects are enumerated specifically as follows:—

1. To bring together as members of the Guild all those throughout the Empire interested in science and scientific method, in order, by joint action, to convince the people, by means of publications and meetings, of the necessity of applying the methods of science to all branches of human endeavour, and thus to further the progress and increase the welfare of the Empire.
2. To bring before the Government the scientific aspects of all matters affecting the national welfare.
3. To promote and extend the application of scientific principles to industrial and general purposes.
4. To promote scientific education by encouraging the support of Universities and other institutions where the bounds of science are extended, or where new applications of science are devised.

No doubt the people, broadly speaking, need to be convinced. But even in their unregenerate state they are very slow to grudge support to any educational work whose value has been made sufficiently plain to their understanding. They want leading. The Government, one would imagine, have already before them "the scientific aspects of all matters affecting the national welfare," but probably there will still be scope for the representations of the Guild, backed by popular opinion. The universities and other institutions are plainly in need of large additional pecuniary

encouragement; but they are all capable of misapplications of such funds as they possess, and here also the criticism of the Guild may find scope for practical usefulness. The essential thing, however, is the promulgation of the scientific idea.

THE educational *entente cordiale* between America and Germany is manifested afresh in a mutual establishment of professorships. A "Theodore Roosevelt Professorship of American History and Institutions in the University of Berlin" has been endowed by a gift of 50,000 dollars by Mr. James Speyer, of New York. The Trustees of Columbia University have nominated Prof. J. W. Burgess, Professor of Political Science and Constitutional Law and Dean of the Faculty of Political Science in Columbia University, to fill the post (with summer excursions to other German Universities), and the Prussian Ministry of Education will no doubt appoint him in due course. On the other hand, the German Government will establish at Columbia University a Professorship of German History and Institutions under similar conditions. The idea of such an academic interchange appears to be an inspiration of the German Kaiser's. As President Butler says: "What is really needed is the careful, systematic, and scientific presentation of the culture of the one people to students of the other in the language that the students most fully understand." The reception of the lectures of Prof. Peabody in Berlin, delivered in English, is not encouraging: the students are reported to have pronounced that they knew, or might have known, the subject apart from the Professor's mission. We should have fancied they were right. However, President Butler is "not without hope that before long Columbia University will be put in a position to make similar arrangements with the University of Paris and with an English university, possibly the University of London." How the University of London is to get funds to respond we do not know: it has certainly many purposes very much more urgent.

A WELL informed Anglo-Indian correspondent, writing from an entirely independent point of view, and representing public no less than educational opinion in India, says: "The greatest indignation has been aroused in Bengal by the proposal of the Lieutenant-Governor to appoint a civilian without educational experience or university qualifications to the vacant Directorship of Public Instruction. This post has invariably been held by members of the Bengal Educational Service, and the action of the Lieutenant-Governor, therefore, will deprive them of the only appointment carrying pay equal to that of a civilian of only ten or fifteen years' standing. As the Bengal Educational Service contains many first-class Oxford and Cambridge graduates who have devoted their lives to the cause of education in India, we must confess our inability to understand how the Lieutenant-Governor can justify a step so obviously unjust to the Service and detrimental to the educational interests of the province. In anticipation, no doubt, of the awkward questions that are sure to be raised in the House of Commons in February as to the fitness for the post in question of the officer upon whom Sir Andrew Fraser's choice has



fallen, he has been deputed, it seems, to visit a number of educational institutions in England and America in the course of a rapid tour of two or three months' duration. We trust that this shallow artifice will not impose upon the Secretary of State, and that he will decline to hand over the educational interests of a province containing forty millions of people to the control of an officer whose qualifications for so important an educational post are of so slender and superficial a character."

### SUMMARY OF THE MONTH.

THE Roman Catholic Archbishop of Dublin, in a long address on the subject of Irish education at the Christian Brothers' School, Dublin, referred in detail to the success of Roman Catholic schools and colleges in the recent public examinations, and severely criticized the manner in which the Board of Intermediate Education has made its awards upon the examinations of the present year. Mr. Dillon, M.P., said that in the increasing success of their Roman Catholic schools they were witnessing the uprising of an oppressed nation. When the barriers against the Irish people were removed they would trample down all those Trinity College professors who talked about confining knowledge to a class. They would prove in the open competition of life that they were more fitted to go into a university than a Trinity College man, and, if the Trinity College men did not wake up and work much harder, they would clear them out of all the learned professions in the country.

SIR JOHN BRUNNER distributed (November 13) the prizes at Winnington, Northwich, to the evening classes, which rank amongst the most successful in Cheshire. Messrs. Brunner, Mond, & Co. make it a condition of employment that all their young men must attend evening schools. They return all fees to those making 90 per cent. of attendances. A record has been established, about £60 being returned to 219 students out of 261. On three days weekly the company's apprentices attend technical classes free of charge. The schools have been greatly enlarged.

At the annual presentation of prizes and certificates to the successful candidates in the Local Examinations (London Centre) of Trinity College of Music, London, Mr. J. W. Sidebotham, Mus. Bac., in the chair, it was reported that for the musical knowledge examinations there were 248 candidates, of whom 78 were successful in obtaining honours and 128 were awarded pass certificates. For the practical examinations the total number of candidates was 1,008. Of these 805 satisfied the examiners, 110 obtaining honours and 695 pass certificates. The total number of candidates for the session was 1,256. The chairman, in the course of a short address, said that he had been chairman of the Manchester Centre for many years. The college was no new institution which had its place to make in the musical world, but it stood upon a firm and sound basis. It supplied a public want, its aims were high, and its certificates carried with them a guarantee of solid and satisfactory work. From the very beginning the college had received the support of those who had been at the head of the profession, and at the present time it held an important place among the institutions of its kind in the country. He had lately read in a German newspaper that England was satisfied with the commonplace of the music-hall. This was a sweeping and exaggerated statement, but he was inclined to think that there was some truth in it, and it was for the present-day student to assist in raising the taste for music in this country. Dr. Turpin alluded to the decadence in the musical taste of this country, and said that in the future progress of music in England the one thing necessary would be a more complete and intelligent method of reading.

THE Board of Education have issued to Inspectors of technical institutions a memorandum, in which they say they have had brought to their notice a number of cases in which advantage accrues from the existence of some form of co-operation between employers of labour on the one hand and the managers of technical institutes and evening schools on the other, with regard to the instruction of employees or apprentices. As there appears to be great variety in the character and amount of such co-operation, a short account of a few typical examples is given by

way of showing what has been found actually possible under present conditions. The development and strengthening of the relation which the work of the teaching institution bears to the practice and to the commercial aspects of our industries are, in the opinion of the Board, a necessary part of further industrial progress. It is therefore important that Inspectors should be prepared to discuss with those interested what methods of promoting this connexion are most suitable, or most likely to prove possible of establishment, in the case of particular schools. It should not be forgotten that any effective interest which employers or foremen take in the studies of apprentices who work under them will exercise an important influence in helping these youths to appreciate the fact that technical education has for them a real value. Thus, even where no large measure of success is attained by local efforts to secure for a particular school such a direct form of support as one of those indicated, they will not have been wasted if they succeed in giving those in authority in the workshop or office a clear conception of the nature of the facilities afforded in the school, and of the significance of the records of good work there.

THE Mayor of Hampstead (Alderman D. McMillan) presided (November 1) over a numerously attended meeting in the Town Hall, Haverstock Hill, in connexion with the forthcoming removal of the University College School from Gower Street to Hampstead, where new buildings are now in course of erection. It is estimated that about £100,000 will be required for the building and equipment of the new premises, towards which about £62,000 has already been promised. Among those supporting the chairman were Viscount Hayashi, a former pupil in the school, who was heartily welcomed, Sir William Collins, Chairman of the London County Council Education Committee, Principal Gregory Foster, Dr. E. Collingwood Andrews, Dr. Spenser, the Head Master, Mr. Walter Baily, the Rev. G. A. Herklots, Dr. Horton, and Mr. Eve, a former Head Master. The Town Clerk (Mr. A. P. Johnson) read letters expressing regret for inability to attend from Lord Selby, Lord Reay, Sir Richard Farrant, Mr. Rufus Isaacs, K.C., M.P., and others. The chairman referred to the fact that at least two-thirds of the boys of University College School resided in Hampstead or its vicinity. He believed the new buildings would be worthy of Hampstead, and he thought it but right that Hampstead people should take an interest in the removal. Viscount Hayashi moved: "That this meeting pledges itself to use its best endeavours to support University College School, which is to be removed to Hampstead, and to obtain the sum of £50,000 still required for the necessary buildings and equipment." He remarked that his presence was evidence of his interest in education in general, and more particularly in secondary education as imparted by University College School. He was glad to testify his personal interest in that school, at which he was for some time a pupil. The resolution was seconded by Sir William Collins, and supported by Mr. C. A. Russell, K.C., both former pupils of University College School, and carried unanimously. A committee was then appointed to organize an appeal for the funds needed.

A CONFERENCE on educational questions, under the auspices of the Association of Head Mistresses, was held at the Clothworkers' Hall, E.C., on October 28, Miss F. Gadesden, M.A. (Blackheath High School), President of the Association, in the chair. The following motions came under discussion:—

1. That in the opinion of this Conference (1) co-education in schools for children under ten years of age has many advantages if sufficient care is taken to place it sufficiently under the control of able and responsible women; (2) in rural districts where the secondary-school population is sparse and its character more homogeneous, the mixed school is often the best solution of the educational problem; (3) but that, under the conditions of life in this country, the mixture of social types, the diversity of religious opinion, and, in general, the heterogeneity, of the secondary-school population, it is better that the system of secondary education should proceed on the principle of supplying separate schools for boys and girls over ten years of age.

2. That this Conference welcomes the New Code for Public Elementary Schools, especially on account of its elasticity and freedom, and the opportunities it gives for adapting the curriculum to local requirements.

3. That the widespread realization of the work of the various types of secondary schools is now a matter of vital importance, since Local Education Authorities are empowered to take action in maintaining, aiding, and establishing secondary schools within their areas.

The first resolution (moved by Mrs. Bryant) was carried, and the other two were adopted.



THE *Oxford Magazine* (November 1) contains an analysis of the results of the recent competitive examination for the Civil Service of India, for first-class clerkships in the Home Civil Service, and for Eastern cadetships. The total number of appointments was only 63, but the results for the 83 candidates whose names appeared on the list have been analyzed. The most conspicuous success belongs to Edinburgh University, which has secured the first, second, and third places with 9 successes. Oxford has 36 names on the list, Cambridge 28, Glasgow and the Royal University of Ireland 3 each, Aberdeen, St. Andrews, Trinity College, Dublin, and London, 1 each. Among colleges St. John's, Cambridge, has 7 successes; Balliol takes 6 places, and Trinity, Cambridge, 5. As to the schools from which successful candidates were drawn there is little to record. "4 is the largest from any one, a distinction which falls to Cheltenham. Harrow, St. Paul's, Dulwich, and City of London each have 3; Eton and Winchester 2 each. George Watson's College, Edinburgh, really possesses the best record, having 1st, 3rd, and 37th." This year the average number of subjects taken is a little over 12 per candidate, but in future competitions no candidate will be allowed to take up an unlimited number of subjects, and there will be a fixed maximum of marks.

DR. CLIFFORD contributes to the *Baptist Times* a letter on the settlement of the education controversy. He says:

We are encouraged to hope that the people of England will obtain these three things: (1) popular control of State education; (2) the abolition of theological and ecclesiastical tests in the State teaching profession; (3) the exclusion of sectarianism of every type from the curriculum of the schools. "Let us have," he adds, "an *ad hoc* Authority, such as is now demanded by writers in the *Schoolmaster*. Municipalize education on the broadest and most democratic lines. Abolish secrecy of management; bring the administration to the light of day. Let the people not only rule themselves through their freely and directly elected representatives, but also let them know all their representatives do, and how they do it."

A BILL has been drafted to enable the Governing Body of Rugby School to make provision for the establishment, constitution, and incorporation of an Education Authority for the purpose of acquiring, maintaining, and managing the Lower School (which is to be known as the Subordinate School) and to transfer and vest this in the Education Authority to be established, and also the buildings and lands and special endowments relating to such school, together with the balance of any money belonging or appropriated to the school, and to provide for the making of payments or contributions by the Governing Body to the Education Authority. Provision is also to be made for the maintenance and management of the Subordinate School by the Education Authority as a school for higher or secondary education, and such Authority is to be responsible for all maintenance charges and other expenses in connexion with the school, and for the maintenance of, or for any change in, the existing system of foundationerships and scholarships tenable at the school. They are also to receive and apply any sums granted or paid to them by the Local Education or other Authority as if they were an Education Authority appointed under the Act of 1902. They are to be required to afford a good commercial education for students in the Subordinate School, and to maintain the teaching of English, Latin, at least one modern foreign language, and Greek, unless and until the Governing Body shall consent to the discontinuance of Greek.

THE Civil Service Commissioners desire to draw the attention of schoolmasters, parents, and guardians to the fact that the scheme of examination for the forthcoming open competition for not fewer than six appointments to the post of examiner in the Exchequer and Audit Department is very similar to the present schemes of examination for admission to Woolwich and Sandhurst and for junior appointments in the Supply and Accounting Departments of the Admiralty, and that it is, therefore, suitable for gentlemen whose education has been conducted on ordinary public-school lines. The subjects embrace English, Latin, Greek, French, German, Geography, History, Mathematics, and Science; but candidates will not be at liberty to take up all these subjects. They will be permitted, however, to take both Latin and Greek. Candidates must be between eighteen and twenty years of age. Copies of the regulations, together with particulars of the pay and prospects, are obtainable on application, by letter, to the Civil Service Commission.

AN excellent example of the "educational ladder" (says the *Westminster Gazette*) is to be seen in the career of Mr. T. S. Moore, B.A., B.Sc., the newly elected Fellow in Chemistry of Magdalen College, Oxford. Beginning as a London School Board scholar, Mr. Moore successfully pushed his way on through the standards until he had won a London County Council scholarship and had graduated B.Sc. with Honours in London University. Then, after vindicating the worth of the good educational schemes of the late School Board and of the County Council, Mr. Moore turned from the younger university to the older, and, going into residence, as a scholar of Merton in 1899, graduated with First Class Honours in Chemistry in 1902. Immediately afterwards he was appointed Lecturer in Chemistry at Birmingham University, and, after work there which has won the highest praise, was last week elected Fellow in Chemistry at Magdalen after open competition.

At the annual meeting of the subscribers to the British School at Rome, the President of Trinity (Prof. Pelham), who occupied the chair, said the most satisfactory statement in the report was that which had reference to the Government grant (£500). Thanks were due to the signatories to the memorial, which was one of the most representative of learning which had ever been addressed to the Treasury. To the Government also gratitude was due. The grant would begin next year, and until then much work would have to be kept in suspense. But this school and the British School at Athens still lagged far behind the institutions of Germany and other nations. Hereafter we should hope to attain to the level of the German School. This country was sadly handicapped. The French and German student began the study of archaeology with the knowledge that it led to a professional career. In this country there was no such prospect, but it was to be hoped that the growth of universities would bring about a change, and the unduly individualistic English people would learn the value of co-operation and organization. Notwithstanding all these drawbacks, the work of the British School was being recognized, and Dr. Rushforth's labours on the Church of Sta. Maria Antica had been warmly commended by German scholars. There were many fields at Rome—*e.g.*, mediæval times—besides that of classical archaeology; a history of the English in Rome was one *desideratum*, and another was the study of architecture. All who had to do with the school were most deeply indebted to Lord Currie; and in Sir Edwin Egerton, who had done so much for the British School at Athens, they welcomed a worthy successor to Lord Currie. Mr. H. Stuart Jones, late director of the school, gave an address, illustrated by lantern slides, mainly on historical sculpture in Rome.

## UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

Oxford. THE death of Sir John Burdon Sanderson has removed from our midst one of the most striking personalities in Oxford. Many will remember the bitter controversy, that extended even to the University, between vivisectionists and anti-vivisectionists when his appointment to the Regius Professorship of Medicine was first published. But Dr. Burdon Sanderson, as he then was, soon convinced even his opponents that he was a man of wide learning, no extremist or faddist, and one whose real object was to use knowledge and research for the amelioration of human life. Those who have seen him walk to his place in Magdalen Chapel (for he was a Fellow, and afterwards an Honorary Fellow) will not forget quickly the man with the remarkable head and clearly chiselled features. Indeed, in its recent Regius Professors—Sir Henry Acland, Sir John Burdon Sanderson, and now Prof. Osler—the University has rightly claimed three men of real mark.

A *propos* of the new holder of the title, his enthusiasm for his subject was demonstrated by the fact that, after the regular annual medical dinner, when possibly the junior brethren expected bridge and tobacco, their new chief proceeded, as an after-dinner relaxation, to give them a paper on tuberculosis.

Possibly the topic which aroused most interest of late in Oxford has been the interpretation put upon the Bishop of London's sermon to undergraduates by sundry of the London papers. Bishop Ingram has been himself at pains to correct the exaggerated inferences drawn by the *Daily Mail*, for instance. There is not the shadow of a doubt that Oxford is not passing through a "wave of drunkenness"; the Oxford wine merchants and the various junior common rooms could tell a different tale.



The consumption of wine in Oxford has decreased just as much as it has in London clubs and general society. A good deal of the noise and "ragging" at bump supper and other festivities is not due to alcohol at all, but to the contagion of excitement. No one will imagine that in a collection of two thousand young men of all kinds there will not be some who drink; but to talk about general drinking habits or applause of drunkenness is absurd.

We are never satisfied with our examinations. Responsions, of course, has been assailed, and will no doubt be assailed again soon, when the non-Greeks have remmarshalled their forces to the attack. There is a rumour now that once more Honour Moderations is to go into the melting-pot, with the idea of replacing "prepared books" by more general work. No doubt this might be a better test of true scholarship; but, at the same time, the claims of the weaker competitors, who are more numerous, can scarcely be disregarded. The prepared books give these men a chance, by their industry, of doing respectably in the examination, and it is a pity to take any step which would remove the reward of industry. Pass Moderations has been, within the last few weeks, bitterly assailed by tutors in the pages of the *Oxford Magazine*, and possibly the result will be a redistribution of the time allotted to certain papers in the examination and a more frequent change in the "set books."

We had various distinguished visitors in Oxford during the month: Lord Roberts, at the Union, had a fine reception from a crowded house, and his exposition of our national responsibilities and weaknesses was able, if not convincing to every hearer. At the Union debate on the Fiscal Question and Mr. Chamberlain's Proposals, we had Lord Hugh Cecil; at the Palmerston Club, on the day after, Sir Charles Dilke; very soon we are to listen to the fiscal prophet himself. Practically all the tickets for the Tariff Reform League meeting on December 8 have been issued.

In matters athletic our star in some aspects is not very bright: it must have been a long time since a Rugby football team suffered so many reverses, and not even the most sanguine can look forward to the match against Cambridge. The Association team promises well, and, among other successes, defeated a strong Army team. The athletes effected somewhat of a surprise by winning against the L.A.C.: the London club adopted the unusual plan of numbering present Cambridge blues among its representatives. Expert tells us that the Trial Eights are up to a good average, and that the new talent is promising.

The 'Varsity Fours, after a close race, was won by Magdalen, while the Association Cup will almost certainly fall to Oriel, who have to meet Exeter in the final. Oriel had a very narrow escape in the beginning of the competition from being beaten by Merton, while Exeter only triumphed over Christ Church after two games and extra time.

The letter should not close without an allusion to the success scored by Bodley's Librarian in the debate as to whether the Curators should be allowed to put up bicycle stands in the Proscholium. Whatever be the rights or wrongs of the matter, we ought anyhow to be grateful for the beautiful architectural illustrations which appeared in Mr. Nicholson's pamphlet.

(From our own Correspondent.)

It is pleasing to see first one, then another, of Cambridge, the theological colleges, excluded so long by the intolerance of older times, coming to the shelter of the older universities as to their natural home now that religious tests are removed. This term sees another theological college settling at Cambridge. Cheshunt College, founded by Selina, Countess of Huntingdon, in 1768, an outcome of the Evangelical revival of the eighteenth century, has for the last 113 years done its work near London, training men for the ministry of various Evangelical Churches and sending not a few of its sons—such as Gilmour of Mongolia, Chalmers of New Guinea, and Griffith John of China—into the foreign mission field. Since the reorganization of the London University as a teaching university, Cheshunt has been one of its Divinity schools, but, as it was unable, owing to distance and difficulty of communication, effectively to combine its teaching power with that of the other London colleges it has removed to Cambridge to draw on the wealth of teaching resources there. It has at present fifteen students and two tutors. The students are becoming members of the University, attending University and college lectures and classes, and reading for University examinations in Arts and Theology, and the Council of the Senate of the Uni-

versity will be represented on its Governing Body as well as various religious bodies with which it has been connected.

The ninth of November was celebrated by one of the periodical "Rags" for which Cambridge is now famous—or otherwise. The abnormal quiet of the term was far too great to last, and the New Zealand match afforded a pretext for the rowdier elements to assert themselves once more. As a rule, the Cambridge police, burly and kind-hearted, are able to manage the obstreperous undergraduate and the more unmanageable Barnwellite, but on this occasion the police were reinforced by their junior colleagues, and a right royal row ensued. A few heads of comparatively inoffensive persons were cracked; the proctors arrested the tamest of the undergraduates; and property owners are left lamenting the destruction of their gates, fences, and shutters. A few fines were imposed at the Police Court; but these disgraceful affairs will never be stopped until a real example is made. If some of the marauders were sent before a judge of assize, they would be surprised to hear that their childish pranks are visited by a kindly Legislature with a punishment of five years' penal servitude. Perhaps some unsympathetic tradesman some day will lodge a charge of No. 6 shot in the legs of the rioters, and things will come to a crisis. What would the University man say if the mob were to break into the boathouses and demolish a few of the racing eights?

An influentially signed memorial has been addressed to the Council suggesting a very necessary reform. At present the University requires absolutely no test from those who matriculate: everything is left to the colleges. Now, colleges must live, and fees fill the college treasuries. Result: all sorts and conditions of men are received into our midst who would be—to put it mildly—ineligible for the middle forms of a decent school. The memorialists suggest the advisability of imposing upon all candidates the passing of the Previous or some substituted examination as a condition precedent to matriculation in the University. The possibility of inducing Oxford to combine with us in establishing a joint entrance examination is also put forward as one of the objects of the memorialists. The proposal is an obvious one: it would decrease the number of examinations, as it would enable the ordinary schools to frame their work so that boys from the Upper V. might while still at school do all that is necessary to take full advantage of their Cambridge course. It would prevent the scandal of Tripos men wasting six months or a year of their valuable time in learning what can be taught elsewhere and is contemptuously brushed aside up here.

The report of the Local Lectures Syndicate shows that solid progress is being made in the work of that department. Mr. Cranage, the Secretary, does not believe in showy methods of work, and would be the last to trust to the uncertain arbitrament of figures; but there is no doubt that the movement is not only spreading wider, but is throwing its roots deeper. It has given many a working man a chance of refinement, and, what is far more important, has brought an increasing number of able men into touch with the actual realities which underlie national education. We may have taught the masses a little: they have certainly taught us much.

The visit of the New Zealand football team to Cambridge caused a mighty inrush of football devotees. Many a well known "Blue" was seen once more watching the doings of his successors. Happily, our men, though defeated, were far from being disgraced, and gave the colonists quite the best game they have had in England. We have great hopes of beating the Dark Blues on December 12, as it is extremely probable that at least eight of our men will by that time have won their International colours.

The new Mayor of Cambridge is Mr. Durnford, of King's. He will prove a great success if his achievements as Treasurer of the A.O.C. afford any guide.

The Bishop of London has been addressing the undergraduates, and has much to say as to the misinterpretation of his Oxford sermon: fortunately, here in Cambridge people can keep their heads and avoid panic. At the same time, it must be acknowledged that a little more moderation in the consumption of alcohol would make the undergraduate a quieter if not a happier person.

This term has been signalized by a few "rags" of a domestic order in one college, large enough to support two boat clubs, and catholic enough in its sympathies to welcome within its portals sojourners from the Far East. Some jovial spirits have manifested their impatience at the admission of Asiatics to the benefits of their ancient foundation. In a dress-suit and bathing towels arranged to represent the flowing robes of a dusky



potentate, a *soi disant* Poo Bah of Nigeria with his suite compelled some harmless Hindoos to do fealty to their self-constituted ruler. College meetings and retirement to the country followed as the inevitable result.

Sir Edward Candy will, it is announced, deliver a course of lectures next term on "The Causes of Indian Famines." Sir Edward, who is a retired judge of the Bombay High Court and was recently at the head of the Police Commission in India, has had exceptional opportunities of forming an opinion on this important question and will be worth hearing.

The A.D.C. are performing "The New Boy" with vast success. The Club maintains its usual high standard of excellence.

The actual number of matriculations this year was 1,038—a record.

Full term ends on December 8, and we shall get away to sunnier spots.

\*.\* In reference to a statement in our Cambridge letter last month—"Caius is once more encouraging medical students, and has 87 new names on its books in consequence"—an esteemed correspondent writes authoritatively:

"The large entry (86) is no way due to increase in the number of medical students. If any obvious cause is sought, it is due to the considerable increase in the number of engineering students, and the substantial increase in literary and theological students. The fact is that most colleges, and quite rightly, encourage the admission of medical students."

At a meeting of the Court of Governors of the Manchester. Victoria University (November 16), Sir Frank Forbes Adam, in submitting the report of the Council, said since the last meeting an instructor in military history, strategy, and tactics had been appointed, with the object of giving a thorough military education to those who wished to take advantage of the opportunity at the University. In this connexion he might say that, in addition to the nominations which had been placed at the disposal of the University by the War Office, there was reason to believe that before long these would be extended so as to include the grant of nominations in the Royal Engineers, which was *par excellence* the scientific service in the Army. Another matter of interest was that the Professor of Pathology in the University had been appointed a member of the Medical Board of the Royal Infirmary, and the infirmary would now grant facilities for the teaching of morbid anatomy to students. Arrangements had also been made with the Royal Eye Hospital for teaching the subject of ophthalmology to University students when the eye hospital to be erected on part of the infirmary site was completed. These were developments with which they might feel justly satisfied. On the proposition of Sir William Houldsworth, M.P., seconded by Dr. Nield, and supported by Sir John Hibbert and the Vice-Chancellor, the report was adopted. In the course of the discussion it was stated that the number of students was continually increasing, and that the University had now arrived at a state of equilibrium in respect of its finances.

THE annual meeting of the Court of University Wales. College of Wales was held at Aberystwyth on October 27. The most important matter to come before the Court was the consideration of the proposal to appoint a working head for the University of Wales. The Council in the morning passed the following resolution:—"The Council recommends that no scheme for reorganizing the administrative work of the University of Wales be approved by the University Court without first submitting the same to the consideration of the constituent colleges; in the meantime the Council earnestly trusts that no such scheme will be adopted, involving an infringement of the principle which the University charter is designed to safeguard, 'the freedom and equality of the colleges in the organic unity of the University.'" In a long letter protesting against a working head, Lord Rendel, the President of the college, said the proposal tended to set up a University conclave. They must have no separate camps in Welsh education, and so long as the three colleges of the University constituted one indissoluble organization the national cause and position were safe. The resolution was carried unanimously.

Sir Marchant Williams, Warden of the Guild of Graduates of the University of Wales, addressing the Cymmrodorion Society at Cardiff (November 7), advocated the appointment of a Principal or working head for the Federated University; the relieving of the

Principals of the three federated national colleges of their duty each as Vice-Chancellor in turns of two years; the curtailment of the powers assumed by the academic section of the University Court; and the restoration to the University of its original democratic and national character. The hostility to the creation of a Principal or working head for the University, he said, had only developed since the appointment of Sir Isambard Owen as Principal of the Armstrong College of Science, Newcastle-on-Tyne. Sir Isambard is deputy to the Prince of Wales as Chancellor of the Welsh University, and as Deputy Chancellor had exercised many of the functions proposed to be entrusted to the intended Principal. Before his appointment at Newcastle those who now opposed a working head had contemplated creating Sir Isambard "Rector" of the Welsh University, "Rector" being an alternative title for "Principal" or "Working Head." Sir Isambard could not hold the dual office of Rector of the Welsh University and Principal of the Armstrong Science College at Newcastle. The Principals of the three Welsh colleges objected to being deprived, as they would be if the new appointment were made, of their Vice-Chancellorship by rotation. Sir Marchant said they now drew £200 a year salary to which they were not entitled, inasmuch as in the application made to the Treasury this sum was set aside to pay for an assistant or substitute professor at the colleges when the Principal could not take classes owing to his fulfilling the duties of a Vice-Chancellor; but since then the Principals had ceased to hold professorships, and consequently no assistants or substitutes were needed as originally contemplated, but the Principals when Vice-Chancellors continued to draw the £200 per annum intended for the substitute. Sir Marchant maintained that his scheme of reform was inevitable if the University's integrity was to be maintained.

UNIVERSITY COLLEGE, BRISTOL (says the *Bristol Times and Mirror*) had a good account to give (November 15) of its past year's work.

The Lord Bishop was able to say that its position was stronger and its prospects more hopeful than ever; and another staunch friend of the College, Mr. Lewis Fry, regarded the financial position as more satisfactory than it has ever been. The report showed every branch of the College work to be in a healthy state. Changes in the staff, though more numerous than usual, have not permanently interfered with teaching efficiency. An important feature of the College activities—the training of teachers—tends year by year to become more effective and far-reaching. The friends of the institution do not fail, however, to insist on the inadequacy of the local financial support which it receives relatively to similar colleges in Northern and Midland centres. Nor do they lose sight of the ideal of having in Bristol, not merely a university college preparing students to take degrees elsewhere, but a fully equipped university granting degrees of its own. Except that the munificent citizen for whom the Bishop yearns has not yet come to the front, there is no reason why the West of England should lag behind other parts of the country in the modern university movement.

THE completed Honour Lists of the Royal University for the academical year now closed (says the *Irish Independent*)

should furnish food for thought to those who have prevented a settlement of the Irish University question. The splendid successes achieved year after year by the Catholic colleges and convents have been repeated on this occasion, and the State-aided Queen's Colleges show by contrast as unfavourably as ever. Ten colleges and convents divide 271 honours between them, and of these the Catholic institutions, unendowed and unrecognized by the State, secured a large majority, University College alone obtaining over one-fourth of the total. The three Queen's Colleges, in addition to their initial cost, receive annually £41,000 as a subsidy out of the public funds; yet University College carried off within two of the total number of honours awarded to the three State-aided colleges. Or, again, the unendowed Loretto College, St. Stephen's Green, secured 41 honours to the 45 awarded to Queen's College, Belfast. But the case of the Cork and Galway Queen's Colleges, which receive between them £20,000 a year, is even worse. Galway obtained only 24 honours, and Cork figures at the very bottom of the list with 9. If examination is any test of efficiency in education, surely the whole system which squanders money on the Queen's Colleges, while ignoring the Catholic institutions, stands self-condemned.



## CURRENT EVENTS.

THE North of England Educational Conference will be held at Newcastle-on-Tyne on January 5 and 6. The Hon. Secretaries are Mr. A. Goddard, Secretary of the Newcastle Education Committee, and Mr. F. H. Pruen, Secretary of the Armstrong College, Newcastle.

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THE distribution of scholarships, medals, and prizes gained in the examinations for the Commercial Education Certificates of the London Chamber of Commerce will be made at the Mansion House on December 6, at 3.30 p.m., by Prof. W. J. Ashley, Dean of the Faculty of Commerce in the University of Birmingham.

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THE L.C.C. Free Popular Lectures on Saturday afternoons at the Horniman Museum for the month will be: December 2, "The Decorative Art of Primitive Man," by Dr. Harrison; December 9, "The Work of our Primitive Ancestors; and what we learn from it," by Mr. E. Lovett; and December 16, "The Weapons of Savages," by Dr. Harrison.

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At the Parkes Museum (Margaret Street, W.) there will be a "Discussion on Infant Classes" on December 7, at 8 p.m. (arranged by the Childhood Society); and a Lecture on "Moral Intuition and Common Sense: a Study of Original or Inherited Moral Capacity," by H. Thiselton Mark, M.A., B.Sc., Lecturer in Education to the University of Manchester, on December 14, at 8 p.m. (arranged by the British Child-Study Association).

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MR. F. B. KIRKMAN, B.A. Oxon., will expound a Moral Lesson on the subject of "A Gentleman" to the Moral Instruction Circle (19 Buckingham Street, Strand, W.C.) on December 11, at 7 p.m.

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At an ordinary meeting of the Sociological Society (School of Economics and Political Science, Clare Market, W.C.), M. Waxweiler, Director of the Institut de Sociologie, University of Brussels, will discourse on "L'Institut de Sociologie: its Equipment and Work," on December 18, at 8 p.m.; and at a research meeting on "Biological Methods in application to Social Problems," on December 19, at 4 p.m.



Honours. MR. R. B. HALDANE, K.C., M.P., LL.D., &c., has been elected Lord Rector of the University of Edinburgh, by 877 votes against 847 for Lord Dunedin, Lord President of the Court of Session; Mr. H. H. Asquith, K.C., M.P., D.C.L., &c., Lord Rector of the University of Glasgow, by 866 votes against 655 for the Marquis of Linlithgow, Secretary for Scotland; and Sir Frederick Treves, Bart., F.R.C.S., LL.D., &c., Lord Rector of the University of Aberdeen, by 390 votes against 153 for Mr. C. T. Ritchie, M.P., the preceding Lord Rector, who had withdrawn before the vote was taken.

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PROF. G. H. DARWIN, F.R.S., President of the British Association, has been made a K.C.B.

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THE Royal University of Ireland has conferred the honorary degree of LL.D. upon Mr. Robert Cochrane, F.R.I.B.A., C.I.S.O., &c., President of the Institution of Civil Engineers of Ireland and Hon. General Secretary of the Royal Society of Antiquaries of Ireland.

THE VERY REV. JAMES MOORHOUSE, D.D., formerly Bishop of Manchester, has been elected an Honorary Fellow of St. John's College, Cambridge.



AN anonymous donor has promised £50,000 towards the completion of the new buildings of the University of Birmingham at Bournbrook.

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SOME £5,855 has been promised towards establishing a Students' Union at Liverpool University. The sum includes £1,000 each from Mr. Edward Whitley and Sir John Brunner; £500 each from Mrs. George Holt, Miss Holt, Mr. C. W. Jones, Mr. E. K. Muspratt, and Mr. T. Sutton Timmis; £250 each from Mr. Walter Holland, Mr. John W. Hughes, and Sir W. H. Tate; £200 from the late Dr. Button; and £100 each from the Vice-Chancellor (Dr. Dale), Mr. Holbrook Gaskell, and Mr. W. B. S. Hughes.

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MR. HENRY MORRIS, F.R.C.S., Senior Surgeon, Middlesex Hospital, has given £1,000 to form the nucleus of a permanent endowment fund for the maintenance of the Medical School of the hospital.

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MR. JAMES DAVENPORT, Hey-in-Lees, Lancashire, has left £1,000 to provide three annual scholarships in the day schools at Hey, and £500 to the Oldham Blue Coat School.



Scholarships and Prizes. MR. THOMAS H. KELLY, of New York, has given £300 to the Irish Catholic Scholarship Fund, to endow two scholarships of £50 a year for three years.

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PRELIMINARY examinations for 15 free open scholarships at the Royal College of Music, South Kensington, will be held on January 31, 1906, in various local centres throughout the United Kingdom. The scholarships to be competed for are as follows:—Composition, 1; Singing, 4; Piano-forte, 3; Organ, 1; 3 among Violin and Violoncello; 3 among Double Bass, Viola, Flute, Bassoon, Horn, and Trombone. They entitle the holders to free musical education at the College, and are, as a rule, tenable for three years. Further information and official forms of entry may be obtained from the Registrar. No entry form can be received after December 21, 1905.

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ONE scholarship, £50, will be offered for competition amongst new students entering for a two-year course (commencing January next) at St. Bride Foundation Physical Training College (Bride Lane, Fleet Street, E.C.). No examination will be held unless there be five entries. Apply to the Clerk or Manager to the Governors, or to the Gymnasium Instructor.

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BEDFORD COLLEGE, LONDON, offers two open scholarships, £20 each for one year, for the course of secondary training, beginning in January next, to candidates holding a degree or equivalent in Arts or Science. Apply to the Head of the Training Department by December 18.



Appointments and Vacancies. AT University College, London, the following appointments have been made:—Dr. Herbert Tilley to be Surgeon of the Ear and Throat Department of University College Hospital; Dr. Thiele to be Pathologist to the hospital for a further period of twelve months; Prof. Gardner to be Yates Lecturer in Archaeology for the current session; Mr. J. H. Walker to be Assistant in Coptic in the Department of



Egyptology; Mr. N. F. MacLeod to be Assistant in the Department of Hygiene.

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IN Liverpool University, Dr. A. W. Titherly has been appointed Lecturer in Organic Chemistry; Dr. W. G. Smith, Lecturer in Experimental Psychology; Dr. G. Schaafs, Assistant Lecturer in German; Dr. H. Bassett, Demonstrator in Chemistry; Messrs. W. Mason and G. E. Scholes, Assistant Lecturers in Engineering; and Mr. C. A. Sadler, Assistant Demonstrator in Physics.

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MR. F. C. BURKITT, M.A., has been appointed to the Norrisian Chair of Divinity in Cambridge University.

Mr. Burkitt (who was educated at Harrow and Trinity) came out twenty-eighth Wrangler in 1886, and took a First Class in the Theological Tripos, 1888, being also awarded the Hebrew prize. He was successively Carus Prizeman, Jeremie Prizeman, second Tyrwhitt Scholar, Mason Prizeman, and Kay Prizeman. He has been University Lecturer in Palæography, and Examiner for the Theological Tripos.

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DR. W. A. BONE, Ph.D., D.Sc., F.R.S., has been appointed Professor of Applied Chemistry (Fuel and Metallurgy) in the University of Leeds.

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AT University College, Cardiff, Mr. F. S. Pinkerton, M.A., has been appointed Professor of Applied Mathematics; and Mr. D. G. Taylor, M.A., and Mr. J. G. Smith, M.A., Lecturers in Mathematics.

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MR. H. STANLEY JEVONS, M.A., B.Sc., of the University of Sydney, has been appointed (for one session) Lecturer in the Department of Political and Commercial Science in University College, Cardiff.

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MR. ADAM B. WEBSTER, M.A., succeeds Prof. G. Gregory Smith as Assistant Professor of Rhetoric and English Literature in Edinburgh University.

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MR. GOLLANZ has resigned the University Lectureship in English at Cambridge.

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MR. EDWARD J. THOMAS, M.A. St. Andr., B.A. Lond., has been appointed Assistant Lecturer in Greek and Latin at University College, Bangor.

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MISS MABEL E. HOWELL, B.Sc., has been appointed Assistant Lecturer in Mathematics in University College, Bristol.

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THE following members of the teaching staff of the Manchester Municipal School of Technology have been appointed Lecturers of the University:—Messrs. J. P. Wrapson, J. Radcliffe, T. W. Fox, H. G. Jordan, W. W. Haldane Gee, E. Knecht, J. Hübner, and Charles W. Gamble.

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MR. L. A. BORRADAILE, Lecturer in Natural Science at Selwyn College, has been appointed Assistant Secretary for Lectures to the Cambridge Local Examinations and Lectures Syndicate, in succession to Mr. Archbold.

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MR. FRANCIS R. B. WATSON, B.Sc. (Engin.) Edin., has been appointed Assistant Lecturer and Demonstrator in Engineering in the Merchant Venturers' Technical College, Bristol, in succession to Mr. W. K. Beard, who has been appointed one of H.M. Inspectors of Factories.

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AT Wigan Mining and Technical College, Mr. Arthur J. Jackson, Art Master, Wednesbury Art Gallery, has been appointed to the Art Department; Mr. Ernest B. Naylor, M.Sc., F.C.S., Lecturer in Chemistry at the Technical School,

and Chemistry Master at the Secondary School, Widnes, to the Chemistry Department; and Mr. H. G. Cotsworth, A.M.I.M.E., Lecturer at Battersea Polytechnic, and inventor of the Cotsworth arc lamp, to the Electrical Engineering Department.

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THE REV. F. S. WILLIAMS, M.A. Cantab., assistant master of Rugby School, has been appointed Head Master of Eastbourne College.

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MR. R. O. BISHOP, M.A. Cantab., has been appointed Head Master of Andover Grammar School.

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THE Second Mastership at Bancroft's School is vacant through the premature death of the Rev. James Hall, B.A., B.Sc.

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MISS AMY T. STEELE, M.A. London, second mistress of George Watson's Ladies' College, Edinburgh, has been appointed Head Mistress of the Portsmouth and Southsea High School of the Girls' Public Day School Trust, in succession to Miss Adamson.

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AT the College, Ramsgate, Mr. Tudor Foulkes Jones, B.Sc. Wales, assistant master, Lurgan College, has been appointed senior mathematical and science master; Mr. R. M. Williams, B.A. Oxon., second form master; Mr. W. E. Weber, M.A. Cantab., senior modern language master; Mr. William G. Patton, assistant master, Hall Gate School, Doncaster, master of the commercial form; and Mr. D. K. Petano, B.A. Oxon., assistant master, Guildford Grammar School, Head Master of the Junior School.

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MR. ROBERT JOHNSON, M.A. Oxon, second master, Pocklington School, has been appointed to King Edward VII. School, Sheffield.

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MR. R. O. V. THORP, B.A. Cantab., assistant master, Pocklington School, has been appointed to Trent College, Long Eaton.

\* \* \*

MR. JOHN PEILE, B.A. Cantab., Aske's School, Cricklewood, has been appointed to University College School, London.

\* \* \*

MR. ALFRED H. SCHOLEFIELD, B.A., B.Sc. Lond., assistant master, Wolverhampton School, has been appointed to Leigh Grammar School.

\* \* \*

MR. A. H. WEBBER, assistant master, Liverpool College Middle School, has been appointed to Hulme Grammar School, Oldham.

Literary Items. *South Africa* for August 19 contains a full and appreciative sketch of the career of Dr. Thomas Muir, F.R.S., C.M.G., &c., Superintendent-General of Education in Cape Colony, and an old and esteemed contributor to our mathematical columns—with portrait. We quote part on another page.

\* \* \*

MESSRS. BLACKIE & SON will publish almost immediately "Indian Echoes," by John Renton Denning—a series of poems by an Anglo-Indian, comprising ballads and other pieces, in which various phases of Indian life, or subjects suggested by the author's Indian experiences, are dealt with, together with some poems having no special bearing on India.

\* \* \*

MESSRS. W. HEFFER & SONS, Cambridge, will publish a



series of phonographic records for the teaching of English, French, German, and other languages, which have been made under the supervision of Mrs. J. G. Frazer. They claim to have almost eliminated the metallic quality of the sound of the phonograph.

\* \* \*

THE Oxford University Press is about to issue a new edition of the poetical works of William Blake in two forms—one for the library, the other for the pocket. It gives a *verbatim* text from the manuscript, engraved and letterpress originals, and various readings, bibliographical notes, and prefaces by John Sampson, Librarian in the University of Liverpool. Mr. Frowde also announces a volume of "Counsels and Ideals from the Writings of William Osler," Regius Professor of Medicine at Oxford.

\* \* \*

The *Hereford Times* of October 28 contained the interesting report of the Rev. J. O. Bevan, M.A., F.C.P., &c., as delegate to the British Association from the Woolhope Naturalists' Field Club, together with supplementary experiences by Mr. Luther Davis, his companion, a member of the Club.

\* \* \*

A DETAILED and very suggestive Report on an Ideal Curriculum in Modern Languages by a special sub-committee of the Education Sub-Committee of the Assistant Masters' Association appears in the Association's "Circular to Members" for November. The sub-committee consisted of Messrs. A. Hargreaves, W. G. Hartog, H. L. Hutton, A. M. Saville, A. A. Somerville, and three co-opted members—Messrs. C. Brereton, W. Rippmann, and F. Storr.

\* \* \*

MESSRS. BLACKIE will publish *Who's Who* on December 8. It will contain some two thousand more biographies than this year's edition, besides some fresh features. Their other year books will be ready about the same time.

\* \* \*

MR. FISHER UNWIN is issuing a shilling edition (fourth impression) of Mr. Thiselton Mark's "The Teacher and the Child."

\* \* \*

AT Aberdeen University, Sir William D. Geddes, late Principal, has been commemorated by a medallion portrait in marble, placed in the Geddes Memorial Library; and the late Prof. Fyfe (Moral Philosophy) by a stained-glass window.

\* \* \*

THE University of Ireland has decided to confer the degrees of Bachelor and Doctor in Veterinary Medicine.

\* \* \*

It is proposed to raise a subscription to acquire that part of the library of the late Provost of Oriel which relates to Homeric studies, and present it to the Bodleian Library as a memorial of him. Bodley's Librarian has kindly undertaken that the books should be kept together and referenced as one set. The collection, which is probably unique, may be had for the moderate sum of £120; but it is hoped that a larger sum may be subscribed in order that the balance may be given to the Bodleian Library, as the acceptance of the gift will, for various reasons, involve considerable expense.

\* \* \*

THE Report of the Inter-Departmental Committee on the Medical Inspection and Feeding of Children in Public Elementary Schools was signed on November 9. The Committee has held 25 meetings and has examined 44 witnesses, of whom 21 gave evidence as to London and 23 as to other parts of the country.

MR. CHARLES FRY'S Shakespearean *matinées*, usually given in November, are postponed till spring. They will be given at the Royal Court Theatre, April 21 and 28, and May 5 and 12.

## CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

### TEACHERS FOR SOUTH AFRICA.

To the Editor of "The Educational Times."

SIR,—In consequence of my having visited South Africa of late and of having seen something of the state of affairs, I have been asked by a leading member of the South African Colonization Society to do what I can to make known the educational wants of these colonies and the efforts the Society is making to cope with them.

Their Education Committee acts as an intermediary between (1) teachers in Great Britain desiring posts in South Africa and (2) Government Departments for Education or private employers in South Africa.

The Committee invites communication and co-operation from (1) principals of training colleges or other educational bodies and qualified teachers of all sorts in Great Britain, (2) officials and private persons in South Africa who require the services of first-rate teachers.

There is a growing demand for qualified men and women teachers, both elementary and secondary, as well as for trained musicians, private governesses, and technical teachers; also typists and shorthand writers are sent out through this Committee, and should apply in the same way.

The following educational authorities have expressed their approval of these objects, and have consented to give the benefit of their advice on points of special difficulty:—Sir W. R. Anson, Sir R. C. Jebb, Sir H. Craik, and Mr. H. T. Gerrans.

Over so wide a field—comprising the greatest part of the continent south of the Equator—it would be misleading to generalize as to conditions of service and emolument, but full particulars can be obtained from the Education Secretary, South African Colonization Society, 47 Victoria Street, London, S.W.; whilst applications respecting Scotch teachers should be addressed to the Scottish Representative on the Education Committee, S.A.C.S., 42 Frederick Street, Edinburgh.

As to the need for experienced teachers and the importance of the work—both from an educational and an Imperial point of view—no doubt can exist in the mind even of the most cursory visitor.

Naturally, the conditions of climate and of life in South Africa vary enormously. This is evident as one glances at the map and sees the names: Cape Colony, Natal, The Transvaal, Orange River Colony, Rhodesia, and the South African Protectorates. Herein a location can be offered which would suit every taste.

As to the strenuousness of the people and their hospitable instincts, surely every member of our late expedition can do no other than speak well of these.—I am, Sir, &c.,

J. O. BEVAN,

Member of the General Committee and of the Sectional Education Committee of the British Association for the Advancement of Science.

Chillenden Rectory, Dover.

November 14, 1905.

### EDUCATION IN NORTHERN EUROPE.

To the Editor of "The Educational Times."

SIR,—The new secondary school in Sweden is not, as I stated on page 483 of *The Educational Times*, a ten-year school, but a nine-year school, viz., *Realskola*, five years, and *Gymnasium*, four years. The sixth year of the *Realskola* is only for those who do not enter the *Gymnasium*.

When I stated also, with regard to our own Secondary School Commissioners, that there seemed no immediate prospect of their recommendations being carried out in their entirety, it occurred



to me that the words were probably more appropriate to the years before 1902 than to those after; and, on consulting Prof. Sadler on the matter, he sent me the following interesting answer:—"I have looked through the recommendations made by the Secondary Education Commission in 1895. They were 160 in number. Of these, 13 have not been adopted, 12 have been virtually adopted, and no less than 135 are now (in some cases with slight modifications) in force. I am surprised to find how large a proportion of the Commissioners' recommendations have been taken up and put into practice. Of course, the Act of 1902 covered the whole field of educational administration, whereas the Commissioners were only authorized to deal with secondary education. But an essential part of the Act of 1902 was modelled on the lines indicated by the Commission."

The paper bearing the above title has now been reprinted in octavo, with these two corrections embodied; and I shall be glad to send a copy to any of your readers on receipt of a stamped directed wrapper.—I am, Sir, &c.,  
J. S. THORNTON.  
6 Kirkdale Road, Leytonstone.

### MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on November 18. Present: Dr. Wormell, President, in the Chair; Prof. Adams, Mr. Armitage Smith, Mr. Barlet, Rev. Canon Bell, Rev. J. O. Bevan, Mr. Bidlake, Mr. Bowen, Mr. E. A. Butler, Mr. Charles, Miss Crookshank, Mr. Eve, Mr. Hawe, Mr. Holland, Miss Jebb, Mr. Kelland, Mr. Ladell, Dr. Lawrence, Rev. G. E. Mackie, Sir Philip Magnus, Mr. Millar Inglis, Dr. Moody, Mr. Morgan, Miss Punnett, Mr. Rule, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, Rev. J. Stewart, Mr. Storr, Mr. Vincent, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the number of entries for the forthcoming Certificate and Lower Forms Examinations was 8,280, or about 1½ per cent. below the number of entries for the corresponding examinations in December last.

Diplomas were granted to the following who had completed their subjects for the respective grades:—*Licentiate*: Miss M. Bolton, J. W. M. Gale; *Associate*: Miss B. Gavan, Miss M. Keenan, Miss L. E. Wright.

Prof. Foster Watson, M.A., University College of Wales, Aberystwyth, was elected a member of the Council in place of Prof. Findlay, resigned.

Mr. H. W. Eve was appointed to represent the Council of the College on the Teachers' Registration Council, in place of Mr. E. E. Pinches, resigned.

The following resolutions were adopted:—

1. "That the Council are not prepared to recommend to the members of the College that application should be made to the Privy Council for a Supplementary Charter, but are strongly desirous to secure federation by other means."

2. "That the Council communicate with the Federation Committee, suggesting the formation of a Standing Committee of representatives of Associations of Secondary Teachers to meet from time to time at the College, and to deal with matters of common interest."

The following persons were elected members of the College:—

Mr. J. Cameron, M.A. Aberdeen, 1, Upper Hornsey Rise, N.  
Mr. W. S. Denton, A.C.P., Dunelm, South Road, Taunton.  
Mr. L. R. W. Gibbens, Ronaldsholme, Churchfield Avenue, N. Finchley, N.  
Mr. W. F. Hopkins, 27 Powis Square, Bayswater, W.  
Mr. E. E. Kitchener, M.A. Leeds, L.C.P., Providence House, Mirfield, Yorks.  
Mrs. M. O'Brien Harris, D.Sc. Lond., L.C.P., 84 Petherton Road, Highbury, N.  
Miss F. H. Tait, Dagnall Park School, South Norwood, S. E.  
Mr. W. T. Wright, Central Training College, Lahore, India.

The following books had been presented to the Library since the last meeting of the Council:—

By Dr. A. E. C. DICKINSON.—Pattison's Pope's Satires and Epistles; Sweet's Anglo-Saxon Reader.

By E. ARNOLD.—Nabarro's Laws of Health; Wilson's Lingua Materna.

By G. BELL & SONS.—Stern and Topham's Practical Mathematics.

By THE CAMBRIDGE UNIVERSITY PRESS.—Godfrey and Bell's Winchester Arithmetic.

By CASSELL & Co.—Cassell's New French-English and English-French Dictionary.  
By GINN & Co.—Collar's First Year German; Duerr's Essentials of German Grammar.

By MACMILLAN & Co.—Marchant's Thucydides, Book I.

By J. MURRAY.—Thompson's Elementary Greek Grammar.

By G. PHILIP & SON.—Taylor's First Reader in Health and Temperance.

By RELFE BROS.—Carter's Old Testament History and History of England, Part I.; Evans's Outlines of English Literature.

By THE UNIVERSITY TUTORIAL PRESS.—London University Guide and U.C.C. Calendar, 1906.

By WHITTAKER & Co.—Bird's School Geography.

Calendars of Armstrong College, Newcastle-on-Tyne; University College, London; King's College, London; and City of London College.

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## TO WHOM SHALL WE TEACH LATIN AND GREEK, AND HOW SHALL WE TEACH THEM?

At the Evening Meeting of the members of the College of Preceptors on November 15, Mr. H. W. EVE, M.A., Dean of the College, in the Chair, Mr. FRANCIS STORR, B.A., read a paper on "To whom shall we teach Latin and Greek, and how shall we teach them?" He said:

All I desire in this paper is to moot a question that at the present moment faces every educational authority in the kingdom, and has to be solved in practice by every—or nearly every—secondary head master or head mistress. I am not so vain or foolish as to imagine that I can solve it: I do not believe that a general solution is possible. I can only contribute as my *ερανος* to the *symposium* a few observations which are the outcome of thirty years' experience of teaching—mainly language teaching, both classical and modern—supplemented by a pretty wide acquaintance with schools and scholars of all grades, that I have since gained as an inspector and examiner. If my remarks are couched in a somewhat dogmatic form, it will be solely from my desire to be brief and provocative—I mean to elicit the opinion of teachers whose experience differs from mine or leads them to other conclusions. I desire, further, to restrict the subject to secondary schools, excluding at the one extreme the primary scholars, to whom Mr. M. Arnold would have some Latin taught, and at the other the Universities. It is not open to me to exclude Greek altogether from the discussion, but I shall confine myself mainly to the consideration of Latin, because that is a question that affects a far larger number of teachers than Greek, and also because what is true of Latin teaching in general holds good of Greek teaching, as far as aims and methods are concerned. It may, however, be well to enter at starting a *caveat* against the common fallacy—Latin is a good subject for A., B., C., and Greek is a good subject for A., B., C.; therefore it behoves us to teach A., B., C. Latin and Greek.

The question To whom shall we teach Latin? involves the previous question—Why we teach Latin?—and this opens out a vast vista, historical, sociological, and psychological. I can only glance at the fringe of it, take a few snapshots, or, to vary the metaphor, jot down a few shorthand notes. In the Middle Ages Latin was what Esperanto essays to be, the *lingua franca*, the universal language of the civilized world. With the Renaissance Latin came to be studied, not solely for its practical utility as a means of communication, but, with Greek, as a key to all, or nearly all, the best literature of the world. Our grammar schools were Latin schools. The "Utopia" was written in Latin; Bacon apologizes for writing his "Essays" in English; Milton wrote his foreign despatches in Latin; Mulcaster is the first English schoolmaster to plead that English children should be instructed in their native tongue.

All this is common form which appears in every text-book of the history of education, but I was compelled to rehearse it in brief in order to direct attention to a strange phenomenon which is generally overlooked or imperfectly recognized by the thorough-going supporters of a classical education. "Cessante causa, non cessat effectus." Latin has ceased to be a spoken language. The Russo-Japanese Treaty was not drawn up in Latin. And, as far as literature is concerned, the literature of at least four modern European nations—of England, France, Germany, and Italy—each of them far outweighs, not only in its contents and matter, its usefulness and interest, but in depth of thought and imaginative power, in masterpieces of style and diction, the whole literature of Rome from Emilius to Ausonius, from Livy to St. Augustine.

As far as practical utility and literary culture are concerned, we may lay it down at starting that, if it is a choice between French and Latin, or between reading Shakespeare and reading Ovid, we shall choose for our



pupils the French language and English literature. This position will, I know, be disputed, and we find so high an authority as Prof. Simon Laurie maintaining that Latin should take precedence over French; but he does so on other than literary grounds. Even the foremost champion of classics against modern languages frankly acknowledges that the orthodox defence of classical training on the ground of the incomparable beauty of the great masterpieces of ancient literature must be abandoned. "When closely questioned, no advocate of classics ever professes that this is really the object in view with the mass of boys." Those literary outworks which have served so long to keep at bay the invading host of modern studies are found, on closer inspection, to resemble a Chinese fortification, with cardboard guns and mandarins disguised as gunners. The classicists have been driven back to their inner lines, and have entrenched themselves in what still appears to them the impregnable fort of discipline.

The position is clearly set forth in the essay from which I have just quoted, and I will give it in the words of Mr. Lyttelton—I wish that time permitted me to quote the passage in full: "The learning of these ancient languages in its earliest stages affords an opportunity for training in precision of thought, memory, inference, and accuracy. . . . If there had not been in the study of these languages some peculiar quality which braces the faculties of the learners, it might quite safely be said that classics would long ago have been restricted to a small coterie of scholars. But teachers, with whatever opinions they have embarked on their task, have been forced to acknowledge that the failure to stimulate the love of literature by means of Latin and Greek has been compensated by the admirable tonic virtue which resides in these languages owing to the fact that they are no longer spoken as they have been written. . . . Latin is an admirable instrument for stimulating the reasoning faculties at an age in which their very existence might almost seem open to doubt."

Now, if I may say so without irreverence towards the Head Master of Eton, who also holds the Cambridge Teaching Certificate, this "oratio pro domo sua" appears to me a survival of the Ptolemaic system of education. It rests on the assumption that there are certain distinct faculties that must be exercised—in this case *par excellence* the reasoning faculty—and that the problem of the educator is to find out what gymnastic will best develop a particular faculty; just as a gymnastic master might prescribe: "This child is weak in the biceps—give him dumb-bell exercise; this other is spindle-legged—make him kick for an hour a day." Surely we have changed all this. On the one hand, modern psychology teaches us that the mind is one and indivisible: to plead that any study exercises the memory is to us a lame and impotent argument. On the other hand, in our modern educational cosmogony the centre of gravity is transferred from *discipline to interest*. We may admit to the full that the study of Latin has a high disciplinal value; but we go on to inquire, or rather we ask the previous question: Will it interest our pupils? It is from this point of view that we must weigh the study of Latin against the study of French or any proposed alternative for Latin.

Put in another form, "the one great merit of Latin as a teaching instrument is in its stupendous difficulty." Such are the actual words of Mr. Tarver ("Observations of a Foster-Parent"), and he prescribes that his foster-child shall begin Latin at ten, and for the next three years devote to the study five hours a day, by the end of which time, if he has been taught by a true foster-parent in a select preparatory school where the classes are small, he will have been well grounded in the rudiments of the language. I would call Mr. Tarver's attention to an observation of Bismarck: "Russian is quite as difficult as Greek and much more useful." And a corollary of this theory expounded both by Mr. Tarver and Mr. Lyttelton is that there are to be no short-cuts—no "Latin without tears," no easy colloquial methods which may suit very well courier languages that are learned for use, to be spoken and understood, such as French and German. "The acquisition of a language [I again quote Mr. Tarver] is educationally of no importance: what is of importance is the process of acquiring it." The bilingual Welshman or the Swiss hotel porter is no more educated than the Wilts clod-hopper with his vocabulary of two hundred words. Let me quote as a counterblast a dictum of Mr. Bowen, of Harrow, which may be found in the same volume as the Sidgwick essay to which I shall subsequently refer. After laying down as an essential of all teaching that the study must be in itself, or must be made to the pupil, attractive, he proceeds:—"Above all the work must be easy. Few boys are ever losers from finding their task too simple; for they can always aspire to learning what is harder; many have had their school career ruined by being set to attack what is too hard." Look on this picture and on that, and say which of the two is the truer pedagogic.

I may dismiss another theory which is set forth, not quite seriously, I take it, in an article entitled "Latin for Girls" which appears in the

current number of the *Nineteenth Century*. Dr. Stephen Paget starts from the same point as Mr. Lyttelton, but he diverges widely, and it is difficult to determine what is his goal. First among the advantages of an enforced study of the classics, he also puts discipline; but next to discipline come "an ear for poetry, a proper respect for style," and, as a crowning grace, "a store of apt quotations." Girls are to begin their study of Latin by discovering the meaning of *£ s. d.*, of B.A. and M.D. and other grains of gold that have been embedded in our barbarous tongue (Dr. Paget has no opinion of the vulgar English tongue); they are next to learn in Latin the Lord's Prayer and the Canticles, to decipher (whether in church or in the "Corpus Inscriptionum" is not stated) epitaphs and lapidary Latin, and, finally, to prove their mastery of the language by turning into elegant Latin with the help of a dictionary and, if available, a brother:

"Every little boy or girl  
That's born into the world alive  
Is either a little Liberal  
Or else a little Conservative."

Dr. Paget allows that this may seem a poor makeshift for the body of the classics; but then he reminds us that he is prescribing only for girls, and not for boys.

This last, as Bacon remarks, were fitter for a satire than a serious observation, and yet it is worth noting as an indication that what we may call the "gentlemanly theory" of Latin maintained as a social distinction—Colonel Newcome's "emollunt mores"—is scotched, but not killed. Dr. Paget would have Latin learnt "suaviter in modo" (as the Mayor of Reading pronounced it), but not "fortiter in re."

To return from this digression to our main argument, though discipline is the main object alleged by the modern upholders of the classical tradition, subsidiary claims are likewise advanced which have to be considered before we can enter on the question of curriculum and method.

In an interesting monograph on "The Teaching of Latin and Greek in the Secondary School," by two professors in the Cornell University, Prof. Bennett sets down training in English as the first and most important reason for studying Latin: "First and foremost, I should say that Latin is of value because it confers a mastery over the resources of one's mother tongue. To my own mind this reason weighs more than all others combined." This mastery, according to Prof. Bennett, is acquired by constant practice in translation from Latin into English, translation which must be once accurate and elegant, and it cannot be acquired so surely or so fully by any other method, neither by the study of a modern language, nor assuredly by the study of English alone.

In my judgment this line of defence is much sounder and more reasonable than the treadmill theory, and, with some reservations and considerable qualifications, I am prepared to allow the plea as valid.

When we pass beyond the elementary stage of education, the study of a foreign tongue is, by almost universal consent, an integral part of the curriculum. Further, translation combines most of the *desiderata* in a scholastic exercise. It can be graduated to suit every age and capacity; it gives the pupil something to do, not merely to learn—he feels himself a poet, a maker in his small way, just as does the carver of a Sloyd spoon or one of Mr. Ablett's impressionists; it sets him a number of little problems of infinite variety which tax his memory, his common sense, his *Sprachgefühl*. And, incidentally, there can be no doubt that he does thereby gain a more intimate acquaintance with his own language, a practical knowledge of its qualities and its limitations, and a command of it as an instrument of expression. But that Latin, even if taught as it is taught at Cornell University (and how few are the teachers who even aim at such results!)—that Latin can be a substitute for English teaching is a chimera relegated to the limbo of the philosopher's stone and "aurum potabile"; so at least we imagined till we read Prof. Bennett's volume.

If we needed a refutation of the old fallacy that a good Latinist is "ex vi termini" a good English scholar, we have only to turn the page and peruse the English of a fellow-professor who is quoted by Prof. Bennett as an authority: "The iridescent threads of cultivated and flexible æsthetic and ethical institutions must be shot through the intellectual warp of the mind at the loom."

We should like to set Prof. Shorey to turn that sentence of his into Latin prose. Would it be possible to pick an instance of such inflated and meaningless bombast from the writings of Jane Austen and Artemus Ward, Bright and Bret Harte, Cobbett and Cobden, Dickens and Darwin? One might go through the alphabet with English authors who have had no tincture of Latin.

To sum up this point of the discussion, the argument for classical education on account of its many-sidedness—an argument that Mr. Thring was constantly enforcing with sledge-hammer blows—will not bear examination. It was refuted forty years ago in a memorable essay on "The Theory of Classical Education," and I cannot improve upon the refutation of my old friend Henry Sidgwick: "We may allow that the education is many-sided: still, if it is defective on each side, this many-sidedness will not count much in its favour. And the very fact that the same instrument is made to serve various educational purposes, which seems at first sight a very plausible argument in its favour, is really, for the majority of boys, a serious disadvantage. In the actual process of education one or other of the purposes is continually sacrificed. Some boys, with strong taste for literature and natural power of expression, pass with moderate



success through their classical work by means of their literary taste alone, and yet, after the first rudiments of grammar are acquired, very little training in close observation or accurate reasoning. But, with the greater number (especially of boys who do not go to the University), the process is reversed. The mind, exhausted with the labours of language, imbibes miserably little of the lessons of literature. . . . The consequence is that half the undergraduates at our Universities and a large proportion of the boys at all of our public schools, if they have received a literary education at all, have got it for themselves: the fragments of Latin and Greek that they have struggled through have not given it them."

Thus far I have been clearing the way. I have shown, or attempted to show, to whom we should *not* teach Latin, and *a fortiori* Greek. I have pointed out that the stock arguments advanced by its professors rest on no sound psychological basis; that they have been manufactured *a posteriori* to bolster up a falling cause built on no more solid foundation than tradition. My conclusions have been wholly negative, and some of you, I fear, will have set me down as a sworn foe to the classics, a Trojan whose gifts (if I may transpose the Virgilian parts) are to be regarded with suspicion. I hope before we part to convince you that I am no renegade; that, if to my dying day I shall regret that at school I was taught no word of English literature, or history, or science, I am grateful every day of my life that I learnt at school the elements of Latin and Greek, and scarce a day passes on which I do not read some portion of a Greek or Latin classic.

"Usque adeo nihil est quod nostra infantia caelum  
Hausit Aventini bacca nutrita Sabina."

"I too amid the hills of Rome was bred,  
And yet a child with Sabine olives fed."

For those who endure to the end, who carry on the study of Latin and Greek to the stage of ability to read ancient literature, and of finding pleasure in reading it, I am profoundly convinced of the value of classical studies; and, with the proviso that it is not to be made the one way of salvation, that a man may be highly educated and highly cultured too without knowing a word of Latin or Greek, I would subscribe to all the glowing eulogiums that have been pronounced on the study by Thring and Kennedy, by Prof. Butcher and Sir Richard Jebb. My protest has been against enforcing Latin on unwilling pupils who will not get beyond the accident; whose knowledge of Latin literature will be confined to a book of Caesar's "Commentaries" and some scraps of Ovid or Tibullus, to a sacrifice of the multitude of narthex-bearers for the sake of the few initiated.

The scathing words of Ruskin might be addressed to-day to the Head Masters' Conference. "We pour this kind of knowledge [classical scholarships] on one and all alike, like snow upon the Alps, and are proud if here and there a river descends from their crests into the valleys, forgetting that we have made the loaded hills themselves barren for ever." I don't suppose that there are any of that august body among my audience. They are not wont to attend such gatherings of teachers, holding, as a late episcopal head master expressed it, that "the theory of education is a number of platitudes that can only be of speculative interest," and *that* only elementary teachers and adventurers in private schools. If any were here, I should certainly be arraigned, not for the first time, on a charge of *scandalum magnatum*, and they would point triumphantly in self-justification to bifurcation, or, in some cases, trifurcation, to the alternatives they offer for Latin verse and Greek, to modern sides and Army classes. I am far from denying the reforms that have taken place in public schools since Ruskin wrote; but I maintain that these reforms have been forced upon the Head Masters by public opinion, that modern languages and modern subjects generally have been admitted grudgingly and of necessity, thrown as a bone for the dull dogs and lazy hounds to mumble after they have shown that they cannot digest the ambrosia of the gods.

Further I complain that the scales of moderns and ancients are not evenly poised, and that the moderns are prejudiced at starting by the prevailing system of entrance, and still more of scholarship, examinations at public schools. A knowledge of Latin is insisted on for all, and the majority of entrance scholarships are awarded for a knowledge of Latin and Greek, a few being reserved for the mathematicians. English, including history and geography, science (which at this stage should signify natural history, *Heimatkunde*, the elements of botany and perhaps physics), drawing (which should form a universal subject of instruction), and French—all these, if recognized at all, count as dust in the balance. The Head Masters call the tune and the Preparatory Masters are forced to pipe to them. The consequence is that, as these plaintively confess in their own organ, they see and approve the better and still follow the worse. They would fain "take the child out of doors and let Nature enter the school-room"; they would fain exercise his senses, train his eye to see and his hand to imitate or record what he sees; they would teach him to speak and write his mother tongue, to know the rudiments of English grammar, and to appreciate the simple masterpieces of English literature, the ballads and lyrics that appeal to his age; and when he passes on to a foreign language they would tackle one language at a time, and choose the easiest—not the hardest—as food for babes. Instead of this, they are compelled by *force majeure* to make Latin, Greek, and mathematics the staple of their curriculum. Needs must when the Head Masters drive. The success of their schools depends on winning scholarships. It is the

possible scholarship winners who force the pace, and we have in consequence the monstrous spectacle, which moves at once our laughter and our tears, of Grecians in knickerbockers and Latinists in petticoats.

I remember being shown an almost faultless copy of Latin elegiacs, the unaided composition of an Elstree boy of thirteen. I expressed my unbounded admiration for the verses, but I felt inclined to add, like Mr. Herbert Spencer when he was beaten a love game at billiards by a young subaltern: "Such proficiency in what should be an elegant pastime is evidence of a misspent youth."

There is another practical objection to this preponderance of classical studies and the premature specialization that it entails to which I would call your attention. The Board of Education and Local Education Authorities throughout the country are actively engaged in constructing the Jacob's ladder which is to reach from earth to heaven, from the gutter to the University. Some of us may think it one of those delusive dreams that issue from the gate of ivory; but all will acknowledge in some form or other the advantage of continuity, of rendering it possible for the *élite* of our elementary scholars to pass on to our secondary schools without any violent dislocation of their studies. This is only practicable if we start from a common basis. We cannot demand that the clever ploughboy shall have begun Latin before he is thirteen. We can urge that the boy who enters Eton at thirteen or fourteen should be required to show some knowledge of English grammar, of history and geography.

I have consumed the greater part of my allotted time in beating the bush—as Matthew Arnold said of F. D. Maurice, "beating the bush with infinite emotion and never starting the hare," if I may venture to compare great men with small. But I would plead, with G. K. Chesterton, that "good bush needs no wine." In other words, if I have succeeded in formulating first principles, the deductions follow almost as a matter of course.

Let me attempt to state categorically the conclusions we have so far reached.

1. For boys and girls who leave school at sixteen or earlier—at least as it is at present taught—Latin is not an entrance to Latin literature, and, if it is to be taught to such pupils, it must be taught on other than literary grounds, as a purely linguistic discipline, and, possibly, as an introduction to comparative grammar and philology.

2. For pupils who stay at school till eighteen or nineteen and will carry on their studies at the University till twenty-one or twenty-two Latin and Greek are subjects of pre-eminent, though not of unique, excellence.

3. But the curriculum of the majority must not be determined by what is best for the chosen few, even if it be proved that a purely classical education is best for the latter.

4. Easy studies must precede the more difficult.

"The labour we delight in physics pain."

We must pass from the near to the remote, from sense perceptions to abstractions. To the schoolboy distance does not lend enchantment to the view. French or German must come before Latin or Greek, and English before either.

5. The half is more than the whole. A comparative mastery of French is more than a smattering of French and Latin. Latin and Greek combined are to the average schoolboy of less value and profit than a study of one of the ancient languages.

If these premisses are accepted, we shall be able without much difficulty to answer in general terms the question: "To whom shall we teach Latin and Greek?"

First, we shall not begin teaching Latin under any circumstances before the age of twelve at the earliest. I should myself be inclined to put it later. There is much to be said in favour of beginning French pretty early. The vocal organs are then plastic; a child can catch the French accent with far greater ease than an adult, and, if the conventional method is adopted, learning a new language is both easy and attractive. But ten is quite time enough to begin, and two years is more than too long a time for a child to gain entrance into the tongue, as Bacon phrases it. Secondly, we shall not teach Latin to any who are intending to leave school before the age of sixteen. Four years with (say) four hours a week is the minimum of time required to gain entrance into Latin: by that I mean to have reached the stage at which the pupil will be able to construe a Latin author of average difficulty and be inclined, if his bent lies that way, to pursue for himself the study of Latin literature. My proposed rule would cut out half of the pupils who at present, in my view, waste their time over Latin; but I am prepared to go further. Of those who stay at school till sixteen and over we may say, roughly, that one half are literary and the other half scientific. For the science boys on the modern side I would make the second foreign language after French not Latin, but German.

The superiority of German to Latin as an instrument of practical utility will hardly be disputed. Whatever line of life the pupil may intend to pursue—soldier, sailor, chemist, engineer, medico, man of letters, publicist, or theologian—he will find his way blocked and his attainment of the highest rank almost impossible without a knowledge of German. But I would go further and maintain that in the earlier stages, for the Gibeonites who will remain to the end hewers of wood and drawers of water, German is every bit as good a discipline as Latin.

At the last annual meeting of the Classical Association I listened to an admirable paper by the Head Master of the Bristol Grammar School,



in which Mr. St. Leger maintained that the rudiments of a highly inflected language like Latin gave a liberal education such as no modern language could give. He pointed out the various problems that were presented and the various faculties that were exercised in turning the simplest English sentence into Latin. But I thought, as I listened, that, had he been, like me, the master of a modern side, he would have experienced exactly the same difficulties in getting a boy to turn a simple English sentence into German. "The brave Balbus built a wall"—"Balbus, vir fortis, murum aedificavit"—"Der tapfere Balbus hat eine Mauer gebaut." For difficulty there is not a ha'porth to choose between them; or, if we pass to the next stage: "He had a wall built"—"Murum aedificandum curavit"—"Er hat eine Mauer bauen lassen," here, it seems to me, the German can give points to the Latin.

I would here remark another great advantage that German, or French for that matter, has over Latin for beginners. In German the teacher has an almost unlimited choice of easy reading books, fairy-stories, myths, legends, tales of travel and adventure, nursery rimes, and poetry for children. Almost from the beginning it is possible to give a child a whiff of German atmosphere, a tincture of German letters. What is there in Latin to correspond? Caesar is dull even when illuminated by Mr. Rice's illustrations, difficult even when defecated by Mr. Ritchie's simplifications. Nepos, recommended as a substitute by the American Committee of Ten, is indeed easier and to a boy more interesting; but it labours under the grave objection that its subject matter is Greek, not Latin. Of Latin poetry there is more for beginners. For "Stille Nacht, heilige Nacht" we should have to substitute "Enos, Lases, juvate." Ovid is fairly easy; but what of his poetry and what of his subject matter? The parallel would be a proposal of the moderns to take the "Roman Elegies" of Goethe and Wieland's "Oberon" for our text-books in German, or for German boys to begin their study of English poetry with Swinburne's Ballads and "The Rape of Lucrece." The great Latin poets, to read whom in the original it is, I gladly allow, well worth learning Latin—Lucretius, Catullus, Virgil—must remain to the ordinary schoolboy books with seven seals.

Time, as I said at starting, compels me to deal very perfunctorily with the question of Greek. As a fact, it does not greatly concern the schools which send in pupils for the College of Preceptors examinations, and, in my judgment, it should not concern them at all. In the growing conflict of studies Greek must inevitably tend to become a luxury, not of the few, I hope and trust—for I believe that with the spread of education the genuine, the voluntary students of Greek are bound to increase and multiply—but still a special study reserved for those who have shown in other ways their linguistic and literary aptitudes.

After I had written most of what you have so patiently listened to—I fear I have already bored you—I came across a singular confirmation of the views I have enunciated on independent and purely psychological grounds in an article on "Thinking in a Foreign Language" in the current number of *Modern Language Teaching*. Dr. Lloyd, of Liverpool, draws from self-experience the following conclusions:—"The educational value of learning a language is exceedingly slight in its earlier stages. It is only when the learner can freely wield the language that any worthy and permanent good is done. But this hardly happens in one case out of twenty under the present system. The simple fact is that we attempt too many things. One thing done thoroughly is much better than two things half done; and in language the case is even stronger than that, for the second thing attempted sometimes partly spoils the first. The best thing for a school child would be the thorough acquisition of a single foreign language coupled with an equal acquisition of the mother tongue. One such language is necessary to everybody; for no one knows his mother tongue properly till he properly knows another. But a second foreign language may do more harm than good in that early period antecedent to all specialization."

And, as to the advisability of teaching Greek to the commonalty of schoolboys, he gives us as his personal experience: "I studied Greek and Latin very thoroughly for years, and never showed the slightest tendency to soliloquize in either. [The chief test, as he has previously laid down, of thorough mastery.] But the reason is now clear: it was because I studied both simultaneously." And, after relating a later experience with French and German, he draws the salient lesson: "The third language could only triumph by expelling the second from its privileged position."

May we not, then, safely lay down that, just as Latin should follow French, so Greek should follow Latin; that, as Latin should not be begun before twelve, so Greek should not be begun before fifteen or sixteen? It is not so very long ago that a sixth form in a public school was learning English, Latin, Greek, French, German, Hebrew—six languages simultaneously. This is hardly now conceivable; but we are still far from frankly adopting the intensive method of language teaching.

If I were well advised, I should end here, and hand on the second half of my theme to my "only begetter," our Secretary, or to our Dean and Chairman, who is far more competent to treat it than myself. My experience of teaching Latin to beginners is very limited, and, such as it is, is, I fear, hopelessly out of date. We have—so the Classical Association inform me—changed all that, and I can only serve as a warning to show how not to do it. Yet, to prove that educational theory is not all platitudes of none but speculative interest to practical teachers, I would venture on a few obvious applications.

1. If interest is to be our motive power, we must begin by cleaning the ship's bottom of barnacles and throwing overboard all the supercargo. In grammar teaching we shall be homœopaths: not only shall we administer it in small doses, but in like doses—the grammar, I mean, will follow the Reader. A few regular declensions and conjugations must be learnt by rote—I incline to think that the inductive method is too artificial and too casual—but we shall relegate all irregularities of gender, comparison, &c., to a later stage; and we shall from the first make the pupil see the immediate use of grammar, that without he cannot construe. Half of the difficulty of Latin syntax will have vanished with pupils who have learnt to analyze a sentence in English.

2. The Reader, as already implied, will form the centre of our teaching. The very first lesson will be of the type: "*amo, amas*, I love a lass."

I have not much faith in what may be termed the treacle-and-brimstone treatment of the New Orbilius. The story of "Truthful Tommy" in a Latin dress may amuse the teacher; but it is like to turn the stomach of the pupil who has to spell it out word by word or to have the joke daily rubbed into him. Interest by all means, but it must not be a fictitious interest. It is no good pretending that work is play. Give the genuine article, but at first in extracts, and I see no harm and much gain in "cooking" the extracts.

And from the very first insist on translation as opposed to construing. Jump upon Latinisms such as "The foot having been put to rout." Denounce "All Gaul is divided into three parts" as nonsense. I cannot, as I have said, go so far as Prof. Bennett and hold that English is best taught through Latin; but it is undoubtedly an invaluable auxiliary, and one of our main objects in teaching Latin must be to bring home to our pupils the differences of structure and idiom between the two languages.

Prof. Church at the Classical Association meeting to which I have more than once referred told us that he had just been looking over the translations of some hundreds of scholars in a Caesar paper set by a college which shall be nameless, and that he had not found one decent attempt to turn the Latin into good English. No graver charge could have been brought against the teachers of these pupils. I know not whether he plucked the lot; but indisputably they all failed in Latin.

3. What shall we say of Latin composition? First, we may lighten our ship by throwing overboard Latin verse, in spite of Mr. Lyttelton and Dr. James, that elegant trifling on which I must have squandered on an average some five hours a week for ten years of my life. I verily believe that for the vulgar schoolboy *bouts rimés* and double acrostics would be more instructive and educative.

Some prose composition there must be. It is the best and surest way of driving in the essential facts of the language and of testing accuracy and comprehension. The sentences to be turned into Latin, we are most of us now agreed, should be founded on the Reader. The old Kerchever Arnold, the "Balbus, household word of all," has ceased to sell even in the colonies, and I do not think that the rehabilitated Bradley-Arnold will survive this generation.

Shall we attempt to teach our pupils to write Latin prose? I mean, the prose that is demanded in an Oxford scholarship examination—to turn half a page of Gibbon or Macaulay into Latin. I decline to answer yes or no, and must speak in parables. The late Archbishop Temple, when interviewing candidates for a head mastership, put to each as the crucial question: "What do you think of Latin prose, and how would you teach it?" The same Archbishop once stated that in all his experience at Rugby he had never seen a really good copy of Latin prose.

Mr. Arthur Sidgwick has said that he finds his women pupils at Oxford about equal to the men in translation, and inferior—but not very much inferior—to them in composition. Yet the women have, on a moderate computation, devoted half the time to Latin and Greek before joining the University that men have.

I have already reached, if I have not overstepped, the end of my tether, and I have said nothing of what you doubtless expected to hear from me—of all the modern aids to classical study, art and archaeology, lantern slides and models, parallel grammars and reformed pronunciation.

I have dealt only with the architectonics—how imperfectly and fragmentarily no one is more conscious than myself. I hope the final impression that I shall have left on you is not of a foe to the classics—a renegade who would burn the gods he once adored. I would see the classics taught to fewer, solely because I would have them taught to those alone who can profit by them. I would have them begun later, because we shall then be able to judge who will profit by them. I would restrict composition, that more time may be devoted to literature.

Let me end by subsigning the confession of faith of that noble humanist whose recent death we have all lamented: "Four words above all others come home to the heart of civilized man: these four are beauty, freedom, truth, and goodness. And it is literally accurate to say of three out of the four that the passion for these was first awakened in Greece."

With this for an afterword: Thank God it is possible to be Greeks in spirit without knowing the Greek alphabet, and to practise Roman *virtus* though unable to decline it.

Mr. STORR having replied to several questions put to him by members of the audience, a vote of thanks to the lecturer concluded the proceedings.



## THOMAS LUPSET.

1498 (?)—1530.

By Prof. FOSTER WATSON, M.A.

THE sufferings of the martyrs in the reign of Queen Mary, together with the religious struggles connected with Puritanism and Nonconformity, have given the Protestant Reformation something of the appearance to the English mind of a cataclysm in history. There has seemed a hard and fast barrier placed between post-Reformation and pre-Reformation history. To our forefathers this was perfectly established. But the investigation of history, and the application to it of a scientific method, has familiarized us with the idea of continuity in the world of history, as in the world of science. Accordingly our minds are becoming open to reconsider the history of the Reformation times without preconceptions and prejudices. Mr. A. F. Pollard tells us that, in thinking out measures for the amelioration of social evils in the reign of Edward VI., reformers were not confined to "one form of theological belief: the greatest of all was Sir Thomas More, and of similar religious views were Thomas Starkey and Thomas Lupset; but, for the most part, they were, like Henry Brynkelow and Robert Crowley, Protestants as well as social reformers." This is readily intelligible; for those who wish for change in one direction are likely enough to see that other changes have equally good ground. The "progressive" in religion is often enough the "progressive" in social questions. But Mr. Pollard's recognition that the social reformers were both Catholics and Protestants can now be frankly made, without apology, explanation, or reserve, as simply the statement of a fact. In questions of education, Mr. Leach can speak of Edward VI. as the "spoiler," rather than the "founder," of schools, and can write his books and produce his documents to attempt the demonstration "of the antiquity and ubiquity of secondary education in centuries long anterior to its hitherto reputed beginnings, whether we place them under Edward VI. and his reputed foundation of free grammar schools or, with more knowledge, under Edward III., with Winchester College and William of Wykeham." In other words, Mr. Leach claims that pre-Reformation education was more widespread than post-Reformation education; that Catholic England had a more complete system of education than Protestant England. The appeal must be to the facts. We all feel we must listen to these facts with an open mind, as each one who has made a thorough investigation presents us with a statement of those facts in an accessible form. So, too, we recognize, as matter of common knowledge, that such fine spirits of the age of the Reformation as Colet and Erasmus were Catholics. Or, to quote the words of Father Gasquet:

The main fact cannot be gainsaid—namely, that the chief ecclesiastics of the day, Wolsey, Warham, Fisher, Tunstall, Langton, Stokesley, Fox, Selling, Grocyn, Whitford, Linaere, Colet, Pace, William Latimer, and Thomas Lupset, to name only the most distinguished, were not only ardent humanists, but thorough and practical Churchmen.

It will be noticed that both Mr. Pollard and Father Gasquet mention Thomas Lupset as a man of outstanding importance. Lupset was a Catholic, whose whole heart went out to the new revival of letters; but the spirit in which he writes concerning education shows religious warmth in its attitude towards the new classical learning such as is often identified with the Protestant reforming zeal.

The best account of Thomas Lupset is to be found in the *Gentleman's Magazine* for February, 1856. He was born about 1498 and died in 1530. He writes with such apparent experience of life that it is not easy to realize that he died by the age of thirty-two years. On the title-page of his books he more than once describes himself as "Thomas Lupset, Londoner." He had the privilege of being taken under the protection of Dean Colet, who sent him to the newly founded school of St. Paul's, where he was taught by William Lily and John Rightwise. Colet not only took an interest in the boy's schooling, but left in his will directions that Lupset should be remembered "after the discretion of" his executors and "to have all such printed books as may be necessary for his learning." It is supposed that Lupset was a student in the University of Cambridge. It is certain, however,

that at the age of seventeen years he was fortunate enough to go to Italy, in 1515, as secretary to Richard Pace, Ambassador to Venice. On his return to England he succeeded John Clement in the Lectureship in Rhetoric and Humanities and also in Greek founded by Cardinal Wolsey. In 1520 he was lecturing, with considerable acceptance and credit, on Cicero's "Philippics." There is another reference in which Lupset is spoken of as lecturing on Linaere's version of the "Sphere" of Proclus.

Amongst his friends were Reginald Pole, whom he had met in Italy, Sir Thomas More, and Erasmus. He was also well known to Wolsey, who committed to him the charge of his natural son Sir Thomas Winter. Lupset himself tells of a pupil, Christopher, the son of Andrew Smith; and the "Exhortation to Young Men," the book which I propose to describe presently, is addressed to my "dearly beloved" Edmund, though the surname is not added.

Lupset held the following ecclesiastical livings:—(1) The Free Chapel of St. Nicholas, in the parish of Stanford-le-Hope, in the county of Essex; (2) Great Mongeham, in Kent; (3) St. Martin Ludgate; (4) Cheriton, near Southampton; (5) was Prebendary of Ruscombe in the Cathedral Church of Canterbury. He was buried in St. Alphage within Cripplegate.

Samuel Knight, in his life of Erasmus, 1726, says: "Of all our countrymen I know of none he had a greater respect for, on account of his uncommon abilities, than Thomas Lupset." Knight speaks of Erasmus as having changed the current of Lupset's thoughts. "It seems," he says, "Lupset had been deeply engaged in the study of school divinity, but, being better informed by Erasmus,\* he left the rubbish of the schools for the more polite learning then coming into vogue. We are told that immediately upon this change he sold his musty schoolmen, and bought Greek authors. He was very serviceable to the learned men of that time, in preparing and correcting their works for the press, so he served Linaere in his work 'De Sanitate tuenda'; so Sir Thomas More's 'Utopia,' in its second edition, of which he was supervisor."

On the death of Dean Colet, Erasmus wrote to Lupset. The letter contains these words of deep feeling: "I never had any familiar or free conversation with him but that I went from him better than I came; or at least not so bad." And then Erasmus directly addresses Lupset: "You ought, therefore, my Lupset, to endeavour to resemble, as near as possible, your great master, in whose family you lived so many years,† both in his erudition and piety."

Dr. J. H. Lupton, in his biography of Dean Colet, shows how eager Erasmus was to write the life of Colet, and how he appealed to Lupset to supply him with details. He says he has said what he could within the compass of a letter. If Dean Colet's life and character "is thought [I am quoting Dr. Lupton's translation] to be not very artistically portrayed, the fault will be partly set down to you, for not having fully provided me with those embellishments of the picture, which none could have done better than yourself." It is possible that Lupset provided for the tomb of Dean Colet the prose inscription given in Dr. Lupton's book. But, whatever Lupset did to honour the memory of Colet, it appears he did not supply that full detailed sketch that Erasmus had begged.

The educational book written by Lupset to which I would call attention is entitled: "An Exhortation to Younge men, perswadyng them to walke in the pathe way that leadeth to honestie and goodnes: written to a frende of his by Thomas Lupsete Londoner."

Apparently this was written in 1529 and published in 1534. My own copy was published in 1538, but it appears that it is printed from the same plates as the 1534 edition. I have already mentioned that the book is written to an old pupil—Edmund. Lupset's purpose in writing it is to give Edmund hints on the conduct of his life, and particularly to suggest the intellectual and moral paths in which he should walk.

The "Exhortation" has this further interest. It was written whilst Lupset was a member of the household of Cardinal Wolsey. The picturesque opening of the book sets this forth:—

\* Erasmus, in a letter to Thomas More, says: "Lupset existimat se nostra renatum opera, planeque ab inferis emersisse. Magistri moluntur omnia, quo retrahant adolescentem, in suum pistrinum. Nam statim eodem die, sophisticis libris distractis, Graecos emerat. Vide ut, cum inciderit opportunitas, gnaviter agas partes tuas, nihil hujus ingenio gratius, nihil amantius."

† "Quicum tot annos domesticum consuetudinem egeris."



To my withipol,\*—It happeneth at this time (my hearty beloved Edmund) that I am in such place where I have no manner of books with me, to pass the time after my manner and custom. And though I had here with me plenty of books, yet the place suffereth me not to spend in them any study. For you shall understand that I lie waiting on my lord cardinal, whose hours I must observe, to be alway at hand, lest I be called when I am not by—the which should be straight taken for a fault of great negligence. Wherefore, now that I am well satiated with the beholding of these gay hangings that garnish here every wall, I will turn me and talk with you. For you must know that my mind hath long coveted to show what effect I bear toward you; the which, peradventure, I never uttered unto you so plainly that you might take thereof any perfect knowledge. And that I did so keep in such outward tokens whereof when you were with me, you should have perceived my love: the cause was none other but that indeed I loved you. For long I have been taught that the master never hurteth his scholar more than when he uttereth and showeth by cherishing and cockering the love that he beareth to his scholars. I think you lacked with me no cherishing, but of cockering you had very little, because I was loath to hurt you; the which loathness came, I say, of that I loved you. But now, in as much as you be of age, and also by the common board of houseling admitted into the number of men, to be no more in the company of children, and especially for as much as my rule over you is ceased, I will not defer any longer the expressing of mine heart, that no less loveth and favoureth you than if nature had made you either my son or my brother.

Lupset tells us himself that "the place" where he was waiting on my Lord Cardinal was at More. Otherwise he gives us no further details of Wolsey or of himself. We can, however, readily gather his chief educational views.

Perhaps, in the first place, it should be mentioned that Lupset insists upon allegiance to the Church. It is true that the open steps of rupture with the Pope had not taken place in 1529. It may surprise some readers that Lupset advises Edmund to read the New Testament,† with due reverence—

For I would not have you in that book forget with whom you talk. It is God that there speaketh; it is you, a poor creature of God, that readeth. Consider the match and meek down your wits. Presume not in no case to think that you understand aught: leave devising thereupon: submit yourself to the exposition of holy doctors; and ever conform your consent to agree with Christ's Church. This is the surest way that you can take, both before God and man. Your obedience to the universal faith shall excuse you before God, although it might be in a false belief. . . . It is your part to obey and to follow the Church.

Lupset wishes Edmund to "read the story of our master Christ, that lively expresseth the whole course of a virtuous life." But the Renaissance spirit had already claimed Lupset. Though he would have his pupil hold by the authority of the Church, he had no hesitation in naming along with the Gospels the works of Chrysostom and Jerome, to get a more perfect understanding of the text. He adds the "Ethics" of Aristotle, which should be studied "rather under some expert philosopher or else with comment of Futtiratus." Plato, too, should be familiar—especially the "De Republica." Cicero's moral philosophical books should be known, and "especially read with diligence the works of Seneca, of whom ye shall learn as much of virtue as man's wit can teach you." These are the books to make a man grow to a high courage and to rise in a judgment "above the common sort." "If you rejoice in these books they shall lift you up from the clay of this earth and set you in a hill of high contemplation, from whence you shall look down and despise the vanity that foolish men take in the deceitful pomp of this short and wretched life." To these books Lupset would add Erasmus's "Encheiridion."

The juxtaposition of the New Testament, Chrysostom, Jerome with Aristotle, Plato, Seneca, &c., is characteristic enough of the incoming Renaissance spirit. It is the attempt to reconcile the so-called sacred and profane. It is the spirit of Erasmus,

\* "Withy-poll: a term of endearment."—See J. O. Halliwell, "Dictionary of Archaic and Provincial Words." The well informed writer in the *Gentleman's Magazine* already quoted says: "One Richard Withipol was Vicar of Walthamstow, Essex. But the person here addressed is styled Edmund, and appears to have been a pupil to the author and was now come to age. Perhaps he was the son of Richard." This is ingenious research, but the merest conjecture.

† Father Gasquet, however, has shown—in "The Old English Bible and other Essays" and in "The Eve of the Reformation"—that Catholics were not forbidden to read the Scriptures in the vernacular, but that translations into the vernacular were on various occasions approved.

and leads logically to the comparative method.\* Such tendencies lead in other educational directions than those associated with Luther and Calvin, whose followers, as Mark Pattison points out, made so clean-cut a division between the sacred Scriptures and "profane" writers.

The educational end with Lupset means to be "stayed" for the whole course of life in learning "what is to be done" to become a "good and honest man."† A guide is necessary at the first entry to life, "for there be so many by-paths and for the most part all by-paths be more worn with the steps of your fore-goers than is the very true path of living." It is, therefore, so easy to wander out of the straight path. Lupset trusts he can point out certain marks so that his old pupil "cannot err nor fail of the way." In his ethical enthusiasm, he declares, if this be so, "he will nourish himself with an incomparable delight and gladness that will continually reign in his clean and pure conscience." Lupset believes that virtue can be taught. If so, it can be learned from the great and the good. He would have his old pupil grow into the spirit of these, and let them mould his life. But he warns Edmund: "It is not the reading of many books that getteth increase of knowledge and judgment, for the most part of them that readeth all indifferently confound their wits and memory without any notable fruit of their reading." It is a selection and an order of reading well observed that brings profit. Before proceeding to mention the books, the names of which I have already given, Lupset urges: "First and last (mine own good withipol) remember earnestly to have in your mind three certain things, the which be of such valure, that he that forgetteth *either their dignity and nature, or else the degrees and order of them*, he cannot please neither God, nor himself, nor the world." These three certain things are: The soul, the body, and the goods of this world. "Care for your soul as for your chief jewel and only treasure. Care for your body for the soul's sake. Care for the world for the body's sake."

It is from the books already named that the right conduct of the soul can be learned. From Galen, "De bona Valetudine tuenda," directions can be got for the due care of the body. As to the goods of this world, Lupset, with, for once, a glimpse of humour, observes: "I can give you small advice of myself, for I have had but small experience herein." Nevertheless, he is quite sure of this:

There is no tittle so small of virtue that is not to be valued ‡ without comparison above the whole power of earth and seas throughout Asia, Africa, and Europe. He who retains the good soul is an invincible emperor. We may despise all violence of princes, all worldly chances touching the keeping of virtue maugre the whole power of the devil and all his retinue. . . . Other goods be not called properly goods. § . . . This onely care must be to get and keep the true goods—the goods of the mind. . . . This should be a great gladness to consider in how strong a tower you be from all hurt. . . . You cannot be hurted, but of one. This is your own Free Will. This will of yours, and nothing else, hath power to hurt you.

We thus see that Lupset recognizes the moral end in education—the formation of character, the making of a good and honest man, and the preservation of his integrity as the supreme end of education. There is no trace of asceticism, of separation from the world. The ideal is to live in the world without being of it, to have a due sense of proportion in his aims, to be fully persuaded in his own mind as to the *summum bonum*.

There are other points which Lupset treats of as he passes along the main current of his plea. On the importance of friendship in a man's development, he says:

Above all things in this world procure to have plenty of friends and

\* Erasmus, like Lupset, never left the Catholic Church. But the unwillingness to draw distinctions between goodness in the Church and out of it is seen where in the "Colloquies" there is a reference to the saying of Socrates: "Whether God will approve of our deeds I know not; but at least it has been our constant effort to please Him." Erasmus makes one of the interlocutors say: "When I read such passages as these, I can scarcely keep myself from saying, 'Sancte Socrates, ora pro nobis!'"

† One is reminded of R. L. Stevenson: "To be honest, to be kind . . . here is a task for all that a man has of fortitude and delicacy. He has an ambitious soul who would ask more: he has a hopeful spirit who should look in such an enterprise to be successful." (Christmas sermon in "Across the Plains.")

‡ The form of the word in the text is "valured."

§ Compare Kant: "There is nothing in the world which can be termed absolutely and altogether good: a good will alone excepted." (At the beginning of "The Metaphysics of Ethics.")



make of them your comfort, as of your best and most precious goods. Always your friend shall be more profitable to you than any treasure or power beside can be. How you shall know them that be worthy to be your friends and by what means and what way friends be both gotten and also kept, ye shall best learn in Cicero's little book, "De Amicitia."

He advises Edmund as to his wife, "when the time shall come that you shall have one." On this point Lupset is of opinion: "The very truth is that there is no evil housewife but for her faults the good man is to be blamed. I am utterly of this opinion that the man may make, shape, and form the woman, as he will." But he does not elaborate this position, since the whole question of house management, he thinks, can be best studied as a whole by Edmund in Xenophon's "Œconomicus." Lupset adds that he has himself translated the Greek text into English, and offers Edmund the MSS. when his "pleasure is to read it." Furthermore, Lupset would have Edmund read Aristotle's "Politics."

Finally, Lupset is painfully aware of the unrest of men's minds in connexion with the religious controversies of the times. We have seen that he remains inside the Old Church, apparently because he believes that it is comprehensive enough to include all who seek "the good" of the mind. As a means of confirming Edmund in "these right opinions" he would have him read the "Encheiridion" of Epictetus,\* and he believes that, with a proper application and help in the understanding of the "Encheiridion," "it will ravish you into a higher contemplation than a great sort of our religious men come to."

Moreover, Lupset feels that there is need to withstand the disturbers of men's peace of mind, these leaders of revolt against the religion of the Old Church. How are they to be met?

And one thing believe me, my good withipol: that reading of these old substantial works the which I have named unto you shall, beside the perfection of knowledge, gender a certain judgment in you that you shall never take delight nor pleasure in the trifles and vain inventions that men now a days write, to the inquieting of all good order; by reason that the most part of men that read these new fluttering works lack perfect judgment to describe a weighty sentence from a light clause, the which judgment cannot be gotten but by a *long exercising of our wits with the best sort of writers*. And to me it is a pitiful thing to behold the foolish dreams of these young clerks in men's hands, and to see these noble old works of the holy fathers and philosophers lie untouched.

This appeal of Lupset recalls Matthew Arnold's call to culture in our own generation. "Culture," says Mr. Matthew Arnold, "is a pursuit of our total perfection by means of getting to know, on all the matters which most concern us, the best which has been thought and said in the world." Is it too much to suggest that Thomas Lupset and Matthew Arnold join hands across the centuries? With both "the dissidence of dissent" is painfully blind before the white light and heat of the unifying "best of what has been thought and said in the world." Paulus Jovius, in his "Elogia," says of Lupset that "Lupset was a man who preferred to keep the results of his learning for his own private use at home rather than to leave works to be published and read after his death." Samuel Knight reproaches him for not contributing further materials for a biography of Dean Colet. But, whatever his omissions and shortcomings, no one can read the "Exhortation" to Edmund, his pupil, without recognizing that, though, like Vittorino da Feltre, he left no school text-books and no systematic treatise for schoolmasters, his heart was full of that irresistible sympathy for the highest and best interests of his pupils which is the surest test of teachership, and that he helped in his day and generation to pass on to his pupils those ideals of life-culture which maintain throughout the ages the high road of pedagogic progress in spite of the clash of creeds, ecclesiastical and political. Let it be noted, too, he died soon after reaching thirty years of age.

\* Lupset tells Edmund that he is in mind, should he find leisure, to translate the comment of Simplicius upon Epictetus.

BOTH the Cheshire and Surrey Education Committees have just adopted a scheme of training in citizenship which is practically the same as the Graduated Syllabus of Moral Instruction for Elementary Schools issued by the Moral Instruction League. The West Riding of Yorkshire, Brighouse, Ebbw Vale, and West Hartlepool Local Education Authorities had already adopted the same scheme. Copies of it may be obtained on application to the Secretary, Moral Instruction League, 19 Buckingham Street, Strand, London, W.C.

## AN EMINENT COLONIAL EDUCATIONIST.

DR. THOMAS MUIR, LL.D., F.R.S., C.M.G.,

SUPERINTENDENT-GENERAL OF EDUCATION IN CAPE COLONY.

A RECENT issue of *South Africa* (August 19) contains an appreciative sketch of the career of Dr. Thomas Muir, Superintendent-General of Education in Cape Colony, and a well known contributor to our mathematical columns for many a year. Dr. Muir is a Lanarkshire man, born in 1845, and educated at Glasgow University, and at Berlin and Göttingen. He made his mark in mathematics while Head of the Mathematical and Science Department of the High School, Glasgow, Prof. Chrystal describing him as "one of the very best teachers of mathematics in Great Britain." In 1892 he went out to his present post in Cape Colony. "It was the influence of Mr. Rhodes," he says, "that decided me to go to the Cape, and I cannot say that I ever regretted it." *South Africa* writes:

On arriving at the Cape Dr. Muir found himself in a position which demanded exceptional tact and administrative power. Educational affairs were in a very unsatisfactory condition, and the first three or four years were devoted to the work of organization, and to getting the Education Department into sound working order from a business man's point of view. After that he began to try and get legislative measures passed in connexion with matters which, as a Government official, he could not accomplish single-handed, namely, the introduction of School Boards and compulsory education. It was uphill work, but for nine years he never ceased his efforts. It was a very ticklish subject from a political point of view, and one Ministry after another fought shy of bringing in a comprehensive Education Bill. Four or five Bills were drafted in the course of the years between 1895 and 1904, but none of them got very far, simply because of the difficulty of getting the Dutch and British parties to work together. But, with

### THE ADVENT OF DR. JAMESON'S MINISTRY,

Dr. Muir found that he had a supporter in the Cape Premier, who was strong enough to say: "This shall be done." Dr. Jameson simply put his foot down and said, in effect: "We will pass an Education Bill even if we have to have all-night sittings for a week." And it was done. Before the determined attitude of the Cape Premier, backed up as it was by the uncompromising advocacy of Colonel Crewe, the Colonial Secretary, the Opposition backed down. The Bill, being taken on its merits, became law, with the consent of both parties in the Cape Legislature. But, with regard to the Bill itself, something more remains to be said—something that until to-day has never been printed in black and white. It is a fact that the Bill was originally drafted by Dr. Muir, and that every amendment to the original clauses—and there were several—was submitted to Dr. Muir for his consideration before being voted upon in the Legislative Assembly. Financial considerations may, perhaps, have prevented the measure being as wide and sweeping in its provisions as Dr. Jameson, Colonel Crewe, and Dr. Muir would have liked it to be; but it can easily be extended in the future.

Although, therefore, Dr. Muir himself assigns the credit in the first place to Dr. Jameson, the Premier, who perceived the pressing need for reform, and had the courage and determination to resolve that, whatever happened during the Parliamentary Session of 1905, such a measure must perforce be passed, and in the second place to Colonel Crewe, the Colonial Secretary, who had the energy, tact, and knowledge of men and parties necessary to pilot the Bill through the Assembly and Council, it is a matter of common knowledge that the planning head and guiding hand were his own. Assuredly he it was who for years had been preparing the way for the acceptance of the main provisions of the Bill, but who, by

### HIS SUCCESS IN ADMINISTERING THE OLD ACT,

increasing the number of schools to 2,900 from about half that number, unwillingly gave conservative-minded politicians an excuse for delaying the day of serious reform. What will be the immediate effect of the Act no public man has yet ventured to prophesy. On all hands, however, it is felt that ultimately it will be of enormous benefit to South Africa. It is the natural analogue at the Cape to the English Act of 1870; and it will be strange indeed if the priceless results of that Act do not slowly, but surely, accrue to Cape Colony also, and equally strange if



the Progressive Government of Dr. Jameson does not, as years go on, receive from educationists similar honour to that bestowed on Mr. Gladstone's Liberal Administration of 1868-74. Unfortunately, at the Cape, as elsewhere, education is apt to become the battle-ground of political parties; and it stands to reason that, if the elections to the new School Boards be run on lines prepared by party wire-pullers, improvement will be more or less seriously delayed, and the good influences inherent in the Act will not flow out in full measure. Dr. Muir, however, firmly believes that the sound sense of the moderate men of all parties will prevail; that the increasing desire for education among the farming population will lead to the choice of good representatives on the new Boards; and that, by strictly impartial administration from headquarters, all sections of the community will be induced to secure from the Act the greatest amount of good possible. Our readers are well acquainted with its provisions; but we may again remind them of

#### THE TWO MOST IMPORTANT PRINCIPLES.

The first is the establishment of local School Boards, who have been entrusted with the management of educational affairs in their own districts, with power to levy the necessary rates. The second point is the fact that the Bill embraces the principle of compulsion, but it is put in a very agreeable way, so much of the administration being placed in the hands of the local bodies that the provisions of the measure cannot press too hardly upon the poorer classes of the population.

In estimating the elements which have contributed to Dr. Muir's success as Superintendent-General—and leaving aside all questions of scholarship, educational experience, and managing power—it is impossible not to lay stress on one which in a country like England might seem of little moment, viz., his strict avoidance of all connexion with parties or cliques. This came notably into evidence during the period of the late war, one of the most trying times for an administrator in the whole history of South Africa. His inflexible determination to act impartially and to be just and fair to all races, all political sides, and all ecclesiastical sects, brought on his head in those days

#### MUCH BITTER CRITICISM AND DENUNCIATION,

which probably, however, was easier to bear in view of the fact that it came now from one side and now from another, and thus was mutually destructive. Soon after the war one was glad to notice that the work of such extremists ceased to attract attention, and by the time that Parliament met, and the new Education Bill had been discussed by the country, the normal state of feeling had returned. The debate on the first reading showed this most clearly. When the Leader of the Opposition was expected to ban he blessed. "Especially noticeable," says the *Cape Times* of March 21, "was his splendid, generous, and unqualified tribute to Dr. Muir's work as Superintendent-General of Education. It may be doubted whether so notable a panegyric has ever been passed in the House of Assembly upon the services of a Government officer, and the cordial cheers which rose from all sides of the House showed that the eulogy was felt by all parties to be just and well merited."

The country people, Dr. Muir believes, are beginning to see how the coloured population, by reason of their anxiety for education, may possibly tread upon the heels of the poorly educated whites, so that here there is an inducement for the latter to take a greater interest in education than they have done in the past. The revival of interest in

#### EDUCATION AMONG THE COLOURED PEOPLE

is quite wonderful. Dr. Muir does not believe in educating the blacks too much, but, as they have been given the franchise, he holds that it is desirable that they should be fairly well instructed, in order that they may know how to exercise the privilege which a vote gives them. As the administrator of the Education Act it will be his duty to see that it is administered in such a way that neither section nor political party shall have a word to say against its fairness to everybody concerned. Judging from Dr. Muir's record, the administration of the Act is perfectly safe in his hands. Under his guidance the cause of education in Cape Colony has advanced by leaps and bounds during the past thirteen years, and he has deservedly won the encomiums of Dutch and British alike—the reason being, as we have already indicated, the fact that he has never shown partisanship for either, and is consequently impartially admired and respected by both.

## REVIEWS.

### THE OMARIC HOMER.

*The Odyssey.* Translated by J. W. Mackail. Books IX.-XVI. (5s. net. Murray.)

We can only repeat our judgment of Mr. Mackail's first instalment. To our mind the dissection of the flowing original into four-line self-contained stanzas introduces a uniformity of break alien to Homer, and so far by regular and constant recurrence rendering the verse steadily unhomeric. The riming of three of the four lines of each stanza on one note shackles the translator, the odd line furnishing the single chance of free movement. Moreover, the run of the verse in no way recalls or suggests the characteristic qualities of the Homeric line. Against all this must be set Mr. Mackail's mastery of the Omaric stanza, distinctive poetic feeling, and skilful manipulation of language, which combine to maintain a strong interest of a peculiar kind. As a rule, too, it seems to us at least the first line of each stanza gives a fresh impulse, by reason of superior verve, directness, and freedom of expression. Take the scene following the operation upon the Cyclops' eye:

Then from his lips a great and awful shout  
 Brake, that the rock-walls echoed round about,  
 And we in terror fled away, while he  
 The stake bespattered all with blood pulled out  
 With both his hands and cast it far away,  
 And called out loudly, wallowing where he lay,  
 For help to the Cyclopes who in caves  
 Dwelt on the wind-swept headlands round the bay.

Hearing him call, they came from far and nigh  
 And questioned him what ailed him, standing by  
 About the cave, and asked: "What ails you so,  
 O Polyphemus, that aloud you cry,

To break our sleep, through the immortal night?  
 Is any mortal man in your despite  
 Driving away your flocks? Is any man  
 Slaying yourself, by treachery or by might?"

And mighty Polyphemus from the den  
 Answered: "O friends, no man it is of men  
 Slays me, by treachery nor by any might."  
 Then answered they in winged words again:

"Now then, if no man does you violence  
 And all alone you are, upon your sense  
 Some malady is come from Zeus on high  
 Against the which there is no more defence.

Then to your father, Lord Poseidon, pray  
 To heal you." So they said, and went their way.  
 But in my heart I laughed, because my name  
 And pure device had led him quite astray.

The following stanzas illustrate the overflowing of the sense—as in Omar, no doubt—in spite of the natural close of the rime; and two at least of the first lines are of masterly effectiveness, though some other verses verge on the mechanical and commonplace:

So spake Alcinous, and they gave assent.  
 Then each to his own house to sleep they went.  
 But when rose-fingered Dawn of Morning shone  
 Down to the ship they came incontinent,

Hasting the well-forged bronze aboard to bring:  
 And through the ship his Majesty the King  
 Alcinous passing, stowed it well away  
 Under the thwarts, that in their voyaging

It should not cumber any of the crew  
 When swift beneath their oars the galley flew.  
 Then to Alcinous' house to meat they went,  
 Where the King's Highness for the banquet slew

A bull to him who has dark clouds for pall,  
 Zeus, Cronus' son, who is the lord of all:  
 And, having burned the thigh-pieces, they shared  
 A noble banquet, making festival;

While at their feast the godlike minstrel sung,  
 Demodocus, well-prized the folk among;  
 But oft and oft Odysseus turned his head  
 Impatient to the splendid sun that hung

In heaven, and for his longing sank too slow;  
 Even as a man to supper longs to go,  
 Whose wine-red oxen all day long have drawn  
 Across the tilth the plough frame to and fro;



And welcome to him is the dusking grey  
At sundown, when to supper go he may,  
And his knees ache in going: with such joy  
Odysseus watched the sunlight fade away.

Occasional weaknesses of execution, being practically inevitable, need not be dwelt upon. Apart from comparison with Homer, the poem is an extremely able and scholarly work, and sure to be attractive to readers that know not Homer. To such as do know Homer it will be most interesting as a *tour de force* on hopeless lines of reproduction. No doubt Mr. Mackail will complete his courageous experiment in a third volume. We certainly hope he will; for, though the circumstances preclude any alteration of our opinion, the work will be a very distinctive literary achievement.

#### THE "DISMAL" SCIENCE.

*Foundations of Political Economy.* By William Bell Robertson. (5s. Walter Scott.)

A few months back we had occasion to notice favourably Mr. Robertson's volume of selections from the works of eminent writers on political economy. Now he challenges attention with an original systematic exposition of great logical acuteness and independence of handling. While professing adherence to the method of the orthodox or classical school, he finds himself driven to conclusions often widely divergent from the views of his predecessors. Recognizing wealth as an abstract term, he refuses to confound it with property: "the right view of wealth," he says, "is to regard it as a species of power—viz., the power to satisfy wants or desires or to achieve aims"—not altogether a new view, but new (we think) as a formal definition. This involves a difference as to the scope of the science: one "simply wishes to know how that power is acquired, how it is increased, and how it may not be lost." The faculty of exchange is the "great augmentor" of wealth, and it brings to the front the importance of a correct theory of value. Mr. Robertson decides against all previous theories of value, excluding the conditions of utility and labour; and he holds that the essential conditions are the possession of the object by somebody and the desire for it by somebody else. On the determinants of value and on quantity of labour as regulating value Mr. Robertson offers some shrewd criticisms of Ricardo, more especially on certain of Ricardo's strictures upon Adam Smith. Having pursued the analysis of value through several chapters in order to the establishment of the conditions of exchange value, he proceeds to deal with wages and profits. "Hitherto rate of wages has been regarded as what a labourer receives per hour, or per day, or per week, &c."—an idea that "is all very well in the ordinary operations of the world and practice," but is "of very little use in political economy." So Mr. Robertson explains rate of wages as "not what a man receives for labouring during any period of time, but the rate per commodity or per each creation of exchange value his labour results in." "The important thing in political economy is the share in every separate creation of exchange value resulting from labour that goes to the labourer, and it is the sum of these shares that goes to make up his hour's, day's, or week's pay, as the case may be." This must be read with the chapter on the differentiation of value into maintenance of efficiency, wages, and profits. We cannot help thinking that Mr. Robertson is hypercritical on Mill in some respects with regard to the explanation of profits. A discussion of the effect of diminished output on wages and profits leads to a consideration of the question of an eight hours' day, and particularly an eight hours' day for miners, the conclusions of which will hardly satisfy the miners; indeed, Mr. Robertson thinks it likely that "the only class that will permanently benefit will be the receivers of rents from mines." The effect of his theory of wages and profits is displayed in two chapters on abridgments of labour, one regarding them as a spur to production, the other regarding them as a curb to consumption, and both setting forth the forces at work in producing unemployment, in building up colossal and breaking down small industrial establishments, in bringing about commercial crises, and generally, as Carlyle has it, "crushing out the life of us and ours." On the population question Malthus and Malthusians are passed in review, and fresher aspects are presented, touching closely questions of national as well as of merely industrial interest. "A Glance at some Popular Misconceptions" is usefully suggestive. Two chapters on international trade and the profits of international commerce might well have been expanded. In an appendix is reprinted Mr. Robertson's pamphlet (1897) on "The Industrial Problem." The large subjects of Money and

Rent will be treated in a subsequent volume. Mr. Robertson displays a decided turn for economic thinking, a keen logical faculty, and a lucid and engaging style of exposition. He keeps his mind steadily on the truth of the matter, undisturbed by any particular deflecting interest; he disagrees with Ricardo or with a trade-unionist with like indifference. His distinctive positions will, of course, be challenged, and that will no doubt lead to fuller exposition and illustration in another edition. The volume is fresh and piquant—not to say provocative—and there is not a "dismal" page between the boards.

#### CELTIC MYTHOLOGY.

*The Mythology of the British Islands.* An Introduction to Celtic Myth, Legend, Poetry, and Romance. By Charles Squire. (12s. 6d. net. Blackie.)

Mr. Squire has essayed a task of some magnitude and difficulty—"to put the English reader into possession, in clear, compact, and agreeable form, of the mythical, legendary, and poetic traditions of the earliest inhabitants of our islands who have left us written records—the Gaelic and the British Celts." Various books cover particular parts of the field, though usually with little elucidatory matter. Mr. Squire believes he now makes the first attempt to present a general view by digesting the matter into a systematic exposition, embodying all explanations necessary to the reader that brings with him no preliminary knowledge of the subject. Mr. Squire tempts him on thiswise:

Here he will at last make the formal acquaintance of all the chief characters of Celtic myth; of the Gaelic gods and the giants against whom they struggled; of the "Champions of the Red Branch" of Ulster, heroes of a martial epopee almost worthy to be placed beside "the tale of Troy divine"; and of Finn and his Fenians. He will meet also with the divine and heroic personages of the ancient Britons; with their earliest gods, kin to the members of the Gaelic Pantheon; as well as with Arthur and his knights, whom he will recognize as no mortal champions, but belonging to the same mythic company. Of all these mighty figures the histories will be briefly recorded, from the time of their unquestioned godhood, through their various transformations, to the last doubtful dying recognition of them in the present day, as "fairies." Thus the volume will form a kind of handbook to a subject of growing importance—the so-called "Celtic Renaissance," which is, after all, no more—and, indeed, no less—than an endeavour to refresh the vitality of English poetry at its most ancient native fount.

This is a sufficiently attractive, and at the same time a very fair, outline of the substance of the volume. There are four introductory chapters, setting forth the interest and importance of Celtic mythology, the sources of our knowledge of it, an inquiry as to who the "Ancient Britons" were, and an account of their religion. A final chapter deals briefly with survivals of the Celtic paganism into modern times. Appended is a select bibliography of recent and accessible works for such readers as may wish to go deeper into the subject. And the index is serviceably full. The work is very ably executed, and cannot fail to surprise and charm those that have little or no acquaintance with the "remnants of a mythology as splendid in conception and as brilliant in colour as that of the Greeks." The author is enthusiastic; but he does not let his enthusiasm overbear his judgment. The style is simple, easy, and agreeable.

## GENERAL NOTICES.

#### CLASSICS.

"Bell's Classical Translations."—(1) *The Iliad of Homer, Books I. and II.* Translated into English Prose by E. H. Blakeney, M.A., Head Master of King's School, Ely. (1s.) (2) *The Choephoroe of Aeschylus.* Translated from a revised text by Walter Headlam, Litt.D., Fellow of King's College, Cambridge. (1s.)

(1) Mr. Blakeney renders the Greek closely and accurately, manifesting throughout very great care and assiduous study, and placing alternative renderings and other select illustrations in footnotes. The transliteration of proper names seems occasionally open to objection, and we do not like some of the archaic turns; but, altogether, there is probably no better prose translation than this. (2) Dr. Headlam has a very exacting task. His footnotes on textual difficulties imply thorough-going study, and will be found to be very helpful. The translation is most careful and able. It will be of great and legitimate assistance to students of this difficult play.



*Criticisms and Elucidations of Catullus.* By H. A. J. Munro.  
Second Edition. (7s. 6d. net. George Bell.)

Classical students will be grateful to the publishers for rendering more accessible this esteemed work. The first edition came out in 1878, and was soon exhausted. But, as Mr. J. D. Duff states in a preface note, the book "contains some of Munro's finest and most characteristic work," which scholars like to have by them. The only differences in the present edition are these: the addition of three short papers printed by Munro in the *Journal of Philology* after the publication of the first edition, of a few illustrations taken from a copy in which they had been entered by Munro himself, and of several references to later discussions of particular points dealt with; and the correction of a few misprints. The new edition is extremely welcome.

#### MATHEMATICS.

*The Elements of Plane Trigonometry.* By R. Lachlan, Sc.D., and W. C. Fletcher, M.A. (2s. Edward Arnold.)

The authors have spared no pains in the preparation of this comparatively small but very valuable text-book designed for beginners and other junior students. The matter has been carefully selected and carefully arranged, and the treatment of the individual articles is excellent. The little work differs from the best of its predecessors chiefly in the arrangement of the contents. It is to be observed that the writers, in considering order, have preferred to assign to the earlier chapters such portions of the subject as tend to create and foster appreciation of principles and skill in their application, whilst the purely algebraical development of theory is rightly regarded as more appropriate to later stages in the study of the science. Due prominence is given to accurate drawing as a factor in producing power in the solution of problems.

*The Elements of Geometry.* By Braithwaite Arnett, M.A. (Books I., II., and III., 2s. each. Simpkin, Marshall, & Co.)

The work is deserving of a good place amongst elementary text-books, whether considered with regard to the matter contained, the manner of treatment, or the form of publication. It is intended that the study of the text should be accompanied by the instruction of a teacher, and the course is framed to meet the requirements of candidates reading for university and Civil Service Commission examinations. The treatise is in three "Books": the first dealing with the substance of Euclid's First Book up to the thirty-fourth proposition, the second treating of the Circle and the theory of Ratio and Proportion, and the third devoted to the consideration of Areas and Similar Figures. Very many well known riders find a place amongst the propositions recognized by Euclid as fundamental. The subject of Symmetry receives here closer attention than it does in the average work of similar scope, and, further, the author includes an interesting discussion of the motions of translation and rotation as affecting plane figures.

*Arnold's Number Lessons (Scheme B).* (Books for the Pupil: I., II., III., 2d. each; IV., V., VI., 3d. each. Books for the Teacher: I., II., III., 4d. each; IV., V., VI., 6d. each. Edward Arnold.)

A practical and useful series, embodying the general scheme laid down by the Education Code in Scheme B, but giving effect also to the principal recommendations of the Committee of the Mathematical Association. The plan of the work is novel and excellent, the series consisting of six pairs of complementary volumes, of which, in any pair, that intended for the pupil contains tables, worked examples to be studied as general types, and numerous exercises; whilst that designed for the teacher supplies valuable notes as to suitable methods, plenty of exercises arranged for the purposes of oral work, and in addition the results of the questions set in the pupil's book for practice in written work. Much prominence is given to decimals, and great care is taken to emphasize the fact that the principles underlying their use are the natural extension of the laws that govern calculation with integers.

#### FRENCH GRAMMARS AND COURSES.

- (1) *French by the Direct Method (First Course), Part II.* Adapted from the German of Rossmann and Schmidt by T. Cartwright. (1s. 8d. Jack.) (2) *A First Year of French.* By J. E. Mansion. (1s. Harrap.) (3) *Sure Steps to Intelligent French.* By H. R. Beasley. (1s. Swan Sonnenschein.) (4) *La Première Année de Français and French Lesson Notes.* By F. B. Kirkman. (1s. 6d. Black.) (5) *A First Book of French Oral Teaching.* By C. B. Calvert and W. G. Hartog. (2s. Rivingtons.) (6) *Grammaire Française.* By Mary S. Bruce. (3s. Heath.) (7) *The Essentials of French Grammar.* By A. Barriball. New Edition. (2s. 6d. Ralph, Holland, & Co.) (8) *A Practical French Grammar.* By F. W. Aveling. (3s. Swan Sonnenschein.)

(1) The so-called Direct Method, which originated in Germany, has taken root in England, and is already represented by a number of text-books of varying degrees of goodness. It was therefore desirable to present to the English public an adaptation of the book by Messrs. Rossmann and Schmidt, which has been selected by the Prussian Board of Education as the one book on that method for use in Prussian schools. It begins, as such books generally do, with the class-room, the human body, and Hölzel's picture of Spring, and a number of small woodcuts.

Among the early lessons are also some on numbers, and on the maps of Europe and of France. The conjugation of verbs is shown in action by taking verbs like *montrer*, *compter*. The vocabulary seems to be increased rather too rapidly for young pupils. For example, the names of a good many animals and their cries come early in the book. One point strikes one in studying all books on the direct method: the book is of little use to the pupil. The teacher must do the work, and all that need be put in the hands of the pupils is a reference grammar and a sort of exercise-book containing reading extracts, questions to be answered on paper, sentences to be altered, and so on. In arithmetic all that need be given to the scholar is a book containing models and examples to be worked out, possibly only the latter. The gradual spread of the direct method in language teaching will probably produce such books to be aids to the teacher, not his guides.

(2) Mr. Mansion's "First Year" is distinctly a drill-book, in which, in accordance with the direct method, translation from English into French plays a very small part. But what is known as the intuitive part of the method, the use of pictures to connect the French words with the things seen, is wanting. There is an appendix reproducing the reading extracts in phonetic script.

(3) "Sure Steps to Intelligent French" is simply a series of instructions and examples on peculiarities of French pronunciation. Phonetic symbols are introduced and explained gradually.

(4) Mr. Kirkman, in his "Notes," supplies valuable suggestions to teachers using the direct method. The directions given are very full, and particular pains is taken to introduce fresh matter as slowly as possible. His "Première Année" details a day of the life of an English boy in a French family in Paris, illustrated by coloured pictures of "La famille Pascal à table," of a street scene ("La Porte Saint-Martin"), a plan of Paris, and numerous smaller woodcuts—a great improvement on the hackneyed pictures of the Seasons. Songs are introduced, the music of which is supplied in another book.

(5) Messrs. Calvert and Hartog have drawn up a method which they believe to contain the advantages of both systems of teaching French. The staple of the book is a series of short readings, most of which refer to pictures, followed by a set of questions to be answered from the piece given for reading. Most of the extracts introduce fresh portions of simple grammar. There is an appendix, containing a brief accidence written in French. The book is well adapted for the use of teachers who cannot rise to the vigorous cross-questioning required for the efficient use of the direct method.

(6) Miss Bruce's grammar is written entirely in French. No doubt this plan has advantages, but there are obvious objections. Grammatical terminology is of little value for teaching French as a spoken language, and difficulties which generally involve differences of idiom between English and French are more easily and more lucidly met by an English explanation. To each chapter are subjoined French grammatical questions to be answered in French, and exercises partly consisting of translation from English and partly of the alteration and completion of French sentences.

(7 and 8) Mr. Aveling's and Mr. Barriball's French Grammars are carefully drawn up, but present no special features of method.

#### MENTAL SCIENCE.

*A Survey of English Ethics: being the First Chapter of Mr. Lecky's "History of European Morals."* Edited, with Introduction and Notes, by W. A. Hirst, Principal of Gujarat College, Ahmedabad. (3s. 6d. Longmans.)

Mr. Hirst finds that "students learn far more by reading a standard work than by studying a handbook." That would seem to depend partly on what they want to learn, and partly on what is the standard work and what is the handbook. We think it well that students should have easy access to Mr. Lecky's chapter, as here provided, but we are not so sure as Mr. Hirst that "it is in every way suitable to students who are beginning to attend a course of lectures," except as an able representation of a particular view. Mr. Hirst's introduction supplements at points Mr. Lecky's exposition, but his sharp antithesis of "the schools of Pleasure for Pleasure's sake and Duty for Duty's sake" narrows and obscures the real points at issue.

*The Existential Import of Categorical Predication: Studies in Logic.* By A. Wolf, M.A. Lond., B.A. Camb., Lecturer in Philosophy at the University of London. (4s. net. Cambridge University Press.)

These studies are amplifications of the substance of a dissertation that gained a Certificate of Research at Cambridge, and will be of service in the elucidation of "a rather obscure subject"—namely, in the words of Dr. Keynes, "the question whether the assertion of a categorical proposition necessarily implies that its terms are the names of actually existing things." It seems curious that this problem, though traceable as far back as Plato and Aristotle, has hitherto "received neither separate nor independent treatment." Mr. Wolf clears the ground in two chapters. First he discusses some aspects of Names, in order to settle which of them his inquiry is concerned with; and next he inquires what is to be understood by Existence or Reality. Then he examines the existential import of categorical propositions in general, and proceeds to a more detailed inquiry into the several kinds.



The final chapter indicates the bearing of his results upon Formal and Symbolic Logic. The little volume, though lucid and patiently argued, is not so very easy reading, but it is an independent and able contribution to the discussion of important points of logical theory.

*A Primer of Logic.* By E. E. Constance Jones, Principal of Girton College, Cambridge. (1s. 6d. Murray.)

The volume appears as one of Mr. Murray's excellent series of "Primers." It covers the subjects usually treated under Deduction and Induction, and expounds them quite simply and freshly. Appended are useful analytical tables, questions on the different chapters, examination papers that have actually been set, and a combined index and vocabulary. A pupil cannot go through the little work intelligently without obtaining a firm grip of the essentials, while the appended matters will test and clinch the study of the text.

#### ART—DRAWING—WRITING.

The Educational Supply Association issues a new series of Historical Cartoons ("The Viaduct Series"), representing important scenes in English history. They "have been specially painted by a well known artist, and are historically accurate in every detail," and are beautifully printed in sepia tones by the colotype process. The size is 27 x 35 inches. They will make capital decorations for schoolroom walls. The example before us, "St. Augustine preaching the Gospel," is tastefully framed (and glazed) in stained oak, with gilt slip, and costs only 8s. net (including carriage to any part of England and all risk of breakages). We should add that a descriptive letterpress, with historical explanations, accompanies each picture.

Messrs. West, Newman, & Co. are furnishing a varied and attractive series of landscapes in colour—"and some in glowing colours"—from water-colour drawings by Luther Hooper, Fritz Althaus, and other artists, with the special view of "brightening schools." The actual picture measures 32 x 20 inches (5s. each, unmounted).

*The Art Workers' Quarterly* for October (2s. 6d., Chapman & Hall) is the "National Competition number." Apart from this special attraction, it includes several excellent articles, with much minor matter of usefulness and interest. The illustrations are abundant and admirable. One coloured and six supplementary plates.

*Sir Benjamin Stone's Pictures*—"records of national life and history"—reproduced from the extraordinarily varied and valuable collection of photographs made by Sir Benjamin during an active experience of some forty years, are being brought out in Parts (7d. net each) by Messrs. Cassell. The series forming the first volume will depict festivals, ceremonies, and customs. The pictures given in the Parts already issued are characteristic and most interesting; and the collection will be unique. They are skilfully reproduced, and each is accompanied by descriptive letterpress.

*Nelson's New Drawing Course (Teacher's Handbook), Stage V.*, by J. Vaughan, Superintendent of Drawing and Manual Instruction under the Glasgow School Board (2s. 6d.), is excellent in point of selection of material, practical treatment, and exposition. There are 24 full-page plates, and 66 figures in the text, all remarkably well reproduced. The introductory observations are most useful.

Parts II. and III. of Messrs. W. & A. K. Johnston's *The Nature-Study and Free-Arm Drawing Cards* (1s. 6d. each set), "illustrating the correlation of Drawing and Object Lessons," contain 20 cards each, judiciously selected, and well drawn and coloured. Each set is accompanied by a Drawing Book corresponding to the Cards (4d. net). The series will be very serviceable.

*Blackie's Commercial Course of Writing and Book-Keeping* comprises a series of six writing copy-books (2d. each), specially designed for commercial and continuation classes. The aims are two: to train in a neat, clear, fluent, official hand, and to give practical lessons in book-keeping and in the use of commercial forms and terminology. The style is modelled on Vere Foster's "Medium," and is admirably distinct and rational, without affectations.

The French series of *Philips' Semi-Upright Copy-Books* has recently received three additions—Nos. 10b, 10c, and 10d (2d. each). They are well fitted to train to clear and fluent penmanship.

Sir Isaac Pitman & Sons have begun to issue *Illustrated Aids to Composition*, by H. J. Barnell. The first series consists of 32 cards (3s.). The left side of each card is fitted with drawings of the subject of composition, and the right side contains the heads and outline. The notion is to help the flow of ideas. The cards are carefully designed, and "the author, in practice, has found it a splendid device." It seems well worth a trial.

#### MAPS—CHARTS—DIAGRAMS.

Of *Snelling's Large-sheet Demonstration Tracing Maps* (6d. net per sheet), we have (4) The Balkan Peninsula; (6) Japan, Korea, Manchuria, &c.; (13) Russia; and (14) S.W. Asia. Also the corresponding *Snelling's Comprehensive Tracing and Colouring Maps* (6d. net a dozen): Nos. 104, 106, 113, and 114. The use of these aids should help to render the geography work both agreeable and efficient.

Mr. Edward Stanford offers a very fine and elaborate sheet showing

the Public Elementary Schools of the County of London in 1903, both Board schools and efficient non-Board schools, the School Board divisions being outlined (10s.; mounted in case, 14s.).

*McDougall's Twin Maps for Class Use*—Nos. 1-12, 1d. net each—work out an excellent idea with good effect. The "twins" in each case are a coloured map and a photo-relief physical map opposite each other: and on the other side of the maps is printed a summary of the main geographical points, with allied information as to productions, industries, &c.

*Philips' Sixpenny Scripture Atlas*, ably edited by George Philip, F.R.G.S., consists of a series of sixteen coloured plates, containing over thirty maps and plans, illustrating the books of the Old and New Testaments. It is very complete, detailed, and clear, and cannot but be a most helpful companion to the text.

The *Europe and British Colonies* numbers of "Bacon's 'Excelsior' Upper Class Atlases and Text Books Combined" (3d. net each), for use with the "Excelsior" Wall Atlases V. and VI. respectively, are remarkably comprehensive, convenient and clear, and moderate in price.—*Bacon's "Excelsior" Upper Standard Atlas*, for Standard IV. (3d.) is very creditably prepared and produced, and will be very serviceable.

#### REGISTERS.

Messrs. Philip publish a "*Simplex*" *Attendance Chart*, mounted on millboard and eyeletted, 17½ x 22 inches (1s. 6d.), showing at a glance the average attendance each for a period of two years. They claim that the chart "has proved a great stimulus to the attendance wherever it has been in use." At all events, it exhibits the facts very simply and effectively.

The "*Eurēso*" *Mark Book* (2s. 6d. net) and the accompanying *Preparation Book* (4s. per dozen), compiled by Charles M. Parks, B.A. (Relfe Brothers), provide for a comprehensive record of the pupils' school career, and engage the pupils' own interest, while a most convenient means of reference for the master.

#### DIARIES AND CALENDARS.

Of Letts's useful Diaries, published by Messrs. Cassell, we have No. 12 (Pocket Diary and Almanack), three days on page (3s.); No. 17D (Pocket Diary with an Almanack), week on page, with blank page opposite (1s.); No. 34 (Rough Diary), week on page, interleaved blotting (1s.); No. 36 (Rough Diary), week on page interleaved blotting (1s.); No. 61 (Oblong Diary), week at opening, nicely bound, for pocket (2s.); Engagement and Address Diary (2s.); and Daily Health Diary (by Eustace Miles, M.A.; 1s. 6d.). Each diary contains an accident insurance coupon for £1,000.

Messrs. George Gill & Sons publish the interesting *Modern Language Calendar*, by J. Eisner and Rose L. Yates, with analogous mottoes for each day in French, English, and German. Another block calendar is *Letts's Office Calendar and Reminder Tablet* (2s.).

*Pitman's Shorthand and Typewriting Year Book and Diary* (1s.) contains the usual variety of information upon the special subjects, the diary showing a week on a page.

## CHRISTMAS BOOKS.

### I.

#### HISTORICAL TALES.

A new and cheaper edition of outstanding works by the late G. A. Henty is announced by Messrs. Blackie. The volumes are in cloth, with ornamental cover design and olivine edges, agreeably printed, and liberally illustrated (3s. 6d. each). *In Freedom's Cause*, which comes first, is a spirited story of the days of Wallace and Bruce, not quite so close to history as Henty believed, but all in the right vein, and thoroughly deserving of a renewed popularity. Eight illustrations. *A Soldier's Daughter* and other stories (2s.), also by Henty, is full of dashing adventure; first on the north-west frontier of India (where the daughter of a British officer fights, is captured, escapes, &c.), next in Middle Age Germany (in the Electorate of Trèves), and then in the Australian bush. Six illustrations by Frances Ewan.

If what the critics say be true, then the mantle of Henty has fallen upon Herbert Strang. Last year Mr. Strang furnished a stirring romance of the earlier phases of the Russo-Japanese War—"Kobo"—mainly from the Japanese standpoint; this year he works the later incidents of the war into a background for the adventures of *Brown of Moukden* (5s., Blackie), the standpoint being on the Russian side. The story is sufficiently stirring and diversified, while the situation is presented in many important aspects in accordance with actual facts without embarrassment to the narrative. The book is a capital boy's book, but it is also well worth reading for its varied collateral illustrations of the war at a notable conjuncture. Six plates by William Rainey, R.I., and four maps and plans.

*The Adventures of Harry Rochester*, also by Mr. Strang (6s., Blackie), is "a story of the days of Marlborough and Eugene." The hero gets kidnapped and shipped for the West Indies, but escapes and takes



service with a Dutchman, who is a contractor for the allied forces in the Low Countries. In the execution of a mission on behalf of Mynheer Jan Grootz he distinguishes himself so markedly in a skirmish with the French in protection of his convoy that he is presented with a commission; and eventually he fights at Blenheim. The operations that lead up to the victory are outlined, and the life and manners of the time are incidentally illustrated with careful regard to the historical facts. The story, however, is the thing; it is full of adventure, and goes briskly forward. And there is an underplot of romantic charm. Eight plates by William Rainey, R.I., a map of the Low Countries in 1703, and plan of the Battle of Blenheim.

Captain F. S. Brereton also furnishes a similar couple of volumes—one on the Russo-Japanese War, the other on an older historical episode. The hero of *A Soldier of Japan* (5s., Blackie) is shelled in his junk passing opposite Port Arthur at the time of the first naval engagement of the war, is rescued by Japs, and joins the Japanese forces in the second dash upon Port Arthur, when he is made prisoner; escapes as he is being sent up country, joins some Hunhuse brigands, and has a tussle with a band of Cossacks; presently falls in with Kuroki's army, and takes part in the battle of the Yalu; and in many another adventure, here and there in Manchuria, he displays dash and courage, "earning a wonderful reputation amongst both Russians and Japanese," and showing his comrades, the men of the Dai Nippon, "that he was, like themselves, a true soldier of Japan." Naturally the pages are full of bustle. Six illustrations by Stanley L. Wood.

*A Knight of St. John*, also by Captain Brereton (6s., Blackie), is a story of the Siege of Malta by the Turks in 1564. There is fighting in abundance as well as plotting and counterplotting, a taste of the galleys, a brush with the "Brave men of Algiers," and so forth. Before that, however, the young hero finds use for his sword at Havre, whither he had come with a fleet of provision ships for the succour of the starving garrison under the Earl of Warwick. The story has more substance than some other of the author's books, and the interest is briskly maintained throughout. Eight illustrations by William Rainey, R.I.

*The Old Moat Farm*, by Eliza F. Pollard (2s. 6d., Blackie), is a story of the times of Queen Elizabeth. The Farm is the Kentish home of John Weston, yeoman, whose nephew Derward was the companion of John Rolfe in the hands of Powhattan, whose daughter Pocahontas saved the lives of both the captives. The Virginian expedition brings Sir Richard Grenville and Raleigh into the narrative; and Sir Philip Sidney plays a part. There are secrets to be discovered and tangles to be unravelled. The story is very carefully written, and the voyage of discovery to Virginia, as well as the history of Pocahontas, is fully narrated. The book will be read with sustained interest. Four illustrations by Frances Ewan.

*Squire and Page*, by G. I. Whitham (2s., Blackie), is "a story of olden days"—the time of King Henry V., who appears in person and transacts important business. The page, Mador de la Garde, a chorister in the Abbey of Marlay, carrying a message for a knight sorely wounded in an ambush near the Abbey, gets involved in plot and counterplot through the chance knowledge of the purport of the message by the knight's enemies. His fidelity, alertness, and acuteness bring him well on the road to fame and fortune. The story is sufficiently charged with adventure, rapid in movement, and clearly and pleasantly presented. Three illustrations by Frances Ewan.

*Soldiers of the Cross*, by Eliza F. Pollard (3s. 6d., Nelson), takes us to Spain in the days of Ferdinand and Isabella, with Anthony Scales, Lord Rivers, and Don Rodrigo Ponce de Leon, Marquis of Cadiz, to make war on the Moors of Granada. The power of the Inquisition is illustrated, and Torquemada is one of the personages of the story. There are also private complications, of course, to furnish a softer interest as a foil to the more stirring warlike adventures. The colour of time and place is carefully applied to the canvas. The story is fresh, vigorous, and full of interest. Four coloured illustrations.

#### TALES OF FAERIE.

*The Red Book of Romance*, edited by Andrew Lang (6s., Longmans), stands eighteenth (we think) in "The Fairy Book Series." It contains some thirty stories "done by Mrs. Lang, out of the old romances"—"William of Palermo," various sagas, "The Faerie Queene," "Don Quixote," the Early English metrical romances, and other sources. Mr. Lang explains in his preface how such stories come into a series of fairy books. They make very charming reading, anyhow, and they cannot be read too widely. The volume, like the rest of the series, is beautifully got up, with eight coloured plates and forty-four other illustrations.

*Fairy Tales, Old and New* (3s. 6d., Cassell), is a pretty and handy little volume, containing a good selection of stories from the old fairy tales—Grimm, Andersen, and the King Arthur cycle, with twenty full-page coloured plates and other illustrations. They are also obtainable in five separate books (6d. each). They are written in simple and attractive style, and—"are carefully graduated for the various standards," a sadly utilitarian consideration. However, they will delight the children, who will arrange them to suit themselves.

#### LITERARY AND ARTISTIC INTERESTS.

Mr. Heinemann opportunely issues a new and revised edition of Dr. Edmund Gosse's short history of *Modern English Literature*, with

72 plates (8 of them photogravures), which light up the volume with points of fresh interest. It is beautifully printed and in tasteful binding. A very stimulating and suggestive work.

The Standard Oxford editions of *The Talisman* and *Ivanhoe* (2s. each), in beautiful type and pleasant binding, and having respectively 9 and 19 excellent illustrations, would gladden a modest heart at Christmas time. The volumes are handy and agreeable, and every youngster should read them.—With these we may place the similar editions of *The Complete Poetical Works of William Cowper*, edited by H. S. Milford, M.A., and *Poems of Robert Browning*. Mr. Milford gives "every poem of Cowper's hitherto printed (besides a few from MS.), except the translations of Homer and *Adamo*"—the most complete collection available; and he has laboured diligently and most usefully to constitute and present the best text. The edition is thus the most satisfactory in the market. The Browning volume contains "Dramatic Lyrics, Dramatic Romances, Men and Women, Dramas, Pauline, Paracelsus, Christmas Eve and Easter Day, and Sordello." Otherwise, it "includes (1) the contents of the three-volume edition of Browning's poems published in 1863; (2) *Pauline*, taken from the first edition (1833); (3) two short poems, a *Sonnet* and *Ben Karshook's Wisdom*, not reprinted by Browning in any collected edition of his poems." The edition is most welcome, as likely to spread widely an acquaintance with Browning's poetry.

Messrs. Seeley offer a charmingly tasteful edition of Sir Joshua Reynolds's *Discourses*, delivered to the students of the Royal Academy (7s. 6d. net). The introduction and notes provided by Mr. Roger Fry are most careful and instructive. There are thirty-three illustrations, judiciously chosen and skilfully reproduced.

*Longfellow* (Select Poems) has been added to Messrs. Blackie's dainty "Red Letter Library." The Bishop of Ripon (Dr. Boyd Carpenter) furnishes a concise and discriminating introduction. Also a beautiful edition of *Essays of Montaigne* (Florio's translation), with introduction by Charles Whibley.

#### FOR GIRLS.

*The Ghost of Exlea Priory*, by E. L. Haverfield (5s., Nelson), describes the trials and troubles of a little girl at school burdened with perplexities and aspirations brought with her from home, and animated by as keen a spirit as her brother, a Repton boy. Family difficulties lead to evacuation of the Priory, in which the representative of a family for generations at feud with the Exlea folk is installed as lessee. A fortune in Chancery was at the root of the enmity; and the Ghost was not unconnected with the resultant perplexities. What comes of it all we will not explain: it is told pleasantly and attractively, and boys and girls alike will read it with interest. Six coloured illustrations from oil paintings by Miss N. Tenison.

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Another excellent volume of like character, by Mrs. Henry Fawcett, LL.D., depicts the lives of *Five Famous French Women* (6s., Cassell). The five famous French women are Joan of Arc; Renée, Duchess of Ferrara, daughter of Louis XII.; Louise of Savoy, mother of Francis I. and Regent of France during his Spanish captivity; Margaret of Angoulême, Duchess of Alençon and Queen of Navarre, sister of Francis I., the foundress of the Collège de France, the friend of Erasmus and other leaders of the Reformation, the "Marguerite des Marguerites"; and Jeannet d'Albret, the fearless Queen of Navarre, daughter and granddaughter of the foregoing, and mother of Henry IV. The sketches are written with great care and in a very interesting way; and there are thirty good and pertinent illustrations.

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(Continued on page 531.)



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The varied contents of *The Playroom Annual* (1s. net, Horace Marshall) include stories, songs with music, pictures to colour, to sew,

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*Blackie's Children's Annual* (3s. 6d.) makes its second appearance, with appropriate stories and rhymes by many well known writers for young folk, and with 114 illustrations by many esteemed designers. A large proportion of the pictures are in colours. The present issue should go far to confirm the popularity of the annual.

## MISCELLANEOUS.

*Northern Trails*, by William J. Long (Ginn), is another of the author's most charming, sympathetic, and instructive books of first-hand description of the ways of animals. He now takes us away "into a new country, a land of space and silence where it is good to be, away up among the mountains and woods and salmon rivers and mossy barren grounds of Labrador and Newfoundland," and brings us "face to face with new animals—white wolf, fisher, salmon, wild goose, polar bear, and a score of others big and little." "Every smallest incident recorded here is as true as careful and accurate observation can make it," excepting only the ways of the salmon "beyond the breakers and beneath the tide," where "no man has ever followed or seen him," the description of these being "a guess at probable truth." Mr. Long observes as patiently, and loves his animals as warmly, as Water-ton himself. The volume is beautifully written, intensely interesting, and lavishly illustrated.

Messrs. George Philip & Son offer a considerable variety of sound books of interest very suitable as prizes or gifts to thoughtful lads. Of the "Ludgate Prize Series" we have (1) *Heroes of Industry*, by Frances E. Cook, with thirty illustrations; and (2) *Round the Coast*, by George F. Bosworth, F.R.G.S., with numerous illustrations and sketch maps (1s. 6d. cloth; 2s. 6d. net, quarto morocco).—Of the "World's Great Explorers Series" *Mungo Park*, by Joseph Thomson, with thirteen full-page illustrations, seven illustrations in text, seven maps in colours, and four maps in text (3s. 6d.).—Of the "Science Ladders Series" *The Story of Animals*, by Mrs. Arthur Bell (N. D'Anvers), with 211 illustrations (3s. 6d.). All the volumes are in agreeable presentation bindings.

*The Golden Reciter* (3s. 6d., Seeley) contains over seven hundred passages in prose and verse, for reading and recitation, with introductory remarks of a usefully practical character by Cairn James, Professor of Elocution at the Royal College of Music and the Guildhall School of Music. The passages are carefully selected from the best writers, fresh sources being largely drawn upon, and many of the pieces being still under copyright. The book is an excellent collection, and the form is quite convenient in spite of the number of pages, for the paper is judiciously thin. It ought to be a general favourite.

*The Little Folks Sunday Book*, by S. H. Hamer (5s., Cassell), consists of Bible stories simply narrated, with a great many excellent full-page illustrations, mostly in colour. A handsome and attractive volume.

## MATHEMATICS.

15802. (Communicated by JAMES BLAIKIE, M.A.)—Étant donnés deux points A et B, on prend les points I et I' qui partagent le segment AB dans un rapport donné  $a/\beta$  et l'on considère toutes les droites D telles que le rapport de leurs distances aux points A et B soit égal à  $a/\beta$ . Démontrer que les plans ID et I'D sont rectangulaires. En conclure:—(1) que les droites D qui passent par un point fixe S engendrent un cône dont les sections circulaires sont perpendiculaires aux droites SI et SI'; (2) que les droites D qui sont situées dans un plan  $\Pi$  enveloppent une conique ayant pour foyers les projections des points I et I' sur le plan  $\Pi$ . Indiquer ce qui arrive lorsque le point S est situé sur la sphère qui a pour diamètre II' ou lorsque le plan  $\Pi$  est tangent à cette sphère. (See Guichard, *Compléments de Géométrie*.)

Solution by JAMES BLAIKIE, M.A.

Let E, K, F, K' be the feet of the perpendiculars drawn from the points A, I, B, I' to the straight line D. By hypothesis,  $AE/BF = AI/BI$

$$= AI'/BI' = a/\beta.$$

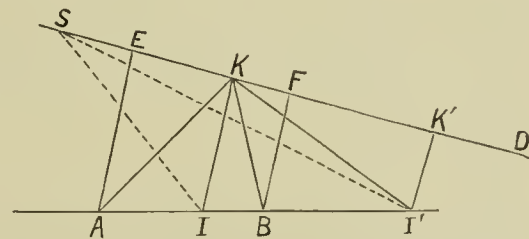
The three straight lines AE, IK, BF are in three

parallel planes; therefore  $KE/KF = IA/IB = AE/BF$ . The right-angled triangles AEK, BFK are accordingly similar, whence

$$AK/BK = AE/BF = AI/BI = AI'/BI'.$$

This shows that KI, KI' bisect the angle AKB internally and externally. Hence IK, which is perpendicular to D, is also perpendicular to KI', and therefore IK is perpendicular to the plane I'D. The plane ID, which contains a perpendicular to the plane I'D, is therefore perpendicular to that plane.

(1) SKI, IKI' being right angles, the locus of K is the intersection of





the spheres on SI and II' as diameters, that is, a circle whose plane is perpendicular to the line joining the mid-points of SI and II', and therefore also perpendicular to SI'. Similarly the locus of K' is a circle whose plane is perpendicular to SI. Thus the straight line D traces out a cone having two systems of circular sections perpendicular to SI and SI'. If the point S is on the sphere with II' as diameter, this cone reduces to two planes, perpendicular to the plane KII', and passing through KI and KI'.

(2) Let  $i, i'$  be the projections of I, I' on the plane  $\Pi$ . Then, as IK is perpendicular to the straight line D in the plane  $\Pi$ , Ki and similarly K'i' are perpendicular to D. And, since the points K, K' describe a circle (the intersection of the plane  $\Pi$  with the sphere on II' as diameter), the straight lines D envelop a conic having  $i, i'$  as foci. This conic is an ellipse or a hyperbola according as the plane  $\Pi$  meets the straight line II' between I and I' or not. If the plane  $\Pi$  is tangent to the sphere of diameter II', the conic is a hyperbola reduced to the straight line passing through the point of contact and perpendicular to  $ii'$ .

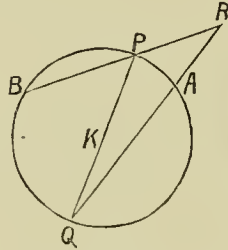
15871. (Professor SANJANA, M.A. Suggested by Question 15748.)—A, B, C are three fixed points on a conic, and from another fixed point K a chord is drawn terminated by the curve at P and Q. Find the locus of the intersection of AQ and BP, and investigate when it is of the first degree.

Solution by W. J. DOBBS, M.A.

The point C is not required in the Question. Project the conic into a circle of centre K. Then, if BP and AQ meet at R,

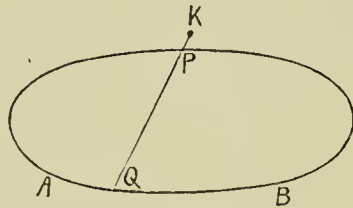
$$\angle BRA = \angle BPA - 90^\circ = \text{const.}$$

Therefore the locus of R is a circle through A and B, which reduces to the straight line at infinity when BA is a diameter. Hence, returning to the original problem, we see that the locus required is a conic through A and B and the intersections of the polar of K with the original conic; and that it reduces to the polar of K when A, B, and K are collinear.



Mr. H. L. TRACHTENBERG, B.A., solves the first part of the Question by isogonal transformation as follows:—

Transform with regard to the triangle KAB. The conic, passing through AB, becomes another conic through AB, and, if P', Q' be the points corresponding to P, Q, the straight lines KPQ, AQ, BP become, since they pass through an angular point, the straight lines KP'Q', AQ', BP', passing through the same angular points respectively.



Hence the locus of the intersection of AQ and BP transforms into the locus of the intersection of AQ' and BP', a locus which bears the same relation to the transformed conic and the points K, A, B as the locus sought does to the original conic and the points K, A, B. Hence, if the degree of the locus sought is  $n$ , that of its transformation is  $n$ .

Now a conic through KAB cuts the locus sought in  $2n$  points, two of which coincide with A, B, since these are points on the locus found by taking limiting positions KA, KB for KPQ. Hence the  $2n-2$  points which do not coincide with an angular point must correspond to the points in which the straight line corresponding to the conic through KAB cuts the transformed locus, but the number of these points is  $n$ . Therefore  $2n-2 = n$ . Hence  $n = 2$ . Thus the locus required is a conic through A, B.

15862. (F. N. MAYERS, M.A.)—Discuss the possibility or otherwise of the congruence  $2^{p-1} \equiv 1 \pmod{p^2}$ .

Note by Lt.-Col. ALLAN CUNNINGHAM, R.E.

In the *Comptes Rendus des Séances de l'Acad. des Sciences*, Paris, t. LXXXIII., p. 1288, there are given the enunciations of several theorems by M. M. F. Proth, one of which is that "If  $2^p - 2 \equiv 0 \pmod{p}$  a prime, then  $2^p - 2 \not\equiv 0 \pmod{p^2}$  or  $p^3$ ." It is not stated whether this is a mere empirical theorem, or whether the author of the paper had found actual proof of the same.

15679. (ALEXANDER HOLM, M.A.)—In Diophantus v. 19 it is required to find three numbers such that, if each is subtracted from the cube of their sum, the remainder may be a cube.

Diophantus' method leads to the numbers

$$\begin{array}{ccc} 68574961 & 134953109 & 162707336 \\ 549353259 & 549353259 & 549353259 \end{array}$$

In the *Ladies' Diary* for 1716-17 (Leybourn's *Math. Questions*, Vol. I., pp. 52-62) it is stated that the lowest numbers hitherto found to satisfy the problem are  $\frac{13851}{85184}, \frac{18954}{85184}, \frac{19467}{85184}$ ; required to find still lower

numbers, for example,  $\frac{351}{3136}, \frac{832}{3136}, \frac{833}{3136}$ .

Solution by the PROPOSER.

Let  $x, y, z$  be the required numbers, and their sum

$$x + y + z = u \dots\dots\dots(1);$$

$$\text{then } \left. \begin{array}{l} u^3 - x = \text{a cube} = (lu)^3, \quad u^3 - y = \text{a cube} = (mu)^3 \\ u^3 - z = \text{a cube} = (nu)^3 \end{array} \right\} \dots\dots\dots(2),$$

where  $l, m, n$  are arbitrary; therefore

$$x = (1-l^3)u^3, \quad y = (1-m^3)u^3, \quad z = (1-n^3)u^3 \dots\dots\dots(3).$$

Hence, from (1),  $3 - l^3 - m^3 - n^3 = 1/u^2 = \square$ . Thus it is necessary to seek for three positive cubes each  $< 1$  [cf. (2), (3)], such that, their sum being taken from 3, a square is left. Setting out from Diophantus' particular case,  $3 - (\frac{5}{6})^3 - (\frac{2}{3})^3 - (\frac{1}{2})^3 = \square = (\frac{2}{3})^2$ , let us take  $\frac{5}{6}, \frac{2}{3}, X, -\frac{1}{2} + X$  for the roots of the required cubes. These assumptions leave the sum of the roots of the cubes unaltered. (Diophantus keeps the sum of the cubes themselves constant.) Thus  $3 - (\frac{5}{6})^3 - (\frac{2}{3} - X)^3 - (-\frac{1}{2} + X)^3 = \square$ ; therefore  $\frac{5}{6} + \frac{7}{12}X - \frac{1}{2}X^2 = \square = (-\frac{2}{3} + rX)^2$ , where  $r$  is arbitrary; therefore  $X = (36r + 7)/(12r^2 + 6)$ . To make the last two cubes positive, choose

$$X = (36r + 7)/(12r^2 + 6) > \frac{1}{2} < \frac{2}{3};$$

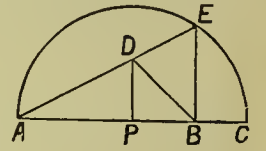
whence  $r > \frac{1}{3}(9 - \sqrt{87}) < \frac{1}{4}(9 - \sqrt{87})$  or  $> \frac{1}{4}(9 + \sqrt{87}) < \frac{1}{3}(9 + \sqrt{87})$ .

If  $r = \frac{11}{2}$ , then  $X = \frac{5}{6}$ . Thus  $3 - (\frac{5}{6})^3 - (\frac{2}{3})^3 - (\frac{1}{2})^3 = \square = (\frac{2}{3})^2$ . Taking  $l = \frac{15}{18}, m = \frac{2}{18}, n = \frac{1}{18}, u = \frac{1}{18}$ , we have  $x = \frac{3 \cdot 5 \cdot 1}{3 \cdot 1 \cdot 3 \cdot 6}, y = \frac{8 \cdot 2 \cdot 2}{3 \cdot 1 \cdot 3 \cdot 6}, z = \frac{8 \cdot 3 \cdot 3}{3 \cdot 1 \cdot 3 \cdot 6}$ .

15844. (ROBT. W. D. CHRISTIE.)—Divide a straight line into two such parts that the square on one part shall equal three times the square on the other. Can it be solved generally?

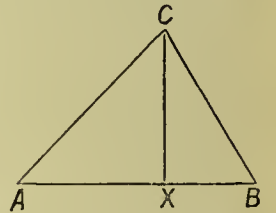
Solutions (I.) by HENRY RIDDELL, M.E.; (II.) by RAM KRISHNA RAO; (III.) by W. J. GREENSTREET, M.A., the PROPOSER, and others; (IV.) by Lt.-Col. ALLAN CUNNINGHAM, R.E.; (V.) by Professor LANGHORNE ORCHARD, M.A., B.Sc.

(I.) Let it be required to divide AB into two parts AP, PB, so that  $AP^2/PB^2 = m/n$ . Produce AB to C, making  $AB/BC = m/n$ , which can always be done as long as the ratio  $m/n$  can be got in linear form. On AC describe a semicircle, and erect BE perpendicular to AB and cutting the semicircle at E. Join AE, and through B draw BD, making the angle ABD half a right angle, and drop DP perpendicular to AB. Then



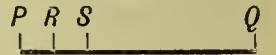
$$AP^2/PB^2 = AP^2/PD^2 = AB^2/BE^2 = AB/BC = m/n.$$

(II.) Let AB be the given straight line. At A and B make angles of  $45^\circ$  and  $60^\circ$  respectively. Draw CX perpendicular to AB. Then X shall be the required point. Now  $CX = AX$  and  $CX/BX = \sqrt{3}$ ; therefore  $AX/BX = \sqrt{3}$ ; therefore  $AX^2 = 3BX^2$ ; therefore X is the required point.



The general solution for dividing a straight line into two parts so that the square on one part may be  $n$  times the square of the other:—Take a straight line PQ. Divide it at R in the ratio of 1 to  $n$ . Find a mean proportional PS to PR and RQ.

$$PS^2 = PR \cdot RQ = nPR^2.$$

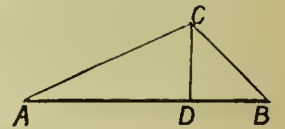


Now divide AB at X in the ratio of PS to PR.

Then  $AX : XB = PS : PR$ ;

therefore  $AX^2 : XB^2 = PS^2 : PR^2$ ; therefore  $AX^2 = nXB^2$ .

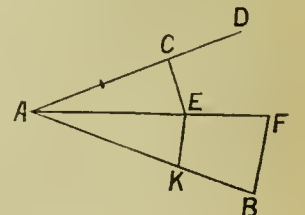
(III.) Let AB be the given line. Construct a triangle ABC with angles  $A = 30^\circ, B = 45^\circ$ . Then  $CD = \frac{1}{2}AC, CD = DB$ . Then CD, perpendicular on AB, gives D, the point required. For  $4CD^2 = AC^2$ ; therefore  $AD^2 + CD^2 = 4CD^2$ ; therefore  $AD^2 = 3CD^2 = 3DB^2$ . If  $AB = a$  and D is on AB such that  $AD^2 = nDB^2$ , let  $AD = x$ ; then  $x^2 = n(x-a)^2$ ,



$x^2(n-1) - 2anx + a^2n = 0$ ; therefore  $x = a\sqrt{n}/(\sqrt{n} \pm 1)$ . Now a length  $a\sqrt{n}$  can always be drawn and the section required can always be effected.

Perhaps the simplest process is as follows:—

(1)  $n = 5$ .—Trisect any line AD in C; draw CE perpendicular to CD and equal to it. Produce AE to F, so that  $CE = EF$ . Join FB. EK, parallel to FB, gives the point required. For



$$AE^2 = AC^2 + CE^2 = 5CE^2, \quad EF^2 = CE^2,$$

$$AE/EF = AK/KB,$$

$$AK^2/KB^2 = AE^2/EF^2 = 5.$$

(2)  $n = 6$ .—Divide any line AD in C, so that  $AC^2 = 5CD^2$ . Draw CE perpendicular and equal to CD. Produce AE to F, so that

$$EF = CE = CD.$$



Draw EK parallel to FB. Then

$AE^2 = AC^2 + CE^2 = 6CE^2$ ,  $EF^2 = CE^2$ ,  $AK^2/KB^2 = AE^2/EF^2 = 6$ ,  
and, by repeating this process, we get each point of section in turn.

Rest in Reprint.]

15764. (R. F. DAVIS, M.A.)—The tangent at A to the circum-circle of the triangle ABC meets the base BC produced in T. From T perpendiculars are drawn upon AB, AC, meeting the circum-diameter through A in P, Q respectively. Prove (geometrically) that P, Q are equidistant from the circum-centre.

[Want of space prevents the publication of more than a few of the many solutions sent in.—ED.]

Note by CONSTANCE I. MARKS, B.A.

The problem appears to require something more to complete its solution than has been given in either of the articles sent in. It is to be observed that P and Q will be within or without the circle according as the circum-diameter through A falls without or within the angle A of the triangle ABC. The applicability to both figures of a method of solution based on either one of them is not obvious.

Solutions (I.) by C. E. WILLIAMS, M.A.; (II.) by J. A. H. JOHNSTON, M.A., and others; (III.) by A. M. NESBITT, M.A.; (IV.) by H. W. WEBSTER, M.D.

(I.) Since  $\angle ABA' = 90^\circ = \angle AHP$ ,

$$A'P : BH = AA' : AB.$$

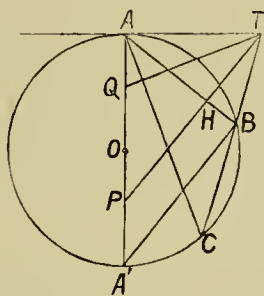
Also  $\angle QTA = 90^\circ - \angle TAC = \angle A'AC$   
 $= \angle A'BC = \angle PTB.$

and  $\angle HTA = 90^\circ - \angle TAH = \angle BAA'.$

Therefore

$$AQ : BH = AT : TH = AA' : AB.$$

Thus  $A'P = AQ.$

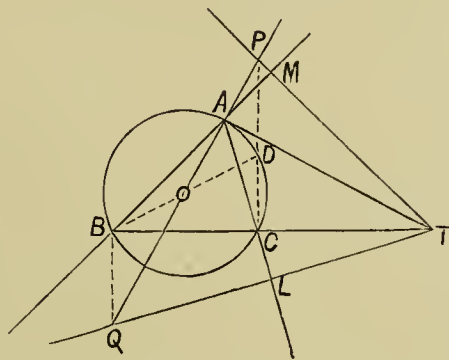


(II.) Let TQ meet AC in L and AB in M. Join PC, QB.

Then  $TA^2 = TC \cdot TB.$

But  $TA^2 = TL \cdot TQ;$

for QAT and ALT are right angles. Therefore B, Q, L, C are concyclic; therefore QBT is a right angle. Similarly B, P, M, C are concyclic; therefore PCT is a right angle. Let PC meet the circle in D, and draw diameter BD. Comparison of the triangles OBQ, ODP, which have two angles and a side equal in each, shows at once that  $OP = OQ.$



[Rest in Reprint.]

10693. (Professor LAMPE, LL.D.)—Find all the values of  $x$  that satisfy the equation  $64 \sin^2 x \sin^2 2x \sin^2 3x = 7.$

Solution by the PROPOSER.

$$\begin{aligned} \text{The relation } \sin 7x &= 7 \sin x - 56 \sin^3 x + 112 \sin^5 x - 64 \sin^7 x \\ &= \sin x (7 - 56 \sin^2 x + 112 \sin^4 x - 64 \sin^6 x) \end{aligned}$$

leads immediately to the conclusion that the equation

$$64y^6 - 112y^4 + 56y^2 - 7 = 0 \dots\dots\dots(1)$$

has the roots  $y_1^2 = \sin^2 \frac{1}{7}\pi$ ,  $y_2^2 = \sin^2 \frac{2}{7}\pi$ ,  $y_3^2 = \sin^2 \frac{3}{7}\pi$ , and thence

$$\sin^2 \frac{1}{7}\pi \sin^2 \frac{2}{7}\pi \sin^2 \frac{3}{7}\pi = \frac{7}{64} \dots\dots\dots(2).$$

Comparing (2) with  $64 \sin^2 x \sin^2 2x \sin^2 3x = 7 \dots\dots\dots(3),$

we see that  $x_1 = \frac{1}{7}\pi$ ,  $x_2 = \frac{2}{7}\pi$ ,  $x_3 = \frac{3}{7}\pi$  are roots of (3). But it is possible that there are still other roots of (3). Reduced to powers of  $\sin x = y,$

$$(3) \text{ becomes } 4096y^{12} - 10240y^{10} + 8448y^8 - 2304y^6 + 7 = 0 \dots\dots\dots(4).$$

The polynome forming the left side of (4) must admit of the polynome in (1) as a factor. Dividing, we get

$$64y^6 - 48y^4 - 8y^2 - 1 = 0 \dots\dots\dots(5).$$

This equation possesses a positive root for  $y^2, = 0.9068412 = \sin^2 x,$  whence we derive  $x = 72^\circ 13' 43.2''.$  Thus we have the following values for  $0 < x < 90^\circ:$ —

$$\begin{aligned} x_1 &= \frac{1}{7}\pi = 25^\circ 42' 51.43'', & x_2 &= \frac{2}{7}\pi = 51^\circ 25' 42.86'', \\ x_3 &= 72^\circ 13' 43.2'', & x_4 &= \frac{3}{7}\pi = 77^\circ 8' 31.29''. \end{aligned}$$

Similar questions result from the relations

$$2^{\frac{1}{2}(n-1)} \sin \pi/n \sin 2\pi/n \sin 3\pi/n \dots \sin [(n-1)\pi]/2n = \sqrt{n},$$

$$2^{\frac{1}{2}(n-1)} \cos \pi/n \cos 2\pi/n \cos 3\pi/n \dots \cos [(n-1)\pi]/2n = 1,$$

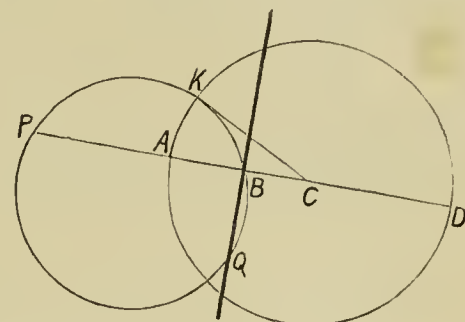
$n$  being any odd number.

15856. (Professor COCHEZ.)—Trouver le lieu des points tels que leurs polaires relatives à trois cercles concourent en un même point.

Solutions (I.) by HENRY RIDDELL, M.E., and W. J. GREENSTREET, M.A.

(II.) by H. M. TAYLOR, M.A., F.R.S., and C. M. ROSS.

(I.) Let there be any two circles cutting each other at right angles, and through any point P on the circumference of one draw the chord PABD, passing through the centre of the second circle and cutting the two circumferences in P, B, A, D. Since the two circles cut at right angles,



$$CB \cdot CP = CA^2,$$

and hence the polar of P with regard to the circle having C as centre passes through B, and, being at right angles to PC, also passes through Q, the point diametrically opposite P. Hence, if any number of circles be described cutting the first circle at right angles, the polars of P with regard to them will be concurrent at Q. In general, a circle can be drawn to cut three circles at right angles, and this circle is the required locus.

The case in which the circles are co-axial is worth notice. As a circle cutting a system of co-axial circles at right angles can be drawn through any point, the polars of any point with regard to such co-axial system will concur.

(II.) Let the equations of the three circles referred to rectangular co-ordinates be

$$\begin{aligned} x^2 + y^2 - 2a_1x - 2b_1y + c_1 &= 0, \\ x^2 + y^2 - 2a_2x - 2b_2y + c_2 &= 0, \\ x^2 + y^2 - 2a_3x - 2b_3y + c_3 &= 0. \end{aligned}$$

Then the condition that the polars of the point  $(x, y)$  with respect to the three circles should meet in a point is

$$\begin{vmatrix} x - a_1 & y - b_1 & a_1x + b_1y - c_1 \\ x - a_2 & y - b_2 & a_2x + b_2y - c_2 \\ x - a_3 & y - b_3 & a_3x + b_3y - c_3 \end{vmatrix} = 0.$$

The locus is therefore apparently a cubic curve; but it is easily seen that the coefficients of the highest terms  $x^2y, xy^2$  vanish. This suggests that the line at infinity is part of the locus, as is clear from the fact that the polars of a point at infinity are parallel. The remaining part of the locus is therefore a conic. The coefficient of the term  $xy$  is zero, and the coefficients of  $x^2, y^2$  are equal; the locus is therefore a circle.

If we choose the radical centre of the three given circles as origin of co-ordinates, then  $c_1 = c_2 = c_3 = t^2$ . The coefficients of the terms  $x, y$  will then vanish, and the equation of the locus circle reduces to  $x^2 + y^2 = t^2$ . This shows that the locus circle cuts the given circles orthogonally. It may be proved that the polars of any point on the locus circle meet in the other extremity of the diameter through that point of the locus circle, and it may be observed that each of the points where the locus circle cuts the line joining the centres of two of the given circles has the same polar with respect to each of those circles. It is easily seen that, if the centres of the given circles are collinear, the locus circle reduces to the line at infinity and the line of the centres.

These results can very easily be verified geometrically.

15841. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Jack and Jill run a race of 300 yds. to the top of a hill, and then the same distance down the other side to a fixed goal. Going up the hill Jill takes 5 steps to Jack's 4, and going down takes 6 steps to Jack's 5. If Jack's speed in ascending is half what it is in descending, and if the length of Jill's step to Jack's is as 3 to 4, how much start should be given to Jill in order that they may reach the goal together?

Solutions (I.) by JAMES BLAIKIE, M.A.; (II.) by B. C. WALLIS, F.C.P., B.Sc. (Econ.); (III.) by R. J. WHITAKER; (IV.) by T. BRILL.

(I.) If the length of Jill's step be  $3a$  and Jack's  $4a$ , then up hill Jill travels  $15a$  while Jack travels  $16a$ , and down hill Jill travels  $18a$  while Jack travels  $20a$ . Then, if  $x$  be the required start and we take Jack's rate up hill as unity, equating the times taken, we have

$$300 + \frac{300x}{3} = (300 - x) \frac{1}{4} + 300 \frac{1}{5},$$

which gives  $x = 34\frac{2}{3}$  yds., Jill's start.

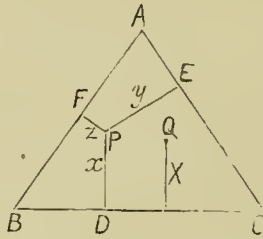
(II.) Up hill Jill goes 15 units to Jack's 16. Down hill Jill goes 18 units to Jack's 20. Jill goes 300 yds. down hill, while Jack could go  $\frac{1}{5} \cdot 300 = 333\frac{1}{3}$  yds., an excess of  $33\frac{1}{3}$  yds. Therefore Jack is  $16\frac{2}{3}$  yds. from the top when Jill is just there. Therefore Jack goes  $(300 - 16\frac{2}{3}) = 283\frac{1}{3}$  yds. up hill while Jill ascends completely from her starting point. Therefore Jill's distance up is  $\frac{1}{5}$  of  $283\frac{1}{3} = 265\frac{2}{3}$  yds. Therefore Jill should receive  $34\frac{2}{3}$  yds. start. [Rest in Reprint.]



Note on Two Isogonal Conjugates.

By R. CHARTRES.

Let P and Q be isogonal conjugates; then, if  $x^2 + y^2 + z^2$  be a minimum .....(1), while  $ax + by + cz = \text{constant} = 2\Delta$  .....(2), then  $(a^2 + b^2 + c^2)$  times (1) - (2) squared or  $(bx - ay)^2 + (cy - bz)^2 + (az - cx)^2$  will be a minimum; therefore  $x : y : z = a : b : c$ . But  $xX = yY = zZ$ ; therefore  $aX = bY = cZ$ , or Q is the centroid and P the Lemoine point, and evidently P is the centroid of DEF.



15079. (Rev. T. ROACH, M.A.)—Prove geometrically  $\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} = \frac{1}{2}\pi$ .

Solution by C. E. YOUNGMAN, M.A.

A general formula of this kind can be obtained as follows:—If N be an even number greater than 2,  $N^2$  can always be resolved in two ways into a pair of unequal factors, say  $N^2 = ab = cd$ , where  $a > b$ ,  $c > d$ , and  $a + b > c + d$ . Make two right-angled triangles ABC, ADC, with the right angle C common, and  $AC = 2N$ ,  $AB = a + b$ ,  $AD = c + d$ . Then  $BC = a - b$  and  $DC = c - d$ . Let p be the perpendicular from D on AB. We have  $p \cdot AB = AC \cdot DC$ ; i.e.,  $p = 2N(a + d - b - c)/(a + b)$ . And, since the sum of the angles at A and B is  $90^\circ$ ,

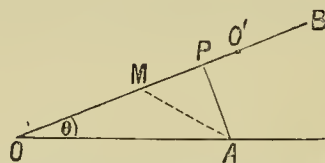
$$\sin^{-1} [2N/(a + b)] + \sin^{-1} [p/(c + d)] + \sin^{-1} [(c - d)/(c + d)] = 90^\circ.$$

This gives the formula in the Question when  $N^2 = 12 \cdot 3 = 9 \cdot 4$ . When  $N^2 = 18 \cdot 2 = 9 \cdot 4$ , or when  $N^2 = 50 \cdot 2 = 20 \cdot 5$ , the three sines are  $\frac{4}{5}, \frac{3}{5}, \frac{5}{13}$ .

QUESTIONS FOR SOLUTION.

15894. (Prince C. DE POLIGNAC.)—A ball moves along OB, making an acute angle with OA. The velocity of sound is V, that of the ball nV,  $n > 2$ . If  $n > \sec \theta$ , the whizzing of the ball along OB will be heard by an observer placed in A in the reverse order in which it is produced. (Tait and Steele, 2nd ed., p. 30, Ex. 10.) There is then a point M from which the whizzing of the ball is first heard and a point O' on the other side of M such that the sound from O and O' reaches A at the same moment. Let OA = a and AP be perpendicular to OB. Prove: (1) If  $n < \sec \theta + \tan \theta$ , O' lies between M and P; if  $n = \sec \theta + \tan \theta$ , O' coincides with P; if  $n > \sec \theta + \tan \theta$ , O' lies beyond P. (2) When n increases indefinitely OO' converges towards  $2a \cos \theta$ . (3) If  $\theta = 0$  and  $OB = x$ ,  $OB' = x'$  are any two distances such that the sound proceeding from B and B' reaches A at the same moment, then

$$(n - 1)x + (n + 1)x' - 2na = 0.$$



15895. (B. KRISHNAMACHARI, B.A.)—Solve the equation

$$9xy^2 \frac{d^2y}{dx^2} + 2 = 0.$$

[I observe that  $y = x^3$  is a particular solution.]

15896. (H. BATEMAN, B.A.)—Prove that, with the usual notation,

$$\text{dn } u = \frac{2K'}{2K} \text{sech} \frac{\pi}{2K'} (u + 2iK).$$

15897. (Rev. J. CULLEN.)—Solve the congruence  $xa^x + 1 \equiv 0 \pmod{p}$ , where p is a given prime and a any integer prime to p. Hence show that with one possible exception there is no prime of the form  $q \cdot 2^a + 1$ ,  $1 < q < 100$ .

15898. (Lt.-Col. CUNNINGHAM, R.E.)—Show that the roots (y) of the congruence  $y^3 + 1 \equiv 0 \pmod{p}$  can be found if a root  $Y = 2\eta^2$  be known in the congruence  $Y^4 + 1 \equiv 0 \pmod{p}$ . Ex.—Given  $p = 38737$  a divisor of  $(512^4 + 1)$ , find some roots of  $y^3 + 1 \equiv 0 \pmod{p}$ .

15899. (ROBERT W. D. CHRISTIE.)— $N = 73439775749$  is an exact power. Find its root by a strictly mathematical process. Generalize for any odd power.

15900. (ALEXANDER HOLM, M.A.)—Show how to find an infinite number of rational right-angled triangles such that the sum of given rational multiples a, b, c, d of the three sides and of the area may be equal to a given rational number e. [Note.—This problem is a generalization of Diophantus, vi. 6, 7, 8, 9, 10, 11, and of the analogous problems added by Bachet and Fermat.]

15901. (Professor SANJANA, M.A., and M. V. A. SASTRY, B.A.)—Prove that

$$R(1) - \frac{1}{2}R(3) + \frac{1}{3}R(5) - \dots - \frac{1}{2n}R(4n-1) + \frac{1}{2n+1}R(4n+1) - \dots \text{ad inf.} = \frac{1}{16}\pi^2,$$

where R  $(2p + 1)$  denotes the sum of the reciprocals of the odd numbers from 1 up to  $2p + 1$ .

15902. (A. M. NESBITT, M.A.)—If  $t_r$  denote the  $(r + 1)$ -th term of the expansion  $(x + y)^n$ , n being a positive integer, then will

$$(t_0 - t_2 + t_4 - \dots)^2 + (t_1 - t_3 + t_5 - \dots)^2 = (x^2 + y^2)^n.$$

Hence deduce that, if  $c_r$  be for shortness written for  ${}_n C_r$ ,

$$(c_0 - c_2 + c_4 - \dots)^2 + (c_1 - c_3 + c_5 - \dots)^2 = 2^n.$$

15903. (Communicated by Professor R. W. GENESE.)—A box just holds 160 cigarettes packed regularly in rows of 20. Prove that on repacking in alternate rows of 20 and 19 the box will hold 16 more cigarettes.

15904. (S. C. BAGCHI, B.A.)—If  $\begin{vmatrix} g_2 - g_3 & g_2 - g_1 \\ f_2 - f_3 & f_2 - f_1 \\ c_2 - c_3 & c_2 - c_1 \end{vmatrix} = 0$ , then there

are two points from either of which the three circles specified by the elements of the above matrix can be inverted into concentric circles.

15905. (W. F. BEARD, M.A.)—ABC is a triangle, I its in-centre, H its orthocentre; AD, BE, CF are the three altitudes. Prove (1) that the circles through AID, BIE, CIF are coaxial; (2) that the line of centres of these circles is the polar of H with regard to the in-circle; (3) that, if the circles AID, BIE, CIF meet BC, CA, AB respectively in X, Y, Z, then X, Y, Z are collinear; (4) if L, M are the inverses of A, D with respect to the in-circle, then LM bisects IH; (5) if LM meets AD at K and A' is the middle point of BC, then A'K is perpendicular to AI. Similar results are true in the case of the ex-circles.

15906. (D. BIDDLE.)—From P, a point in a rectangle, perpendiculars are drawn to the four sides. Prove that the sum of the products of those drawn to opposite sides is equal to the product of the segments of any chord of the circumscribed circle, determined by P. [This ought to be in Casey's Euclid, or the Sequel thereto, but I cannot find it.]

15907. (C. E. YOUNGMAN, M.A.)—Find geometrically the two single foci of a strophoid—the pedal of a parabola with respect to a point on the directrix—and show that they are the ends of a diameter of the rectangular hyperbola which has the same focus and directrix as the parabola.

15908. (Professor NEUBERG.)—Si de chaque point M(x, y) d'une courbe plane C on déduit un point M<sub>1</sub>(x<sub>1</sub>, y<sub>1</sub>) d'après les formules

$$x_1/y_1 + a x/y = b, \quad 1/y_1 + a/y = c,$$

le point M<sub>1</sub> décrit une seconde courbe C<sub>1</sub> telle que les tangentes en M à C et en M<sub>1</sub> à C<sub>1</sub> se coupent constamment sur l'axe Ox.

15909. (H. L. TRACHTENBERG, B.A.)—ABC is a triangle; X is the point of contact with the side BC of the escribed circle corresponding to A. Show that an ellipse can be described with A, X as foci passing through B and C, and show that the lengths of the semi-major axis, semi-minor axis, and semi-latus rectum are respectively  $\frac{1}{2}s$ ,  $\sqrt{[s(s-b)(s-c)/a]}$ ,  $2(s-b)(s-c)/a$ ; also eccentricity = AX/s.

15910. (Professor NANSON.)—P, Q, R are points on three diameters of an ellipse. Show that the conjugates of these diameters meet QR, RP, PQ in collinear points.

15911. (K. S. PATRACHAN.)—The normal at a point P of an ellipse meets the curve again at Q; p and q are points on the auxiliary circle corresponding to P and Q. If the angle pCq be bisected by CR, show that CP and CR are in the directions of conjugate diameters.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9915. (ARTEMAS MARTIN, LL.D.)—A point is taken at random in the surface of a given circle and two random chords drawn through it at right angles to each other. Find the average area of the quadrilateral formed by joining the extremities of the chords.

10184. (Professor SCHOUTE.)—Find the sum of the series

$$\frac{1}{1} + \frac{1}{2+3} + \frac{1}{4+5+6} + \frac{1}{7+8+9+10} + \dots$$

10780. (H. MCCOLL, B.A.)—If  $f(\theta)$  denote the cubic expression  $x\theta^3 + y\theta^2 + z\theta + u$ , and if  $\phi(\theta)$  denote  $u\theta^3 + z\theta^2 + y\theta + x$ , so that  $f(\theta) = 0$  and  $\phi(\theta) = 0$  are equations with reciprocal roots, find the chance that the roots of the two quadratic equations  $f'(\theta) = 0$  and  $\phi'(\theta) = 0$  are all four real, the coefficients x, y, z, u being each taken at random between -u and u.

11831. (Professor DÉPREZ.)—Soient P, Q deux points d'une sphère, les arcs AP, BP, CP rencontrent les côtés correspondants BC, CA, AB du triangle sphérique ABC aux points A', B', C'. On a la relation  $\cos PQ = \cos AQ (\sin PA'/\sin AA') + \cos BQ (\sin PB'/\sin BB') + \cos CQ (\sin PC'/\sin CC')$ .

12154. (Professor CATALAN.)—Si a, b, c sont les longueurs des côtés d'un triangle rectiligne, démontrer qu'on a

$$a^2b(a-b) + b^2c(b-c) + c^2a(c-a) \geq 0, \\ ab^2(b-a) + bc^2(c-b) + ca^2(a-c) \geq 0.$$



12155. (Professor ORCHARD, M.A., B.Sc.)—If the Earth's velocity round her axis varied inversely with her velocity round the Sun, how would this affect the (true) weight of objects on her surface?

## NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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## THE LONDON MATHEMATICAL SOCIETY.

Thursday, November 9th, 1905 (Annual General Meeting).—Prof. A. R. Forsyth, President, in the Chair.

Messrs. P. I. Anderson and J. A. H. Johnston were elected members.

The De Morgan Medal was presented to Dr. H. F. Baker.

The Council and Officers for the ensuing Session were elected, as follows:—President, Prof. A. R. Forsyth; Vice-Presidents, Prof. W. Burnside and Sir W. Niven; Treasurer, Prof. J. Larmor; Secretaries, Prof. A. E. H. Love and Mr. J. H. Grace; other members of the Council, Dr. H. F. Baker, Mr. A. Berry, Mr. J. E. Campbell, Prof. E. B. Elliott, Dr. J. W. L. Glaisher, Mr. G. H. Hardy, Dr. E. W. Hobson, Major P. A. MacMahon, Mr. A. E. Western, Mr. A. Young.

The following papers were communicated:—

"On Improper Multiple Integrals," Dr. E. W. Hobson.

"On the Arithmetic Continuum," Dr. E. W. Hobson.

"On the Arithmetical Nature of the Coefficients in a Group of Linear Substitutions (second paper)," Prof. W. Burnside.

"On the Asymptotic Value of a Type of Finite Series," Mr. J. W. Nicholson.

"On an Extension of Dirichlet's Integral," Prof. T. J. P.A. Bromwich.

"The Continuum and the Second Number-Class," Mr. G. H. Hardy.

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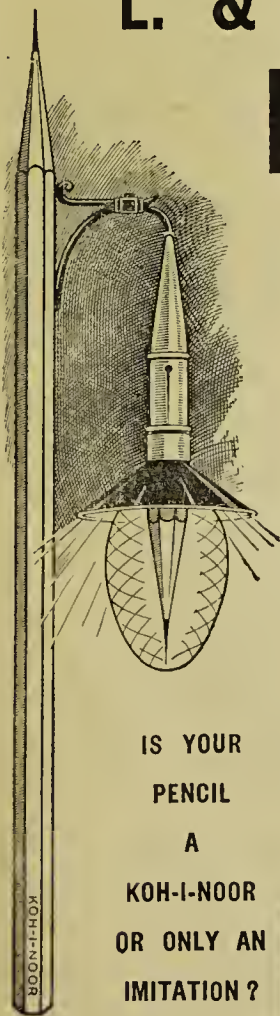
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