DIABLO HAWK, a DoD nuclear test now in its final phase of preparation, has been the occasion for many Sandians to commute to the Nevada Test Site this summer. The Site, 75 miles north of Las Vegas, occupies 1350 square miles of desert and mountain terrain, is larger than state of Rhode Island. Site headquarters—Mercury—is a few miles up this road, has living quarters and administrative offices. Turn to pages 6 & 7 for photo feature on the upcoming experiment.

Status of the Stockpile

Nuclear Weapons Aging But Enduring

The W25, nuclear warhead for the Genie air-to-air missile first produced in 1957, was originally qualified for a stockpile life of four years. It has been operational now in excess of 20 years. Many other weapon systems are approaching similar ages.

There are many Sandia organizations directly concerned with the quality of the stockpile and any related aging questions. Chief among them are the design and development groups. Another organization, the Quality Assurance Advanced Planning Division 9517 under Frank Muller, has a particular interest in determining that Sandia’s Quality Assurance programs are up to the task of detecting aging or other problems which might arise during the operational lives of weapons. Frank points out that Sandia’s QA program provides an independent appraisal of stockpile quality for DOE, and is the result of teamwork among the groups in the QA departments and the Sandia reliability organization.

“Ageing of the stockpile has not affected our nuclear weapon capability,” Frank states flatly. “From the beginning, emphasis on good engineering and strong development and production test programs has minimized problems. The subsequent QA programs are designed to detect failure, potential failure, materials problems that affect the stockpile well before an operational capability would be jeopardized.

“That doesn’t mean there haven’t been problems with the stockpile,” Frank continues. “We’ve found cracked plastics, a silicon lubricant that was harming polyethylene cables, discovered some problems involving outgassing and corrosion—and a number of other difficulties. But our evaluation programs detected these problems in time, and they were taken care of expeditiously with repair, retrofits or new designs.”

The 10,000th weapon system test was performed last year. Most tests are run in the laboratory at Pantex by Bill Sherman’s Division 9524, but flight tests where military crews fire missiles or drop bombs containing instrumentation and telemetry in lieu of the nuclear packages are also included. Results of all tests go into data banks along with data from component testing and any other sources that indicate stockpile status. The data bank now covers more than 20 years of testing.

“In the beginning,” Frank says, “QA did a lot more sampling—something like 800 weapon tests annually. Now that we have a good actuarial base, we’ve fine-tuned sampling requirements, testing less than 400 weapons each year, yet maintaining the same reliability levels as before.

“One of the most interesting discoveries in analyzing accumulated data has been the realization that they can be used as an actuarial base. Since each weapon design is more modern, more compact, more sophisticated than its predecessors, it came as a surprise that defect patterns and frequencies don’t seem to change much from weapon program to weapon program.”

In summing up, Frank says: “The most gratifying thing, however, is that the data reveal a consistently high degree of excellence in weapon technology, the result of excellent engineering. We’re confident the weapon stockpile will remain in a constant state of readiness.”
Afterthoughts

At Nevada Test Site—We spent a few days at NTS last week gathering material for a story on the upcoming Diablo Hawk event. The Test Site is impressive, the Labs’ work at the Site is impressive, and the Labs’ people there are impressive. We describe that elsewhere in this issue.

There’s one element of the job at NTS that we found sort of bizarre. The hundred or so Sandians now at the Site treat this element matter-of-factly, but a non-club member like myself finds the notion of weekly commuting from Albuquerque to Las Vegas (say 500 miles), then from Las Vegas to Mercury (say 75 miles), then from Mercury to Rainier Mesa (47 miles), and then deep into N-Tunnel (one or two miles) where one finally arrives at the work site—well all of this is not your ordinary, run-of-the-mill 8 to 4:30 job.

Once the Sandians from Albuquerque are on Site, they generally remain there through the week, returning home Friday evening. But being on Site means a daily 47-mile commute from Mercury to Rainier Mesa, and I observed that most depart for work from Mercury (where there are living quarters) at 7 a.m. and return well after 6 p.m. The long days are made somewhat more bearable by the circumstance that Mercury itself tends to the monastic and, as one Sandian noted, most don’t object to the additional hours in the tunnel—“might as well spend the time here as back there,” was the way he phrased it.

High technology is the sum and substance of the Sandia experiments in N-Tunnel. And a subdued excitement is the prevailing atmosphere as shot day approaches. The long journey into N-Tunnel is coming to its end.

**

The automobile & love—I call it "People develop very sensuous relationships with their cars. They wash them, scrub them, paint them, speak softly to them, name them, and in general decorate them... At times we become irritated with them, as we might with loved ones, but for the most part we are pleased with our symbols of technology that miraculously take us to and from our real and symbolic destinations day after day... We wrap ourselves in automobiles; they surround us and thus become extensions of ourselves. Marshall McLuhan is quite right when he suggests that we drive to and from work in America for a story on the upcoming Diablo Hawk event.

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ECP at Work

The Albuquerque Hearing and Speech Center—A unique feature of this agency, which serves people with hearing or speech problems, is its Hearing Aid Bank. The agency recycles used hearing aids and gives them to people who cannot afford their purchase. The Center has a school for children with hearing troubles, provides speech therapy for all ages, language classes for children two to five years of age, and a complete audiological testing program including hearing aid evaluation. The agency also has a sound level testing meter which is used to calibrate therapeutic equipment. But its uses are not limited to the Center. A trained staff audiologist conducts noise level tests at job sites for employers or employees who are concerned about noise levels. Maryan Holp is Executive Director of this agency that is supported in part by Sandia’s Employee Contribution Plan.

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Sewell Confirmed in DOE Post

A familiar figure in the nuclear weapons complex has been confirmed by the Senate as DOE’s Assistant Secretary for Defense Programs. He is Duane Sewell, formerly Deputy Director at Lawrence Livermore Laboratory.

A veteran of the Manhattan Project in World War II, Mr. Sewell is perhaps best known to Sandians through his management roles in several atmospheric test series, including Operations Upshot-Knothole, Castle, Teapot, Redwing and Hardtack. He has been Deputy Director at LLL since 1975.

In his new post (in addition to overseeing Intelligence and Arms Control, Laser Fusion, Safeguards and Security), the Assistant Secretary oversees DOE’s Military Applications office (MA, successor to DMA). This office is principal coordinator for weapons programs underway at Sandia. In 1977, Mr. Sewell was awarded ERDA’s Distinguished Associate Award.

Wade Named to Head MLC

James Wade has been confirmed by the Senate to be Chairman of the Military Liaison Committee, the Pentagon-based MLC (DoD’s official channel to DOE) works closely with DOE’s Defense Programs office in matters relating to nuclear weapons.

A West Point graduate, Mr. Wade has a PhD in physics and, in 1961, was assigned by the Army to Work at LLL. Since then he has worked in numerous organizations in DoD and held several high-level posts, including Director, Strategic Arms Limitation Task Force. His most recent assignment in DoD has been as Assistant for Analysis in the Office of the Undersecretary of Defense, Research & Engineering.

Interpreters Needed

The Albuquerque Chamber of Commerce is expecting 1700 travel directors, members of the Discover America Travel Organization, from 60 countries to convene here Sept. 9-13.

Interpreters are needed as airport greeters and information booth operators at the Convention Center. If you speak any of the following languages, you could help: Spanish, German, Japanese, Arabic, French, Dutch, Italian, Swedish, Norwegian, Turkish, Portuguese, Greek, Danish, Finnish, Mandarin Chinese, Indonesian, Persian, Korean, Siamese, Thai, and Serbo-Croatian.

If interested, call Ruth Hashimoto, 255-8097, or the Chamber of Commerce, 842-0220.
Holometry ‘Sees’ Pressure Vessel Weaknesses

Like a “before” picture superimposed on an “after,” a new Labs holographic technique helps to weed out defective pressure vessels. The traditional test, by mechanical gaging, is less sensitive and less complete than the holographic interferometry (or holometry) used by Dan Tichenor in Acceptance Technology Division 8444.

Dan makes one holographic exposure before the test vessel is pressurized and, on the same photographic plate, another after it has been pressurized and vented—a deliberate double exposure. The result is two superimposed holographic images that interfere (hence, holographic interferometry) with each other. The alternating bright and dark lines, or fringes, created comprise a sort of topographic map, revealing pressure-induced deformations in the vessel (see photos).

All vessels deform permanently during pressurization. The trick is to detect those that deform unevenly, a consequence of weak spots where failure is likely to occur.

Holometry is significantly more sensitive to minute deformations than mechanical gaging. A hologram produced by a helium-neon laser, for example, shows deformations as small as 0.3 micrometers compared with the 10 micrometers achievable by mechanical before-and-after gaging. And gaging can cover only a limited number of surface points while holometry looks at an entire surface. Such sensitivity and coverage are important with high-pressure vessels because displacements that indicate weakness are too small to be detected by gaging.

Says Dan, “Although holometry is not used frequently in non-destructive testing, it does provide capabilities that other techniques don’t. Inspecting these pressure vessels is a task well suited to holometry.”

Sympathy

High Technology Brings New Look to Shops

In the evolution of nuclear weapons, systems and components have continually shrunk in size while becoming more complex, more sophisticated and with no reduction in reliability.

This advanced technology could not have been accomplished without the development of exotic materials and processes—a partial listing would include ferroelectric and piezoelectric ceramics, glass ceramics, microcrucibles and microelectronics, solid state devices with ion implantation, thermal batteries, thin film coatings and kevlar composites.

Moving from research through engineering to fabrication and finally to technology transfer to outside suppliers, these advances have placed additional demands on the Development Laboratories.

In their early days the Development Shops were primarily an assemblage of precision machinists. Through the years process development activities and capabilities have been added to keep pace with advancing technology.

Newest of these is the process analysis group working in Development Laboratories Division B 9572 under Gene Frye.

"Control is the key word," Gene Frye says. "When you consider all of the steps required in making an active ceramic, for example, from mixing, pressing, bisquing through high firing cycles and testing, then it becomes obvious that we need understanding about what is happening to the material in every stage. We need to know what is happening in order to produce what the researchers and developers have specified. They need to know exactly what is happening so that the process is repeatable, so that changes and improvements may be made. Our Process Analysis Lab gives us the answers."

Capabilities of the lab include thermal analysis—characterization of materials at various temperatures by measuring the thermal expansion, glass transition temperature, heat capacity, weight loss, as well as endothermic and exothermic transitions. Thermal properties can be evaluated isothermally or dynamically in various environments. Microscopy—potting, polishing and coating samples prior to providing electron microscope scans at enlargements up to 20,000X (at these magnifications the highly polished surface of a material may resemble the craggy landscape of the moon). Samples are often etched to enhance surface morphology; physical measurements and mechanical properties—including true and bulk density, surface area, porosity, particle size distribution, compressive strength, tensile strength, flexure strength and modulus of rupture.

"We quantify materials properties," Bob Courtney says. "We serve the shops by evaluating incoming raw materials, and by providing rapid analysis of process conditions, final product quality assays and analysis of potential substitute materials. The nature of the work varies greatly; it's sometimes routine, but always demanding."

Major instruments used in process analysis include:

- JEOL, JSM-2 scanning electron microscope
- ISI mini-scanning electron microscope
- Bausch and Lomb metallograph
- Leitz macro-camera
- Surface area-pore volume analyzer
- Automatic helium-air pycnometer
- Sedigraph 5000 particle size distribution analyzer
- Instron (mechanical properties)

"Most of these instruments originated as tools for basic research. In recent years they have been increasingly applied to understanding fabrication processes," Bob says. "The scanning electron microscope, for instance, was once an exclusive R&D laboratory instrument."

Although assignments vary, Jake Young usually operates the scanning electron microscope, Tino Casaus makes the mechanical properties analyses, and John Lanoue performs thermal analyses.
Bill Atkins Is Down On Pollution

"A real educational experience," is how Bill Atkins (1213) describes his six years on the New Mexico Environmental Improvement Board. An active member of the New Mexico Citizens for Clean Air and Water, Bill was first appointed to the board in 1972 by Governor King; his current term expires in 1981.

"The board drafts air, land and water use regulations," Bill explains. "Once the regulations become law, the state's Environmental Improvement Division takes over. We are a state version of the federal EPA."

The EIB works in a number of areas: subdivision regulations; insect and rodent control; radiation protection; solid waste control; water supplies; food protection; subdivision regulations; insect and rodent control; radiation protection; solid waste control; water supplies; food protection.

The EIB drafts air, land and water use regulations. "The board's time is by far devoted to air quality," particularly in the Four Corners area.

"The volume of operation in this area makes pollution control a tremendous concern," Bill says. "The Four Corners Power Plant, with five generating plants, consumes 50 tons of coal per minute! This combination of other plants in the area, today produce more sulfur dioxide and nitrogen oxide than all the industrial and power plants in Los Angeles."

"Here we're concerned with 'room in the air shed' because of the industry already established and the proposed additions," Bill continues. "Two companies have developed preliminary plans for complex of seven coal gasification plants. To produce pipeline quality gas, methanation process plants will also have to be included."

The city of Farmington, closest to the Four Corners industry, is already in a boom town situation. And more people will be needed to operate the new plants. "The predicted population for Farmington-Aztec metropolitan area in the next 10-15 years," says Bill, "is 175,000 people."

And these people, as in other communities, will likely drive cars, buy a home in a new subdivision, use water, and contribute tons of solid waste to the local landfills. Pollution problems are coming unless we prepare wise regulations."

Creating a regulation takes time and effort. A public hearing is first held to get technical testimony and the public's input. Of incidental interest, two other Sandians have given technical testimony at several EIB hearings. They are Bob Luna (5432), representing the Environmental Control Board of Albuquerque and Bernalillo County, and Hugh Church (5335), representing the New Mexico Lung Association.

The environmental impact statements now required by law are also considered. Typically, these hearings last three to four days.

"Following the hearing," Bill says, "the real work begins. We usually allow a 30-day period for public written comment to be submitted for the record, meanwhile studying the testimony and any other pertinent information. Our final regulation is based on the technical feasibility of pollution controls, economic considerations, effect on visibility and the impact of the pollutants upon human, plant and animal life."

In some areas the economic effects of a stringent regulation must be taken into account. This is true in the copper mining areas around Silver City where residents, unions and employers alike have called for minimal controls. Jobs are preferred to strong environmental controls.

Bill notes the same attitude at the Four Corners Power Plant which is operated by the Arizona Public Service Co. On the other hand, in the same area, the San Juan Generating Station, operated by New Mexico's Public Service Co., has voluntarily adopted the best pollution-control technology available. And Utah International, which strip mines the coal for use in the power plants, works closely with NMSU in a program to reclaim and restore the land disturbed by strip mining.

When the EIB reaches a decision it can be—and has been—challenged through the courts. But once law, the state agency (EID) monitors the concerned industry to assure compliance. The same agency works with the Environmental Improvement Board, informing members of latest pollution control technologies and making suggestions to tighten or loosen certain controls.

Occasionally no regulation can be readily formulated. "The pecan growers around Las Cruces came to us, complaining of damage to crops and trees from sulfur dioxide emitted from copper smelting in the area. At the hearing, testimony was offered on sulfur dioxide damage to pine trees in a very wet climate. But this was a new problem in the arid southwest. Ultimately, we recommended a research program at NMSU, funded by the state, to determine the effects of this chemical on the pecan trees."

"Basically, I feel good about what the board has accomplished," Bill concludes. "We cannot satisfy everyone but we'll continue to protect human, plant and animal life in any situation we can."

SANDIA VOLUNTEERS for the United Negro College Fund telethon practice their telephone technique. From left, they are Geronimo Fragua (9712), Vanessa Haggerty (5710), Wilma Salisbury (3522) and Larry Holmes (2642). Hugh Jones (3511) and Harvey Colfer, UNCF committee member, monitor operation. Telethon takes place Sunday, Aug. 20, from 2 to 5 p.m. on Channel 7, aims to raise money for 41 predominantly black colleges and universities with aggregate enrollment of 48,000.
**Final Preparations Underway for Diablo Hawk**

Each Monday morning a planeload of Sandians departs for the Nevada Test Site to complete preparations for the upcoming Diablo Hawk nuclear test, an event sponsored by the Department of Defense. Sandia is one of several participants and the Lab's principal effort is directed toward weapons effects experiments—exposing weapon hardware to the radiation emanating from a nuclear detonation to determine if the hardware will survive and function. The high level of radiation corresponds to that which one of our weapons might encounter in space from a nearby nuclear burst, that is, in a missile/anti-missile missile encounter.

As part of this effort, a newly developed digital data system will be employed for the first time in Diablo Hawk for the retrieval and recording of the tens of thousands of bits of information from instrumentation associated with the nuclear event. This new system is the responsibility of Bob Rutter's Data Systems Development Division 1115.

With discussions of a comprehensive test ban in the international wind, experimenters from all the nuclear laboratories began some time ago to look upon Diablo Hawk as just possibly their last nuclear event for an unforeseeable length of time. As a consequence, the number of experiments has increased several-fold over original estimates, and the entire Diablo Hawk operation has seen a corresponding increase in complexity.

The fielding of Sandia's part of Diablo Hawk is centered in Carter Broyles' Directorate of Field Engineering 1100. They, along with experimenters from development groups throughout Sandia, have been preparing for this event for over two years. Organizations participating in Diablo Hawk include 2110, 2150, 2160, 2350, 2510, 2530, 3310, 4330, 4340, 5130, 5130, 5130 and 5230.

Arming and firing support for the LLL device is led by Ray Peabody (1132), and the DoD-sponsored health physics and radiation safety effort is headed by Jim Metcalf of Health Physics Division 3312. Frank Dean of Experiments Planning Division 1111 is Technical Director and John Allen of Field Instrumentation Division 1124 is the Project Engineer for Diablo Hawk. These photos show some of the people and some of the work associated with the upcoming event.

N-TUNNEL EXPRESS carries people and material to experiments located mile-and-a-half down tunnel. Tunnel is actually complex of two main tunnels with innumerable drifts and alcoves. More than ten nuclear shots have been staged here.

TOP OF RAINIER MESA, at 7600 ft. elevation, offers view of N-Tunnel complex and portal immediately below. Area 12 Camp in middle ground. Tunnel is 47 miles from Mercury where workers reside during week. Sandia has 25 permanent staff who live in Las Vegas and work at the Test Site. They are from NTS Staff Division 1131, NTS Instrumentation Section 1123-1, AF&F Systems Division 1132, and Field Support Logistics Division 1135.

JOHN ALLEN (1124) & FRANK DEAN (1111) are, respectively, Sandia's Project Engineer and Technical Director for Diablo Hawk.
JISCUSSING instrumentation difficulty are (from left) John Allen, Dave Straub (1124), Jim Lohkamp (4343), and Harry Evoly (EG&G). With over five hundred experiments, instrumentation and data retrieval become major challenge.

WORKERS sign out at end of day after debarking from train. Sign in/out procedure is safety measure.

CHECKING installation of new digital data systems are Ruth David, Larry Ebinger, and Steve Lenz, all from Data Systems Development Division 1115. Diablo Hawk is first full scale tryout of the new data system.

MOTIF of Diablo Hawk nuclear shot is this vaguely disreputable creature with horns.

DISCUSSING instrumentation difficulty are (from left) John Allen, Dave Straub (1124), Jim Lohkamp (4343), and Harry Evoly (EG&G). With over five hundred experiments, instrumentation and data retrieval become major challenge.

HOW a tunnel is created is shown in this photo, taken in nearby G-Tunnel. Electrically driven bits at head of this Alpine mining machine chew into soft volcanic tuff; loose material is then disgorged at tail end of machine for removal. Geologist Bill Vollendorf (1133) glances toward camera.

MOTIF of Diablo Hawk nuclear shot is this vaguely disreputable creature with horns.
**Volleyball**—An Organizational meeting for the fall volleyball league is set for Aug. 22 at 4:45 p.m. at the C-Club in the upstairs Staff Room. New and old members, coaches and managers should plan to attend.

Flag football—The organizational meeting for this activity takes place on Aug. 21 at 4:45 p.m. in the C-Club’s ballroom. Players, coaches, managers and team reps should plan to attend.

Swimming—The C-Club is sponsoring a Master’s Swim Meet on Saturday, Aug. 26, at the Club’s Annex Pool. This is the first event of its kind offered by the Club. A “Master” is he/she who is age 25 or over. Starting time is 1 p.m. Entries: from Bob Giersberg at the C-Club, room B5A, or from the LAB NEWS office (Bldg. 814).

Tennis—The Labor Day Weekend sees the 1st Annual Coronado Club Open Tennis Tournament, with events in men’s and women’s singles and doubles, as well as mixed doubles. Play starts at 9 a.m. each day. Entries (at $5) from Bob Giersberg at the C-Club, room B5A, or from the LAB NEWS office (Bldg. 814). Entry deadline is 12 noon, Aug. 28.

Running—Bob Giersberg is organizing a 10-mile road race for Saturday, Aug. 26, to start at 9 a.m. from the Base gym. The entry fee of $5 is good for one 1-T-shirt, and you sign up the morning of the race. The C-Club will give awards to the top three in each age group.

At this late hour, if you still need an entry for Sunday’s La Lu Trail race, LAB NEWS (Bldg. 814) has a supply.

We also have a supply of entries for the 1st Annual Old Santa Fe Trail Run, “a 10 km race and a 5 km fun-run” on Sunday, Sept. 3, at 9 a.m.

Biking—Saturday, Aug. 26, is the date of the Sandia Crest Bike Race, with the pros going the distance from Madrid to the Crest and those less ambitious starting in San Antonio at the foot of the mountain—a 13-miler with its own brand of pain. At this writing we have no further information on the race.

Women’s bowling — The Women’s League now has openings for persons who wish to bowl regularly or as a substitute. Active and retired Sandians, DOEans, and wives of employees are eligible. For more information, call Bonnie Vigil (1223) on 4-2704.

Softball—A slow-pitch tournament is being set up for Sept. 8, 9 and 10 by the C-Club. Teams wishing to enter should contact Bob Giersberg at the Club on 4-8486. Deadline for entries is Sept. 4 at 4 p.m.; cost is $30 per team.

“Pikes Peak Or Bust”—We don’t know how many busted but 900 people attempted to conquer the mountain in the Pikes Peak Marathon on Sunday, Aug. 13. The ascent was 14.2 miles with a 7700-foot gain in elevation. Five of those people were Sandians. With incomplete information on times and placements, we can report the following: Ron McCurley (7529) finished 6th overall, 1st in the 30-35 year age group, with a time of 2 hours, 51 minutes. Pete Richards, 29th overall, 3rd in the 40-49 age group; Jim Harrison (4511), 40th overall; and Irv Hall (1223), 227th.

Margaret Johns (1222) not only completed the run up the mountain, but also completed the descent, finishing 8th or 9th among the women participating.

**Colloquium Committee Wants Suggestions**

The Sandia Labs Colloquia offer a variety of speakers discussing subjects ranging from the very technical to the very general. Speakers are invited by the Colloquium Committee.

“We need help,” says Crawford MacCallum (5231), chairman. “If you know of a good speaker or are interested in a particular subject, please contact any Colloquium Committee member.”

Members are Bob Walko (2352), Dale Schaefer (5814), John Panitz (5114), Ken Bergeron (5241), Gil Cato (5453), Joe Polito (5716) and Virginia Padilla (3163), secretary. The committee reports to Al Narath (5000).

ONCE UPON A SUNDAY, Tom Mayer (1247) cycled from his home in town up Juan Tabo Canyon to the La Luz Trail, a very respectable bike hike. Then Tom biked up La Luz Trail, time two and a quarter hours. Then he biked south on the Crest Trail all the way past South Peak down to Tijeras Canyon, time five hours. And returned home, some 45 miles later. Those who have hiked these steep, rough trails can best appreciate Tom’s feat. To our knowledge, it’s a first and will probably be a last. Tom has since learned that bikes are verboten on these trails. For bike buffs, inset shows gear arrangement—a 50-tooth chain wheel, a 3-speed internal shifter and a 5-sprocket external derailleur, making available a total of 15 speeds. Tom practices cross country technique on Base motocross course.

KOOL & THE GANG came up with a record in the Albuquerque Parks & Recreation Slow-Pitch softball league that’s pretty hard to beat—17 & 3. That gave them the league championship. From left, Clarence Collins (1245), Bernard Alexander (9711), Ed Canty (9718), G. T. Holman (8131), Nathan Wyatt (2336), Monson Smith (9716), and Basil Steele (1764). Happy recliner is manager Vernon Keone (5121). Lacey Learson (9515), Will Jernigan (2341) and Eddie White (1739) didn’t make it for the photo.
In our last issue an article on New Mexico place names, we cited the town of Gurule as one of those named for a Spanish family. We've since learned, from several phone calls and a letter, that Gurule isn't Spanish but French, and thereby hangs a story.

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**Coronado Club Activities**

**The Prisoners Are Loose**

TONIGHT the Prisoners are loose on the bandstand while Pat Corcoran and the C-Club staff go all out serving roast pork and accompanying goodies on the buffet line. Next Friday will see a giant steamship round of roast beef as the buffet feature while Martha Kaye and the Trio play for dancing.

ALSO TONIGHT, C-Club retiree members will be partying on the patio starting at 4:30. Mike Michnovicz and accordion entertain.

TOMORROW ticketholders will enjoy a Shrimp Peal, a disco exhibition by Renee Velasquez, and the big trumpet sounds of Fantastic Freddie and the Mellotones. The rest of us can eat our hearts out.

DISCO is the thing these days. Try it Saturday, Aug. 26, at the Club’s Disco Soul Session. Music by peripatetic Ricci Dustin. Members admitted free, guests pay $1.

MORE DISCO—this one for teenagers—scheduled Thursday, Aug. 24, from 8 to 11. Member parents should pick up tickets at the Club office for their youngsters. Door prizes and a dance contest are part of the fun.

TRAVEL—Pretrip meeting for those planning the Mazatlan trip (seven nights starting Oct. 28) will be held Tuesday, Aug. 22, at 7:30. Signups for this terrific travel package—the Playa Mazatlan, a Fiesta entertainment night, a cocktail party at $875 (dbl.)—close Aug. 21. Still open are four seats on the Cancun trip—seven nights at the Hotel Cancun Caribe for $366 (dbl.) starting Sept. 9. This is last call for the Aug. 26 run of the Cumbres and Toltec scenic railway excursion. Pre-trip meeting is set Monday, Aug. 21, at 7:30 p.m.

The Disneyland package Oct. 25-28 is still open. This includes air fare, hotel, 15-ride book to Disneyland, a tour of Universal Studios and a boat trip to Catalina Island.

More info at the Club office, 265-6791.

UPCOMING EVENTS—Variety Night, Sept. 2; T-Bone & the Jug (Watermelon Mountain Jug Band) Sept. 16.

C-CLUB JUNIOR BOWLERS get organized for the coming season tomorrow at 10 a.m. at San Mateo Lanes. Cis Kelly (5545) invites any C-Club youngster (parents must be members), both boys and girls age 7 through high school, to join the league. At the meeting trophies won at the recent State tournament will be distributed. More info from Cis, 4-6989.

**Events Calendar**

Through Aug. 27 — “Boeing-Boeing,” Barn Dinner Theater, 281-3338.
Aug. 18-20, 25-27—“The Company of Wayward Saints,” Vortex Theater, 8 p.m.
Aug. 20—La Luz Trail run.
Aug. 24-Sept. 10—“Tobacco Road,” Corrales Adobe Theater, performances Thurs. through Sun., 8:30 p.m., 898-1943.
Aug. 26-28—Indian Pueblo Cultural Center Anniversary Celebration, dances, films, lectures, feast, 9 a.m.-7 p.m.
Aug. 27—Hector Garcia performs with the Chamber Orchestra of Albuquerque, UNM Keller Hall, 4 p.m.
Aug. 27, 28—San Augustin Fiesta, Isleta Pueblo.

**Death**

John Sanchez (3172), a service clerk in Archives, died suddenly Aug. 6. He was 36.
He had worked at the Labs since October 1966.
Survivors include his widow and three sons.

**Sympathy**

To Ronnie Sanchez (9571) on the death of his father in Albuquerque, Aug. 7.
To Emiliano Sanchez (9575) on the death of his brother in Belen, Aug. 6.
To Thurman Foreman (3426) on the death of his brother in Wichita, Kan., Aug. 11.

**Hey Joe, Ever Think About Retirement?**

Well Charlie, I used to think about it all the time, but anymore I get bored just from thinking periodic.

Sunset Dills

THE SUN ALSO RISES over the People’s Republic of China and this delegation of engineers from that country was interested in Sandia’s solar energy projects. Jim Leonard, head of Solar Total Energy Test Facility Division 5712, hosted the group as they toured the facility; man at right served as interpreter.