



LAB NEWS

VOL. 30, NO. 17

AUGUST 18, 1978



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.

"Aging 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 work 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/NTS (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--"People develop very sensual relationships with their cars. They wash them, scrub them, polish 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 will have a difficult time getting people to use mass transportation as long as the whole American system offers as its reward the privilege of driving to and from work in comfort and privacy." Michael Marsden, sociology professor at Bowling Green State Univ. *js



Isaac Asimov, a leading scientist and science fictionist, predicts that those of us who survive the 20th Century (a risky assumption?) will have available that most desirable of all educational situations--a one-to-one relationship with an all-knowing intellect. "In the 21st Century," says Asimov, "each of us will have a private information channel accessed by computer to a computerized library containing the mass knowledge gathered by all humanity through all time. This will allow us to study only the subjects that interest us--to learn at our own rate, in our own time." Such computerized educational potential prompts us to poetry that begins, "Send me your bent, your spindled, your mutilated..."

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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 Holpp is Executive Director of this agency that is supported in part by Sandia's Employee Contribution Plan.

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 WWII, 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 1973.

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 weapon 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.

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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

To Paul Heppner (8152) on the death of his mother-in-law in Plymouth, Ind., July 9.

R E T I R I N G



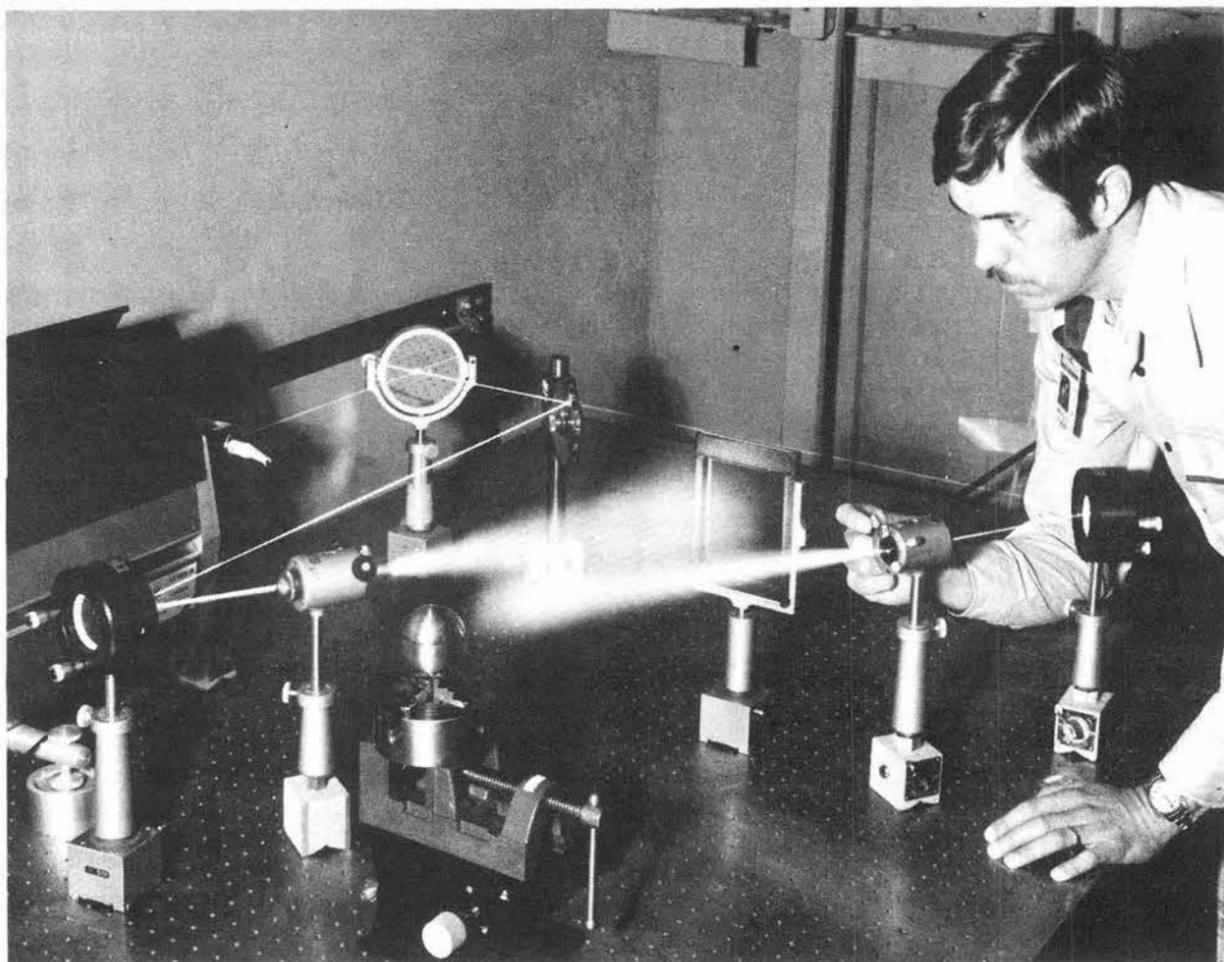
C. H. "Hilt" DeSelm (8200)

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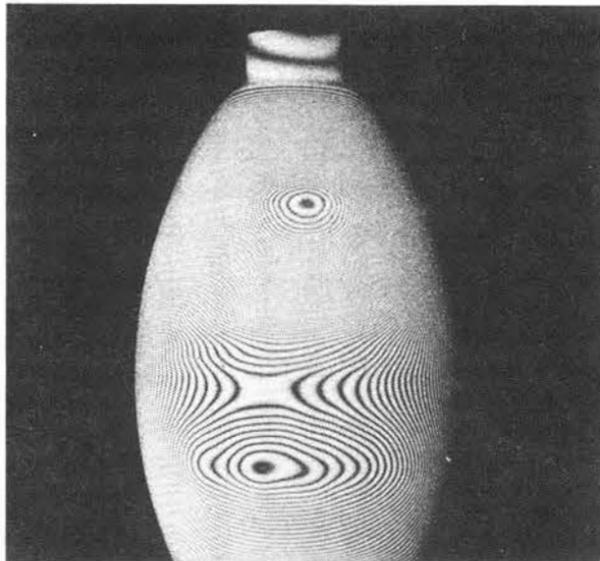
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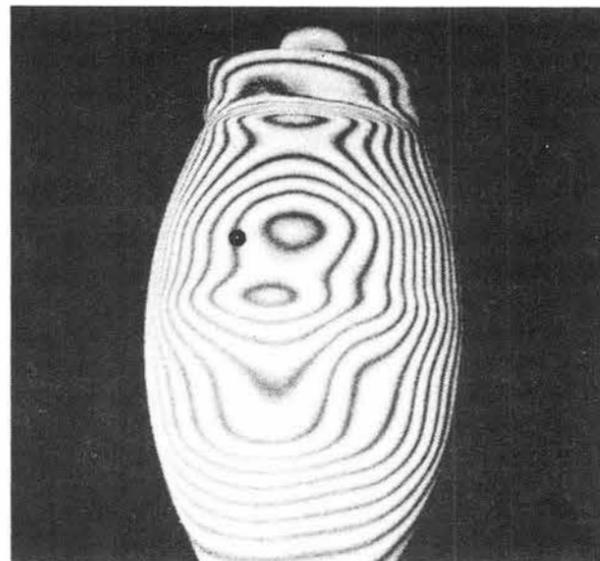
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LABORATORY ARRANGEMENT for obtaining holograms. Dan Tichenor focuses beam on the target, the spherical vessel left of center.



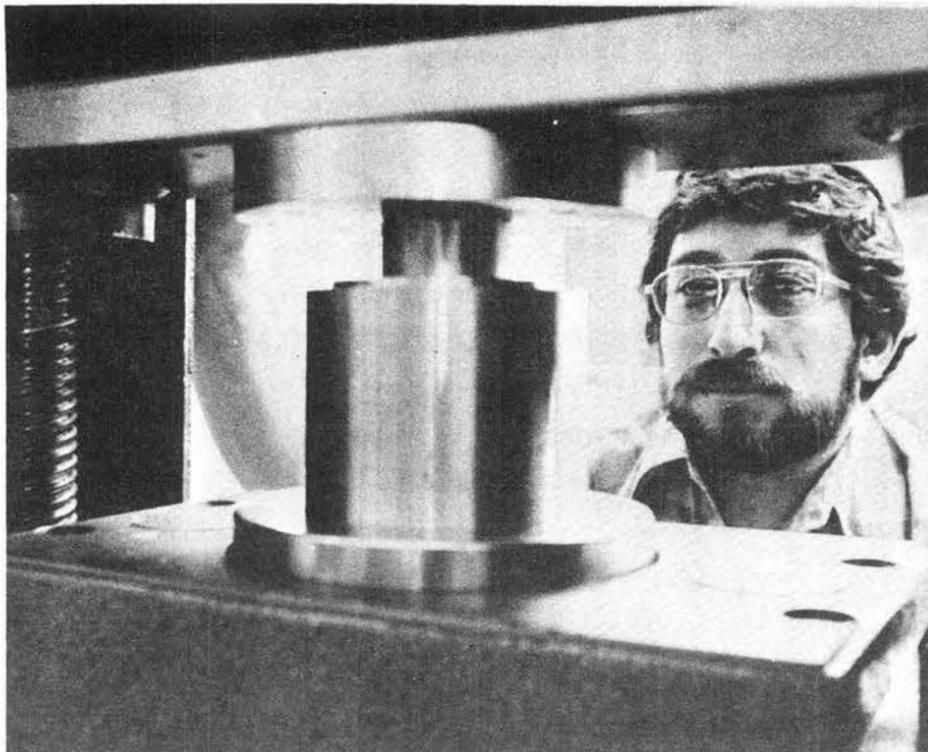
RESIDUAL DEFORMATION of a poor-quality vessel. The bullseye patterns represent local maximum deformations.



RESIDUAL DEFORMATION of a good-quality vessel. Fringe pattern indicates that maximum expansion occurred near center of vessel.



LEAP '78 — Planning is underway for this year's LEAP (Livermore Employees' Assistance Plan) campaign to be held the week of Oct. 2, and agency representatives are currently briefing the LEAP committee. Chairman Frank Murar (8345), center, and other committee members are shown with Candace Ingram, executive director of Hotline, a counseling program specializing in three areas—drugs, alcohol and family problems.



PROCESS TECHNOLOGY ANALYSIS—Above, Tino Casaus makes measurements of mechanical properties of materials using Instron instrument. At right, Jake Young operates scanning electron microscope. Image shows angled surface of solar collector material magnified 300 times.



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, microcircuitry 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. Bob Courtney heads the process analysis group, which includes Jake Young, Tino Casaus and John Lanoue, all trained or in the Sandia Apprentice Programs.

"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)



IN THERMAL ANALYSIS LAB Bob Courtney and John Lanoue operate thermogravimetric analysis instruments.

- DuPont thermal analysis equipment which includes a thermogravimetric analyzer, differential thermal analyzer, differential scanning calorimeter and a thermal mechanical analyzer.

"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 make 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; food protection; solid waste control; water supplies for cities; health and safety in swimming pools; and, finally, air quality. Most of the board's time is by far devoted to air quality, particularly in the Four Corners area.

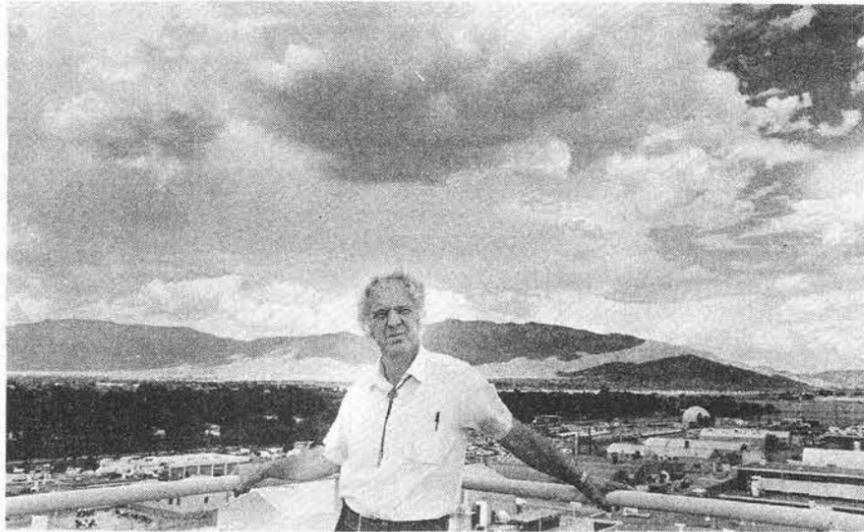
"The volume of operation in this area makes pollution control a tremendous concern," Bill says. "The Four Corners Power Plant, with five generating plants, consumes 20 tons of coal per minute! This complex, plus other plants in the area, today produce more sulfur dioxide and nitrogen oxide than all the 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 a 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 (5333), 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



BILL ATKINS (1213) of the New Mexico Environmental Improvement Board samples Albuquerque's air.

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 pollutant 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 Collier, 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

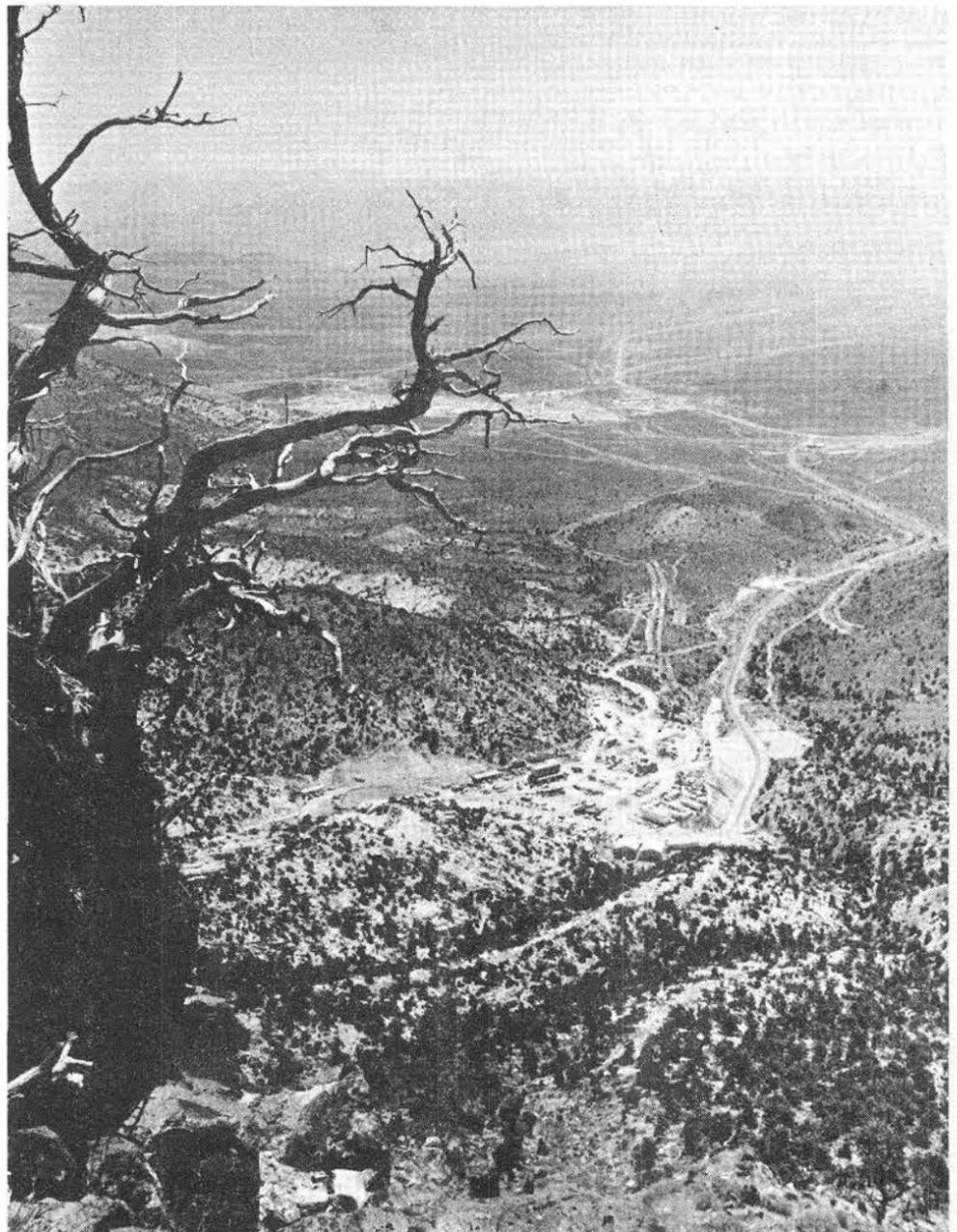
Each Monday morning a planeload of Sandians departs for the Nevada Test Site to complete preparations for the upcoming Diablo Hawk nuclear test, an event sponsored by the Department of Defense. Sandia is one of several participants and the Labs' principal effort is directed toward weapons effects experiments—exposing 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 and 5230.

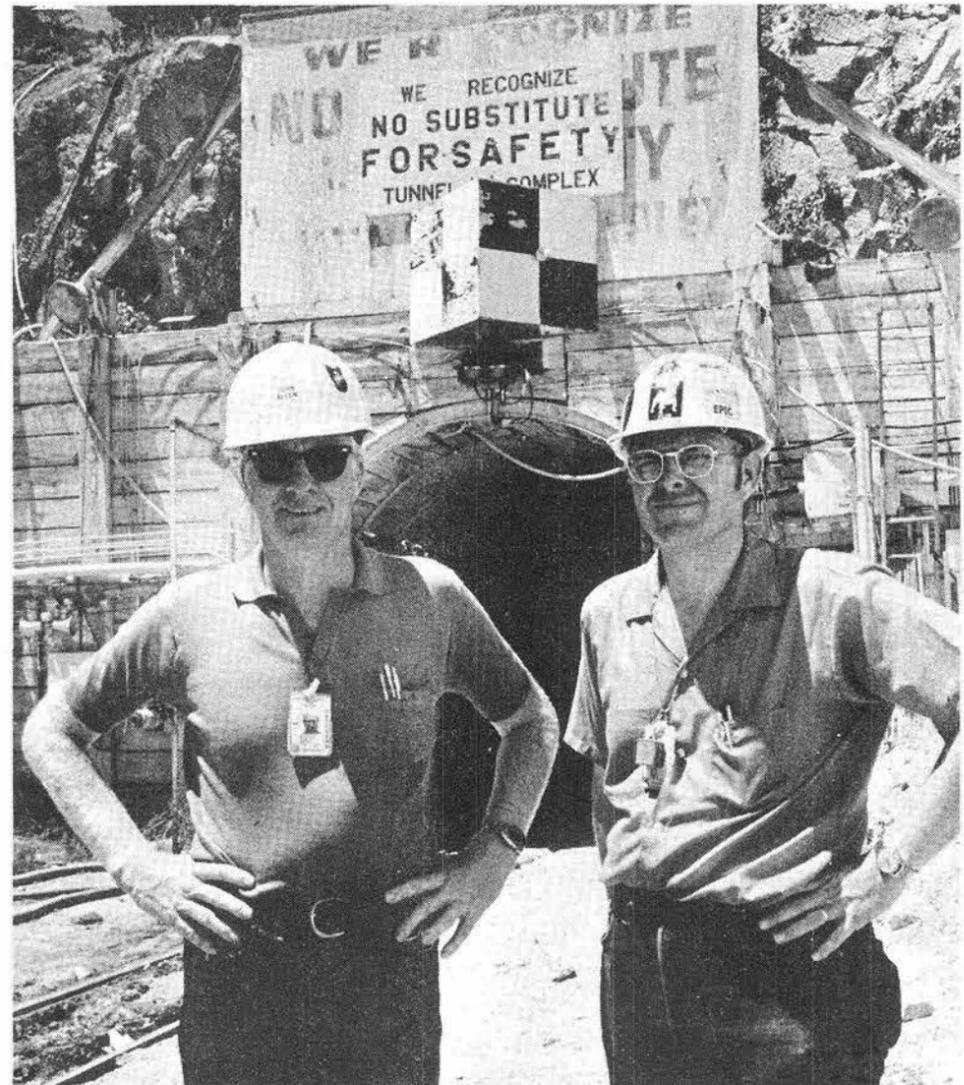
Arming and firing support for the LLL device is led by Ray Peabody (1132), and the DoD-sponsored health physics and radiation safety effort is headed by Jim Metcalf of Health Physics Division 3312. Frank Dean of Experiments Planning Division 1111 is Technical Director and John Allen of Field Instrumentation 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.



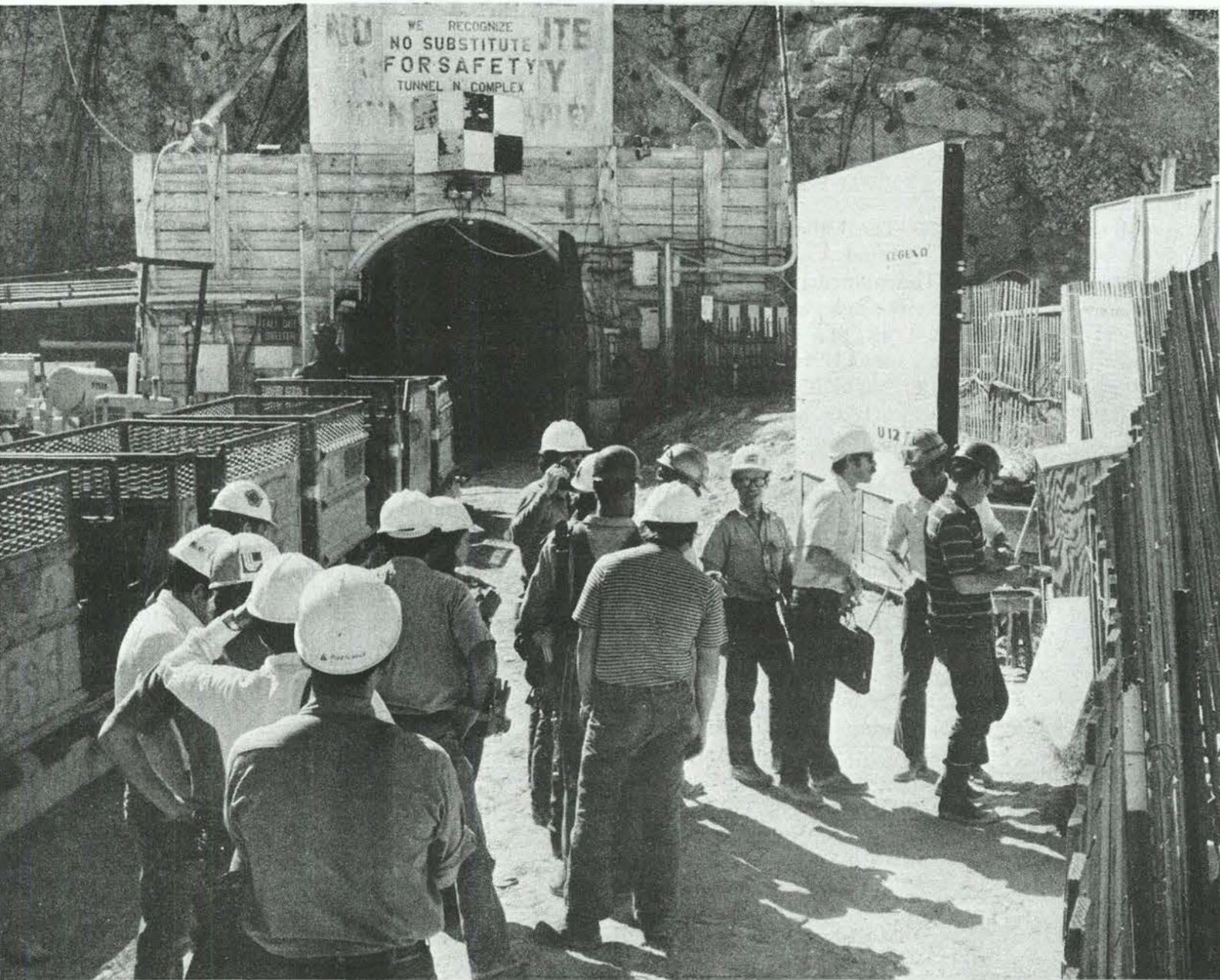
TOP OF RAINIER MESA, at 7600 ft. elevation, offers view of N-Tunnel complex and portal immediately below, Area 12 Camp in middle ground. Tunnel is 47 miles from Mercury where workers reside during week. Sandia has 25 permanent staff who live in Las Vegas and work at the Test Site. They are from NTS Staff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



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.



JOHN ALLEN (1124) & FRANK DEAN (1111) are, respectively, Sandia's Project Engineer and Technical Director for Diablo Hawk.



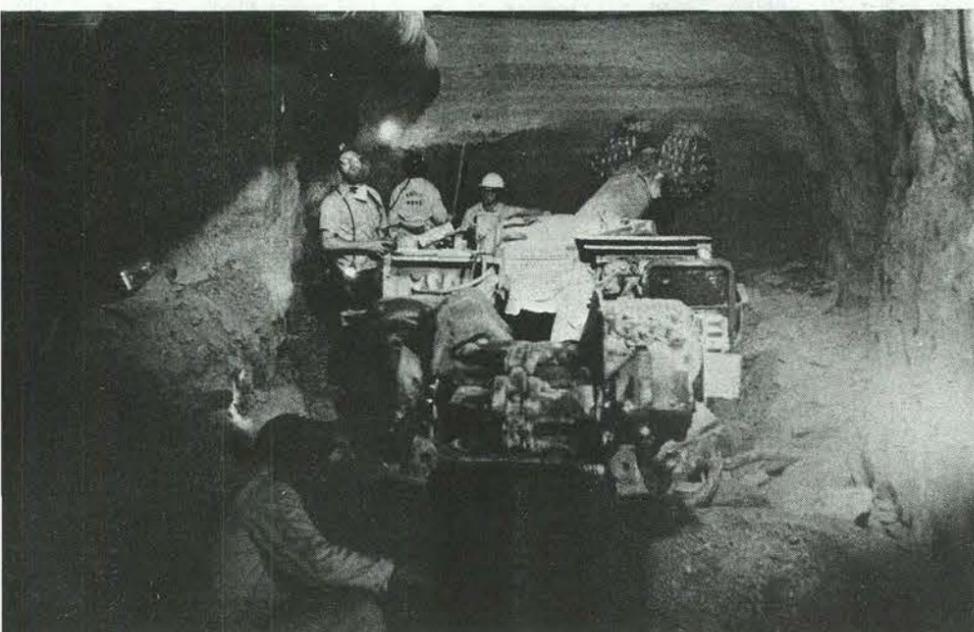
WORKERS sign out at end of day after debarking from train. Sign in/out procedure is safety measure.



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



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.



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.

FUN & GAMES

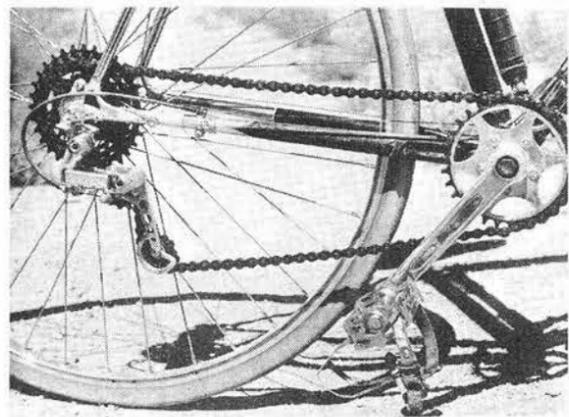
Volleyball—An Organizational meeting for the fall volleyball league is set for Aug. 22 at 4:45 p.m. at the C-Club in the upstairs Staff Room. New and old members, coaches and managers should plan to attend.

* * *

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



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 30-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.

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 \$3): 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 \$3 is good for one 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 Luz 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 Antonito 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.

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"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 placement, 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, 31 minutes. Pete Richards, 29th overall, 3rd in the 40-49 age group. Jim Harrison (4311), 40th overall; and Irv Hall (1223), 227th. Margaret Johns (1282) 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 Cano (5423), Joe Polito (5716) and Virginia Padilla (3163), secretary. The committee reports to Al Narath (5000).

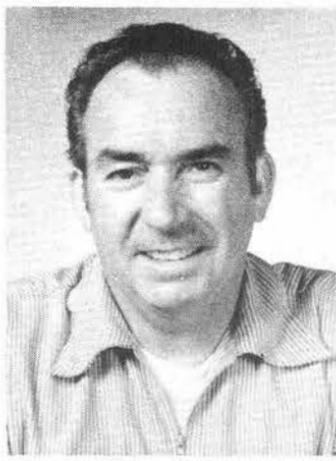


KOOL & THE GANG came up with a record in the Albuquerque Parks & Recreation Slow-Pitch softball league that's pretty hard to beat—17 & 3. That gave them the league championship. From left, Clarence Collins (1245), Bernard Alexander (9711), Ed Canty (9718), G. T. Holman (5131), Nathan Wyatt (2336), Manson Smith (9718), and Basil Steele (1764). Happy recliner is manager Vernon Koonce (1531). Lacey Learson (9515), Will Jernigan (2341) and Eddie White (1739) didn't make it for the photo.

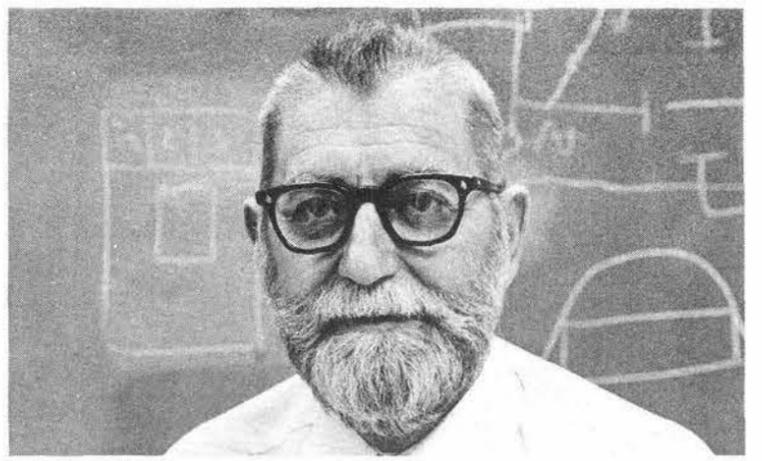
MILEPOSTS

LAB NEWS

AUGUST 1978



Tony Souza - 8257 10



Art Roth - 9526 30



Leo Bressan - 2552 25



Ronald Haines - 9655 15



Norm Toly - 8271 20



Robbie Smith - 9651 10



Duane DeWerff - 2336 15



Einar Forsman - 2522 25



Hanloy Quock - 8323 20



Jon Meeks - 8342 15



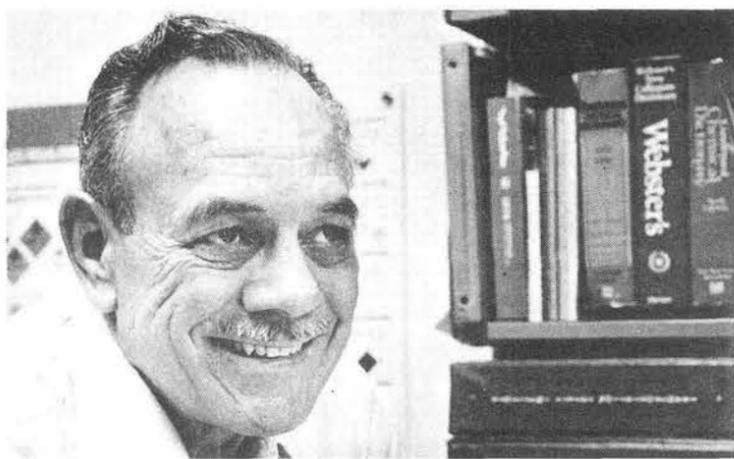
Paul Spellman - 2552 20



Gordon Boettcher - 2355 25



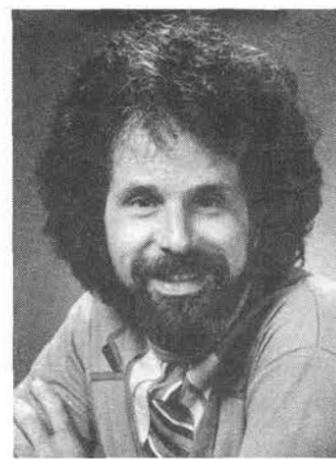
Al Schwarz - 2513 25



James Laffoon - 3423 30



William Vigil - 9511 10



Ted Mamaros - 8123 10



George Adkins - 1324 25



Karen Medeiros - 8441 10



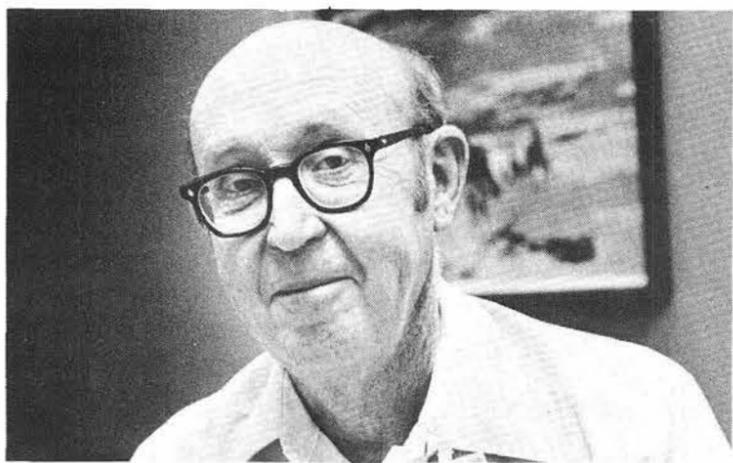
Glenn Mills - 2322 25



Michael Norris - 5120 25



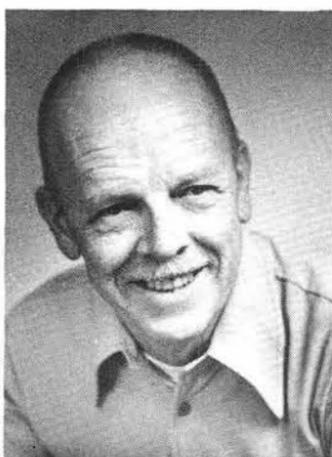
Gary Miller - 1123 15



George Hansche - 1120 30



Bill Myers - 5420 25



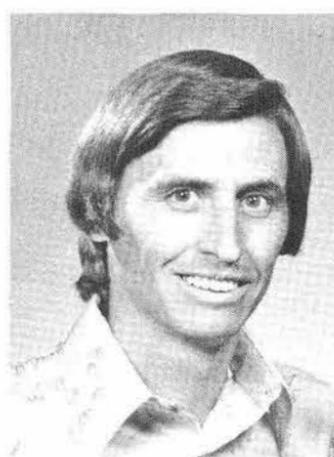
Pete Petersen - 8412 15



James Borders - 5825 10



Pat Lerma - 9714 25



Mel Salazar - 2553 10



Paul Bahr - 2166 25



Marlene Cody - 8256 10



John James - 2166 20



Dick Dillon - 5413 20



Shary Holmes - 9573 30



Richard Marmon - 9574 30



Roy Lee - 8327 10



George Urish - 9484 15



Paul Jesse - 3715 20

Take Note

Air Force Sgt. Randy Wahlert dropped by the LAB NEWS office to ask Sandians to contribute time and skill to collect and/or repair items donated to an upcoming flea market sale in behalf of the muscular dystrophy fund drive. The sale will take place on the weekends of Aug. 26/27 and Sept. 2/3 at the State Fairgrounds flea market; look for the muscular dystrophy sign. If you can help Sgt. Wahlert, or if you have items you'd like to donate to the cause, give him a call on 256-9442. The MD drive is geared to a nation-wide telethon to be held Sept. 3-4. MD shares in Sandia's ECP.

* * *

In our last issue in 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 tale. Seems that back in the late 1600's a French expedition which was to have explored the upper Mississippi foundered on the shores of what is now Texas and dwindled away until, eventually, the few

remaining survivors went to live with the Indians. Among the survivors were two young lads named Archeveque and Grole. Later, Spanish troops seized the two from the Indians and dispatched them to Mexico City. Since Spain and France were mutually hostile, the two were given an option: imprisonment or join Cristobal de Velasco who was recruiting soldiers to proceed north to New Mexico. This was in 1693, not too long after the great slaughter of Spaniards in the pueblo revolt of 1680. Archeveque and Grole didn't ponder the option too long and, a little Hispanicization later, the New Mexico province had two new citizens, Senors Archibeque and Gurule. Fifty-two of the former and 155 of the latter are now listed in the Albuquerque phone book.

* * *

Oppenheimer, Fermi, Einstein, Groves, Tibbets. Got a sense of history? These and other figures from the early days are subjects of a new photographic exhibit at the National Atomic Museum entitled "Building the Bomb." Located on Wyoming Blvd. just south of Sandia's Credit

Union, the museum is open daily to the public from 9 a.m. to 5 p.m. Admission is free.

* * *

The recent IEEE Conference on nuclear and Space Radiation Effects held in Albuquerque and chaired by Bob Gregory (2140) broke several records, with 446 people attending, 71 papers, and 24 poster papers. Several foreign countries were represented among the attendees. Other conference committee members included Charles Gwyn (2113), Howard Sander (2144), John Duncan (4343), Floyd Coppage (4343) and Augustin Ochoa (2144). The conference was sponsored by Sandia, DNA, and JPL/NASA in cooperation with UNM.

* * *

In the Career Enrichment Center article (LAB NEWS, Aug. 4, 1978), the name of Lorella Salazar (3512), a member of the CEC advisory council, was inadvertently omitted.

JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (814/6).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and ERDA employees.
6. No commercial ads, please.
7. Include name and organization.
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TRASH BAGS, city approved, \$4/box, \$20/case of 6, South Hwy. 14 Project. LAB NEWS office, Bldg. 814.

PACKARD BELL cabinet color TV, 21" screen, needs tubes, \$50; Packard Bell stereo, maple finish, \$50. Burns, 268-1306.

DBL. BED FRAME, headboard, mattress & box spring, \$50; Sony port. tape recorder, \$20. Snodgrass, 821-0975.

PINK chest of drawers & vanity w/bench (no skirt). Schultz, 255-0686.

4 TIRES \$40: E 78-14 Firestone Deluxe Champion polyester, from '71 VW bus; older Mercury outboard, about 20HP, 70 lbs., \$130. Brumley, 877-2667.

CAIRN TERRIERS, AKC, 5 wks., \$100. Walkington, 842-1938.

FREE SAND, easy to load. Bailey, 908 Cuatro Cerros Trail SE, 298-0517.

RED DOBERMAN PINSCHER, 14 mos. male, good disposition but excellent watchdog. Wright, 281-5828.

NEW TIRE: B.F. Goodrich Silvertown belted L78-15, tubeless whitewall. Miller, 281-3189 after 6.

WARD TRUNDLE BED, one mattress new, one used. Moore, 298-6288 after 5.

ELECTRONIC ignition tester-oscilloscope, \$145; 40-watt stereo receiver, \$135; remote volume-balance control, \$15 or best offer. Hale, 298-1545.

BABY CRIB & mattress, \$60; baby's upholstered car seat, \$15; Admiral Solarcolor 19" TV, \$200. McMaster, 296-7881.

SHELTIE PUPS, purebred, 12 wks. old, AKC reg., \$100. Barnaby, 265-4353.

WOODEN FRAME bunk beds w/ mattresses; solid-core mahogany entrance door; cast alum. port. barbeque. Tolman, 296-8239.

STOVE, 4-burner gas top w/110V.

elec. top oven, \$75; wooden playpen, \$4. Gauerke, 299-5806.

SHOP MANUAL for '75 Honda Civic, CVCC, wagon. Peterson, 877-6398.

CARPET, 11'3" x 12', w/pad, avocado green, make offer. Yoakum, 265-9176.

35 HP JOHNSON motor, short shaft, manual start, 2 props & controls, \$300 or best offer. Bentz, 299-3448.

16" ROTH VIOLA w/case & bow, new strings. Houston, 344-9004.

'78 BENDIX CITATION, 28' fully self-contained, 2-way lights, 2-way lg. refrig./freezer, bath & shower, AC, sleeps 6. Cotch, 881-7644 after 6.

POLAROID Pronto w/elec. flash & self timer, used 6 mos., \$37.50. Miller, 255-7716.

SNARE DRUM, stand, case & practice block, \$75. Ingram, 298-0390.

LADY'S winter coat w/hood, shades of brown, white fur collar & cuffs, size 10, worn twice, \$20. Ruvolo, 296-1316.

SEWING MACHINE, older elec. table-model Singer w/all kinds of attachments, including buttonholer & ruffler, \$25. Houghton, 299-3386.

EVAPORATIVE window cooler, lg. 2-spd., almost new, less than half new price at \$100. Schubeck, 294-5666.

DUCKS & rare breed chickens; need lg. incubator & brooders. Lackey, 898-6638.

HAM RADIO equipment. Greenway, 299-8540.

TEAR DROP CAMPER, \$250, not a cab-over type. Jeys, 265-1584.

SLR 35mm camera, Vivitar SC-4, 50mm f.2 lens, 135mm telephoto lens, 2X tele-converter, UV filter, carrying case, \$275. Newlin, 898-4613.

SELL OR TRADE: 200cm skis; sell Remy cable bindings & boots. Cafey, 296-3320.

FREE: medium-sized 11 mo. Collie-Shepherd cross, neutered male, excellent w/children, bonus of 100 lbs. food. Kerschene, 821-2848.

CHILD'S packframe & bag, Dansport Minipack, \$18; chest freezer, \$25. Drumheller, 821-9527.

BRICKS, 3-hole, orange (soft), approx. 400, some chipped, 5 cents/ea., all for \$17; tires, 775x15, 3 good, 1 OK, \$5/ea. Ewing, 298-1404.

35MM CAMERA, SLR, f1.9 Kowa SE, \$60. Andersen, 294-8624.

BUNK BEDS, 2 sets w/mattresses, walnut, \$75. Garcia, 255-3201.

UPRIGHT FREEZER, 15 cu. ft., Manitowoc, new motor, \$70. Nunez, 292-3873.

HIGH CHAIR, \$10; stroller, \$15. Riley, 869-2119.

WIRE FENCING, 155 ft. heavy 11 gage dbl. picket, 44" high; 10

line posts, 1 gate; new, \$150, sell for \$75. Doggett, 293-6210.

KENMORE washing machine, copper-tone, \$50; push button cycles, needs minor repair. Beatty, 299-3429.

RUGER Security Six .357 magnum, \$150; shotgun, 12 ga. Stevens Savage, \$60. Barnette, 821-6247 after 7.

BROTHERS zig zag sewing machine, \$70; trundle bed, 30" wide, \$50. Norton, 344-1329 or 345-9325.

EXECUTIVE DESK & credenza, walnut finish, desk 34"x60", matching credenza 20"x60", \$250. Trujillo, 344-1259.

FLUTE, Armstrong, music stand, used 2 yrs., \$90. Still, 299-8825.

SPANISH-STYLE stand-up fireplace screen, fits any fireplace, \$45; matching utensils also available. Fossum, 294-2364.

LINEAR AMPLIFIER, Swan Mark II, \$550; Pachinco machine, \$30; new, never used, rototiller 5HP engine, \$250. Cochrell, 298-2068.

BEDROOM SUITE, white French Prov., dbl. dresser, night stand, lingerie chest, desk, chair, twin frame, headboard, \$180. Hawn, 299-7835.

NMMI UNIFORMS, several never worn: dress jacket 36L, 3 dress pants 31; dress shirt 15/33; 3 sets khakis; 2 extra shirts; hat 6-7/8, \$100. Whan, 268-0687.

GERMAN SHEPHERD puppy, purebred, female, \$25. Sparks, 898-1252.

WINCHESTER 30-30 w/box shells, & shotgun w/shells; 2 pr. skis w/bindings. \$20/pr. Brammer, 266-5158.

GARAGE SALE: Sat. 8/19/78, 9 a.m., 8907 Los Arboles Ave. NE. McIlroy, 299-4977.

BUNDY FLUTE. Smith, 264-7841.

TRANSPORTATION

'69 PONTIAC Tempest 4-dr., HT, V8, AT, power, air, radio, new tires & brakes, \$650. Hartwig, 298-5048.

'77 VEGA coupe, 4-cyl., 4-spd., \$2250. Weaver, 898-7716.

'73 MUSTANG, 2 HT, AT, PS, PB, AM/FM/8-TRK., \$2400. Disch, 293-8355.

'75 SUZUKI T500 twin, adult owned, new chain sprockets & tire, has windshield & rack, \$675. Rody, Moriarty 1-832-4767.

'76 HONDA CB360T, recently tuned. Houston, 344-9004.

'75 YAMAHA Enduro, DT125B, street/trail, elec. starter, 2400 miles, \$395. Ewing, 268-6920.

'70 DUCATI 450 Desmo street, \$350. Good, 898-7963.

'72 BLAZER, 4-wd, 350 V8, AC, PS, PB, 4-spd., low miles, 16-18 mpg

avg., dual batteries, many extras, \$3500. White, 293-2219.

'73 AUDI 100LS, 4-spd., AM-FM stereo, air, \$2500. Pitts, 268-4045.

'73 JEEP CJ5, fully equipped, numerous extras, 28,000 miles. Braasch, 268-8416.

'66 OLDS F85, 3-spd., floor shift, \$425 or best offer. Drumheller, 821-9527.

'69 PONTIAC LeMans, HT, AC, power, 2 new radials, new transmission, \$600. White, 299-6411 after 5.

'75 LAND CRUISER, low mileage, rebuilt engine. Kovacic, 256-0062.

'77 30' GMC Transcon Savannah, AC, PS, PB, 454 engine, built-in microwave & vacuum, \$28,950 or trade smaller motor home/real estate. Zucuskie, 881-4086.

'74 VOLVO 164E, AC, AM-FM radio, AT, leather seats, below book at \$4100. James, 292-1606.

MARK TWAIN tri-hull, 18', 120 Chrysler outboard, w/canvas, skis, trailer, new tires, extra prop. Forsythe, 298-4034.

BOAT, 14' heavy gauge aluminum V-bow, cartop, oars included, accommodates 18 HP outboard, \$295. Hueter, 242-1620.

'71 VW Fastback, fuel injection, radials, many other options. Sparks, 898-1252.

'73 CHEVY 1/2-ton pickup, long narrow box, 350 engine, 4-spd. trans., \$1450. Prevender, 299-5253.

'65 IMPALA Super Sport, 327 V8, AT, AC, PS, one owner. Skinner, 869-6609.

'70 VW Fastback, fuel injected, 6000 miles on rebuilt engine, Michelin radials, \$1100. Leighninger, 299-6815.

REAL ESTATE

ACREAGE in wilderness area, 690 feet Chama river frontage, will trade on adobe house or acreage near Belen. Jolly, 1-684-2430.

2408 SQ. FT., \$23/sq. ft., 6 miles to Base, Juan Tabo/Menaul, extras: full finished basement, shade/fruit trees, 6-bdr., rec. rm., 2 1/2 baths, \$54,950. Asprey, 296-6673.

THREE 3.3-acre tracts meadowland & trees, just east of North 14, adjacent to I-40, \$4000-\$6000/acre, depending on terms. Leenhouts, 299-7856.

3-BDR., all brick, 1 1/2 baths, LR/DR, den w/fp, huge office w/floor-ceiling bookcases, 2300 sq. ft., covered patio. Borders, 299-4816.

NE HEIGHTS BRICK, 2310 sq. ft., 3-bdr., 1 1/2 baths, lg. den w/fp, lg. lot, RV parking, \$73,500. Ray, 299-1253 evenings.

FOR RENT

3-BDR., NE, 1 1/2 baths, FR w/fp, dbl. garage, carpeted, extras, newly built, \$350/mo. negotiable. Arvizu, 821-7690.

MOUNTAIN CABIN on northern N.M. private ranch: crude but comfortable, furnished, sleeps 8, fishing, hunting, skiing, snowmobiling, rent or lease. Jolly, 1-684-2430.

4-BDR. house, unfurnished, stove, refrig., fenced yard, family, couple. Neuman, 265-4133 or 247-0444.

NEAR Jefferson JH, 3-bdr., unfurn., 1 1/2 baths, fp, complete kitchen, DR, den, carpeting, drapes, walled back yard, \$375/mo., first, last, deposit. Zucuskie, 881-4086.

LAKE FRONT CABIN, Vallecito Lake near Durango, modern, furnished, fp, mountains, fishing, reservations day/week. Croll, 881-7235.

WANTED

16' ALUMINUM BOAT, or what size alum. boat do you have?; trailer & motor not needed. Brumley, 877-2667.

PIANO, cheap practice, condition unimportant. Davis, 281-5239.

USED video terminal for home use microprocessor. Bullington, 821-7357.

SMALL 2-wheel bicycle for 5-6 yr.-old-child. Waddoups, 865-7952.

SMITH & WESSON or Colt 38 Special revolver; Winchester 1894 carbine 30/30 cal., will pay cash. Smitha, 881-1001.

SUGGESTIONS as to possible sources of donations to the Albuquerque Mountain Rescue Council. Tax deductible; money needed for expanded downed aircraft locator activities locally & throughout US. More info. Mattox, 821-3945 or 296-5103.

WOMEN'S 10-spd. bike, used. Hanson, 296-7141.

8' STEP LADDER; G78x15 tire. Hall, 298-8617.

FEMALE ROOMMATE, share house near Constitution & Eubank, kitchen privileges, \$130/month, including utilities. Armijo, 298-9285 after 5.

LOST AND FOUND

LOST—Petit point Zuni earring for pierced ear, Rx glasses in 2-tone blue frames, brown bifocal safety glasses in black case, black notebook. Bldg. 832, 264-1657.

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 Peel, 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 \$275 (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.

FRIDAY	SATURDAY
18—HAPPY HOUR ROAST PORK BUFFET Adults \$4.95 Under 12 2.50 PRISONERS 4:30—C-Club Retiree Party	19—SHRIMP PEEL Cocktails 6 p.m. Dinner 6:30 Disco Entertainment MELLOTONES
25—HAPPY HOUR Steamship Round Of Beef Buffet Adults \$4.95 Under 12 2.50 MARTHA KAYE TRIO	26— DISCO SOUL SESSION

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 (3542) 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

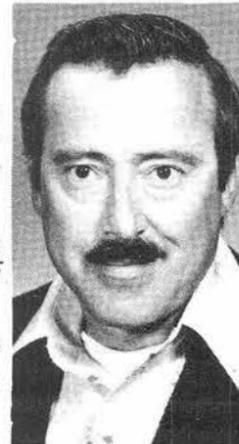
- Through Aug. 27 — "Boeing-Boeing," Barn Dinner Theater, 281-3338.
- Aug. 18-20, 25-27—"The Company of Wayward Saints," Vortex Theater, 8 p.m.
- Aug. 18-20, 25-27, Sept. 1-2—"How to Succeed in Business Without Really Trying," Albuquerque Civic Light Opera, Popejoy Hall, 8:15 p.m., 344-2317.
- Aug. 20—La 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.

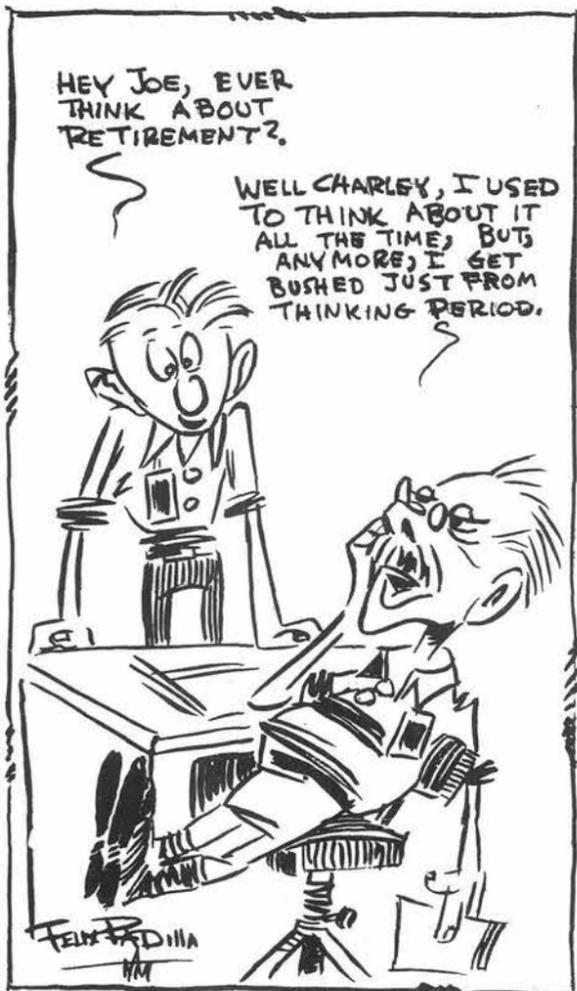


Sympathy

To Ronnie Sanchez (9571) on the death of his father in Albuquerque, Aug. 7.

To Emiliano Sanchez (9573) 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.



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.