

Sandia to Manage Geothermal Well Technology R & D

Responsibility for management of ERDA's Geothermal Well Technology Development Program was transferred recently to Sandia Laboratories by ERDA's Division of Geothermal Energy.

Sandia will assume technical direction of some \$6 million in research and development contracts during FY-77 and 78; these are expected to increase to about \$10 million by FY-79.

The program has two major elements—geothermal drilling and completions technology development, to be headed by Max Newsom (5735), and geothermal logging and instrumentation technology development to be headed by Tony Veneruso (5736).

An immediate task for Sandia is the development of a long-range plan for the program. The goal of this effort is the reduction of well development costs by 25 percent in 1981, 50 percent by 1985, using today's costs as the base. The program plan will define areas of technology development, set priorities and establish schedules. The program plan should be completed by the end of FY-77.

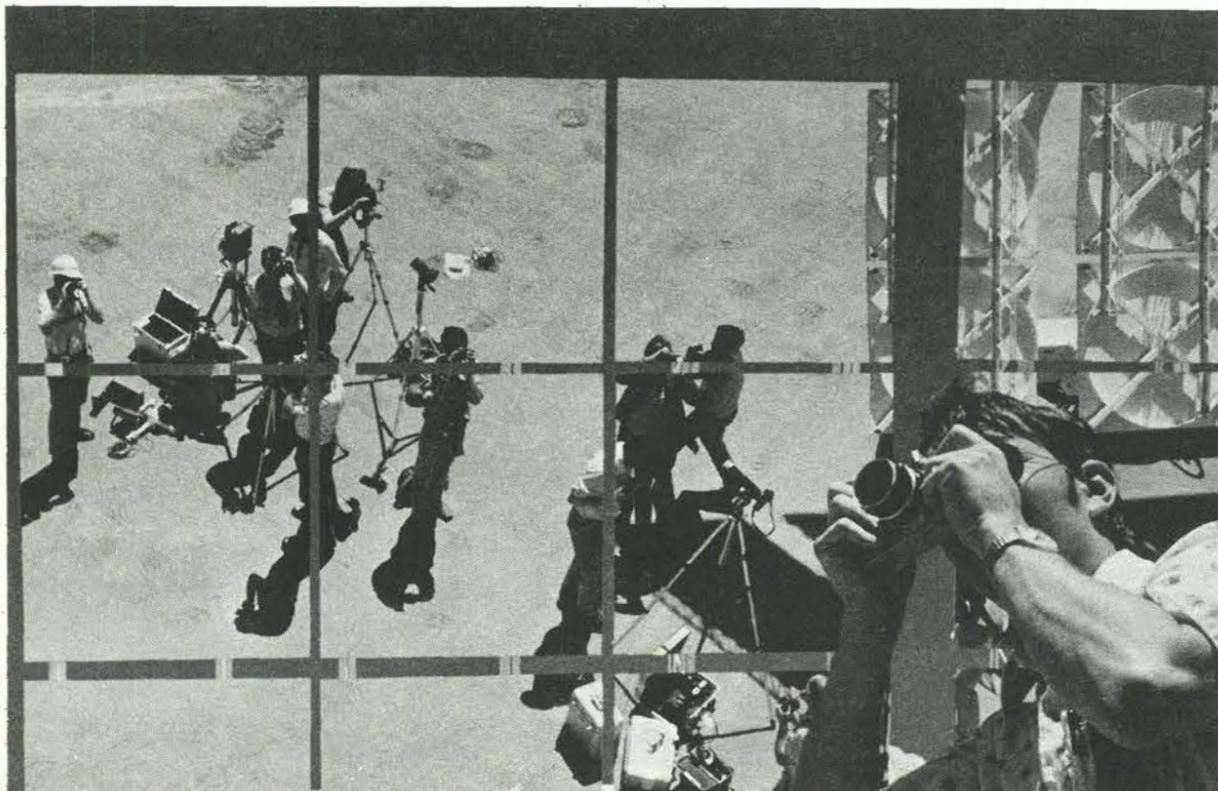
Technology areas to be developed include improved geothermal drill bits (Sandia has been working in this area for some time), improved high temperature drilling fluids, downhole motors such as the mud turbine and electrodrill, high temperature elastomers for seals and packing, and well completion technology.

Geothermal logging and instrumentation technology includes improving downhole sensors and systems for temperature,

[continued on page five]



LIKE SOME ANCIENT INCAN sun ritual, 72 heliostats in Sandia's Solar Thermal Test Facility swing slowly and majestically around to point their mirrors sunward, focusing beams upon a steel plate mounted for test purposes on the tower. During first major operational test of heliostats, a large hole was quickly burned in the plate. Note molten droplets. When completed, 300 heliostats will focus upon a boiler atop the 200-foot tower, producing about five megawatts of thermal energy. Facility is located south of Area III. Test was covered by host of media people, including representatives from *Time*, *National Geographic*, and a German TV station.



Excess Supplies?

This month and next, Sandia will undertake a major effort to reduce the number of storage cabinets and General Stores-type supplies throughout the Labs.

In a letter to supervisors President Sparks says, "We are faced with an acute shortage of laboratory and office space. . . . It is important that we free floor space of unused or unnecessary equipment . . . your personal involvement in this process is requested."

In addition to cabinets and supplies, organizations are also asked to examine their use of small machine tools and to return surplus equipment to Organization 9500.

Cardboard boxes marked "Return to General Stores" will be placed in central locations in all facilities. No paperwork will be necessary to transfer supplies. Surplus cabinets may be returned by calling Telecon, 4-4571.

Supervisory Appointments

MERRILL JONES to supervisor of Physical Standards Division 2551, effective May 16. A long-time Sandian, Merrill joined the Labs in July 1948 as an electronics fabrication technician. A short time later he moved to the standards organization where he worked as a standards engineer, staff member and section supervisor. During this time his work was in the electrical standards area but, more recently, his work has been associated with nuclear radiation standards.

With the aid of Sandia's education programs, Merrill continued his education, earning BS and MA degrees in mathematics from UNM. He is a member of IEEE, ISA, and is a past president of the Albuquerque section of ISA. Merrill's leisure interests include photography and activities of his church. He and his wife Francis have four sons and live at 1416 Arizona NE.

* * *

BERNARD ZAK to supervisor of Environmental Research Division 5443, effective May 16. Bernie's work has been with the environmental research group since joining Sandia in September 1974. Since then he has been scientific director for Project Da Vinci, a program to study the long distance transport of air pollutants from urban areas or from various energy sources. Work with this project will continue to be one of Bernie's responsibilities in his new position.

Before coming to the Labs, Bernie worked with energy and environmental groups at Lawrence Labs in Berkeley. He earned a BS in physics from De Paul University in Chicago, and a PhD in physics from UCLA. He is a member of the American Chemical Society, American Physical Society, American Academy for the Advancement of Science, and the American Geophysical Union.

Bernie enjoys hiking and reading, primarily history and economics. He and his wife Nancy live at 12221 Lexington NE.



NEW SUPERVISORS—Ron Detry (2610), Tony Lopez (3413-2), Bernie Zak (5443) and Merrill Jones (2551).

RON DETRY to manager of the newly created Computing Applications Department 2610, effective May 16. Ron joined Sandia's computing organization in July 1969 as a member of the technical staff in Computing Services. In March 1973, he became supervisor of the Applied Mathematics Division and, for the past two years, has headed the Scientific Systems Software Division 2641. The new applications department provides support for engineering and scientific organizations and handles all computer training and consulting.

Ron earned BS, MS and PhD degrees in applied mathematics from the Illinois Institute of Technology. He is a member of SIAM and ACM, and is secretary of the Rio Grande chapter of ACM.

Hunting, fishing and photography are Ron's favorite leisure activities. He and his wife Faye have two children and live at 1629 Mary Ellen NE.

* * *

TONY LOPEZ to supervisor of Nuclear Materials Control Section 3414-2, effective

May 1. Since coming to Sandia in April 1951, Tony has worked in the electronic stockroom, been an expeditor and for many years was staff liaison man for the machine shops. In 1968 he became a computer programmer and for the past four years has been the computer programmer for the Nuclear Materials Control Division.

Tony attended the University of Albuquerque for three years. During WWII he served three years in the Navy, aboard the U.S.S. Portland in the South Pacific. From 1946-50 he was in the Air Force. Tony is actively involved in coaching little league teams—baseball and football. He also plays a lot of golf.

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JUNE 3, 1977



LAB NEWS

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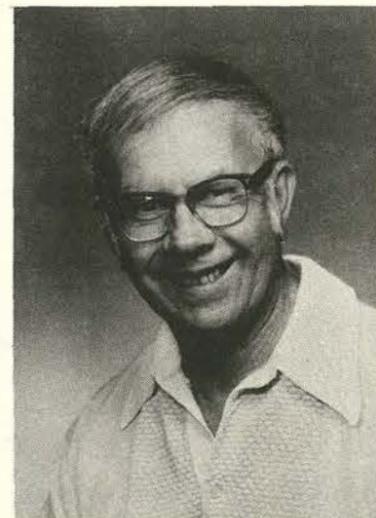
Retiring



Nabor Rael (9573)



Bill Jemison (2131)

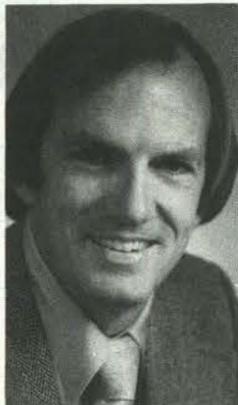


Herbert MacPherson (3430)

Supervisory Appointments

DANNY HARTLEY to manager, Gas Dynamics Department 8350, effective May 16.

After joining Sandia in 1968, Danny worked in the application of laser Raman spectroscopy to gas flow studies. In 1972 he was promoted to supervisor of Aerothermodynamics Division where, most recently, he has been responsible for SLL's combustion research programs.



Danny received his BS, MS and PhD degrees from Georgia Institute of Technology in aerospace engineering, and subsequently a postdoctorate degree in experimental aerodynamics from the Von Karman Institute in Belgium under a research fellowship. He is U.S. technical representative to the Combustion Project Group of the International Energy Agency, a member of the editorial advisory board for *Combustion Science and Technology*, and serves on the program committee for the Combustion Institute's 1978 International Symposium. Chairman of the Mt. Diablo Section of AIAA, he is also a member of AIAA's National Combustion Technical Committee.

Danny and his wife Barbara reside on Briarwood Court in Livermore with their two daughters.

* * *

RICHARD WAYNE to manager, Solar Department 8130, effective May 16.

Joining Sandia in 1966, Rick worked in the Solid State Physics Division in Albuquerque until his promotion in June 1969 to supervisor of Component Physics Division at Livermore. For four years he supervised the Physical Research Division, and since 1973, has headed the Command and Control Division with responsibility for the development of nuclear security systems.

Rick has a BS from Brown University and PhD from Cornell University, both in physics. A member of the American Physical Society and the IEEE, he is SLL representative on the Advanced Nuclear Technical Interchange Panel for the U.S. Air Force, the Joint Chief of Staff's Stockpile Improvement Study, and the Joint Working Group with the U.K. on Nuclear Security Systems.

Off the job, Rick enjoys golf, tennis and camping. He, his wife Kim, and their four sons live on Ewing Drive in Pleasanton.



Congratulations

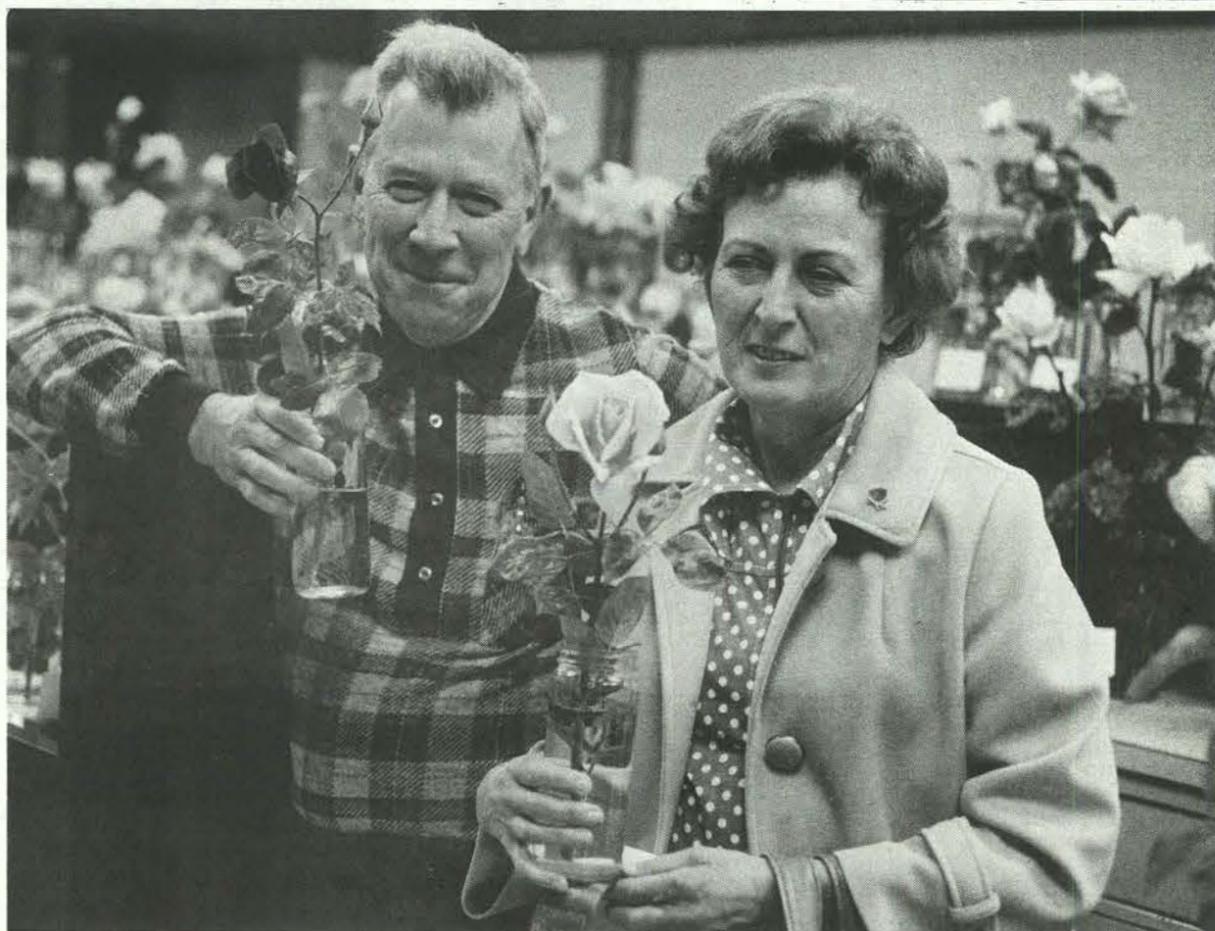
Mr. and Mrs. Hank Witek (8365), a son David Scott, May 18. Wife Mary is on LOA from 8340.

LIVERMORE NEWS

VOL. 29, NO. 11

LIVERMORE LABORATORIES

JUNE 3, 1977



TWO MORE RIBBONS for Jack (8424) and Ruth Brierly at this year's Rose Show—their Royal Sunset (right) and Etoile de Hollande climbers were both winners.

Brierlys Produce Prize-Winning Roses

Although rose growing is no longer a blooming industry in the Livermore area, individual growers continue to thrive here. And each year they exhibit their best at the annual Pleasanton Rose Show, a tradition that began 39 years ago.

"We weren't sure we'd have roses fit for competition this year because the blooming came early, and the first blooms are always the biggest and healthiest," says Jack Brierly (8424). "We were pleasantly surprised when we won two ribbons."

Jack and his wife Ruth, who enter the show every year, have been consistent winners, collecting 36 ribbons since first entering in 1964. That year they took first place with three Confidence roses, the pink hybrid tea that is still somewhat uncommon in most rose gardens. Hybrid teas are a long-stemmed type with a single bloom on one stem.

The Brierlys began growing roses after

moving to Livermore in 1959. Jack recalls one of their first bushes was a gift from his mother which he planted near the front door of the house. It's still there and doing beautifully.

Most of the Brierlys' 30 rose bushes are climbers that grow over arbors and fences. Once a week they water and every six weeks fertilize with a pesticide added to keep down the aphids and other petal eating insects. This year a hatch of ladybugs, the aphids' natural enemies, also helped.

Jack says you can generally tell a few days in advance which blooms you'll enter in the show by what the roses look like. If the buds are too tight, they won't open in time for judging. One of their favorite entries and a consistent winner has been a 17-year-old pink climber called the Queen Elizabeth—a grandiflora which is a cross between a hybrid tea and a floribunda rose.

Proper pruning is important in rose growing. By cutting the bushes back in February, leaving the main canes about two feet long and cutting the smaller shoots back to the second or third eye, full bloom comes in April about time for the early May show.

"But the blossoms must be cut often," warns Jack, "otherwise, the bush won't bloom again that year and eventually may die. Generally, on weekends, my wife clips all the dead flowers back to a five petal leaf. We water with a bucket, letting the moisture soak in, because deepwatering is better and actually saves on water."

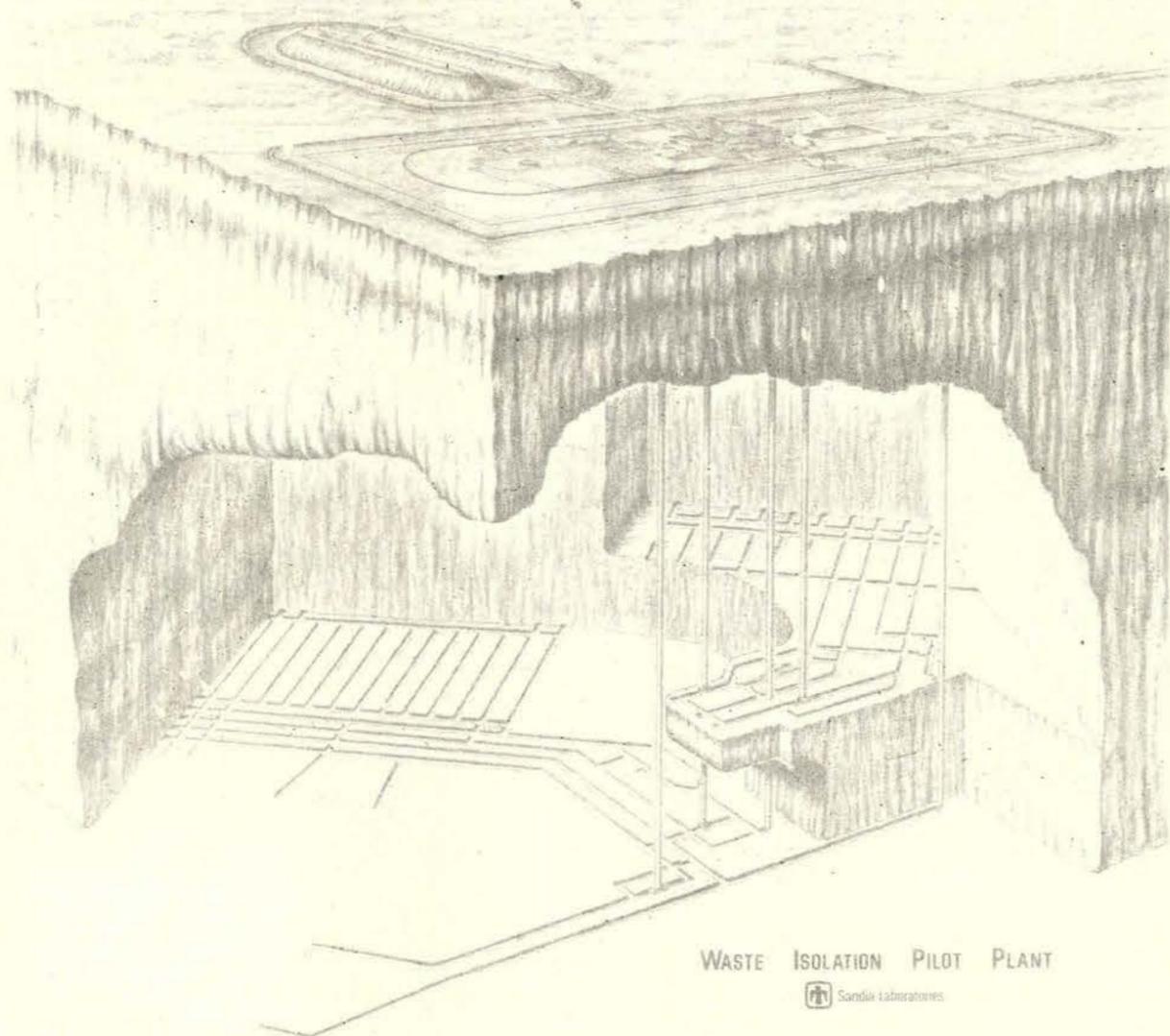
Sympathy

To Jack Renaud (8213) on the death of his father in Port Huron, Mich., May 15.

To Sandy Moore (8160) on the death of her father-in-law in Tustin, Calif., May 14.

To Allen Danielson (8432) on the death of his mother-in-law in Pleasanton, Calif., May 18.

To Roy Tackett (8365) on the death of his father in Texas, May 17.



CONCEPTUAL DESIGN of the Waste Isolation Pilot Plant (WIPP) is now complete, and a report on it is in final preparation for ERDA action. Facility is different from most pilot plants in that it may be converted to full operational use as a repository for radioactive waste if the pilot operations prove the safety of the facility as expected. Current estimate of capital cost is \$330 million with construction start in 1979, completion in 1983. Plans call for some 210,000 sq. ft. of tornado and seismic resistant buildings to be built on the surface plus another 100,000 sq. ft. of conventional structures. Some 12 miles of road and eight miles of railroad tracks are in the plans. About 1.5 million tons of underground material needs to be mined before the start of waste handling operations. Underground storage levels—one at 2100 ft. and one at 2700 ft.—are reached through five shafts, which provide ventilation, passage for waste material, and access for men and equipment. Nuclear Waste Engineering Division 1142 is coordinating design effort. Wendell Weart (1140) is WIPP program manager.

Speakers

C. P. Ballard (5845), "Glass Ceramics Compatible with Superalloy Processing"; G. R. Laguna (2524), "Optical Polishing of Thin PLZT Ceramics"; J. K. Johnstone (5846) and B. T. Kenna (5824), "Fixation of Radiocesium in Ceramics for Beneficial Applications"; J. C. Swearingen (5846) and R. J. Eagan (5845), "Effect of Dispersed Al_2O_3 Particles on the Toughness of Borosilicate Glasses"; J. C. Swearingen (5846), "Structure and Properties of Metallized Alumina," 79th annual meeting of American Ceramic Society, April 23-28, Chicago.

D. H. Habing (2116), "User's View of CAD in LSI Circuit and System Design," 1977 IEEE International Symposium on Circuits and Systems, April 25-27, Phoenix.

J. R. Freeman (5241), "Hydrodynamic Instabilities in Inertial Confinement Fusion"; T. P. Wright (5241), "Relativistic Electron Motion in Cusped Magnetic Fields"; S. T. Picraux (5111), invited presentation, "Hydrogen in Solids Via Nuclear Reactions," 1977 Washington meeting of the American Physical Society, April 25-28, Washington, D.C.

J. L. Hartley and C. Z. Stuart (both 2553), "Predicting Gas Mixture Changes Due to Leakage in Hermetically Sealed Units," National Relay Conference, April 26-27, Stillwater, Okla.

R. H. Ericksen (5844), "The Effect of Pressure Folding on the Strength of Kevlar 29 Parachute Fabrics"; R. E. Allred (5844), "Response of Kevlar Fabric Laminates to Bearing Loads"; N. J. Delollis (5813), "Durability of Structural Adhesive Bonds (A Review)," 1977 SAMPE Technical Conference, April 26-28, San Diego.

R. P. Reed (1116), "A System for the Measurement of Free-Field Stress Waves Using Lithium Niobate Piezoelectric Transducers," 9th Transducer Workshop, Range Commanders Council, Transducer Committee, April 26-28, Fort Walton Beach, Fla.

H. D. Sivinski (5445) and G. S. Smith (NMSU), "The ERDA/EPA Beneficial Uses Program," Treatment & Disposal of Industrial Wastewaters and Residues, U.S.

Environmental Protection Agency, April 26-28, Houston.

E. H. Copeland (9343), "Pressure Safety Aspects of Liquid CO_2 Storage—A Case History," 28th meeting of Subgroup on Environmental Testing, IMOG, April 27-28, SLL.

M. E. Morris and J. R. Brandon (both 5442), "Costs & Technical Feasibility of Irradiation & Thermoradiation of Wet and Dry Sewage Sludges," Calif. Water Pollution Control Assoc. annual conference, April 27-29, Anaheim.

A. M. Fine (1754), "Perpetrator Attributes in Threat Analysis," NBS conference; "The Role of Behavioral Science in Physical Security," April 29-30, Alexandria, Va.

J. M. Alcone (5742), "Design Considerations for Solar Augmented Heat Pumps," Helioscience Institute, International Solar Energy Conference, April 30 - May 4, Palm Springs, Calif.

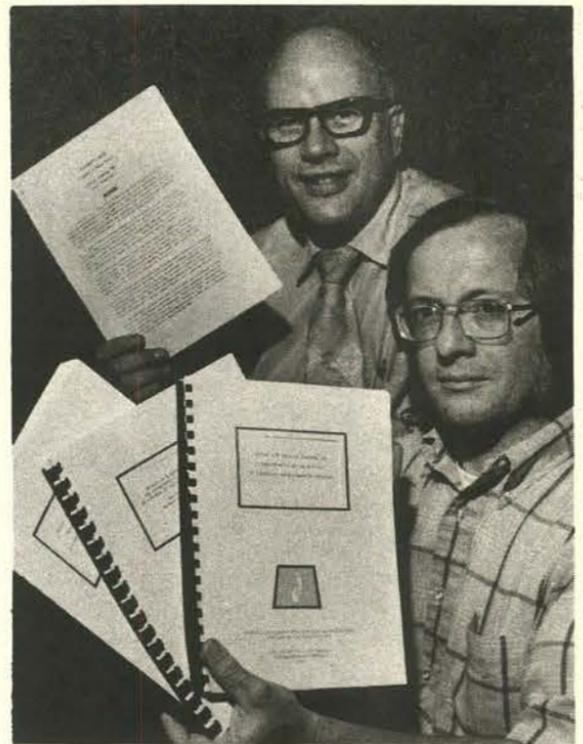
K. Wally (5715), "The Transient Response of Beaded Thermocouples Mounted on the Surface of a Solid"; G. F. Wright, Jr. and D. D. McBride (both 1333), "In Flight Measurements of Thermal Response of a Carbon Phenolic Heatshield," 23rd International Instrumentation Symposium, May 1-5, Las Vegas, Nev.

H. J. Rack (5832), "The Fracture Toughness Behavior of Unaged Beta-III Titanium," Symposium on Toughness of Titanium, ASTM, May 1-6, Toronto, Canada.

R. M. Jefferson (5430), "United States Experience in the Transportation of Radioactive Materials," Conference on Nuclear Power and Its Fuel Cycle, May 2-13, Salzburg, Austria. (Presented by A. Platt, Battelle, Pacific NW Labs.)

K. L. Shipley (2522), "Simulation of the Backface Heating in Carbon Heatshield," ISA International Instrumentation Symposium, May 3, Mountain View, Calif.

M. A. Butler and D. S. Ginley (both 5154), "Role of Semiconductor Properties in Photoelectrolysis," Electrochemical Society topical meeting, May 3-5, Airlie, Va.



SANDIANS' RESPONSES to a 1975 survey of employee attitudes and job satisfaction are contained in the three-volume tabulation held by UNM Professor Joe Champoux who headed the study. Behind him is Sandia's Industrial Psychologist Lynn Rigby (3530) holding a summary of the tabulations. The three-volume version is in the Tech Library; the summary is available from Lynn at 4-4341.

Take Note

The 28th Annual Rose Show of the Albuquerque Rose Society will be held tomorrow from 3 to 8 p.m. and Sunday, June 5, from 10 a.m. to 4 p.m. at the Albuquerque Garden Center, Los Altos Park, 10120 Lomas NE.

"The public is invited and admission is free," says Ken Swanson (9636), president of the group. "In addition to many exhibits in many categories, slide presentations on roses are scheduled at half-hour intervals during both days of the show."

* * *

The Museum of Albuquerque Assn. is hosting a preview and champagne buffet in celebration of its new exhibit "Early 20th Century European Master Painters." The event is scheduled for Saturday, June 11, from 6:30 to 9:30 p.m., and proceeds will be used to benefit the Museum. Artists include Picasso, Braque, Klee, Kandinsky, Miro and Mondrian. Free catalogs of the exhibition will be distributed and a program of symphonic music is planned. Reservations: members, \$12.50/person; non-members, \$17.50/person (includes \$5 membership); by June 6 on 766-7993.

* * *

Considerable Sandia footage is scheduled to be a part of the ABC News Closeup Special entitled "Nuclear Power—Pro and Con" over Channel 7 from 9 to 10 on June 7. While at Sandia recently, ABC Science Director Jules Bergman filmed tractor-trailer-nuclear shipping cask crashes, a mock-up of a plutonium storage vault, and the safe secure trailer and tactical escort vehicle rigs.

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Geothermal Management

pressure, flow porosity and gas and chemical analyses.

The two divisions will be assisted in the program as follows: systems analyses—Division 5742 under Sam Varnado, contracting—Division 3721 under Ed Dylo, advanced electronics—Division 2151 under Dick Heckman and technical support from metallurgy, materials and applied mechanics groups from throughout the Laboratories.

Events Calendar

thru June 15—New West Gallery, paintings by Claire Haut (retired Sandian).

June 3-5—"Lady Who Cried Fox," Barn Dinner Theatre, 281-3338.

June 3-5—San Felipe de Neri Fiesta, Old Town Plaza.

June 4—"Camelot," KHFM 96.3 FM, 6:30 p.m.

June 5, 8, 12, 15—June Music Festival Fine Arts Quartet, Woodward Hall, UNM, 8:15 p.m., 265-3689.

June 7—Albuquerque Dance Theatre performance for Sanado Women's Club, Coronado Club, 1:30 p.m., 881-9164.

June 8 - July 10—"Stuffed Shirt," (world premiere), Barn Dinner Theatre, 281-3339.

June 12 - July 24—"20th Century European Masterpainters," Museum of Albuquerque.

June 12—11th Annual Sandia Crest Bicycle Race, Madrid to Sandia Crest, 9 a.m.

June 15—"Guerrero Masks," Maxwell Museum of Anthropology.

June 15—N.M. Mt. Club general meeting, St. Timothy's Lutheran Church, 7:30 p.m.

June 15—Albuquerque Childrens Theater, free plays and comedies, San Pedro Library, 2 p.m., Heights YMCA, 3 p.m.



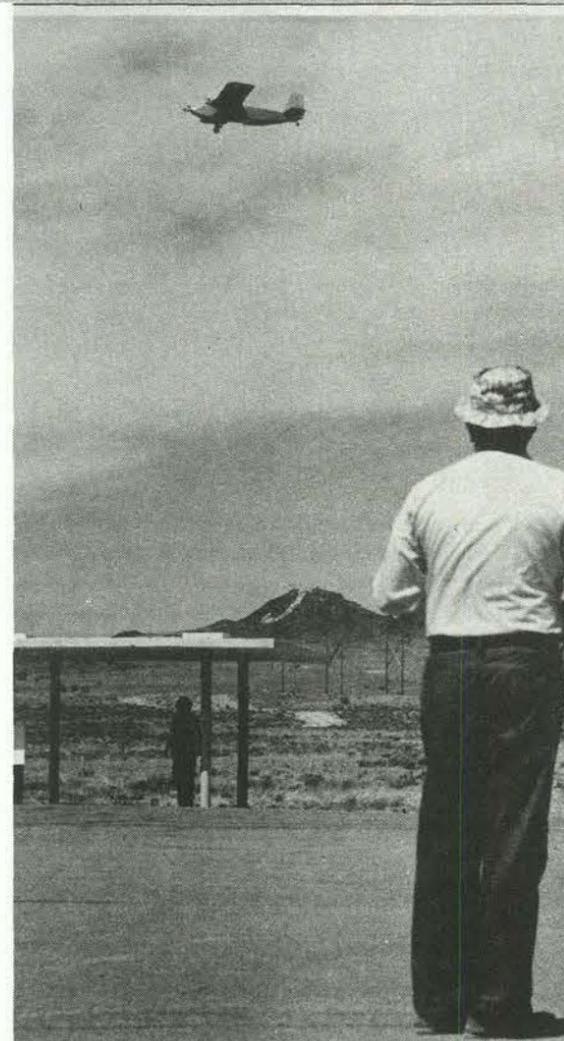
The Beast Flies Again

First used eight years ago to drop test 12-lb. projectiles in the COIN development program, "The Beast," a radio-controlled tri-motor model airplane, was recently removed from storage to fly prototype electronics for a sensor development program in Division 1352.

Jim Baremore (2132), an avid RC modeller, replaced the radio and servo-mechanisms in the aircraft for the new program. He will fly a precise low altitude flight pattern during the tests while a direct RF link relays data from the sensors to Sandia. The flying site is currently La Boca Negra Park on the West Mesa.

"Other than electronics, the eight-year-old 20 lb. airframe required little rework," Jim reports. "I had to implement a 'fly-by-wire' concept instead of mechanical linkages to the control surfaces to obtain the extreme precision required, and the 'Beast', with a 20 lb. payload, is a very stable test bed. It is economical (compared with rental cost of a full-size airplane) and will allow many tests to be performed in a short time."

The plane was originally built in Sandia's Pattern shop.



Authors

M. M. Widner (5241), F. C. Parry, L. P. Mix, J. Chang and A. J. Toepfer (all 5242), "Implosion Dynamics of a Hemispherical Target Irradiated by an Intense Relativistic Electron Beam," Vol. 48, No. 3, JOURNAL OF APPLIED PHYSICS.

C. W. Mendel and S. A. Goldstein (both 5242), "A Fast-Opening Switch for Use in REB Diode Experiments," Vol. 48, No. 3, JOURNAL OF APPLIED PHYSICS.

P. C. Lysne (5131), "Dielectric Properties of Shock Wave Compressed FZT 95/5," and "Shock-Induced Polarization of a Ferroelectric Ceramic Dielectric Equation of State of a Ferroelectric Ceramic," Vol. 48, No. 3, JOURNAL OF APPLIED PHYSICS.

F. A. Fisk (5215) and F. F. Crim, "Single Collision Studies of Vibrational Energy Transfer Mechanisms," Vol. 10, No. 3, ACCOUNTS OF CHEMICAL RESEARCH.

J. E. Schirber (5150) and J. P. VanDyke (5151), "Effect of Pressure on the Fermi Surface and Band Structure of InBi," Vol. 15, No. 2, PHYSICAL REVIEW B.

P. J. Feibelman and E. J. McGuire (both 5211), "One-Orthogonalized-Plane-Wave Calculation of Na KLV Auger Line Shapes," Vol. 15, No. 6, PHYSICAL REVIEW B.

D. M. Haaland (5825), "Graphite-Liquid-Vapor Triple Point Pressure and the Density of Liquid Carbon," Vol. 14, No. 6, CARBON.

D. E. Grady, R. E. Hollenback, K. W. Schuler (all 5163), and J. R. Callendar, "Strain Rate Dependence in Dolomite Inferred from Impact and Static Compression Studies," Vol. 82, No. 8, JOURNAL OF GEOPHYSICAL RESEARCH.

M. L. Knotek (5155) and R. K. Quinn (2516), "Auger Electron Spectroscopic Depth Profiling Techniques Applied to Ultrathin Electrochemically Deposited Metal Layers," Vol. 14, No. 2, THE JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY.

H. H. Madden and J. E. Houston (both 5144), "Auger Electron Spectroscopic Investigation of the Transition Density of States for Lithium," Vol. 21, No. 12, SOLID STATE COMMUNICATIONS.

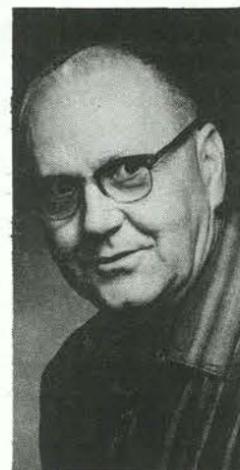
M. R. Scott and H. A. Watts (both 2642), "Computational Solutions of Linear Two-Point Boundary Value Problems Via Orthonormalization," Vol. 14, No. 1, NUMERICAL ANALYSIS.

P. J. Feibelman and E. J. McGuire (both 5211), "Theory of Valence-Band Auger Line Shapes: Ideal Si(111), (100), and (110)," Vol. 15, No. 4, PHYSICAL REVIEW B.

R. C. Hughes (5814), "Time-Resolved Hole Transport in a-SiO₂," Vol. 15, No. 4, PHYSICAL REVIEW B.

S. J. Niemczyk (5151) and C. F. Melius (8341), "A Discussion of the Xa Statistical Exchange Approach for Atoms and Molecules," Vol. 46, No. 2, CHEMICAL PHYSICS LETTERS.

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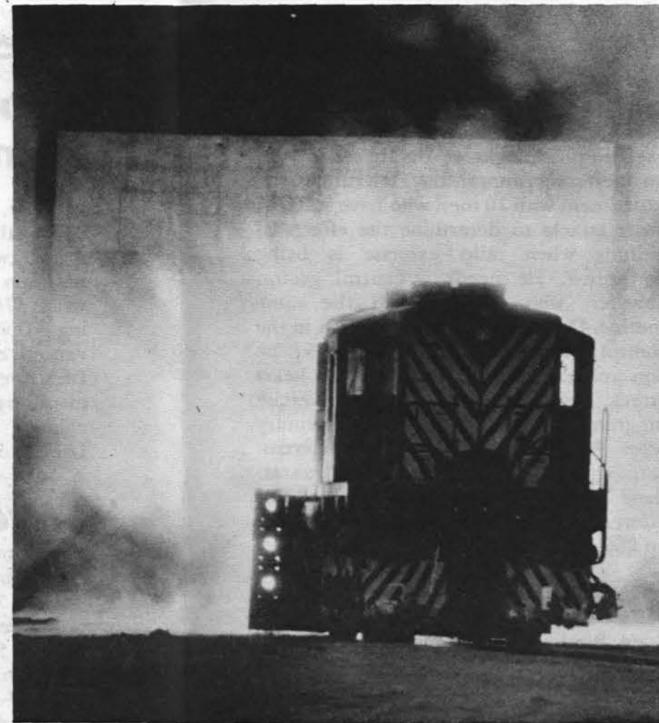


Death

Cecil Haynes of Specialty and Branch Shops Division 9582 died April 26 after a long illness. He was 64.

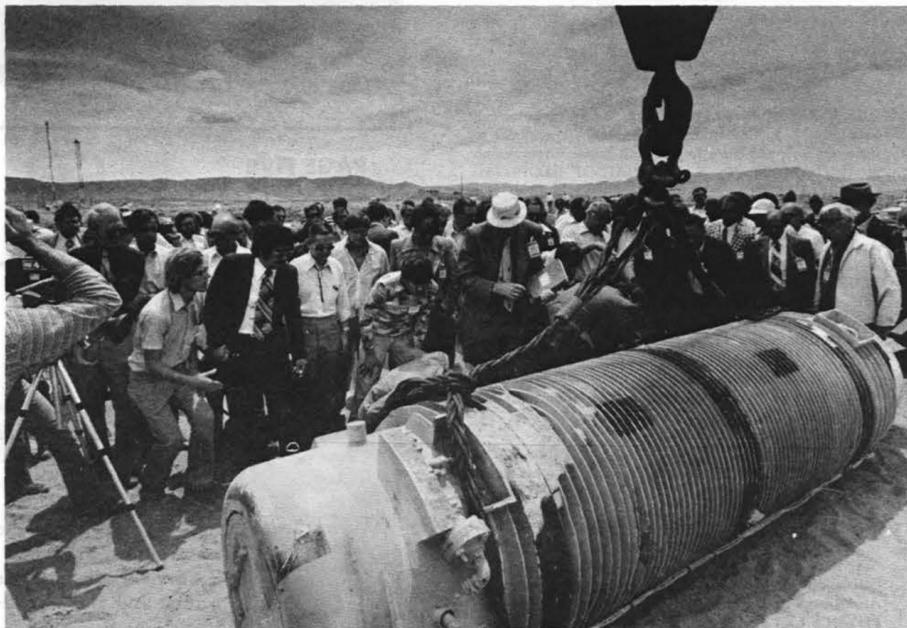
He had worked at the Labs almost 21 years.

Survivors include his widow and two daughters.



By The Rockets' Red Glare . . .

Yoshimura strikes again, but the nuclear fuel cask prevails. That's Richard (5432) in the milling mob below (dark suit) examining the still intact cask. This time he rocket-accelerated an old locomotive smack into the trailer/fuel cask sitting astride the tracks at a simulated rail crossing. At 80-plus mph, cask went flying, trailer went down gloriously, locomotive fared pretty well.



A BOINGER for Security

Complacency Fighters Unveiled

When security infractions drop from 50 in 1975 to 30 in 1976, it's possible to become complacent. "But complacency about security is something we can't let happen," says Norman Scott (3431), Sandia's Security Coordinator.

Norm—with the help of some people in the shops and in Plant Engineering—has come up with several new complacency fighters. Some of them are new consciousness-raising devices to be used on safe files. One is a new OPEN/CLOSED sign. Another fits on a safe drawer so it won't shut accidentally. Its red-and-white striping is a reminder that the drawer is indeed open and unlocked. It has to be removed and tucked into the handle (so the stripes are hidden) before the drawer can be locked.

The other two devices are more fanciful. One attaches to the outside of a safe drawer. As soon as the drawer is opened, a striped disk falls down across the combination knob. During the locking procedure the disk is returned manually to its stripes-don't-show slot.

The last device attaches to the inside of a drawer. As soon as the drawer is pulled open—BOING!—up springs a little red-and-white flag mounted on a flexible steel tape. It stays up all day and prevents the drawer from closing and looking locked. Again, the locker has to deliberately return the flag to a horizontal position inside the drawer where it waits for the next morning to BOING again.

Each device makes it a little harder to forget to lock the safe. That's good for security's sake—17 of our infractions last year resulted from unlocked safes or space-savers. It's good for your sake too; most of us are all too aware of the new penalty system for an infraction: you can be given time off without pay or have your merit increase delayed if you're responsible for multiple infractions during a 12-month period.

One other result of an infraction is that security flags fly at halfmast, bringing us to the last of the new complacency fighters. We now have three new security flags and flagpoles to supplement the current ones. One of the new ones is in the Area III/V complex, one is near Gate 6, and one is southwest of Bldg. 803 (near Gate 1). Check one as you come in each morning. If it's still flying high, Sandia's security is in great shape for one more day.

(The devices mentioned are available in Bldg. 802, Room 109.)

Sympathy

To Marv Becktell (5200), on the death of his mother in San Diego, April 9.

To Ira Hamilton (5243), on the death of his mother-in-law in Espanola, May 15.

To Harold Meidal (9561), on the death of his sister in Minnesota, May 23.

To Don Wader (9562), on the death of his brother-in-law in Oregon, May 24.



NEW SECURITY DEVICES remind Eve Baughman (4010) that safe drawers are open. The sign and the striped device are easy to spot; the flag springing to verticality is less visible but it's there—note blur.

Conservation Notes

Plant Engineering's Hal Baxter (9753) has come up with some interesting data on the cost, in gas and in money, of pilot lights about-the-home and of that charming gas light that illuminates your patio, 24 hours a day, 365 days a year. Here's what the numbers look like:

Gas/Ft. ³ /Hour/Typical Home	
Gas light	2.2
Pilots: Furnace	1.0
Water heater	1.0
Dryer	1.0
Stove	0.1
5.3 cubic feet per hour	

A little arithmetic discloses that that amounts to 890 cubic feet per week; residential gas costs \$1.68 per thousand cubic feet, so we're looking at \$1.50 per week or \$78 a year.

So what? Well, Hal says you can shut off your furnace pilot light and start it up again in the fall. Unfortunately, most gas lights do not have easily manipulated controls and the shut down/start up process is something of a hassle. As for the kitchen stove, you can always go back to those big kitchen matches and impress the kids as you scratch a light on the stubble of your beard.

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD—JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING APR '77

ELECTRICITY	BASE PERIOD 9276 MWH 977,78066 MWH	15.4% SAVED
STEAM PLANT FUEL EQUIV. OIL	BASE PERIOD 224583 BBLs 977,20986 BBLs	6.3% SAVED
VEHICLE MILES	BASE PERIOD 2468 MI. 977,2265 MI.	8.2% SAVED





PASEO DEL BOSQUE—The newly opened bike trail along the Rio Grande gets the once-over from Sharla Vandevender (5742), who serves as Chairman of the City/County Bikeway Committee. Sharla reports that the trail starts at the end of Tingley Drive and goes five miles north to Candelaria Rd. in the North Valley. Plans call for trail extension both north and south along the river.

Multi-Talented Hobbyist

Barry Butler Builds About Everything

"Productive entertainment" is what Barry Butler, materials scientist in Division 5844, calls his many leisure time activities. He is a metal sculptor, a jewelry maker, furniture builder, restorer of old autos, and all-around handyman.

Barry's current project is planning and designing a solar home to be built on the east side of the Sandia Mountains. That's a story for a future LAB NEWS.

In the meantime Barry has created metal sculptures of Indian pueblos, families of roadrunners, a buffalo on the lone prairie and an indestructible biplane toy for his two sons. That's in addition to a backyard playground that includes a jungle gym, swings, a slide and something resembling a lunar lander. The playground was welded together from an old fire escape ladder and exhaust hood, and metal and pipe purchased from Sandia's Salvage Yard.

"The Salvage Yard got me into the metal sculpture business," Barry says. "Bought some oxygen tanks there and traded several for a used torch. That was about five years ago. I'm a regular customer now, buying stuff to use in my house. I plan to do the wiring, plumbing and interior finishing plus the solar heating system."

Barry will build most of the furniture also. He's already built bunk beds for the boys, two massive chests for the master bedroom, a dining table and two marble-topped coffee tables for the living room. In addition, there's a number of decorative wood, wrought iron and glass hanging lamps and a massive coat rack made from a railroad tie.

As a jewelry maker Barry specializes in bolo ties and bracelets in modern designs. He cuts and polishes turquoise, then creates the design to enhance the individual stone. Most of his pieces are made from sheet silver hammered, soldered and filed into shape. He's also made necklaces incorporating large hollow silver beads made by this method.



BARRY BUTLER (5844) displays some of his handiwork—silver and turquoise jewelry, metal sculpture and a marble topped coffee table.

In Barry's driveway is a '41 Chevy 4-door sedan. It runs well but still needs body work and upholstery. Several years ago he restored two Austin-Healys but sold them to finance new projects.

"Bought an industrial sewing machine to take care of the Chevy seat covers," he says. "It should also come in handy when I redo the canvas on my boat. One of these days . . ."

When Barry isn't working on one of his projects he reads—"How To Do It" books, naturally. The one section of his garage not filled with tools contains an extensive library on how to build just about anything.

Fun & Games

For those who sit—Dave Parker, an exercise physiologist at UNM, called with an interesting proposition. He's running an experiment with 10 men who have suffered heart attacks to determine the effects of altitude when mild exercise is being performed. He needs a control group, however, who will undergo the same routine. Qualifications are that men in the control group be ages 40 to 55, be non-smokers, *not* have suffered a heart attack, and *not* be pursuing any exercise program. In short, he wants sedentary types. Participants undergo a stress electrocardiogram and other physical exams; these are for free and are a reward for effort expended. Volunteers can call Dave on 266-0534.

* * *

Bowling—In the New Mexico Women's State Bowling Tournament held in Las Cruces, a team of five Sandians came in first, with a scratch series of 2355. Team members are Beany Hall (9712), Jenny Cordova (2326), Edwina Kiro (5241), Dora Montoya (5410) and Pam Morenus (2516). Their team placed second in the Women's Sandia Labs Bowling League for the '76-'77 season.

* * *

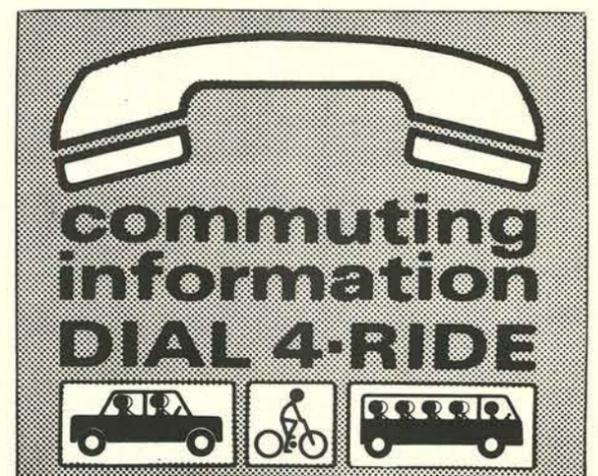
Sandia Runners—Larry Johnson (4323) was second in his age bracket in the Thoreau Minimarathon held May 22. Larry completed the 13-miler in 1:37 and was 33rd of 75 overall.

* * *

Coming up—On Sunday, Aug. 21, the La Luz Trail race. And on Sunday, June 12, the Madrid to Sandia Crest bike race; youngsters and old-timers can start from San Antonito, a mere 13 miles from the Crest. Anyone interested in a Canyon to River run? From Tijeras Canyon to the Rio Grande, about 12 miles and downhill. Call LAB NEWS, 4-1053, for details on these events.

* * *

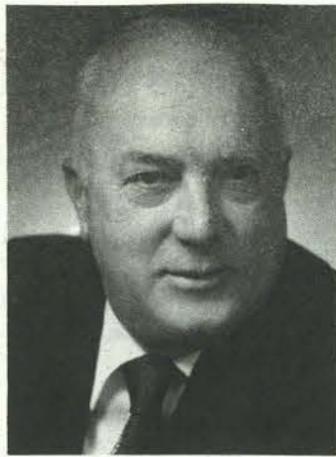
Tennis—ERDA's Sue Caroon is coordinating a women's tennis ladder for players from ERDA and Sandia. She has 14 signed up thus far. A ladder is a good way to get lots of tennis with a variety of opponents. Call Sue on 4-7207 if you're interested.



MILEPOSTS

LAB NEWS

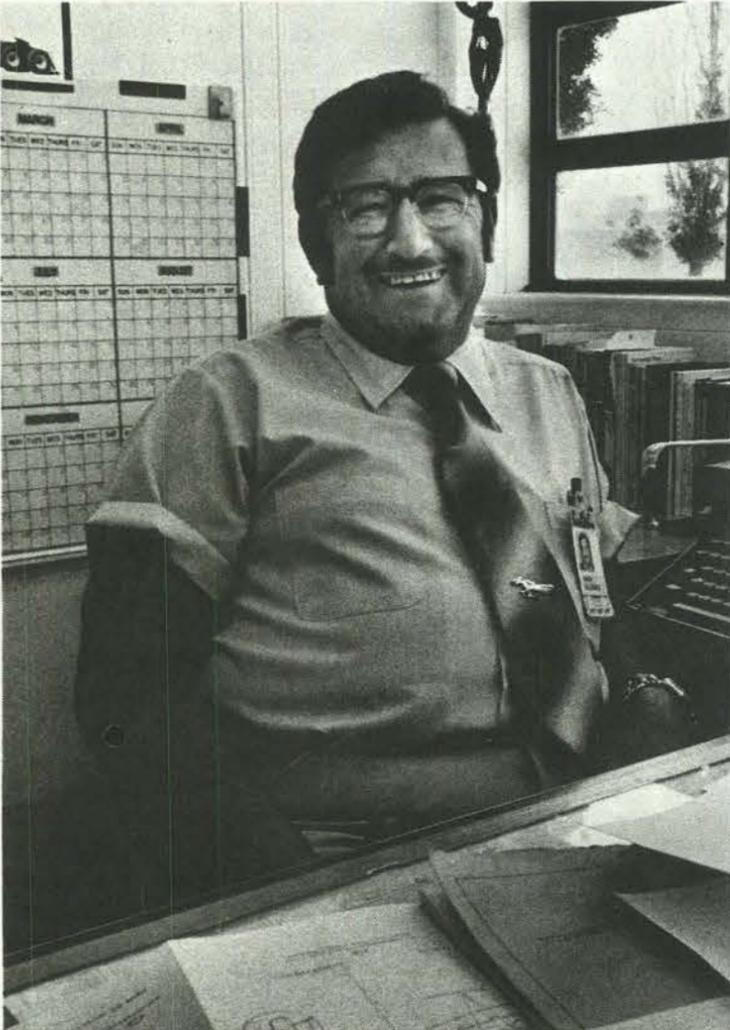
JUNE 1977



Russ Richards - 8424 20



Bob Foster - 2551 20



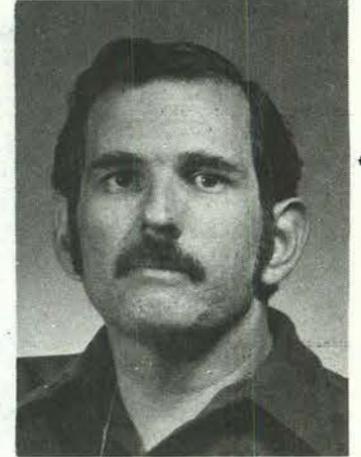
Ramon Baldonado - 1212 20



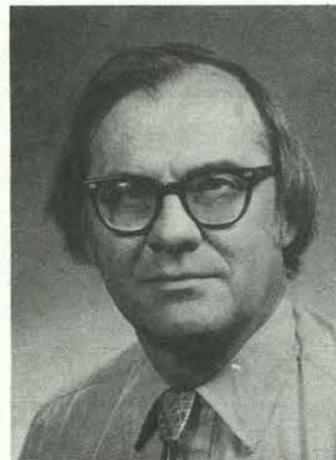
Ken Shriver - 8167 20



Margaret Key - 2633 10



Harold Gottlieb - 1244 15



William Stevens - 1230 20



Flora Burch - 3251 20



Cliff Potthoff - 8185 20



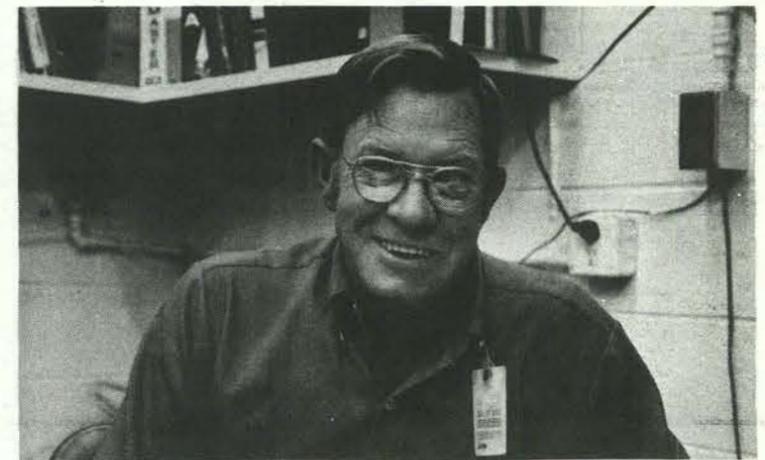
David Kirk - 8254 20



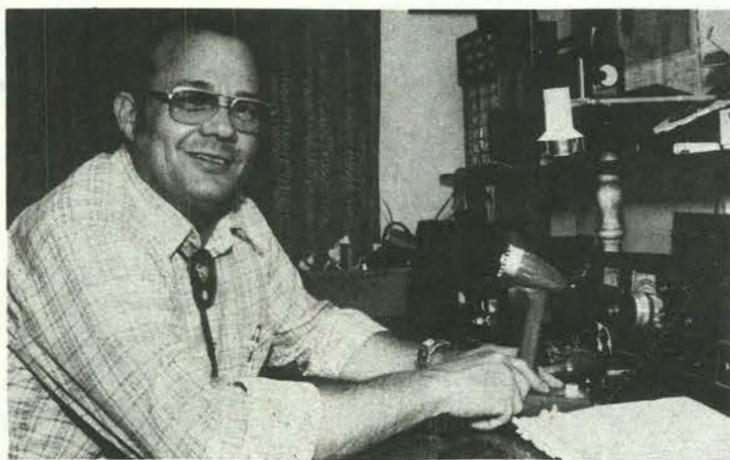
Bob Johnsen - 8161 20



Abelicio Molina - 3423 20



Joe Langdon - 9573 30



John Goff - 1713 20



Jan Inzerilla - 8323 20



Hal Faulkner - 8432 20



John Anderson - 8166 20



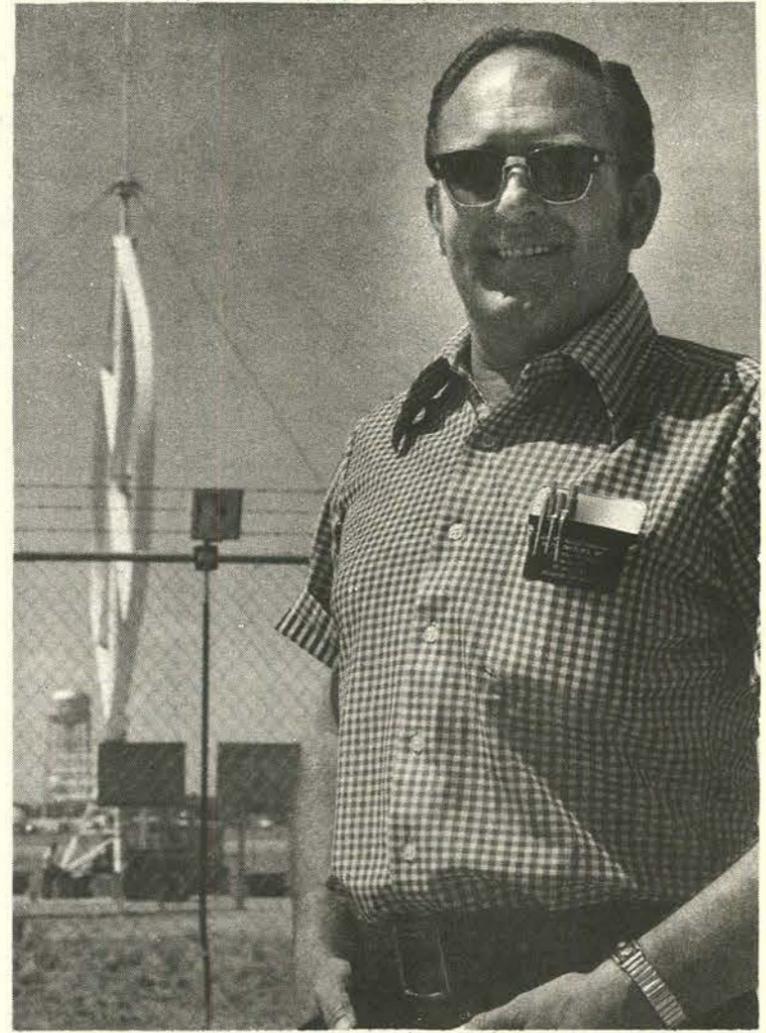
Don Gregson - 8150 25



Dominic Russell - 3121 20



Lloyd Miller - 9582 10



Carl Longfellow - 5715 25



Freddy Martinez - 3212 25



Lou Wittkopp - 8413 15



Ray Rychnovsky - 8158 20



Robert Mueller - 5000 25



Ted Church - 9480 30



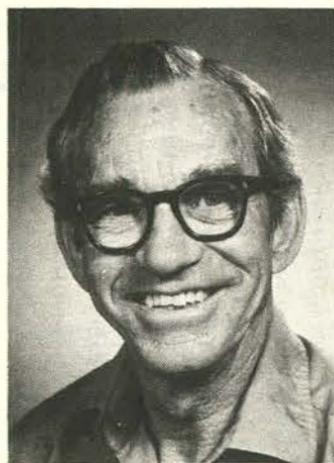
Maurice Gilmer - 1126 20



Bill McGuire - 8431 25



Ernest Tavasci - 3411 25



Phil Meekins - 9582 25



Len Morrison - 1112 20



Leo Arellano - 3211 25



Paul Metoyer - 3430 10



Harold Post - 1335 10



Robert Rieden - 2112 15



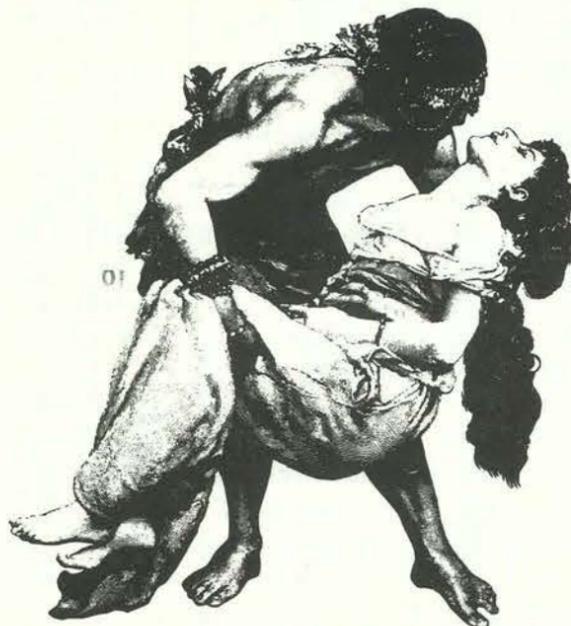
Ira Holt - 1332 20

What Ever Happened to Smallpox Shots?

Some physicians give the tetanus-diphtheria toxoid, similar to that given children, to adults. Others feel plain tetanus toxoid is all that is necessary. The frequency of tetanus boosters is something that has been changing over the past ten years or so. They used to be given on a yearly basis. Reactions, as well as effective blood levels, dictated a change to every five years. Currently, it is recommended that a booster be given only every ten years. If a person is exposed to a contaminating injury and his last booster was within the past five years, no booster is required. If it was more than five years ago, many physicians will give another booster even though the ten-year interval has not yet been reached.

You may have noticed in all we have written that the word "vaccination" never appears. Rather the word "immunization" is used. Vaccination is a form of immunization, but strictly defined, it is a very specific form of immunization, against one disease only: smallpox. Which raises the question: "Whatever happened to smallpox vaccinations?" Everybody needs a smallpox vaccination, don't they?

As you may have guessed, the answer is nobody needs a smallpox vaccination anymore. Through the most wide-ranging public health effort in history, smallpox



Swooning at the sight of a needle is no longer *de rigueur*.

has been completely eradicated. Last year, when this victory was declared, there was general rejoicing and then some subsequent concern as a few isolated cases were reported from the last stronghold of smallpox — Ethiopia. However, an intensification of effort in Ethiopia has been so successful that no cases have been reported there in at least six months and it looks as if smallpox is gone forever.

Mumps May Be Of Concern

There is one disease about which a number of adults, especially males, might be concerned, and that is mumps. It is true that most children who follow the suggested regimen of immunizations outlined here will achieve permanent protection against the disease, but what about those adults who have not had an immunization and who don't think they ever had the infection when they were young?

It should be emphasized that mumps is among the most infectious of childhood diseases so, if you were living at home with brothers and sisters who developed it, you in all likelihood did get the disease even though, perhaps, it was so mild you weren't aware of it. Nonetheless, some adults haven't had such exposure and they may very well be susceptible to mumps.

If one has the luxury of enough advance time, there are some expensive and quite intricate blood tests that can be performed to determine if one has had prior exposure to mumps. A positive result, of course, means that you are permanently protected. If negative, consideration might be given to being immunized.

This is especially worrisome to adult males because, in about 25 percent of cases of post-puberty mumps, there is involvement of the testes and the possibility that this involvement can result in sterility.

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.

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

FREE: Labrador cross pups to good homes, extra fine animals w/shots. Kane, 881-7672.

EICO RF generator, \$90; Palmer freq. counter, \$110; Tektronix sq. wave gen., \$125. Belding, 821-7463.

BRASS footboard 54"x35", \$100; ornamental iron footboard 54"x35", \$60; unused carved Turkish Meerschbaum pipe, \$35. Baczek, 255-3429.

AREA RUG, blue 8'x12', \$5; round dbl. drop leaf table, \$20; 3 chairs, \$2 ea.; orange modern sofa & chair, \$35; baby crib w/mattress, \$15; work table, \$35. Bishop, 299-5749.

SEARS refrigerator, \$50. Shinn, 299-6238.

AM-FM tuner, amp., 13 watts/chan. RMS, both \$90; new smoke detector, photoelectric, \$25; wide angle 35mm lens, screw mt., \$35. Molecke, 296-5850.

DISASSEMBLED 9'x16' greenhouse w/trays, pots, heater & many other extras. Self, 296-4137.

8x12 ATLAS aluminum storage shed. Sanchez, 298-9619.

SCUBA TANKS. Quintana, 265-6369 after 5.

REFRIGERATOR, white, 12 cu. ft., Sears frostless, \$150. Tapp, 821-0644 after 4:30.

CATALYTIC heater; cartop carrier; trailer hitch; H78-15 tires; gelger counter; screen door; doghouse; swing set; misc. children's clothes. Brown, 285-2831.

DARK mahogany headboard & bed frame, night table, 9-dwr. low dresser; 2 walnut finish end tables. Auerbach, 296-1489.

TWIN BEDS, innerspring mattress, box springs; mahogany cabinet to hold cassette tapes & player, stands or hangs on wall. Iman, 299-6500.

COLLIE PUPPIES: father purebred tri, mother collie & shepherd sable, \$30. Terrell, 265-0100.

TORO Guardian rotary lawn mower, 19", bought in '74, recent overhaul, \$90 or best offer. Halpin, 7609 Harwood NE, 299-7710.

CAMPER CUSHION, stabilizer between cab/cab-over, \$15; camper boot, \$50. Kohut, 296-8537.

STEREO SPEAKERS, Realistic Optimus - 1B, 20-20,000 Hz response, new, in walnut enclosures, \$120/pr. Schimmel, 296-2295.

VAPORIZER, Hanksraft, \$8; Kantwet crib mattress, \$10; Weber type barbeque grill, \$8. Caskey, 294-3218.

UNFINISHED picture frame material, 4c/ft., or make offer on several hundred feet. Worrell, 299-0381.

HEAVY tweed upholstered chair, \$25; Japanese 8mm movie camera, \$20; old Indian drum; leather flask. Smitha, 881-1001.

TWO outside doors, 5 glass panels, 32" wide. Olson, 268-5312.

TUXEDO, show collar, white dinner jacket, size 40, accessories, make offer; child's swing set, \$10. DeWerff, 298-1029, 5:30 - 7 p.m.

RECREATION VEHICLE: small pull trailer, '62 Cree, sleeps 6, sink, stove, ice box, \$550. Velasquez, 877-0652.

WALNUT gate-leg dining table, 22x42" closed, 42x84" open, \$195. Converse, 247-4568.

AIR CONDITIONER: Air Temp refrigerator 2-ton, fresh air control, 3-spd., thermostat, 220 V, single phase, \$175. Ruminski, 256-0770.

BED, ¾, bookcase headboard, box springs, foam mattress, \$35. Beatty, 299-3429.

TIRE, new Firestone super-belted, H-78-15, \$20; zippered canvas cartop carrier, \$20. Seaburn, 299-2215.

METAL BED FRAME (queen); mirror; Fullbore boots, 9½; Dremel jigsaw; bicycle motor; cheap headphones.

Hansche, 281-5623.

SELL OR TRADE: baby to half-grown chickens, ducks and geese. Lackey, 898-6638.

IVY geraniums in deluxe hanging baskets, ½ to ¾ of retail. Leenhouts, 299-7856.

HORSE EQUIPMENT: saddles, bridles, bits, bolso, cinches, nylon halters, stirrups, chaps, horseshoeing tools, barrels, barbed wire, cowboy boots. Rutledge, 281-1155.

TWIN BED steel swing apart frames, blond hardwood headboards, accommodate king size or use separately, \$35. Bassett, 898-1840.

OUTBOARD MOTOR, Wards 7½ HP, remote gas tank, gear shift, less than 25 hrs., complete w/tank, \$195. Morgan, 299-2850.

HAND lawnmower, 16", \$8. Austin, 298-5352.

BEER TAP, prong type, \$20. Rarrick, 296-2340.

TRAVEL TRAILER, Dalton, 13', 2 propane bottles, \$995 or best offer. Abbin, 296-7678 or 883-8665.

TRANSPORTATION

'65 MERCEDES 300 SE, 4 dr., AT, PS, PB, sun roof, disc brakes, 86,000 miles, \$2995. Grace, 266-7405.

TRADE '68 Olds Delta 88, full power, 4-dr., for Datsun, Toyota or equivalent. Perea, 255-6902.

'66 IMPALA 4-dr. HT, \$350. Martinez, 298-8812.

'75 MOBILE TRAVELER, 18.5 ft., 318 Dodge engine & chassis, PS, PB, AC, CB, 10-12 mpg, sleeps 6, \$8200. Lanoue, 877-0915.

'64 PLYMOUTH 2-dr. HT, AT, R&H, 318-V8, new tires, battery, fuel pump, \$675. Martin, 299-6768.

'69 VOLKSWAGEN BUG, 37,000 miles, auto. stick shift, one owner, book value \$1300, asking \$1100. Duncan, 299-2415.

'63 CHEVROLET Belair, motor needs work, 283 engine, R&H, \$125. Zurawski, 294-1078.

BIKE, woman's 3-spd., needs repair, \$10; GE cassette tape recorder, \$10. Simons, 821-9343.

'69 DODGE crewcab pickup, ¾ ton, PS, PB, AT, AC, 383-V8, short wide w/shell. Preston, 299-2331.

'73 BMW R75/5 motorcycle w/luggage & other extras, low mileage, adult ridden, over 50 mpg. West, 255-5855.

SMALL BIKE w/handlebars & banana seat. Hall, 298-8617.

'75 FORD, 4-dr. Gran Torino, PS, PB, AC, \$2050. Baczek, 255-3429.

20" SCHWINN fancy, heavy duty boys bike, front disk brake, shocks front & rear, 5-spd. stick shift, \$50. Hudson, 296-3484.

HONDA CB125S, 83 adult driven miles, w/new battery & windshield, \$500. Laskar, 299-1024.

'69 OLDS Vista Cruiser, PS, PB, AC, new battery, steel radials, air shocks, recent brake job & front end alignment. Olsen, 881-2761.

BICYCLE, Schwinn sting-ray, 3-spd., \$25. Ezell, 821-1768.

'76 TOYOTA Celica G.T. 5-spd. lift-back, \$3900, below book value. Stiefeld, 299-9293.

'76 CHEVY pickup, 4x4, PS, PB, AC, AT, fully loaded w/many extras, below blue book. Lackey, 345-5474.

'74 FIAT 124 TC wagon, AM-FM, 4-spd., CB wired, under 28,000 miles, below book at \$2395. Morgan, 299-2850.

'70 JEEP Wagoneer, PS, PB, AT, 360-V8, Eckhart, 256-7665.

SCHWINN BICYCLES: girls 1-spd., 20" Tornado, \$20; matched pair 24" Hollywood, \$24 ea. Austin, 298-5352.

'74 FORD Maverick 302, AT, AC, PS, SBR tires, AM/FM/i-trk, 30,000 miles, \$2550. Williams, 293-3630.

'74 YAMAHA RD 350, luggage rack, fairing, \$650. McConnell, 255-2480.

WORK WANTED

COLLEGE STUDENT needs summer work; yard cleaning, hauling, painting, house sitting, etc., have truck & tools. Ken Stixrud, 298-0478.

REAL ESTATE

3-BDR., den, fp, dbl. garage, \$39,500, CTL \$245 monthly payment, Eubank & Candalaria area. Lin, 292-1378.

3-BDR. HOFFMAN brick, 2250 sq. ft., lg. den w/tp, separate dining area, lg. LR, 2-car garage, 1½ bath. Brown, 265-2831.

ROSWELL: 2-bdr., den, 1500 sq. ft., \$17,500, trade, lease. Smith, 298-7365

HOFFMAN BRICK, 4-bdr., FR, fp, 1½ bath, 1940 sq. ft., remodeled kitchen, \$46,500. Hines, 296-4959.

3-BDR., den & lg. FR, 2300 sq. ft. w/plenty of storage, established landscaping. Jefferson, 299-1125.

FOR RENT

NEW 2-bdr. apt., unfurnished, fp, w/d hookup, enclosed patio, yard, \$260/mo. Ballard, 294-5364.

RENT OR LEASE: 3-bdr. house, Eldorado High ½ block, rec. veh. access, sprinklers, first & last, deposit. Smith, 299-1981.

3-bdr. house, carpet, drapes, fenced front & back, sprinklers, covered patio, garage, \$250/mo. Bozone, 294-1127.

MODERNIZED adobe, Guadalupe Trail, available in July, suitable for single or couple only, drapes, refrig. & stove. Stump, 898-2546.

LAKE FRONT CABIN, Vallecito Lake, near Durango, modern, 3-bdr., fp. Croll, 881-7235.

WANTED

VOLUNTEERS for NW Valley mental health center. Sandoval, 843-2870.

1968-1972 Chevy or GMC pickup. Blackwell, 265-4242.

'72 PINTO, Datsun, Subaru, or equal. Baxter, 344-7601.

INSTRUCTOR in Tramway-Montgomery area to give beginning guitar lessons to 11-yr.-old, starting in June. Prevender, 299-5253.

FIXED HUB WHEEL 4.80/8.00 for ¾" axle; trailer hitch for '75 Dodge van. Worrell, 299-0381.

ROOMMATE w/2 girls in 3-bdr. apt. near Montgomery & Louisiana, 2½ bath, indoor & outdoor swimming pool. Thompson, 298-3283.

TENT, small, 1 or 2-man pup tent size. Stoever, 296-3717.

LOST AND FOUND

LOST—keys on silver ring; 3 keys on square metal key ring; large-faced watch, crystal scratched, with turquoise Zuni band; white circular contact case.

FOUND—none

LOST & FOUND, Bldg. 832, 4-1667.

FRIDAY	SATURDAY
3—HAPPY HOUR ROAST BEEF BUFFET Adults \$3.25 Under 12 1.92 BROWN SUGAR Single Mingle - 4:30	4—POOLS OPEN FOR SUMMER SEASON 11-6 Each Day
10—HAPPY HOUR STEAK FRY II Adults \$3.95 (Snack Bar Open) COUNTRY CAPERS	11—KING CRAB FEAST Cocktails 6 Dinner 6:30 WATERMELON MOUNTAIN JUG BAND Mbr \$5.90 Guest \$6.90

ACTUALLY—you may be too late to get tickets for the Combination King Crab and Jug Band Festival coming up on the 11th. But it certainly is worth a try. Drop by the office today or tomorrow and, if necessary, resort to an old Viking trick—begging and pleading. Don't threaten through—unless you want a Gingersnap.

I—and several other Sandia/ERDA Singles Mingle after work TODAY in the C-Club Patio. Music, games, Happy Hour-priced drinks (including a 90-ounce pitcher of beer for \$2), snacks, conversations both visceral and cerebral, and (we hope) you if you're single by choice, chance, or whim of romance. 50 cents at the patio door (through the ballroom).

NEVER—let people tell you that Roast Beef and *Brown Sugar* don't go well together. Bring them along to Happy Hour tonight and let them admire your discriminating tastes in food and music—and friends.

WAS—Steak Fry I your idea of poetry? Waning poetic once more, what is so rare as a steak in June? So medium rare? (If you want something well done, you're reading the wrong page again.) Steak Fry II fills the patio a week from tonight. Come out and



let it fill you. The 10-ounce New York cut steaks are delicious, but they're limited to one per customer. The snack bar will be open for the kids. At 8:30 the *Country Capers* will do their Western thing right there on the stage, coach.

AS—much as you teens hate to see school end, it's ended. Share your sorrows with other teens and *Max*, a new group whose name probably describes the decibel levels on Thursday, the 9th, from 7:30 to 10:30. Tickets are 50 cents and must be purchased by sympathetic parents.

GOOD—old (and young and the awkward ages in between) Sanadoes hostess their mothers and daughters at a tea at the Club at 1:15 on the 7th. If a cup of tea is not your cup of tea, give it back to its owner and enjoy some beautiful entertainment by the Albuquerque Dance Theatre. I've seen this group and they're good. Reservations should have been made yesterday, but if you call Barb Gunderson at 298-2133 and carry on about your childless mother and your orphan daughter, she'll probably relent and let you come join the tea party.

AS—today is the last day of school, tomorrow begins the swim season in Earnest. (Earnest is located in the southeast part of town near the intersection of Wyoming and West Sandia Drive.) Pools are open every day from 11 to 6 normally, till 9 on abnormal days like Fridays. They can be rented for parties if there's no horseplay (cowplay is OK). The Twin Pools will be closed June 17 after 4 and all day the 18th for the 21st Annual Invitational Age-Group Swim Meet. (Come out and cheer the Aquatics Club.)

I—would enroll my teenagers in the Hunter Safety Course starting on Tuesday at the KAFB Firing Range from which they would get a genuine certificate enabling them to hunt legally. But the little Savages are Browning in the Springfields these days whatever the Weatherby. So I guess my Marlin Remingtons are lost and gone forever when it comes to being Sharps shooters. (At least they're not rolling stones that gather no Moss, man.) Muzzle yours, leap into the breach, and trigger some action—sign them up today.

ONCE—the seas were filled with them: majestic windjammers plying their trade among the romantic ports-of-call. Now there are only a few left. Earl Sherwood managed to get himself shanghai'd aboard one in the Caribbean, and he'll share his slides of a Windjammer Cruise on the 15th at 7:30. Yacht to come see them.

WAS—it travel information you read this whole page to find? This is it. Immediate signups are necessary for the Las Vegas Anti-Inflation trip June 13-15, the Las Vegas Caper June 17-19, and the Tokyo trip July 26 - August 9. Within the next ten days or so, decide on the Cumbres and Toltec Excursion July 23 (at a 20% discount) or the Grand Canyon Raft Trip August 17-22 (a \$50 discount here). The Super Cheap to London, Amsterdam, or Frankfurt is still open in late summer or early fall, but don't wait much longer. You've got a little more time to decide on Alaska August 28 - September 8 or Hong Kong November 12-29. Info on all trips from the Club Office.

MORE INFO—265-6791.



PSYCHO-CYCLIST returns! His precautions against theft are admirable, but the Temperamental Tetherer has picked a fire alarm and hydrants (they're red) are no-no's as bike anchors.