

Space Shuttle Work About Complete; Tests Successful



TEST VEHICLE for the space shuttle parachute system hangs on wing of B-52 mothership. Note slot in wing flap to accommodate aft section (which contains the recovery system). Sandia is serving as a consultant to NASA for the recovery system development program.

Since February 1974 Sandia has served as consultant to NASA for the space shuttle solid rocket booster recovery program. Two tests of the system were conducted successfully recently at the National Parachute Range, El Centro, Calif.

A cluster of the three main parachutes (each 115 ft. in diameter) gently lowered the 48,000-lb. test vehicle to earth from an altitude of 18,000 ft. This is the heaviest weight that could be dropped to simulate the 170,000-lb. solid booster rocket which the parachute system will ultimately handle.

Dean Wolf (1332), project leader, reports that Sandia's work significantly contributed to the successful tests.

"We're about wrapped up," Dean says. "We have performed extensive design analysis of the system, made a thorough computer study of the release of the test vehicle from the B-52 mothership (the same one that dropped the X-15 experimental rocket aircraft) and contributed pieces of hardware and surplus parachutes that probably saved taxpayers more than \$1 million. As a matter of fact, we just returned \$100,000 to NASA that wasn't spent on our consulting program. We will continue with the program through full scale tests of the operational space shuttle but, essentially, our work is complete."

"At the time the space shuttle concept

[continued on Page Two]

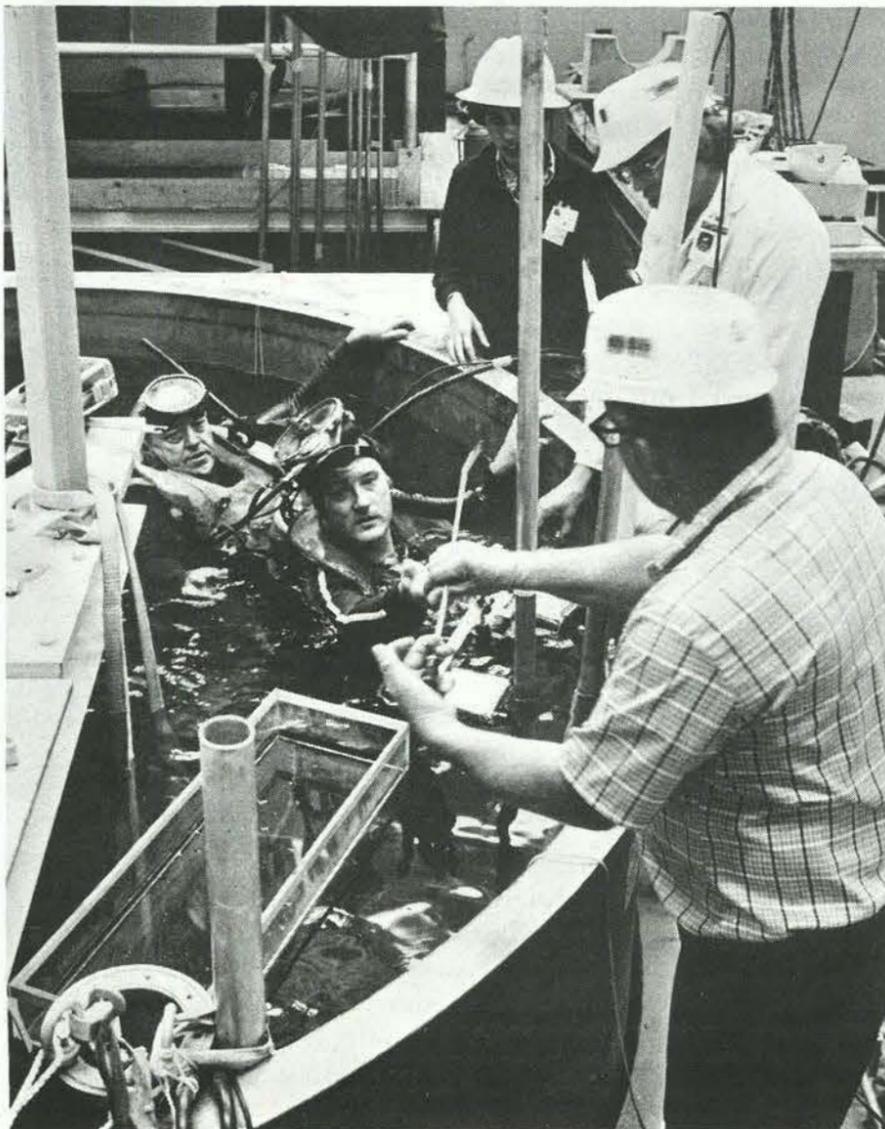
LAB NEWS

VOL. 29, NO. 22

OCTOBER 21, 1977

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

SCUBA DIVERS Marcel Schiess (1715) and Mark Davis (5830) entered the 30-ft. ACPR shielding pool last week to make more detailed radiation readings after health physicists determined by remote readings that the area was safe. Mark and Marcel took pictures of the fuel assembly rack at the bottom of the pool and unbolted some hardware. Disassembly of the facility will be performed next week by contract divers.



DOE Officials Are Named

The last issue of LAB NEWS carried charts of the table of organization of DOE. We have since received the names of a number of people who will occupy top slots in the new department.

President Carter has nominated the following for Senate confirmation:

John O'Leary	Deputy Secretary of Energy
Dale Myers	Under Secretary of Energy
David Bardin	Administrator, Economic Regulatory Administration
Alvin Alm	Assistant Secretary of Energy (Policy & Evaluation)
Harry Bergold	Assistant Secretary of Energy (International Affairs)
Robert Thorne	Assistant Secretary of Energy (Energy Technology)
John Deutch	Director of Office of Energy Research
Charles Curtis	Members, Federal Energy Regulatory Commission
Georgiana Sheldon	
George Hall	

The Secretary of Energy has announced these appointments not requiring Senate confirmation:

James Bishop	Deputy Asst. Secretary for Public Affairs
Roger Colloff	Special Assistant
Merwyn Greer	Controller
William Heffelfinger	Director of Administration
Frederick Hitz	Deputy Asst. Secretary for Congressional Affairs
William Peacock	Deputy Asst. Secretary for Intergovernmental Relations
Michael Tashjian	Director of Procurement & Contracts Management
Raymond Walters	Director, Executive Secretariat

DOE will be located in the Forrestal Building, 1000 Independence Ave. SW. Temporary headquarters for key officers is 730 Jackson Pl. NW, Washington, D.C.

Afterthoughts

Double entendre--The community of scientists and engineers at Sandia Laboratories will be gratified to learn that another breakthrough has been achieved in the metrication of the land: the Vassarette line of brassieres is going metric. You now ask the salesclerk not for a 32A --it's "let's see something in a 70/80, please." One thing about metrication--the new numbers certainly sound impressive (a case of there being less here than meets the ear?).

* * *

Ad man's dream--Anheuser-Busch says it will soon become the first brewery in the country to use solar energy in its beer-making process. A system is being installed that uses solar energy to heat water for the pasteurization of bottled beer at its Jacksonville, Fla. plant. The company's next ad campaign will have a lot of fun with this development. How about "Drink Budweiser--it's liquid sunshine. And you get your vitamin D too!"

* * *

Behind the statistic--Plant Engineering's news notes reports that 19,518 telecons were processed during FY 77 through the Organization 9753 Telecon Desk. That works out to 78 trouble calls per working day--you know, that's a bunch of trouble.

* * *

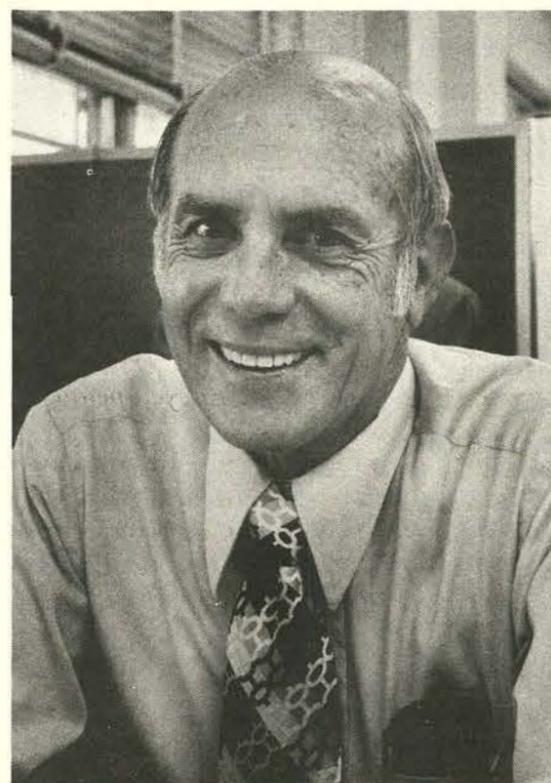
Now it is autumn and the falling fruit
and the long journey towards oblivion.

The grim frost is at hand, when the apples will fall
thick, almost thunderous, on the hardened earth.

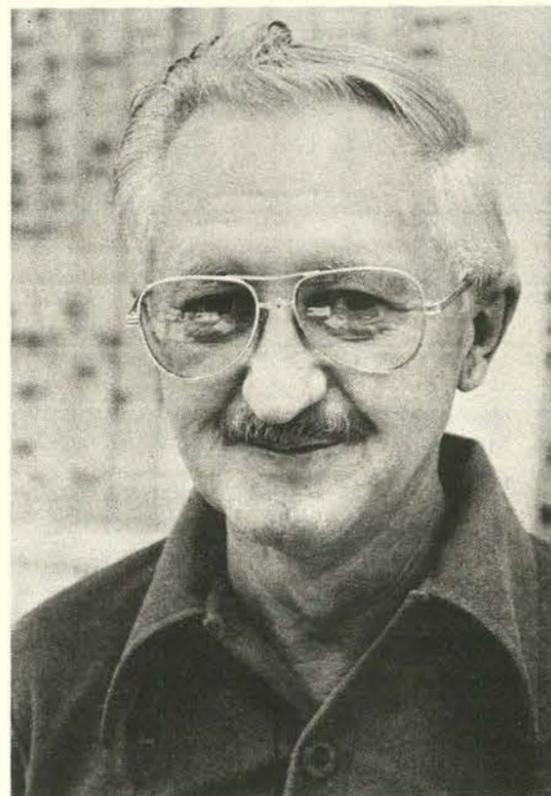
And death is on the air like a smell of ashes.
Ah! can't you smell it?

Ship of Death D. H. Lawrence *js

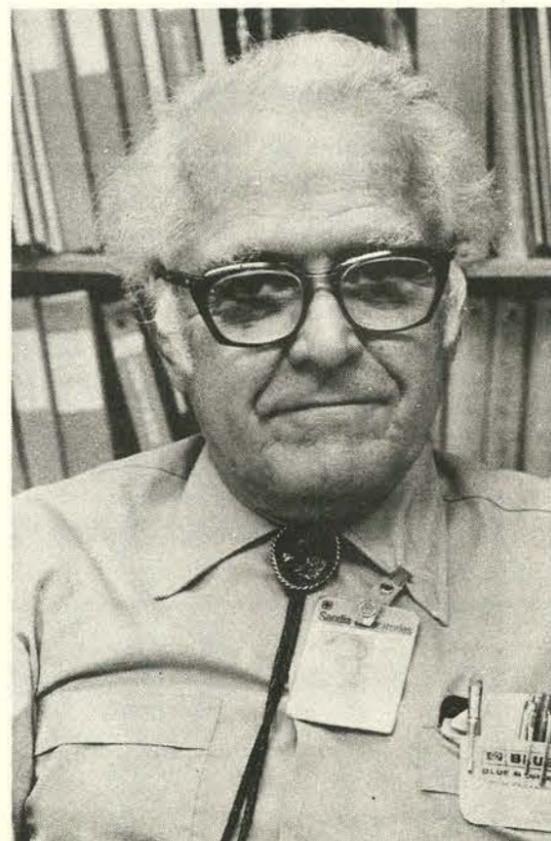
Retiring



Bob Thompson (3212)



Neal Howard (9753)



William Carman (2153)

continued from Page One

Sandia Space Shuttle Work

with recoverable solid rocket boosters was evolving, Sandia possessed the only experience in fielding large ribbon parachute systems," says Ira Holt (1332). "During the Test Readiness Program, we dropped many 76-ft. diameter ribbon parachutes with 22,000 to 45,000 payloads."

Several of these parachutes were donated to NASA along with special equipment needed for loading the heavy test vehicles on the drop aircraft.

Sandia evaluated the preliminary designs that NASA proposed for the recovery system, made recommendations on the final design and helped with contractor selection. Sandia also helped plan the test program for the recovery system.

Harold Spahr (1336) performed extensive analysis of the separation trajectory of the test vehicle from the B-52 mothership. (Ira Holt suggested using the old B-52 from the X-15 and X-24 rocket plane programs. It was rescued from salvage and transferred from the Air Force to NASA.)

"Analysis of the drop sequence was difficult," Harold says. "The B-52 has a slot in its wing where the test vehicle has only 1.5 inch clearance. The release mechanism may not be simultaneous. If the front 'hook' releases slightly before the rear hook, clearance is reduced. Our analysis showed that the planned release would be safe. In the 'worst possible' case, there would still be approximately 0.75 inch clearance."

The analysis was performed with a computer program Harold developed for weapon/aircraft releases. Final product of the computer program is a movie showing side and bottom views of the release sequence. The program obviates the need for many full scale or wind tunnel separation tests, saving development dollars and time.

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Experimental H-Pipeline Begins Operation

Hydrogen . . . the primordial substance from which all other elements in the universe were developed. In terms of cosmic abundance, with a rating of silicon = 10,000, it has been estimated that the figure for hydrogen is about 3.5×10^8 . . . in seawater, hydrogen ranks second (behind oxygen) with an estimated 510,000,000 tons per cubic mile.

Van Nostrand's *Scientific Encyclopedia*

Hydrogen is abundant and clean-burning, and it's easy to see why the expression "hydrogen economy" frequently comes up in discussions of alternate energy sources. Solar energy is probably dominant in the public fancy, but the public is also aware that the oceans are filled with hydrogen and that it burns cleanly, so why not exploit this virtually inexhaustible fuel?

Like many potential sources of energy which at first glance are attractive, hydrogen is not without drawbacks:

—The extraction of hydrogen from water by electrolysis or other means remains expensive and requires a primary energy source.

—Compared to natural gas, hydrogen has about one-third the heat content in BTU's. To assure that the customer receives enough in terms of heat content, the gaseous hydrogen would have to be piped at higher pressures than are used with natural gas. This means a more expensive pipeline network.

—Hydrogen attacks most steels, including those commonly used in pipelines, producing hydrogen embrittlement. This can lead to decreased ductility, increased cracking and pipeline failure.

At Sandia Livermore, Steve Robinson, Bob Anderson and Bob Habekoss of Materials Development Division II 8314, are concerned with the problem of hydrogen embrittlement in pipelines. They have now completed construction of a miniature, experimental pipeline at SLL's Site 9291. Steve explains: "We—DOE—are looking for ways to transport hydrogen at higher pressures. If cheap hydrogen should become available, we'll want to use existing pipelines. This means we have to determine the magnitude of the embrittlement problem, and our 80-foot pipeline addresses that purpose."

SLL's hydrogen pipeline is constructed of carbon-manganese steel similar to those used in natural gas pipelines. Compared to the usual 24 and 36-inch pipeline diameter, its diameter is only 4 inches, but embrittlement problems are not a function of pipe size. Mechanical and metallurgical flaws in the pipe and defects in pipeline welds are of particular interest as possible failure sites. The experimental pipeline facility is set up to evaluate the behavior of deliberately defective pipeline sections and welds. The effects of gas pressure, time, and gas composition will be investigated. Data collected and knowledge gained are expected to have application to large pressure vessels used for hydrogen storage as well as pipelines.

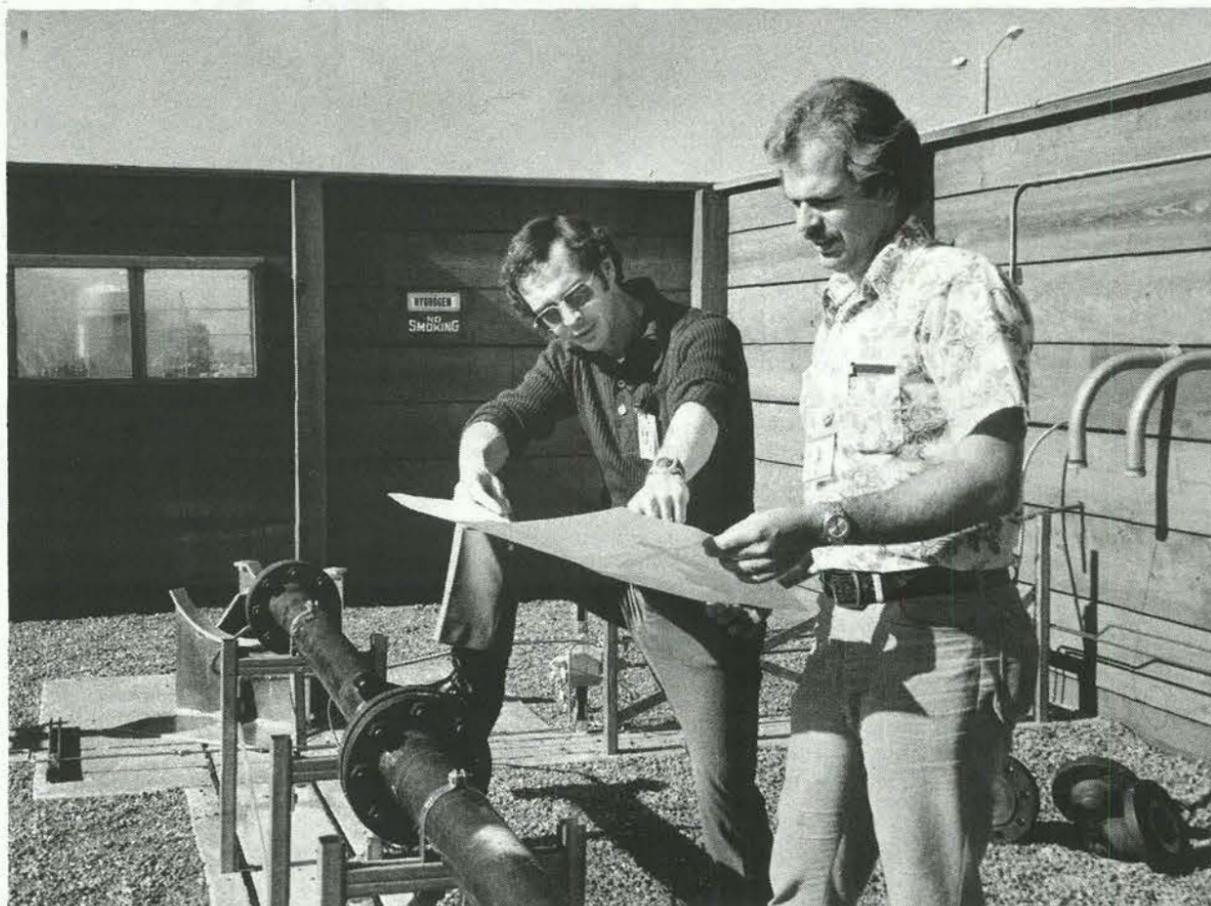
"The embrittlement problem," says Steve, "would virtually go away if we

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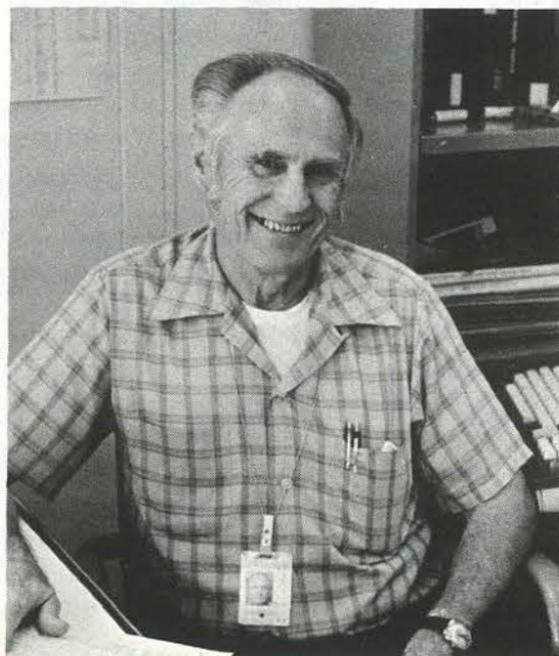
OCTOBER 21, 1977



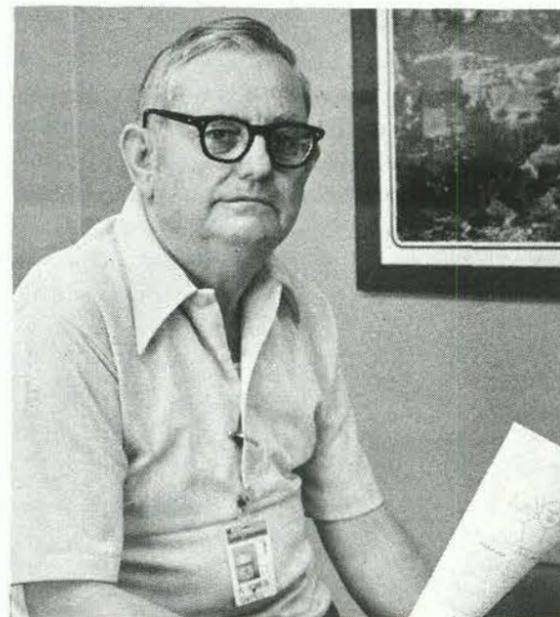
HYDROGEN PIPELINE—Steve Robinson and Bob Anderson (8314) check out section of SLL's 80-foot pipeline. Facility will be used in studies of hydrogen embrittlement as it relates to use of existing pipelines for possible transmission of the gas in a hydrogen economy.

wanted to use stainless steel for pipelines. Consider though, the tens of thousands of miles of existing mild steel pipelines, the cost of stainless steel (ten times that of mild steel), the construction costs and that stainless steels require the use of strategic resources such as chromium. The price tag for a new stainless steel distribution gas system would be excessive. Perhaps our experimental pipeline will point the way to a less expensive solution."

Retiring



Howard Schmalte (8346)



Ken Chappell (8413)



Don Skinrood (8413)



SKI SWAP chairman Norm Elliott (2552) tells Mariam Schroeder (wife of Don, 2648) that the big bash is next weekend at the Agriculture Bldg. on the State Fair Grounds. Sandia Peak Ski Patrol leader Gwen Cyrus (wife of Jack, 2524) looks on. Register skis, boots, poles, and clothing for sale at the Swap on Friday the 28th, then buy stuff on Saturday the 29th. Doors open at 9 a.m. on Saturday. More than 5000 items will be up for sale. Proceeds buy medical supplies and rescue equipment for use by Patrol on Sandia Peak.

Fit Is Better

Aerobics & You

Back in the mid-60's when the physical fitness boom was just getting underway, a young doctor named Kenneth Cooper published a book, *Aerobics*, that is likely the single most influential factor in the physical rehabilitation of millions of Americans. Dr. Cooper didn't start the physical fitness revolution, but he abetted it mightily with his mix of medical statistics, a systematic program of fitness and, most important, a means for the participant to keep track of his or her progress through the sweaty accumulation of "points."

To gain or to maintain a certain level of fitness, Cooper chiefly prescribes running, and he has developed a point system under which you achieve a certain number of points for running a given distance in a given time. For example, if you run a mile in 8½ minutes you get 5 points. Thirty points per week worth of work should ultimately win you access to the "Good" category of fitness. If you choose to work harder, 50 points would put you in the "Excellent" category. These categories are themselves defined by a running test:

Fitness Category	Distance Covered in 12 Minutes
Very poor	less than 1.0 miles
Poor	1.0 to 1.24 miles
Fair	1.25 to 1.49 miles
Good	*1.5 to 1.74 miles
Excellent	1.75 miles plus

*Over 35, 1.4 miles in 12 minutes is "Good"

A person about to take up the Cooper plan would, after an OK from his or her doctor, repair to the quarter-mile track and, watch in hand, see what distance could be covered in 12 minutes. A similar table is given for a run of 1.5 miles (instead of 12 minutes). The existing level of fitness would thus be established, after which an appropriate regimen of exercise is determined.

So what are "aerobics"? The term is defined in Webster simply as that which takes place in the presence of oxygen, but

Cooper goes a bit beyond that with his definition:

"Aerobics refer to a variety of exercises that stimulate heart and lung activity for a time period sufficiently long to produce beneficial changes in the body."

The central element in Cooper's thesis is to increase the maximum amount of oxygen that your body can process within a given time—your aerobic capacity. If you conscientiously pursue the proper exercise, changes will take place over a period of time in the various systems and organs of the body. This is called the "training effect," and it occurs only when the exercises are of sufficient duration and intensity to be classified as aerobic. A two or three mile run is aerobic. A golf game is not (not intense enough).

Frequency is also a factor in achieving a training effect. Most physiologists recommend workouts at least four days a week—you can't do it all during just one frantic Saturday morning workout.

There's a golden future for those who undertake the Cooper way. These are his words on the effects of aerobic exercise:

- It strengthens the muscles of respiration and tends to reduce the resistance to air flow, ultimately facilitating the rapid flow of air in and out of the lungs.
- It improves the strength and pumping efficiency of the heart, enabling more blood to be pumped with each stroke. This improves the ability to more rapidly transport life-sustaining oxygen from the lungs to the heart and ultimately to all parts of the body.
- It tones up muscles throughout the body, thereby improving the general circulation, in time lowering blood pressure and reducing the work on the heart.
- It causes an increase in the total amount of blood circulating through the body

Inspect Those Shower Doors

Tom Zmiejko (9658) has a safety reminder for homeowners. When he accidentally shoved his knee through the glass door of a shower stall, 13 stitches were required to patch up the knee. The shower door, fitted with ¼" plate glass, splintered into sharp slivers and chunks. Many homes do not meet a recently (July 6, 1977) instituted Federal building code requiring the use of tempered glass. Some contractors have used safety glass for several years, and it is easy to detect. Tempered glass is always identified as such in one corner. Tempered glass for shower doors is usually mottled and opaque; however, it can also be clear. Tom reports that replacing the plate glass with tempered glass is relatively inexpensive—about \$25 per glass door panel.

Authors

M. A. Butler and D. S. Ginley (both 5154), "Photoelectrolysis with YFeO₃ Electrodes," Vol. 48, No. 7, JOURNAL OF APPLIED PHYSICS.

B. Granoff (5731) and H. E. Nuttall (UNM), "Pyrolysis Kinetics for Oil-Shale Particles," Vol. 56, No. 3, FUEL.

R. E. Palmer (5216), T. D. Padrick (5215) and R. B. Pettit (5842), "Evaluation of Flashlamp Reflectors for the Atomic Iodine Photodissociation Laser," Vol. 48, No. 7, JOURNAL OF APPLIED PHYSICS.

P. M. Richards (5132), "Effect of Impurities on One-Dimensional Hopping Conductivity: Saturation of Current," Vol. 15, No. 12, PHYSICAL REVIEW B.

E. J. T. Burns (5244), "The Use of Some Metal Photocathodes for Absolute Intensity Measurements in the Soft X-Ray-Vacuum Ultraviolet," Vol. 31, No. 4, APPLIED SPECTROSCOPY.

D. M. Follstaedt (5111), "NMR Study of Copper with Vanadium Impurities," Vol. 16, No. 1, PHYSICAL REVIEW B.

E. J. Graeber (5822) and B. Morosin (5154), "The Molecular Configuration of the Decaniobate Ion (Nb₁₀O₂₈)," Vol. 33, Part 7, ACTA CRYSTALLOGRAPHICA.

E. J. McGuire (5211), "Electron Ionization Cross Sections in the Born Approximation," Vol. 16, No. 1, PHYSICAL REVIEW A.

J. G. Fossum (2144), "Physical Operation of Back-Surface-Field Silicon Solar Cells," and Fossum and F. A. Lindholm (U. of Fla.), "The Dependence of Open-Circuit Voltage on Illumination Level in p-n Junction Solar Cells," special IEEE issue on Photovoltaic Devices, April 1977.

A. D. Swain (1222), "Error and Reliability in Human Engineering," B. B. Wolman (Ed.), *International Encyclopedia of Psychiatry, Psychology, Psychoanalysis and Neurology*, Boston: Von Nostrand Reinhold, Aesculapius Publishers, 1977, Vol. IV.

and increases the number of red blood cells and the amount of hemoglobin, making the blood a more efficient oxygen carrier.

You can find the same claims on the label of a patent medicine bottle but, as Dr. Cooper notes, none of this is speculation. "The anatomic and biochemical changes characteristic of the training effect have been documented in the laboratory many times."

I've followed the Cooper method for five years and have no quarrel with any of his assertions. If you're interested, I suggest you pick up a copy of *The New Aerobics*. (An even later edition, *The Aerobics Way*, is slated to come out in late November.) It's available as a paperback and your modest investment may pay a handsome dividend. • js

Take Note

More than 50 local suppliers, most of them machine shop owners and their employees, attended the eight-session "True Position & Dimensioning Course" during the past two weeks. The course was set up by Purchasing's John Lewis, and Ken Swanson of Engineering Information Systems Division 9636 was the instructor.

* * *

Tomorrow, Oct. 22, is the date of the Junior League's 3rd Rummage Sale. The event is again taking place at the Civic Auditorium. Proceeds from the sale go to a number of worthy causes that the League supports. Just about everything is offered—sporting goods, clothing, hardware, furniture and more. Doors open at 8 a.m.—get there early for the super buys.

* * *

Halloween approaches and so do those hordes of little monsters who pound on your door beseeching a treat (if you collect befuddled expressions ask one sometime what the "trick" is). So the Kidney Foundation is selling bite size Tootsie Roll candy, suitable for disbursement on that night, for one buck per canister and, as a bonus, the canister is designed to be used as a bank after it's empty. Volunteers will sell the candy during regular banking hours at all branches of Albuquerque National and First National Banks on Oct. 28. You can also buy the candy all next week at Harkness Drug, 4th and Candelaria NW, and at the Kidney Foundation office, 1923 Alvarado NE.

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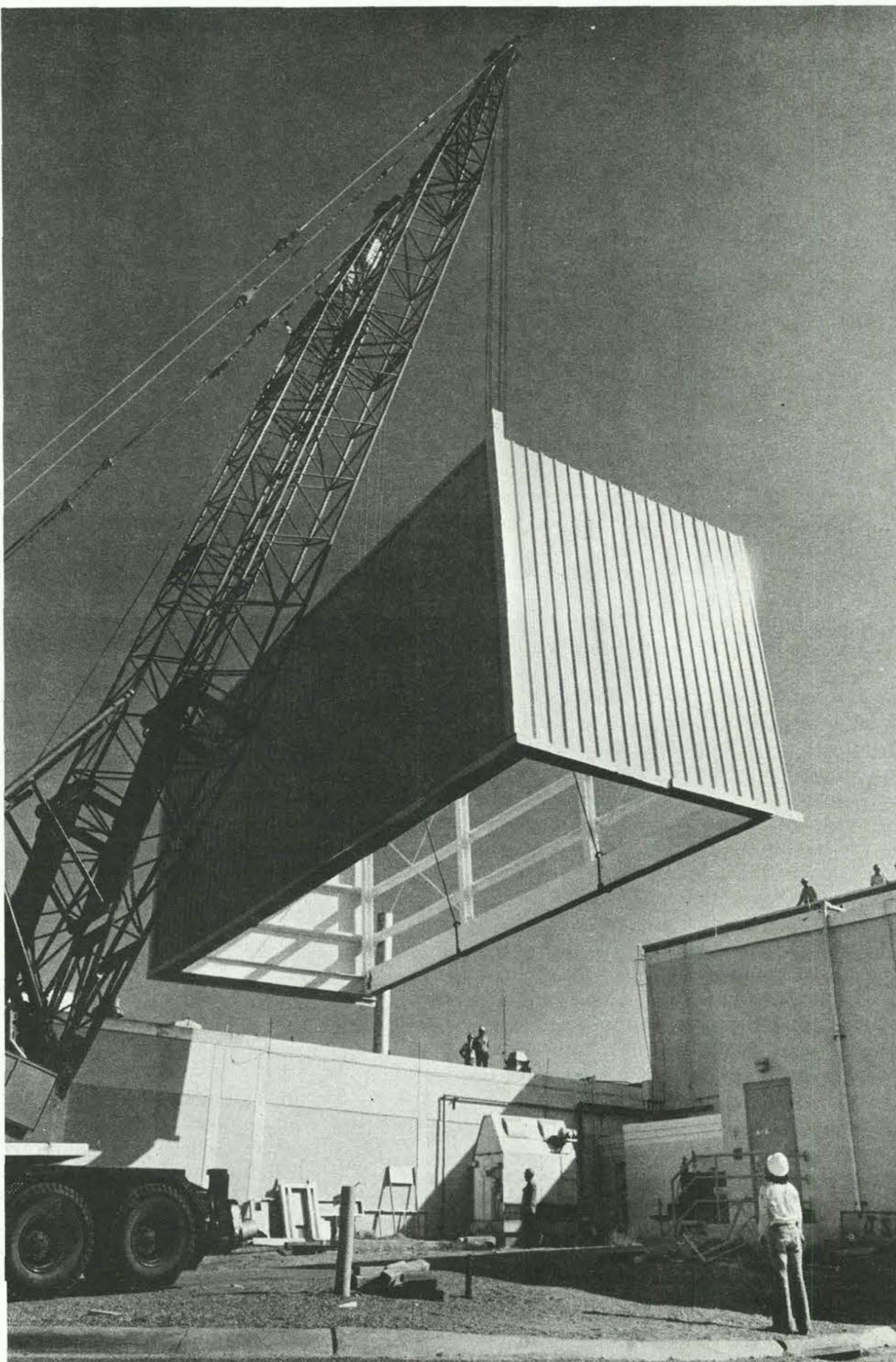
When did you last ask the Social Security Administration to furnish you with a statement of your Social Security Account? Many employees go a lifetime without ever checking to see if their accounts are correct and then, because too many years have passed, have a difficult time straightening out records so that they can draw the maximum Social Security benefits to which they are entitled. It's a simple matter to complete a post card Request for Statement of Earnings (Form OAR 7004) which can be obtained from Benefits Division 4112 (8214); and, within a few weeks of mailing the card, you'll receive from Social Security a record of all earnings credited to your account.

* * *

The second seminar on microprocessors and LSI devices will be held Oct. 26 from 8:30 to 11:30 a.m. in the Sandia Exhibit Center. Steve Diamond (Intersil) will discuss the 6100 CMOS microprocessor system. The speaker and other Intersil representatives will be available from 1 to 5 p.m. for consultation.

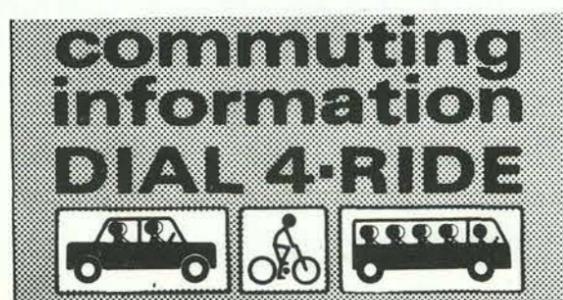
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The KAFB Weekly Bulletin carries a reminder that it is a violation of base regulations to carry privately owned firearms on base except for some legitimate purpose such as participation in a shooting competition. For such purpose you must produce an AF Form 1314 and advise the



NEW "PENTHOUSE" addition to the Annular Core Pulse Reactor high bay area is lifted into place by tandem cranes, adding 17 ft. to the height of the ceiling over the reactor. The structure weighs 40 tons, measures 17 x 45 ft. It will house a new hoist and monorail to permit long test assemblies to be inserted and removed into and out of the reactor core. The new addition is part of ACPR upgrade.

security policeman at the gate that a firearm is in the vehicle. If you return from a fall hunting trip and forget to take the gun out of the camper and your vehicle is "inspected," i.e., searched, the firearm is subject to confiscation.



Materials Management Workshop Next Week

Seventeen laboratories will be represented next week at the 22nd annual Materials Management Workshop, hosted this year by Sandia Labs and chaired by Craig Summers of Stores Management Division 3727. The Workshop runs from Oct. 25 to Oct. 27 and is being held at the Sheraton Old Town Inn. Sessions will be run in the hotel's Turquoise Room.

Like Sandia, the laboratories are all contractors to the Dept. of Energy.

Speakers at the Workshop from Sandia include Larry Conterno, director of Purchasing, Russ Foster (3730) and Jimmie Martin (3411). A number of speakers from other laboratories are also on the agenda.

Merrill Murphy Has a Gem of a Hobby

Merrill Murphy, an electronics TSA in Experimental Systems Division 1731, has been cutting and polishing stones since 1953. He is an accomplished lapidary. And, during the past 17 years, Merrill has also become an expert in the art of gemstone faceting.

In addition to their industrial uses, gemstones are prized today much as they were in ancient times for ornamental purposes, chiefly personal adornment. A gemstone is a mineral substance whose beauty or rarity causes its popularity. Ancient people probably prized the original rough stone because of its color, or because it was transparent and had some light reflecting power. Later they learned to polish their stones to enhance their beauty.

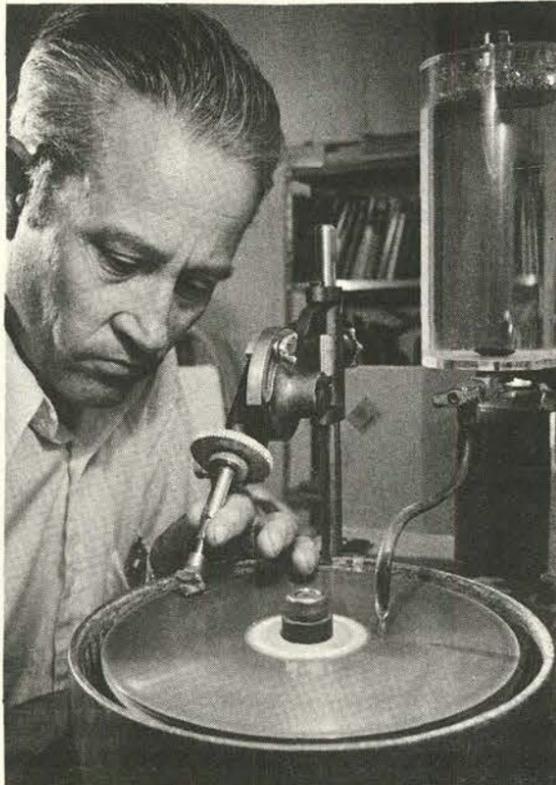
Probably the oldest form into which stones were shaped is *en cabochon*, a French term referring to the rounded shape. For years this was the only gemstone cut. Modern gem cutting began in 1475 when it was accidentally discovered that diamonds would scratch each other, although there is evidence that the people of India were using diamonds as an abrasive long before this date. Today, "cabochon" means a gem cut in convex form, highly polished but not faceted; it also means this style of cutting.

"Agates make fine cabochons," Merrill says. "Agates are fine grained, variegated, with colors arranged in stripes, blended in clouds or showing moss-like forms. The cabochon cut is used for opaque, translucent and even some transparent stones such as opal, carbuncle (ruby, garnet), and jade. Most transparent gems are faceted to produce brilliancy."

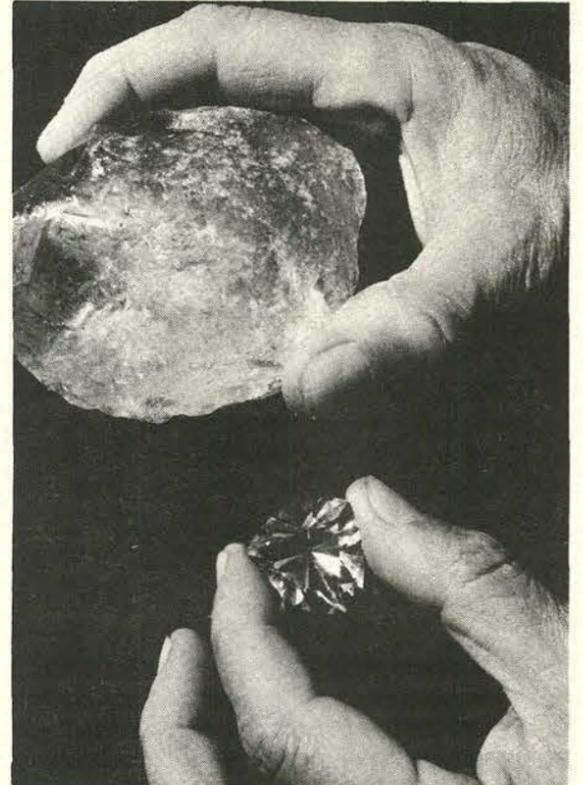
Merrill's favorite hunting grounds for cabochons is the Jemez country. He has a beautiful cabochon from Jemez—a soft rosy hue, with a landscape of mountains and mesas in a darker shade and an approaching, greyish/white tornado funnel.

To look at Merrill's cabochons is to let your imagination wander. Different shapes (all rounded, smooth, and highly polished), different colors and patterns, and different scenes. It's difficult to believe that these striking pieces came from very ordinary appearing rocks.

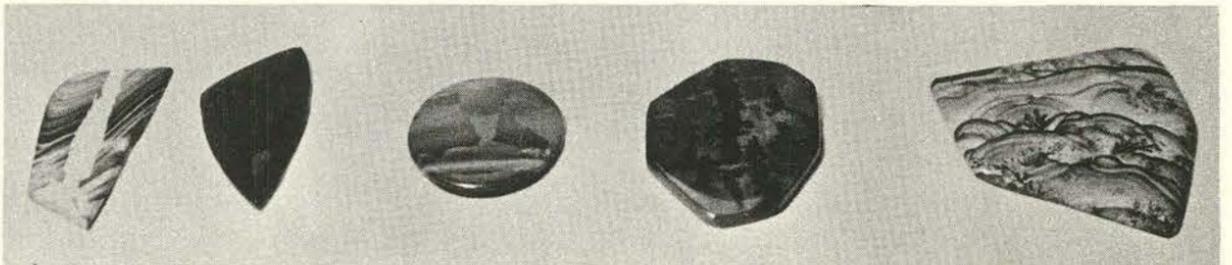
Merrill took us through the steps for cutting and polishing a cabochon. He used a piece of jade which he had sliced with a huge slab saw—too large for his workroom and relegated to the garage. Next Merrill cut off a small piece of the sliced jade with a diamond-edged trim saw. Then we moved to the coarse grit grinding wheel. With water running over the wheel, Merrill begins to work on the shape he wants. With the cabochon shaped, he moves on to another finer grit wheel—this one is a silicon carbide wheel which gives the jade a smoother finish. An even finer finish is achieved in the next step with sander belts. The final step is the polisher which has two wheels—one diamond dust and oil, the other tin oxide on felt. Diamond polishing is effective on jade; felt and tin oxide is



MERRILL MURPHY (1731) demonstrates the art of faceting. He is making geometric cuts with this disc—diamond bonded by nickel. When finished, this stone—a golden beryl—will have 70 facets. A standard diamond has 57 facets.



THE BEFORE AND AFTER of a quartz gemstone. The heart-shaped stone with triangular facets is Merrill's own design. The original chunk of quartz came from Brazil and is harder than steel.



CABOCHONS—"You never know what your cabochon will look like until you slice the rock and start polishing," Merrill says. Center cabochon came from Jemez Mountains.

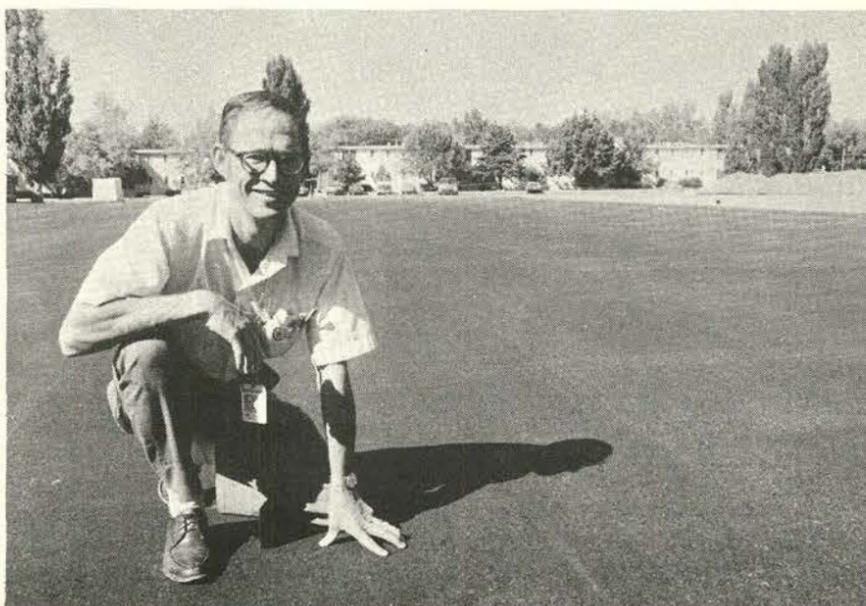
used on agates and many other stones. The whole procedure takes about 30 minutes.

Merrill says he has been picking up rocks since he was four or five years old. Today, he buys most of his gemstones from dealers. "The whole thing is more of a hobby than a business. Occasionally, I'll sell something in order to buy something else."

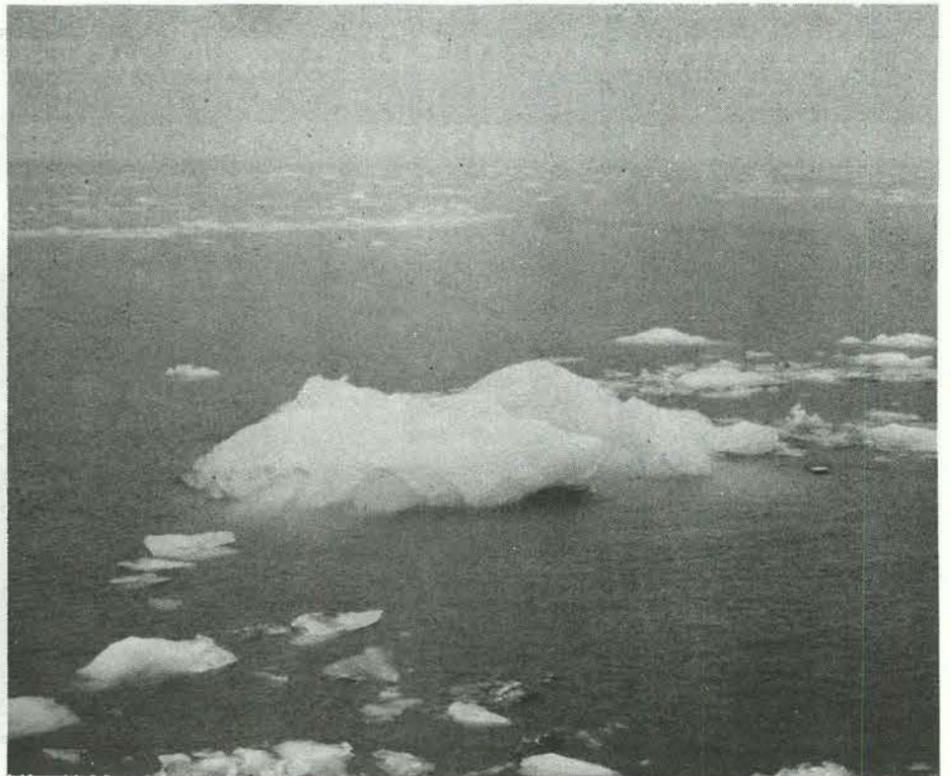
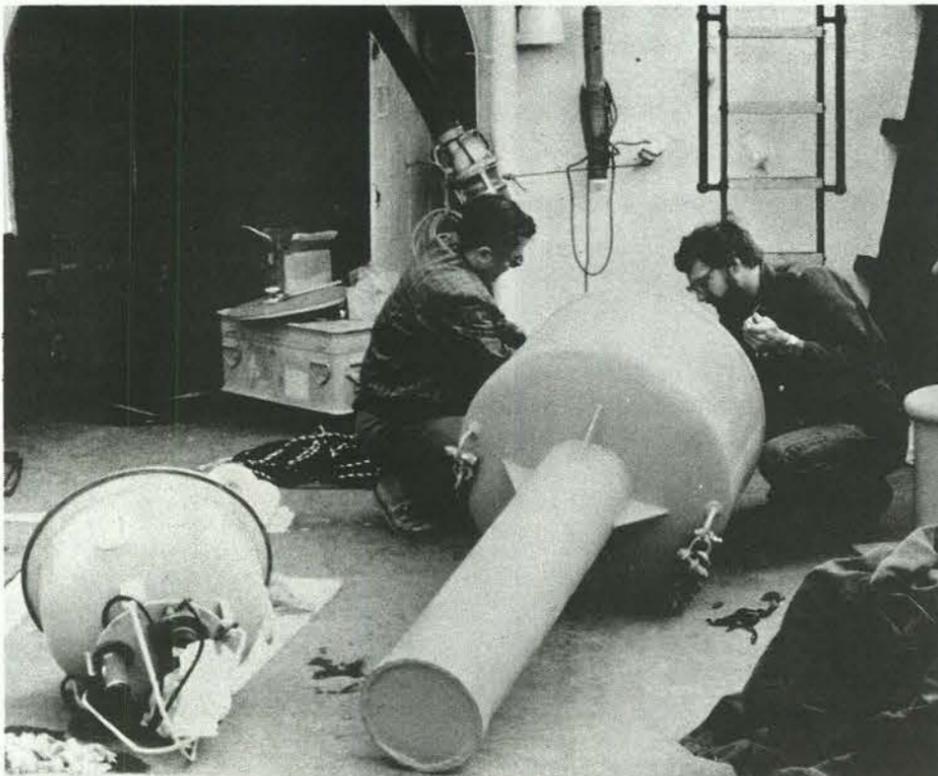
The other aspect of Merrill's gemstone hobby is faceting. Faceting requires a delicacy of touch and a knowledge of the stone. Facets (cuts) are geometrically placed on a stone to bring out the beauty of

light and color by reflection or refraction of light from the underside of the gem. Merrill uses all of the standard cuts and sometimes designs his own. Depending on the stone and the design, faceting takes 4 to 20 hours to complete.

He also designs and makes the settings for those stones destined to become gifts to friends and relatives. Merrill is a popular speaker at gem and mineral club shows and meetings. Over the years, he has written many articles about his hobby. More than 50 of his articles have been published in the LAPIDARY JOURNAL.



LOVE that playing surface says Ed Leeman (2165) as he strokes the first course of the C-Club's new tennis courts. After installation of fences, the Lakold color coats will be applied. Ed says the four courts should be ready late November, early December.



SECOND SUCCESSFUL TEST of Sandia's acoustic telemetry system was completed recently in Icy Bay, Gulf of Alaska. Operating from a Coast Guard cutter based in Kodiak, Alaska, Sandians Dan Miko (1327), left, and Lou Feltz (1324) check the buoy relay package before testing. The system monitors and acoustically transmits acceleration data from the ocean floor to a surface buoy where the data are relayed via RF link to a shipboard command station. The

system will provide important data for development of offshore petroleum resources. First test of the acoustic telemetry system was conducted successfully in July in the Gulf of Mexico. Sandia's goal is to emplace three prototype units in the Gulf of Alaska next fiscal year. Eric Reese (1327) is project engineer.

Events Calendar

- Oct. 26 - Nov. 27—"Absurd Person Singular," Barn Dinner Theatre, 281-3338.
- Oct. 26—Albuquerque Youth Symphony All City High School Choir, Albuquerque High School, 8 p.m.
- Oct. 28-30, Nov. 4-6, 11-13—"The Ride Across Lake Constance," Vortex Theatre, 106A Vassar SE, 8 p.m.
- Oct. 28-29—Annual Holiday Ideas Show, Albuquerque Garden Center, Los Altos Park.
- Oct. 29—The Soviet Georgian Dancers and the Tbilisi Polyphonic Choir, Popejoy Hall, 8:15 p.m.
- Oct. 31—Julian Bream, Guitarist, Popejoy Hall, 8:15 p.m.
- Nov. 3—Queen Elizabeth II Silver Jubilee Royal Tattoo, 200-member Royal Scots Guard with bagpipe band and Highland dancers, UNM Basketball Arena, 8:15 p.m.

feed back

Q. There are stirrings on the national scene as well as at the state level [N. Mex.] toward relaxing the mandatory retirement age.

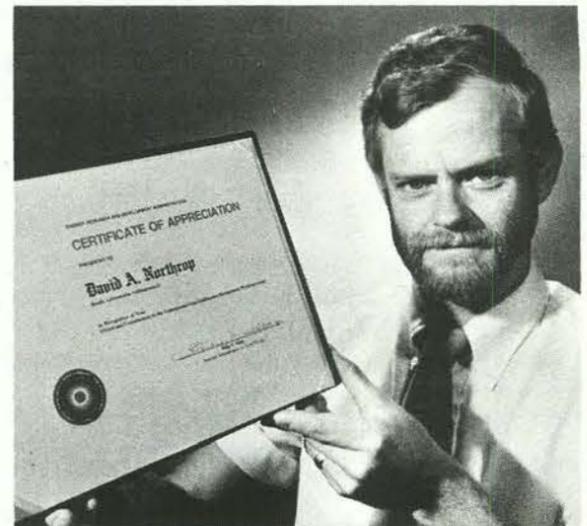
Does Sandia have any plans in this regard?

A. Sandia does not have any plans with regard to the changing of the mandatory retirement age of 65.

F. P. Prange - 4100

Sympathy

To Stu Ingham (9481) on the death of his 19-year-old son Oct. 4 in a motorcycle accident.

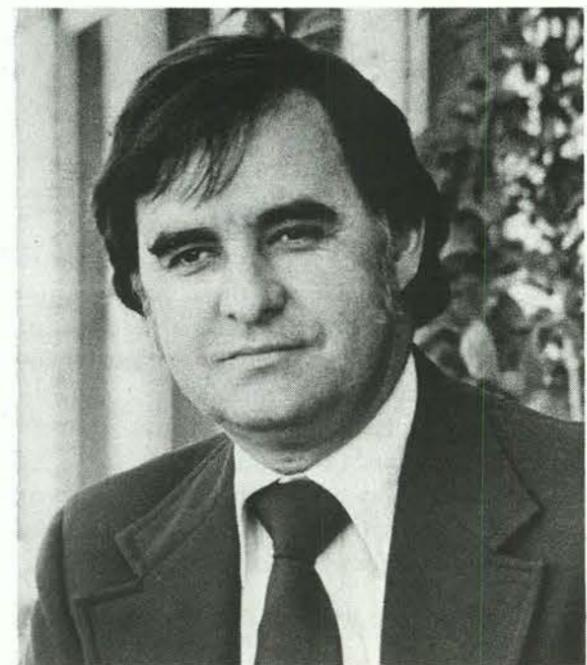


DAVE NORTHROP (5732), Sandia project leader for in situ coal gasification, was recently honored for his contributions to DOE's underground coal gasification program. He was one of six receiving citations from Philip White, assistant administrator for fossil energy, DOE (formerly ERDA).

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PETE RAND (5813) displays his newly-built radio controlled biplane which he will fly Oct. 29-30 in the "Fun Fly" at Boca Negra Park on the West Mesa. Sponsored by the Albuquerque Radio Control Club, the event is expected to attract 50 flyers from four states. Activities include precision flying, acrobatics and contest events. Starting at 10 a.m. each day, the meet is free to the public.



LEW SISNEROS (3725) was recently awarded a \$200 scholarship by the Purchasing Management Association of New Mexico and UNM's Department of Continuing Education. Lew was selected because of his diligence in furthering his education. He joined the Labs 20 years ago as a graded messenger and has progressed to MA status. Under Sandia's Educational Aids Program, he is now a junior in the school of accounting at U. of A.



HIKING'S FUN, but resting's funner. Sixty-mile trek by Bob Nelson (2154) and Wendell Nelson (3242) followed track of C&T RR through high country of



northern New Mexico, southern Colorado. Gallantry lives as male totes female across stream. N.M. Mountain Club sponsored trip.

Nelson & Nelson Have Been Walking on the Railroad

Bob Nelson (2154) and Wendell Nelson (3242) recently completed a different kind of trek: they walked the 60 miles of the narrow gauge Cumbres & Toltec railroad track from Antonito, Colorado, to Chama, New Mexico.

The trip was Bob's idea and he set it up under the auspices of the New Mexico Mountain Club, of which he is a member. The total party numbered six.

The C&T is now a state-owned, privately run enterprise operated solely for tourists who rattle over the 60 miles, hauled by a

Sandians Find Woman Lost in Manzano Mountains

Roger Chaffin (2345) is an amateur radio operator. On the evening of Oct. 10, Roger heard a call on his radio asking for volunteers to help search for a woman who was lost in the Manzano Mountains. He immediately called his friends Ray Hibray (5133) and Dennis Shanfeldt (Mt. Bell) and asked them to join him in the search.

The woman, 58-year-old Mrs. Lupe Jaramillo of Albuquerque, became lost while gathering pinon nuts near Cedro Peak (a few miles south of Tijeras). She was last seen about 2 p.m. by her husband. Predictions of below freezing weather and high winds caused concern and authorities requested search parties. Approximately 60 people from several local volunteer search and rescue groups responded to the call. The search operation was coordinated by a volunteer field coordinator and the New Mexico State Police.

Roger, Ray and Dennis, each driving a four-wheel-drive vehicle, were assigned to search a large area several miles north of Cedro Peak. About 9 p.m. these three searchers located Mrs. Jaramillo near one of the many four-wheel-drive roads in the area. Other than being cold and a little shaken by the experience, she was in good condition.

"We were assigned an area several miles from where she was reported lost," Roger says. "The chances of finding her in that large area, which is honeycombed with four-wheel-drive roads, were remote. We were lucky and so was she."

steam locomotive through the magnificent high country of northern New Mexico and southern Colorado. In the old days it was the Denver & Rio Grande Western, plying between Alamosa, Antonito, Chama, Durango and Santa Fe. It carried mostly freight, but passenger service was offered too. And if a passenger was really lucky, he might be stranded with the train when it bogged down for days at a time in the heavy snows around Cumbres Pass, elevation 10,000 feet.

The Nelson trip pretty much followed the track, tie for tie, over the entire route. Water turned out to be locally available, even in this dry year, so that the group was not unduly burdened. The weather cooperated, and each night they slept under the stars. The trek took six days.

Sole problem: walking the railroad. Seems the ties are so spaced that a step to the next tie is too short and to the one beyond that too long.

Drama In The Parking Lot

Right Color, Wrong Truck

"Hi Don:

Here are the washbowls you wanted for your cabin. Hope they are O.K. and I got them in the right truck. You did say to put them in the Blue truck, didn't you?

O.K. for now, see you later.

Rufus"

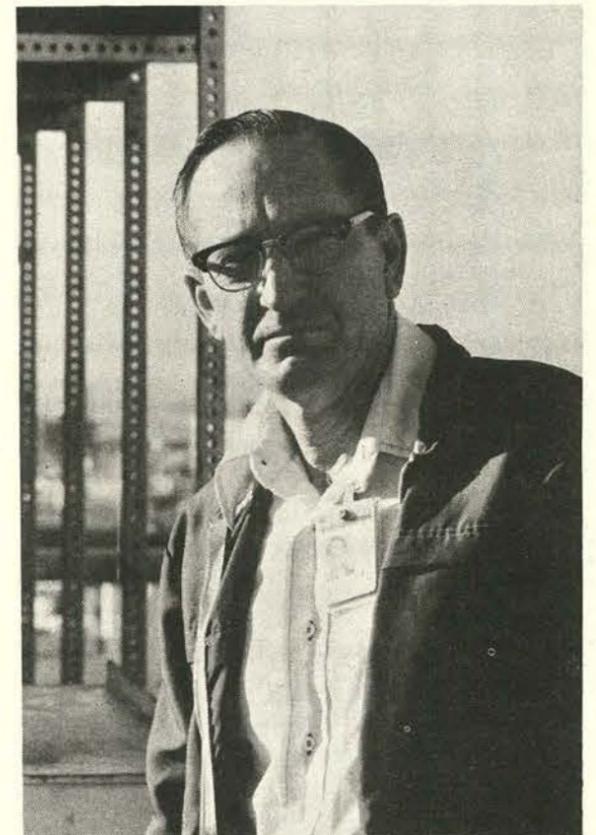
"Dear Don:

For the past two weeks, I have been carrying two washbowls in the back of my Blue truck.

If you still want them for your cabin, either you or Rufus can come and see me.

P. Lopez - 9581
Bldg. 840, 4-2751"

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VAUN ATKINS (9712-3)

Supervisory Appointment

VAUN ATKINS to supervisor of Maintenance Section III, 9712-3, effective Oct. 1. Since beginning his career at Sandia 27 years ago as a journeyman refrigeration man, Vaun has worked the entire time in Plant Maintenance and Plant Engineering. For the past four years he has worked in operations engineering where he managed outside contracts for building systems maintenance. In his new position, Vaun will supervise mechanics, electricians and pipefitters doing building maintenance.

Vaun attended Refrigeration and Air Conditioning School in Albuquerque. He was a gunner's mate in the Navy from 1944-46. Vaun spends much of his leisure time working on the cabin he's building in the Pecos. He also enjoys big game hunting.

Vaun and his wife Loretta have three children. They also have identical twin granddaughters and a grandson—all two and a half years old. The Atkins' live in the University area.

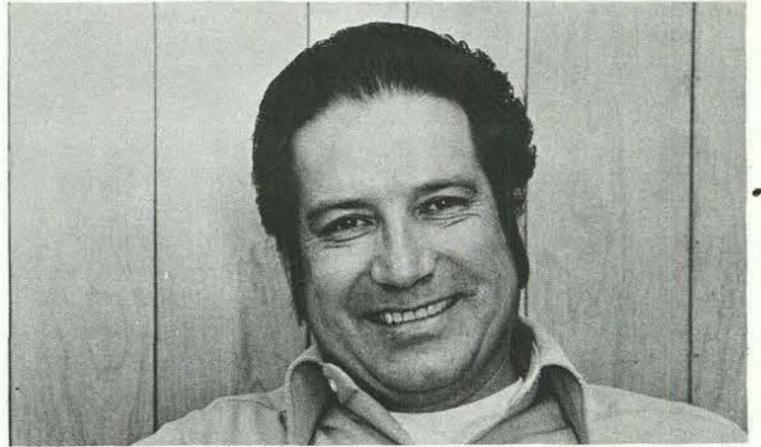
MILEPOSTS

LAB NEWS

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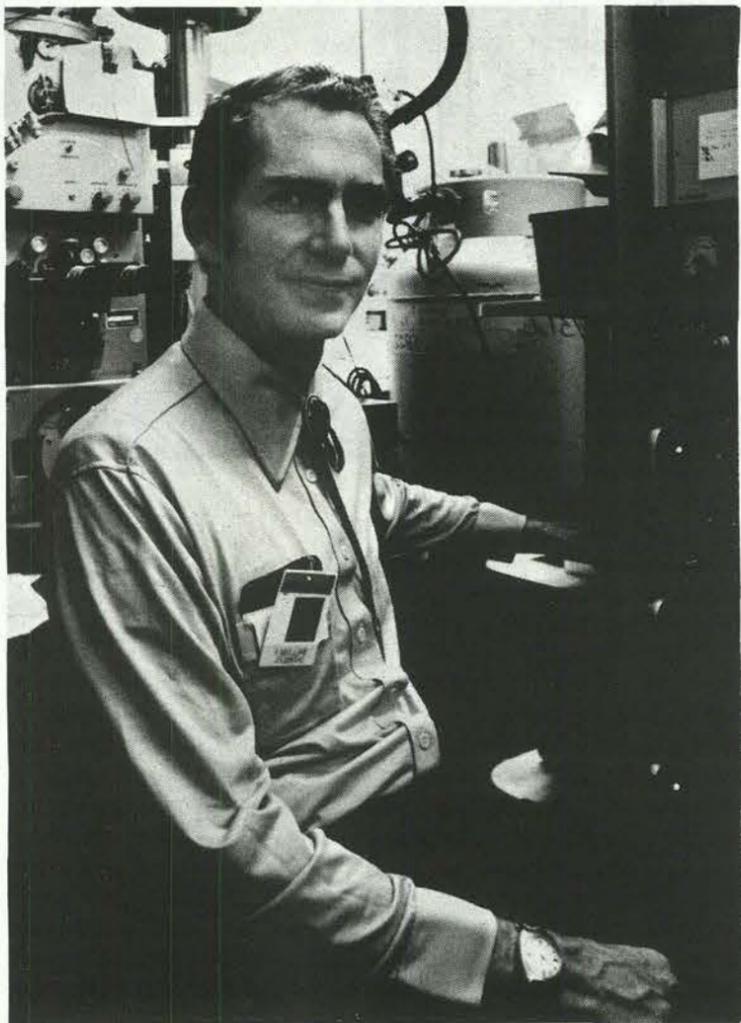


Dorothy Marklin - 9524 20



Leo Cordova - 3411

25



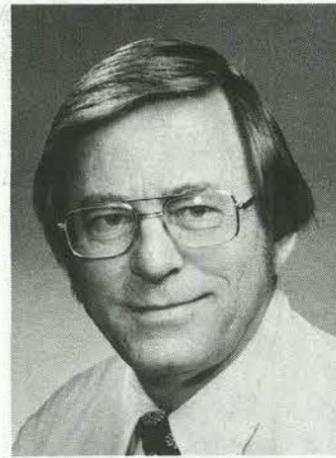
Bill Chambers - 5822

10



Ray Larribas - 3727

10



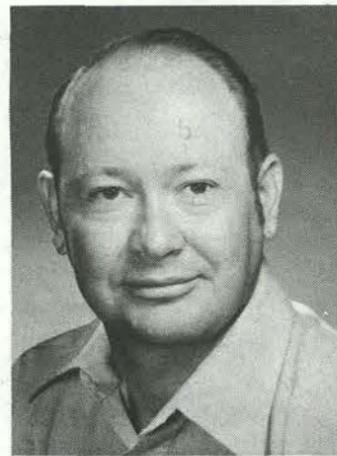
John Hoice - 2122

20



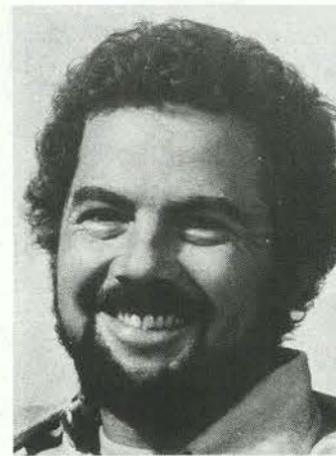
Gerald Barr - 5243

10



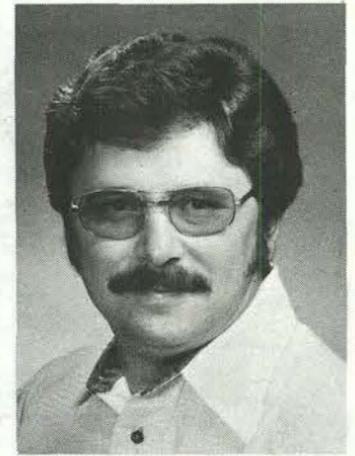
O'Neill Burchett - 9352

10



Robert Nasby - 5155

10



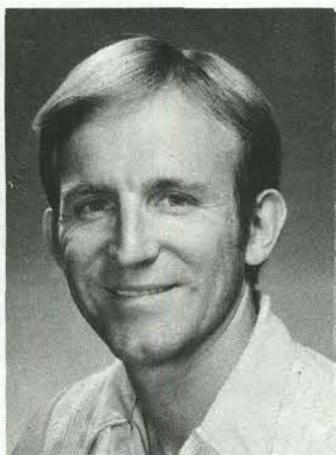
Joe Montoya - 2626

15



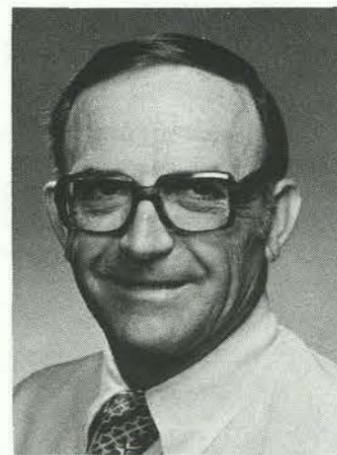
Joseph Curzi - 9656

15



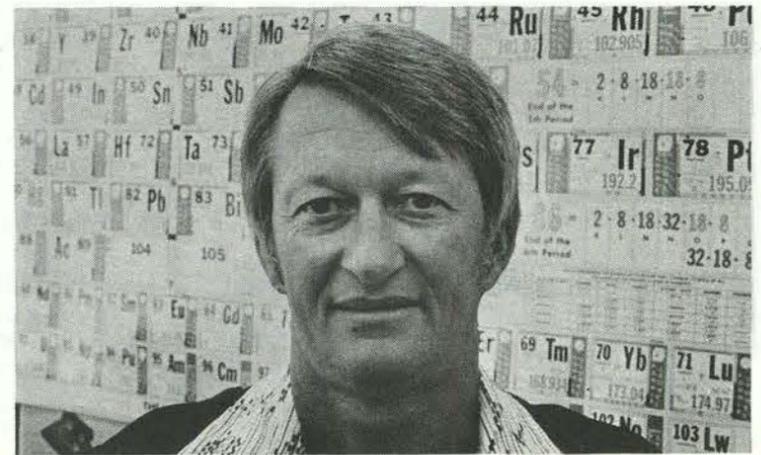
Charles Healer - 9583

10



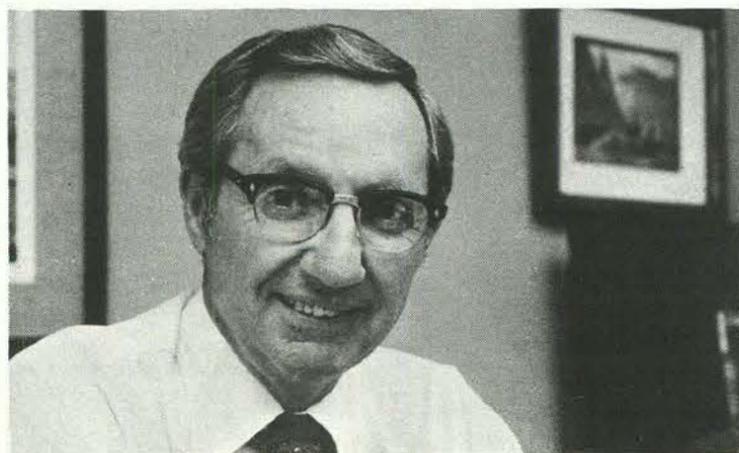
Ervin Armbrust - 1733

25



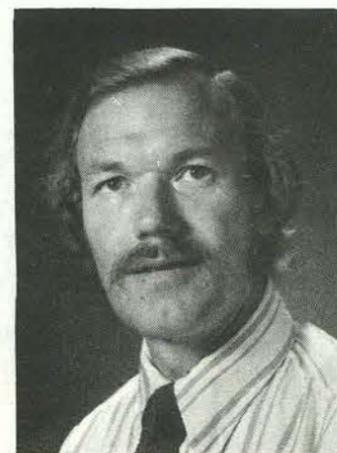
Rex Steele - 2515

15



Leon Smith - 2300

30



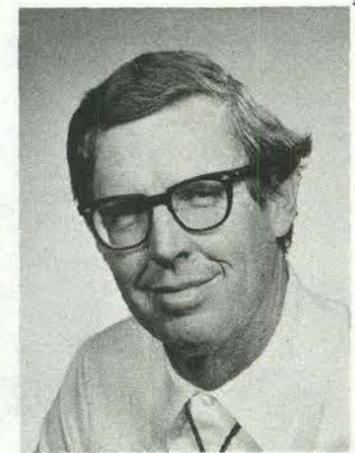
Bob Kehl - 9516

15



Willard Benson - 4325

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Donald Robbins - 9624

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Heinz Schmitt - 4340 15



Virginia Padilla - 9000 10



Edwin Machin - 2151 25



Stanley Eastman - 9562 25



Curtis Mueller - 9525 15



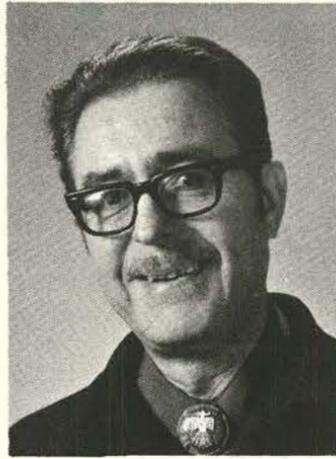
Frank Valencic - 9582 15



Curtis Warthen - 9482 20



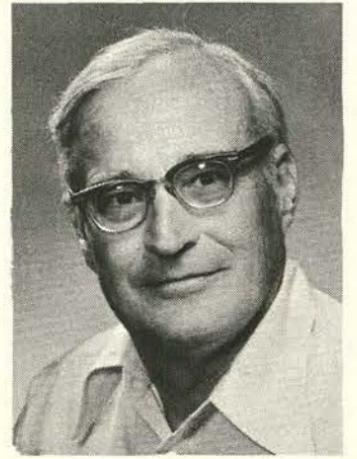
Marian Ewald - 3433 25



Blitz Kreiger - 8366 25



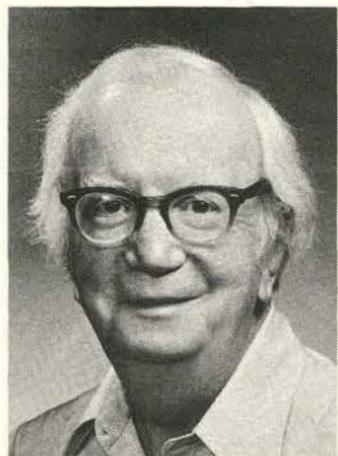
John Vondreele - 2324 25



John Ames - 1731 25



Mary Campbell - 3521 20



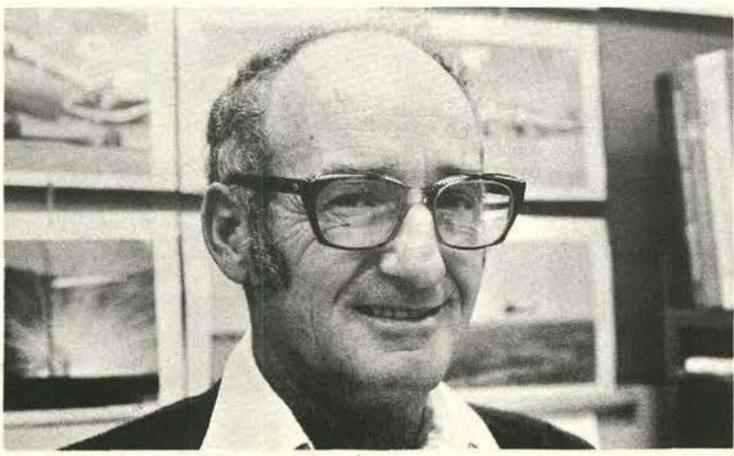
Edward Herrity - 3250 20



Bert Lindsay - 2142 20



Walter Granfield - 1730 20



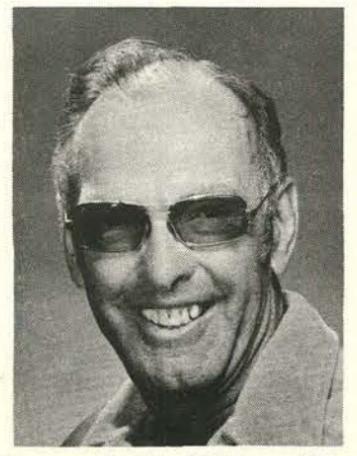
Curly Saxton - 9412 25



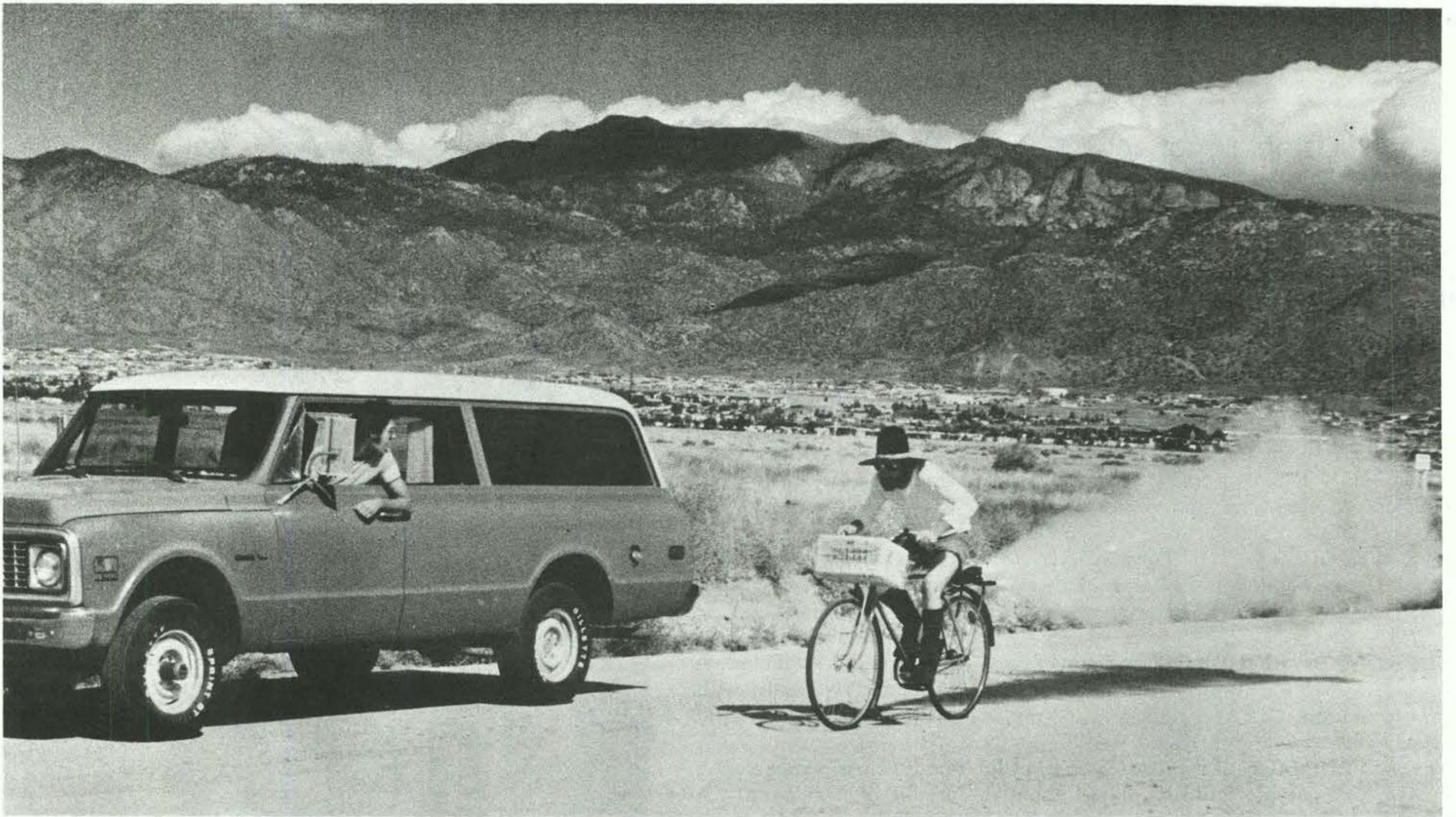
Esequiel Montoya - 2630 25



Roland Hewitt - 9414 20



Norman Smith - 2614 20



PSYCHO-CYCLIST got fed up with all those dirty looks from passing motorists—they were hitting 40 while he managed 12 when the wind was right. Here he is in his moment of triumph with ignition of the small Saturn booster. When last heard from, the mad rocketeer was reporting good 2nd stage ignition and

asking for landing clearance in a small community outside San Francisco. If you're having the same problem, a simpler solution is to avoid those high-speed arterials and to restrict your cycling to residential streets wherever possible.

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. So. Hwy. 14 Project. LAB NEWS, Bldg. 814.

CEMENT MIXER, \$175; roto-tiller, \$175; tire, LR-78-15, \$10. Duran, 867-5251.

ELEC. grass trimmer (Craftsman), \$10; '96" sofa, rust colored suede-like, \$85; twin bed frame & headboard, \$25. Orrell, 299-2300.

ALBUM, brown genuine top grain cowhide, 24-K gold inlay, 12½x14", \$50. Henry, 266-2107.

CAR TOP LUGGAGE CARRIER, \$5; 2 pr. ice skates, size 6 & 7, \$10/pr., many more misc. items. Salazar, 420 Graceland SE, 255-1301.

AUTOMOBILE 8-track player, FM stereo radio, slip-out mounting, fast forward, program repeat, \$65 w/ speakers. Spence, 268-7396.

ANTIQU Boston rocker & candle stand; traction device which fits on bed; 12 sterling teaspoons, "Rambler Rose" pattern. Southwick, 281-3782.

SINGLE BED: Simmons mattress, box spring, frame, headboard, bedspread, all for \$75. Cosden, 881-1412.

CUSTOM DRAPERIES, ceiling-floor, 9' wide, blue floral, off-white background, lined, \$65. Blöse, 296-8878.

AMATEUR RADIO transceiver SB104 w/AC power supply & speaker console plus other accessories. Greenway, 299-8540.

73 RCA 17" color TV, horiz. needs service, \$75. Bickes, 293-4037.

SHARES in hot air balloon, 8 people wanted w/\$500 ea. Sarason, 299-2443.

PIANO, \$500 or best offer. DeVargas, 294-3951.

ELEC. sterilizer w/bottles, \$8; 30" screen door, \$8; wrought iron light fixture, \$15; twin bedspread, \$5. Biffle, 293-7043.

GE refrig-freezer, '66, white, \$75. Mendel, 265-3840.

GE coppersone port. dishwasher, \$35; Nash skateboard, \$15; Parisian cart plant stand, \$6. Moyer, 881-3879.

CLARINET, Bundy, \$45; 2 chrome 15" rims, 5-hole, fits Ford truck, \$15 ea.; Yashica 8mm movie camera, zoom lens, \$12. Shunny, 265-1620.

BOOKS: "Great Books of the Western World," all the great masters, includes 10-volume study program and pecan bookcase, \$250, terms. Bower, 299-5765.

WATER WELL drilling rig, "Waka-shaw," mounted on 1942 Chev truck, tools, 2 bits, 4" x 7", bailers, cables, jars, stem. Rupe, 881-2214.

BARBED WIRE: metal posts; metal garage door hardware; fiberglass camper shell; metal light poles; stock gates; mimeograph machine. Welsh, 281-3103.

CULLIGAN water softener, used 5 yrs. Barnes, 877-3301.

NEW AM/FM monoral car radio from '77 Lincoln Continental, compatible w/most Ford cars & pickups, best offer. Torres, 265-7194.

2 TIRES: snow, mud, 7.75x14 mounted, 5-hole Dodge rims, 4-ply. Carli, 298-9271.

AIR COMPRESSOR, 30-gal. tank, ¼ HP motor, Curtis commercial, \$150. Campbell, 299-9195.

CONVERTIBLE sleeper couch, Simmons, green weaver upholstery, \$100. Hueter, 242-1620.

MORGAN MARE, reg. 13 yrs., bay, 15 hands, 1100 lbs., gentle. Hurt, 281-3675.

CAR RADIO, '63 Chevy; 700x14 black-wall tire w/rim, new. Sedillo, 255-0669 after 5.

APACHE tent trailer, '72, sleeps 4, zip on rain fly w/poles, other extras, undercoated, 750 lbs. Nelson, 265-2248.

BEDROOM SET: modern style, dbl. bookcase headboard, mattress, box springs, dbl. dresser, lg. mirror, night stand, \$200. Love, 299-0956.

PARTS for '74 Chev. pickup: hubcaps, bumper, rear glass, tire carrier, rims (7.50x16); bed, Dual King size, \$150; B&W 23" TV, \$40; 14x20 wool carpet. Chavez, 255-9006.

ELEC. fireplace, 20,000 BTU, 220 V, \$200; youth bunk beds, \$25. Pennington, 256-9506.

CAMERA: Leica CL w/40mm F2 Summicron C lens, \$300; 90mm f 2.8 Leitz Elmarit R lens, \$350. Mattox, 296-4149.

DOG transportation kennel, 25"x20"x16", \$12.50. Flower, 298-0632.

RANCH OAK: couch, chair, tables;

recliner chair; couch & love seat; dinette table & 4 caster chairs. Bushmire, 821-4447.

BOY'S 3-spd. 24" bike; Ford 390/360 4-bbl. carb & intake manifold. James, 298-0709.

SHELL, camper, LWB, insulated, light, paneled. Guncel, 299-3543.

HEAVY DUTY Black & Decker ½-HP lawn trimmer-edger, \$30. Liguori, 256-3613.

TENNIS BALLS, brand names, 4/\$1; practice balls, 10/\$1. Hochrein, 268-9204 after 5.

'73 MITCHELL CAMPER, 9½', heater, AC, self-contained, elec. water pump, sleeps 6. Ray, 265-0053.

PAIR snow tires, mounted on wheel for Vega, used less than 1500 miles, \$50. Mancuso, 296-4178.

CABOVER CAMPER, 10' Teardrop, sleeps 4, stove, oven, ice-box, water, jacks, \$450. Curtis, 881-2440.

30" ALUMINUM pickup cover for LWB Ford; '64 Ford truck shop manual; 2 underbed auxiliary gas tanks for Ford pickup. Hyde, 268-2885.

VASQUE hiking boots, women's size 7½, \$15; Bell & Howell 124 camera, elec. eye, \$30. Watterberg, 294-6759.

NEW AM push-button radio & speaker, out of a '77 Dodge van, \$40 or offer. Pohlman, 296-1252.

SOFA, 2-piece sectional, Flexsteel, 93" overall, \$75. VanDeusen, 299-4328.

MOBILE HOME, 14 x 65 '75 Shult w/2 bdr, 1½ baths, heated garage, built-in microwave, appliances, adult section, 4-Hills, Redding, 294-2928.

TRANSPORTATION

74 YAMAHA, 360cc, Enduro, 1100 miles, \$695. Coalson, 298-0061.

'75 FORD Granada, red w/blk. interior, AT, AM-FM, 8-track, \$2650. Person, 255-4815.

'67 HONDA Trail 90, 4000 miles, \$175. Schuster, 299-1072.

TWO SUBARU 360 minicars, one runs, one for parts, 45 mpg in city, both for \$500. Guttman, 243-6393.

'66 VOLVO S-122, AT, R&H, \$500. Curtis, 293-7602.

'74 MAZDA RX4, 4-dr., R&H, AC, AT, low mileage, \$1800 below book. Bailey, 255-6931.

'69 ROAD RUNNER, 383 Hurst 4-spd., \$900. Gonzales, 265-2671.

'75 CHEVY pickup, 4x4, SWB, maroon, toolbox, rack, PS, PB, sell or trade for small car. Rupe, 881-2214.

'76 DATSUN B-210, 1500 miles, AC, \$3250 or best offer. Davis, 299-9209.

'75 HONDA 550-4, new rear tire, 4 in 1 header pipe, 46 mpg in city. Downie, 293-1039.

'70 OLDSMOBILE Delta 88, 70,000 miles, AT, AC, PS, \$1150. Ward, 299-2859.

'75 VW BUS, Model 2211, just spent \$350 on 30,000-mile checkup, \$4095. MacDonald, 867-5729.

'73 HONDA 500, 4-cyl., 29,000 miles, \$2 per cc or dicker. Johnson, 836-3164.

'75 29' COACHMAN 5th wheel w/'73 dbl. cab pickup. Cole, 296-4265.

'75 VW BUS, AM-FM, 4-spd., Coleman cooler, 21,800 miles, \$4100. Plomp, 296-2647.

'60 FORD pickup, \$550. Duran, 867-5251.

'77 HARLEY DAVIDSON Sportster, elec. start, low mileage, \$2800. Simpson, 1-864-6062.

'72 MARK IV, spd. control, cruise, AM-FM, white w/red interior, \$4100; '74 Lemans coupe, V8, sport wheels, AM-FM, below book, \$2600. Browne, 294-6603 or 345-0560.

'76 PLYMOUTH Duster Custom, 318, 2-bbl. carb., AC, PB, PS, Sony cassette, CB. Arana, 299-1214.

'76 OLDS 88, Delta Royale, power, air, radio/tape, other accessories, \$4695. Wheeler, 296-4793.

'76 MONARCH Ghia, air, PS, PB, buckets, 4-dr., AT, 4700 miles, silver grey, red velour interior, \$4500. Cochrell, 298-2068.

'69 PLYMOUTH Fury III, loaded, 4-dr., HT, take best offer. Harter, 256-3766, 909 Kentucky SE.

'72 VEGA, 4-spd., R&H, \$550 or offer, low mileage. Dees, 898-8049.

10-SPD BIKE, Girondelli 26", \$55; child carrier, will fit any bike, \$5. Pohlman, 296-1252.

HONDA 200, street, 4700 miles, red, 60 mpg, consider trade for dirt bike. Rose, 298-4849.

'70 FORD pickup, F-100, LWB, 360V8, R&H, step bumper, hitch, w/or w/o auxiliary gas tanks, shop manual available. Hyde, 268-2885.

HONDA TL125 Trails, \$425; Yamaha 175 Enduro, \$260. Watterberg, 294-6759.

'74 OPEL Manta, 25,000 miles, new Sears radials & battery, \$1850. Melvin, 298-6402.

'74 GMC truck, ¾ ton, LWB, 8200 GVW, fully equipped & LWB shell, dbl. door, custom built. Simon, 898-3275 or 256-9734.

WANTED

15 to 25 HP OUTBOARD MOTOR. Hueter, 242-1620.

SKI PANTS, size 12 & 13. Arana, 299-1214.

CHAIR, traditional w/curved, semi-detached back, for recovering; frame should be of good quality.

Cutchen, 296-9213.

TWIN BED & FRAME, no headboard; or trundle beds. Haskell, 296-7141 evenings.

4 CU. FT. 3-way camper refrig.; dbl. stainless camper sink; hydraulic camper jacks; trunk-mount ski rack. Erdman, 298-3097.

SCHEMATIC, Philco AM/FM radio, model 49-909. Wentz, 881-7125.

REAL ESTATE

EASTRIDGE, 4-bdr., 3-bath, formal LR/DR, paneled den, finished dbl. garage, 2166 sq. ft., fully landscaped, sprinklers front & back. Treece, 298-8277.

CABIN, Grass Mtn., A-frame, 20'x40', w/loft, electricity, insulated, Franklin stove, counters, cupboards, dbl. sink, outhouse, view. Thompson, 298-5800.

3-BDR., living-dining room, kitchen appliances, FR, fp, Bosque Farms, 1 acre, landscaped, \$63,000. Benedict, 869-2949.

ONE ACRE, Sandia's Forest Park addition, good access, power & water. Burd, 294-0132.

3-BDR. 1½ bath, lg. den w/fp, carpet, drapes, lg. covered patio, 1812 sq. ft., near Mall shopping center. Baca, 298-4212.

FOR RENT

TWO private rooms, kitchen facilities, very quiet, S.W. Barnes, 877-3301.

CONDOMINIUM, Purgatory, 2-bdr., 2-bath, equipped kitchen, sleeps 8, ski to & from lifts. Carson, 898-8847.

HOUSE near Brentwood & Chelwood, 3-bdr., den w/fp, garage, 1400 sq. ft., \$330/mo. Eaton, 299-7271.

SINGLE CAR GARAGE & 10x20 storage room within fenced, secured area. Liguori, 256-3613.

2-BDR. HOME, den, fenced back yard, SE Heights near HHS, \$250/mo. Orear, 256-1941.

LOST AND FOUND

FOUND: small female cat, gray w/ brown stripe down nose, approx. 1½ yrs. old, found 9-24 vicinity Juan Tabo & Central. Wilde, 293-2652.

LOST: Beige colored man's leisure jacket, silver ring w/6 small diamonds, Ford silver car key w/chain, Rx sunglasses in black case, blue folder containing equations/figures.

FOUND: Backpack w/bicycle tools, Template for MIL-STD-15A, reddish-orange handled "Case" pocketknife.

LOST AND FOUND, Bldg. 832, 264-6245.

The Biggie Is Oktoberfest

SOUL SESSION TOMORROW—Something called Smoothie will be wired into the bandstand from 9 to 1; members free, guests \$1.

TONIGHT—The Watermelon Mountain Jug Band will be recording on stage for their next album—should be super entertainment. Baked ham tops the buffet menu (\$3.50 adults; \$1.92 kids under 12). Tonight only Happy Hour prices end at 8 p.m.; guest fee is \$2. Next Friday's Happy Hour is your standard blast with a barbecue beef buffet, Brown Sugar playing for dancing.

OKTOBERFEST Oct. 29 is the biggie of the month with Der Polka Schingles on the bandstand, folk dancing performances and German food buffet. Cocktail hour starts at 6, dinner at 6:30. Tickets (\$6.25 members, guests \$7.25—includes a free glass of Lowenbrau) should be picked up from the Club office no later than tomorrow.

TRAVELOGUE NIGHT Tuesday, Oct. 25, features traveler Art Randall with slides and comments on Taipei, Taiwan, Singapore, Bangkok and other exotic Far East places. The free show starts at 7:30.

CORONADO BRIDGE CLUB Team of Four Tournament is set Tuesday, Oct. 25, at 6 p.m. Steve Neff, 4-6804, invites players and will assist with team formation. Call him right away.

CONSTRUCTION of the new Coronado Club tennis courts is progressing rapidly. First games should be played about the middle of next month. A limited number of charter memberships are still available—call Ed Leeman, 4-7949, Phil Stanton, 4-1097, or Joe Tillerson, 4-5575, to sign up.

CORONADO SKI CLUB plans an Aspen/Snowmass trip Feb. 25 - March 4. Accommodations for 7 nights (deluxe two-bedroom condominiums), 7 days skiing plus transportation costs \$320. A deposit of \$50 is due by Nov. 1. Ed Harley, 4-3043, has details.

TRAVEL DIRECTOR Ed Neidel issues the last call (do it now) to sign up for the Hong Kong trip Nov. 18 - Dec. 4 for \$919. He also has a wide selection of Caribbean cruises available during the Christmas and New Year's vacation season starting at \$925.

Also during Christmas vacation is a new trip announced this week—a nine-day Holy Land tour starting Dec. 26 or 27 with a charter flight to Tel Aviv. The trip includes five days of touring with a guide in a deluxe motor-coach, five-star hotels and all meals. Cost is \$1084 from Albuquerque.

See Ed in the lobby tonight from 6 to 7 for details of trips or to discuss the possibility of a Hawaii trip in February or March.



ASSORTED SPOOKS, witches, goblins and monsters will inhabit the Club's House of Horrors on Halloween (6:30 to 9:30 p.m.) to scare the pants off your little kids. Games, goodies and movies are included in the 75 cents per kid admission tab. The wolfman is Tony Shannon (9584), the witch, Barbara McHaffie (5112).



THE RUSSIANS ARE HERE. Gerry Yonas (right) of Fusion Research Dept. 5240 points out features of the E-Beam Fusion Lab, now under construction, to these visiting Soviet scientists. Collectively they represent the Kurchatov Atomic Energy Institute, the Lebedev Physical Institute of the Soviet Academy of Sciences, and the Institute for High Temperature Research. Visits are reciprocal, and Yonas has been to the Soviet Union several times.