

LAB NEWS

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DECEMBER 4, 1970

SANDIA LABORATORIES - ALBUQUERQUE NEW MEXICO & LIVERMORE CALIFORNIA

Thermoradiation Technique

Less Time, Less Heat Now Needed For Spacecraft Sterilization

Continuing research into the effects of simultaneous gamma radiation and heat has revealed that spacecraft can be sterilized in short time periods while maintaining temperatures below 212°F, according to Marcel Reynolds, project leader in Planetary Quarantine Applied Science Division 1742.

Reduction of sterilization temperatures is desirable since prolonged exposure of spacecraft to high temperatures seriously affects

the reliability of internal components and materials.

Earlier related research conducted by Division 1742 for NASA demonstrated that a spacecraft with a bioburden of 10 million bacteria could be sterilized in 12 hours at 221°F through the combined heat/radiation (thermoradiation) technique (LAB NEWS, Sept. 26, 1969).

More recent experimentation has demonstrated that sterilization is possible at still lower temperatures. For example, a level of sterilization taking 150 hours with heat alone at 194°F can be accomplished with thermoradiation in 30 hours at the same temperature. And at 140°F, sterilization with thermoradiation requires 60 hours' exposure as compared with more than 1000 hours with heat alone.

Typical total radiation dose is 25,000 to 500,000 rads. This dose level is about one-tenth of that commonly used for sterilization without heat, and is low enough to avoid serious radiation effects.

By international agreement, spacecraft are sterilized to reduce the possibility that micro-organisms from earth will contaminate other planets. Requirements are so stringent that the probability of a single micro-organism contaminating a planet must be less than one in one thousand. It is surmised that prior to sterilization a spacecraft may carry 10 million micro-organisms, even after assembly in ultra-clean conditions.

In addition to its use in spacecraft sterilization, it is believed thermoradiation could have significant applications in pharmaceuticals, medical products, cosmetics and foods.

Peter Thoma Named Plastics Committee National Chairman

Peter Thoma of Plastic Materials and Processes Division 5512, was recently elected chairman of Technical Committee D-20 on Plastics of the American Society for Testing and Materials (ASTM). This committee, one of the largest technical groups of the Society, promotes research on and develops standards for plastics, including raw materials and finished products.

Before joining Sandia in 1959, Peter served in the U.S. Air Force for four years, earned associate of arts and BS degrees in chemistry, and did graduate work in chemistry and math. In addition to ASTM, he is a member of the Society of Plastic Engineers. He has authored numerous technical papers on development, processing, characterization and applications for thermoplastics, thermosets and reinforced plastics.



CITATION from AEC for work on SNAP-27 program is read by four recipients and Glenn Fowler (9000), second from left. Recipients are (from left) Jim Leonard and Al Stephenson (9521), Sam Jeffers (9512), and Sam McAlees (9513). Twenty-six other Sandians associated with program were also honored at Coronado Club luncheon.

Honor SNAP-27 Workers

Thirty Sandians were honored at a luncheon last week for their contributions to the SNAP-27 program. The occasion coincided with the first anniversary of operation of the nuclear generator on the lunar surface.

During the luncheon at the Coronado Club, Glenn Fowler (9000) recognized those closely associated with the program and presented scrolls from the AEC to four Sandians who had been honored earlier at a Commission ceremony in Germantown, Md.

Jim Leonard (9521), Sandia SNAP-27 project director and one of the recipients, attended the AEC ceremony to accept the scrolls on behalf of the Sandians. Other recipients were Sam Jeffers (9512), who was responsible for safety environments analyses and test of launch abort and impact; Sam McAlees (9513), who was responsible for aerothermodynamic analysis; and Al Stephenson (9521), who was program office fuel capsule engineer and loading team leader.

Others recognized for their contributions were John Biffle (1542); Carl Sisson (1543); George Elliott (3250); John Brammer (5165); Bob Harnar, Bob Hannigan, Dale Pipher (all 7414); Joe Taylor (7421); Bob Luna, Hugh Church (both 9344); Ed Johnson (9500); Bob Wemple, Dan Sasmor, Lloyd Keller, Frosty Baker (all 9512); Har-

old Spahr, Bob Klett, Dave Larson (all 9513); Tom Harrison (9520); and Bob Berry (9521).

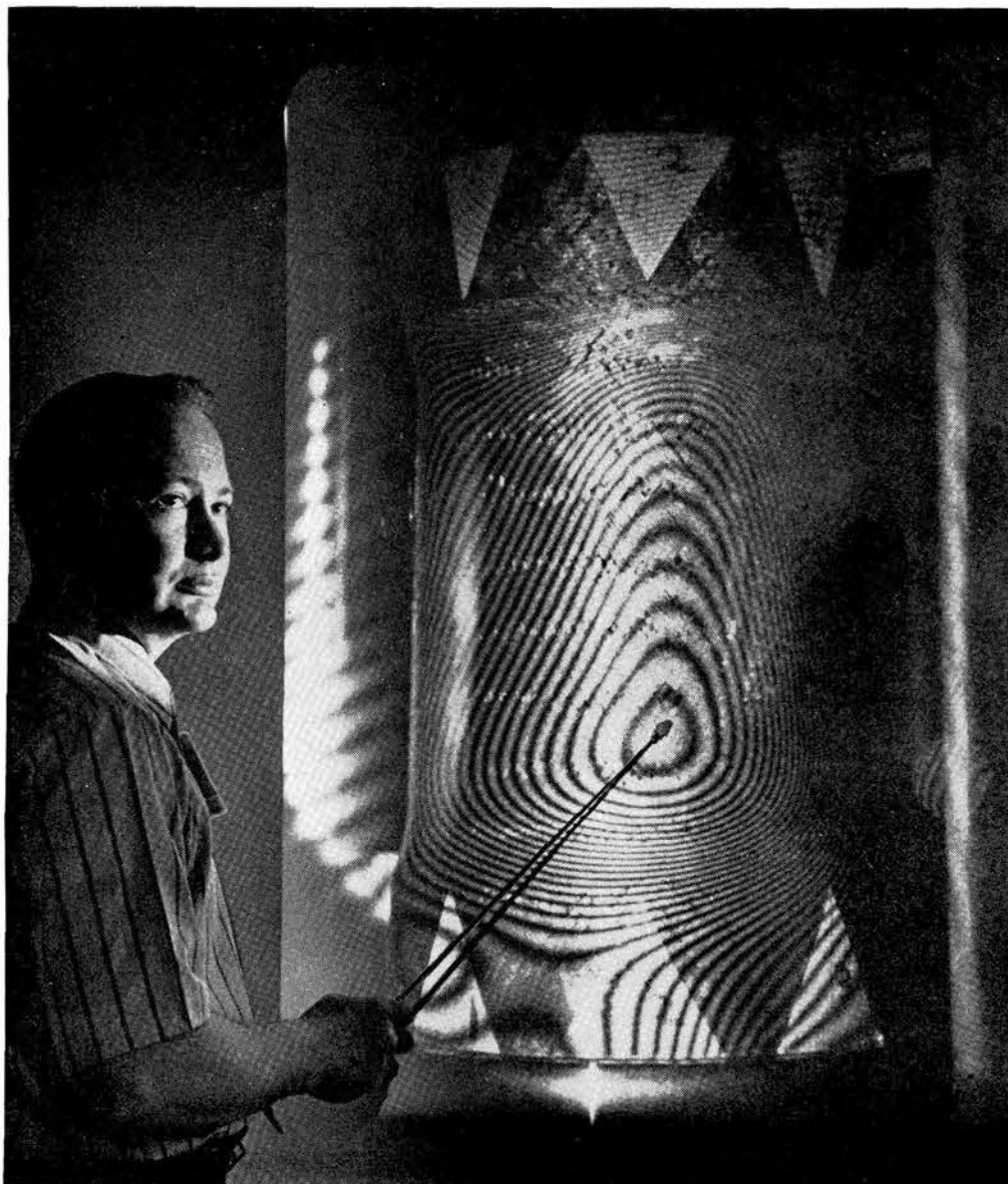
The SNAP-27 nuclear generator continues to provide over 70 watts of power to experiments left on the moon by Apollo 12 astronauts Alan Bean and Charles Conrad on Nov. 19, 1969. It is the sole source of electrical power for the six instruments on the lunar surface and for the transmission of data from the devices to earth.

Radioactive decay of the generator's plutonium-238 fuel produces heat which is converted to electrical power by a thermoelectric process. Designed to operate for one year, the generator has exceeded all requirements.

Sandia was assigned the task of investigating and evaluating safety aspects of SNAP systems in 1962. In addition, it provides technical direction of the AEC's space isotope power program and a quality assurance program.

For the Apollo 12 mission, Sandia and AEC-ALO also provided the team which loaded the SNAP-27 fuel capsule on the lunar module before launch.

Sandia will complete its responsibilities in the SNAP program during calendar year 1971. This includes work in the space isotope power program and the aerospace nuclear safety program.



O'NEILL BURCHETT (7362) points out areas of maximum stress in the double-exposed holographic "fingerprint" of sample carbon/carbon composite cylinder.

New Nondestructive Testing Technique Uses Holograms

A new inspection technique using holograms — three dimensional images created by split laser beams — has been perfected by Nondestructive Testing Advance Technology Division 7363 under O'Neill Burchett. The technique is being employed for nondestructive testing of carbon/carbon composite cylinders and cones.

Holograms are made by splitting a laser beam into two separate beams — one which illuminates the test item while the other serves as a reference beam. Light from the reference beam interferes with that reflected by the test item and causes a characteristic pattern which is captured on photographic film as a hologram.

Typically the hologram is viewed in laser light to produce a three-dimensional image of the subject. For the nondestructive testing application, however, the needed data are extracted from a double holographic exposure which has been reduced to an ordinary two-dimensional film transparency.

In a typical experiment, the test item is first holographed in an unstressed state. A second hologram is then exposed on the same plate after a bladder is placed within the item and inflated to exert a given pressure — say 50 lbs. per square inch — on its inner surface.

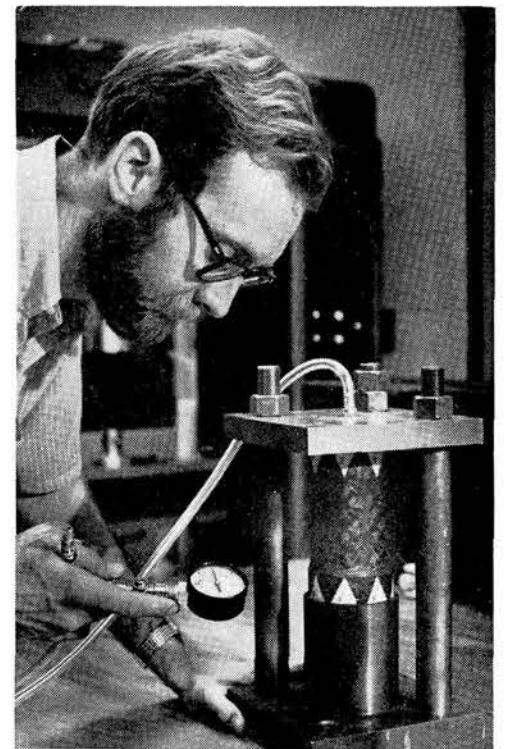
In combination, the two exposures provide a graphic representation which resembles a contour map. Dark lines (fringes) indicate the amount by which the applied pressure has deformed the structure from its original shape.

A perfect part, for instance, in a given test item may generate a hologram consisting of several continuous concentric lines which trace a characteristic pattern.

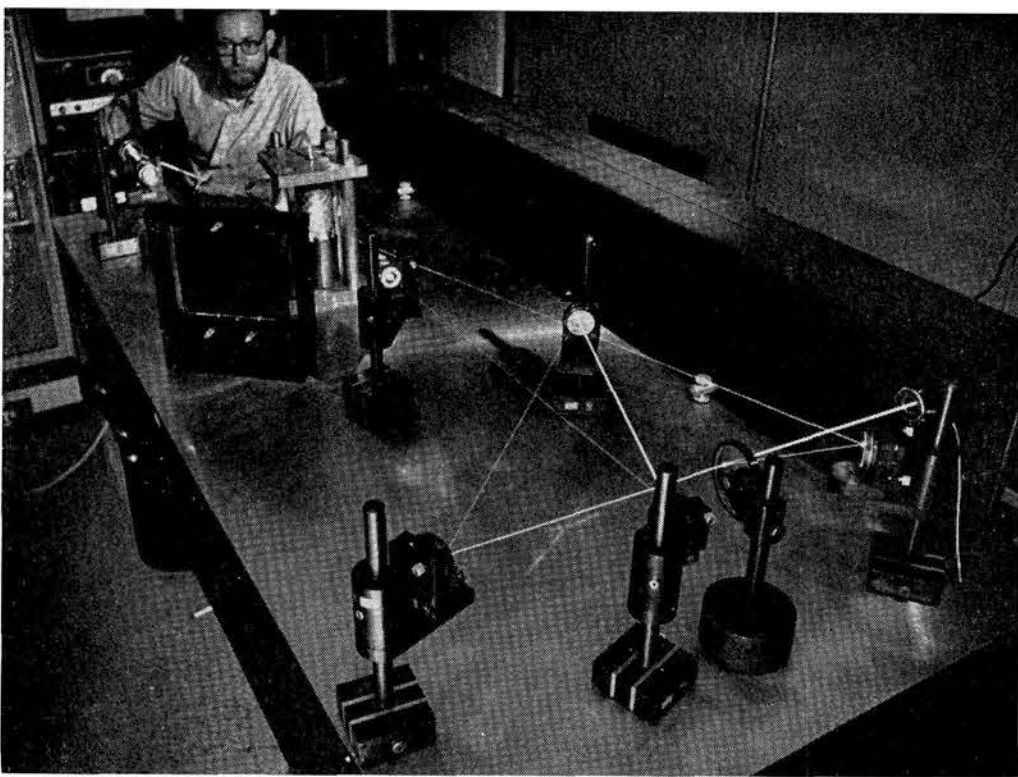
As stress is exerted on an imperfect part, however, weak points begin to bulge microscopically, generating new fringe patterns which appear as easily identifiable hills and valleys on the original design.

Since the system can detect deformations of as little as three millionths of an inch,

(Continued on Page Two)



CARL MURPHY (7362) applies stress to a carbon/carbon cylinder by inflating a bladder placed inside the unit with compressed air.



HOLOGRAMS are made of a test carbon/carbon cylinder as it is subjected to two different levels of stress. Here Carl Murphy (7362) adjusts the laser used to expose the hologram.



REAL-TIME RECORDS of the formation of stress patterns are made with the aid of videotape. As the cylinder is stressed it is viewed by a TV camera through an earlier hologram made of the cylinder in a non-stressed state. This produces the fringe patterns characteristic of the double-exposed still photos—but on a real-time basis. Here Carl Murphy (7362) watches the TV monitor with videotape operator Hugh Taylor (3454).

Measurements and Instrumentation Meet Set Here Dec. 9-10

Product Data Systems Development 2400 is sponsoring a Measurements and Instrumentation Symposium in Bldg. 815 Dec. 9-10. Twenty-one technical papers will be presented covering aspects of airborne instrumentation, test equipment instrumentation, optics and light detection, measurement of mechanical properties, photographic techniques and radiography, and electronic systems and components.

Bob Henderson, vice president 2000, will open the conference at 1:15 Dec. 9. Representatives of the integrated contractors and Sandians from Albuquerque and Livermore have been invited to attend.

Copies of the program and additional information are available from Marv Daniel (2442), Symposium coordinator, tel. 264-5878.

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Continued from Page One

Nondestructive Testing With Holograms

the exertion of minute stresses is enough to reveal weaknesses in the test item. Strain gages, by comparison, would require much greater internal stress to provide a usable output; furthermore, they would produce data on only one discrete area of the item's surface, as opposed to data on the complete entity recorded on the hologram.

Strain gages also measure only surface strain; actual changes in position must then be calculated mathematically from the transducer output.

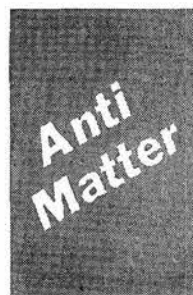
The history of deformation in the test item may be monitored on a real-time basis by viewing the changing holographic image with a television camera as the object is subjected to loading. Typically, a hologram of the original, unstressed item is placed between the camera lens and the real-time holographic image to produce the "contour map" pattern of fringes.

Division 7363 is now considering the feasibility of analyzing holographic deformation patterns by computer. Such a system would involve the use of a single-scan television system and would permit programming to compensate for the fringe patterns caused by normal radial deformation of the test item. Use of the computer would also permit immediate reduction of the stress analysis problem from its present three-dimensional state to a one-dimensional state.

Walt Scott Gets Award for Scout Work

Walt Scott (7633) has been named Albuquerque "Optimist of the Year" and has received a plaque to this effect signed by presidents of the 12 Optimist Clubs of Albuquerque. The selection of Walt as Optimist of the Year was based on his volunteer work in the Scouting program.

He has been active in the Boy Scout program in Albuquerque for the last 15 years, working on troop committees as scoutmaster, explorer advisor, commissioner and in many other positions. Since 1968 Walt has been Sandia District Scout Leadership Training chairman, Kit Carson Council. In this capacity, he has given training to over 100 scoutmasters, enabling them to present a better quality program to the boys in their troops. Walt joined Sandia in 1957 after serving 28 years in the U.S. Navy.



AUTHORS

R. J. Baughman and E. H. Farnum (both 5154), "Crystal Growth Techniques for KVO₃," Vol. 5, No. 12, December 1970, MATERIALS RESEARCH BULLETIN.

B. L. Gregory and H. H. Sander (both 2653), "Transient Annealing of Defects in Irradiated Silicon Devices," Vol. 58, No. 9, September 1970, PROCEEDINGS OF THE IEEE.

D. S. Miyoshi (9226) and others, "Nuclear Magnetic Resonance in Solid Helium-3-Helium-4 Mixtures Between 0.3 and 2.0°K." Vol. 2, No. 3, September 1970, PHYSICAL REVIEW A.

J. E. Schirber (5150), "The Solid Helium Pressure Generation Technique," Vol. 10, No. 5, October 1970, CRYOGENICS.

A. C. Switendick (5151), "Electronic Band Structures of Metal Hydrides," Vol. 8, No. 18, September 1970, SOLID STATE COMMUNICATIONS.

C. S. Williams (2625) and J. E. Cooper (2627), "Antenna Polarization and Terrain-Depolarization Effects on Pulse-Radar Return from Extended Areas at the Near Vertical," Vol. 58, No. 9, September 1970, PROCEEDINGS OF THE IEEE.

G. L. McVay (5154), "Diffusion and Internal Friction in Na-Rb Silicate Glasses," Vol. 53, No. 9, September 1970, JOURNAL OF THE AMERICAN CERAMIC SOCIETY.

P. J. Roache (9343), "Sufficiency Conditions for a Commonly Used Downstream Boundary Condition on Stream Function," Vol. 6, No. 2, October 1970, JOURNAL OF COMPUTATIONAL PHYSICS.

Events Calendar

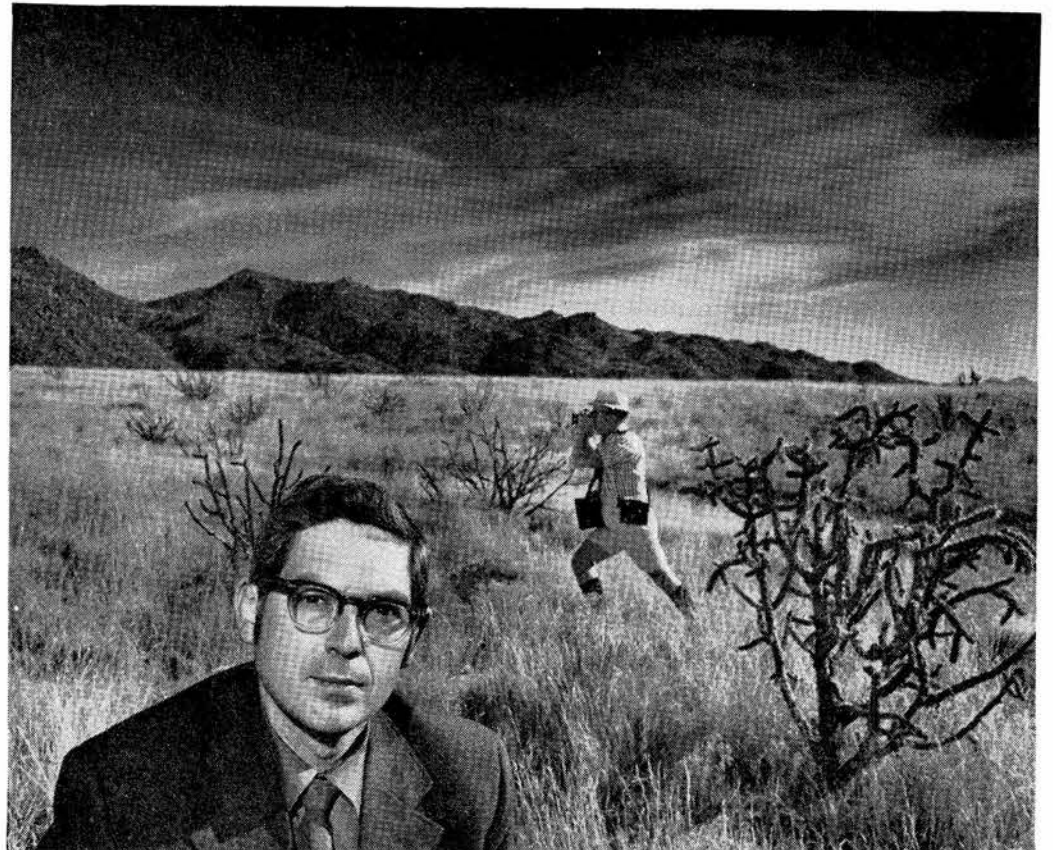
Dec. 6—Enchanted Mesa. N.M. Mountain Club. Leaders: Mike Stroud, 255-8070, and Gary Tisone, 296-5103.

Dec. 7—Community Concert series, John Darrenkamp, baritone. Popejoy Hall.

Dec. 9-13—UNM Drama Dept. presents Arthur Miller's "The Price." Rodey Theater, 277-4522 or 277-4402.

Dec. 11-13—Ballet West presents "Nutcracker Ballet." Popejoy Hall.

Dec. 17—Christmas Tree Cutting in Jemez Mountains. N.M. Mountain Club. Leader, Bill Trebilcock, 296-1418.



THERE'S NO BUSINESS LIKE THE TOURIST BUSINESS claims Bob Armstrong (4542), chairman of a local group to promote tourism. Tourists bring money, admire the view, and then leave; they make attractive alternative to industrialization of state.

Bob Armstrong Likes Tourists

Every New Mexican knows that a tourist is the Texan who has just taken your favorite camp site, so more than a few natives view the promotion of tourism with something less than enthusiasm. But Bob Armstrong (4542) has some observations about tourism that are worth pondering. Bob is chairman of the Tourism and Recreation section of the Albuquerque Goals Committee.

"Look at a few facts about our state," he says. "First, as a state we are poor — we have very little industry. One depressing effect of this condition is that our own children can't afford to live in their home state — they leave after graduation from school because they can't find employment. This is happening all over New Mexico."

"Yet many New Mexicans view widespread industrialization with loathing. So what's left? I say tourism. Tourists bring in lots of money — and then they leave. No smokestacks, no noise pollution, just lots

of nice money that creates more jobs for New Mexicans."

The tourist business is already big business in our state. Last year an estimated \$150 million was spent by tourists in New Mexico, and each tourist and his family seeing the sights spends somewhere between \$35 and \$50 per day. Nearly 10 thousand businesses are tourist dependent, and over 50,000 New Mexicans make at least some of their living from tourism.

Bob is fired up about tourism after attending the recent Governor's Conference on Tourism. He notes: "People from other states — with much less than New Mexico in the way of tourist attractions — came and told us how profitable the tourist industry can be, given proper development and promotion. Just in the camping business alone, New Mexico can make a bundle. Money from tourism is like both having your cake and eating it — the tourist doesn't change the scenery and he's soon gone."

The Modernized Metric System The International System of Units (SI) and its relationship to U.S. customary units



STATUS OF U.S. METRIC STUDY is followed closely by Jack Wilson (8121). Object of the National Bureau of Standards' study—nearly two-thirds finished—is to determine advantages and disadvantages of increased use of the metric system of measurement in the United States. Report is due to Congress August 1971.

Measurement Systems

37-24-36 or 940-610-914?

Looking at 37-24-36 will still have its visual impact!

Describing what you see as a 940-610-914, however, takes a slight shift in thinking.

Just how the use of a metric system of weights and measures will affect a nation accustomed to the "English" measurement system is the subject of a three-year United States Metric Study. Authorized by Public Law 90-472 in August 1968, the results of the study are due in Congress by August 1971.

Why have such a study?

"It's just short of amazing," says Jack

Wilson, supervisor of Standards and Calibration Section 8121-1, "that we communicate—measurement-wise—with one another at all. The "English" inch/pound system has been described as cumbersome to use, chaotic to apply and easy to misinterpret. Its continued use for conveying dimensional information to the increasing number of nations using the metric system is difficult. The world-wide economic posture of the United States could be affected."

No single system of measurement exists in the United States; we have a conglomerate of units—as far back as ancient Babylonia (scale of twelves) to those used by astronomers today (parsec or 3.26 light-years). The **Metric Practice Guide** of the American Society for Testing of Materials lists 24 separate units to express length; the **International System of Units**, published by NASA, lists 38. Included are our different kinds of inches, feet, yards leagues and miles. And other units such as the angstrom, astronomical unit, caliber chain, parsec, perch, skein and span.

Having problems with your weight? So has the "English" system. To determine mass, we must decide if we are talking about ordinary materials, precious metals or drugs. Your body is "ordinary material," so its weight is in avoirdupois units. Gold is precious metal and uses troy units. Drugs were measured in apothecary units, although the pharmaceutical industry now uses the metric system.

The International System of Units, the modernized metric system resulting from the work of the Eleventh General Conference on Weights and Measures in 1960, has one and only one unit for each physical quantity. In all, there are six basic units of measurement; the meter for length, the kilogram for mass, the second for time, the Kelvin for temperature, the ampere for electric current and the candela for luminous intensity.

For the past two years, the U.S. Metric Study has been looking at the effect of more extensive use of the metric system in the United States. How would it affect the individual citizen? Large industrial complexes?

In most cases, increased use of metric units would affect the citizen only slightly. He could accommodate. "Fill 'er up!" would mean the same. Except the quantity of gas would be measured in liters instead of gallons.

The job of the shopping housewife might be easier where all weights are given in grams—not pounds and ounces. Value comparisons could be more readily made. The greatest effect would be found in the manufacturing sphere, but here, too, parts can be made on a machine and measured with instruments calibrated in either system of units. Drawing dimensions, too.

Jack states, "that a good deal of planning remains to be done before this country can embark on a nation-wide conversion. But all logic points to our ultimate adoption of the metric system."

An adjustment for us, perhaps? Consider, "First down and 9.14 meters to go." Or "Give him 2.45 centimeters and he'll take 1.61 kilometers."

940-610-914?

Congratulations

Mr. and Mrs. Joe Grant (8352), a daughter, Elisse Jennifer, Nov. 5.

REMINDER!

**Sandia / Livermore
Christmas Dinner/Dance
Dec. 11**



SKI FASHION BENEFIT FOR FAMILY SERVICE AGENCY—Mary Witek (8325) will model ski wear for "Fashions r.s.v.p.," fund-raising party sponsored by the Family Service Agency (a LEAP-UBAC organization), on Dec. 12 at the Kaiser Center for Technology in Pleasanton. Virginia Cook (wife of Tom Cook, 8000) and Bill Ormond (8217) serve as directors of the Family Service Agency.

LIVERMORE NEWS

VOL. 22, NO. 25

SANDIA LABORATORIES

DECEMBER 4, 1970

Recycling Is Everyone's Affair

A fact that everyone is becoming increasingly aware of is the need to recycle our resources. The fact that we do have collection centers in the Bay Area that recycle these resources is not so well known. Aluminum and tin cans, glass bottles and newspapers may all be recycled, and collectors can make some profit at the same time.

All-aluminum containers bring 10 cents a pound. Scrap aluminum brings \$200 per ton as compared with \$16 a ton for steel, but the scrap steel market will probably improve. Many companies are attempting to find a way to make the reuse of metals a profitable enterprise.

Non-returnable glass bottles can be ground up and used to make new bottles. Waste glass can supply 30 percent or more of the raw material needed to make new bottles. "Glasphalt," glass plus asphalt, is being tested as paving material and appears to be a satisfactory surfacing material. One advantage of this application is that scrap bottles do not have to be sorted by color. Nineteen dollars per ton for clear glass and \$17 per ton for green glass are the rates now being paid by an ecology center.

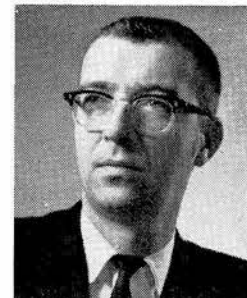
Newspapers constitute a large portion of refuse. To produce two tons of paper takes one acre of trees—and Livermore residents use 57 tons of newspapers each week. Local companies are now collecting newspapers for shipment to a de-inking plant for treatment before further recycling.

A list of firms that buy scrap material is available from Public Relations Division 8235, Mobile Office 4, Rm. 112.

Author

Jack Wilson, supervisor of Standards and Calibration Section 8121-1, was the author of an article entitled "Metrication — Where Do We Stand?" which appeared in the October 1970 issue of WESTERN MANUFACTURING magazine.

Bruce Held on Panel of Health Planning Seminars



Bruce Held of Safety Engineering and Environmental Health Division 8263 has been named one of four members of a new seminar, "Comprehensive Health Planning in Action," made possible through a grant from the U.S.

Public Health Service. The other three members are professors in community health planning and health economics on the faculty of the University of California at Berkeley.

The seminar is being presented as part of the Program of Continuing Education in Public Health sponsored by the Schools of Public Health: UC/Berkeley, UCLA, University of Hawaii, Loma Linda University, and the Western Regional Office of the American Public Health Association. Overall theme is "Problem Analysis in Public Health."

Designed to give health planning experience, seminars were held in Salt Lake City, Nov. 4-6, and Phoenix, Nov. 16-18, and are to be held in Los Angeles, Dec. 9-11. Bruce gives instruction in the analysis of environmental problems at these seminars.

Bruce's involvement in the health planning seminar relates directly to his background in health service and industrial hygiene. Before joining Sandia in 1967, he worked as an industrial hygienist in AEC installations and in private industry. He is a member of the American Industrial Hygiene Association, the Health Physics Society, and the national honorary Scientific Research Society of America. A number of his articles have appeared in journals and national magazines. He served on the Governor's Advisory Council on Atomic Energy and Radiation Protection in California for a two-year term, and is currently a member of the State Environmental Quality Study Council.



CAROLYN KERSEY (8217) models the latest in midi and mini fashions. So what's unusual about that? Well, the picture on the left was taken in 1959 and the one on the right in 1970. Which proves that women's fashions are coming full circle once again. We vote for the mini—how about you?

The Phenomenon of Sleep

By S. P. Bliss, M.D.
Medical Director

Do you have trouble sleeping?

If so, you are among the 52 percent of Americans who, according to a survey, have occasional or frequent difficulty achieving slumber through the night.

Generally speaking, there are three types of insomniacs:

1. The greatest number are those who can't get started — who have difficulty falling asleep when they first retire.

2. People who wake up often during the night, then have a hard time falling back into slumber.

3. Those who wake up much too early in the morning — after only four or five hours of sleep — and then toss around until it's time to start the day.

The true chronic insomniac is irritable and restless, tense throughout the day. He uses up more energy than he should when he sits, stands, eats and talks. Fretting too much, his emotions on edge, by the day's end he's exhausted but his mind will not let him fall asleep or pass a restful night.

The majority of those who now and then have difficulty sleeping may not know what their problem is. It could be a disturbing event during the day, or an important undone chore that prods the subconscious, or nothing more than vague aches and pains that could be relieved by aspirin.

Dr. Francis C. Wood, Chief of the Department of Medicine at the University of Pennsylvania, observes that many older people have trouble falling asleep at night. His solution: an aspirin tablet. "It works wonders," says Dr. Wood, "just like a sleeping pill." And aspirin, which is not a barbiturate, never exacts the morning-after price of a drug "hangover."

Many theories on the nature of sleep have been offered by brain surgeons, chemists and other researchers. One is that sleep is nothing more than a "conditioned reflex." Another is that sleep comes when the oxygen supply to the brain begins to slack off. Still others involve fatigue — caused by lactic acid that accumulates in the blood, or the rise and fall of body temperature.

Dr. Nathaniel Kleitman, physiologist and perhaps the leading authority on sleep — who recently retired from the University of Chicago — dismisses the popular notion that we have a "sleep center" in our brain that must be activated to lull us out of our normal wakefulness.

Man goes to sleep when his muscles are so tired that they have to relax, Dr. Kleitman maintains, though this is complicated by the tensing effects of emotions on muscles. Muscular relaxation leads, by some mechanism that no one yet understands, to relaxation of the wakefulness center.

If scientists don't know precisely what sleep is, they are fairly sure what goes on while you snooze. Your heart and pulse rate slow down, blood pressure falls off sharply, you breathe more slowly, deeply and regularly. Fingers grow cooler, toes warmer. Body temperature drops con-

siderably and your perspiration increases.

In the quieting down process, your muscles go off duty as the brain quits assigning them jobs to do. Yet, during sleep you must move often if you expect to wake up refreshed. No one sleeps "like a log." The average person changes position about 45 times, often 60 or more, in a night.

The amount of sleep you should get depends on your physiological and psychological make-up. Some people need 10 hours, others only six. Actually, many people get more sleep than they realize. Dr. Walter C. Alvarez, former consultant at the Mayo Clinic, maintains there are several depths to sleep, and many people get enough rest from a stage in which there are either frequent short periods of waking or a slight residue of consciousness.

Anyone suffering mild or periodic insomnia can usually overcome it by adopting a few simple practices:

1. Slow down physically and mentally after the day's work is over; make your evening peaceful and restful, free of conflict.

2. Train yourself to postpone thinking about unsolved problems until the following day.

3. Make your bedroom a real sleeping room: the bed shouldn't move or creak, the mattress should not be too hard or too soft, blankets should be light and fluffy, the room well-ventilated and not too warm.

4. If your muscles or joints ache, take a hot bath and two aspirin tablets before retiring.

5. Establish ritual or routine which has going-to-sleep as its goal. This may include laying out your clothes for the next day, putting out empty milk bottles, brushing your teeth.

6. Don't try too hard to fall asleep because this only increases muscle tension. Take a "don't care" attitude. Learn to relax, physically and mentally. A sleepless night now and then won't hurt you.

7. Take a hint from John D. Rockefeller, Sr., who said, "I do not permit myself to look at a timepiece after retiring." Knowing the hour of the night can only cause more anxiety.

8. If you wake in the middle of the night, don't start counting sheep; try to recapture the last dream you were enjoying and go on with the plot.

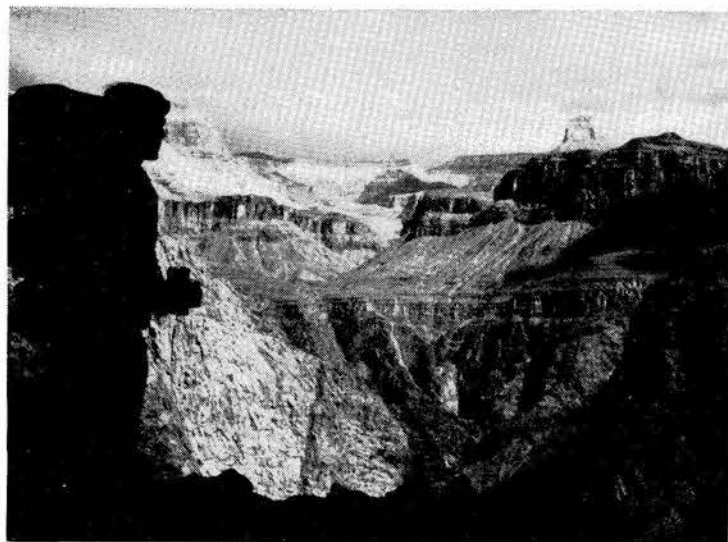
9. Learn to anticipate sleep in a pleasant frame of mind and make going to bed a happy event. Consider it a delightful escape from the pressures of the day and your problems.

10. If, however, your insomnia persists and leaves you extremely fatigued, get a medical check-up.

The chief function of sleep is to give your body a chance to recuperate — to recharge your batteries. And the one inviolable rule for achieving sleep is: RELAX.

Congratulations

Mr. and Mrs. Roy Rentzsch (9225), a son, Nov. 16.



MORE THAN A MILE DEEP, the Grand Canyon offers spectacular scenery and a challenge to hikers. Bob Nelson (2634) and Wendell Nelson (4142) recently took three teenage boys and hiked 47 miles down, across, up and back.

Sandians Complete Triple Rim Hike—Into the Grand Canyon and Out

Anyone who has ever stood on the rim of the Grand Canyon and gazed at that monument to geologic time has felt close to the forces that shaped the universe. Recently, Wendell Nelson (4142) and Bob Nelson (2634) took three teenage boys and hiked down into the canyon, across the valley floor and the Colorado River, up the North Rim and then back—a distance of 47 miles.

"Up close," Wendell says, "the Canyon is even more spectacular."

They started the hike from Yaki Point on the South Rim on a cold windy morning. As they climbed down into the great gorge, the temperature rose. By the time they had dropped the 5000 feet to the river level, they were experiencing tropical weather.

This was Bob's third trip into the canyon. Previously, he had taken Boy Scout troops to the canyon floor but had never completed the "triple rim" hike. His son, Wendell's son and nephew are all three Boy Scouts and earned the Grand Canyon

merit award as a result of completing the hike.

"The trails are well marked," Bob says, "and camp grounds have adequate facilities. Still, you have to carry everything you need for three days on your back."

The second day was the toughest going. They had camped the first night near Phantom Ranch and at dawn set out to climb up the North Rim. They made it by noon, but the fatigue, the blisters, and the sore muscles were something else.

"We had lunch," Bob says, "rested awhile, and then started the descent. It's much easier to walk down than up."

Both Bob and Wendell are enthusiastic about the trip and highly recommend it to anyone who enjoys hiking and who is in reasonably good shape.

"It's a tremendous experience," Wendell says. "The scenery is fantastic. The layers of sandstone contain fossils from the beginning of life on earth. There are Indian relics, much wildlife, and a feeling of isolation that is awesome."

Take Note

Gary Shepherd (9428), working in the Neighborhood Dramatics Project, is script writer for the Project's musical Christmas show entitled *The Littlest Angel*. Two performances are scheduled Dec. 13 and 14 at 7:30 p.m. Contact Gary for further information and tickets.

"Optimization and Comparison of Partial Difference Methods" will be presented by Robert Walsh (5162) at the 5100 Staff Seminar Dec. 8. George Arnold will discuss "Macroscopic and Microscopic Effects of Ion-Implantation in GaAs and Other Semiconductors."

The seminar meets on Tuesday mornings at 8:30 a.m. in rm. 201 of Bldg. 806.

Promotions

Howard Anderson (4231) to Technician
Loraine Aragon (4135) to Accounting Clerk
Charles Brown (8322) to Computer Operator
Julia Calderon (3256) to Secretarial Steno
Felix Castillo (3428) to Mail Clerk
Bennie Chavira (4518) to Cleaner
James Clabaugh (7423) to Technical Staff Associate
Joseph DalPorto (5535) to Technical Staff Associate
D. R. Deatherage (2454) to Technical Staff Associate
Ronald Delsner (2451) to Technical Staff Associate
Julia Florence (3256) to Secretarial Steno
John Gabaldon (3428) to Mail Clerk
Helen Gailher (4135) to Accounting Clerk
Laudente Gallegos (4515) to Janitor
Laura Garcia (3255) to Steno Clerk
Joan Hall (8270) to Secretary
Joanne Hisey (3256) to Secretarial Stenographer
Ronald Huse (2333) to Technical Staff Associate
William Jordan (8256) to Stockkeeper
Edwina Kiro (3256) to Steno Clerk
Alex Maestas (9411) to Computer Facilities Clerk
Theodore Martinez (3428) to Mail Clerk
Dolores Mascarenas (3256) to Secretarial Steno
Charlene McCann (3256) to Secretarial Steno
Charles Miglionico (5522) to Technical Staff Associate
Harry Morris (2444) to Technical Staff Associate
Terry Otero (4231) to Technician
Henry Pacheco (4515) to Cleaner
Kathy Pitts (3256) to Secretarial Steno
Roger Rizkalla (4135) to Accounting Clerk
Diana Romero (3256) to Steno Clerk
Kathleen Sandoval (3256) to Steno Clerk
Dalton Savage (9239) to Technical Staff Associate
Rebecca Statler (3256) to Steno Clerk
Marian Van Delinder (3256) to Secretarial Steno
Bonnie Vigil (3256) to Steno Clerk



RON DAY (3131) and his puppet Big Red are pleased about a check for \$550 which Barbara Young of Zeta Tau Alumni Sorority will present to the Carrie Tingley Hospital Foundation, Inc. Ron and his wife Mary Kay recently presented a series of puppet performances for the charity project. They will perform for the Kids Christmas Party at the Coronado Club Dec. 19.



TWO YEAR EXTENSIONS to the present Union Agreements and a number of other changes were agreed to by members of the Metal Trades Council and Office and Professional Employees Union. Signing (left) is Jake Young, President of the Council, while Ernie Peterson, head of Labor Relations Depart-

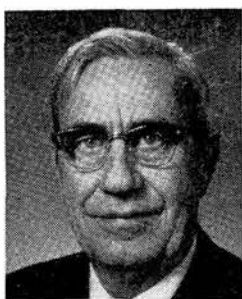


ment (3220), and Merle Alexander, Council Secretary-Treasurer, look on. Signing for OPEIU (right) is Acting President Maxine Stephenson; Nancy Barela, Acting Secretary-Treasurer, and Frank Morton, OPEIU International Vice President, watch Maxine sign.

LAB NEWS

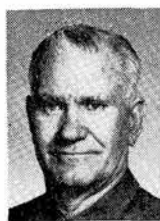
SERVICE AWARDS

25 Years



William Elskes
4511

20 Years



William Baldwin
4511



John Barnes
7363



Susana Derado
3256



Benny Garcia
4613



David Gonzales
4233



John Lannon
7222



Thomas Meloche
4136



Wayne Miller
7411



Gail Sievert
4373



M. F. Stewart
4612



G. R. Vaughan
7615

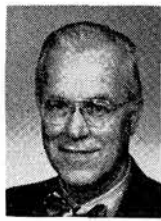


Dorothy Washburn
4614



Richard West
2512

15 Years



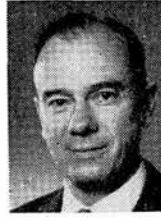
Robert Adams
2451



Michael Butteri
3412



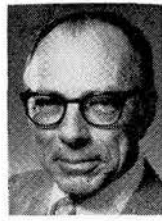
Alvin Farmer
2453



Charles Jackson
1532



William Lace
4231



Carl Scheiber
7250



Robert Stewart
7433



Norma Taylor
3432

Minitouring with CB

Santa Clara's Puye Ruins Are Treat in All Seasons

The Puye Cliff Ceremonial is a little-known event, held in late July, that has several interesting features.

For many visitors, the main attraction is the large quantity of handsome black pottery, made by the women of Santa Clara Pueblo, displayed on tables set around the plaza. Another bright spot is the Indian announcer with a Lawrence Welk voice who tells you where to find "cold pops" and warns you that "at Puye we operate on Indian time" (leisurely, that is). The rest of the show is, well, downhill, except for the food. The Indian women knead and roll dough for the popular fry bread and then dip it into hot fat. The bread is great for its soothing effect on the hot chili and posole.

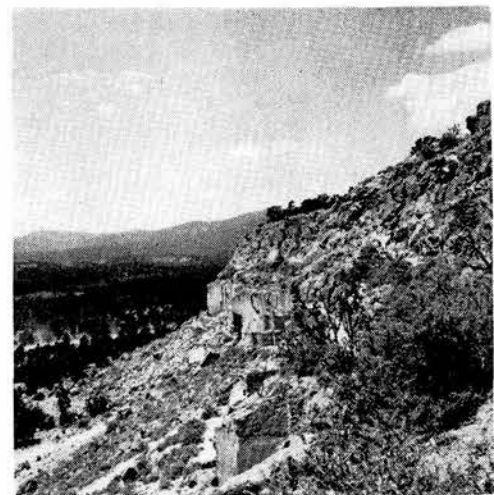
Puye ruins are worth a drive any time of the year. To reach them, take highway 30 south out of Espanola and watch for the road marker about three miles out. At this point, turn west onto highway 5 and drive about 10 miles through grassy, pinon country before reaching the official entrance, where a Santa Clara Indian guard may collect a nominal fee (about 50 cents) for each visitor. The road then curves around a steep bluff to the top and a parking area.

The ruins — the homes of ancestors of the Santa Clara people — are on top of the mesa and within or against the cliff walls. For more than a mile can be seen the remains of multiple-chamber buildings of native tufa block laid in adobe mortar. Some of the structures are several stories

high. The southern front of the cliff is honeycombed with artificial caves used for storage and living quarters. Horizontal rows of holes in the rock wall show where roof and flooring beams were inserted to support a protective wall. The dwellings are reached by paths and foot- and hand-holds worn into the soft tufa through centuries of use.

Puye reached its peak in 1540, at which time the population was estimated at 2000. A serious drought in later years caused the mesa-top dwellers to move to lower lands where water was more readily available.

The panoramic view of the Sangre de Cristo, Sandia, and Jemez Mountains, as well as nearness to Santa Clara Canyon (camping and fishing), and Bandelier National Monument further commend Puye for a one or two-day outing.



PANORAMIC view of Sangre de Cristo, Jemez and Sandia mountains was available to Santa Clara Pueblo ancestors, many of whom lived in these cliff dwellings.



MESA TOP RUINS include multi-storied structures of volcanic tufa block laid in adobe mortar.



INDIAN FRY BREAD, prepared amid the pine trees, is a special feature of the Puyé Ceremonials.

10 Years

Jane Morgan 1522, Dolores Streater 4140, Joseph Losinski 2333, and Floyd Mathews 7342.

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CLASSIFIED ADVERTISING
Deadline: Friday noon prior to week of publication unless changed by holiday.
A maximum of 125 ads will be accepted for each issue.

RULES
1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Laboratories and AEC employees only
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.

FOR SALE

MISCELLANEOUS

LAMP w/white silk shade; turquoise drapes, 120" wide x 86" long; tire w/wheel for trailer; trailer hitch; ice crusher. Bliss, 296-3752.
GOLF CLUBS, Lord Byron woods 1, 3, 4, 5, Pro-Line reg., \$45. Wangerin, 298-6351.
KENMORE auto. washer. Gammill, 299-4702.
'68 CAMPER, El Dorado, 10 1/2 ft., jacks, heater. Garcia, 243-5117.
MOTOROLA 5-watt FM hand carry, 46-06, 06-06, w/spare batteries & charger, \$100. Day, 265-2319.
PORTABLE DISHWASHER, GE Mobile Maid, \$115, avocado green. Hines, 296-4959.
OLD ENGLISH Sheepdog puppies, AKC reg., champion sired, excellent pedigree, whelped Nov. 14, ready after Jan. 9, reservations & inquiries welcome. Cooper, Bosque Farms, 1-636-2198.
CAMERA, Kodak movie #D10S, w/1 roll film, \$9; Camera, Kodak Starmite II, #485, \$3.50; ice skates, women size 5, Hyde brand, \$15. Ristine, 298-8383.
KODAK "500" projector, \$20; Bell & Howell camera, reg. not Super 8, \$20; editor 8 or 16 mm, \$20. Eaves, 299-7728.
'67 YAMAHA, model 250 Sport. Ward, 298-7230.

TV, B&W, \$15; tape recorder, \$14; dirt bike, 250cc, Maico 70 model, make offer; drafting table, \$10. Otero, 265-2549.
BOY'S figure skates, size 6, worn twice, new \$20, sell for \$10. Looney, 255-7345.
CAR TAPE DECK, 8-track w/4 speakers, \$40. West, 265-4236 or 268-6464.
DOUBLE pedestal desk, dark hand finished, \$40; Sony TC-355 3 head tape deck, \$125. Kahn, 255-3870.
WESTERN SADDLE, Simca brand, practically new, \$95. Butler, 898-2025.
CUSTOM BUILT nautical youth bed w/2 lg. drawers for toys, mattress & pad, \$30; mink cape/stole, \$150. Kahn, 299-3377.
SET of Limoges china, circa 1900; Lane coffee table; bookcase; table lamp. Brown, 299-9134.
TWIN BED set w/chest, mirror; antique mirrors, lamp; Cosco utility table; infant car bed; elec. floor buffer. Fisher, 299-9235.
VERY OLD Navajo man's bracelet, \$135. Navajo rugs, various sizes and prices. Robertson, 298-0578.
POOL TABLE, complete, Sears 54", collapsible lens, sturdy; 2 boy's spyder bicycles. Fenimore, 298-8052.
WALNUT DINETTE table & 4 chairs, \$50. Gelwicks, 299-3909.
ELECTRIC GUITAR, 3 pickup; Barbie & Ken w/wardrobes; ski rack; ro-cart engine; slide projector. Brewer, 298-6018.
GIRL'S ice skates, size 13, \$3; sizes 3 & 6, \$7 ea.; 2 girl's 24" bicycles, \$7 ea. Rightley, 256-7586.
HO TRAIN SET, 24 freight cars, 4 engines, 5 Santa Fe cars, heavy duty transformer, on table, extras, \$90. McCutchan, 255-7215.
UPRIGHT DRILL PRESS; sterling for 8; complete fishing equip.; all kinds of tools, garden, etc.; Cutco steak knives, 8; dishes. Miller, 255-8993 after 6.
BROWN SOFA-BED, 2 pc. green sect, recliner. Chavez, 255-9006.
TRAILER, utility, 2-wheel, enclosed, wired & lighted, make offer. Young, 296-1963.
SIMMONS roll-a-way, \$25; beginner's 47" skis, bindings & size 3 boots, \$8; skis, 58" multiple laminated, auto. cable bindings, \$10. Kane, 298-1717.

SKI PANTS, boy's size 12, \$5 ea.; Frigidaire apt. size elec. range & Whirlpool refrig. Stixrud, 298-0478.
STUDENT VIOLIN, \$45; Stella guitar w/plastic cover, \$15. Villa, 298-0435.
SOLID WOOD kitchen table; trailer axle w/hubs, wheels; 4 mag wheels for VW; center seat for VW bus; gas tank 8"x12"x36". Campbell, 268-8445.
SEMI-AUTOMATIC .22 rifle, used only 6 times, \$35. Smith, 299-7151.
5 MATCHING 5-60x14 4-ply nylon tires, tube type, fit MGB, Fiat 1500, others—spare for Maverick, some Mustangs, \$10 takes all 5. Doggett, 299-7957.
120,000 BTU Carrier furnace, 4 yrs. old, \$125. Constnt, 296-1431.
ORIENTAL COCKTAIL TABLE, 20x40x15", cost \$129, sell for \$35; shoes, Florsheim, black, plain top, worn once, size 10B, \$10. Browning, 299-6384.
ELECTRONIC ignition system, less than 1/2 original price; misc. Corvette Stingray parts. Fuller, 256-1593.
CANOPY BED FRAME, double, antique white, \$35. Ferguson, 299-1501.
STOCKHOLDER'S season ski ticket for Sandia Peak, reduced below pre-season rate. Holland, 898-3118.
40" electric stove, \$15; washing machine, \$10; girl's pink ski coat, size 12, \$10. Luikens, 256-0437.
ORGAN, Thomas Artiste, all transistor, 75 watt, full complement of true voices, Scandia walnut, 2 yrs. old, \$595. Bassett, 898-1840.
'69 LARSON snowmobile, less than 10 hrs. running time, \$450 cash. Flowers, 282-3458.
SEWING MACHINE, Singer Touch-and-Sew Model 603, zig-zag / decorative stitches, contemporary style, walnut cabinet, \$275. Brammer, 265-8194.
GE electric clothes dryer, 220V, \$35. Rozelle, 298-0396.
APPROX. 80 yds. "Coronet Melody" plush acrilan carpeting, color: spring green, less than 4 yrs. old, \$300. Thomas, 268-2565.
ANNIVERSARY Speed Graphic 4x5, flash, holders, bag, Polaroid back and filters, \$100. Ezell, 268-4845.

PORTABLE TV, 18" B&W, \$55; transistor car radio, 6 or 12 volt, \$30. Van Den Avyle, 265-0263.
BOYS' bicycles, 20", 3-spd. Spyder, new tires, speedometer; 26" liteweight; 2 7:75x14 snow tires, 4-ply, \$5 ea. Cave, 2995066.
ALTERED female tortoise shell cat to give away; also white cat w/lgreen eye and 1 blue eye. Cervantes 255-5670.
AKC Collies, 22 ch. pedigrees, \$75, terms; horses, all kinds; horse trailers, financing. Rhoder, 296-2473.
COLT .25 auto., \$55 or trade for old Japanese daggers & swords; also want old hunting knives. Smitha, 299-1096.
VOX electric organ w/amplifier, first \$325 or make offer. Mikkelsen, 3421 Dakota N.E., 268-1485.

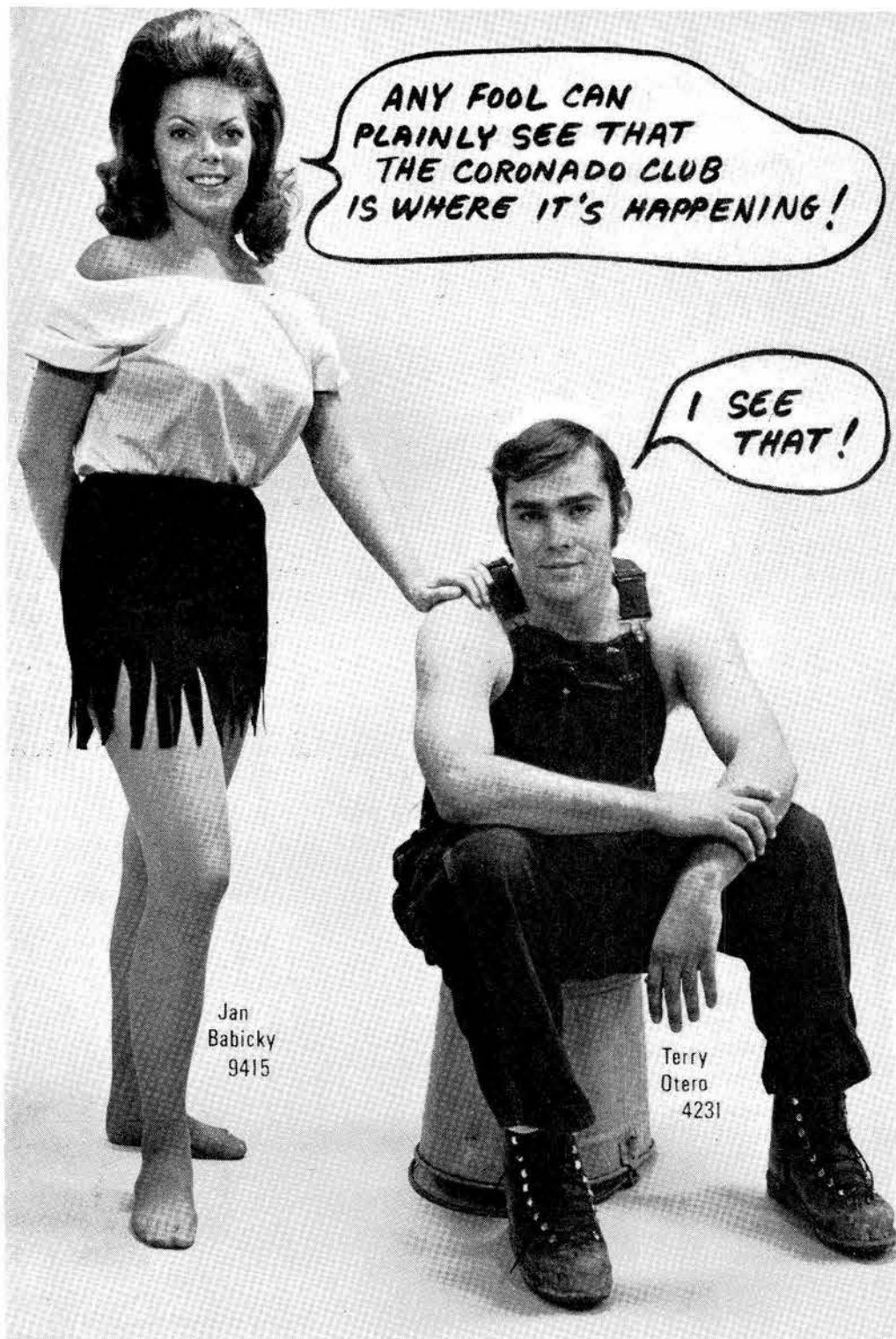
REAL ESTATE
1.27 A. Canyon Estates w/well, 20'x10' well house, garage, 6 miles from Sheraton Western Skies, will finance. Schulze, 299-0152.
1077 ACRE RANCH, \$60 an acre, Lindrith, N. M. Robertson, 298-0578.
4-BDR., living dining, den & hobby rooms, 2 1/2 baths, 2400 sq. ft., brick, walk to schools, 4 miles from Laboratory, view, mature landscaping, dog run. Church, 299-7038.
BRICK, 3-bdr., 2 bath, fp, bar, patio, Candelaria off Wyoming, \$850 down, \$18,900. Palmer, 255-7957, 299-3557, 299-9044.
5/4 FHA, 3-bdr., fp, DR, pantry, built-ins, 1 1/2 baths, AC, landscaped, lg. patio, near Collet Park School. Filusch, 299-5932.

CARS & TRUCKS
'67 DODGE DART GT 2-dr. conv., R&H, 318 cu. in. V8, PS, Tipping, 296-3492.
'67 DATSUN Sport Roadster, below book. Silva, 298-8039.
'64 VW, \$800. Cordova, 298-7734 after 5.
'62 CADILLAC, all power, AC, new tires. Krumm, 299-2279.

'55 CHEV., 6-cyl., AT, 2-dr. HT, new tires & battery. Stevens, 242-7059.
'65 CORVAIR Monza 2-dr. HT sports coupe, R&H, bucket seats. Martinez, 298-4183.
'62 CORVAIR Monza 700, 4-dr. sedan, AT. Hughes, 299-6674.
'67 VW Squarback, new valves & carb kits. Timmerman, 298-4587.

WANTED
JOIN OR START car pool from Ranchos de Albuquerque. Walsh, 6729 Green Valley Pl.
MOTOR HOME or chassis-mount camper, have '70 all metal self-contained E-Z-Rise trailer & '68 Dodge pop-top A-108 camper van to trade. Davis, 265-7283.
SHARE RIDE from vicinity San Pedro & Hannett to any gate, will consider car pool of 3 or 4. Devor, 255-4890.
MINI BIKE or mini bike frame, any condition. Sarkis, 877-4146.
EFFICIENCY or 1-bdr. apt., will consider lease. Johnson, 264-1854.
MOVIE SCREEN, portable, about 4' wide. Jennings, 299-0227.
BICYCLE, used, 10-speed. Kepler, 298-5652.
RENT OR BUY cable-tool well drilling rig. Zanner, 265-0210.

LOST AND FOUND
LOST—Silver Carvelle pocket watch on leather string, Indian ring w/5 needlepoint turquoise sets, round filigree-type pin, silver & turquoise Indian bolo tie, Rx bifocal glasses w/black frames, Cross Silver pencil. LOST AND FOUND, Bldg. 832, tel. 264-2757.
FOUND—Rx glasses w/clear & black frames, ladies' brown cloth glove, pr. blue golf driving gloves, beige scarf, brown & black "Yello-bowl" pipe, green Polaroid sunglasses w/brown frames, safety glasses. LOST AND FOUND, Bldg. 832, tel. 264-2757.



Jan
Babicky
9415

Terry
Otero
4231

SPEAKERS

Dorris Tendall (9150), "Seismic Amplitude Variations from NTS," Fall Meeting of the Seismological Society of America, Nov. 11-13, Milwaukee.

M. L. Lieberman and G. T. Noles (both 5315), "Impurity Effects in Rayon-Based Carbon Fibers," ASTM Symposium on High Performance Fibers, Nov. 16-18, Williamsburg, Va.

C. J. Fisk and Leigh Hendricks (both 9424), "Colored is Beautiful," 1970 Fall Joint Computer Conference, Nov. 17-19, Houston.

M. J. Landry (7261), "Lidar Beam Wander and Moding," 14th Radar Metrological Conference, Nov. 17-20, Tucson.

L. R. Edwards (5132), "Effect of Pressure on the Magnetic Transition of $MnAs, Sb_{1-x}$ Solid Solutions," 16th Annual Conference on Magnetism and Magnetic Materials, Nov. 17-20, Miami Beach.

W. F. Chambers (5522) and F. I. Magee (9413), "A Computer Assisted Microprobe Laboratory"; G. J. Thomas and W. F. Chambers (both 5522), "Diffusion Simulation by Random Walk in a PDP 8/I," Digital Equipment Users Society Meeting, Nov. 19-21, Houston.

F. W. Bingham (5232), "Delayed Coincidence Study of $O^+ + Xe$ Collisions"; R. L. Park (5331), "Threshold Enhancement in the L_{II}, L_{III} Appearance Potential Spectra of Some Transition Metal Surfaces"; R. A. Langley (5233), "Range-Energy Relations for H^+ and H^{++} in $N_2, O_2,$ and Air"; J. M. Hoffman (5233), G. H. Miller and G. J. Lockwood (both 5235), "Emission Cross Sections for the N_2 Second Positive (O,O) Transition for He^+ and He Impact"; J. F. Cuderman (5232), "The Detection of Fast Alkali Metal Beams" and "Ionization of Fast K Atoms in Collision with O_2 and N_2 Molecules," 1970 Annual Meeting of the American Physical Society, Division of Electron and Atomic Physics, Nov. 23-25, Seattle.

R. L. Fox (9341), "Study of the Decay of Isotropic Turbulence Using Multipoint Distribution Functions"; W. S. Saric (9341), "Non-Linear Kelvin Helmholtz Instability," 23rd Fluid Dynamics Division Meeting of the American Physical Society, Nov. 23-25, Charlottesville, Va.

E. H. Farnum (5154), "The Effect of Growth Rate on the Defect Structure of Czochralski-grown Single Crystals"; L. R. Edwards (5132) and A. R. DuCharme (5331), "Calculations of Volume Dependence of Residual Resistivity in Binary Alloys"; R. I. Ewing (5235), "Condensation of Indium on Refractory Metals"; C. M. Tapp (2610), "Secondary Electron Emission from Metallic Hydrides"; H. T. Weaver (5154), "NMR on 3He and 1H Contained in Gold Films"; W. G. Perkins (2613), "The Diffusion and Permeation of Inert Gases and Deuterium Through Silicon Oxide Thin Films"; J. W. Reichardt (2613), "The Reaction of Hydrogen with Clean Thin Films of Titanium"; R. S. Blewer (2613), "Thermal Diffusivity of Rare Earth

Coronado Club Activities

December Calendar Full of Holiday Events

Friday night is happy hour time and tonight the Club's famous chuckwagon roast beef is the buffet feature while Frank Chewiwie is the maestro in charge of dancing music.

Special prices will be in effect from 5 to 9 p.m. The buffet will be spread from 6 to 8 p.m. and the band will play from 6 to 9 p.m. Then the troops move into the main lounge where Yolanda Adent will entertain with a sing-along until midnight.

Chet Fornero (4337), Club travel director, is finally relaxing. After several months of putting together the tour to Grand Bahamas Island, it's finally wrapped up. A planeload of Coronado Club members will depart Dec. 9 for six days at the Kings Inn at Freeport. Chet was sweating out those last few registrations which made the tour possible.

Bon voyage, you lucky travelers!

The Board of Directors changed the Club by-laws recently. Retired Sandia and AEC employees are now eligible at any time for membership in the Club. Previously, the rule was that they had to be members at the time of retirement.

The Coronado Ski Club takes off at 5 a.m. tomorrow by charter bus for a weekend of super skiing at Wolf Creek Pass. Jack Mortley (7524), who is the honcho in charge of the trip, says that there might be some last minute cancellations, so if anyone is interested in making the trip, call him right now at 264-5707. The package deal costs \$14.

Tomorrow night, the Sanado Club will hold its Christmas dinner dance at the Club. The holiday decorations, courtesy of the Sanado ladies, will remain up during the season.

After tonight, Friday happy hours for the rest of the month will be from 5 to 7 p.m. in the main lounge only. Tuesday

night happy hours continue from 5 to 8 p.m. The main lounge will be open on Dec. 24 from noon until 5 p.m.

On Tuesday, Dec. 15, Rosario Ayres will present a holiday fashion show during the noon hour. The Club's special 99-cent luncheon featuring turkey and the works will be served on Thursday, Dec. 17. The special will also be available in the Bldg. 839 and Area III cafeterias.

The Comedy Classic night this month is scheduled Thursday, Dec. 17, at 7:30 p.m. The movie seems appropriate for the season — "Holiday Inn" with Bing Crosby, Fred Astaire and all those great Irving Berlin melodies. Also, the last two chapters of the Flash Gordon movie serial will be shown. Flash might make it back to earth yet.

The Club's annual Kids Christmas Party is set for Saturday morning, Dec. 19. Ron Day and Mary Kay have put together a great new puppet show for the occasion. Of course, Santa Claus will be on hand to pass out the goodies and there will be other fun and games including some cartoons. It's free to members' kids 12 years old and under. Bring them out about 10 a.m. The main lounge will be open.

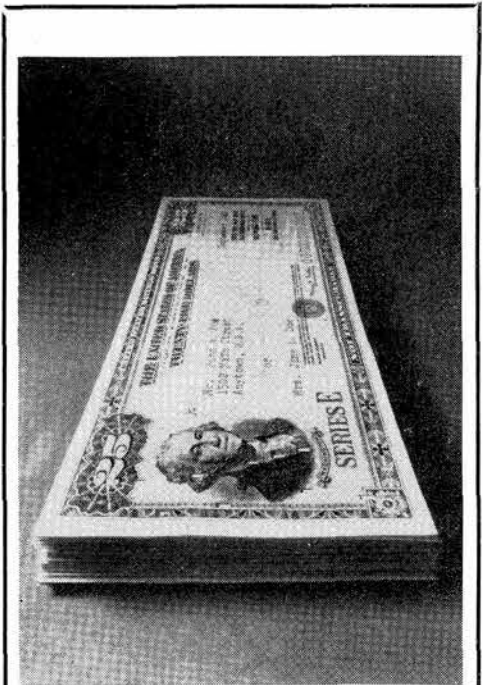
The Coronado ladies bridge group will hold an all-day session on Thursday, Dec. 17 starting at 10 a.m. Duplicate bridge meets on Tuesdays at 7 p.m.

Books and Records— Who Needs 'Em? (we do)

Once read, a paperback is useful under a table leg to get the thing level, but there isn't much else you can do with them. So once again, as a service to a humanity burdened with old pocket-books, LAB NEWS is reopening its Christmas bookstore, back at its old stand in the elevator foyer of Bldg. 802, and we need books . . . even that old calculus text will probably move. The proceeds — usually two to three hundred bucks — are used to buy things like metal roofing material, socks, aspirin, chicken wire, fresh oranges, toys and other such disparate items for poor families in villages on South 10.

Last year people brought in phonograph records as well — all kinds and all speeds. They sold nicely too. So if you can part with that "Rudy Vallee Swings at the Y" favorite, well bring it in too.

Oh yes, Laura Garcia (3255), below, who's pretty high on things literary, urges you to drop your books and records at the LAB NEWS office in room 100, Bldg. 802. Or call for pickup on ext. 1053. (Laura won't be picking them up.)



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