

Nimbus Weather Eye Satellite with SNAP Generators Launched

An advanced Nimbus weather satellite, currently in a trans-polar orbit scanning the entire earth's surface twice a day, is using power from two SNAP 19 generators, in whose development Sandia has an active role.

This is the report brought back from Vandenberg Air Force Base in California by Bob Luikens (9521), Sandia's project engineer for administration of SNAP 19 technical development.

Bob witnessed the launch of the satellite about midnight Sunday, April 13, after sweating out two postponements. The first, on April 10, was a scheduling delay to give way to the firing of a Minuteman 3. On April 11, a minor fuel leak in the Agena rocket booster for the Nimbus satellite caused a 48-hour postponement.

Bob was a little apprehensive because the first Nimbus satellite scheduled to carry the SNAP 19 system was destroyed after launch on May 18, 1968, by the Range Safety Officer.

In October 1968, Bob spent several cramped days in an underwater submersible off Santa Cruz Island directing the recovery operations of the two plutonium 238 fuel capsules which went down with the destroyed satellite. The \$700,000 fuel capsules were successfully recovered by the Navy after a team of Sandians located the debris.

The SNAP 19 generators are producing about 50 watts of power for the 1265-pound weather eye satellite. Butterfly-shaped with extending arms for solar cells, the satellite is the heaviest of NASA's weather observers. The isotope generators supplement the solar panels as a source of power.

Environmental Advances Discussed at Anaheim

A number of Sandia's testing facilities, their capabilities, and results obtained through their use were discussed during the 15th Annual Institute of Environmental Sciences Technical Meeting and Equipment Exposition, April 20-23, in Anaheim, Calif.

Papers presented included:

Les Lamkin (7300), "Environmental Laboratory Management"; Floyd Tuler (5161) and Bill Lyons (former Sandian), "Failure Mechanisms in Materials and Structures Subjected to Short-Time Loadings"; F. T. Stixrud (7311), "Improving Techniques for Thermal Conditioning of Objects under Environmental Test."

Don Williams, Jr. (7311), "A Magnetically Suspended Rocket Sled"; Pat Walter (7332), "A Technique for the Evaluation of Seismic Velocity Gages"; Bill Snyder (5220), "Laboratory Simulation for TREE Studies."

John Otts (7324) conducted a panel discussion on "Structural Vibration Characteristics."



SANDIA LAB NEWS

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SELECTED to pursue PhD degrees under Sandia's Doctoral Study Program are, sitting from left, Bennie Blackwell, Richard Davis, Charles Harner, Steven Benzley, Martin Abrams and Larry Bickle.

Standing are Gary Scrivner, Anthony Veneruso, Charles Watkins, Dennis Hayes and Horace Poteet. Not shown is Robert Rinne. The men will start their PhD programs in September 1969.

PhD Bound

Twelve Selected for Doctoral Program

Twelve Sandians were named this week by President John Hornbeck as the next participants in the Doctoral Study Program (DSP). The DSP permits full-time study at certain universities for an initial period of 12 months with the possibility of additional extensions.

Sandia pays the cost of tuition and normal school fees, and the participant receives a reduced salary while attending school. Each of the candidates submitted a plan for his doctoral program as part of the qualifications for selection. They will start their academic work the fall semester of 1969. Those selected:

Martin Abrams (5416), Purdue University, ME—radiation heat transfer; Steven Benzley (5162), University of California-Davis, CE—applied mechanics; Larry Bickle (7342), University of New Mexico, ME—transient measurement theory; Bennie Blackwell (9328), Stanford University, ME—heat transfer.

Richard Davis (5112), Washington State University, computer science—non-numerical applications; Charles Harner (9425), UNM, mathematics—combinatorics; Dennis Hayes (1224), Washington State University, physics—shock wave physics; Horace Poteet (1912), UNM, EE—communications theory.

Robert Rinne (8324), University of Virginia, mathematics—systems analysis; Gary Scrivner (2316), UNM, nuclear engineering—transport theory; Anthony Veneruso (1223), UNM, EE—control theory; Charles Watkins (9511), UNM, ME—fluid mechanics.

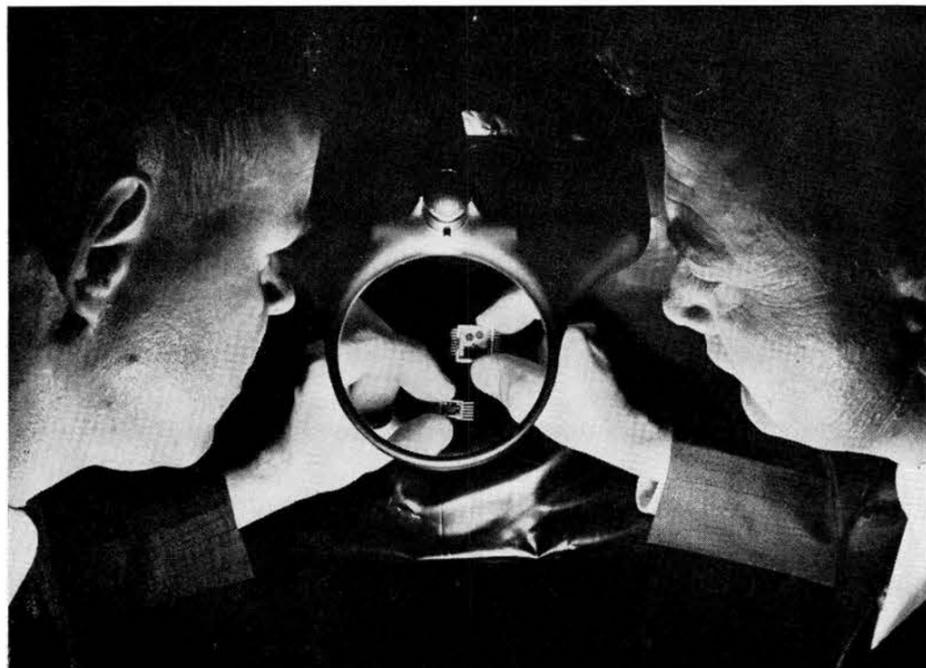
For those selected, the opportunity to continue their education is an exciting prospect. For some, however, it does mean moving families and leaving familiar surroundings and routine for a small apartment and the long academic grind.

One of the men is looking forward with delight to the year of concentrating on nothing but classes. He is Dennis Hayes, who over the past 11 years has earned his BS and MS degrees in physics while progressing at Sandia from a grade three document clerk to a staff member working in research.

"In fact," Dennis says, "my goal has always been to get a PhD degree. Sandia has made that possible. This last year will be a relief in a way—I can devote full time to the subject matter."

Dennis will sell his home and "start over" when he returns to Albuquerque. He echoes the feeling of the group, however, when he says that "the satisfaction of earning the degree will make the effort worthwhile."

Two Patents Granted to Sandia Lab's Scientists



SMALL SIZE, LARGE POTENTIAL are characteristics of these two recently-patented devices. On right, Cecil Land (5133) holds an "emitter-follower oscillator" which he and Don Schueler (2633) invented. Left, Gene Haertling (2317) examines a "multiremanence ferroelectric ceramic memory element" which he and Cecil developed. The two devices represent another forward step by Sandia in the science of microelectronics.

Two AEC-assigned patents have been granted in the names of three Sandians.

Cecil Land and Don Schueler (2633) are co-inventors of an "emitter-follower oscillator employing ferroelectric ceramic feedback network." Gene Haertling (2317) and Cecil are inventors of a "multi-remanence ferroelectric ceramic memory element."

The emitter-follower oscillator eliminates much of the frequency instability due to varying gain characteristics which transistors exhibit under changing temperature conditions. Earlier circuit arrangements using transistors could overcome those undesirable characteristics only through addition of special temperature compensation devices which, in turn, limited the simplicity and degree of miniaturization possible.

The device utilizes a transistor oscillator constructed in the form of a hybrid microcircuit. The oscillator includes a piezoelectric ceramic feedback network which functions as a transformer with greater than unity voltage gain (i.e., the voltage output is greater than the input). This eliminates the relatively bulky inductor and other lumped circuit components necessary in earlier feedback networks and allows a greater degree of miniaturization.

Also, earlier passive networks required some adjustable element, such as a capacitor, for frequency control, again limiting

(Continued on Page Four)



AND THAT'S HOW IT WORKS, explains Alan Chodorow (9141) to a group of high school science students touring the Hermes II flash X-ray facility. The students were among nearly 160 from area high schools who toured Sandia Laboratories during Science Youth Days April 17 and 18. The youths, all outstanding science students, were welcomed to Sandia by Charles Trauth, supervisor of Planetary Quarantine Systems Studies Division 1741. Science Youth Days are intended to encourage young people to pursue scientific and engineering careers.

Bond Election May 6 to Support T-VI and School Construction

Bernalillo County residents will vote May 6 on a bond issue to fund an expanded program for the Technical-Vocational Institute plus a limited amount of construction for Albuquerque Public Schools.

The money sought in the bond issue represents a compromise — and in a sense a sacrifice by both educational facilities — in recognition of demands made upon local taxpayers already this year. T-VI is asking for three mills to meet immediate needs (\$1.8-million per year for the next four years). The public school construction fund of \$6-million is lower than usual to offset the T-VI increase. In this way, the tax dollar for the two issues remains unchanged from last year.

Mel McCutchan (3235), who was active in setting up T-VI and has since served in additional advisory capacities, calls T-VI "a real community asset — a great success." His opinion is supported by T-VI principal Louis Saavedra in a follow-up study of 732 T-VI graduates who attended the school between 1965-68. The replies

to the questionnaires sent the graduates indicate the majority are now employed (where none was upon entry to T-VI) and this employment is largely in areas in which the graduates received training at the school.

At present the equivalent of 1500 full-time students are enrolled at T-VI and about an equal number are waiting to enroll. Since 1964 when it was established, 25,000 students have attended the school — some for only one course, others for a complete curriculum.

Albuquerque public schools have a dropout rate of around 25 percent and T-VI courses help these teenagers train for jobs, but the vocational training programs are not set up exclusively for dropouts. The courses are part of public education to meet the needs of all adults. A big increase in enrollment has been noted among persons moving to Albuquerque from rural counties in the state. Some 15 vocational "majors" are offered in day or evening courses.

Deaths



Santiago Aragon

Santiago Aragon, a cleaner in Machine Shop Division 4254, died April 13 after a brief illness. He was 63.

He had worked at Sandia Laboratories since July 1951.

Survivors include two daughters, a son and several grandchildren.



Manning Hodges

Manning Hodges, a staff member in Joint Missile Firing Division 7421, died suddenly April 19. He was 47.



Edwin McGarvie

He had worked at Sandia Laboratories since September 1950.

Survivors include his widow and three daughters.

Edwin McGarvie, a staff assistant in Instrumentation Engineering Division 7217, died suddenly April 9. He was 46.

He had worked at Sandia since July 1953.

He is survived by his widow.

Credit Union Statement

As part of its normal audit procedure, the supervisory committee of the Sandia Credit Union recently mailed statements to members with account numbers from 10000 to 10999. If your account number is in this series and you have not received your statement, please notify Earl Simonson (4122), committee chairman.

Fact Finder

(Got a question or comment about something related to Sandia? Put it in writing, include your name and organization, and send it to FACT FINDER, 3432. Satisfaction can't always be guaranteed, but your anonymity and a factual answer is. Items of wide interest will be answered in this column; others will be answered individually).

Q. Are there any plans underway to observe the 20th anniversary of the establishment of Sandia Laboratories this November 1st?

A. The anniversary will be observed in news releases and posters as well as in special programs being planned. Watch for details in future issues of LAB NEWS.

Q. Is there any good reason why the LAB NEWS no longer publishes photographs of deceased employees?

A. LAB NEWS will resume publishing pictures of deceased Sandians who were active employees at the time of their death.

Comment and Question: Endorse heartily your new column in LAB NEWS. Also hope you do maintain anonymity as you say you will. (Ed. Note — Honest, we will.) Two questions: Why is LAB NEWS printed on heavier paper? Is there any prospect for color pictures in the future?

A. Our last issue was printed on heavier paper because of paper folding difficulties which the printer had, since solved. Color pictures are not likely, aside from our Christmas cover, because of prohibitive expense — a color run triples the printing cost.

Q. Recognizing that only so much money is available for buildings, will Sandia ever get rid of all of the temporary wooden buildings in Area I (plus Bldg. 610)? If not, why not—they sure look raunchy.

A. The answer to your first question is, of course, "yes." Now as to the timing, we may have to bend our definition of "temporary" a little—some of these structures date back to WW II and are still going strong. Give them a few more years and—who knows—they may be declared historical landmarks. Actually, they have been coming down steadily — Bldgs. 813, 817, 820 and 821, to name several razed in the last few years. As for their looks, remember only that "beauty is in the eye of the beholder."

Savings Bond Group Tours Sandia Labs

The 1969 savings bond drive began in Albuquerque April 22 when representatives of 25 firms participating in the payroll deduction program toured Sandia Laboratories. The tour was arranged by Glenn Fowler (9000) who is serving as chairman of the Albuquerque savings bond campaign.

The group toured materials research laboratories in Bldg. 805, the computer center in Bldg. 880, wind tunnels in Bldg. 865 and environmental testing facilities in Area III.

"Since Sandia is essentially a government-funded operation," Mr. Fowler said, "it seemed appropriate to show the people who will be involved in promoting savings bond sales how some government funds are spent.

"People buy savings bonds for two reasons — for their personal benefit and the benefit of our government. Savings bonds provide funds which we, as a country, do not then have to borrow from other sources at higher interest rates.

"For the individual, other investments might provide a greater return, but how many of us regularly make these investments? I find that the payroll deduction method of purchase of savings bonds is an automatic, convenient and painless way to accumulate savings."

Last year, Mr. Fowler served as state chairman for the payroll deduction savings bond program.

At Sandia Laboratories, the 1969 savings bond campaign will start May 16. Currently, 6518 Sandia employees purchase \$108,400 in bonds each month through payroll deduction.

Engineering Technician Rank from NSPE Earned By Harry Conrad



Harry Conrad, a technical maintenance specialist in Maintenance Planning and Control Division 4517, was recently certified as a Senior Engineering Technician by the Institute for the Certification of Engineering Technicians.

The Institute is sponsored by the National Society of Professional Engineers.

Larry met the educational requirements for certification plus the 17 years of experience required for the senior technician rating. In addition, endorsement from three professional engineers was required.

Larry has worked at Sandia since 1964, initially as a components testing technician and then in his present assignment in Plant Engineering as a staff assistant.

Previously he worked for Data Technology Corporation in Albuquerque after retiring from the U.S. Navy as a Chief Electronics Technician.

Sympathy

To George Andrews (4221-1) for the death of his mother-in-law in Florida.

To Meluiades Salazar (4574) for the death of his son, April 7.

To Alfredo Chavez (4574-1) for the death of his mother-in-law in Duran, N. M., April 10.

To Mary Winter (4362) for the death of her grandson, David Michael Dixon, in Albuquerque, March 18.

To Albert Ayotte (3415) for the death of his father in Madowaska, Maine, April 10.

Promotions

D. W. Fenstermacher (4222) to Specialties Worker
J. E. Lowery (4574) to Janitor
M. J. Mortensen (3126) to Secretarial Stenographer
H. Kuroski (4333) to Teletypewriter Operator
K. E. Brown (8151) to Secretarial Typist
R. K. Garrison (1210) to Secretary
V. H. Hagan (1710) to Secretary

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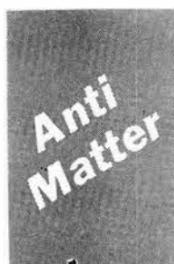


SANDIA LABORATORIES
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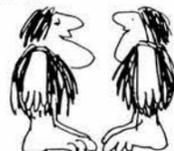
Editorial Offices in Albuquerque, N. M.
Area 505 264-1053
ZIP 87115

In Livermore Area 415 447-2387

John Shunney is Editor, Don Graham Ass't. Editor
Cherry Lou Burns & Don Wolfe are Staff Writers
Matt Connors & Lorena Schneider are Staff Writers in Livermore
Bill Laskar is Photographer
Norma Taylor/ All The Rest



HOW'RE THE EXPERIMENTS GOING?



SOME OF THE OTHER GUYS IN MANAGEMENT KEEP ASKING WHEN YOU'LL COME UP WITH SOMETHING AGAIN. BUT...



I KNOW YOU'LL HAVE SOMETHING SOON AND I WANT TO BE SURE YOU DON'T LET THE SIMPLE FACT THAT WE'RE...



A BIT OVER STAFFED WORRY YOU.



THERE'S A MAN WHO REALLY UNDERSTANDS THE CREATIVE PROCESS!

DICK WILSON © 1968



SANDIA ENGINEERS who wanted to learn to fly pooled equal amounts of money for a 1941 Luscombe 8A plane (above) and training for an instructor. From left, Jim Pergrossi (8164), Don Warne (8331), and Jack Parry (8164) check plane during preflight inspection.

On a Thin Bankroll

Livermore Engineers Fly Co-op Style

A good number of the engineers in Project Engineering Division 8164 are flying enthusiasts who have found one way to enjoy their hobby without too great of a financial outlay.

It all started back in January 1968 during a lunchtime session when the conversation turned to flying. An article had appeared in the SAN FRANCISCO CHRONICLE Sunday Supplement, titled "Flying Opens a New World for Californians," which went into detail on the joys and expenses of private planes.

While discussing the article, several of the fellows in the group stated that one of their ambitions was to learn to fly—but they all concluded that it generally was too expensive an undertaking.

Don Yearout said he knew how to do it inexpensively — that is, by getting group together and purchasing a relatively cheap airplane, hiring a flying instructor to teach the group, and using their own plane to build up the 40 hours of flying time required for a private pilot's license. Don was sure of his ground since he had

done that very thing about 18 years ago to get his private license.

After more discussion, it was determined that if Don had a flight instructor's rating more money could be saved. Everyone agreed and the decision was made to proceed with the idea. The group—composed of John Liebenberg, Mike Nicholson, Jim Pergrossi, and Don—would each put in equal amounts of money and an aircraft would be purchased. Meanwhile, the four would split the expense required for Don to take flight instructor training (about \$400), and he would then instruct the others free.

"Amazingly enough, it all worked out just as planned," says Don. "In March 1968, the four of us bought a two-seater, 1941 Luscombe 8A aircraft, in pretty good condition, for \$2000. In June, I completed my flight training, passed all required tests, and received both my flight instructor and commercial pilot ratings."

Since that time, John has received his private license, while Mike and Jim have both soloed and have over 30 hours toward their licenses. Because of his return to school, Mike sold his interest to Don Warne (8331) who has since soloed too.

At present Don is building a gyrocopter (a one-man autogyro) which he plans to fly in the local area. "As far as I can determine there is only one other gyrocopter in the Livermore Valley. I think the Valley is such a beautiful place, especially in the canyons and up around the mountains, and I can use this type of plane to get into these places," he says.

In the meantime, Don Yearout sold his share of the Luscombe to Jack Perry (also an engineer in Division 8164) who has started instruction from Don and will solo soon. Jack's first experience with flying was during his military service in the Coast Guard. He was a relief helicopter pilot on an ice breaker, serving two years near the North Pole and a year near the South Pole.

With the proceeds from the sale of his share, Don Yearout bought an old unlicensed plane (also a Luscombe 8A) for himself. "The plane is run down and poorly equipped, but I had plans for rebuilding it," Don says. What I finally do with it remains to be seen, but, in any event, I'll probably be instructing students in the future."



INSTRUCTOR Don Yearout (left) gives John Liebenberg (both 8164) last-minute briefing before takeoff.

Authors

C. W. Harrison, Jr. (2625) and R. E. Jones (9422), "On the Reflection Coefficient of a Plasma Profile of Exponentially Tapered Electron Density and Fixed Collision Frequency," May issue, IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION.

C. W. Harrison, Jr., and E. A. Aronson (both 2625), "On the Bistatic Scattering Cross Section of a Re-entry Capsule with Ionized Wake," May issue, IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION; "On the Response of a Missile with Exhaust Trail of Tapered Conductivity to a Plane-Wave Electromagnetic Field," May issue, IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY.

G. Carli (2442), "Read-Only Memory Loads Process Computer," Vol. 16, No. 2, CONTROL ENGINEERING.

R. K. Cole, Jr. (5231), "Nuclear-Polarization Corrections to the Levels of Muonic Atoms," Vol. 177, No. 1, PHYSICAL REVIEW.

Optical Electronics Seminar at KAFB

National leaders in the field of optical electronics will meet at Kirtland AFB on Monday for a one-day conference arranged by Cecil Land (5153). The conference is sponsored by the Albuquerque Section of the Institute of Electrical and Electronics Engineers (IEEE) of which Cecil is a member and chairman of the seminar committee.

The seminar — which begins at 8:30 a.m. — will hear seven papers on such subjects as scanlaser technology, holography and liquid crystals.

"The speakers are each nationally-recognized authorities in their fields," says Cecil. "Their talks will cover the latest developments in optical electronic materials, devices, and systems and are aimed at specialist and non-specialist alike."

Cecil has arranged a tour for seminar participants of Sandia's ferroelectric devices and optical ceramics laboratories for Tuesday morning.

Retiring



Joe Fox, a stock-keeper in Material Storage Section 8245-2, is retiring the end of this month. Since joining Sandia Laboratories Livermore in June 1959, he has worked in the same organization.

He and his wife will continue to reside, at least for the present, at Pleasant Hill near their daughter and granddaughter.

Joe has been ill for some time and his immediate concern is to recover completely. "I'm on my way now, though," says Joe. "As soon as possible I want to get a car and trailer, and we'll do some extended travelling — first through the mid-West and the East for five or six months. Before coming to Sandia, I was a chief warrant officer in the Air Force and retired after 29 years of service, so I have a good many friends and relatives whom I haven't seen for a number of years."

After returning to California, Joe expects to spend some time looking for a locale with a drier climate that will be better for his wife's asthma.

Take Note

Bruce Held of Environmental Health and Medical Services Division 8263 served as chairman of the Respiratory Protective Devices Session of the 16th Annual Western Safety Congress and Exhibits, sponsored by the Greater Los Angeles Chapter of the National Safety Council, April 8-10. Herb Zenger of Safety Engineering Division 8262 was in charge of arrangements for the session.

Ken Foster (8245-1) shot a low net of 64 to win the first place trophy in the Sandia Employees Golf Club tournament held at Las Positas Golf Course in Livermore March 29.

Roy Tackett (8166) was the winner of the first flight (handicap of 21 or less) with a net score of 70, and Joe Genoni (8245-2) won the second flight (handicap 22-36) also with a net of 70. Dick Ballard (8212) was closest to the pin in the hole-in-one contest.

Several Sandians have been elected officers for the coming year in Del Valle Skilaufers, the Livermore ski club. They include Mike Daley (8133), president; Don Clarin (8172), vice president; and Marlene Balalou (8243), secretary. The club meets the second Wednesday of each month during ski season at 7:30 p.m. at the East Avenue School in Livermore.

Jerry Maloney (8128) has been reappointed by Livermore's City Council to serve a four-year term as one of five commissioners of the Livermore Housing Authority. His previous appointment — made 18 months ago — was to finish the term of a commissioner who resigned from the authority. As an agency of city government, the housing authority establishes policy and makes long-range plans for the city's low-income public housing projects. Most current studies of the authority have been directed toward replacement of the 77 unit Villa Gulf public housing project. Under state law, existing buildings are due to be eliminated in 1971.

Monthly Announcements of Livermore Centennial Events

Events for May
During 1969, various events are planned to celebrate Livermore's Centennial year. For our readers' information, a monthly schedule of upcoming events will appear in the LAB NEWS.

- May 3 Historical train arrival en route to Oroville
- May 3 Maid of Livermore Pageant
- May 3 Cinco de Mayo (5th of May) Fiesta by Latin Organization for Betterment (LOB)
- May 9 Centennial Plaque special train (San Francisco to Truckee)
- May 10 Special concert by Livermore Symphony
- May 13 Jaycee Wives fashion show
- May 24-25 Centennial "Sing Out" Livermore concerts
- May 26 Spaghetti Feed and Pony Auction by Livermore Ranch Riders

New Pre-Retirement Series Offered for Livermore Employees

A series of meetings is again being offered by Sandia Laboratories Livermore as part of its continuing pre-retirement counseling program.

Program objective is to help employees prepare for retirement. Spouses or guests who may be interested in any of the subjects are encouraged to attend as well.

Arranged by Training, Benefits, and Records Division 8214, the five meetings will be held in two-hour evening sessions at the LRL (East Avenue) cafeteria. Sessions, consisting of lectures and question-and-answer periods, are scheduled on consecutive Tuesdays, beginning May 6, at 7:30 p.m.

At the first meeting, Marlin Pound and Jim Henderson of Division 8214 will discuss Sandia retirement benefits.

Other meetings will feature various topics presented by guest speakers from the Bay Area: May 13, D. V. Jenkins, manager of the Social Security Administration's Hayward Office, and Ruth Blanchard, field representative, "Social Security Benefits, Medicare"; May 20, Joseph Clark, trust officer, United California Bank, Oakland, "Financial Planning"; May 27, Dan Johns, occupational analyst, and Kenneth Humphreys, unemployment insurance counselor, for the State of California, Department of Employment, "Alameda County Labor Market"; and June 3, Max Biggs, M.D., consultant physician for Sandia Laboratories Livermore, "Retirement and Your Health."

Additional information may be obtained from Jim Henderson, ext. 2254.

Congratulations

Mr. and Mrs. Dick Demo (8172), a son, Duane Michael, March 28.

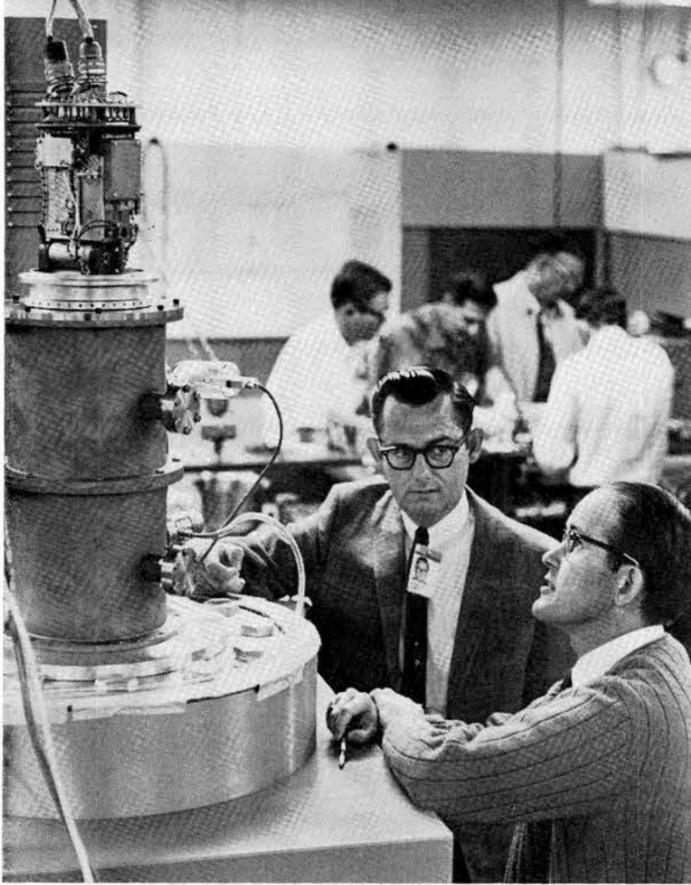
Sue Cormier (8243) and Earl McMurtrie married in Reno, Nev., April 4.

Gay Adams (8231-1) and Jerry Lattery married in Reno, Nev., April 12.

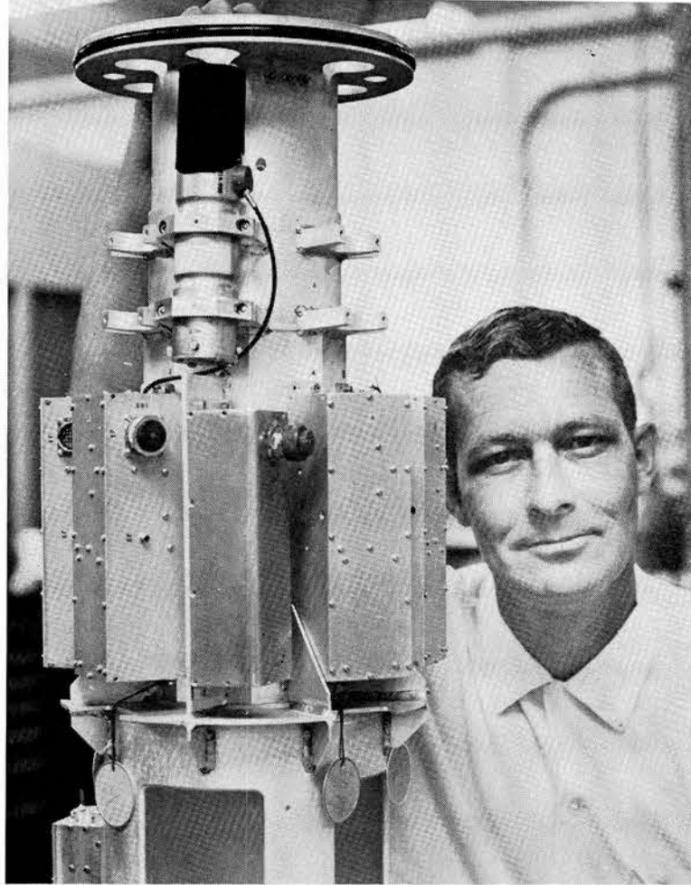
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South Pacific

ROLE IN LIGHT OPERA—Bob Harks (8161) is singing the romantic lead role of Lt. Cable in the Diablo Light Opera Company's current production of "South Pacific." The musical play is being presented at the Walnut Creek Civic Arts Theatre Friday and Saturday evenings and Sunday matinees. For further information call 846-8477.



CALIBRATION of cathode gages to measure upper atmosphere densities is discussed by Chad Looney (9226), left, and Bob Woods (5235). The gage is inside the vacuum system below the telemetry instrumentation. The experiment will be carried by rocket into the upper atmosphere in early May from Sandia's rocket launch facility on Kauai in the Hawaiian Islands.



"FLYING ION" experiment instrumentation, partially assembled for insertion into a rocket nosecone, is displayed by Tom Latta (9226). The complex experiment consists of a 20 kv accelerator which will project a beam of neon ions in front of the rocket. Photomultiplier tubes with filters will detect interactions with atmospheric particles and provide a means of identifying and measuring them.

Upper Atmosphere Studies

Hawaii Rocket Launch Series Scheduled

About 60 Sandians will move out next week to launch a series of upper altitude research rockets from Sandia's Barking Sands facility on Kauai in the Hawaiian Islands. Sixteen rockets are scheduled for firing during the period from May 7 to 23.

Four of the rockets will carry Sandia instruments to measure upper atmosphere constituents and densities. The remainder of the series will carry payloads designed by the Air Force's Cambridge Research Laboratories, Los Alamos Scientific Laboratory and Lawrence Radiation Laboratory to measure upper atmosphere and outer space phenomena.

Sandia is responsible for instrumentation, telemetry and rocket systems in addition to range support for the launches. Test director at the site will be J. J. Miller, supervisor of Ground Systems Division 9222.

The Sandia experiments will concentrate on the region between 300,000 and one million feet altitude, which is above the range of most sounding rockets and below the orbits of satellites. It is also the region of the most interaction of solar energy and the earth's atmosphere.

Two of the experiments will be under the direction of Glenn Miller, supervisor of Atomic Particle Physics Division 5235, and Jim Hoffman, supervisor of Radiation Phenomena Division 5233. Called the "Flying Ion" project, the experiment will project a beam of neon ions in front of the rocket's nosecone. Molecular and atomic particles in the atmosphere will react with these ions and glow with their characteristic fluorescence. An array of filters and

photomultiplier tubes positioned around the ion source in the nosecone will "see" the reactions and provide a means of making atmospheric composition and density measurements.

The complex instrumentation for the experiment was designed by Tom Latta of Instrumentation Development Division 9226. The "Flying Ion" will be on board two rockets.

Since this will be the first time that this technique has been tried for upper atmosphere measurements, it will be backed up by a second experiment which was successfully flown last year by Robert Woods (5235). In his system, laboratory-type cold cathode gages, refined to withstand flight conditions and modified for the specific project, are used to measure atmospheric densities. Chad Looney (9226) is responsible for this instrumentation.

In another experiment, part of a continuing study by Larry Smith (5235), metal-coated polyethylene balloons are ejected and their fall tracked by radar. The rate of fall of the spheres is an indication of atmospheric density.

In addition to rockets carrying scientific experiments, one Sandia development rocket will be tested. Project engineer Morris Goebel of Carrier Systems Division 9224 has mated a booster Sandhawk rocket with an upper stage Tomahawk rocket in an attempt to produce a sounding rocket capable of going up to 1,900,000 feet with a payload of 175 pounds.

Ken Crowder, Division 9224 supervisor, is directing rocket system preparations. Keith Smith, Division 9226 supervisor, is

directing development of experimental instrumentation. Ren Moore, supervisor of Project Division I 9221, is responsible for all other project instrumentation.

LASL and LRL scientists will be at Barking Sands during the operation, along with representatives of Cambridge Research Labs.

The Navy's Pacific Missile Range facility will provide support in connection with the tests, including radar to track the rockets, range safety coordination, and recovery operations. The NASA radar at Kokee, also in Hawaii, will also be used to track the test vehicles.

Coronado Ski Club Elects

Ron Syler (9215) is the newly elected president of the Coronado Ski Club. Other officers include Norm Elliott (7451), vice president; George Kupper (3114), treasurer; and Mrs. Robert L. Hughen, secretary. The new officers will serve for the 1969-70 ski season.

Job Opportunities To Be Made Known At Annual Job Fair

Sandia will join nearly 60 other New Mexico firms next weekend in an effort to give wider dissemination to job information and opportunities at the annual Job Fair at Civic Auditorium.

The fair is sponsored by New Mexico employers and by Operation SER (Service Employment Redevelopment), a nonprofit agency designed to provide greater employment opportunities for the underprivileged in the Southwest. The annual fair gives job seekers an opportunity to meet company representatives, learn of openings, and make application for specific jobs.

Sandia again will operate a booth where people can obtain information on job opportunities, mostly in the service fields, apprenticeship programs, and the summer employment program. Attendees will be able to submit applications at the fair.

Senator Joseph Montoya and Congressman Manuel Lujan will make welcoming remarks. Officials predict nearly 10,000 persons will attend the two-day affair which will run from 10 a.m. to 8 p.m., Saturday, May 3, and from 10 a.m. to 4:30 p.m., Sunday, May 4.

Sandians who will operate the display booth are: Bill Garcia (3233), Fred Romero (3232), Frieda Salazar, Frances Morris, Eleanor Kelly, Jack Rex, and Andy Fuller (all 3251).

Supervisory Appointment



ARLIN COOPER to supervisor of Electromagnetic Hazards Division 2627, effective April 16.

Arlin came to Sandia in 1963 as a staff member in the Electronics Development Division and later moved to the Signal Processing and Analysis Division. His work has involved analysis of electromagnetic transmissions through reentry plasmas and radar signal reflection.

A former electrical engineer at the Rocketdyne Division of North American Aviation, Arlin has also taught courses at the UNM for the past three years.

Arlin has BS and MS degrees in EE from UNM and holds a PhD, also in EE, from Stanford University.

He is a member of the IEEE.

Arlin, his wife, Patt, and their three sons live at 7708 Spring Ave., NE.

Continued from Page One

Patents Granted to Three

miniaturization. The frequency of the emitter-follower oscillator, however, can be controlled electrically thus eliminating variable capacitors or other components.

Don Schueler currently is pursuing graduate work at the University of Nebraska under the Doctoral Study Program (DSP).

The second patent was issued for a ceramic memory device which was invented by Cecil and Gene Haertling.

The new memory element increases computer storage capacity by storing information in as many as 10 stable states (conventional memory elements store information in one of two states) and, at the same time, decreases the write-in and retrieval time by eliminating the need to translate decimal information into binary form.

Composed of rhombohedral lead-zirconate-titanate, the ceramic material is

manufactured using a technique developed by Gene. The materials are mixed, inserted into a special Sandia-developed mold, and placed in a hot press assembly which can subject material to pressures up to 10,000 psi and temperatures to 1350° C for as long as 10 hours.

Investigation of the materials as a substitute for earlier substances which are inherently birefringent (capable of two polarization states) was conducted by Cecil and members of the Components Physics Division.

Discovery that rhombohedral ferroelectric ceramic composition has multiremanence capabilities led to the invention which may be particularly useful in space applications because the material is relatively insensitive to high energy particle radiation, high electromagnetic fields, and temperature variation.



AT SANDIA LABORATORIES there are 349 employees with PhD degrees, 905 with master's degrees, 1639 with bachelor degrees, and 896 with associate degrees. There are also at least a half dozen astrology magazines stocked in the Bldg. 802 snack bar.

Take Note

A Collectors Bazaar—everything from books to butterflies—will be held May 3 and 4 as a benefit for the Museum of Albuquerque.

Right now the museum association needs items to be sold at the bazaar. These donations should be objects likely to stimulate and encourage private collecting. Such things as paintings, models and miniatures, magazines, records, craft items, stamps, coins, rocks, Indian artifacts, buttons, old photographs, etc., are needed.

The two-day sale will be held at the museum, located at the south end of Yale Blvd. Items should be taken to the museum or a pick-up can be arranged by calling the museum association office, tel. 247-3055.

The 13th annual Speciality Show, sponsored by the Central New Mexico German Shepherd Dog Club, will be held May 9 at the Livestock Pavilion, State Fairgrounds. Chairman for the show is Ed Villella (9327). For further information call him at tel. 298-7955.

Dave Archuleta (7351) was elected recently to serve as one of three New Mexico representatives to the Board of the National Young Republican Association. The election was held during the state convention of the New Mexico group in Las

Cruces. Tom Massis (2342) is chairman of the Bernalillo County Young Republicans.

The Albuquerque Razorback Club, an alumni association of the University of Arkansas, will receive its charter at a dinner meeting in the Sun Room of the Sunport, Friday, May 2, at 6:30 p.m. Any graduate, former student, or friend of the University is eligible to become a charter member of the group. Dr. Charles Oxford, administrative vice president of the University, will speak at the meeting where "Razorback Football Highlights" will also be shown. Anyone interested in attending should contact George Browning (4622), Ed Burgess (5272), or Ragon Kinney (9522).

There will be an organizational meeting of a local chapter of the Society for Experimental Stress Analysis (SESA), Tuesday, April 29, at 7:30 p.m., in room 143 of the Farris Engineering Center, UNM. Anyone interested in participating in activities of a local SESA group is invited to attend or to contact Mark Percival (5415) for further information. Speaking at the organizational meeting will be William T. Bean, of William T. Bean, Inc., manufacturers and consultants in the area of strain gages.

Hunter & Outdoor Safety is Theme Of Course Taught by Sandians

Tom Harrell (4364) advises lost hunters to build three fires spaced a few feet apart in a straight line. Why three fires? "Three fires are easier for searchers to spot and will keep the hunter warm. Besides it gives him something to do — carrying wood."

He is not being facetious. "Keeping occupied will prevent panic which could get a hunter into more serious trouble than just being lost," he says.

Tom's advice is part of that which he and Gerald Wilson (7333) offer in a hunter safety course they teach. More than 120 Sandians have taken the six-week course since it was first offered three years ago.

The hunter safety course is sponsored by the New Mexico State Game and Fish Department and the National Rifle Association. The course consists of five two-hour classroom sessions plus one four-hour class on the rifle range. The students, many of them female employees or wives of Sandians, learn safe hunting practices as well as survival techniques.

Both Tom and Gerald, avid hunters themselves, see the need to promote safety among the increasing number of hunters. They donate their time to teach the course which is tuition free. Any course costs are borne by the state and the NRA, although

a \$1 fee to cover minor expenses may be paid at the student's option.

Of prime concern in the course is safe handling and use of sporting firearms. Special films are used in teaching safety, including one in which a picture of a man crouching is flashed briefly on the screen. "Animal or hunter?" the class is asked. "Most people usually shoot him for a bear," says Tom.

One night is devoted to survival techniques for hunters or campers who may be lost or stranded. A film is used which shows the plight of a lost hunter and the mistakes he makes, and then shows how he should have acted. In addition, the students get tips on simple survival equipment they should have with them when hunting, hiking, or just picnicking in the woods. Included are a whistle (which beats shouting), lightweight space blanket, waterproofed matches, and a map of the area.

In addition to the hunter safety course, Tom, Gerald, and Pat Walter (7336) teach a home firearms safety course for women. This past Saturday, about 40 female Sandians or wives of Sandians graduated from the course.

The next hunter safety course is scheduled for the third or fourth week in July. Anyone interested in enrolling should contact one of the above instructors.



A POINTED LESSON is offered by these two Sandians. Tom Harrell (4364) demonstrates the proper use of a hunting bow. Tom, along with Gerald Wilson (7333), at right, and Pat Walter (7336), teach a hunter safety course. Sponsored by the New Mexico State Game and Fish Dept. and the National Rifle Association, the course offers Sandians a chance to learn safe hunting practices and survival techniques.



MAJOR CONTRIBUTORS to recently-published NASA Contamination Control Handbook were (l to r) Dan Garst, Kermit Lindell, and Willis Whitfield, all of Planetary Quarantine Systems Support Division 1742.

NASA-Sponsored Contamination Control Handbook Written Here

Sandia Laboratories has been a leader in the field of contamination control with the development of laminar air-flow clean rooms and benches. This interest in control of particulate contamination has resulted in the first definitive handbook on the entire field of contamination control.

The handbook was prepared for NASA by Dan Garst, who was project leader, Kermit Lindell, Willis Whitfield (all of Planetary Quarantine Department 1740) and Jay Paulhamus (Sandia consultant). Dr. John Beakley and Loris Hughes, microbiologists at the University of New Mexico, assisted in the section on microbial contamination.

Publication was prompted by need for a better understanding and proper application of contamination control in the aerospace and allied industries.

"Technical papers and articles were an important source of information," Dan says, "but we decided also to use information and data from private industry because we felt these were the people who were doing the latest research. Some 72

companies cooperated with us in one way or another."

Purpose of the handbook is to compile in one volume as much verified information on contamination control as is possible. "We had to go to a half dozen sources for data for some portions," Kermit says, "plus adding the results of our own laboratory work."

The result is a 410-page book containing 62 figures and 99 tables. The contents describe the practical application of contamination control techniques in areas related to product design, surfaces, air, liquids and gases, microbiology, radiation, packaging and personnel. After the initial printing in March, NASA received requests for over 700 copies of the handbook, although its publication had not been widely advertised. A limited number of copies is available from the Technology Utilization Officer, MSFC, Huntsville, Ala., 35812. Requests should reference NASA CR-61264.

The report also will be published as a NASA special document by the Government Printing Office.

Technical Expertise is Needed By International Aid Group

Sandians who have a yen to assist less fortunate persons in underdeveloped or emerging nations now have opportunity to apply their specialized talents — without leaving Albuquerque.

An organization called VITA (Volunteers for International Technical Assistance) solves technical problems in newly-developing areas of the world. VITA is an international association of scientists, engineers, and businessmen who have volunteered their free time and skills to help raise living standards in these countries.

The service works like this: A volunteer worker (who might be a Peace Corpsman) in Morocco becomes aware of the limited supply of cooking fuel. He communicates the problem to VITA, which then routes it to those scientists who have a specialized knowledge in this area. The result: a cheap, mass-produced, solar energy cooking stove.

A considerable number of such local problems — ranging from methods for preserving fish in Ecuador and advice on pottery-glazing for craftsmen in West

Cameroon to designing a municipal water supply for a village in Rwanda — have been solved for nations whose technological competency has not yet reached high levels.

Problem solving is but one of VITA's functions. Among other services offered by the organization is a publication center offering how-to-do-it booklets covering a range of local problems. VITA also operates a village technology center that develops and introduces simple implements such as pumps, plows, lathes, and hand looms at the village-level. A program of cooperation is pursued with overseas-based organizations having similar aims and the formation of VITA-like technical assistance programs throughout the world is fostered.

The 6000-member organization, based at Union College, Schenectady, N.Y., is financed primarily through corporate and foundation grants.

Any Sandian who would like further information or who wishes to volunteer should contact G. Corry McDonald, Office of Industrial Cooperation, Division 3416.

A PARTIAL LISTING OF SKILLS NEEDED BY VITA INCLUDES:

- | | |
|---|---|
| <ul style="list-style-type: none"> Agricultural technologies Crafts, such as printing, photography, jewelry, leatherwork, metalwork, pottery, woodworking Building materials and design Chemistry Engineering — electrical, mechanical, etc. Economics Food and nutrition Geology and mineralogy Home economics Industrial development Library science | <ul style="list-style-type: none"> Management and safety engineering Medicine and public health Power sources (non-electric) Social sciences Special knowledge of materials, such as adhesives, fibers, leather, paper, petroleum, plastics, textiles, wood Transportation Water purification and sources, and irrigation techniques Writing (journalism and technical writing) |
|---|---|

Speakers

M. J. Landry (7271), "An Investigation of Some Problems Involved with the Use of Lasers in Alignment Systems," ASME Idaho-Montana Section, April 17, Idaho Falls.

W. E. Alzheimer (1541), "Dynamic Membrane Stresses in a Circular Shell," Cornell University Theoretical and Applied Mechanics Department, April 9, Ithaca, N.Y., and Virginia Polytechnic Institute Engineering Mechanics Department, April 10, Blacksburg, Va.

C. W. Harrison, Jr. (2625), "Radar Return from Inhomogeneous Media," Electrical Engineering Seminars, California Institute of Technology, April 22, Pasadena, and University of Wisconsin, May 14, Madison.

R. T. Meyer and L. S. Nelson (both 5271), "High Temperature Processes in the Explosive Combustion of Zirconium Droplets in N₂/O₂ Mixtures," American Chemical Society Meeting, April 14-18, Minneapolis.

R. C. Reuter, Jr. (1541), "First Branch Dispersion of Torsional Waves in Bi-Material Rods," Acoustical Society of America, April 8-11, Philadelphia.

H. D. Arlowe (7335), "A Magnetic Disk Instrumentation Recorder," 16th Meeting IMOG Subgroup on Environmental Testing, March 12-13, Burlington, Iowa.

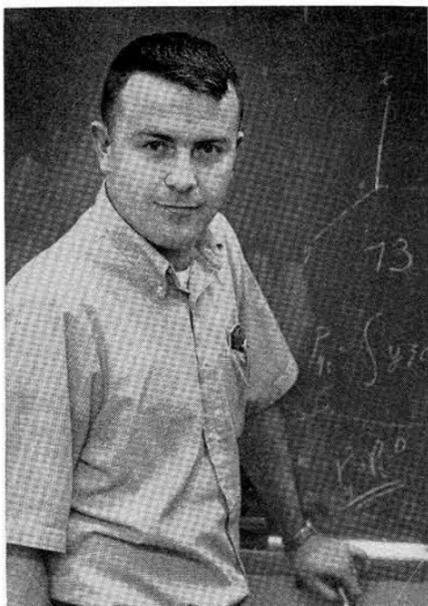
J. A. Reuscher and M. R. Scott (both 5222), "Numerical Analysis of Two-Dimensional, Dynamic, Thermal Stresses in a Hollow Cylinder," Conference on the Effective Use of Computers in the Nuclear Industry, April 21-23, Knoxville.

J. R. Garcia (3230), "American Industry's Involvement in Minority Problems," Ethnic Studies Program Panel, 23rd Annual Conference on World Affairs, April 18, Boulder, Colo.



VASEY'S PARADISE on the Colorado was the destination of several Sandians over Easter weekend. At a remote spot on the North Rim they found a break in the Kaibab limestone of the rim where they could begin the descent. With no trail and route uncertain, they carried plenty of water because there was no assurance of even reaching the river.

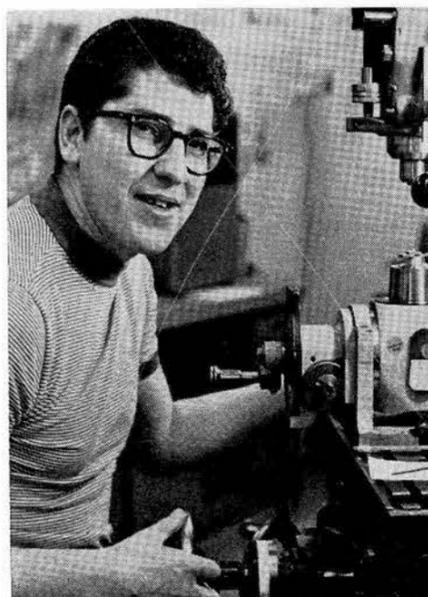
(Left photo) Max Linn (3400) checks the view from the rim, while farther down the unmarked trail Max's son (left below) and Ed Clark (9322), right, catch a good view of the river still far below. (Below) With waterfall at destination in sight (right background), party stops for picture: (l to r) leader Stan Logan (1514), Max Linn, Bob Kyrloch, Norman Bullard, Cathy Logan, Corry McDonald (3416) and son Scott, and Max Linn, Jr.



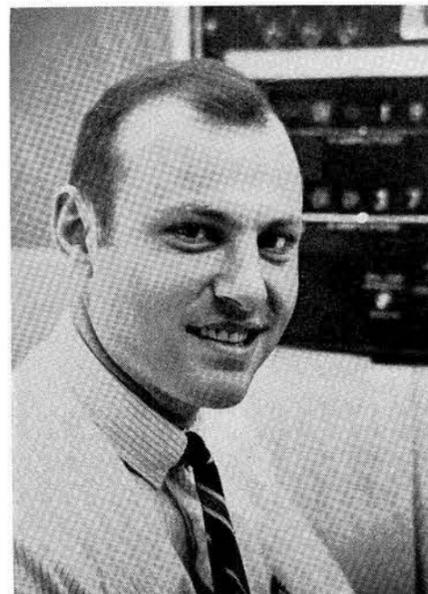
RICK BECKMAN (1223)
"No comb, no hair tonic, no bother."



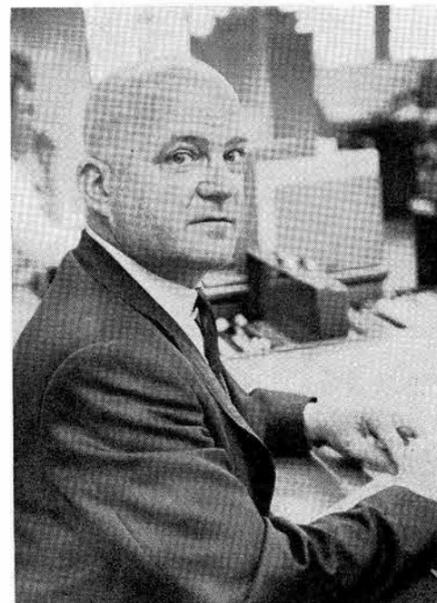
BILL HUNTSMAN (3511)
"I never recovered from my first GI haircut."



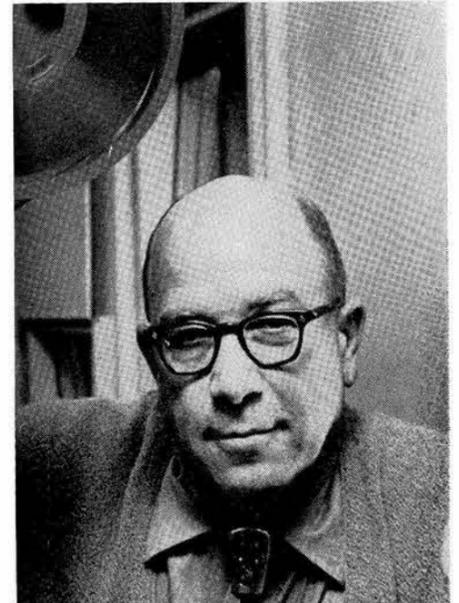
CHARLES SALAZAR (4254-2)
"I have naturally curly hair."



JOHN BRANE (7653)
"I heard the lady in the commercial and decided to take it all off."



TOM MELOCHE (4363)
"Yul Brynner and Mr. Clean are great guys."



FRANK TAYLOR (3454)
"I grew a beard once but got tired of sleeping on the couch."

Part Two

A HAIRY QUESTION

A couple of months ago, LAB NEWS addressed the subject of the increasing number of Sandia males who were sprouting beards, moustaches and long sideburns. It was our observation that the hirsute-ones were not being stylish or following fads of fashion but were merely asserting their independence and individuality.

Well, the clean-cut types demanded equal time. Maintaining that individuality is expressed by more subtle means than by mere adornment, the close-cropped males may have a point. Pictured here are a few who discuss their reasons for shaving daily and visiting the barbershop regularly.

Service Awards 20 Years



Lee Davies
8150



Bruce Langford
4233



Sam Moore
7230



Lloyd Wilson
4574

15 Years



Truman Casson
8171



F. S. MacDonald
9242



R. B. Middleton
2491



Naomi Myszkowski
3126



Hugh Smith
4231



C. A. Sullivan
9342

10 Years

April 25 - May 8

James Johnson 7216, Richard Vigil 7222, Robert Buxton 2342, Arthur Youtz 2342, Albert Smailer 4517, Janet Davis 7631, Maxine Boles 7632, Marie Carlson 7651, Arnold Andrade 8311, Ben Conklin 9126, and Albino Bustamante 9513.

PAGE SEVEN

LAB NEWS

APRIL 25, 1969

Non-Proliferation Treaty Discussed

One of the more important actions this year by the U.S. Senate was ratification of the Non-Proliferation Treaty. The treaty was ratified on March 13. Following is a brief summary of its background and provisions.

In July 1968, representatives of the United States, United Kingdom, and Union of Soviet Socialist Republics and more than 50 other nations signed the Treaty on the Non-Proliferation of Nuclear Weapons. Since then, other countries have signed the document to bring the total to more than 80 nations.

Under Article I of the Non-Proliferation Treaty, countries that now have nuclear weapons would not transfer them to any other country.

Article II prohibits the manufacture or acquisition of nuclear weapons by non-nuclear countries.

Under Article III, the non-nuclear weapon countries would accept safeguards, "with a view to preventing diversion of nuclear energy from peaceful uses to nuclear explosive devices." These safeguards stem from concern that nuclear reactor materials might be diverted to the making of nuclear explosives.

Article IV discusses cooperation in the peaceful uses of nuclear energy, and the next Article covers measures which insure that the non-weapon countries gain whatever benefits are made possible through the peaceful applications of nuclear explosives. For example, such a country would be able to acquire and use nuclear explosives for canal or harbor excavation.

These latter articles reflect, in large part, confidence that the treaty will inspire a kind of international cooperation in the peaceful uses of nuclear energy that will not contribute to nuclear weapons proliferation.

The treaty does not in any way affect U.S. control over its own weaponry, nor does it affect U. S. control over its own weapons dispersed as part of NATO's collective security. Indeed, by providing safeguards, the effect of the treaty is to encourage the development of peaceful applications of nuclear energy.



LEAGUE PRESIDENTS of Albuquerque's Little League Baseball Association discuss opening the season on May 1. From left are S. D. Carrillo (4615), past president of West Mesa; Gene Long (4612), Eastern Valencia; Howard Sanchez (4231), West Mesa; and Art Pino (7637), Zia. Some 6000 boys participate in the 15 Albuquerque leagues.

Play Ball

Little League Season Starting In Albuquerque on May 1

On May 1 Little League baseball season opens in Albuquerque. More than 6000 youngsters between the ages of 8 and 15 are expected to participate. Fifteen leagues will be running competition.

For the kids, it's great fun to participate in competitive baseball. For the 100 or so adult volunteers required to keep each league operating efficiently, it's work and lots of it.

Of the dozens of Sandians who volunteer their time and effort as coaches, managers, committeemen, umpires and trainers, five have particular responsibilities.

They are League presidents and their job is to worry about everything — from equipment, facilities, sponsors, and programs to the organization of women's auxiliaries for the League.

The Sandians are Howard Sanchez (4231), president of West Mesa League; Orville Padilla (4645), North Valley; Gene Long (4612), Eastern Valencia; Art Pino (4212), Zia; and S. D. Carrillo (4615), past president of West Mesa.

Little League is big business. Most of the Leagues in the city have operating budgets of more than \$25,000 and investments ranging from \$10,000 to \$60,000 in playing fields, lights and equipment.

Andy Wilkin (2454) is one of the many Sandians involved in Little League activities who spends as much as 20 hours per week on league activities—the year 'round.

Andy is commissioner for the Mile High league and he started work on this year's scheduling back in September. Last year's work ended in July.

"August is my month off," Andy says. Like all of the volunteers in Little League, Andy gets tremendous satisfaction from providing the activity for the youngsters. He likes baseball and he likes kids.

One other Sandian gets more satisfaction than most from Little League. He is Bob Guerrero (4135) who last year managed his team to championships in area, district, state, zone, and national regional tournaments. They almost made it to the Little League World Series.

SHOPPING CENTER

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

- '67 20' KENSKILL travel trailer, dual axle, easy lift hitch, bath, shower, monomatic toilet, 25 gal. water tank, \$2995. Foster, 298-9193.
- CRAFTSMAN 3 hp rotary lawn mower, will run, \$15; 3 interior doors, used, \$3. Colp, 268-8035.
- 1/2-ROLL 3" x 24" foil faced insulation, \$2. Henry, 256-2467.
- SKI BOAT w/new Johnson 33 & ski equipment, \$600. Lewis, 268-3835.
- RED BASSET, sprayed female, AKC reg., 1 yr. old, great w/children. Andreas, 255-3949.
- DESK, double pedestal, oak, w/center well for std. typewriter, old fashioned but functional, \$35. Moore, 299-3758.
- '68 TRIUMPH 500cc competition motorcycle w/ extras, \$900. Silva, 298-5779 after 5.
- WRL Galaxy 300 transistor & AC power supply & mike, \$150; Everain walking sprinkler, \$10; Onan 12v gas generator, \$25; 20" window fan, \$5. Snyder, 268-0679 after 6.
- BLACK & WHITE GE TV w/stand, 18" screen, '66 model, \$70. Freshman, 296-2017.
- LAWN MOWER, 25", 3 hp B&S engine, \$25. Wallace, 296-1088.
- 30" O'KEEFE-MERRIT gas range w/top grill, cost \$250, sell for \$75. McLroy, 299-4977 8907 Los Arboles NE.
- SIX 35c rain jet sprinkler heads, 1 3/4" sprinkler valve, 1 small lawn spreader, 1 Sear's slant board. Keck, 265-9463.
- AKC REG. German shorthaired pointer puppies, ready to start training for fall hunting. Patterson, 877-3158.
- 1/4 HP electric motor, GE, 2-spd. for air conditioner, unused, \$18. Graves, 344-3008.
- 97 COPIES of QST amateur radio magazine, \$5. Sisneros, 344-3864.
- GERMAN SHEPHERD puppies and some large dogs from good stock, see champion CH Wingait's Carlota. Villalla, 298-7955.

- 5-GAL. galvanized Arctic Boy water cooler, used once, \$7.50. Rutledge, 282-3151 after 5:30.
- DELUXE 18" Craftsman hand lawn mower, ball bearing drive, grass catcher included, \$15. Doyle, 299-7567 after 4.
- BABY DUCKS: females are dark brown, males have green heads, other colors available, 75c ea. Gonzales, 877-5693.
- UMBRELLA TENT, 10'x13', \$30. Wheeler, 265-2187.
- LARGE CHEST of drawers, red maple finish, \$17.50; coffee table, \$5; infant carrier, \$1; infant car seat, \$1. Gendreau, 268-3436.
- KELVINATOR refrig.; air conditioner, 11,000 BTU/hr., \$75. Stewart, 298-8266.
- ANTIQUE mahogany dining room suite, seats 6; antique silver & misc. furniture. Jackson, 256-0121.
- SCHOOLMASTER DESK, pine, early American antique, tapered legs, slant top. Stump, 898-2546.
- FRIGIDAIRE refrig., \$35; 2 rollaway beds, \$15 each. Clabaugh, 299-0721.
- SILVERTONE GUITAR, 2 pickups, vibrato, new strings, coil cord, case & strap, \$25. Ruminiski, 256-0770.
- WHEEL PULLER, 3-arm Universal wheel puller & striking wrench set, \$14. Sims, 255-6967.
- AUTO RECORD CHANGER, BSR, stereo, complete w/wooden base, diamond needle (cartridge) & all hook-up wiring, used 1 mo., \$25; innerspring mattress, twin size, \$10. Holmes, 299-4167.
- BULLETS: 30 caliber, 210 gr., round-nose, full jacket, will sell any quantity of 2000, \$1.50/100. Ristine, 298-8383 after 5:30.
- TWO aluminum patio chaise lounges, \$5 for both. Smith, 299-6873.
- 2 LARGE western pictures (prints), size 2 1/2'x4', artist-Hunter, decorated wide frames. Newton, 255-2074.
- HEATH solid-state guitar amp., 60 watt, new, reverb, tremolo w/foot switch, twin 12" heavy-duty speakers, \$120. Sandy, 299-0120.
- WARD'S garden mart lawnmower, used 1 yr., \$24; infant car seat for cars w/bucket seats, \$7. Rea, 299-9315.
- MW Garden Mark 20" reel lawn mower, self propelled, grass catcher, \$25. Kenna, 1521 East-ridge Ct. NE, 298-6059.
- BOX TRAILER w/cover, spare, lights; station wagon luggage rack; 1 7/8" drawtight hitch for '67-69 Chev., GMC pickup. MacDougall, 299-8496.
- GE refrigerator, frost-free w/separate 75-lb. freezer, \$100. Grimes-Jones, 265-6234.
- GIRL'S 24" bicycle, blue, \$7.50. Knauth, 299-0241.
- METAL SKIS: Rohmshofer atomic (maker of Fischer skis), 200 cm, made in Austria. Drove cable bindings, \$40. Keeling, 255-2943.
- WASHING MACHINE, GE, \$100. McDonald, 299-9269 after 6.

- PEKINGESE PUPPIES, line bred for quality, flat noses, heavy coat, \$75 & up. Roberts, 256-3901.
- OLD used pool table, needs recovering, still usable, \$25. Wigley, 299-3138.
- KODAK 500 W. 35mm slide projector, auto. interval timer, pointer, 36 slide trays, 2 tray cases, 40" x 40" silver lenticular screen, \$70. Knox, 255-3145.
- BREAKFAST SUITE, \$30; chest of drawers, \$12; barbecue grill, stools, \$20. Herrmann, 299-5598.
- POP-UP lawn sprinklers, about 25, make offer. Laskar, 299-1024.
- 10 1/2' pickup camper, roomy, storage, w/jacks. Stixrud, 298-0478.
- '55 SUZUKI 150 cc, low mileage, \$200; factory-built 15' camping trailer, hydraulic brakes, extra tire, \$150. Shock, 877-3728.
- REFRIGERATOR-freezer, 2-door Hot Point, \$85. Howard, 256-2525.
- 21" ROTARY power lawn mower, \$12. Hall, 298-8617.
- DINING ROOM SET, mahogany, 8 piece — buffet, table, 6 chairs, \$95. Coleman, 299-2377.
- POLAROID CAMERA, Mod. 250, \$100; golf clubs, 2 woods, 5 irons, putter & bag, \$20; 4-chair dinette set, \$20. Rice, 344-4719.
- CAMPER SHELL, Sports Liner, insulated, fits 7'6" bed, cost \$480, sell for \$200; camper trailer, 15', Boles Aero, \$595. Clark, 877-0829.
- GARAGE SALE: wall tent, drop leaf table, hutch desk, baby stroller, push mower, motor, bookcase, shoe polisher, misc. Lane, 2829 Mesilla NE.
- TWO television sets, 3 radios, record changer, repair or use for parts, make offer. Lynes, 268-0144.
- TRAILER CAMPER, 13' Aristocrat Lil-Loafer, sleeps 4, icebox, water tank, butane stove & light, \$695; Resse equalizer hitch, \$75; VW Transporter roof rack, \$15. Shea, 255-8092.
- TRAVEL TRAILER, '68 Vander Built, 14', sleeps 6, \$1075. Wagoner, 282-3177.
- GUN COLLECTION: rifles, pistols, shotguns, must sell. Troy, 268-6865.
- S&W MODEL 39 & 1913 Luger, 9mm. ammo. Brammer, 265-8194.
- '62 BUICK Electra 255, below book at \$795. White, 296-3842 after 5.
- '67 BUICK sportwagon, factory air, power disc brakes, AT, PS, AM-FM radio, 27,000 miles. \$2395. Schmieger, 299-2352.
- '62 FORD Galaxie 500, 6-cyl., std. trans., R&H, \$350. Tormey, 298-5312.
- '63 F-85 OLDS, AT, lt. blue, \$475. Chandler, 296-3323.
- '62 VW sedan, R&H, \$650 or best offer. Cashion, 242-3639 after 5.
- '66 SAAB, 4-spd., new Goodyear radials, 20,600 miles. Voorhees, 256-3971.

CARS & TRUCKS

- '62 FORD FALCON Squire station wagon, 6-cyl., AT, R&H, \$575. Dalesandro, 299-6413 after 5:30.
- '58 CHEVY, HT, AT, \$275. Landavazo, 256-9638 after 5.
- '58 CHEVY Impala, 327 cu. in. engine, AT, PS, PB, R&H, \$350. Graham, 255-6585.
- '53 PLYMOUTH, \$75. Condit, 282-3788.
- '55 CHEVROLET 4-dr., V8, AT, AC, \$360. Morgan, 299-2850.
- '56 GMC 1/2-ton step side, V8, AT, 4 new 6:50x16 tires, R&H, \$400. Gorman, 255-4431.
- '59 CHEVROLET, 2-dr., AT, 6-cyl., new paint job \$295. Guist, 243-4637.
- '60 VALIANT 4-dr., R&H, ST, new tires, \$350. Earhart, 265-2615.
- '63 FORD Fairlane 500 sedan, AT, PS, one owner, \$90 under book price. Folkens, 1-867-2825.
- '65 FORD Country Squire, 6-pass. wagon, low mileage, AT, PS, PB, Cleveland, 299-7420 after 5:30.
- '55 CAD. SEDAN, 68,000 miles, uses reg. gas, \$295. Shunmy, 265-1620.
- '65 FLEETSIDE 1/2-ton pickup, 292 engine, 4-speed, new paint, below BB. Brown, 296-5768.
- '64 CORVAIR Spyder, supercharger, 4-spd. trans., one owner, low mileage, \$750. Stark, 299-5953.
- '63 FORD convertible, black Galaxie 500, white top, T-Bird engine, AT, radio, \$650. Hawkinson, 282-3241.
- '62 RAMBLER Classic, 6-cyl., 2-dr., HT, R&H, \$450. Baca, 265-9323 after 5:30.
- NE HEIGHTS, 3-bdr., 1 3/4 baths, paneled den w/brick floor, separate DR, lg. shaded backyard, fallout shelter-wine cellar or work rm., 1650 sq. ft. hw/floors. \$18,500 w/5/4 loan. Zimmerman, 296-1058.
- 2-BDR., den, 1 bath, 320 Adams NE. Atkins, 255-1461 after 5.
- 2804 DAKOTA NE, Mossman, 3-bdr., study, 1 3/4 baths, 2-car garage, drapes, carpeting fp, AC, sprinklers, landscaped, patio. LeRoy 296-2953.
- STUCCO, 4-bdr., 1 3/4 baths, carpeted, cfa, AC, disposal, walled yard \$15,500. Hood, 256-7245.
- 2 ACRES, lg. 3-bdr. & den, 2 fireplaces, hw/floors, built-ins, dbl. garage w/shop, \$28,700, \$5000 down. Bordenave, 2037 Gun Club Rd. SW, 877-6237.
- 3-BDR. MANKIN, built-in R&O, garage, lg. patio, near Base & golf course, \$13,300, \$2700 equity, \$94/mo. assume loan, 320 Espejo NE. Fergesen, 299-1501.
- 4-BDR., 1 3/4 tiled baths, fin. dbl. garage, dining area, \$2000 down, \$161/mo., \$18,550 total. Gallegos, 1922 Venus Ct. NE, 299-7270.
- BRICK 3-bdr., 1 3/4 baths, 2-car garage, pool, built-ins, dishwasher, 5 acres, corals, arena, tackroom, many extras, Bushmire, 636-2872.
- LOT in Glenwood Hills, 80 x 140, \$3250, terms. Fox, 299-9031.

- EQUITY in 3-bdr. apt., 1 1/2 baths, built-in appliances, refrig. AC, walled yard, 2 swimming pools, recreation room, playground. Sutton, 344-0196.
- 2-BDR. block stucco, dbl. garage, 2 1/3 acres, well, power, phone, Hwy. 66 east of Tijeras, \$17,500. Brooks, Box 898, Tijeras.
- 5 ACRES, Edgewood, 20 miles from Base, lg. 3-bdr., pitched roof, fp, utility rm., lg. dbl. garage fruit trees, low taxes, 5 1/2%, \$16,500, terms. Browne, 344-6343.
- 3-BDR. ROBERSON, dbl. garage, lg. covered patio, high fenced yard, landscaped, carpeted, \$20,300, 5 3/4% FHA, \$4000 equity, \$137/mo. Cooper, 298-1568.
- LOT, nearly 1/2 acre, quiet NW neighborhood, cash or terms. Smith, 344-2221.
- WANTED
- TRADE city lot, paving paid, for clear camping vehicle. Chavez, 298-5091.
- 283 or 327 CHEVY MOTOR in running condition. White, 877-4149 after 5.
- TRADE twin beds for double bed, preferably w/canopy; or will sell for \$70. Roberts, 256-3901.
- BIKE lightweight, 26", 5 or 10 speeds; also extra long, bunk or twin beds (2). Tiefs, 299-2763.
- CAMERA, 35mm, elect. eye (CDS), auto-exp. cont'l. R/F or SLR. Browning, 299-6384.
- BABY SITTER for 16-month-old girl. Jockle, 255-2240 after 5:45.
- CHEVROLET TRUCK WHEELS, 15 in., 6-hole. Tucker, 877-1140.
- RIDE to Sandia Corp. from vicinity Indian School NE & Eubank. Cobb, 296-3934.
- 19" PORTABLE television w/UHF tuner. Heavirland, 298-8976.
- INVESTORS: need one person for pool taking NYSE "Quote Digest" weekly stock charts. Westman, 255-6048.
- MARTIAL ARTS STUDENTS for Jiu Jitsu and stick fighting classes, next class begins in June, adults only (non-commercial group). Treon, 282-3835 except Fri. & Mon.
- GOOD used compost shredder. Gustin, 256-3807.
- GOOD used refrigerator for use in summer cabin. Blaine, 299-1036.
- SOMEONE to clip & groom 2 small poodles every month. Bascom, 299-9044, 255-4772.
- HOME for small female dog, likes outdoors better than indoors, affectionate but exuberant, 1 yr., has all shots. Van Deusen, 299-4328.
- TOTE GOAT or BURRO type scooter or low-geared trail cycle. Hillard, 298-1226.
- JOIN car pool near Chellwood & Regent NE. Harrington, 296-6707.
- USED LP Western/Country albums in good condition. Clay, 296-5836 after 6.
- FOR RENT
- 14' TRAVEL TRAILER, sleeps 6, \$35/wk., reservations taken. Bentz, 299-3448.



OLE! Betty Jo Espinosa (9425) sets the mood for the Latin Fiesta scheduled at the Coronado Club Saturday, May 3, with some help from Sol Chavez and Terri Lujan. Special entertainment and an outstanding Mexican food menu will be featured. Make reservations early.

Coronado Club Activities

Latin Fiesta Scheduled May 3

Flamenco dancers, a mariachi band, Sol Chavez and the mighty Duke City Brass, a special Mexican food dinner—this adds up to a super swinging Latin Fiesta at the Coronado Club Saturday, May 3.

Goodies on the special menu include guacamole salad, enchiladas de carne, chili rellenos, carne adovada, arroz espanol, sopapillas and natillas. Free miniatures of tequilla will be distributed during the social hour starting at 6:30 p.m.

Dinner with mariachi music will be served at 7 and the special entertainment (Clarita and her flamenco dancers) will begin at 8 p.m. Sol Chavez will play for dancing from 9 to 1 a.m. Tickets are \$3.50 for members (guests \$4) and must be picked up early.

Social Hours

Tonight, Tommy Kelly and the Smiling Irishmen will make the happy music while the Club's kitchen staff wheels out the standard Mexican food buffet. The fun starts right after work with special prices until 8 p.m. The band plays until 9 p.m.

On Friday, May 2, seafood will top the buffet menu while Tommy Kelly returns to the bandstand.

On Friday, May 9, the Club's famous chuckwagon roast beef will be the buffet feature while Frank Chewiwie plays for dancing.

Special Luncheon

The Club's special 99-cent luncheon will be offered Thursday, May 8, at the Club, Bldg. 839 cafeteria and Area III cafeteria. The menu will be top sirloin steak, French fried potatoes, cole slaw, coffee or tea and cheese cake.

Bridge

Duplicate bridge meets Thursdays at 7 p.m. Ladies bridge meets at 1 p.m. Thursday, May 1.

Make Life Hard for Burglars—Lock Up

As the weather becomes warmer, Sandia families like to take overnight camping, fishing, or boating trips. When the trip is of extended length, they'll often make arrangements to protect their vacant home against burglars, but the problem is just as serious anytime when no one is at home.

Albuquerque Police Detective Sergeant Ernie Olague points out that there are far more burglaries of private residences during the day than at night — and also more during springtime.

"Your best 'watchdogs' are your neighbors," Sergeant Olague says. "Let them know when you will be away from home and ask them to be alert to any strangers in the neighborhood."

The daily newspaper left lying in the driveway for more than a few hours may be a tip-off to burglars that a house is temporarily unoccupied — and it takes only minutes to ransack a home of many valuable items.

The police department recommends leaving a radio playing at normal volume if you plan to be away from home for a short time. If you will be gone more than a few days, have all deliveries curtailed, lock all doors, leave an inside light on (preferably switched by an automatic timer), leave curtains in their normal position, and inform the police department of the dates you will be away so that an officer can check the house periodically.

For your own protection, keep a list of all serial numbers on cameras, radios, TVs, guns, and other portable items. In the case of jewelry, valuable rugs, paintings, and other art items, take a colored photograph of the item. Descriptions of these types are valuable to aid police in locating stolen items during their daily check of pawnshops, and also help you to identify any recovered items. Serial numbers and descriptions of stolen items are listed in a police newsletter which is circulated monthly to other southwestern cities.

Locks of Ages Shown

If the intricacies of combination locks at Sandia puzzle you, a visit to the current exhibit at the Museum of Albuquerque might be reassuring.

"Style and Security," as the show is called, includes 20 display cases of locks, keys and door hardware which trace man's 4000-year development of protective devices. A lock from Jerusalem, believed to be of Egyptian origin, is the same style as that placed on the West Gate of the Holy Sepulchre by the Crusaders in the 12th Century. Another Egyptian type pearl inlaid lock and key from Abydos, Asia Minor, was believed used by the Persian King Darius III about 3000 BC.

A popular choice is a 19th Century American door lock loaded with a percussion cap to fire when the knob is turned, presumably frightening an intruder and warning occupants of the house.

The museum, at the south end of Yale Blvd., is open Tuesday-Saturday 10 a.m. to 5 p.m. and Sunday 1-5 p.m.

The LAB NEWS needs copies of the March 28, 1969 issue. If anyone has an extra copy, we would appreciate receiving it. Send to Division 3432.

Events Calendar

- April 25, 26—Albuquerque Dodgers vs. Little Rock; April 27-30, vs. Memphis, Albuquerque Sports Stadium.
- April 27—Hidden Canyon in the Sandias, N.M. Mountain Club, leader Bill Tryon, tel. 299-6895.
- May 3-4—Museum of Albuquerque Collector's Bazaar.
- May 4—Cienega Canyon, N.M. Mountain Club, leader Jo Norwood, tel. 255-4639.
- May 15—YWCA chartered bus trip to Singing River Ranch in northern New Mexico. Reservations due by May 8. For information tel. 247-8841.

Record Solo Sail

A first-hand account of plans for a hoped-for record solo sail from Yokohama to San Diego was heard by John Colp (9327), his wife Martha, and Al Quant (5437) during a recent California visit with Sharon S. Adams.

Sharon will leave Yokohama May 12 in a 31-foot ketch-rigged sailboat on the 6000 mile trip. She estimates that her travel time will be 80 days. She will follow a great circle route — which is also used by at least one commercial airline — but will have only a limited range radio (600 miles).

The Colps met Sharon last summer at Marine del Rey, Calif., where her husband is a sailing instructor. In October, Sharon visited the Colps in Albuquerque and sailed with them on one of New Mexico's inland lakes — a new experience for the Californian and one she found most challenging, but hardly in the same class with her previous solo journey from Marina del Rey to Honolulu in a 25-foot sailboat.

Al was in California to pick up a new 25-foot sailboat which he and his wife Barbara plan to take on a three-week cruise around Baja California in June.

Congratulations

Mr. and Mrs. M. R. Prucha (2642), a daughter, Valarie Jean, March 31.

Mr. and Mrs. David Zagar (5235), a son, Tim, April 16.

Mr. and Mrs. William Drozdick (7651), a son, April 5.

Take Note

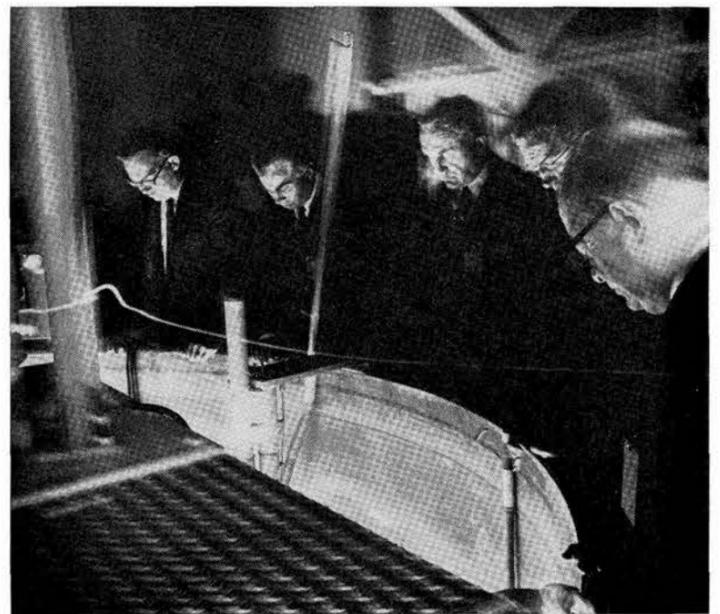
In response to requests by AEC integrated contractors, the University Relations Division 3134 is continuing to provide Value Engineering training within the AEC complex. The latest sessions included an orientation for executives and management personnel and a 40-hour training workshop for managers, supervisors and professional personnel of the Monsanto Research Corporation and the AEC/Dayton Area Office. Both sessions were conducted by Jack Hueter (3134) with the workshop assistance of John Cejka (7621). A second Mound Laboratory workshop, scheduled for May, will include guest participants from the Goodyear Atomic Corporation, also an AEC contractor.

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MEMBERS of Sandia's Board of Directors met at Sandia Laboratories April 10. During the session, the group toured laboratories and reactor facilities in Area V. In picture at left, A. P. Clow (center), vice president, Western Electric Company, examines an encapsulated component in the Department 5110



laser laboratory. Sandians will remember Julius Molnar (between Mr. Clow and Mr. Hornbeck), a former president here now at BTL and also on the Board. At right, the group is illuminated by the light from a burst of the Annular Core Pulsed Reactor, contained in the tank of cooling water.