

1968 Sandia Payroll Totals \$91.6 Million For 8125 Employees

Sandia Laboratories' payroll for the calendar year 1968 amounted to approximately \$91.6 million, including the \$11.6 million payroll at Sandia Laboratories Livermore. For 1967, the figures were \$85.6 million and \$10.5 million respectively.

During 1968, the number of persons on roll at Sandia averaged about 8125, including 1040 at SLL. This compared with the 1967 average of 8183, with 1000 at Livermore.

Assets of the Atomic Energy Commission's installations operated by Sandia Laboratories totaled about \$234.6 million at the end of 1968, compared to \$219.2 million in 1967. These figures represent undepreciated values of buildings and facilities at Sandia Laboratories, Albuquerque; Sandia Laboratories, Livermore; and Tonopah Test Range in Nevada. All of the plant assets are the property of the AEC but are used and operated by Sandia Laboratories.

Purchases by Sandia Laboratories in the State of New Mexico amounted to approximately \$24.1 million for the calendar year 1968, based on actual figures for the first eleven months and estimated for December. The figure does not include purchases from other AEC contractors. In 1967, purchases in the state amounted to about \$28.2 million.

Approximately 99 per cent of the amount spent in New Mexico in calendar year 1968, or about \$23.9 million, went to Albuquerque firms.

Paul F. Becht is Named To State Purchasing By Gov. David Cargo



Paul F. Becht (4332) has been appointed State Purchasing Agent by Gov. David Cargo, effective this past Oct. 16.

Currently on a leave of absence from his staff position in Purchasing Administration Division 4332, Paul has been employed at Sandia since 1962.

A graduate of Wisconsin State University where he received the BS degree in economics in 1960, Paul also attended the University of Wisconsin and Marquette University. He received the MA degree in labor and industrial relations at the University of Illinois.

Prior to joining the Sandia staff, Paul was employed by the Institute of Labor and Industrial Relations at the University of Illinois where he worked with the Armour Automation Fund Committee to determine the effects of joblessness on workers whose jobs were eliminated through automation.

Since coming to New Mexico in 1962, Paul has been active in the New Mexico Purchasing Agents Association, the National Association of Purchasing Management, and the American Ordnance Association. He also has taken advanced work in business administration at the University of New Mexico.

1968 Sandia Highlights -- A Year in Review

It has become a custom for the LAB NEWS at year's end to present a compilation of significant happenings at Sandia Laboratories. This often provides a unique opportunity to relate individual activities to the overall responsibility of the company. This was 1968:

January

Two Sandians, members of a weapons safety group, were flown to Thule, Greenland, and the site where an Air Force B-52 bomber, carrying nuclear weapons, had crashed on ice on North Star Bay. This activity was part of standard operating procedure for a nuclear weapons safety team — but the locale was somewhat unusual.

Project Cabriolet, an experiment in developing nuclear excavation technology, was conducted at the Nevada Test Site. Sandia scientists and technicians participated.

Thirty Sandians were called to active duty as members of the New Mexico Air National Guard 150th Tactical Fighter Group. Later in the year some were assigned to Vietnam and some to duty in Korea.

Sandia Laboratories won third place in the 1967 National Fire Protection Association contest in competition with 132 U.S. and Canadian entries.

A Sandia engineer at Livermore, recently graduated from the University of California at Davis, returned there to relate some of his work experiences for senior

engineering students. He was participating under a new UC/Davis — Bell System recruiting team program.

February

Two AEC Commissioners, including Chairman Seaborg, and key members of AEC staffs here visited Sandia Laboratories for technical briefings on weapon systems and other programs.

Plans were announced for Sandia participation in a three-week scientific expedition to study atmospheric phenomena in the northern and southern hemispheres.

President Hornbeck was named a member of the Aerospace Safety Advisory Panel to the National Aeronautics and Space Administration.

Sandia Peak Tramway was used several times to study characteristics of radio fre-

quency return signals from uneven terrain — part of a continuing program.

Development of a photoelectric tilt indicator by two employees at Sandia Laboratories Livermore increased the sensitivity and accuracy of a 25-kilogram (55 pound) capacity analytical balance in Livermore's metrology laboratory.

March

A number of Sandians participated in Project Buggy, a Plowshare experiment in nuclear cratering which was carried out March 12 at Nevada Test Site. The test consisted of the simultaneous detonation of a row of five nuclear explosives each having a yield of about 1 kiloton. The explosives were buried 135 feet deep and placed 150 feet apart. The resulting crater

(Continued on Page Four)



SANDIA LAB NEWS

VOL. 21, NO. 1, JANUARY 3, 1969

Lab News Interviews President

John Hornbeck Discusses Sandia

1. How would you describe the "state of the union" — Sandia Laboratories?

We're in good shape. We continue—and expect to continue—to be the primary nuclear weapons ordnance laboratories of the AEC. Because of the breadth and depth of this work, we find ourselves stretched a bit thin in a number of technical areas—the work load is heavy and there are more jobs than people to do them. Here are a few indicators of our corporate health: our contract with AEC has just been renegotiated with virtually no change, extending through December 1973. Our stature in the defense community has grown over the past few years and—as a result—we are gaining wider recognition for technical excellence. One consequence of this is our ability to attract the best of new technical graduates. The tools we need to carry out our tasks are being provided. For example, a new flash X-ray test facility has just been completed and our three new computers have given us at least a five-fold increase in computer capacity. There are other indicators as well, and all add up to confirm this assessment: Sandia is in good shape.

2. What kind of job and what technical challenge do we face at Sandia in 1969 and over the next few years?

I want to emphasize that the "kind of job" we are doing and will continue to do at Sandia is weapons work—this is our main stream activity. Some smaller effort will continue to be in the non-weapons, "reimbursable" area. This is about 15 percent of the total effort, and I see no appreciable change in this balance. In both weapons and non-weapons work there is technical challenge of the highest order—we have to create and absorb new technology if we are to develop the hardware that will function in the kind of extreme environments we are working in.

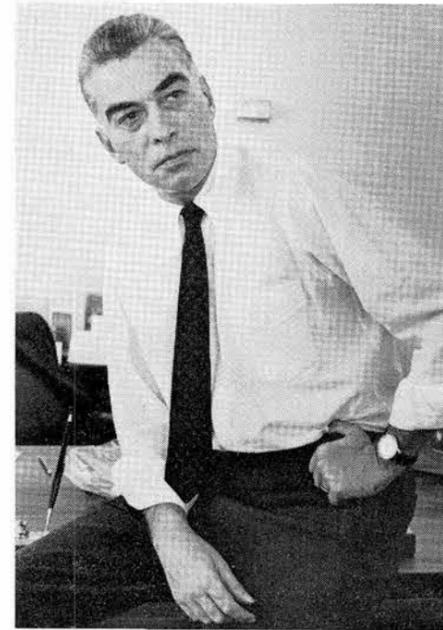
We will continue to undertake non-weapons work when it makes use of our special capabilities—a sophisticated technology, an ability to react fast, a willingness to take experimental or untried routes.

3. How about the number of people at Sandia—any changes here?

I expect a modest expansion in our technical staff over the next few years. To insure that Sandia remains healthy in the future, we need to continue the infusion of new blood—masters and doctoral degree people who will bring to us new ideas and new approaches.

4. What's the "Management Review Committee?" They're taking a close look at some organizations—why?

Actually, this committee is taking a close look at all organizations, and their purpose is simple—to ask "Why?" Why are we doing this job? When we have—as we do—more work than people, then we can't afford to



"There is technical challenge of the highest order."

have people doing jobs that don't need doing. The committee's primary aim, then, is to be as sure as we can that every job at Sandia is relevant and meaningful.

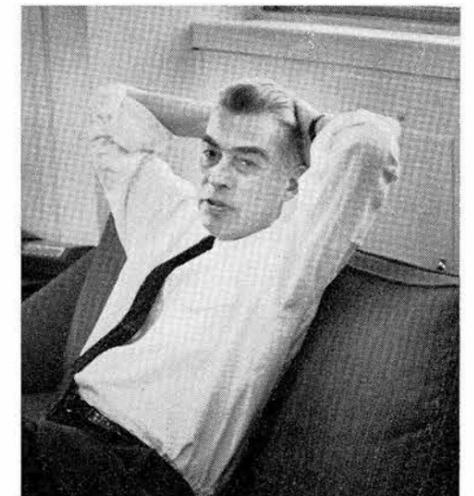
5. How will Sandia help the underprivileged and minority groups in the community?

As a corporate citizen, we have a strong interest in the overall health of our home communities. Sandia enthusiastically supports the various programs designed to help the underprivileged and minority groups, for example, the Youth Opportunity Trainee program we've sponsored the past few summers. But over and above this corporate support, I want especially to single out the outstanding contributions of the many individual Sandians who are involved—who work in community service activities. Their efforts show that we, collectively and individually, are sensitive to the needs of our community and respond to these needs. Incidentally, I'm especially pleased with Sandia's participation in the UCF program. Our per capita contribution is higher than that of any other Bell System company.

6. What do you foresee of our relation to the New Mexico educational system?

Clearly, this is a subject of considerable interest to us. Many New Mexico school system graduates will come to work at Sandia, and we hope that their academic qualifications will be second to none. And, since many Sandians—myself included—

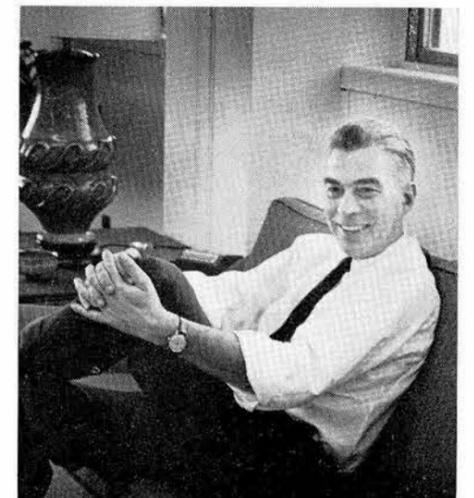
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"We must continually ask 'Why?'"



"We have more jobs than people."



"Sandia is in good shape."



PROMOTION OF SANDIA DIRECTORS—Reorganization of top management responsibilities within the Bell System has affected Arthur P. Clow (left) and Guy Accettura (right), both members of Sandia's Board of Directors. In January Mr. Clow, who had been Vice President of WE's Defense Activities Division, became an Executive Vice President in charge of all government business. He joined WE in 1929. Also in January, Mr. Accettura became Vice President, WE, in charge of Manufacturing, Station Equipment and Electronic Components. Mr. Accettura joined the Bell System in 1936, and had been BTL Vice President and General Manager.

Continued from Page One

John Hornbeck Discusses

have school age children, we have added reason to wish for excellence in the school system. I can reply, then, in somewhat the same vein as I did to the previous question—Sandia has a positive interest in New Mexico education. We shall continue to cooperate with the state universities on various programs—such as the exchange of university faculty and Sandia staff members in our Joint Staff Appointment program—and shall explore other means of cooperation. Wherever possible, we shall also encourage Sandians to support the school system at all levels—primary, secondary and college.

7. Tonopah Test Range—what are the long-range plans for it?

Probably the best way to answer that is to tell you the AEC is now negotiating

with the Air Force on a five-year renewal of the agreement covering our use of the land.

8. How about Sandia's physical plant—any major new buildings or facilities planned?

A fair amount of construction work is ahead. A new building for the Environmental Health Department will be completed in late spring, and another new building for the Space Isotope Power Department has just been approved. Next in priority is a new laboratory building at Livermore. We also expect to complete our research quadrangle in Albuquerque by construction of Bldg. 808.

9. Any general observations?

Just a few. For instance, when we talk about challenge at Sandia, I'd like to propose a challenge of my own: that we all acquire the habit of asking "Why?" Why are we doing things the way we do? Just because it's the way we did them last year? Asking "Why?" may be our single most effective agent of improvement; we should not hesitate to question established procedures and established approaches.

As I said earlier, we are in good shape. No small part of this condition derives from the state of our own internal affairs: we have outstanding union-management relations (with five three-year contracts recently signed); we reorganized laboratory functions in 1968, and have set up a new cost control system—changes that should enable us to do the best possible job.

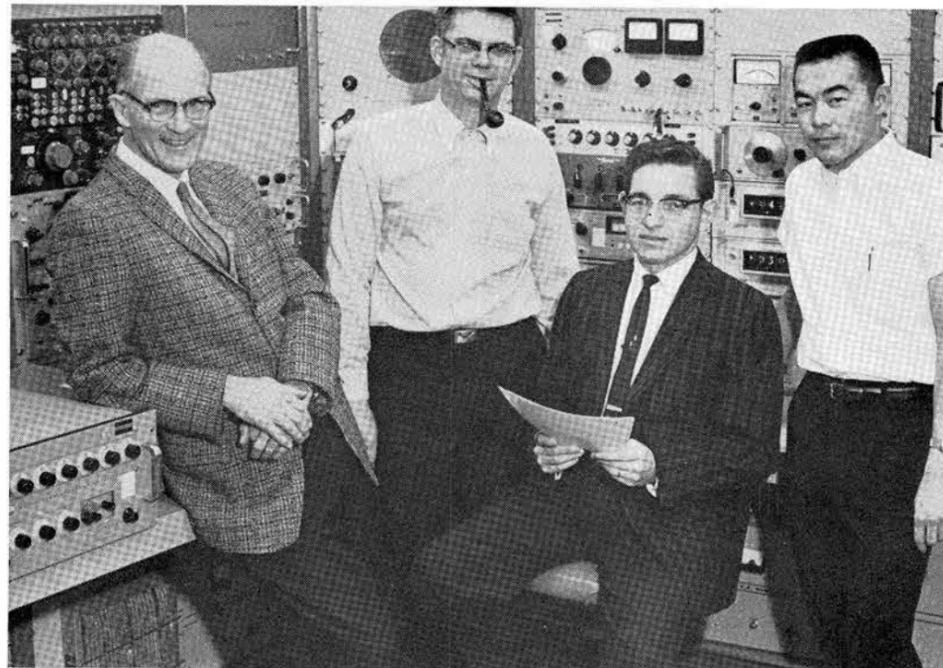
Finally, I'd like to express my own personal pleasure at being here. The opportunity to work with all the fine people at Sandia is a real privilege.

Christmas Baskets Collected Through Efforts of 7600

Thanks to the efforts of people in organization 7600, 40 Albuquerque needy families enjoyed Christmas dinners they otherwise may not have had.

The 11th annual 7600 Christmas Basket donation drive netted nearly \$325 which was used to purchase 40 boxes of chickens, potatoes, bread, eggs and other food, as well as candy for the kids, which was distributed to needy families through the Salvation Army.

Heading this year's drive was Charlie Duval (7612-4). Other members of the committee included Mary Ward (7651), Bernie Reicks (7612), and Ken Swanson (7652).



PLAN SYMPOSIUM—Working on details of the forthcoming ISA symposium on Recording Techniques are from left: Jim McCutcheon (2326), publicity; Bob Tomlinson (7334), registration; Tom Rathke (7334), general chairman; and Kazuo Oishi (7211), arrangements.

On Recording Technology

Local Instruments Society Schedules Symposium at University Jan. 17

A roundup of new techniques and advances in recording instrumentation will be presented during the 4th Annual Technical Symposium Friday, Jan. 17, sponsored by the Albuquerque Section of the Instrument Society of America and the University of New Mexico Engineering Department.

Chairman of the meet is Tom Rathke (7334). Arrangements are being handled by Kazuo Oishi (7211), registration by Bob Tomlinson (7334) and publicity by Jim McCutcheon (2326).

H. D. Arlowe (7335) will present "Disk

Recording Applications" during the program. Other presentations will explore high speed disk recorders, fiber-optics cathode ray tube recording, airborne incremental magnetic tape recording, laser recording techniques, high speed tape transport technology, electrostatic recording and high and low inertial techniques.

At 6:30 p.m. the symposium will move to the Sundowner Motor Hotel for social hour, dinner and discussion of displays of equipment.

Registration fee is \$1.50. Make dinner reservations with Mr. Rathke, tel. 264-4139.

Authors

E. J. McGuire (5233), "The Photoionization Cross Sections of the Elements Helium to Xenon," Nov. 5 issue, PHYSICAL REVIEW.

N. J. DeLollis (5433), "Theory of Adhesion—Mechanism of Bond Failure and Mechanism of Bond Improvement," December issue, ADHESIVES AGE.

Lowell Dworin (5100 temporary hire), "Perturbation-Theoretic Treatment of the Inhomogeneous Electron Gas," January issue, PHYSICAL REVIEW.

Robert L. Long (5232) and Donald N. Cox (9142), "Electron Impact Excitation of Hydrogen Lyman-Gamma Radiation," Vol. 72A, No. 5, JOURNAL OF RESEARCH of the National Bureau of Standards.

J. F. Banas (1712), "On Linear Systems with a Time-Varying Delay and Isoperimetric Constraints," Vol. AC 13, No. 4 IEEE TRANSACTIONS ON AUTOMATIC CONTROL.

A. G. Beattie (5151), "Magnetoacoustic Dispersion and Attenuation; Comparison of Experiment with the Free-Electron Theory," Oct. 15, PHYSICAL REVIEW.

M. J. Forrestal (1222) and W. E. Alzheimer (1541), "Dynamic Response of a Circular Elastic Shell to Circumferentially Moving Forces," November issue, AIAA JOURNAL.

J. N. Johnson (1141), "Single-Particle Model of a Solid: The Mie-Grüneisen Equation," October issue, AMERICAN JOURNAL OF PHYSICS.

J. C. Moody (7451), "Measurement of Ultrafine Surface Finishes," Vol. 7, No. 1, ISA TRANSACTIONS.

R. A. Hill (9342), "Rapid Scan Spectrometers for the Diagnostics of Transient Plasmas," November issue, APPLIED OPTICS.

R. H. Dungan (5432), "Thermodynamic Relations between Composition and Ferroelectric-to-Antiferroelectric Phase Transitions," Oct. 21 issue, JOURNAL OF THE AMERICAN CERAMIC SOCIETY.

Events Calendar

Jan. 6—King's day dances at San Juan, Zia, Cochiti, Jemez, San Ildefonso, Taos, Tesuque and Sandia Pueblos plus installation of new Pueblo officers.

Jan. 10-11—"Man of La Mancha," UNM Popejoy Hall, tel. 277-3121.

Jan. 11—Climb on Enchanted Mesa near Acoma, N.M. Mountain Club, leader Bob Kyrloch, tel. 296-1725.

Jan. 12—Daylong snowshoe trip. N.M. Mountain Club, leader Walt Herrmann, tel. 299-6571.

Jan. 16—Albuquerque Symphony Orchestra, Maurice Bonney conducting. UNM Popejoy Hall.

Jan. 18—Paliza Ridge in the Jemez mountains. N.M. Mountain Club, leader Bill Grobe, tel. 243-1051.

Jan. 3-19—Colonial Art of Mexico Exhibit, UNM Art Museum, Tuesday through Thursday 10-5, Sunday, noon to 5 p.m.

Deaths



Brooks Braffett D. R. Salazar, Jr.

Brooks Braffett, a staff assistant in Physics and Technology Division 2613, died Dec. 22 after a long illness. He was 45.

He had worked at Sandia Laboratories since November 1950.

Survivors include his widow and two children.

Dennis R. Salazar Jr., a staff assistant in Support and Logistics Division 4612, died Dec. 23 in an auto accident. He was 39 years old and had worked at Sandia since October 1949.

He is survived by his widow, three daughters and two sons.

Only Dragons Should Smoke

Suggestive evidence linking cigarette smoking and strokes was shown for the first time in a recently completed four-year study of over one million subjects, the Heart Association notes. The stroke death rate was 40 percent higher in men aged 55-64 who smoked cigarettes, as compared with nonsmokers. Female smokers had an even higher death rate from strokes.

Spanish Classes Celebrate Holidays; Conduct Project

Members of two out-of-hours beginning Spanish classes taught by Rudy Baca (4641) recently combined their efforts for a little holiday festivity, practice in speaking Spanish and a Christmas project.

On Dec. 23, the classes met at the Coronado Club for a traditional Mexican food dinner, entertainment by guitarist D. P. Gallegos (3415), by the El Mariachi Gala group, and by Spanish dances performed by girls of the Albuquerque Academy of Fine Arts.

Ken Sutton (3433), a member of the class, discussed "Navidad en la Casa de Sutton." Master of ceremonies was instructor Rudy Baca who also discussed "La Fiesta Brava."

Presentation of a check to the widow (who has 11 children) of a former Sandia employee concluded the evening.

SANDIA LAB NEWS



SANDIA LABORATORIES
ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA

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Remote Controls Reduce Hazards On Capacitor Bank Control Panel

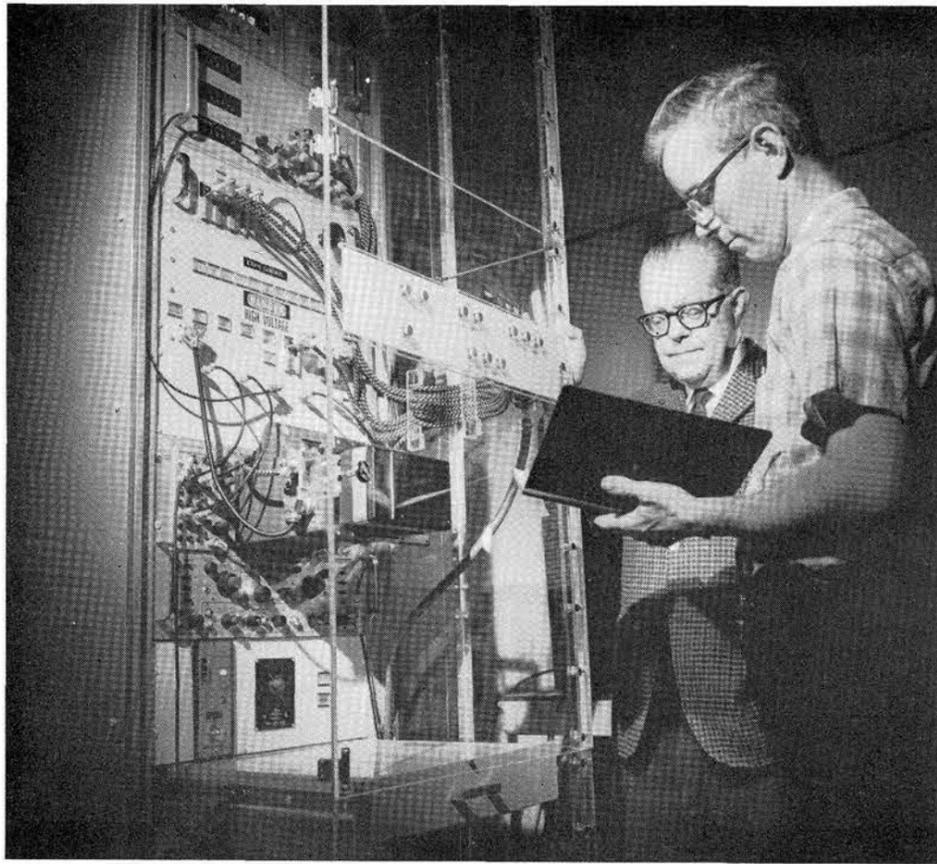
Dick Jacobson and Wil Vandermolen of Environmental Test Division 8125 have designed a remote-control push-button system for operating the control panel of a capacitor bank (electrical energy storage unit). The new system greatly reduces the possibility of an operator receiving an electrical shock while operating control switches on the panel. Before the remote system was designed, operators avoided any electrical shock hazard by depressing the control switches with a 12-inch rubber-tipped plastic rod.

Located in a room apart from the capacitor bank, the control panel is used by the operator to charge the bank with 16,000 volts or activate mechanical devices to release 14 kilojoules of stored electrical energy. Even though maximum safety precautions are taken, it is possible for an electrical failure (short circuit) in the capacitor bank to send current directly to the control panel. Any contact of the op-

erator with the metal control panel during the failure presents a serious electrical shock hazard.

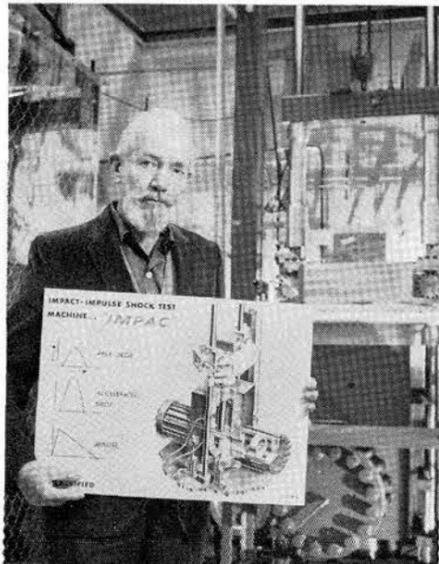
To protect the operator, the control panel is now enclosed in a plastic cabinet assembled with nylon screws. Front doors on the cabinet open to permit access to the electronic equipment before high-voltage is applied to the capacitor bank. When the operator depresses a switch on the front of the plastic cabinet, small valves release air at 60 pounds per square inch which actuates air cylinders attached to the control panel switches. Nonconductive rubber hosing joins the air valves and air cylinders. The operator never comes in contact with metal surfaces.

"The new system does two things for us," Dick says. "Apart from its major advantage of reducing the electrical shock hazard, it also makes fingertip operation of the control panel easier by placing all control switches in a central location."



ENVIRONMENTAL TEST RESULTS are analyzed by (left) Dick Jacobson and Wil Vandermolen (both 8125) in front of capacitor bank control panel they modified to reduce an electrical shock hazard. Control panel is now equipped with air-actuated, remote-controlled switches and is encased in nonconductive plastic.

Bay Area Tech Illustration Award to Artist Ben Aikin



AWARD WINNING TECHNICAL RENDITION of impact-impulse shock test machine is displayed by artist Ben Aikin (8233) in front of machine it represents. Illustration was awarded first place in Technical Rendering category of recent TIMA exhibit.

Ben Aikin of Technical Art Section 8233-2 won first place in the professional Technical Renderings category of a recent Bay Area exhibit. The exhibit was sponsored by the Bay Area Chapter of the Technical Illustrators' Management Association, International (TIMA). His entry was an illustration of an impact-impulse shock test machine (IMPAC).

Judges reviewed 187 entries in 20 exhibit categories and appraised them on the basis of conformance to military or commercial specifications (suitability), story telling qualities (readability) and appropriateness for method of reproduction (reproducibility).

The exhibit serves to acquaint Bay Area students and faculty with current requirements and trends in the technical art field. Students were encouraged to exhibit their work as well.

Congratulations

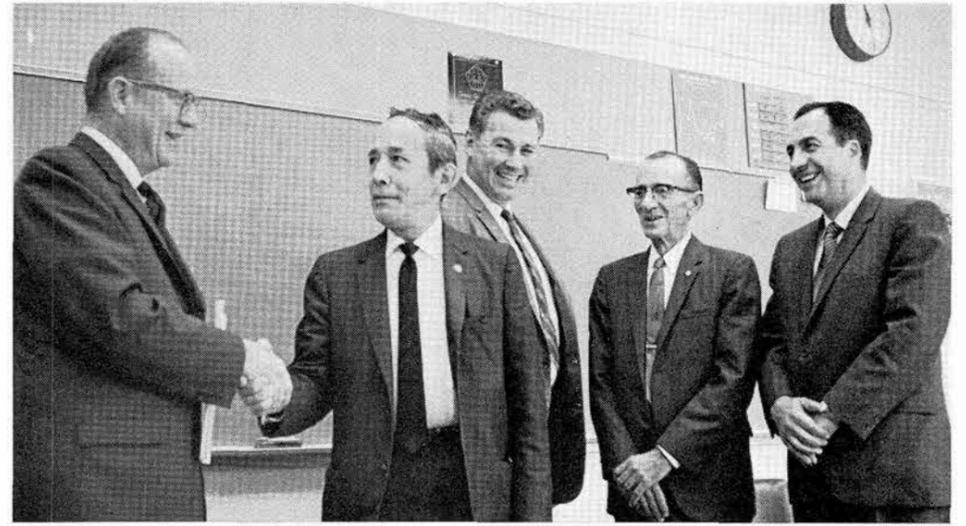
To Mr. and Mrs. Michael Daley (8133), a son, John Thomas, Dec. 9.

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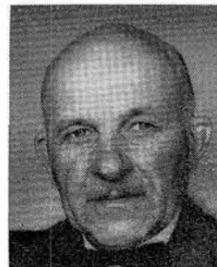
SANDIA LAB NEWS

JANUARY 3, 1969



NEW THREE-YEAR CONTRACT between Sandia and the Sheet Metal Workers International Association, Local 216 was signed recently at Livermore by (left) Director Hilt DeSelm (8200) and Union Business Manager Al Arellano. Others taking part in the event include (l to r) Don Wagner (8212), Union Steward Ted Robinson (8223) and Sam Mancuso (8212). New contract expires midnight Dec. 4, 1971.

J. L. Rowe Elected Officer Of State Apprenticeship Committee



J. L. Rowe, manager of Plant Services Department 8220, has been elected to serve a one-year term as Secretary-Treasurer of California's Machinist's Statewide Joint Apprenticeship Committee. He has been a member

of the committee for the past two years.

Voting members of the 32-man joint committee include union officials of the machinist's trade and management representatives from those California industries which have State-approved machinist and related trades apprenticeship programs (including such trades as electronics and quality control). Nonvoting advisers to the committee include representatives from the State Department of Education and the Division of Apprenticeship Standards.

The committee reviews the applications of industrial firms who are seeking State approval to establish apprenticeship programs. Recommendations are then made

to the State's Division of Apprenticeship Standards based on the committee's evaluation of the program's standards, training and personnel selection procedures. Applications are received from the aircraft, automotive (land and marine), general machine, tool and die, quality control and electronics industries.

Since the start of a machinist's apprenticeship program at Livermore in 1966, four men have been accepted in the program and now completing requirements to become journeymen machinists.

Minimum requirements include 8000 man-hours of on-the-job training, including 640 man-hours of technical and vocational training at the college level. Normally, it takes four years to complete the program; however, previous job-related experience may be applied to an individual's program.

Take Note

Marlin Pound, supervisor of Training, Benefits, and Records Division 8214, was elected to the board of directors of the Livermore Area Recreation and Park District (LARPD) in the Nov. 5 election. Three candidates had filed for two vacancies. One of the vacancies was created when Don Gregson, manager of Preliminary Design Department 8130, completed a four-year term on the board. Don has been chairman of the LARPD board of directors this past year. He did not run for re-election.

Marlin has been active with the LARPD for over four years, serving as chairman of the Personnel Commission. This commission works in an advisory capacity, dealing with employment policies, salaries, personnel rules and employee appeals. He has headed the commission since it was formed.



Dorothy Ray (3126)

Take A Memo, Please

Start 1969 in the right way — resolve to observe safety rules throughout the year.



THE OTHER DAY one of our sharp-eyed engineers called Public Information to say he had just noticed a "spy" in the parking lot. We quickly donned our trench-coats and cautiously moved to the location described by our informant. Not only did we find the "spy" but we also found the space bugged.

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Sandia Laboratories Highlights in Review -- The Year

was a ditch 80 feet deep, 300 feet wide and 900 feet long.

Thomas M. Burford, a department head in the Bell Telephone Laboratories Mathematics and Statistics Research Center at Murray Hill, N.J., was appointed director of Systems Analysis 5300.

Sandia Laboratories Livermore was elected a voting member of the State of California Joint Apprenticeship Committee. Each company which has developed a state apprenticeship program is entitled to representation on the committee; however, only 15 management and 15 union representatives have voting privileges.

In the technical library at Livermore, a system called Selective Dissemination of Information (SDI) was implemented to aid employees in getting desired information.

Acceleration tests were conducted in a facility designed by four Livermore employees. The facility simulates high energy shock by means of electromagnetic repulsion techniques.

April

The first participants in Sandia's new Doctoral Study Program were named. The program permits full-time study at an approved university for an initial period of 12 months with the employee, at reduced salary, receiving full tuition, and normal school fees.

Sandia employees from Livermore performed environmental monitoring and completed a bio-assay program in connection with the search and recovery operations at the site where a B-52 bomber crashed in Greenland with nuclear weapons aboard.

A comprehensive program was established at Sandia Laboratories Livermore to provide secretaries formal orientation as they come on roll.

Bids were opened for construction of a radiation safety and surveillance laboratory for Environmental Health Department 3310. Unusual features of the building include glass plumbing for visual inspection of chemical drains and shielded areas in the basement for examination, analysis and storage of radioactive materials.

Nearly 200 outstanding science students from Albuquerque and surrounding communities toured Sandia Laboratories during the AEC's annual Science Youth Days.

Sandia's first 25-year service pin was presented to William E. Caldes, whose employment included working as a civilian at Los Alamos before Sandia Corporation came into being.

May

The 31 members of the 1968 Technical Development Program class received congratulations from President Hornbeck during a "graduation" luncheon. Only one more TDP class will complete their work-study program before the program evolves into the new Graduate Education Program.

A national achievement award for outstanding participation in the Interagency Data Exchange Program was presented to President Hornbeck during the Sixth Annual IDEP Workshop in Los Angeles. The honor was in recognition of Sandia's outstanding support of IDEP through the exchange of test, reliability and other technical data.

A new series of tests to study high altitude density and pressures was carried out from the AEC's Barking Sands launch area in the Hawaiian Islands. Several different techniques were used to acquire the data. Seventy employees participated in the launch activities with responsibility for instrumentation, telemetry, and rocket systems.

A briefing in the latest industrial technology was conducted at Sandia Laboratories at Livermore for teachers from high schools and junior colleges located in Alameda and Contra Costa counties.

B. S. Biggs, Vice President at Livermore, was honored by the University of Akron as a member of a World War II Copolymer Research Group of the U.S. Government Synthetic Rubber Program.

A fourth employee at Sandia Laboratories Livermore was welcomed into the Wise Owl Club. Members must have prevented eye injury by wearing safety equipment.

June

Announcement was made of appointment of a new Vice President and two new Directors. Solomon J. Buchsbaum, director of the Electronic Research Laboratory, Bell Telephone Laboratories, Holmdel, N.J., was elected Vice President to succeed Thomas B. Cook, Vice President 5000, who transferred to Livermore as Vice President 8000. James C. King was promoted to Director

of newly-created Science and Technology 8300 at Livermore Laboratories and Albert Narath was promoted to Director of Solid State Sciences Research 5100.

B. S. Biggs retired, effective June 30, after heading Sandia Laboratories Livermore for the past seven years and after completing a total of 32 years of service with the Bell Telephone Laboratories.

As part of the AEC's Plowshare Program, 30,000 pounds of conventional high explosives were detonated in Coyote Test Field, creating a crater about 30 feet deep and 105 feet in diameter. The purpose of the underground blast was to determine the factors that relate size of the charge and depth of burial to close-in and distant air-blast pressures. This was the largest charge ever detonated at the site, which is south-east of the main Tech area.

For the fourth summer, Sandia participated in President Johnson's Youth Opportunity Campaign to provide temporary summer work and training experiences for students returning to school this fall. The group included 150 students in Albuquerque, 14 at Livermore, and one at Tonopah. A number of the students signed up for Sandia's out-of-hours courses.

An engineer at Livermore, Edward O. Williams, received the annual Vigness award of the Institute of Environmental Sciences as the author of the outstanding paper on the subject of shock and vibration. Through his work with the manganin gage, he designed a transducer capable of measuring the shock pressure internal to a material without either the device itself or extreme electrical noise distorting the results. Pressures of one and one-half million pounds per square inch (up to 104 kilobars) lasting for one microsecond have been measured.

The 1968 Alfred Noble award for outstanding technical paper was presented Richard W. Holland, a Sandia electrical engineer, for his article "The Equivalent Circuit of a Symmetric N-Electrode Piezoelectric Disk." The national award was established to encourage the work of young engineers.

July

A general reorganization of the Laboratories became effective on July 1. The change was made "... with the objective of meeting the changing needs of Sandia Laboratories as we seek to fulfill our responsibilities in the weapons and non-weapons programs." Also mentioned in President Hornbeck's message on the reorganization was the need for the Laboratories "... to maintain vitality and flexibility ..."

A giant machine to simulate the flash gamma rays from nuclear weapons was test fired in Area V. "Hermes-II" was initially capable of producing 3000 rads of radiation dose in a sample one meter from the x-ray target. The radiation is directed at materials, components, and systems to determine the resulting effects.

Donald R. Cotter returned to the Laboratories as Director of Exploratory Systems Studies 1800 after almost two years (on leave) as Special Assistant for Southeast Asia Matters, Office of the Director of Defense, Research and Engineering. Before leaving Washington, he was awarded the Secretary of Defense Meritorious Civilian Service Medal in recognition of his "outstanding technical and managerial ability ... and significant contribution to the military effectiveness of the U. S. and free world forces in the war in Vietnam."

A new three-year agreement was signed between management and the Metal Trades Council and Office and Professional Employees International Union, Local 251, following ratification of terms of the contract by union memberships.

The SLL representative with the National Alliance for Businessmen assisted with the Oakland Metropolitan Area effort. The goal of the NAB program is to find jobs for 100,000 hard-core unemployed by mid-1969.

Electronic data processing experience at Sandia Laboratories Livermore helped in a computer project for agencies of the cities of Livermore and Pleasanton and local public organizations. Employees who worked on the project were members of the Livermore Technical Panel for Community Service. This panel offers volunteers from science, engineering, mathematics, and other technical fields a chance to apply their professional skills to community programs.

Sandia Laboratories Livermore representative with the National Alliance for Businessmen assisted with the Oakland

Metropolitan Area effort. The national goal of the NAB program is to find jobs for 100,000 hard-core unemployed by mid-1969.

Livermore employees received an AEC Award of Merit in recognition of more than one and a quarter million man-hours worked without a lost-time accident during the period July 3, 1967, to March 4, 1968. Previously, Livermore has received six Awards of Merit and an Award of Honor from the AEC.

August

Conditions of atmospheric re-entry by space vehicles were being simulated on a routine basis at the new plasma arc testing facility. The six-foot-wide pressure chamber allows as many as three re-entry vehicle models to be tested simultaneously. The facility also has a unique capability for testing radioactive or toxic materials. Much of the testing will be SNAP fuel capsules.

Seven employees were granted leaves of absence to join the engineering staff of Western Electric Company's Sentinel Project. WE is the prime contractor responsible for final development and installation of the anti-ballistic missile system.

Two new Directors were appointed. L. C. Hebel, head of Bell Telephone Laboratories' Reentry Physics Department in Whippany, N. J., was named Director of Physics Research 5200. W. Lee Hancock, assistant manager for operations of the AEC's Albuquerque Operations Office, was named to the newly-created Security Directorate 3500.

Sandians, British and Canadian scientists and technicians cooperated in a high explosive experiment in Alberta, Canada. The 500-tons of TNT left a crater 212 feet in diameter. The Sandians were primarily interested in microbarograph data.

September

A Sandia-led underwater search team, working off the California coast near Santa Barbara, helped locate on the ocean floor a Nimbus B weather satellite and its valuable radioactive power supply. The missile carrying the satellite was intentionally destroyed May 18 after veering from its planned flight path.

Sandia was interested in the recovery because the AEC has assigned the Laboratories responsibility for coordinating safety aspects of nuclear generators carried in satellites. The search provided an opportunity to check out a new deep-water submersible. Later, Sandians played a major role in the U. S. Navy's recovery of the two SNAP 19 fuel capsules.

Shakers were mounted on one end of the 30-ton arm of Sandia's huge underground centrifuge to provide acceleration and vibration environments simultaneously to duplicate the conditions of rocket launch. Test items weighing up to 100 pounds may be vibrated in a linear acceleration field of 100 Gs, while heavier units may be vibrated in lower fields. It is also possible to control the temperature of the test item from -60° F to +300° F.

P. E. Hogin, Executive Vice President of Western Electric Company, Inc., was



Stars for savings bond purchases.



New CDC 6600 computer.

elected to Sandia's Board of Directors. He will fill the unexpired term of L. R. Cook, who retired after more than 40 years with WE and the Teletype Corporation.

Three Sandians at Livermore received the John J. Hanney Memorial Award from the American Electroplater's Society for co-authoring the best paper on copper plating presented during the Society's annual convention.

October

Sandia Laboratories and the Metal Trades Council signed an agreement establishing a new apprenticeship program in the Plant Maintenance area. Graduates of the five-year training program will be classified as plant technicians in five major areas of specialization: electrical, mechanical pipe fitter, mechanical-refrigeration, structural-carpentry, and structural-millwright.

A three-year agreement was also concluded with representatives of the International Guard Union of America.

The AEC entered into negotiations with Isleta Indian Pueblo and Martin-Marietta Corporation for use of two land areas south of Albuquerque adjoining Sandia's supersonic rocket sled track. The land would serve as a safety buffer zone to provide an additional margin of protection in the event of a malfunction.

Livermore employees contributed a record \$26,128 to the United Bay Area Crusade, representing an eight percent increase over the previous year's contributions.

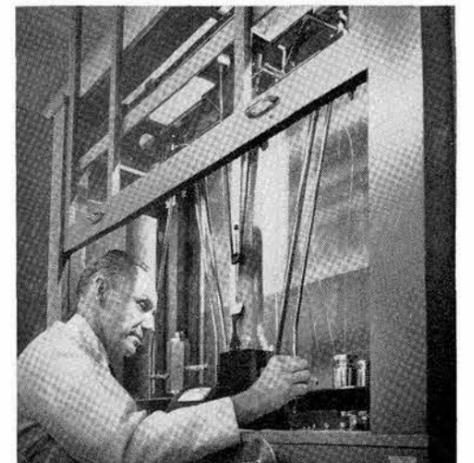
A signal processing system was installed at Livermore to speed engineering analysis of telemetry data. The system digitizes 250-500 channels of analog data a day at the rate of 100,000 samples per second. Turn-around time for processing test data is reduced from three to four weeks down to three days.

November

President Hornbeck and other Sandians were speakers at a two-day Symposium on Rolamite, held in Albuquerque to describe to representatives of industry the latest development of the Sandia-originated device and its possible applications. The symposium was co-sponsored by the Technology Application Center of the Institute for Social Research and Development, University of New Mexico and Sandia's Office of Industrial Cooperation.

The year-old Doctoral Study Program was opened to new applicants who would like to start their studies in the fall of 1969. Fourteen Sandians are already attending universities under the program. Applicants should be MS-level employees of exceptional merit and ability whose personal characteristics, past job performance, and academic history indicate high promise in Sandia work.

Mrs. U. S. Savings Bond, Joy Berlemann of University Park, N. M., made an appearance in Albuquerque to present Sandia Laboratories with two white stars for its previously-awarded Minute Man flag in



Livermore's metrology lab.



Information retrieval from SLL library.

1968

recognition of employees' purchases of savings bonds.

Sandia Corporation's Board of Directors met at Livermore on Oct. 24.

Sandia Laboratories Livermore received a certificate of recognition from its participation and support of the 1968 Youth Opportunity Campaign. The certificate was signed by President Johnson and Vice President Humphrey and was accompanied by a letter of appreciation from the Mayor of Oakland, commending Sandia for its part in the program.

Construction began at Livermore on a 14,400-square-foot underground computer facility. When completed, the facility will house a CDC 6600 computer for performing scientific calculations in support of the Laboratories' research and development efforts, a CDC 3600 computer for processing engineering support data, and an IBM 1401 computer for processing input/output information. Use of the top surface (ground level) of the facility includes a courtyard which employees can use for noontime activities.

December

Final tabulation of this year's Employee Contribution Plan campaign showed a total of \$291,397. Average gift of participating Sandians was \$51. The recipients are the Albuquerque United Community Fund and seven health agencies.

Tonapah Test Range employees and their families began making arrangements for a move to Las Vegas, Nev. Test Range activities will continue, but the change will provide greater flexibility in assignment of Sandia's technical employees. The move will allow employees the choice of renting or owning their homes.

Acceptance testing was underway in Albuquerque on a CDC 6600 computer especially suitable for complex and lengthy scientific programs. The high-speed, high-capacity computer will supplement Sandia's two IBM 7090s, a Univac 1108, and a CDC 3600.

Christmas charity projects throughout the Laboratories resulted in food, clothing, and toys for needy families in the Albuquerque area.

A laboratory was equipped at Livermore for designing hybrid integrated circuits. The new laboratory provides the engineers a tool to keep up with advances in microelectronics.

New three-year contracts were signed with two unions at Livermore — the International Association of Machinists and Aerospace Workers (IAMAW), District Lodge No. 115, AFL-CIO, and the Sheet Metal Workers International Association, Local No. 216, AFL-CIO.



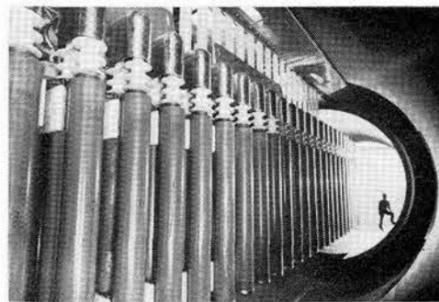
New apprenticeship agreement signed.



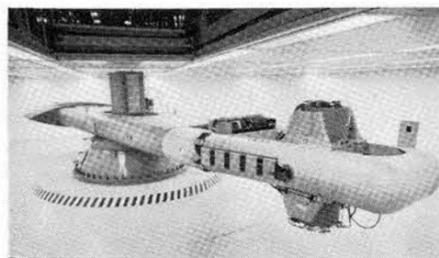
Crater study at Coyote Canyon.



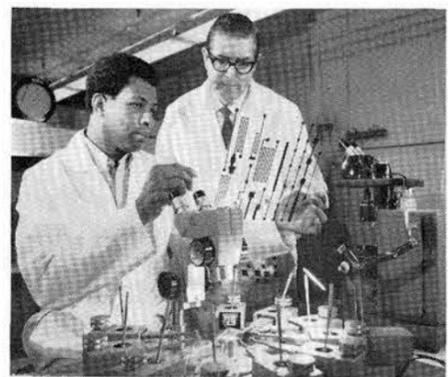
Kudos for SLL's participation in Youth Opportunity Campaign.



Capacitors of flash X-ray machine.



Shakers added to centrifuge.



SLL's microelectric lab.



Sandians called to active duty.

Service Awards 20 Years



Geronimo Alexander
4513



Alan Bolles
9222



Oliver Chapman
4613



Leo Chavez
4222



Elwin Chestor
7422



Donald DeHerder
2491



Marshall Denish
4517



Lyle Hake
8181



G. L. Hutchinson
4622



Harrel Killebrew
4512



Walter Maupin
8124



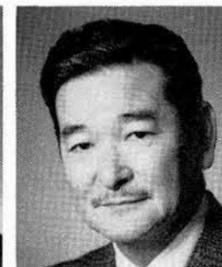
C. B. McCampbell
2310



Maynard Sanders
4361



Wilbur Sheaffer
7216



Tom Takahashi
9132



Louis White
4573



George Walker
2491



August Binder
2315



C. A. Davidson
7634



Charles Maase
7412

15 Years

Jan. 3-16

Elizabeth Gary 3310, Delores Ganzerla 3463, Robert Duke 4122, Sherwood Duhire 5422, Phillip Sites 8128, Carl Beckham 8151, Glen Funk 8172, Francis Cunningham 8243.

Albert Bastion 8223, Harold Roberts 5242, Kathryn Moore 4333, Eleanor Vavro 3126, Dez Brown 8223, Paula Schultz 3126, James Reco 8312, and John Justus 4364.

10 Years

SHOPPING CENTER ● SHOPPING CENTER ● SHOPPING CENTER ● 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 Corporation 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

- HEATHKIT amplifiers W-3M, EA-Z, Preamp WA-PZ. Best offer. Carl, 256-2781.
- MASRITE dual pick-up electric guitar. Fender twin reverb amplifier, dual Lansing 12" speakers, mike, stand. Motorcycle windshield, \$15. Shock, 877-3728.
- METAL WARDROBE 20"x36"x66", \$17; White quilted satin fitted dbl. bedspread, \$15; blue towel sets, \$7; blue bath set, \$5. Dyckes, 299-7280.
- ARCHERY BOW, 35 lb. Shakespeare, \$25. Cox, 1000 Betts NE, 299-9253.

- SKI BOOTS, Koflach size 7, girls, used one season, \$15; Schwinn 20" girl's bike, \$20. Zowair, 256-3717.
- MAGNAVOX AM-FM, hi-fi console, \$60; 1966 Yamaha twin 100cc, \$200. Andrzejewski, 256-1863 after 5.
- GOLDEN RETRIEVER, 3 years old, sprayed, pedigree, excellent with children, will give to proper home. Moyer, 298-1778.
- RACE CAR set, Aurora, HO, 48 ft. of track, 3 cars, 2 transformers, \$22. Sims, 255-6967.
- MINI-TOY poodle, male, silver, 9 weeks old, had 2 shots, \$40. Barber, 299-1752.
- OLYMPUS Pen-E camera, takes up to 72 bantam-sized slides, fully automatic, flash mount and leather case included, \$25. Gottlieb, 298-9859.
- 4-FOOT rollaway bed, innerspring mattress, \$30; Hollywood bedframe, \$5. Pope, 299-2276.
- AKC MINIATURE Schnauzer pups, champion blood lines, \$125. Available Jan. 18. Deposit will hold choice. Jones, 298-3891.
- NORGE electric clothes dryer, \$40; Frigiking automobile air conditioner evaporator, compressor, etc.; dark blue Acrolin carpet, 13'x17'; large lamp. Chandler, 296-3323.
- KROEHLER couch and chair, \$50 swivel rocker, \$10; 2-10" wide 16.5 8-hole wheels, \$20 each. Nelson, 298-2477.
- 4 LADIES Pro Golf woods (Louise Suggs Nos. 1, 2, 3, 4). Michele, 243-5174.
- SILVER POODLE, male, pedigree, 6 weeks old; 100" white naugahide sofa; tile top cocktail table; blue-green shag rug, 6-9'. Schafer, 299-4634.

- MAPLE stained nine drawer clothes chest, 40" wide, 33 1/2" high, \$15. Siska, 298-5756.
- DINING ROOM set, solid lined oak w/6 upholstered chairs (including 2 captain's chairs) drop-leaf table w/two extension leaves. Montoya, 265-9642 after 5.
- REAL ESTATE**
- 4-BDR. HOUSE, 8137 Hannett NE, close to schools, shopping centers, bus line, open house on weekends. Downs.
- 4-BDR SPLIT LEVEL with large family room, \$30,800, excellent location for Sandia, schools, Winrock, freeway, 1505 Marron Circle NE. Driver, 299-2063.
- CARS AND TRUCKS**
- '53 CHEVROLET station wagon, original owner, \$250. Laney, 299-8828.
- '66 ENGLISH FORD Cortina GT, 32,000 miles, one owner, R&H, \$1175. Stark, 296-4971.
- '67 CATALINA 4-dr., PS, PB, radio, \$1575. Hill, 298-5925.
- FOR RENT**
- HOUSEKEEPING rooms, newly painted, free parking, all utilities paid, \$40 a month, employed person preferred. Chaves, 255-6155 or 243-0115.
- WANTED**
- SHARE RIDE or rider, North Valley Alameda cut-off and Rt. 85 to Bldg. 806 or 802. Baker, 898-2514.

- 30,000 to 50,000 BTU natural gas wall or upright ventilated heater and flue pipe. MacDougall, 299-8496.
- CHILD CARE at my home in Tijeras Canyon. Part-time or by hour, reasonable. Fenced-in yard, playroom. Floor, 298-4980 after 6.
- RADIAL ARM saw, misc. hand and power tools and accessories. Tiefa, 299-2763.
- TRADE 3 1/2 hp, 4 cycle Clinton gasoline engine for approx. 3 hp, 2 cycle gasoline engine w/horizontal shaft. Everett, 636-2544.
- STEREO, record player only. Johnson 842-9541.
- LOST AND FOUND**
- LOST—tan London Fog topcoat from Bldg. 836. A similar coat and a pair of gloves remain unclaimed in the same location. Wagoner, 264-2954.
- LOST—ladies half (snow) boots; man's black fur-lined glove; Indian shell necklace; Vol. 5 Semi-Conductor textbook; RX glasses; man's heavy silver ring w/turquoise set; ladies beige wool gloves w/leather palm; beige irregular-shaped button; turquoise stone in square silver scarf; sterling silver chain-link bracelet; man's pigskin gloves; RX glasses/black frames; 4 keys in black case. Lost and Found, Bldg. 610, tel. 264-2757.
- FOUND—set of car keys; 4 keys on a ring; Albuquerque library book; ladies black vinyl glove; brown plaid wool neck scarf; ladies black cloth glove; pair ladies white cotton gloves; simple VW key; gold engraved pierced earring; man's brown leather billfold. Lost and Found, Bldg. 610, tel. 264-2757.



CASINO NIGHT at the Club Saturday, Jan. 16, will feature games of chance with play money and real prizes. Elton Travis will play for western dancing. Bob Banks (5100) plays for Lady Luck (Dody Kurtz, 4135).

Coronado Club Activities

Swinging 1969 Club Calendar Set

Outstanding events on the January Club calendar are starting the year 1969 off with a bang. The pace will continue, Gordon Moe (1812), club president, reports. Already, dates have been set for at least two all-member Saturday night social affairs per month through June. The board of directors is determined that 1969 will be a record Coronado Club year.

January

Elton Travis and the Westernaires will play the sagebrush shuffle for the Coronado Casino Jan. 18. Play money, under "tight control," will be issued at the door for the games of chance. Big winners will win real prizes. President Moe reports that the casino will be in the hands of "honest zealots" carefully administering the awards of "very good prizes."

Admission is \$1 for members, \$2 for guests. Sandwiches will be available.

A special social hour Friday, Jan. 31, will feature "The Shadows"—a swinging group of entertainers from the West Coast who will present a show and play for dancing from 6 until 9 p.m. Admission is \$1.

February

The Shadows will perform for a concert on Saturday afternoon for teenagers and then for adults that night from 9 to 1 a.m. Dinner will precede the evening show and dancing.

A Mardi Gras scheduled on the 15th ought to brighten up mid-February. A jambalaya dinner, special entertainment, and dancing will help the festivities.

March

Here's one to drool over—a New England seafood dinner on March 1. Cherrystone clams and live Maine lobsters will be flown in for the affair. Reservations are required two weeks in advance to allow time to order the goodies. The \$6 admission cost includes the dinner, free wine taste, and dancing.

Later, on March 15, corned beef and

cabbage will make a special St. Patrick's day celebration.

April

A "Taxpayer's Bawl" on April 12 with a free bourbon taste is designed to help ease the troops through this traumatic time. A soup kitchen with mulligan stew will be set up. The band will play the blues all evening.

On April 6, the Club will sponsor an Easter egg hunt for kids age six and under with prizes and surprises.

May

On May 3, a Latin fiesta is scheduled with mariachi bands and a dancing troupe. A very special Mexican menu will be prepared.

A western dance on May 24 will wrap up the May calendar.

June

The annual Coronado Club luau on June 7 will see a few innovations in menu and, again, special entertainment will be booked.

A barbecue on the patio with western dancing and swimming on the 28th will close the June calendar.

"These are the high points of the first half of the year's calendar," President Moe says. "The rest will be even better. The board is trying to plan events that will appeal to everyone. And we welcome suggestions from members anytime."

Stockmarket Forum

A four-week course in stockmarket investing will be offered free by the Club starting Tuesday, Jan. 14. The forum will meet each Tuesday from 7:30 until 9:30. Instructors will be representatives of Goodbody and Company, members of the New York Stock Exchange. All Sandia and AEC employees are welcome.

* * *

Adult Dance Classes

Monday, Jan. 6, will mark the beginning of new 10-week dance classes at the Coronado Club. The beginners will meet Mondays at 7:30 p.m. while the advanced class will meet at 8:30. Enrollment (fee \$20 per couple) is through the Club office.

* * *

Bowling Tournament

Both a men's and women's singles bowling tournament will be conducted by the Coronado Club Saturday, Jan. 11 at San Mateo Lanes. High series bowlers will qualify for the state tournament. Only Coronado Club members may participate.

For additional information, contact John Nakayama (1513), tel. 264-8925; or Dick Demel (4152), tel. 264-7342.

Take Note

Several Sandians will be installed today as officers of Sandia Toastmasters Club No. 765 during a dinner meeting at Bella Vista. They are Bill Alzheimer (1541), president; Jerry Long (9217), executive vice president; Al Bustamante (9513), secretary; and Norm Sinnott (7214), treasurer. The group meets every Thursday at 6:30 p.m. at Wyatt's cafeteria. Prospective members are invited to attend meetings.

Congratulations

Mr. and Mrs. Alex Griego (7636), a daughter on Dec. 21.

Mr. and Mrs. Larry M. Lauger (9328), a daughter, Laura Michelle, Dec. 18.

Jack F. Hammerstran (2452-1) and James S. Reese (2452-1) were presented with 25-year ASTME service awards on Dec. 19 by Albuquerque Chapter 93 Chairman Oscar M. Schroll (2355). The awards were in appreciation of their participation for a quarter of a century in advancement of the professional growth of the American Society of Tool and Manufacturing Engineers.

* * *

J. Robert Garcia (3260) has been appointed by the U. S. Department of Labor to serve on the Office of Federal Contract Compliance Advisory Committee on Testing. This nine-man committee of representatives of industry and universities has been organized to help develop guidelines for personnel tests in industry used in selection of employees. It will also interpret for industry federal specifications of such tests.

Co-chairmen of the committee are Roy Katzell, head, Psychology Dept., New York University, and Howard Lockwood, Lockheed Aircraft Corp.

Sandia Safety Signals

HOLIDAY DRIVING DEMANDS IT EVEN MORE! DRIVE DEFENSIVELY.



A SIZE NINE THANK YOU, one of many received from children from the Duranes School for shoes received as a result of the Christmas project by the United Unions. Fifty-three needy children were fitted with new shoes. Co-chairmen of the project were Hilario Garcia (4221-1) and Granville Dourte (4231).

Sympathy

To Jim Walston (3463) for the death of his son, Freddie, on Dec. 25.

Speakers

Harold A. Krieger (1211), "Examples of Weapon Systems Planning for Specific Uses in Southeast Asia," Military Operations Research Symposium, U.S. Naval Post Graduate School, Dec. 11, Monterey, Calif.

Glenn R. Elliott (2454), "The Use of PDP8 in Automated Test Systems at Sandia Laboratories," Digital Equipment Computer Users Society Fall Symposium, Dec. 12, San Francisco.

A. J. Clark (9520), "Space Isotope Power Program," Engineering Seminars at Ft. Lewis College, Dec. 5-6, Durango, Colo.



HE MAY NOT BE SANTA CLAUS but 60 children of John Marshall Elementary School have reason to thank O. D. Belden (2491) and other members of that organization and persons in organization 7410. Sandians present when the children were fitted with shoes at Sears recently included, from left: Belden, Harold Jeblick (2491), and Don Hurt (7414). From the several Sandia Christmas projects, more than 210 needy children received shoes.