

R. C. MARSH of Manufacturing Research Division 2564 demonstrates a new cleanliness test meter which rapidly detects and continuously measures contamination levels in volatile cleaning solvents. Levels as low as one part per million can be easily measured.

New Sandia Instrument Measures Cleaning Solvent Contamination

A cleanliness test meter which rapidly detects and continuously measures contamination levels as low as one part per million in volatile cleaning solvents has been developed by R. C. Marsh of Sandia's Manufacturing Research Division 2564.

The meter detects and measures contamination by using a light scattering photometer to sense the difference in the evaporation rate of solvent droplets.

Droplets which are contaminated with oils, greases, soldering flux, skin oils, and other soluble substances evaporate more slowly than uncontaminated droplets; the rate of this change in evaporation can be readily measured by a photometer.

The solvent to be checked is first drawn into a nebulizer, reduced to spray and mixed with air, then passed through a controlled drying tube to the photometer,

which electronically measures and records the droplet concentration.

Based on an idea originally conceived at the Illinois Institute of Technology, the Sandia-developed meter can presently measure contamination levels of about one part per million; however, it is expected that subsequent models will be able to measure levels of one-half to one-tenth part per million.

Major applications of the meter include trouble-shooting on production lines, assessing the cleanliness of components, certifying the purity of fresh solvents, and continuously monitoring the solvent in recirculating systems.

Using Sandia's cleanliness meter, contamination measurements can be made in a matter of minutes. Standard non-volatile residue detection methods require an hour or more to make a similar measurement.

Three Sandians Awarded Patent For Electro-Magnetic Contacts

A patent was awarded recently to three Sandians for their invention of magnetic electrical contacts for various types of switching. C. E. Jackson (1514), B. P. Neumon (2548), and P. C. Montoya (1524) are the inventors.

Elimination of contact bounce (which plagues conventional switches) is the primary value of the new switching method. It also minimizes metal vaporization and static resistance between the contacts.

As described by U. S. Patent No. 3,218,426, the invention relates generally to the switching of electrical currents, and more particularly to electrical contacts used in such switching.

The device consists of a pair of contacts, each divided into a central current-carrying portion surrounded by a non-current-carrying portion. The non-current-carrying portion is constructed of both magnetic and nonmagnetic materials arranged so that the nonmagnetic section will interrupt circular lines of magnetic flux created by electrical currents carried by the contacts.

Proper orientation forces the flux to cross between the contacts, thus attracting them to each other and minimizing inter-contact resistance. Magnetic attraction is not produced until the contacts initially close. No "bounce" is produced.

The Sandia trio first conceived the idea several years ago for use on a Sandia System project but, due to short time scales, it was not incorporated into the final system design. Under the circumstances, the AEC determined not to apply for a government patent. Subsequently, the men applied to the Sandia Patent Depart-

ment 6010 for a release on the patent rights.

Sandia then granted the release, subject to licenses to the government and to Western Electric Co., and the men filed for the patent. It was issued last month.



GRANTED PATENT—Invention of a magnetic electrical switching method by (l to r) Bert Neumon (2548), Paul Montoya (1524), and Charles Jackson (1514) led to issuance of a patent last month. The trio displays patent certificate No. 3,218,426.

C. J. McGarr Elected To Business Ass'n. Board

C. J. McGarr, Director of Service Operations 4600, has been elected a director of the New Mexico Business and Manufacturers Association. He will serve a two-year term.

The association is comprised of representatives from throughout the state. Its goal is to provide a better understanding between businessmen, manufacturers, and the state government.

SANDIA CORPORATION

LAB NEWS

PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION / ALBUQUERQUE, NEW MEXICO / LIVERMORE, CALIFORNIA

VOL. 17, NO. 27, DECEMBER 31, 1965



LARGE LANDSCAPE painted by George Shelton (3122), left, hangs in the newly remodeled reception area of Personnel Bldg. 832. He discusses his realistic painting technique with Mimi Walter (3151), personnel receptionist.

Remodeled Personnel Bldg. Lobby Features Painting by Sandian

Focal point of the newly remodeled reception area in Bldg. 832 is a large oil painting loaned to Sandia by artist George Shelton of Employee Services Division 3121. George's colorful painting is a realistic portrayal of a mountain meadow near Sawmill, Ariz. The painting measures seven by four and a half feet and took George about 40 hours to complete.

"I work fast," George says, "but there's more than 25 years of painting experience

that goes into my work." George started painting when he was 15. He has had some formal training in art, including classes at the University of New Mexico and part of a Famous Artists correspondence course, but developed his realistic technique primarily through observation and experience.

The remodeled personnel building includes the new reception area and waiting room, a curved panel behind the reception desk, new paint throughout the building, and relocation of partitions and offices. The work started last summer and was completed this month. It was performed in phases to allow for minimum interruption of work flow.

Plant Engineering Department personnel who contributed to the planning of the project include R. G. Piper (4542), W. F. Gamberale (4542), O. H. Heins (4542), H. B. Burrell (4542), and G. R. Sharp (4541).

Sandia Pyrometer Measures Heat of Rocket Blast

A recording pyrometer which uses a motion picture camera has been devised at Sandia Laboratory to determine the temperature of rocket exhausts and fireballs created by explosions. The device was developed to aid in Sandia's Aerospace Nuclear Safety Program as part of a study of rocket launch abort environment. It has been used in various tests related to blast hazards from rocket propellants.

A 35 mm Mitchell camera capable of taking 96 frames per second is set up overlooking a series of calibration lamps and the test event (rocket launch or an explosion). The camera records, on a single strip of film, the calibrated light from the lamps and the light from the exhaust or fireball. A densitometer is then used to determine the relative densities of the images, and from this the temperature of the exhaust or fireball can be computed.

Still cameras are occasionally used to compute temperature, but the Sandia system is believed to be the first to use a motion picture camera. Big advantage of the motion picture system is that it shows, by means of a timing mark on the film, how the temperature varies with time. Only the hottest portion of the test—usually about half a second—is recorded.

The pyrometer was developed by R. R. Beasley (7223).



Juvenile Court Honors A. L. Ouellette For Work on P-TA Youth Committee

A. L. "Will" Ouellette (5234) received an "Award of Appreciation" Dec. 17 from the Juvenile Court, Second Judicial District, for his work on the Bernalillo County P-TA's Juvenile Protection Committee.

The certificate, signed by Judge Edwin Swope and Chief Probation Officer G. R. Gargoura, read ". . . in sincere and grateful appreciation of the exceptionally dedicated effort, invaluable service and unstinted devotion to the betterment of the youth of this community."

Will has been a member of the committee for the past three years and is chairman for the second year. The committee seeks to represent each of the 57 schools in the county.

"Our function in the P-TA," Will says, "is to know the needs of the children in the community. Our primary interest is in children who constantly get into trouble, the reasons behind their actions, and perhaps ways of preventing problems." The committee also is working to provide proper legislation to protect children, to make available proper facilities, and to inform the public about how juvenile cases are handled.

As chairman of the committee, Will has visited the Bernalillo County Detention Home, juvenile courtroom, probation offices, New Mexico Boys School at Springer, the Girls' Welfare Home, and a camp in Eagle's Nest.

Current changes advocated by the Juvenile Protection Committee are: increasing the size of the Bernalillo County Detention Home, and initiating group homes where eight to 10 boys or girls with similar problems would live in a family-type environment.

On Feb. 1, Will will conduct a program on juvenile protection problems before the Bernalillo County Council of P-TA. The evening meeting will be at the Albuquerque School Administration Building, 724 Maple SE. It will include speakers and a revised slide show on "Journey of a Boy in Trouble," which depicts the happenings of a youth from the time he is apprehended by Albuquerque police officers until he is released to his parents, placed in a proper home, or sent to the Boys School in Springer.

Editorial Comment

The Car Pool Case

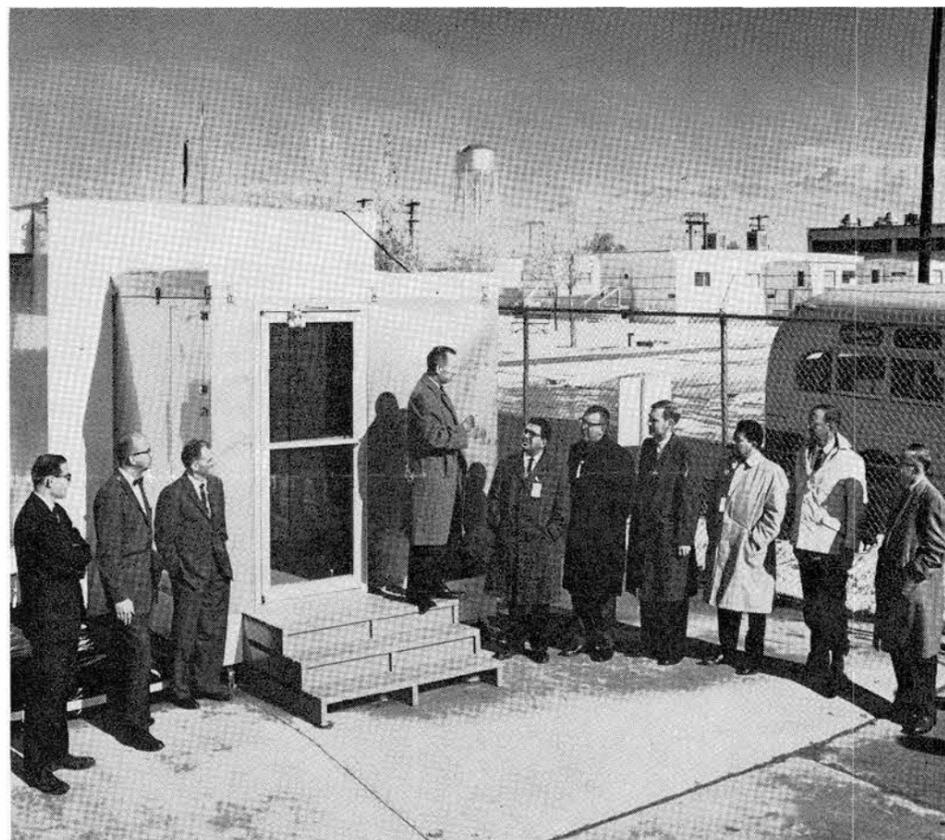
Hundreds of car pools operate at Sandia. However, many hundreds more single passenger vehicles enter the Base each morning than those with several riders. The fact is that those single drivers are missing out on a good thing.

Relaxation is the benefit cited most by members of a car pool. In a five-man pool, four men **relax** on the way to work.

On the very real economic side, car pools save members money. Driving once a week is certainly 80 percent less expensive than driving every day. And car pool members usually own just one car. Think of the fees, insurance, wear and tear, and worry that saves.

Speaking of worry, a car pool member is never alone if he has car trouble. There might be a knowledgeable mechanic among the group.

Car pools help the traffic and parking situation. And anyone who helps the traffic and parking situation should get a medal.



J. R. SUBLETT, manager of Advanced Manufacturing Development Department 2560, discusses applications of clean rooms with Bernalillo County members of the State Legislature from the entrance of a Sandia clean room facility. The group visited Sandia Dec. 16.

ECP Distributes \$220,084 in 1965; Reserve Fund Allocations Made

The Sandia Laboratory Employees Contribution Plan closed the year 1965 last week with the distribution of the November checks and allocation of the reserve fund.

A total of \$220,084 was contributed to the United Community Fund and the seven participating national agencies. The reserve fund, a total of \$2,191.38, was allocated among 16 agencies to meet specific needs. The allocation was as follows:

Albuquerque Association for Retarded Children, sewing machine, \$75; Martinez-town House of Neighborly Service, three tables, \$114; Albuquerque Area Council on Alcoholism, pamphlet rack for reading room, \$48.80; Christina Kent Day Nursery, educational equipment, \$45; Albuquerque Child Guidance Center, professional journals for staff, \$50.

Multiple Sclerosis Society, wheelchair, \$75; Muscular Dystrophy Association, child's wheelchair, \$101; Boy Scouts of America, special leader's training kits for work with potential delinquents, \$80.50; Catholic Social Services, group therapy equipment, \$127.50; Albuquerque Hearing Society, visual-concept teaching materials,

\$50; Bernalillo County Heart Association, ophthalmoscope, otoscope, and stethoscope, \$100.

Albuquerque Association for Mental Health, educational materials for volunteer service corps, \$130.32; Frances Lynn Home, mattress, heater, and cooking utensils, \$104.60; Visiting Nurses Service, used dictaphone, \$125; Special Education Center, fence for play area, \$400; and Rehabilitation Center, Inc., whirlpool bath, \$530.

Final 1965 distribution of ECP funds was as follows:

United Community Fund	\$179,965.34
American Cancer Society	10,563.74
Bernalillo County Heart Association	9,228.90
Arthritis Foundation	3,299.11
Society for Crippled Children & Adults	6,599.19
Multiple Sclerosis Society	2,893.83
Cerebral Palsy Association	1,758.10
Muscular Dystrophy Association	3,067.96
Reserve Fund	2,191.38

In addition to these amounts, Sandians contributed \$516.60 during the 1965 drive period which was designated by the contributors to specific agencies. December ECP deductions begin the 1966 period.

Sandians have pledged \$243,270.26 to the 1966 Employees Contribution Plan.

Take a New Year's Resolution, Please



WISHING EVERYONE a happy and prosperous new year is Sue Winchester (8142). Working safely in 1966 will help make this wish come true for all Sandians.

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LAB NEWS

DECEMBER 31, 1965

SANDIA CORPORATION

LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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LIVERMORE NEWS

Pressure Test Facility Will Be Built in Livermore's Area 8

A new pressure test facility, to be designated Bldg. 966, is scheduled for Livermore Laboratory's Area 8. According to the Atomic Energy Commission's Albuquerque Operations Office, the apparent low bid of \$130,886 has been received from Hugo Muller Construction Company of Oakland, Calif., for construction of the facility.

The facility was designed to provide the means for testing materials and components under conditions in which pressure buildup may approach that resulting from an equivalent of 10 pounds of high explosives.

Design concept for the structure was originally used by Monsanto Chemical Company and Armour Research Institute in the study of fast chemical reactions.

Ed Litzaw of Advanced Development Division 8153 is developing test equipment and instrumentation, much of which will be specially designed. Gary Beeler, Don Bohrer, and Ron McClellan (all 8153) will be responsible for projects conducted in the new facility.

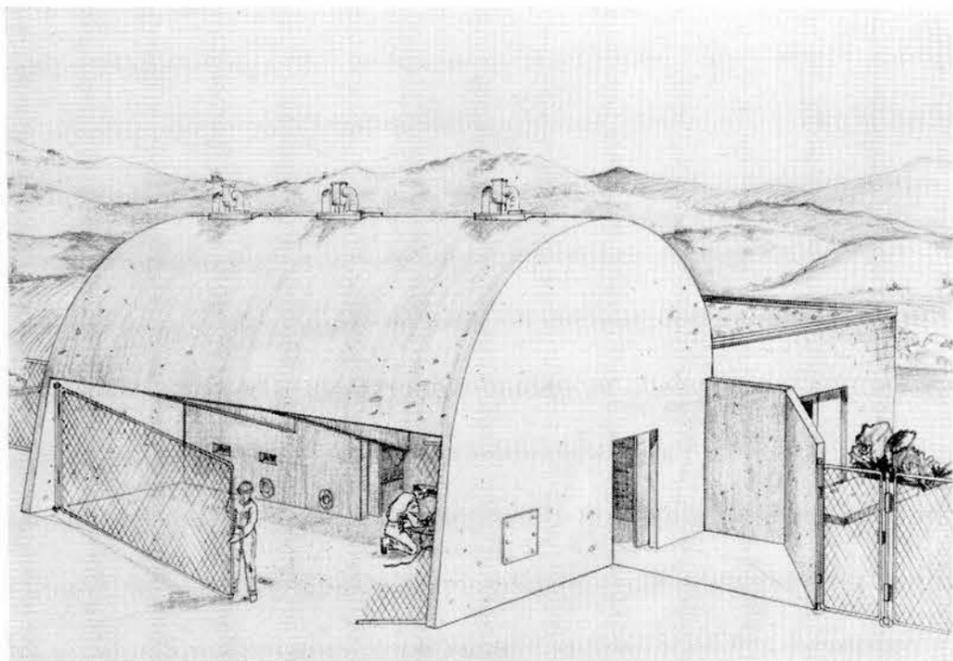
Personnel of Plant Engineering Division 8251 working on the project include Dick Wilhite, Len Bedinger, and Jim Harter.

The building will contain 1420 square feet of space. Part of the structure is a modified igloo shape of concrete containing two test cells and an equipment room. The balance of the building is flat roofed and has masonry walls of standard construction. It will contain a control room where employees may remain to operate instruments while tests are conducted.

Steel rods will be used to reinforce the concrete walls around the test cells. These test cells will have a forced dual ventilation system.

The only openings between the cells and the control room will be pipe sleeves one inch in diameter. Control valves and instrumentation leads will be installed. Heavy glass camera ports will be located in the outside walls of the cells.

Work is scheduled for completion within 130 calendar days after the contractor is asked to proceed.



ARTIST'S SKETCH shows exterior of the new pressure test facility (Bldg. 966) planned for construction in Area 8 at Livermore Laboratory. Total construction costs will be \$130,886.

Standard First Aid Course Planned

Beginning Jan. 11, 1966, the first of a series of standard first aid courses will be offered to supervisors and employees at Livermore Laboratory. Instruction will cover the basic essentials for handling injuries or sudden illness (including control of bleeding), artificial respiration, shock, and poisoning.

The standard course of 10 sessions will be held from 12 noon to 1 p.m. on Tuesdays and Thursdays. Employees completing the five-week basic course will receive a certificate from the local chapter of the American Red Cross.

Instructing the classes will be W. T. Schmedding (8223), J. L. Wilson (8122), and W. B. Vandermolen (8111), three of the 18 employees who completed the Instructor's Course in first aid conducted at Livermore Laboratory during November.

Welcome Newcomers

Dec. 3-17

California	
*Timothy J. Cody, Castro Valley	8245
Gordon L. DeLaRosa, Hayward	8222
Bivens Lovest, Hayward	8232
Sharon M. Ward, Pleasanton	8253
*Dentex rehine	

Congratulations

Mr. and Mrs. Al Wright (8124) a son, Rodney James, Nov. 11.

Livermore Notes

The model airplane Radio Control Club of the LRL Recreation Association has procured for members' use a new transmitter and receiver (six channel proportional), and work has begun on the training plane. Those interested in the club's activities may obtain further information by contacting Roger McLain, LRL ext. 7326.

* * *

With a net low score of 68, Gene Aas (8161) won the first place trophy in the Dec. 17 Sandia Employee Golf Club Tournament. The straight handicap tourney was played at Dry Creek Ranch golf course in Lodi.

In the "throw-out 4-hole" feature, Gene also took first place with a score of 47 and Cliff Erickson (8252) placed second with a score of 50. In the second flight, Joe Buchler (8244) and "Ollie" Olivotti (8117) tied with scores of 50.

Bill Carter (8252) won a special award for coming closest to the pin at the No. 11 hole.

The next SEGC tournament will be held at Spring Valley golf course at Milpitas Jan. 8. Those interested in participating may contact Elmer Smith (8162), ext. 2738; Tom Dadian (8115), ext. 2318; or Joe Genoni (8232), ext. 2433.

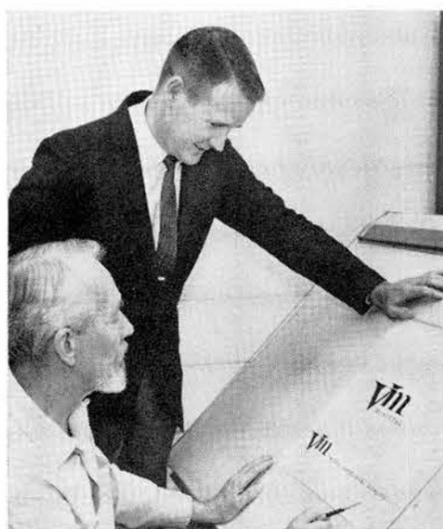
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LAB NEWS

DECEMBER 31, 1965



CHRISTMAS DISPLAY at Livermore Laboratory features the traditional luminarias and a mission church scene mounted on the roof of Administration Bldg. 911. Technical illustrator John Daniel (8233), created the "stained glass" windows by arranging strips of colored cellophane on plastic panels. The display will be up through Jan. 2.



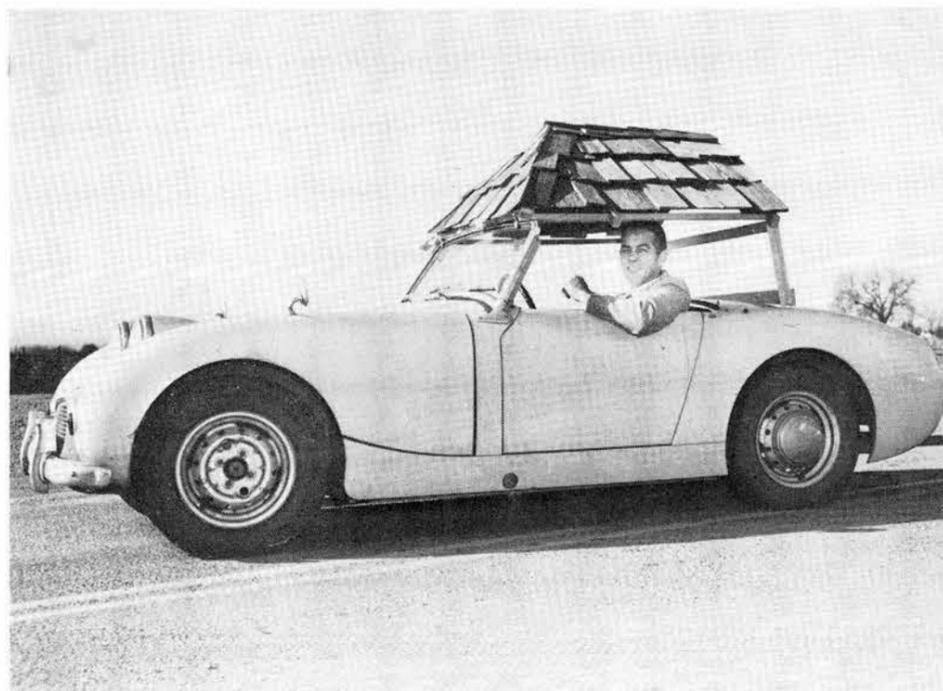
R. L. PEURIFOY (8120), Valley Memorial Hospital Campaign Chairman for Sandia, discusses application of the new "VM" insignia with designer Ben Aiken (8233). Considered for adoption as the official hospital symbol, the insignia will be used on buttons, pledge cards, letterheads, and brochures during the valley-wide campaign to raise \$800,000 toward a \$2.2 million expansion program. C. R. Barncord (8150) is General Chairman of the campaign. The drive at Livermore Laboratory will be Jan. 16-22.

Sympathy

To Ed Williams (8122) for the death of his father-in-law in Hamilton, Ohio, Dec. 8.

To Don Gregson (8110) for the death of his father in Grinnell, Iowa, Dec. 9.

To Glenn Smith (8252) for the death of his brother in Stockton, Calif., Dec. 8.



1965 "SURREY WITH THE FRINGE ON TOP"—Livermore Laboratory's latest head turner is Ernie Bishop's (8115) sports car with its cedar shake roof. After 78,000 miles of wear, the soft top of Ernie's blue 1960 Sprite was in shreds and the winter rains were approaching. As a revenge to friends' ribbing, he designed and built a custom-made top of scrap lumber left from his home—and the price was right.

94550 Is Livermore Laboratory's New ZIP Code Number

As part of a nation-wide program to streamline the ZIP Code system, the Livermore Post Office has announced that effective Jan. 15, 1966, a single five-digit ZIP Code number will serve the entire community of Livermore. Under this simplified system, all postal customers of Livermore, including Sandia, will use the ZIP Code area number 94550.

To avoid inconvenience, mail users may continue to use all current stocks of name and address stickers, stationery, envelopes and other printed mailing supplies until the present supply is exhausted. Only the last digit has changed and mail sent on stationery containing the former ZIP Code will in no way be delayed.

Ski Weekend Set At Squaw Valley

The LRL Recreation Association travel club is offering a ski weekend at Squaw Valley for LRL or Sandia employees and members of their families.

The group will leave Friday evening, Feb. 18, and return on Sunday, Feb. 20. Cost of the trip will be \$28 per person for three per room, \$29.50 for two per room, and \$37.50 for a single. A \$10 deposit is required by Jan. 14. Included in the cost are round trip bus transportation, two nights' lodging, two breakfasts and two dinners, reduced fees for ski lift and lessons, free ice skate rentals, and Saturday night bus connection to and from the North Shore of Lake Tahoe.

For additional information, contact Chris Frank (LRL Berkeley) ext. 5841.

Many Projects Accomplished

1965 a Memorable Year

The end of a year is always a time for reflection on activities and accomplishments during the past 12 months. The period has been a busy one for Sandia with a wide variety of projects underway.

January

The Atomic Energy Commission and Sandia Corporation jointly sponsored an International Symposium on Packaging and Transportation of Radioactive Materials. Some 350 U.S. and international attendees heard 37 unclassified technical papers, including two presented by Sandians.

A. Y. Pope was named Director of a new organization comprising the Aerospace Nuclear Safety Department and Aero- and Thermodynamics Department.

Sandia Laboratory fire losses during 1964 totaled \$279 from four minor blazes.

February

Members of Governor Jack M. Campbell's Scientific Advisory Committee visited the Sphere of Science, wind tunnel facility, plasma jet laboratory, materials laboratory, and computer center.

Ten foreign patents were issued on three items invented by Sandians.

Sandians made long-range blast predictions and manned microbarograph stations as the Navy conducted Operation Sailor Hat off an uninhabited Hawaiian Island. TNT was used to test the ability of modern and future ship structures to withstand shock and air blast pressures underwater.



PARACHUTE LAB marks anniversary.

The 2000th drop of a Sandia-designed parachute was marked by a display of various types of 'chutes, including those used to recover payloads from a rocket fired 200 miles aloft, and those used in tests of RFD-2.

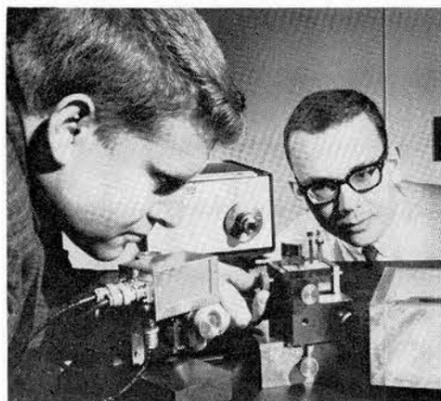
Construction projects underway at both Sandia and Livermore Laboratories amounted to an increased investment by the AEC of over \$11.5 million.

Plans were announced to fire some 50 weather rockets off the west coast of South America to obtain meteorological data as part of a NASA program during International Quiet Sun Year.

April

The AEC Award of Honor was presented to Sandia Laboratory for having completed 3,741,124 continuous man-hours of work without sustaining a disabling injury.

Sandia Corporation evaluated the operational safety aspects of nuclear power sources for the SNAP-10A reactor launched into space from Vandenberg AFB on Apr. 3.



LASER INTERFEROMETER demonstration at Livermore Laboratory.

Engineers demonstrated a new LASER interferometer instrument developed at Livermore Laboratory. The instrument, capable of measuring length with a resolution to within 1.6 millionth inch, has wide applicability in industry and research laboratories.

Construction of additional office space and a new test facility was completed at Livermore Laboratory's Area 8.

Sandia Corporation's board of directors met at Livermore Laboratory.

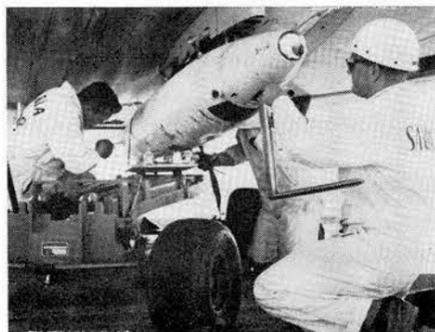
May

A charter for a local chapter of the Wise Owl Club of America was received and four employees became charter members—they had all avoided eye injury by wearing safety equipment on the job.

Two groups of Sandians left for the South Pacific to take part in experiments in connection with the May 30 total eclipse of the sun. One group "chased" the shadow in a NC-135A flying laboratory; others launched instrument-carrying rockets from Rarotonga in the Cook Islands.

The new report center addition to Technical Library Bldg. 804 opened featuring classified and unclassified documents in one location, plus reading areas for use of the documents.

"Get the Facts" was the theme for a U.S. Savings Bond drive which started May 24. Meetings were held to inform employees about the advantages of such purchases. The yearly investment by employees in savings bonds increased to \$600,000, and the number of participants jumped from 935 to 3178.



INSTRUMENT pod for JTF-2 test.

June

At Tonopah Test Range, aircraft participating in JTF-2 tests completed 172 low-level flights over a specially-marked 150 mile course. Sandia organizations assisted in preparing for the tests, instrumenting the planes, and gathering data during the flights. Afterwards, there was the job of data processing and interpretation of the gathered information for use in reports.

Livermore Laboratory received its fifth Award of Merit from the AEC for completing 1,177,128 man-hours without a disabling injury during the period August 1964 through April 1965.



LIVERMORE LABORATORY receives AEC Merit Award for safety on the job.

A Sandia rocket sled set a new speed record (6200 ft./sec.) at the Holloman AFB 35,000-foot track. This was the first time a sled had met test objectives (in this case, to relay pressure measurements) at speeds over 5400 ft./sec.

Bids were opened for construction of a high velocity 5000-foot sled track in Tech Area III. It will replace the existing low-velocity facility in use since 1954. Cost of the new environmental test facility was estimated at \$1 million.

Upper atmosphere studies continued in Hawaii with launchings of 18 rockets to 100,000-500,000-foot altitudes. Scientists are interested in wind currents, atmospheric temperatures, and densities.

July

Seventy students were hired at Sandia Laboratory and 10 at Livermore Laboratory for temporary summer jobs in support of President Johnson's Youth Opportunity Campaign. The program was designed to assist young people from 16-21 to continue their education.

Three-year contracts were signed between Sandia Corporation and Office and Professional Employees International Union, Local 251, and Atomic Projects and Production Workers, Metal Trades Council. The Agreements will continue until midnight July 5, 1968.

Payroll figures for Fiscal Year 1965 (ending June 30) included \$68.4 million at Sandia Laboratory and \$9.2 at Livermore Laboratory. Purchases by Sandia Corporation in New Mexico amounted to more than \$20.3 million. AEC-owned assets at all Sandia Corporation locations totaled \$175 million.

Sandia-designed integrated circuits for the logics systems were carried aboard the third set of Vela detection research satellites placed in orbit this month.

August

AEC Chairman Glenn T. Seaborg lauded Sandia's "significant contribution to the success of the Vela Satellite Detection Program." In a letter to President S. P. Schwartz, he added, "The excellent performance and high reliability of the space-based data processing electronics, designed and fabricated by Sandia, are remarkable accomplishments and are clear evidence of the great technical competence and professionalism of your laboratory."



PRE-SCHOONER II high explosive shot in Idaho.

September

A group from Albuquerque participated in the Pre-Schooner II experiment in Idaho, which was carried out to determine properties of volcanic rock in the Bruneau River area. An 85-ton charge of liquid high explosive was used in the cratering study.

October

A three-year contract, effective Oct. 1, was signed between Sandia Corporation and the International Guards Union of America, Local 27.

The annual Employees Contribution Plan fund drive, which ended Oct. 15, raised a record \$243,270 for United Fund and eight other health and welfare agencies.

An air pollution study of the Albuquerque area received assistance from Sandia in the form of a camera, which will make time-lapse photographs of pollution buildup and dissipation.

A handful of Sandians were on hand as an 80-kiloton nuclear device, buried 2300 feet underground, was exploded on an Aleutian Island (Amchitka). The Department of Defense test, named Project Long Shot, was primarily to measure seismic signals.

Employees at Livermore Laboratory contributed a record \$18,674 to the United Bay Area Crusade.

November

Some 145 Sandians were Pacific-bound to participate in non-nuclear air drop tests authorized by DOD-AEC. The exercises help maintain facilities, resources, and crew proficiency in a state of readiness.

Design was completed for an unmanned seismic observatory to be used in remote locations to detect nuclear detonations. Testing and evaluation of the system will start the first of the year. The unit, which would be buried, contains a tape recorder, electronic systems, and seismometers.

Plans were announced for addition of a second pulse reactor for studies on the behavior of electronic systems and circuits during and following intense neutron bombardment.

December

Preliminary design for a \$2.5 million plasma arc testing facility was completed. The very high temperature supersonic wind tunnel will enable testing of materials or scale models in conditions simulating re-entry of a space vehicle into the earth's atmosphere.

Safety evaluations were underway for SNAP-19 isotope powered generators for the Nimbus B weather satellite program. Design criteria and test results were being studied to assure that no safety hazard would exist during launch, controlled flight, or re-entry. The launch is scheduled for 1967.

Cost improvements totaling nearly \$3.2 million over a two-year period have been reported to the AEC. This represented 42 cost improvement cases.



READING ROOM in Technical Library at Livermore Laboratory.

Alterations and rearrangement of Livermore Laboratory's technical library facility were completed. The changes provide additional space for reference study and will improve the operating efficiency of the library system.

Plans were announced for construction of a new pressure testing facility in Area 8 at Livermore Laboratory. Construction costs will be \$130,886.



CLEAN ROOM treatment for space probe.

A conceptual model of a planetary lander vehicle and bacteria sampling devices were used in an evaluation of Sandia Laboratory's clean room facility.

More than 2500 employees and family members toured Livermore Laboratory's facilities during Family Day.



FAMILY DAY at Livermore Laboratory.

March

Livermore Laboratory received its fourth National Safety Council Award of Merit for having the lowest accident frequency rate in the 1,200,000 to 2,000,000 man-hours-worked group.

Approximately 90 members of the Golden Gate Chapter of the ASTM toured selected areas of Livermore Laboratory as part of the group's monthly technical meeting.

Albuquerque seemed summerlike to a small group of Sandians who returned from study of the upper atmosphere 600 miles from the Arctic Circle. Rockets were fired 60 miles into space to obtain data on the auroral spectrum.

Service Awards

20 Years



C. R. Bamcard
8150



D. E. Grim
1544



R. A. Knapp
7530



R. P. Matthews
9232

15 Years



N. R. Carpenter
1413



D. O. Cook
8111



D. P. Fifield
7223



M. P. Forster
4221



K. A. Gillespie
1333



L. M. Guier
2132



C. C. Kinney
3463



H. P. Kovaschitz
4213



Ramon Lamberson
2523



Dorothy Lewing
9413



N. C. Lowe
4542



E. G. Mares
4253



N. K. Molter
2212



F. J. Murar
8125



E. E. Pierce
4517



R. L. Schneider
2413



William Schober
4517



D. D. Sheldon
2514



W. O. Short
4512



C. E. Spriggs
3465



B. G. Valencia
3242



O. W. Wallen
8244



Conroe Wyman
4512

10 Years

Jan. 1-13

R. A. Harley 1541, C. A. Loveless, Jr. 8127, E. G. Dlouhy 2212, Manuel Cordova 7324, F. N. Rebarchik 1123, W. F. Cronk 2213, G. A. Ray, Jr. 1331, and A. L. Ouellette Jr. 5234.

Go-Go Party, Dance Class Scheduled at Club

Two activities for the teenage sons and daughters of Coronado Club members initiate January's special events at the Club.

"Teenage Go-Go" is the billing for a party Saturday, Jan. 8. A pizza buffet will be served from 6:30 to 7:30 p.m., followed by dancing to the Morticians until 10:30 p.m. There will be "go-go girls" to demonstrate the latest dances, and Don Lincoln, local disc jockey, will be master of ceremonies.

The cost for this big evening of entertainment is 50 cents and reservations should be made in advance at the Club office, tel. 264-4561.

Also on Jan. 8 there will be registration at 1 p.m. and the first lesson of a new teenage ballroom dancing class. John and Sissy King will instruct the course, which will continue for eight weeks.

*61 VW 6-passenger pickup w/tarp and bows, less than 60,000 miles, sell under book retail. Shreve, 898-3407.

WANTED

SKI OUTFIT for young boy, can trade lawn-seeder, carpenter's level, or cash, or will sell lawn seeder. Curkendall, 298-4738.

USED 7.00x15 6-ply tires. Shepherd, 299-9066.

BOAT, 12' or 14' alum. with or without motor. Geilenfeldt, 265-0294.

FOR RENT

2-BDR. furnished or unfurnished apartment, automatic washer, \$75 or \$90, no pets, 8322 Trumbull SE. Villella, 268-4731.

3-BDR. unfurnished house NE section, near Cortez elementary and Monroe Jr. Hi. Savage, 268-2308 after 6.

UNFURNISHED house to couple only, glazed entry, wood paneled, wv carpet, wb fireplace, basement, large BBQ on shaded patio, walled garden, unusual features. Turner, 344-7082.

LARGE FURNISHED room w/bath and fireplace, kitchen privileges, 1 or 2 females, NE Heights. Yates, 299-4968.

LOST AND FOUND

LOST—Car keys in grey case, 3-blade pocket knife, gold leaf earring w/pearl, "Cross" sterling pencil, prescription safety glasses, empty blue suitcase, men's prescription sun glasses. LOST AND FOUND, tel. 264-2757, Bldg. 610.

FOUND—Ladies black glove, 2-blade pocket knife, sterling and turquoise brooch, men's safety glasses, men's brown sweater, 2-blade pocket knife. LOST AND FOUND, tel. 264-2757, Bldg. 610.

SHOPPING CENTER

FOR SALE

SELL OR LEASE: 3 bdr. Roberson in Mesa Arriba Addition, \$16,700 GI or FHA; \$140/mo. w/1 yr. lease. Murphy, 256-1130.

KROEHLER three-piece Early American sectional, \$30; table lamp, \$3; floor lamp, \$3; desk chair, \$3. Miller, 255-1324.

COMBINATION sofa-bed, \$17.50. Roth, 877-4997.

'56 CHEV station wagon 4-dr. V-8, standard, new clutch, Konnick, 268-6409.

COLT Woodsman and early frontier .44 revolver, trade for old hunting knives or pay cash for knives. Smitha, 299-1096.

3-BDR., 1 1/2 bath, sprinklers, near grade and jr. high schools, just painted outside, floors re-finished, 701 Indiana SE, \$13,350. Troy, 268-9079.

'63 PONTIAC Tempest convertible, red, one owner, 28,000 miles, R&H, AT. Keegan, 255-1063.

RELOADING SET for 12 ga. shotgun, \$14. Geilenfeldt, 265-0294.

LUGGAGE RACK for compact cars, Renault, VW, etc., chrome plated tubular steel complete w/ matching tarp, \$14. Schaechter, 3391 51st Loop Sandia Base, 264-1886.

BICYCLE, 24" boy's, \$15; Volkswagen wheel and tire, \$6. Shepherd, 299-9066.

TYPEWRITER, portable Smith-Corona "Silent-Super" '57 model, make offer. Gallegos, 298-4872.

SCHWINN girl's bicycle, 26", \$15; teal blue velvet dress w/jacket, lined, size 12, \$12. Porter, 298-3623.

AM RADIO, record changer in mahogany cabinet, \$20; Sunbeam electric mixer, serviceable, \$5. Volk, 299-1702.

MOTOROLA portable stereo, \$25; 6-drawer desk w/ lamp, \$20; dark natural mink shrug, \$17.5. Miller, 255-6838.

'63 FORD Galaxie 500, 4-dr. sedan, AT, power, low mileage, one owner, \$1400. Smith, 296-1049.

2-BDR. and den, carpeted, newly decorated, AC, sprinklers, attached garage, below appraisal price. Dalesandro, 268-8907.

BOOKCASE headboards for twin beds, lined oak, \$15 each. Machen, 298-1698.

3-BDR., DEN w/fireplace, 1 1/4 bath, brick veneer. Cole, 255-7921.

'56 CHEVY SPORT 2-dr., new 327 engine guaranteed 1 yr., 30-30 cam, 4-barrel, Herst floor shift, roll and tuck, carpet, instruments, best offer. Miller, 298-8634.

FOLDING DOORS, accordion type, heavy duty, two pieces each 8' wide, 7' tall, ideal closet doors or room separator. Mikkelsen, 268-1485.

WOMEN'S SKI BOOTS, size 9 narrow, \$10. Wagner, 268-7868.

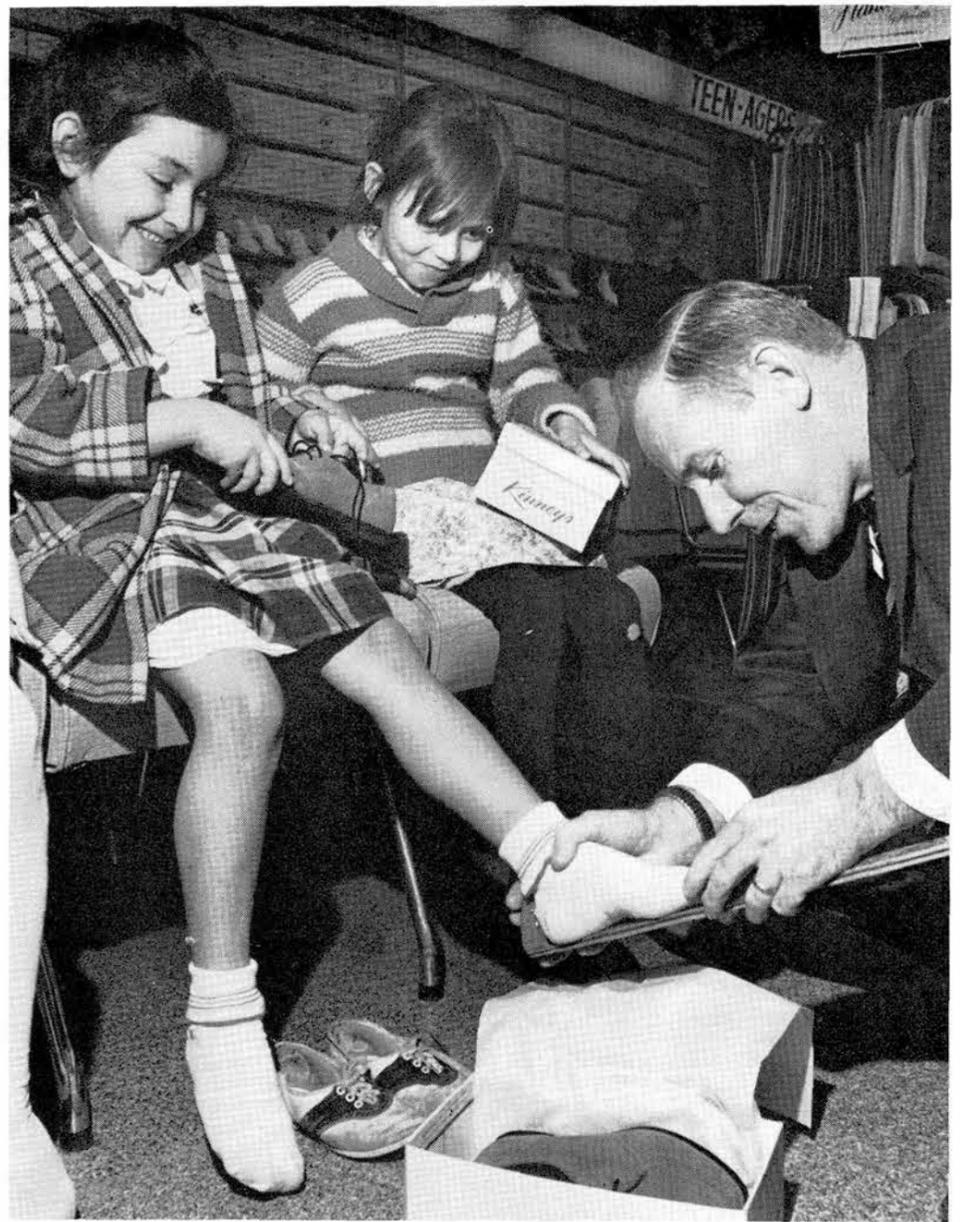
NORGE GAS RANGE; Adams pattern Community plate flatware, salad forks and odd pieces; cuckoo clock, hand-knit dress, size 16. Weaver, 242-5560.

'62 VOLKSWAGEN 1300 sedan, will take \$300 for my share and take over payments. Lobley, 268-8276 after 5.

'59 CHEVY Sport Coupe, 37,000 miles, full power including air. Hamilton, 256-9755.

'59 HARLEY DAVIDSON. Paxton, 268-4454.

BOLT ACTION Mossberg .22 cal. rifle, 4-power target scope, holds 21S, 19L, or 17LR shells, \$20. Doggett, 299-7957.



MILITARY LIAISON ORGANIZATION 7500 raised more than \$400 this year for its "Shoes for Kids" Christmas project. The annual fitting for Riverview Elementary School students took place Dec. 16 at Kinney's Shoe Store, 8900 Central SE. Committee member Floyd Hursh (7522) was on hand to help with measurements.

Join the Coronado Trip to Mexico

When cold temperatures and snow have you fighting winter fatigue, that's the time to head for sunny Mexico. The easy way to travel? Join the Coronado Club's trip in February, custom tailored to your wishes and pocketbook.

According to Pearson Crosby (AEC/ALO), the Club's travel director, the tour is planned for Feb. 12-26 to cover some of the pre-Lenten carnival season events.

The group will leave Albuquerque Feb. 12 by air for El Paso. That evening the Sandians will board a Mexican train for the two night and one day trip to Mexico City. There the planned activities include a half-day tour of the city, a full-day tour to the Shrine of Guadalupe and pyramids, and an evening at the Folklore Ballet.

Friday morning the group will travel by motorcoach via Cuernavaca to Taxco for an overnight stay, then on to Acapulco the following day. After four "unplanned" days in Acapulco, the group will fly to Guadalupe and spend the next two days visiting the scenic and historic sights in that area. On Feb. 26, the Coronado travelers will fly back to Albuquerque.

The charge per person will be around \$350, depending upon hotel accommodations desired and Pullman charges. This includes all transportation, hotel rooms, English-speaking guides, sightseeing fees, and 14 meals.

Reservations will be limited to 50 persons, with Coronado Club members having first priority. Payment in full must be made by Jan. 17. If additional spaces are available after that date, guests of Club members can join the trip.

Full information is available at the Club office.

Welcome Newcomers

Dec. 13-24

Albuquerque	
*Katherine P. Foster	2234
Dorothy Jordan	3126
William J. Moye	2213
Cleodia Snipes	2553
Maria G. Telles	3154
Lucille Trumble	3126
Pennsylvania	
William C. Nickell, Warminster	2421

*Denotes rehire

Other Club Activities

Hard Times Party

Broke from Christmas bills? Relax at the Coronado Club's Hard Times Party on Saturday, Jan. 15. The appropriate menu will include Mulligan stew, salad, rolls, and beverage. And to add to the fun, plan to wear costumes in keeping with the party theme—maybe you'll win a prize. Festivities will start at 7 p.m. and Tommy Kelly's combo will play for dancing until 1 a.m. Make your reservations early at the Club office, tel. 264-4561. The cost: \$1.50 for members, \$2 for guests.

Dance Instruction

The Club's ever-popular dance instruction course for adults will start Jan. 10 and continue for 10 weeks. Beginners will meet from 7-8:30 p.m., and advanced students from 8:30-10 p.m. Gail and Jennifer Ward will teach the American dances, and Holly and Charles Balistrere will instruct the Latin dances. Cost of the course is \$15 per couple.

Social Hours

The first social hour of 1966 (on Jan. 7) will feature the chicken buffet (\$1.25 for adults, \$1 for children) and dancing to the music of Sol Chaves' group.

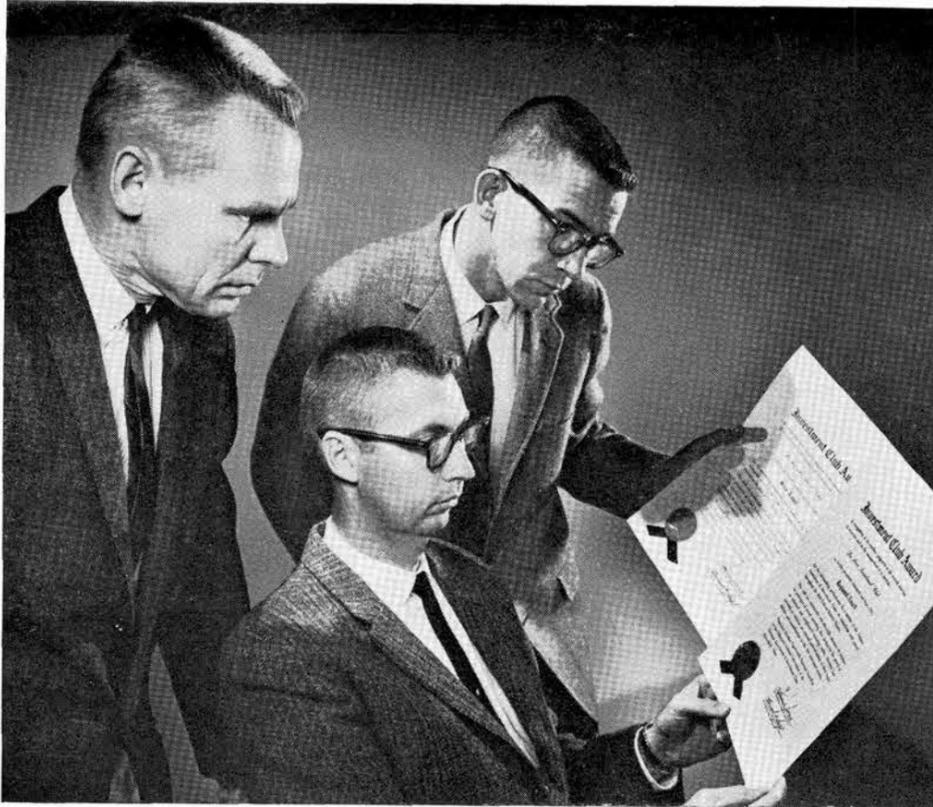
Sanado Luncheon

The popular entertainer Suzie Poole will present "An Afternoon of Song" during the Sanado Woman's Club luncheon Tuesday, Jan. 11. The event will start at 1:30 p.m. Reservations should be made with Mrs. Brooks, 298-5133.

Bridge Club

The Coronado Bridge Club elected new officers during a December meeting—John Nakayama (1513), president; R. E. West (1422), vice president; Pat Waggoner, secretary; Bill Hickerson (3462), treasurer; and Roman Hauer (4212), statistician.

The officers have already met to plan a program of events for 1966. Regular bridge club play will commence Jan. 3. On Jan. 10 the Open Team of Four Championship will be held. Play starts at 7 p.m. at the Coronado Club. Club championship events are limited to Coronado Club members.



LOS TOROS INVESTMENT CLUB officers admire two awards received recently for the outstanding performance of their group. From left are Vic Sirwinski (2444), vice president; Art Littleford (2442), president; and Murl Moore (4114), treasurer and agent.

1965 Awards of Merit Earned By Los Toros Investment Club

Maintain an annual growth rate of 20 per cent and double the investment in five years. This is the goal of the Los Toros Investment Club. Its 18 members are Sandians. In its almost two years of existence, the club so far has managed to stay on schedule.

The club's record was recognized recently by two awards made by Standard and Poor's Corporation for outstanding performance by a National Association of Investment Clubs affiliate.

The awards recognized the Los Toros club for achieving the highest rate of growth of any NAIC club in New Mexico and in the 10th Federal Reserve District, which includes northern New Mexico, western Missouri, Wyoming, Colorado, Kansas, Nebraska, and Oklahoma.

Officers of the club are Art Littleford (2442), president; Vic Sirwinski (2444), vice president; Murl Moore (4114), treasurer and agent; and W. M. Whalen (4114), secretary.

The club was organized in December 1963 with 12 charter members.

Members contribute \$10 each month and meet during the noon hour on the first Friday of each month to decide on the stocks to be purchased. A stock selection committee with rotating membership (every member serves) studies various stocks and reports to the membership on findings. NAIC guidelines for stock selection are used.

Deaths . . .



William J. Prokosch, a retired Sandia employee, died Dec. 19 after a short illness. He was 68.

Mr. Prokosch retired three years ago after nearly 15 years at Sandia. For half of that period he was a taxi driver in Motor Pool Services.

Survivors include his wife, two sons, and a sister.



Harold M. Brown, Sr., a retired Sandia employee, died in San Diego, Calif., Dec. 8 after a lengthy illness.

He retired from Sandia four years ago after nearly 12 years employment here. He was a specifications engineer in Components and Equipment Specifications organization.

Survivors include his widow and a son in San Diego, and a married daughter in New Jersey.

"It's a democratic organization," Murl Moore says. "That means that everybody argues and everybody votes. Most members use the club as a school. We belong to learn something about the stock market and to gain confidence in investing. Most of us have gone on to making our own independent investments."

The club's portfolio is now worth approximately \$4000.

Sandia Authors

G. A. Samara (5132), "The Compressibility of Bismuth and Its Upper Transition Pressure," September issue, JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS; "Pressure Dependence of the Dielectric Constant of Strontium Titanate," Nov. 1 issue, PHYSICAL REVIEW.

W. J. O'Sullivan (5151), "The C1 Nuclear Magnetic Resonance in $CuCl_2 \cdot 2H_2O$," Nov. 29 issue, PHYSICAL REVIEW.

R. G. DeZeeuw (5122), "A Device Used for Determining Magnetic Field Strengths During Magnetic Field Strength Variations," November issue, REVIEW OF SCIENTIFIC INSTRUMENTS.

W. J. Halpin (5133), "Current from a Shock-Loaded, Short-Circuited, Ferroelectric Ceramic Disc," January 1966 issue, JOURNAL OF APPLIED PHYSICS.

J. M. Worrell and H. H. Wicke (both 5421), "Characterizations of Developable Topological Spaces," Vol. 17, 1965, pages 820-30, CANADIAN JOURNAL OF MATHEMATICS.

F. L. Vook (5211), "Thermal Conductivity of Electron Irradiated Silicon," Dec. 13 issue, PHYSICAL REVIEW.

W. E. Warren (5251), "Electrostrictive Stress Singularities in Angular Corners of Plates," Vol. 16, No. 4, pages 531-34, ZAMP (a German publication).

W. W. Allison (3211), "High-Potential Accident Analysis," December issue, NATIONAL SAFETY NEWS.

C. P. Canady (2522), "Standardization of Environmental Testing Methodology," December issue, TEST ENGINEERING.

Sympathy

To David C. Hake (4514) for the death of his mother Dec. 5 in Albuquerque.

To Neal N. Rozell (4511-2) for the death of his father Dec. 12 in Albuquerque.

To Lorenzo D. Duran (4513-4) for the death of his father-in-law recently.

To Cornelio S. Sandoval (4514-3) for the death of his father-in-law Dec. 12.

To A. D. Foster (9325) for the death of his father in Gibsonburg, Ohio, Dec. 13.

To Margarette W. Davis (2512) and David B. Davis (7225) for the death of their husband and father in Albuquerque, Dec. 21.

To L. J. Klamerus (2541) for the death of his mother in St. Louis, Dec. 11.

To W. C. Connelley (2548) for the death of his wife in Albuquerque, Dec. 16.

Giant Carrots and Choice Produce 'Organically' Grown by Webb Shafer

From a plot of ground that "couldn't grow weeds five years ago," Webb Shafer (2525) is producing an abundance of vegetables, including carrots four inches in diameter. His secret is "organic gardening."

Webb doesn't believe in commercial fertilizers or insecticides. Instead, he uses compost—four or five tons of it—to enrich the alkaline soil of his North Valley garden. The garden is about 75 by 90 feet in size.

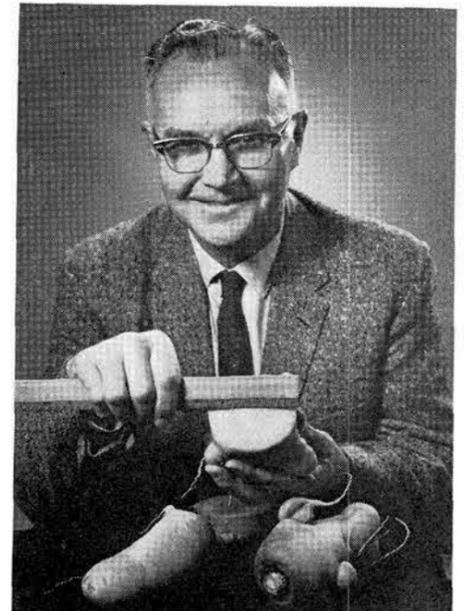
"When I started," Webb says, "The ground was so alkaline that it would turn white after a rain or being irrigated. First thing I did was to plow leaves into it and I've added more organic material to it each year."

Webb's freezer is full of the vegetables of his garden, all choice produce. He was especially proud of his eggplant, cantaloupes, and kohlrabi, a kind of cabbage.

Some vegetables such as dry onions and winter squash keep well without special handling. He will let the carrots stay in the ground covered with soil during the winter and dig them up as he needs them.

Future plans call for developing perennials such as asparagus, rhubarb, and horse radish. He also intends to add several varieties of dwarf fruit trees.

Special bonus of Webb's garden is the fishing worms. "It's full of them" he says, "and I love to fish."



GIANT CARROTS are displayed by Webb Shafer (2525). About four inches in diameter, the carrots are firm and sweet.

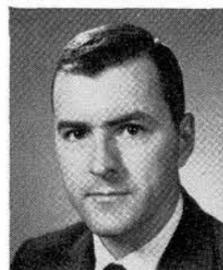
S. P. Koczan Aids Cost Improvement

Last issue of the LAB NEWS featured an article about the \$3,200,000 in cost improvements accrued by Sandia Corporation employees in 42 actions reported to the AEC. S. P. Koczan (8154) made significant contributions to the Value Engineering Workshop team at Livermore Laboratory which challenged the requirements and specifications of a family of explosive valves. The efforts of the team reduced the number of destructive tests required for the valves by 60 percent and achieved a savings of \$427,000. Due to an oversight, Mr. Koczan's name was not included in the article.

Events Calendar

- Dec. 31—Coronado Club's gala New Year's Eve party.
- Jan. 1—Indian dances at Cochiti, Taos, San Juan, and Zia pueblos.
- Jan. 1—Annual climb up La Luz trail to Sandia Crest, N.M. Mountain Club, leader, Larry McCahon, tel. 268-4626.
- Jan. 9—Ingmar Bergman movie "Seventh Seal," followed by discussion led by Jim Morley, local director, 7:30 p.m., Newman Center, 1815 Las Lomas NE. Tickets 50 cents at door.
- Jan. 12—Albuquerque Civic Symphony, cello soloist Tsuyoshi Tsutsumi, Civic Auditorium.
- Jan. 14-15—13th annual UNM Opera Workshop presentation of Richard Strauss' "Ariadne auf Naxos." Tickets at the Fine Arts Center box office.
- Jan. 14—"Heart and the Young Businessman," free seminar, UNM Union Ballroom, 3-5:30 p.m., featuring nationally prominent heart specialist, Dr. Francis L. Chamberlain of San Francisco. Wives are welcome, too.

Supervisory Appointment



RICHARD E. SPALDING to supervisor of Satellite Systems Division II, 9234, Information Systems Department, effective Dec. 16.

Dick has been working full time in the organization since June 1962. Previously, he was a temporary summer employee, assigned in 1960 to Manufacturing Development organization, and in 1961 to Field Testing.

He received both his BS and MS degrees in electrical engineering from Purdue University.

Before attending college, Dick served four and a half years in the Navy as a communications technician.

Two Accidents Down Sandia Safety Record

Two accidents recently downed Sandia Laboratory's safety record.

On Dec. 16, an employee was getting out of a vehicle. He stepped onto an icy surface and twisted his left knee tearing a ligament. He was examined at Clinical Medicine Department 3330 and taken to a local hospital for treatment. After recovering at home for several days, the employee returned to work.

On Dec. 17, a maintenance employee was working on the water line in the Salvage Yard. He was in a trench which exposed the water line. As he worked on the line with an 18-inch wrench, the tool slipped. The force of his efforts carried the employee forward and he struck his chin on the edge of the trench injuring his tongue and jaw.

After x-rays were taken and an examination in Clinical Medicine Department 3330, the employee was taken to a local hospital for further treatment. He is recovering at home.

At the time of the first accident, Sandia employees had worked 15 days or 425,000 man-hours without a lost time accident.

Sandia's Safety Scoreboard

Sandia Laboratory:
9 DAYS
315,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:
196 DAYS
974,400 MAN HOURS
WITHOUT A
DISABLING INJURY