



S. P. SCHWARTZ (center) has been awarded the Department of Defense Medal for Distinguished Public Service. Present at last Monday's ceremonies were President Hornbeck and (right) Lt. Gen. H. C. Donnelly, Director, DASA, Washington, D. C., who made the presentation. The accompanying citation commended the former Sandia president "for more than 12 years of extraordinary personal contributions to national security."

#### Fourth Pair of Vela Satellites

## New Detection Twins Slated for Lift-off from Cape This Month

Two improved Vela nuclear detection satellites are scheduled to be launched from Cape Kennedy later this month. They will be deployed into a circular orbit approximately 60,000 nautical miles from earth.

Twelve Sandians will participate in the launch activities for the fourth pair of satellites which carry Sandia and Los Alamos Scientific Laboratory instruments. Meanwhile, the other six satellites continue to set performance records. The first pair, launched almost three and a half years ago, are the oldest, continuously-operating U. S. spacecraft providing useful data.

Payloads in the new five-foot satellites have improved capabilities for detecting nuclear bursts deep in the earth's atmosphere and for detecting detonation of shielded weapons and detonations behind the moon.

The satellites are also larger, each weighs 730 pounds compared to about 500 pounds for the earlier versions. They are polyhedrons with 26 sides, 24 of which are triangular solar cell panels. Those in orbit have 20 sides with 18 solar panels.

The six extra solar panels supply additional power required by the larger payloads.

Instrumentation includes eight X-ray sensors and four gamma-ray detectors all located in the apexes on the band around the center of the satellite.

Associated data processing electronics in

the payloads and special ground equipment to test the payloads were designed and fabricated by Sandia. The new twins also contain Sandia-developed detectors and power supplies.

The X-ray, gamma ray, and neutron detectors were designed by LASL. In addition, LASL provided new scientific experiments, including a charged-particle analyzer and a solar-proton telescope designed to measure background radiation, particularly that associated with increasing solar activity as the sun moves into the active portion of its 11-year cycle.

Electromagnetic pulse detectors, optical detectors, and the associated electronic systems are designed by Sandia to observe fireball light and ratio pulses emitted from nuclear bursts. Data gathered by the satellites are relayed to Air Force Satellite Control Facility ground stations around the world.

On the pad at the Cape, the two satellites will be mounted in tandem inside a nose cone atop the Titan 3C booster. The two satellites will be carried as a unit during the initial portion of the flight—involving thrust termination, coasting, trajectory change, and re-ignitions—to an altitude of about 27,000 miles. After the tandem satellites leave the carrier, the twins are separated.

About 24 hours after launch, the satellites will reach their apogee of 60,000 nautical miles. One will then be accelerated into a circular orbit by a command from earth. The second satellite will be ejected into the same circular orbit about 71 hours after launch. In the meantime, the first satellite will have reached a point about 160 degrees away. The pair will then be in the same orbits on different sides of the earth.

The Vela satellite program is the re-  
(Continued on Page Six)

## Local Students Invited To Visit Laboratory On Science Youth Days

Two hundred outstanding science seniors and sponsors from local high schools have been invited to Sandia April 13-14 in observance of the Laboratory's eleventh annual Science Youth Days.

Designed to encourage young people to pursue science and engineering careers, the annual program was held in February in the past to commemorate Thomas A. Edison's birthday. This year Sandia and Los Alamos Scientific Laboratory are conducting the program this month to take advantage of more favorable weather.

Science Youth Days were inaugurated in 1957 by the Thomas Alva Edison Foundation. Since then thousands of young science students and teachers have visited various Atomic Energy Commission laboratories and installations.

Sandia's program, which will be the same for both days, starts at 12:30 p.m. and ends at 4:30 p.m.

The visitors will arrive at Sandia's auditorium (Bldg. 815) where they will be welcomed by President Hornbeck. Richard S. Claassen, director of Physical Research 5100, will then address the group on "Science Is Done by People." Following the showing of a film entitled "Environmental Testing at Sandia," the group will tour various laboratories in Technical Area I.

Laboratories included on the tour program are electrical components (1322), fluidics (1325), electronic components (1432), analytical (1121), analytical (1122), surface chemistry (1133), flash heating (5234), analog computer (1314), and ferroelectric materials (1314).

# SANDIA LAB NEWS



VOL. 20, NO. 7, APRIL 7, 1967

SANDIA LABORATORIES

ALBUQUERQUE, NEW MEXICO  
LIVERMORE, CALIFORNIA

OPERATED BY SANDIA CORPORATION FOR  
THE U. S. ATOMIC ENERGY COMMISSION

## New 7100 Director Named

Byron F. Murphey has been appointed director of Underground Experimentation 7100, effective April 1.

The newly created directorate will include Test Sciences Department 7110, C. D. Broyles, manager; Nevada Test Site Instrumentation Department 7120, G. E. Hansche, manager; and Nevada Test Site Engineering Department 7130, C. S. Selvage, manager.

Mr. Murphey first joined Sandia in 1949 as a physicist in the weapons effect organization and was promoted to division supervisor before he left in 1953. He rejoined the Laboratory in 1958. A year later he was promoted to supervisor of the Underground Burst Physics Division. In May 1961 he transferred to Applied Research Division. Mr. Murphey was named manager of the Atmospheric and Underground Sciences Department 5230 in June 1962.

From 1953 to 1958, he was a leader of a physics section in the central research department of Minnesota Mining and Manufacturing Company in St. Paul, Minn. Previously he was a physicist with the Naval Ordnance Laboratory in Washington, D.C., for four years.

Mr. Murphey received his BA degree from the University of Montana in June



B. F. Murphey

1939 and his MA and PhD degrees in physics from the University of Minnesota in the spring of 1941 and August 1948 respectively.

He is a Fellow of the American Physical Society and a member of Sigma Xi.

## N.M. Section, Vacuum Society Plans Third Annual Symposium

The New Mexico Section of the American Vacuum Society will present its third annual symposium and equipment exhibition on April 19-21 at Holiday Inn with numerous Sandians participating in the program or in making arrangements.

M. K. Laufer (2411) is vice chairman of the section and D. G. Schreiner (5123) is secretary-treasurer. Mr. Laufer is also program chairman for the symposium. One of the features of the meeting will be the

presentation of \$100 to the University of New Mexico science student who writes the best paper on vacuum science and technology. L. M. Ford (4631) is chairman of the awards committee.

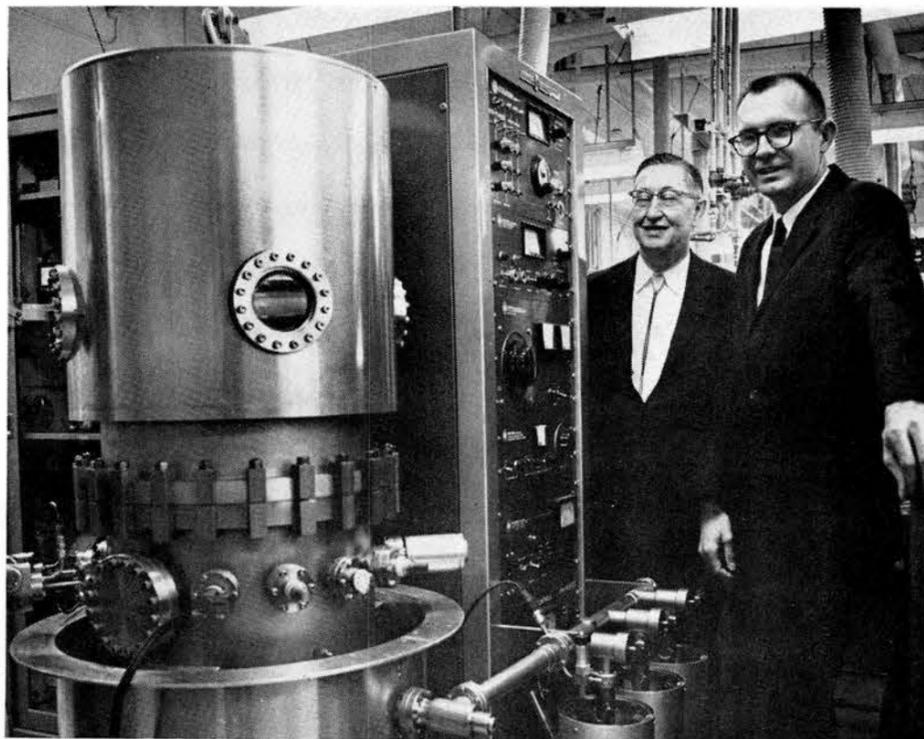
The exhibition of vacuum apparatus will be open to the public from 6:30-9 p.m. on April 19.

Dr. H. W. Schleuning of the Polytechnic Institute of Brooklyn, who is president of the American Vacuum Society, will make the keynote address on April 19. Sandia speakers making presentations during that afternoon session will be C. R. Byrne (4631), "Vacuum System for Rocket Carried Aurora Borealis Probe"; J. P. Myers (4214), "Encapsulation Machines Designed for Clean Room Application"; L. M. Ford (4631), "A Comparison and Evaluation of the Helium Pressurization and Radiflo Methods of Leak Rate Determination"; and D. G. Schreiner (5123), "Emergency Pumping for an Ultra High Vacuum System."

During the Thursday morning session, R. L. Park (5123) will discuss "Electronic Reduction of Tape Recorded Partial Pressure Data" and N. L. Knudsen (2564) will present a paper, "The Internal Atmosphere of Hermetically Sealed Components" (co-authors are W. E. Bergsten and J. F. McDowell, both 2565). Mr. Park will be moderator of the afternoon session.

The annual business meeting will be held at noon on Thursday and the annual banquet will be held that evening. Guest speaker will be Dr. F. C. Hibben, chairman, Department of Anthropology, UNM, who will speak on "Prehistoric Paintings from Pottery Mound Ruins."

The symposium will conclude Friday morning with a workshop on "Automated Thin Film Deposition," moderated by L. C. Beavis (1413), and one on "Vacuum Technology," moderated by C. R. Winkelman of Los Alamos Scientific Laboratory.



FORTHCOMING Third Annual Symposium on Vacuum Science and Technology has required arrangements by M. K. Laufer (2411), left, program chairman, and J. D. Williams (1433), who planned the workshops. (Beside them is an ultra high vacuum system.)



NEW LOCKED CABINET inside another cabinet now houses aspirin tablets and other drugs at the John Williams (7523) residence. His son David recently had a close call from too many aspirins.

### Editorial Comment

## Aspirin Kills Children

A locked cabinet inside another cabinet?

You can't be too safe is the way John Williams (7523) sees it. Especially now after his five-year-old son had a close call with the aspirin bottle.

One hundred and fifty children die each year in the United States from overdoses of aspirin tablets. Thousands are saved in the nick of time by a quick trip to the emergency room and the stomach pump . . . a traumatic, unpleasant experience.

John's son David was never in serious danger, but the experience was enough to scare any parent half to death.

Young David had already caught the bus to kindergarten one day recently when one of the older children reported to Mrs. Williams that the baby aspirin bottle was about empty. It was a new bottle of aspirin, recently purchased. It should have been full.

Some hurried telephone conferences with John and the doctor convinced Mrs. Williams that Dave should be picked up from school and observed closely for awhile. The doctor had said that David's weight and age, weighed against the possible dose, put the odds in favor of a mild reaction, if any. Still, a parent worries.

John picked David up from kindergarten and followed the doctor's orders to get a lot of liquid into the child. Everything turned out fine.

But John built a cabinet with a lock inside another cabinet to house "innocent" drugs such as aspirin. This cabinet is in addition to another locked cabinet in the garage where the cleaning fluids, charcoal lighter, bleach, and strong detergents are kept.

"We have four youngsters," John says, "and we've always been careful. You figure it can't happen to you. But it did. I want to urge all parents to take more precautions, be more careful."

Aspirin is a common drug, used often by everybody. It kills children. Lock it up to be safe.

## Sandians Take Active Role In Albuquerque Sports Car Club Program

Sports car clubs have been described as recreation for people with impractical cars, but John Michaels (5611), president of the Albuquerque Sports Car Club, Inc., prefers to call his group "a meeting ground for people with a mutual interest."

And interested they are. Of the 33 members, 80 percent are "very active" in the club's activities. John defines "very active" as perhaps helping to organize a major rally, which may require two months of planning.

The club was incorporated in 1954 and meetings are held the first and third Thursdays of the month at a garage at 5501 Acoma Rd. SE. Once a month a gimmick rally of some type is held after the regular meeting, but the club's big events for the year include five major rallies covering 175-300 miles each, six gymkhanas, two charity events, a rally school, and three purely social events. You don't have to be a member to drive in the rallies or participate in the gymkhanas or rally school.

Phil Class (1541), who is on the board of governors, notes that nearly all of the members do some mechanical work on their car or spend hours customizing or rebuilding them. "They're actually paternal about their cars," he says.

The rally school, which started Feb. 28, features a driver and navigator who explain what a rally is, what equipment is necessary, and how to compete successfully. On April 1, a full-fledged rally was held to give the students a chance to compete against more experienced drivers and navigators.

Rallying is a team effort requiring concentration on both the part of the driver and the navigator. Some teams will drive for miles without speaking. John is one of those navigators who never looks out the window. "Once," he recalls, "my driver said 'Look.' I did, and there was an owl with outspread wings coming straight for the windshield. The owl swerved in time to miss us, but I've kept my eyes directed toward the instruments ever since."

John and Ray Reynolds (1514) are making arrangements for the annual Rattle-

snake Ramble, to be held April 9. This is a six-hour straight time speed rally which requires the competing cars to be on course and on time all the time. Penalties are given for the number of seconds a driver is early or late in passing each speed check point.

"Our timetables allow for speeds 10 to 15 percent below the posted limit and drivers are disqualified if they receive any traffic ticket or are seen driving in a reckless manner, whether cited or not," John says. The club requires that participants in all events wear belts and it is recommended that drivers carry a fire extinguisher, first aid kit, and tow rope in their vehicles. Provisions are made for 10 or 15 minute "stretching" stops every two or three hours in the longer rallies.

The members thrive on competition. In previous years an "economy" run to Juarez, Mexico, was held. Based on miles per gallon (gasoline, that is) vs. weight, a race car won — but it was pulled by a Dodge.

### Retiring . . .



Charles E. Bennett, Sr., a laboratory assistant in Area I Vibration Division 7321, will retire April 28. He was employed by Sandia in July 1956 and has worked the entire time in the environmental testing organization.

Since November 1966, Charlie has been on an illness leave of absence from Sandia, and he and Mrs. Bennett have been living in Monroe, Conn. They prefer to live there during the summer and in Indio, Calif., during the winter. The Bennetts usually return to Connecticut to spend the Christmas holiday season with their two children and seven grandchildren.

Charlie has had many hobbies, but the one that continues to interest him is leatherwork.



### Papers to be Presented at Environmental Sciences Meet

Seven Sandians will present technical papers at the Institute of Environmental Sciences meeting to be held April 10-12 in Washington, D.C.

Speakers from Environmental Testing 7300 include R. W. Kelley, "Instrumentation for a Ballistic Pendulum Shock Calibrator"; D. M. Dorsey, "Wide Dynamic Range Remote Control System. A Theoretical and Empirical Study"; F. R. Gustke, "Portable Environmental Sampler"; R. L. Henderson, "High Speed Water Tunnel Testing" (J. P. Finger, author).

Representing Engineering Dynamics Division 1541 are J. T. Foley, "An Environmental Research Study"; R. A. Harley, "Impromptu Vibration Data Acquisition with the ELI-31 Recorder"; and M. B. Gens, "The Environmental Operations Analysis Function."

## SANDIA LAB NEWS



**SANDIA LABORATORIES**  
ALBUQUERQUE, NEW MEXICO  
LIVERMORE, CALIFORNIA

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GRAND AWARD in the recent National Fire Prevention contest was earned by Sandia Laboratory. The contest results were announced in January, and the plaque (left) is now at Sandia. It will be mounted in the entryway to Bldg. 802 with other fire prevention awards earned by Sandia. Above, President Hornbeck reviews the Sandia Fire Prevention scrapbook with H. H. Pastorius, manager of Plant Engineering Department 4540. Standing, from left, are C. W. Campbell, vice president 4000; R. E. Hopper, director of Plant Engineering and Maintenance 4500; and R. W. Hunnicutt, supervisor of Field and Plant Operations Engineering Division 4544. Sandia's fire prevention program was judged the best of the 151 American and Canadian entries in the industrial division in the annual contest sponsored by the National Fire Protection Association. J. B. Walston, Technical Art Division 3463, prepared the scrapbook.



SANDIA'S DISPLAY of solar cell operating a transistor radio intrigues two young students at a recent grade school science fair. Over 300 student exhibitors from the Dublin-San Ramon, Calif., area competed for the first prize trophy which went to a student for his exhibit on "Optical Illusions."

## Livermore Notes

J. C. (Jake) Ludington (8253) has been named "Elk of the Year" by the Livermore-Pleasanton Elks Lodge No. 2117. The award and citation for service to the Elks were presented during a recent meeting in Livermore. This is the first year that the local lodge (formed in 1961) has made this award.

A member of the Elks organization for 27 years, Jake is a charter member of the local lodge.

Emily A. Isaacs (8214) will be installed as Worthy High Priestess of the Masonic affiliated Order of the White Shrine of Jerusalem, Star of the West Shrine No. 96, at a ceremony in Livermore, April 14. A member since 1959, Emily has held four of the five elective offices in the local Shrine. She will serve in this office for one year.

Cliff Erickson (8252) won the first place trophy in the March 18 Sandia Employees golf tournament played at the Lake Chabot Golf Course in Oakland. He finished with a low net score of 66.

The tourney was played straight handicap basis with participants divided into two flights. Don Skinrood, Jr. (son of Don Skinrood, 8118), was the top winner of the first flight (handicap of 20 or less) with a net score of 67, and Bernie Kraemer (8111) won the second flight (handicap of 21-36) with a net of 71.

The next SEGC tournament will be played at the Willow Park Golf Course in Castro Valley on April 18.

For information concerning future tournaments, contact Elmer Smith (8118), ext. 2738; or Joe Genoni (8235), ext. 2433.

## Sympathy

To Sue Winchester (8132) for the death of her mother-in-law in Oakland, March 11.

To Jack Brierly (8133) for the death of his father-in-law in Iowa, March 6.

To Charles Tillman (8223) for the death of his brother in St. Louis, Mo., March 11.

To Don Wagner (8211) for the death of his father-in-law in Twin Falls, Ida., March 23.

## Congratulations

Mr. and Mrs. Bob Schaefer (8132), a daughter, Susan Linda, March 10.

Mr. and Mrs. Pat Portolese (8145), a son, Victor Antonio, March 20.

## Livermore Laboratory Active in Computer Meeting, April 11-13

Livermore personnel will be involved when CO-OP, an association of users of Control Data Corporation large scale computers (1604, 3400, 3600, 3800), holds its 19th Conference at the Hilton Hotel in San Francisco, April 11-13. B. E. Barker of Numerical Application Division 8144 is in charge of setting up the program and providing for local arrangements, assisted by F. L. Whitworth of Systems Programming and Computer Operations Division 8145.

The purpose of the conference is to exchange information, techniques, and programs among the users of CDC equipment. Joint standards are developed for interchangeable programs and recommendations are made for improvement of equipment.

J. L. Tischhauser, manager of Programming Department 9420, and past vice president of CO-OP, will participate in the conference program. As chairman of the operating standards subcommittee, he will chair two sessions, "Updating the CO-OP Handbook," and "The CO-OP Guide."

Luncheon speakers will be Robert B. Forest, editor of DATAMATION magazine, on Tuesday and Dr. D. H. Lehmer, professor of mathematics at the University of California, Berkeley, Wednesday.

Approximately 250 conferees are expected to attend the conference. Of these, about a dozen are from foreign countries, including Australia, Canada, England, France, Israel, Netherlands, Sweden, and West Germany. Others attending from SCLL are R. S. DeZur, V. K. Gabrielson, and C. H. Turnbull (all 8144), G. B. Sanders (8145), and P. A. Portolese (8145-1).

Another group, called SWAP, users of smaller CDC computers (lower 300 series), and a third group, called VIM, users of larger CDC computers (6000 series), will hold concurrent meetings.

## Welcome . . . Newcomers

March 9-23

<b>California</b>	
*Robert D. Cozzo, Livermore	8234
Henry Hanser, Concord	8153
Hollis C. Miller, Elk Grove	8235
Alan R. Spring, Santa Rosa	8252
<b>New Mexico</b>	
James D. Newkirk, Los Alamos	8122
* Denotes rehire	



H. G. Mehlhouse, Vice President, Western Electric Company.



J. P. Molnar (left), Executive Vice President, Bell Telephone Laboratories; and J. B. Fisk, President, Bell Telephone Laboratories.



NEW CONTRACT — The International Association of Machinists and Aerospace Workers (IAMAW), District Lodge No. 115, AFL-CIO, and SCLL signed a new 20-month contract which became effective March 1, 1967. Shown at the signing are (l to r) E. E. Padgett (8223-1), union steward; N. B. Curry of Compensation and Labor Relations Division 8211; C. H. DeSelm, director of Staff Services at Livermore Laboratory 8200; W. Stadnisky, IAMAW Senior Business Representative; and D. D. Wagner, supervisor, Compensation and Labor Relations Division 8211.

# LIVERMORE NEWS

## Dr. Teller to Address Colloquium

Dr. Edward Teller, associate director of Lawrence Radiation Laboratory, Berkeley and Livermore, will speak at Livermore Laboratory's Colloquium on April 11. He will discuss anti-ballistic missile systems.

Dr. Teller is presently a professor-at-large in physics at the University of California. His current activities are in the areas of astrophysics, molecular physics, and applications of nuclear energy.

Until 1939, Dr. Teller worked in the field of theoretical physics, then turned his attentions to atomic explosives. He is best known for his work in the development of both the atomic and hydrogen bombs while at the University of Chicago and Los Alamos Scientific Laboratory. He was assistant director of LASL from 1949-52, and helped establish a second weapons labo-

ratory at Livermore, where he served as director, 1958-60.

Dr. Teller received his PhD from the University of Leipzig in 1930, and since then has been awarded honorary DSc and LL.D degrees from several American universities. He has received many honors, including the Einstein award and the Living History award.

His most recent published contributions include THE LEGACY OF HIROSHIMA (1962) and THE RELUCTANT REVOLUTIONARY (1964).

Further information concerning the Colloquium is posted on bulletin boards. Tickets are required.

G. W. Anderson (8140) is serving as host for this Colloquium.

## Sandia Corporation's Board of Directors Met March 30-31 At Livermore Lab

Just before the recent meeting of Sandia's Board of Directors, a Livermore photographer snapped these candid shots of several members of the Board.



P. A. Gorman, President, Western Electric Company.



A. P. Clow (left), Vice President, Western Electric Company; and J. A. Hornbeck, President, Sandia Corporation.



L. R. Cook (left), Vice President, Western Electric Company; and G. Accettura, Vice President and General Manager, Bell Telephone Laboratories.

## Sandia Woman Is Donor In Kidney Transplant Operation

There are not many instances, except in a wartime environment, when an individual has an opportunity to make a personal sacrifice which could save another person's life.

Connie Baca was offered such a chance, and as of Wednesday (when the SANDIA LAB NEWS went to press) it was not known if her sacrifice was in vain. On Wednesday she was wheeled into the operating room of a San Diego, Calif., hospital to donate one of her kidneys as a transplant for her sister Doris (Mrs. Gene Akin). This was the first kidney transplant operation performed in San Diego.

Connie works for the general stores analysts in F. H. Vishaway's Stock Control Section 4613-1, and has been at Sandia less than a year. Her husband, Leo, has been a security guard here for many years. The couple has two daughters, ages 11 and 13, a son 18, and a 19-year-old son who is in military service.

Connie's sister has had kidney trouble for half of her life and has defied doctors' predictions by surviving this long. Seven years ago her condition worsened and since last August she has had to use an artificial kidney machine twice a week. The Akins' two daughters are married; however, Connie's mother has helped care for Mrs. Akin for the past seven years.

Connie went to California in mid-March to undergo preliminary tests. "We both have O-negative blood type and the doctors were sure I could get along with one healthy kidney. I was thrilled that I could be a donor," Connie said. "My sister is only two years older than I, and we have always been very close."

Despite her lengthy illness, Mrs. Akin retained her sense of humor. When Connie left after the preliminary tests, Mrs. Akin told her, "Take care of my kidney; don't live dangerously."

Doctors gave Mrs. Akin only a 10 percent chance of recovery, but that didn't



OPTIMISTIC ATTITUDE was exhibited by Connie (4613) and Leo Baca (3242) before Connie left for San Diego to be the donor in a kidney transplant operation.

keep Connie from going through with her plans. "I figured those chances were better than none, and without the operation her days would be numbered," she said. "I just 'felt' she would pull through."

It was in that frame of mind that Connie left Albuquerque March 30 with her daughters who will enter school in San Diego. They took the train. "I'd be more scared to fly than to undergo surgery," Connie explained. Husband Leo felt it was wonderful that she was able to help her sister and wanted to make this sacrifice, but nonetheless he was admittedly worried.

A kidney transplant operation takes a minimum of three hours and even if the operation is a success from a surgical standpoint, it would be at least 48 hours before doctors could tell if Mrs. Akin's system could accept the transplanted organ. The patient is normally placed in an intensive-care ward for two weeks, and then is transferred to an isolation room for a longer period of time.

Connie expected to be in the hospital for about two weeks and then to convalesce at her sister's home for several more weeks. She said that she looks forward to returning to her Sandia job.

## Events Calendar

April 7-8, 13-15 — Music Theatre production of "Annie Get Your Gun." Menaul High School Auditorium.

April 7-9 — "Matrix: A Dance-Happening," Old Town Studio, 1208 Rio Grande NW. For reservations tel. 242-4602.

April 12 — Community Concert series, Marilyn Horne, soprano. Civic Auditorium.

April 14 — James Meredith lecturer. Sponsored by Newman Forum, no admission charge. UNM Concert Hall, 8 p.m.

April 15-16 — Bandelier-Cochiti backpack trip. N.M. Mountain Club, leader Bill Grohe, tel. 256-2739.

April 16 — Corrales Casa Tour, benefit for Sandoval School. Buses will leave Corrales every half hour from 10 a.m. to 3:30 p.m. Tickets available then.

April 19 — Albuquerque Symphony Orchestra, George Robert and Morton Schoenfeld, piano soloists. UNM Concert Hall, 8:15 p.m.

## Laboratory's Technical Papers Presented at Physical Society Meet

A number of Sandia scientists presented technical papers at the American Physical Society meeting held March 27-30 in Chicago.

The symposia and sessions of invited papers at this annual meeting are devoted exclusively to research in solid state physics, chemical physics, and high-polymer physics. Due to the widespread interest in these subjects, there is usually a large attendance at this APS meeting.

Sandians who contributed papers are: From Physics of Solids Division 5132: D. H. Anderson, "Pressure Dependence of the  $Mn^{55}$  and  $As^{75}$  Nuclear Resonance Frequency in Ferromagnetic MnAs"; G. A. Samara, "Temperature and Pressure Dependence of the Dielectric Constants of the Thallous Halides."

From Electron Structures of Solids Division 5151: Albert Narath (5150) and D. C. Barham, "Nuclear Magnetic Resonance in Metallic Iridium and Gold"; J. E. Schirber, "Effect of Hydrostatic Pressure on the Fermi Surface of Beryllium"; E. D. Jones and Bruno Morosin, "Sign of the Nearest Neighbor Exchange Interaction  $J_1$  in GdAs"; A. G. Beattie and J. E. Schirber, "Pressure Dependence of the Superconducting Energy Gap in Tin"; W. J. O'Sullivan and J. E. Schirber, "Pressure

Dependence of the Fermi Surface of Indium."

From Theoretical Solid State Physics Division 5155: D. C. Wallace, "Relations Among Calculated and Measured Elastic Constants for Stressed Crystals"; R. E. Nettleton, "Domain Wall Motion in Barium Titanate Single Crystals."

From Crystal Lattice Defects Division 5211: F. L. Vook and H. J. Stein, "Electron Irradiation Produced Defects in n-Type Silicon" and "Infrared Studies of Oxygen Associated Defects in Irradiated Silicon"; A. R. Sattler, "Velocity and Charge Dependencies of the Energy Losses of the Channeling Peak"; G. W. Arnold and D. K. Brice, "Luminescence in Electron-Irradiated Zn-Doped GaAs Under Uniaxial Stress."

B. L. Gregory of Transient Effects Division 5212, "Injection Dependent Lifetime in Neutron Irradiated Silicon."

From Physics of Organic Solids Division 5213: R. G. Kepler, "Photoionization of Excitons in Anthracene"; R. C. Hughes, "Single Crystal Electron Magnetic Resonance of p-Phenylenediamine-Chloranil"; G. C. Smith, "Temperature Dependent Triplet Exciton Interactions in Crystalline Anthracene."

## Discarded Eyeglasses, Odd Bits of Jewelry Can Help Others See

Sandia Laboratory is supporting a nationwide "New Eyes for the Needy" campaign to provide eyeglasses and artificial eyes for those who cannot afford them.

Donations of odd bits of jewelry, discarded eyeglasses, and gold and silver scrap will be sent to New Eyes for the Needy, Inc., a non-profit charitable organization. Collection boxes will be placed at each Tech Area gate for next week's drive which is being coordinated by the Sandia Pioneers, a group of persons having 21 or more years of service with the Bell System. Assisting the Pioneers are Public Relations Department 3430 and Security Standards and Operations Department 3240.

R. G. Luckey (4100), a Pioneer, says "New Eyes for the Needy, Inc., never solicits money, instead the collected items are sent to a refinery where the metals are reclaimed and redeemed for cash. Income from this source is used to purchase glasses and artificial eyes for people throughout the United States."

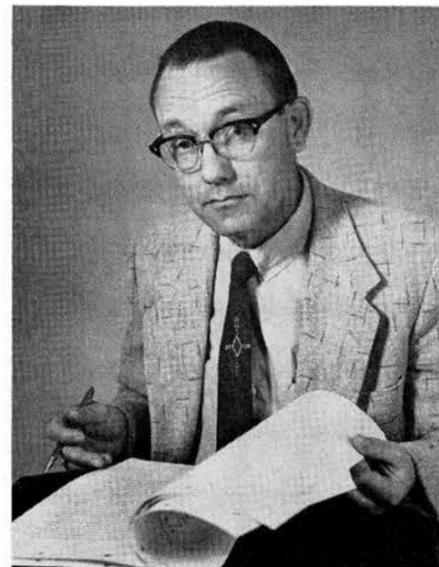
In addition, reusable plastic framed glasses are tested, classified, and sent to medical missions and welfare agencies in Africa, South America, and Asia.

"We had a very successful drive at Sandia in 1965," Mr. Luckey says, "but the need continues. The people helped by New Eyes are screened patients to whom no other private or public funds are available."

In addition to serviceable frames and complete glasses, contributions are urgently needed of items containing bits of gold, silver, or any precious metal—old bridge-work, dentures, and old jewelry are good sources. Other usable items include commercial safety glasses, cataract glasses, reading and sun glasses.

Since its founding in 1932, New Eyes for the Needy has helped more than 400,000 people. The work of sorting, testing, packaging, and acknowledging the thousands of glasses received annually is carried on by a volunteer staff.

Distribution of the glasses is arranged through hospitals and welfare agencies. Any deserving individual also may apply directly to New Eyes for the Needy.



A LINE VOLTAGE LIMITER, invented by R. L. Shaum (7222), was recently issued a U.S. patent. The portable device is often used in the field where commercial sources of power are not available.

## Patent Granted Portable Line Voltage Limiter

A patent for a line voltage limiter has been assigned to the Atomic Energy Commission in the name of Richard L. Shaum (7222).

Such limiters are needed to protect electrical equipment against transient or steady state overvoltages or surges arising from either the source or the load. This is especially true at test sites or on test ranges where there are no commercial sources of power.

Previously voltage regulators were used; however, they were costly, heavy, and slow to react to changes.

The present invention takes a different approach to the problem, eliminates the earlier limitations, and—through the advent of power transistors—makes possible a basic device only about 2 in. x 2 in. x 4 in. Addition of an isolation transformer, for safety reasons, roughly doubles the size.

Two models, for 110 and 205 volts, have been developed and are in widespread use as portable field equipment.

## Widely-Used Sandia Quartz Dynamic Stress Gage Issued Patent

A patent for a piezoelectric stress gage has been assigned to the Atomic Energy Commission in the names of Frank W. Neilson (5620), Robert A. Graham and William B. Benedick (both 5133).

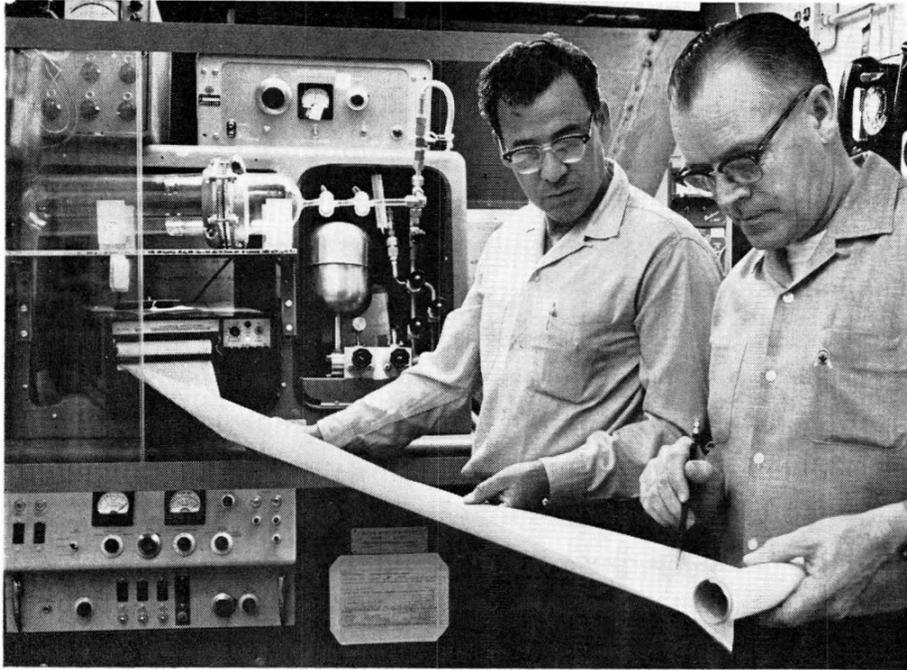
This type of gage is used extensively in research and development laboratories to study and test the properties of various materials under dynamic stress. The shock waves are produced by detonation of high explosives or by impact of a projectile. One of the ways high impact pressures are achieved at Sandia Laboratory is through use of a helium gun.

A disc of quartz, vapor-deposited with

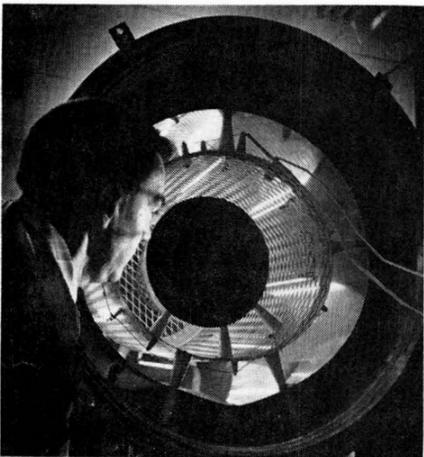
gold electrodes, serves as a piezoelectric transducer in this invention. There are two concentric circular gage electrodes. When placed behind the material being tested, the gage makes a continuous record of stress versus time. The shock wave impacts against the material at pressures in the order of 30,000 times atmospheric pressure for a very short period of time—from billionths to millionths of a second. By the time the wave reaches the back of the gage, the test is over, the gage itself has disintegrated, but the data has been received and recorded.



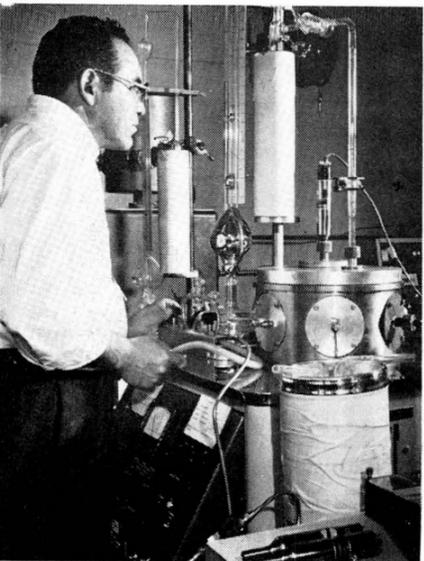
INVENTORS F. W. Neilson (5620), W. B. Benedick (5133), and R. A. Graham (5133), l to r, display typical holder and piezoelectric stress gage (small disc) for which the AEC was recently granted a patent.



READOUT from a mass spectrometer analysis of an explosives sample is examined by Alfred Herrera, left, and George Chaffee. Section 4631-1 operates an explosive facility in Area II in addition to its main vacuum technology laboratory in Bldg. 894.



HEATER SYSTEM is shown in place inside the altitude chamber. Ken Peters checks the current control.



ROBERT LOZANO calibrates a standard vacuum gage for use by an AEC contractor agency. Section 4631-1 is a secondary standards laboratory.



JAKE BARRERAS readies a test jig prior to a leak detection test. The test will determine the number of extraneous molecules collecting in a sealed component resulting from materials "outgassing."

### With Vacuum Technology

# Section 4631-1 Serves Space Age Projects

In this space age, vacuum technology is solving problems undreamed of 10 years ago. Sealed systems, designed to operate in the nothingness of space, require special design, special materials, and special testing.

At Sandia Laboratory, vacuum technology support in these areas is provided by Leak Detection and Vacuum Standard Section 4631-1 under G. M. Haughness.

The group's laboratory in Bldg. 894 is equipped with a number of vacuum pumping systems, mass spectrometer instruments, and one of the largest and most efficient altitude chambers at Sandia.

The section is staffed and equipped to provide support for vacuum design, materials testing, leak testing, and special vacuum technology problems. A continuing program of leak detection testing is provided for stockpiled components, and a secondary vacuum standards laboratory is maintained.

A recent service to the Cariboo II project group serves as an illustration of the special vacuum problems presented to the section.

Cariboo II involved launching a Nike-Tomahawk rocket carrying three special instruments into an aurora borealis. The instruments, which would measure particle emissions from the aurora, were designed to operate in the vacuum of space. They were to be contained in a vacuum sealed nose cone in the rocket during launch and then exposed to the space environment in apogee.

As development progressed, it became obvious that the sealed nose cone was creating "outgassing" problems for the instruments.

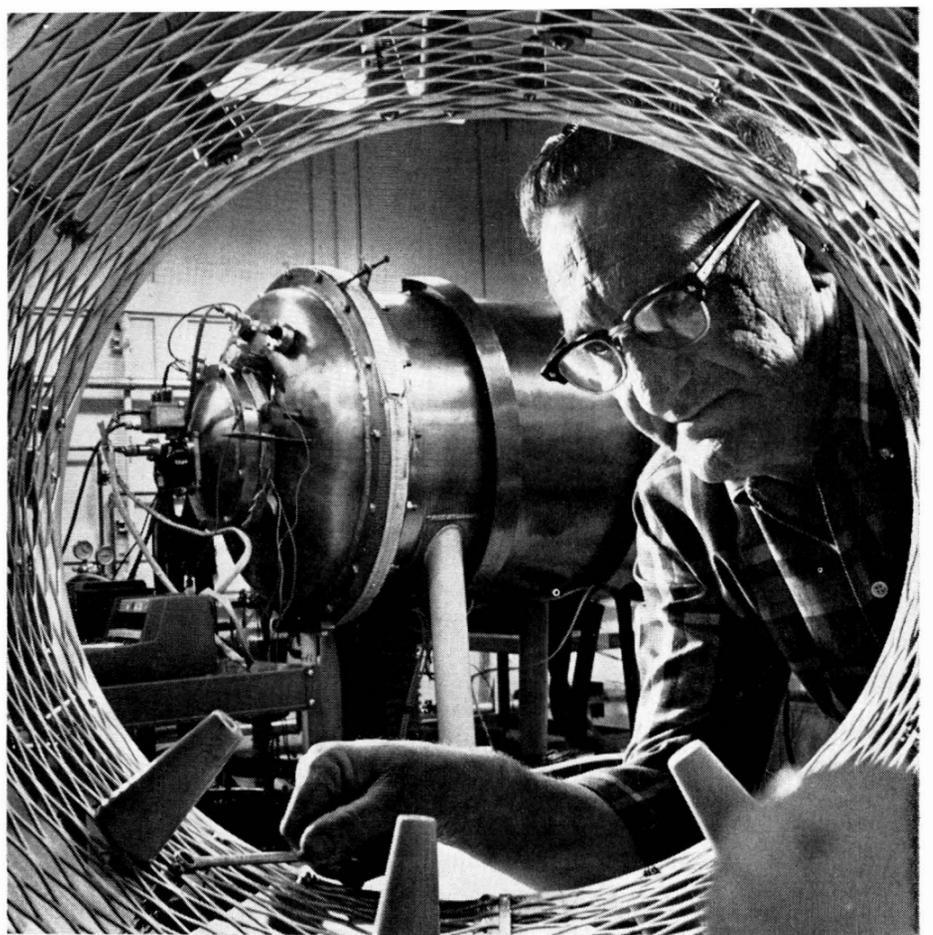
Outgassing is a term which describes the natural phenomenon, common to all materials, when vapor molecules in the material escape into the atmosphere. Normally, these are of no concern to the function of the device under consideration—the loss is miniscule and the tiny particles are quickly dispersed into the atmosphere.

However, in a sealed system—particularly one where the instruments are designed to count molecular particles—the outgassing can quickly contaminate the sealed environment, sometimes to the point of degrading electronic circuit performance.

The Cariboo II group brought their nose cone to Section 4631-1 seeking a solution to the outgassing problem. The answer was to "bake it clean" inside a vacuum—getting rid of the gasses within the nose cone's material.

The section's Ilikon high altitude chamber could certainly provide a large enough vacuum system to accommodate the nose cone, but providing the high temperatures called for some Yankee ingenuity from Mike Ford, Jay Andrews, and Ken Peters.

The deadline for the completed job was short, almost too short to make major modifications of the equipment. However,



QUARTZ LAMPS, which provide high temperature heating inside the Ilikon altitude chamber, are adjusted by Jay Andrews. Section 4631-1 modified the chamber with the heater system to solve "outgassing" problems in a special rocket nose cone.

the men searched through Reclamation and General Stores and found a metal bell-jar guard which could be mounted inside the chamber. They attached eight infrared quartz lamps with tungsten filaments to the guard and wired this into a heavy duty Variac current controller.

The lamps created temperatures up to 1000° F. inside a vacuum environment of approximately  $1 \times 10^{-6}$  torr. This temperature quickly "boiled off" the trapped gasses inside the nose cone, material and these were pumped out of the system. Mass spectrometer analysis showed the nose cone to be "clean."

The section also provided consultation on the vacuum system needed for the Cariboo II project and provided a technician operator, Charlie Byrne, during the field operation.

"We had a side-benefit from the assignment," Mr. Haughness says, "for we've added an extra dimension to our altitude chamber—we can provide a high temperature, high vacuum environment to test large components or systems. With it, we can measure leak rate vs. temperature, perform vacuum bakeout of components for cleaning, monitor outgassing of material and components while making mass spectrometer analysis at high temperature, check electrical performance of components under vacuum at elevated temperatures, and dehydrate materials."

Service is the purpose of our organiza-

tion, Mr. Haughness says.

The section regularly performs leak detection and measurement for components and systems under development while maintaining a regular schedule of leak-detection testing of stockpiled components.

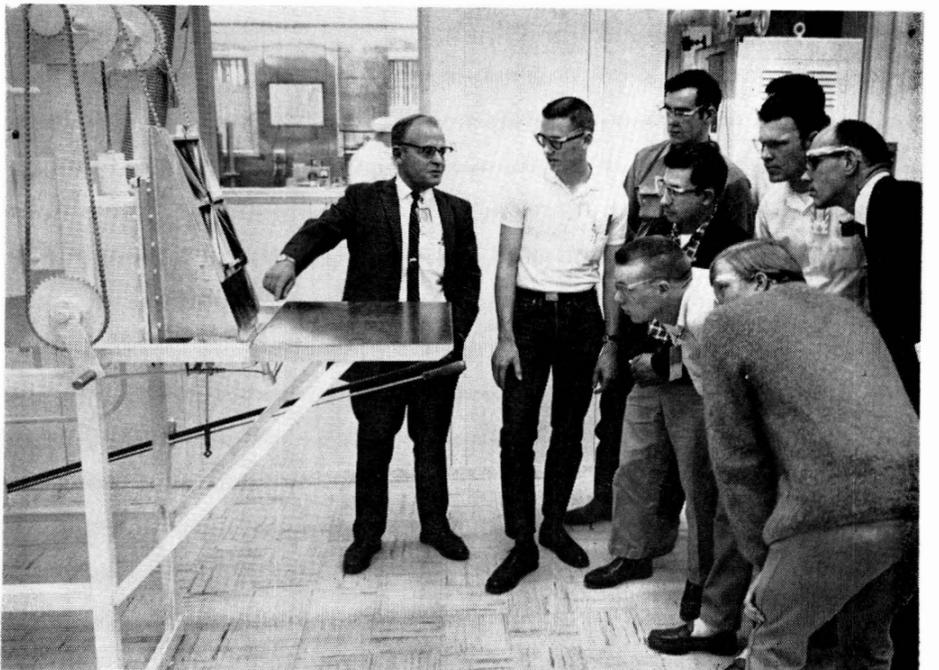
The group also maintains a secondary vacuum standard laboratory and regularly calibrates vacuum and leak detection instruments used throughout the AEC contractor complex.

The analytical mass spectrometer service is available to any group at Sandia with materials questions. This service provides an analysis of the composition in molecular percentages of various gasses and liquids.

The group can also advise on sealing techniques, the design of seals, and material selection for sealed systems. They can detect a molecular leak as small as  $5 \times 10^{-11}$  cubic centimeters per second (at standard temperature and pressure). A leak at this rate would accumulate a volume about the size of a sugar cube in six hundred and thirty-four years.

In addition to the main facilities of the section located in Rm. 151 of Bldg. 894, the group provides a leak detection and mass spectrometer analysis service for explosives in Area II.

Other members of Section 4631-1 are Frank Castillo, Alfred Herrera, Robert Lozano, George Chaffee, Frank Garcia, and Jake Barreras.



PRINCIPLES OF OXIDATION REDUCTION in the hydrogen furnace in Bldg. 834 is explained by E. R. Wood (4233-4) left, to a group of students who are enrolled in the technical institute program at Eastern New Mexico University. Along with touring some of the Laboratory's facilities recently, the group visited the Sphere of Science and heard G. W. Elliott (3151) discuss Sandia's requirements for staff assistants.



WESTERN ELECTRIC VISITORS — K. S. Spoon (right), purchasing agent 4300, explains Sandia's use of a Teletype machine to write commercial purchase orders from purchase requisitions. On the left are S. B. Stapleton, manager of Division Staff, Western Electric Company, and E. N. Lenk, director of WE's Supplies Service and Division Staff, shown during a recent visit to observe Sandia's purchasing operation. C. R. Pritchett (center), manager of Organizational Planning Department 4380, met with the visitors and accompanied them on the brief tour. The Teletype operator is Cherry Gullick.

## Take Note

R. G. Luckey, Comptroller 4100, and H. A. Romme of Systems and Procedures Department 4110 participated in a panel discussion recently in Dallas. They discussed "Educational Needs of the Accounting Profession—An Industrial View" during a joint conference of the Southwestern Social Science Association (composed of university faculty) and the Southwest Region, American Accounting Association.



All Sandia Corporation technical organizations are on various information distribution lists and periodically receive technical reports from around the world. Everyone likes to keep up with "the state of the art."

Recently a publication from Japan, written in Japanese, was received by Alan Pope, director of Aero Projects 9300. Inside, along with the Japanese text, were some wind tunnel photographs and sketches, so Alan sent the publication to Randy Maydew, manager of Aero & Thermodynamics Department 9320. He attached a note saying that it "was fascinating reading."

It was. The Japanese facility described is a hypersonic wind tunnel which duplicates many of the features of the Sandia hypersonic wind tunnel facility—capabilities for Mach 5, 7, 9, and 11, vacuum tank storage, circuit design, pebble bed heater, etc.

About three and a half years ago, three representatives of the Japanese Aerospace Laboratory visited Sandia, along with a number of other hypersonic wind tunnel facilities, and took copious notes.

Awards in the recent 14th annual competition exhibit of the Technical Illustrators and Management Association (TIMA) were won by two Sandians in Technical Art Division 3463. Janet Jenkins received first place in Promotional, Graphic Projectuals category for her 35mm presentation on "Armor's Mark of Quality," and Leo Ortiz won third place in Colored Cut-away Rendering category for illustrations of a re-entry vehicle designed and tested at Sandia. The entries were on exhibit last month at the Museum of Science and Industry in Los Angeles.

Continued from Page One

## Vela Satellites Set for Launch

sponsibility of the Advanced Research Projects Agency of the Department of Defense. Air Force participation involves the development of the spacecraft, launch operations, and control of the satellites in orbit. Management of this effort is under the Air Force Systems Command's Space Systems Division.

TRW Systems Group, a division of Thompson Ramo Wooldridge, Inc., designs and builds the spacecraft.

Sandians scheduled to participate in the launch operations and their areas of responsibility are P. E. Phipps and E. L. Whitlow (both 9231), electromagnetic pulse detectors; F. E. Thompson and C. F. Jacobs (both 9233), optical detectors; and J. C. Mitchell, H. L. Hawk, J. C. Rehberg, C. H. Stockley, and C. M. Greenwood (all 9234), logic systems. Mr. Greenwood will be at the Cape throughout the prelaunch activities to coordinate payload test schedules with Eastern Test Range personnel.

Also involved in launch activities are J. E. Hinde, supervisor of Satellite Systems Division I; H. M. Dumas, supervisor of Seismic Systems Division; and R. E. Spalding, supervisor of Satellite Systems

Division II.

Immediately after launch, some of the Sandia personnel will go to the Satellite Test Center in Sunnyvale, Calif., to provide guidance in activating the payload systems and to provide preliminary evaluations of detector and logic systems performance.

Satellite Systems Divisions I and II personnel developed the logic systems and the computer controlled ground checkout equipment. Seismic Systems Division and Electro-Optics Division developed the Sandia-supplied detectors.

Most of the electronic modules and many detectors were produced by suppliers in the Albuquerque area with the guidance of Electronic Devices Division I 2547 under D. S. Pitts.

## Sandians Serve as Judges for New Mexico Regional Science Fairs

Twenty-eight Sandians served as judges for two New Mexico regional Science Fairs recently.

Twenty-five of them were judges for the Eighth Annual Northwestern New Mexico Regional Science Fair held in the new basketball arena on the University of New Mexico's south campus March 31 and April 1.

Three other Sandians judged exhibits at the Eighth Annual Southeastern New Mexico Regional Science Fair held at New Mexico Military Institute in Roswell on March 25.

Emphasis was placed on creativity, scientific thought, thoroughness, and skill. Attention was also given to clarity and dramatic value of the exhibits.

Winning exhibits from the junior and senior high school divisions were chosen to represent the regions at the State Science Fair in Socorro today and tomorrow.

The Sandians who served as judges for the Northwestern Regional Science Fair were W. B. Estill (1122), J. G. Eberhart (1123), B. K. Seely (1121), L. K. Jones (1133), A. Goodman (5623), R. T. Johnson (5132), M. K. Parsons (5132), R. C. Wayne (5132), R. N. Rogers (5151), E. J. Gilbert (5256), B. H. VanDomelen (5530), O. Milton (1133), C. A. Coone (5611), J. E. McDonald (1110).

R. E. Cuthrell (1133), S. C. Levy (1323), P. B. Bailey (5261), K. C. Goettsche (2564), Mrs. Jean Antoine (1315), C. C. Smith (1314), G. A. Samara (5132), R. J. Everett (9315), J. P. Grillo (3311), D. R. Parker (3311), and P. O. Matthews (3312).

Laboratory employees who were judges for the Southeastern New Mexico Science Fair were C. A. Hall (1132), R. G. Elsbrock (3211), and G. W. Stone (9314).

In addition, G. C. Newlin (6011) was chairman of the judging committee for the Albuquerque section of the Institute of Electrical and Electronics Engineers. The group awarded a \$400 scholarship at the NW Regional Fair.

## Sandia's Bulletin Boards Carry New and Timely Items of General Interest

Several new items are being posted on Sandia's official and unofficial bulletin boards. The new postings are part of an effort by Employee Publications Division 3432 to increase the effectiveness of the boards in Sandia's employee information program.

"Our goal," says R. C. Colgan, 3432 supervisor, "is to keep the boards current with information of interest to employees. To help the viewer spot new postings, we try to reserve the center area of the boards for items that remain on the boards for just a week. Notices that are posted for longer periods, such as security and fire prevention posters, border this center area."

Among the new items being posted are a daily weather forecast (posted only in the larger buildings), "Sandia News Briefs" which contain Management News Briefs items of general interest, pertinent AEC news releases, Sandia recruiting advertisements, Sandia news releases that do not first appear in the SANDIA LAB NEWS, and captioned pictures of Sandia championship or all-star athletic teams.

Gersedon Martinez (3432) monitors and makes new postings on the 75 bulletin boards in Area I at least twice a week.

In addition to improving the appearance of the boards with a planned arrangement of posted items, the worn-out, fiberboard bulletin boards are being replaced with more attractive and durable cork-backed boards.

"We welcome suggestions on bulletin board postings, and would appreciate being notified of buildings that need a board," Mr. Colgan says.

Looking for a speaker? The Sandia Speakers Bureau roster has been revised recently, and includes many new speakers and subjects. Topics range from general to highly technical. Examples: "ESP — Past and Present," "Future Recreational Uses of the Sandia Mountains," "Lasers — A Step Forward," "The Growth of Gold Single Crystals," and "Atomic Collisions." Sandia speakers are available for meetings of school groups, civic organizations, technical societies, etc. If you'd like to look over the list, call Phyllis Swartz, Public Information Division 3431, tel. 264-4207. She'll see that you get a copy.

Stan DeVault (3211) was recently elected to the board of directors of the Texas Safety Association during a meeting in Houston. Stan is also president of the New Mexico chapter of the American Society of Safety Engineers.

Two photographs of New Mexico landscape scenes by Wayne Graving (3465) have been accepted by the Museum of Modern Art in New York to be part of a forthcoming photographic exhibit. In addition, a third print was accepted into the Museum's art lending service.

Tennis, anyone? A Sandia Laboratory tennis competition in both singles and doubles is currently being organized. Anyone interested in playing should contact O. J. Foster (3122), tel. 264-7775, for schedules.

Winners of the Sandia tournament will be eligible to compete in an inter-base tourney to be held in July.

R. K. Strome, supervisor of Technical Illustration Section 3463-1, was a member of the judging jury for the annual Society of Technical Writers and Publishers — Association of Technical Artists art competition conducted by the Huntsville, Ala., district of STWP-ATA. There were about 500 entries in the show held March 30-April 1 in Huntsville.



SANDIA'S FIRST ORGANIZATION CHART refreshed some memories during J. A. Dempsey's recent visit to the Laboratory. Mr. Dempsey (right), who was Sandia's first comptroller from November 1949 to November 1954 and then left to be comptroller for Western Electric's Hawthorne Works, is now retired and has been visiting various WE installations since January. Meeting with Mr. Dempsey were (l to r) C. W. Dickinson, Jr., (3120), R. W. Henderson (2000), C. W. Campbell (4000), and R. G. Luckey (4100).

## Service Awards

20 Years



L. J. Brasher  
2523



H. I. Jewett  
4221

15 Years



E. S. Acton  
9233



A. Mike Barela  
2526



L. D. Blakely  
2552



James Brandolino  
7323



G. H. Bruington  
7331



Solomon Chavez  
4514



E. B. Davis  
4213



James Dickie  
4221



W. L. Hyde  
7215



E. H. Kerl  
2526



H. V. Lewis  
2551



L. G. Martinez  
4611



L. F. Narvaiz  
9421



J. J. Platt  
1521



Lorena Schneider  
8235



L. E. Snodgrass  
2434



William White  
2210



Emily Young  
1115

10 Years

April 7-20

P. E. Gammill 1431, D. L. Anderson 1432, C. W. Hansen 3241, R. T. Tuffnell 4121, R. R. Neel 5623, A. G. Torres 2234, D. E. Holliday 1524, Janice M. Sharp 2234, B. C. Coats 2562, Emily C. Class 3411, P. R. Vouterin 4153, C. W. Ray 7311, J. B. Adams 8254, Angela J. Hopkins 2432, Bertie E. Huston 3126, Hazel R. Whitlock 3416, Raymond Goddard 4231, B. O. Sandoval 4614, J. P. Lapoint 7334, Billy Johnson 9214, J. B. Gonzales 4513, D. H. Davis 9411, and J. F. Wolfe 4512.

## Authors

E. D. Jones (5151) and J. E. Hesse (5154), "Experimental Test for the Suhl-Nakamura Interaction in  $Mn_{1-x}Co_xO$  and  $Mn_{1-x}Ni_xO$ ," February issue, PHYSICAL REVIEW.

W. B. Pepper (9324), "Nylon Trailing Line," April-May issue, AIAA JOURNAL OF SPACECRAFT AND ROCKETS.

R. E. Nettleton (5155), "Uniqueness Theorem for Nonlinear Irreversible Thermodynamics," Vol. 24-A, Pg. 231, 1967, PHYSICS LETTERS.

G. H. Whiting (9333) and K. T. Feldman, Jr., University of New Mexico, "The Heat Pipe," February issue, MECHANICAL ENGINEERING.

## Sympathy

To Loren Blakely (2552) for the death of his mother in Albuquerque, March 15.

To Howard Nicholson (4137) for the recent death of his brother.

## Sandia Speakers

G. L. Cano (5232), "Energy Loss and Resultant Charge of Low Energy Recoil Particles from Alpha-Disintegrations in Surface Deposits of Polonium 210," Physics Research Colloquium, NMIM&T, April 6, Socorro.

L. S. Nelson (5234), "Supercooled Droplets of Refractory Metals and Oxides," 153rd national meeting of the American Chemical Society, April 9-14, Miami Beach.

Irving Auerbach (9326), "Decomposition Kinetics of a Phenolic Resin - Carbon Cloth Ablator," 153rd national meeting of the American Chemical Society, April 9-14, Miami Beach.

J. G. Eberhart (1123), "The Critical Surface Tension of Uranium Dioxide," 153rd national meeting of the American Chemical Society, April 9-14, Miami Beach.

W. J. Howard (1000), "Engineer's Job in Washington," Albuquerque Chapter of the N. M. Society of Professional Engineers, March 27.

F. H. Johnson (3341), "Absenteeism - A Cure?" Albuquerque chapter, Administrative Management Society, March 21.

J. H. Banker (7226), "A Brief History and Discussion of the Practical Application of Schlieren Photography in the Study of Shockwave Phenomena," annual meeting of the Industrial Photographer's Association of New Mexico, April 1-2, Los Alamos.

G. J. Simmons (5612), "Automata," Instrument Society of America, March 28, Albuquerque.

W. R. Perret (7111), "Deep Reflections from a Nuclear Explosion in a Salt Dome," Seismological Society, March 23, Santa Barbara, Calif.

J. H. Gibson (3342), "Practical Aspects of Mental Health in Industry," Governor's Second Annual Employer Action Seminar, March 22, Albuquerque.

T. B. Sherwin (3430), "Sandia Corporation," Parents Club, Alvarado School, March 14, Albuquerque.

## J. K. Merillat on Team to Improve College Placement



J. K. Merillat, supervisor of Employment Division 3151, is participating this week in the College Placement Services' third annual visitation team workshop in Bethlehem, Pa.

The primary work of CPS is to train and send four-man teams to selected educational institutions (predominantly Negro colleges) to analyze in depth the institution's placement and career counseling services.

By last June, 66 representatives from industry and universities had received the training and 19 colleges had been visited. Most of the schools were cooperative in carrying out the suggested changes, which in some cases included extensive reorganization of existing placement services.

There are 26 participants in the current workshop, which includes speakers discussing the background and history of Negro colleges, and employment patterns of Negro college graduates.

CPS-trained personnel have found that few faculty members and administrative officers have been exposed to modern business practices or have knowledge of the internal operations of large corporations.

Team members also meet with students and faculty to discuss the new career opportunities for minority group college graduates. As a result, faculty members have been able to reassess their academic curricula in view of the changed career outlook for their students.

## Welcome . . . Newcomers

March 20-21

Albuquerque	Margaret Martin	3412
	Nathan E. Moore	3465
	*Wilfred Otero	3155
	Karen M. Porn	3416
California	Richard E. Smith, San Jose	2152
Colorado	Elefonso C. Manzanares, Denver	2213
New York	David M. Schuster, Ithaca	1131
Ohio	*Edward J. Shipsey, Columbus	5121
Wisconsin	James W. Poukey, Madison	7112

\* Denotes rehired

## 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 REAL ESTATE

- 2-BDR HOME, attached garage, very small down payment, take over mortgage payments, \$88/mo includes taxes & insurance, 2738 Santa Cruz SE, Clark, 243-0143.
- 3-ACRE restricted residential lot, off Rio Grande Blvd. NW, paved road in, old trees, Stein, 242-2967 after 7.
- CABIN, 1966 show model, will sell or trade for tractor, see at 9204 Susan SE, Villedia, 298-7955 evenings.
- 3-BDR., 1 1/2 baths, hw/floor, cfa, fp, AC, landscaped, \$13,900, low payments, 1219 Garcia NE, Sander, 299-5761.
- MOSSMAN 3-bdr., den w/fp, separate dining, central hall, desk, pantry, broom closet in kitchen, large lot, Moore, 299-3758.
- 7 1/2 ACRES w/2-bdr., den, 2 fp, built-in kitchen, barn, horses allowed, N. Valley, Bell, 242-4221 or 898-3033.
- 3-BDR. HOUSE, attached garage, near Lady Fatima Church, hw/floors, AC, fp, complete landscaping, new carpet, 329 Morningside NE, Nelson, 255-2364.
- 3-BDR., large kitchen w/built-ins, fenced and landscaped, \$1000 assumes \$87/mo. payments, Stomp, 298-3824.
- 3-BDR., 1 1/2 bath, den, AC, sprinklers front, assume 4 1/2% loan, Covert, 296-2383 after 5.
- DEER LAKES ESTATES cabin site, 2/3 acre, nine miles east of Cuba, N.M., on highway 126, private stocked lake, electricity and well, Kelley, 299-0104.
- LAND: 10 acre tracts, Manzano Mts., heavily wooded, 9 miles from U.S. 66 on South 10, Lee, 299-1114.
- 4-BDR., Farr Addition, pitched roof, exposed beams, built-ins, covered 20' patio, DR, 1 1/4 tiled baths, landscaped by Yonemoto, Adolphson, 255-6097.
- 3 OR 4-BDR., garage, walled yard w/rent to back, AC, sprinklers, paved drive, FHA appraisal \$13,450, price \$12,450, Bertholomew, 298-1940.

3-BDR., 6' fenced back yard in Foothill Estates, carpeted throughout, unobstructed view of city, attached garage, Barton, 298-1240.

LARGE 2-bdr. residence at Cedarcrest, 2 acres, modern conveniences, central heat, 2 fireplaces, kennels, 15 mins. from Sandia, Barth, 345-0172.

### CARS AND TRUCKS

- '65 FORD 1/2-ton pickup, custom cab, V8, 4-spd., Positrac, R & H, 6 plys, many more extras, consider trade, \$1600, Johnson, 865-7970.
- '64 CORVAIR, \$800 or best offer, Griego, 842-8041 after 5.
- '50 INTERNATIONAL 1/2-ton pickup, 4-spd. trans., \$150, Burnett, 298-1078.
- ALFA ROMEO, sport car coupe, FM-AM marine band radio, recently rebuilt engine, new interior, Ruff, 299-5414.
- '58 one-owner, 2-dr. Ford, intercenter engine, 3-year-old ARA AC, R&H, \$350, Goss, 243-7368.
- '57 FORD WAGON, V8, AT, R&H, new brakes, low mileage, \$250, Simons, 299-0703.
- '65 MG-B roadster w/hood and tonneau cover, \$1995, Neum, 299-9188, 3600 Persifal NE.
- '61 IMPALA HT, low mileage, PS, PB, R&H, \$775 or trade for VW in same condition; '64 Belair station wagon, \$1550, no trade, Browne, 344-9675.
- 1934 NASH SEDAN in original condition, 31,000 miles, \$1600, Longfellow, 299-7062.
- '66 BLUE MUSTANG, 4-spd., R&H, tachometer, HT, still under warranty, \$1800, Pace, 299-5036.
- '55 PONTIAC station wagon, R&H, AT, Harris, 299-6664.
- '57 CHRYSLER 4-dr. sedan, recent transmission-brakes & front end overhaul, \$200, Bryant, 299-8315.
- '66 EL CAMINO w/sports liner canopy, low miles, under warranty, standard shift, 6 cyl., R&H, 6 wheels, 2 w/snow tires, Lenz, 298-3872 after 6.
- '58 OLDS Super 88 sta. wgn., full power, AC, nearly new tires and shocks, 59,000 miles, \$350, Post, 298-0481.
- '63 1/2-ton FORD pickup, F100, large bed, V8, AT, make offer Ashbaugh, 298-2396.
- '57 CHEVROLET station wagon, 4-dr., V8, AT, \$250, Devenau, 299-4055.
- '65 FORD 1/2-ton V8, deluxe Positraction, style side, heavy duty springs, R&H, defrosters, outside mirrors, \$1700 cash, Bowers, 255-7071 before 5.
- '59 FORD 6 cyl. stick, \$200, Morrisett, 298-2884.
- '56 JEEP station wagon, 4-wd, \$345, Ronan, 299-9168.

### MISCELLANEOUS

- AKC reg. Beagle puppies, 7 wks. old, \$35, Markwell, 299-6276.
- 26" GIRL'S bicycle, \$15; maple corner table, \$12; sturdy 2 piece sectional, \$60, \$25, Blaine, 299-1036.
- RIFLESCOPE, 4-power Jana scope, \$10; want 218 BEE once fired brass cases, Svensson, 344-7700.
- 21" TV w/new picture tube & new tuner, completely rebuilt, \$40, Martin, 298-6644.

92" OVERSTUFFED sofa & chair, Matelese, dark turquoise, flexsteel construction, Van De Velde, 255-8174 after 5:30.

MOWER, rotary, 2 1/2 hp, Ward's, \$20, Abrams, 344-8252.

2 BLOND corner tables; Hollywood steel bed frame, adjustable size; twin size head board, Wheeler, 256-6230.

SWIMMING POOL, 15'x30', 21,000 gal., all steel construction beams, vinyl lining, 2 sun decks, ladder 2100 GPH filter, cost \$800 sell for \$500, Vasquez, 243-3664 or 242-8069.

TRAVEL TRAILER, 15' Mercury, \$685, electric brakes, sleeps 4 to 6, water pumps, extra storage, lights, original owner, Carrick 808 Dakota SE, 255-8281.

FENCE POSTS, 90, 8'x6"; electric water pump, 1/2 hp w/20-gal. tank; trade for calf, pigs, chickens, Cooper, Beck Rd. SW, 877-4674.

AM-FM stereo multiplex, 56 watts, complete or by components, includes cabinet & 6 speakers, Paxton, 299-8475.

MUSTANG car cover, heavy green poplin, water repellent, cost \$32, sell for \$16, Caskey, 296-2237.

.300 SAVAGE rifle, without scope, Causey, 299-0089.

EIGHT-PIECE dining room suite (buffet) w/pads; 26" girl's J. C. Higgins bike (Sear's), Owens, 255-9257.

DYNAKIT stereo preamp 2-mono amplifiers, Heathkit 25 watt, RCA 40 watt, Heathkit mono AM tuner, corner cabinet, blond oak, bow 55-lb. pull, Slesinger, 299-4626.

REDWOOD awning, 25' long, 12' deep, formerly on store front, price negotiable, Daniel, 268-8335 after 5:30.

PENTRON EMPEROR I tape recorder in blond wood cabinet, Blazek, 256-2928.

AMPLIFIER for guitar, Tremolo, 2 channels, 3 inputs, \$45, Esterly, 256-9251.

METAL CAR-TOP-CARRIER, w/straps, Archuleta, 255-6781.

C FLUTE, reconditioned, \$65, 1424 Hoffman Dr. NE, Thayer, 299-3127.

DOUBLE utility sinks w/stand, for home or commercial laundry, useful in shop or garage, \$30, Condit, 344-9887.

BUTANE LANTERN; muzzle loading percussion shotgun; compressor; tank; motor; gauge; safety valve, Wilson, 282-3225.

LEECE-NEVILLE alternator 12v negative ground, 60 amps, heavy duty w/transistor regulator, \$75, DeVore, 255-7211.

SELL OR TRADE: 2 100 mw walkie-talkie radios, 11 transistor, 2 channel, squelch control, Westfahl, 298-5087.

USED 3-piece rose colored nylon frieze curved sectional, \$75, Eichert, 255-2247.

DRESS, formal, white lace, worn twice, size 5 JP, \$19; Danish sofa, brown tweed covering, \$30, Duvall, 299-8744.

4-BAND RECEIVER, 150 to 1500 KC, 92.5 KC IF, 115 VAC, \$15; ART-13 transmitter w/spare tubes & manual, \$20; maple sewing table \$10, Berg, 299-5640.

S&W revolvers, .38 Airweight Chief; .357 Mag.; P-38; .22 auto; want shotgun or rifle, Alexander, 256-0570.

SMALL 26" girl's bicycle, 3-spd. type, \$15, Roberts, 255-9527.

6-YR. CRIB; sofa; 2 chairs; pull-lamp; foam lounge chair for two; baby scale; 2 table lamps, Spray, 299-0412.

18" SUNBEAM electric twin blade rotary mower w/100' cord, \$40, 4615 Palo Alto Ave. SE, Smith, 255-7389.

TYPEWRITER, Remington portable, Everett, 298-3994.

18" x 4' Doughboy pool filter, ladder, skimmer, vacuum, testing kit & chemicals, \$100, Maginnis, 299-1751.

FENDER Gassman amplifier; Fender precision bass guitar, case and covers included, Cordova, 298-2398.

19" WESTINGHOUSE portable TV w/stand, \$50, Fisher, 298-7858.

TOY POODLE, silver, male, 10 weeks old, very small, Shipley, 298-2433.

CARDINAL 8' camper, full cab-over, \$750; 9x12 umbrella tent, \$20, Trujillo, 256-3840 after 5:30.

TWO BIG BUSHES, approx. 5 1/2" dia., \$10 ea., you dig, Corli, 255-5683.

MOTORCYCLE, BSA Super Rocket, 650cc, Abbin, 256-0188.

GE washing machine, \$25; Maytag dryer, elec., \$15, Cowham, 298-4249 after 5:30.

'65 HONDA S-90 motorcycle w/twin mirrors & rear carrier, helmet & face shield, Dolce, 296-4033.

TRAILER, 4'x6', covered, new tubes, '67 tons, \$40, McLaughlin, 6212 Aztec Rd. NE, 255-9685.

CAMPER TRAILER, tent top w/spare tire, awning, mattress, Ward's, tent area 15'x7', \$230, McGuckin, 298-8091.

'66 Evinrude 17' sportsman in-board/out-board, 120 hp, power tilt, \$3600; 8' Travel Queen camper over cab, fully equipped, \$1150, Montoya, 298-6094 after 5.

2 APT.-SIZE Frigidaire refrigerators, \$25 & \$15, Schuetz, 1220 Marquette Pl., NE, 242-3510.

TERRAZZO TILE, 100 sq. ft., plus edging and cut pieces, \$40, Romero, 344-0302.

TV, 21" console w/doors, \$45; folding luggage carrier for station wagon, \$18.50; Denney, 268-0004.

19" EMERSON TV, slimline portable; golfing shoes, size 9; Sunbeam steam iron, never used, Berynk, 296-2109 after 5:30.

REESE equalizer type frame hitch, \$30; overload springs, \$5; car air conditioner condenser, \$5; car top carrier, \$10, Hof, 255-5915.

FENCE, 6' high chain link; motorcycle parts for Mustang and 65 Ducati 125cc, 125 El Pueblo Rd. NW, Robert, 898-0491.

ICE SKATES, size 2 1/2, white boot for girl, \$5; rainbird sprinklers, 4 for \$10; lawn chairs, \$2 ea.; lawn and gardening cart, \$4; misc. furniture, Chandler, 877-2835.

BOAT, 14' fiberglass Lone Star w/waterproof cover; Evinrude 35 hp electric start motor, trailer w/new tires, Crass, 299-1418.

STUDIO COUCH, \$15; 23" B&W console TV, walnut cabinet, \$80, Allen, 256-3234.

SHOTGUN SHELL RELOADER w/work table; 5-piece yellow drette set, oval shape, Cox, 298-4885.

SEWING MACHINE; Singer, portable featherweight w/carrying case, \$44, Hook, 255-1897.

LAWN MOWER, 21" cut, needs tuneup, make offer; 10-spd. bike, \$45; Coleman stove, lamp, \$4.50 ea.; car window cooler, \$2.50, Pliner, 256-1907.

BOOTS, size 10B, Tony Lama brand, high top brown w/walking heel, original price \$39.95, worn 3 times, sell for \$25, Bartlett, 299-4861.

COLONIAL WING BACK CHAIR, gold print, \$25; 100' 18" high galv. fence, Luna, 298-7337.

### WANTED

DRUM SET, need not be in top condition, Peterson, 256-7514.

CANOE, 15-18' aluminum, Everett, 298-3994.

NEED SOON, volumes 1 and 2 of Carnegie or Gardner Development Course; will pay premium, Dippold, 296-3873.

JUNK TRACTOR TIRE suitable for child's sand box, Fisher, 298-7858.

GENERAL handyman for variety of carpentry repairs and some yard work, Miller, 256-6020 after 5:30.

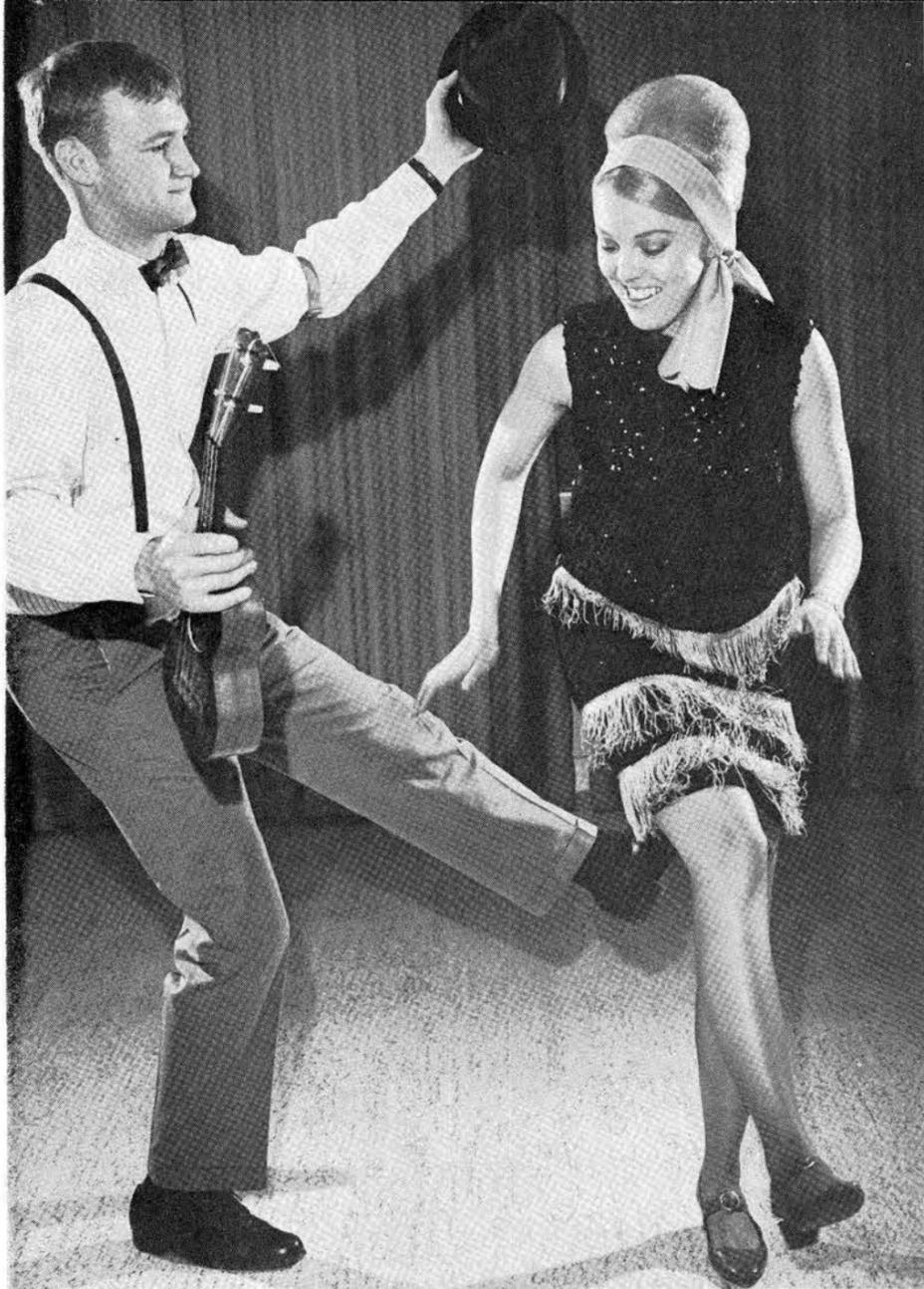
PICKUP TRUCK w/camper to sleep 4 for 1800-mile round-trip to Eastern Oklahoma dur'n April 30 - May 6. Want to rent, Schafer, 299-4634 after 5.

CHILD'S SAND BOX, good condition, small jumping horse, Bliss, 255-7980.

ALUMINUM CANOE and umbrella tent, Brannon, 296-443.

CHILD - carrying pack frame which is made by Gerry, Rowley, 299-8419.

VW SEDAN, 1960 or later w/junk engine, Maak, 282-34



ROARING TWENTIES — Susan Walsh (4333) and Dave Kestly (1333) limber up with a Charleston for the coming Coronado Club party Saturday, April 15. Reservations are needed for this event. Call the Club office, tel. 264-4561.

## Roaring Twenties Party Will Swing At Coronado Club Saturday, April 15

The "Roaring Twenties" return to the Coronado Club Saturday, April 15. In the past, these events have been the swiftest of the season. There's something about a short fringe dress and a raccoon coat that brings out the "voh de oh doh" and "boop boop de doop" in the troops. The young ones can convert rock 'n roll to the Charleston easily while we oldtimers... Well, we remember bathtub gin through the clouded prose of F. Scott Fitzgerald and the wrong side of paradise.

The evening will start with a social hour from 6 to 7 p.m. followed by dinner featuring broiled top sirloin. Dancing to the Lamplighters starts at 9 p.m.

Reservations are needed for this one (phone 264-4561), and pick up your tickets by 9 p.m., April 14. Cost to members is \$3.50, guests \$4.

### Bowling

The Coronado Club junior girl's bowling team set a new record in a recent city tournament. Nancy Thiermann, Rene Snyder, Gail Igel, and Liz Schellhase rolled a 2163 series to sweep their division. The Club's junior boy's team came in second in their division with a 2244 series.

### Swim Team

The Coronado Club swimming and diving teams will participate in the YMCA invitational swimming meet April 15-16. The meet starts at 8 a.m. both days at the Valley High School pool. Spectators are welcome. Admission is free.

### Sanado Club Meets April 11

Wright H. Langham, Los Alamos Scientific Laboratory, will be guest speaker at a Sanado Woman's Club sherry luncheon Tuesday, April 11, at 1:30 p.m. in the Coronado Club. He will discuss the early days of the Laboratory on "the hill" and relate humorous incidents.

Reservations should be made today by contacting Mrs. E. E. Bylander, 3303 Tiley Drive NE, tel. 344-7994.

### Congratulations

Mr. and Mrs. L. J. Seligman (9213), a son, Gregory Patrick, March 17.

### Ballroom Remodeling

Events in the main ballroom of the Coronado Club will be curtailed for a couple of weeks beginning April 17 while the ceiling is resurfaced. New acoustical tile will be added and air conditioning and heating vents will be reworked among other changes.

### Family Ice Skating Party

The Coronado Club has arranged for a special family ice skating party from 7 to 9 p.m. Thursday, April 13, at Lawrence Ice Skating Studio, 5513 Coal Ave. SE. To join the fun, contact Dick Andes (4117), tel. 268-8951.

### Annual Bowling Meeting

The Coronado Bowling Club will meet at the Coronado Club April 18 at 7:30 p.m. Officers will be elected for the 1967-68 season, and plans for the May 6 year-end party will be discussed.

## Promotions

George T. Murren (2152) to Staff Member Technical  
Lawton F. Miller (1512) to Staff Associate Technical  
C. Wolfenbarger (2126) to Staff Assistant Technical  
Ann E. McIntyre (9323) to Staff Assistant Technical  
Harkey Boling (3463) to Staff Assistant Administrative  
Edito O. Trujillo (4614) to Utility Operator  
James C. Sanchez (4513) to Helper  
George W. Revels (4631) to Technician  
Wayne E. Towns (8222) to Maintenance Man  
Sandra E. Chrisman (3126) to Typist Clerk  
Patti M. Harvey (3126) to Typist Clerk  
Teresa A. Orona (3126) to Typist Clerk  
Sandra M. Ulibarri (3126) to Typist Clerk  
Susan K. Walsh (4333) to Record Clerk  
John J. Brennan (3415) to Mail Clerk  
Danny H. Rhoden (3415) to Mail Clerk  
Carolyn Van Hauen (4211) to Typist Clerk  
Eutimia Zubia (4152) to Typist Clerk  
Judy E. Boucher (4333) to Teletypewriter Operator  
Joe Salas (4624) to Messenger  
Eloy S. Montoya (3416) to Messenger  
Andrew L. Lopez (9411) to Messenger  
K. W. Campbell, Jr. (3415) to Mail Clerk  
Dorcen Bevans (3126) to Secretarial Stenographer  
Anita M. Roybal (4364) to Stenographer Clerk  
Peggy L. Black (4371) to Stenographer Clerk  
Gertrude E. Hall (3126) to Secretarial Typist  
Lois E. Ryerson (4135) to Calculating Machine Operator  
Pilar A. Garcia (3415) to Mail Clerk  
Richard L. Padilla (2232) to Reproduction Service Clerk  
Oletha M. Cox (2523) to Service Clerk  
Beatrice M. Whittaker (2523) to Service Clerk  
Gerald M. Hayhurst (2232) to Microreproduction Equipment Operator  
Louis C. Nogales (9411) to Tabulating Equipment Operator  
James E. Lyons (3415) to Mail Clerk  
Robert E. Vaughan (3415) to Mail Clerk  
Gregory C. Drummond (8235) to Messenger  
Beth A. Williams (8232) to Secretarial Typist  
Georgette M. Grogan (8245) to Record Clerk  
Froilan Paler (8235) to Mail Clerk  
Sharon M. McCurdy (8253) to Messenger Center Equipment Operator  
Melba A. Purvis (8245) to Catalog Compiler  
Myrtle Bee Reynolds (7270) to Secretary

## Supervisory Appointments



CLARENCE R. MEHL to manager of Weapons Effect Research Department 5230, effective April 1.

Clarence joined Sandia as a physicist in the nuclear burst physics group in October 1954. Since May 1961, he has been supervisor of Theory and Analysis Division 5231.

Before coming to the Laboratory, Clarence was studying at Lehigh University where he received his MS and PhD degrees in physics in June 1951 and October 1954 respectively. He was awarded his BS degree in June 1949 from Montana State College.

During World War II he served more than two years in the Army.

He is a member of Sigma Xi, Tau Beta Pi, and the American Physical Society.



JAMES D. PLIMPTON to supervisor of newly created Radiation Division I 7112 in the Test Sciences Department, effective April 1.

Jim joined Sandia in August 1961, as a physicist in the Radiation Phenomena Division 5242. His work has involved measurements during nuclear tests.

He received his BA degree from Wesleyan University in Middletown, Conn., in June 1953 and his PhD degree in physics from Iowa State in August 1961.

He is a member of Phi Beta Kappa and the American Physical Society.



GERARD W. HAUER, JR., to supervisor of Division I 5541 in the Advanced Systems Research Department IV, effective April 1.

Gerry worked at Sandia as a summer employee, 1958-60, while enrolled at the University of New Mexico. He became a full-time employee in May 1961 when he joined the instrumentation group in environmental testing and enrolled in Sandia's Technical Development Program to do graduate work in electrical engineering at UNM.

In July 1963 he transferred to an advanced systems studies organization at Livermore Laboratory. He returned to Sandia Laboratory in November 1965 to work with a systems studies group in Advanced Systems Development. Earlier this year he transferred to Division III of Advanced Systems Development Department II, 5620.

Gerry received his BS degree in electrical engineering from UNM in June 1961 with distinction and an MS degree in electrical engineering in June 1963, also from UNM.

He served with the U.S. Navy from May 1954 to July 1957, mainly as an electronics technician. He is a member of Phi Kappa Phi and Eta Kappa Nu.



DAVID R. SCHAFER to supervisor of Mechanical Design Division 7214, effective April 1.

Dave joined a transducer evaluation and calibration group in Sandia's field testing organization in August 1962 while enrolled in the Laboratory's Technical Development Program. In June 1963 he transferred to Mechanical Design Division 7214.

Dave received his BS degree in mechanical engineering from Michigan State in July 1962 and an MS in mechanical engineering from the University of New Mexico in June 1964.

He is a member of Pi Tau Sigma, Tau Beta Pi, and the American Society of Mechanical Engineers.



Mavis Wackerly (3421)

### Take a Memo, Please

April Fool's Day has passed, but year 'round practical jokes are neither timely nor funny -- they're too dangerous.

### Lost-Time Injury March 2 Downs Sandia Safety Record

A Sandia employee suffered a lost-time injury March 2. A sudden loud release of pressure from an experimental shock tube, still under construction, caused a temporary partial loss of hearing in the employee's right ear. He was treated by the Sandia Medical organization immediately after the incident. He has recovered and returned to work.

At the time of the accident, Sandia employees had worked 14 days or 490,000 hours without a lost-time injury.

## Sandia's Safety Scoreboard

### Sandia Laboratory:

33 DAYS  
1,155,000 MAN HOURS  
WITHOUT A  
DISABLING INJURY

### Livermore Laboratory:

162 DAYS  
828,370 MAN HOURS  
WITHOUT A  
DISABLING INJURY