

## Sandia Drafting Textbook Published In Hard Cover Edition

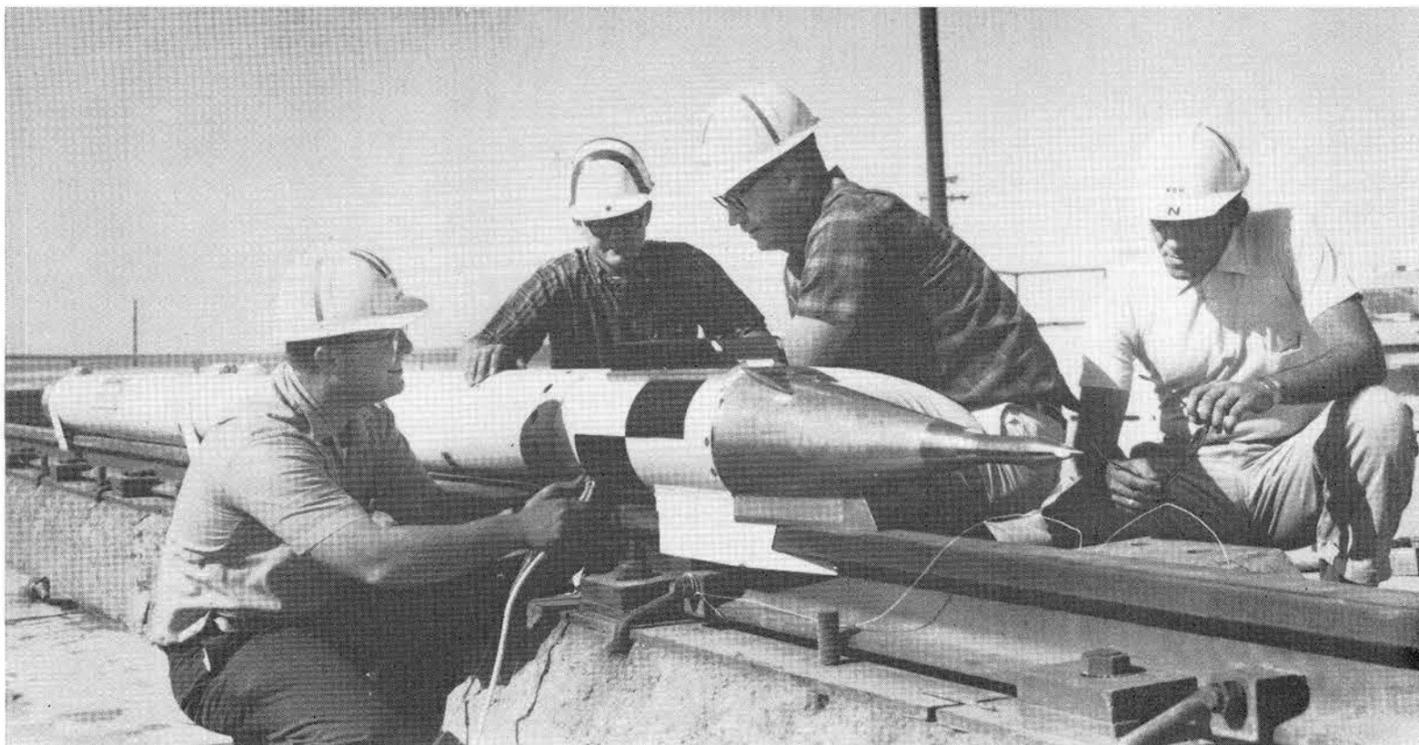
"Concepts in the True Position Dimensioning System," a programmed textbook written by a six-man team of Sandians as a company project, was published this month in hard-cover form by Central Scientific Company, a division of Cenco Instruments Corporation.

The original Sandia-published edition of the textbook was used as a training aid by more than 5000 Sandia, AEC, government contractor, and supplier personnel during the past two years as part of an effort to make effective the use of new drafting standards within the AEC complex. The book was designed to augment "Process Standard 9,900,011" published by Sandia as an AEC weapons contractor standard.

Now available to the general public, the textbook is already scheduled for use in an experimental class at Pennsylvania State University. It will be evaluated by a group of drafting instructors from various Penn State campuses. Widespread use of the book in Technical Institutes is anticipated. No similar book is on the market.

Members of the Sandia team are R. F. Utter, Technical Training and Education Division; A. D. Bridegam, Design Definition Division B; R. O. Dell, Engineering Standards and Procedures Division; R. E. Dunlap, Technical Information Division II; D. R. Fisher, Area I Laboratory; and J. E. Taylor, Manufacturing Research Division.

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THE SANDIA ROCKET SLED which set a new record on the Holloman AFB sled track was inspected prior to launch by four Sandians, (l to r) D. W. Berst, Photometrics Division; W. R. Kampfe of the Track Division who designed the sled and was project engineer; D. C. Hanson

who designed the telemetry package; and R. B. Hedberg, Track Division. The sled achieved a velocity of 5909 feet per second or Mach 5.4. This was the first time that telemetered data was obtained from a rocket sled traveling at this velocity.



**SANDIA CORPORATION**

PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION

ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

# LAB NEWS

VOL. 17, NO. 13, JUNE 18, 1965

## Mach II Capability of Sandia's Hypersonic Wind Tunnel Undergoing Final 'Shakedown Phase' This Month

The Mach 11 capability at Sandia Laboratory's wind tunnel facility will be going through its final "shakedown phase" this month, and if it performs as expected it will be ready for regular testing programs in July.

A Mach 14 capability will be added to the wind tunnel in the latter half of 1966.

The hypersonic wind tunnel has been in operation since 1962, and 20 test programs involving more than 1230 test runs have been conducted in its Mach 5.3 and Mach 7.3 nozzles.

Wind tunnel test results are used in the prediction of flight characteristics which help insure the success of multimillion-dollar programs.

For example, the AEC assigned Sandia Corporation the responsibility of evaluating the aerospace nuclear safety aspects of the SNAP-19 program.

In order to collect information on the safety features, it was decided to conduct an actual flight test, using a non-nuclear mockup of the isotopic generator. When the test was run last October, wind tunnel people at Sandia's Experimental Aerodynamics Division were among those who knew what to expect.

They'd been working on the problem for several months, conducting tests in the hypersonic wind tunnel. Despite the small scale, the tunnel tests produced what was needed — information establishing the flight characteristics of the reentry vehicle.

W. H. Curry, supervisor of Experimental Aerodynamics Division, explained, "We wanted to find out what it would do . . . how it would fly. Wind tunnel testing would contribute to the definition of the flight characteristics in the various stages of burnup.

"By using the 18-inch diameter, hypersonic wind tunnel," he said, "we were able to submit models to simulated flight conditions. The tests showed us what to expect in the way of pitch, yaw, and other in-flight movements during the actual reentry procedure."

Mr. Curry added that the wind tunnel served as one link in the research and development chain leading up to the full-scale flight test.

For a wind tunnel test, compressed air is heated to temperatures up to 2500°F before it is passed through the tunnel.

After the air passes through the heater, it flows through the 16-inch heater outlet into one of the nozzle sections. The nozzle is shaped so the air will expand suddenly within it, creating hypersonic air flows at very low temperatures. The temperature drop is so great that if the air is not pre-heated, it will condense into a fog in the test section, creating an unsatisfactory test condition.

Mach capability depends on the shape

and size of the nozzles, which are mounted on a revolving section of the tunnel. This unique mounting system permits quick Mach number changes for different tests.

Inside the test section, scale models mounted on steel rods called "stings" are subjected to the simulated flight conditions. These models with diameters up to about four inches can be tested at Mach 5.3, 7.3, and 11.3 inside the test sections (nozzles), which are 18 inches in diameter and four feet in length.

Calculated run times vary from 25-90 seconds, with a nominal testing period of 45 seconds. The tunnel can handle about one run each hour.

Types of tests that can be performed in the hypersonic facility are force, pressure, dynamic stability, and heat transfer.

J. F. Reed, also of Experimental Aerodynamics Division, noted that most of the test programs conducted since 1962 involved SNAP programs and development rockets, such as the Strypi and Aerojet Jr., or instrumentation rockets, such as the Nike-Tomahawk.

Whatever the type of test, instrumentation equipment (pressure tubing, electrical leads, and delicate strain gage sensing elements) transmit analog information to the control room where it is converted to digital form with electronic card punch and tabulating equipment.

In addition, a double-pass schlieren optical system is used to obtain motion pictures or still photographs of the model flow field. The tunnel operator uses a

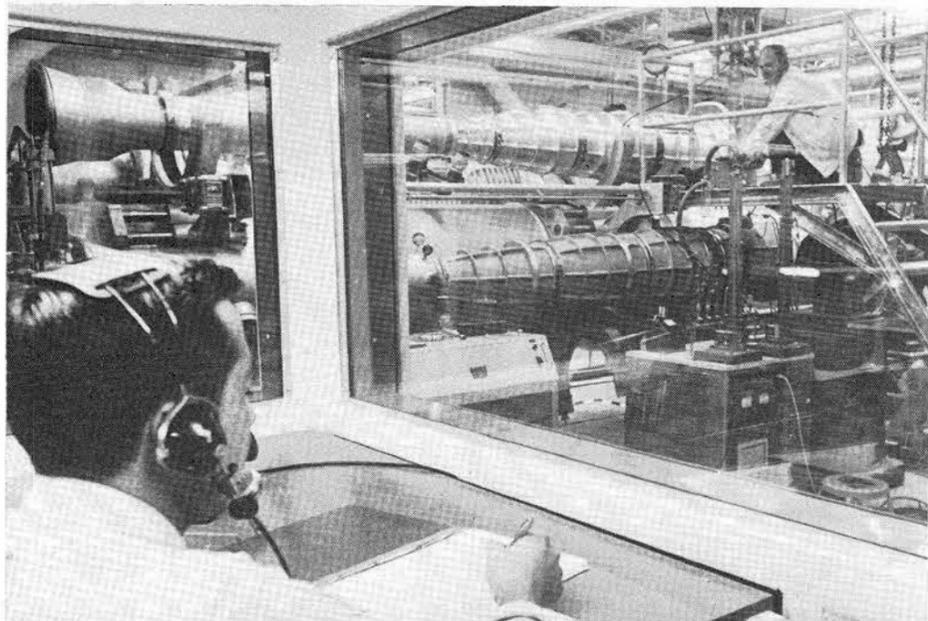
closed-circuit TV system to monitor the model during a test run.

The data obtained from the wind tunnel help Sandia engineers define the flight characteristics of the aerodynamic designs being tested.



TEST VEHICLE — Jim Reed, Experimental Aerodynamics Division, exhibits a scale model typical of those which are subjected to simulated flight conditions inside the hypersonic wind tunnel at Sandia Laboratory. The tunnel is in the background.

CONTROL ROOM VIEW—A. A. Trujillo (foreground) and D. R. MacKenzie, both of Experimental Aerodynamics Division, prepare for a test run in the hypersonic wind tunnel at Sandia Laboratory. The large, bullet-shaped objects are nozzles, which regulate the velocity of air flow inside the tunnel by their size and shape. The facility has a maximum capability of Mach 11.



## N. J. Eich Marks 35 Years With BTL



Norbert J. Eich will observe his 35th anniversary with Bell Telephone Laboratories June 20.

He has been at Sandia Corporation for more than 12 years, supervising work in component development and

later in materials development. He is presently on special assignment to the Director of Materials and Process Development.

Mr. Eich's first assignments as a member of BTL's technical staff in New York were in circuits, telephone apparatus, and relays. During World War II, he worked on sonar equipment.

In 1949, he was transferred to Murray Hill, N. J., and assigned to organizations engaged in work on printed wiring and plastic encasements. Much of his work at Sandia has been of similar nature.

## Sandia Director Elected Chairman of Rocky Mountain Science Council

The Rocky Mountain Science Council, during its annual meeting in Logan, Utah, elected Richard S. Claassen, Sandia's Director of Physical Research, to serve as chairman of the executive committee.

All previous chairmen have been affiliated with universities. Mr. Claassen has been a member of the Council for several years.

The Council consists of 23 universities, colleges, and research organizations in the Rocky Mountain states. Its purposes include developing in this region effective programs of fundamental research in the natural sciences, encouraging students to specialize in the sciences, providing strong programs for scientific education, and promoting maximum use of existing facilities and development of new facilities. A quarterly newsletter provides a media for exchange of information between similarly interested scientists in the region.

One of the group's recommendations was establishment of the Association of Rocky Mountain Universities (ARMU). At the present time, creation of co-op programs in space biology and upper atmosphere research are under consideration.

Colleges and universities which have graduate programs in the natural sciences and research organizations engaged in fundamental research are eligible for membership in the Council.

## Editorial Comment

With two weeks still remaining in the U.S. Savings Bond Drive at Sandia, the Campaign Committee reports that the percentage of employees buying Savings Bonds through payroll deduction has increased from 12 to 22 per cent.

All employees are urged to recognize the very obvious fact that Sandia's important contribution to the country's defense effort is directly dependent on sound government financing.

Even modest participation in the bond program is a fitting way to acknowledge our opportunity and to meet our responsibility.

Payroll deduction cards are available from division secretaries.



CIVIL DEFENSE COURSE—An introduction to radiological monitoring devices was just one phase of the shelter management training course completed by Sandia's security inspectors. Inspectors Brooks King (left) and Titus Sandoval watch Gene Romero use a geiger counter on George Dunham's wristwatch. Mr. Dunham is the educational officer of the Bernalillo County/Albuquerque Civil Defense organizations.

## Sandia Security Inspectors Trained in Civil Defense Procedures

A basic fallout shelter management course conducted by Emergency Planning Division was completed recently by the Sandia Laboratory security force.

Each of the guards spent one and a half days in the classroom, where they were briefed on various aspects of managing a shelter during times of emergency. The course was an outgrowth of Sandia's participation in the national Fallout Shelter Program.

W. R. Rosenberg, manager of Security Standards and Operations Department, met with each of the 16 groups of guards who took the course. During his remarks he noted, "We are conducting this workshop to provide you with as many tools as we possibly can to help you meet any emergency situation with a feeling of optimism and confidence."

The course covered such topics as the effects of nuclear weapons, emergency communications, the shelter manager's role, and the procedure to be followed in emerging from a shelter. The guards also worked with the Civil Defense supplies stocked in a typical shelter at Sandia.

Instructors from the Emergency Planning Division were G. O. Thorne, emergency planning coordinator, and G. W. Goodloe, emergency planning analyst. They were joined by H. R. Shelton, University Relations Division, and George Dunham, educational officer for the Bernalillo County and Albuquerque Civil Defense organizations.

After completion of the instruction, Mr. Dunham neatly summed up the results, saying, "Sandia is in the enviable position of not only having first-rate shelter facilities, but also well-trained personnel to staff them."

Additional courses are being offered to

the guards so they can familiarize themselves with specialized aspects of the Civil Defense Program.

Sandia maintains 19 shelter areas, and more are expected to be incorporated into the plan with construction of new buildings.

The supplies are furnished by the federal government through the Civil Defense organization. They include sanitation, medical, and radiological monitoring equipment, as well as food and water. The CD gear is supplemented with Sandia-supplied items, such as reading material and hand tools.



TAKE A BITE—Howard Shelton, one of the instructors in the Civil Defense course offered by Emergency Planning Division, offers survival crackers to two security guards taking the course. Tasting one of the crackers is Bill Flynn (right) with Charles Farmer.

## Supervisory Appointments



FRED H. JOHNSON to supervisor of Medical Administration Division, Medical Services Department, effective June 16.

Fred has been at Sandia seven years. Originally he was assigned to Systems and Procedures Department, but he has been in Medical Services Department since January 1963. Before coming here, Fred was graduated from the University of Denver with a Bachelor's degree in business administration.

He has served two years in the Army.



JAMES F. BARHAM to supervisor of Telemetry Development Division, Test Department, Livermore Laboratory, effective June 1.

Since joining Sandia in June 1959, Jim has been assigned to the same department at Livermore Laboratory, working on various projects in development and application of microwave and magnetic recording systems.

Previously, he attended the University of California at Berkeley where he received his BS degree in electrical engineering in 1959. He began his college education at Modesto Junior College, Modesto, Calif., following his discharge from the U.S. Air Force in 1955.

Jim is a member of the Institute of Electrical and Electronics Engineers.

## Retiring . . .



Jerry Y. Kostka will retire June 30 after eight years with Sandia.

He has been in Sandia's Design Definition Department the entire time, and has worked as a draftsman since 1920.

Jerry and his wife plan to return to the small farm in Michigan they have owned for many years. Their mailing address is Rt. 2, Box 53 A, South Haven, Mich.

"Our land is two miles from town," Jerry said, "and we're only about six blocks from a lake." He likes to fish and to do cabinetwork.

The couple has three children—one in Chicago and two in Los Angeles.



Lydia F. Waldorf will retire June 30 after more than 16 years at Sandia.

Her most recent assignment has been in the Printing Section of Graphic Arts Department.

At the present time Mrs. Waldorf lives at 301-53rd NW, but if she could sell her house, she would like to move to San Angelo, Tex., to be close to her son. A second son lives here. Future plans also call for a visit with relatives in the Midwest and the East.

She enjoys listening to music and finds driving relaxing.

## Congratulations

Mr. and Mrs. Bobby G. Haynes (2543), a daughter, Sharon Lynn, May 17.

Mr. and Mrs. Charles D. Salazar (4253), a son, Phillip Andrew, June 9.

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LAB NEWS

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## More Master's Degrees



R. W. Kelley



R. E. D. Woolsey



R. J. Isidoro

Among Sandia Corporation employees receiving degrees at the University of New Mexico this month was R. W. Kelley of Instrumentation Development Division. He earned a Master's degree in electrical engineering. His Bachelor's degree was from the University of Colorado.

\* \* \*

An MA degree in mathematics was conferred upon R.E.D. Woolsey during recent commencement exercises at the University of Texas. Gene is assigned to Sandia's Computer Mathematics Division. His Bachelor's degree was from the same school.

\* \* \*

R. J. Isidoro of Stockpile Sampling Division received his Master's degree in mathematics from the University of New Mexico this month. Previously he was graduated from the U.S. Naval Academy with a BS degree.

## Welcome

### Newcomers

May 31 - June 11

Albuquerque	
*Onella R. Allen	3126
Barbara M. Elliott	4135
Claudia J. Garlick	3126
Ruth L. Jones	3126
Lawrence R. Marker	2421
Rebecca A. Popp	4372
William W. Shurtleff	7334
New Mexico	
Thomas N. Hanson, Las Cruces	5154
Texas	
Thomas L. Bratcher, Dallas	9424
*Clayborne D. Taylor, El Paso	1425
Summer Employees	
Roger L. Airgood, Lafayette, Ind.	2212
*Sylvester A. Baca, Albuquerque	2442
*John H. Bartholdi, Albuquerque	7224
*Johnny M. Canfield, Norman, Okla.	1314
*Allan M. Carstens, Albuquerque	5256
William N. Chernish, Philadelphia, Pa.	3130
*Aaron Cox, Jr., Albuquerque	5231
Richard J. Dolejsi, Las Cruces	2450
*John R. Donaldson, Albuquerque	3311
Garland G. Gardenhire, Albuquerque	9313
*Paul M. Geisler, Albuquerque	1323
William C. Hardy, Albuquerque	5253
*Eldred R. Harrington, Albuquerque	1314
*James T. Hood, Austin, Tex.	4113
*Arthur W. Houghton, Albuquerque	1541
*George W. Hudson, Albuquerque	9424
*Larry Z. Kennedy, Albuquerque	5155
*James U. Kincaid, West Lafayette, Ind.	1425
*David L. Kohlman, Lawrence, Kan.	9320
*Arjeh J. Kurtzig, Palo Alto, Calif.	5142
*Wilbur B. Maxson, Albuquerque	3132
*Manuel P. Olguin, Albuquerque	1133
*Michael H. Pleck, Urbana, Ill.	1513
*John A. Rupp, Jr., West Lafayette, Ind.	1420
Paul Slepian, Troy, N.Y.	5256
Roland A. Sweet, West Lafayette, Ind.	9422
Donald L. Wade, Stillwater, Okla.	1122
*William H. Weihofen, Urbana, Ill.	5121

## SANDIA CORPORATION

### LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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# LIVERMORE NEWS



## Car Door Liners Help Prevent Scarred Cars

Considerate Sandia motorists have taken steps to reduce the number of scars on the cars in our parking lots.

Simply by placing a soft plastic liner on the open edge of their car doors, they can avoid chipping the paint from a neighboring car when opening their own car door.

These liners are made of pliable clear plastic with a core of aluminum foil to give a chrome appearance. Inexpensive and easy to install, these liners are available at most auto parts stores.

Why not try them on your car?

## Livermore Notes . . .

Joe Sladky, Post Development Testing Division, was elected to the Board of Trustees for the new Livermore Unified School District in an election held May 25. At this election voters expressed their desire to consolidate all Livermore school districts and selected a board of trustees to operate the unified district.

Joe was just beginning his second four-year term on the Livermore Elementary School Board when the unification proposal was put before the voters and passed.

This month a number of Sandians will be graduating from colleges and universities in the Livermore area. Others will be completing course work marking the end of another school year. Wil Miller, Employment, Placement, Training and Records Division, reminds all employees who receive degrees or certificates or who complete course work to notify their Personnel Representatives so that personnel records can be updated.

The first of five swimming lesson sessions got underway at the LRL pool June 14. Sandia employees still interested in enrolling themselves or their children in the remaining sessions should register at the pool any Saturday or Sunday from 2-5 p.m. Special classes will also be scheduled on an "as needed" basis.

The LRL pool is open daily, 1-7:30 p.m. and any Sandia employee, his family and/or guests may use the pool. Noontime swimming is available for LRL and Sandia employees only.

Bob Peterson, Post Development Testing Division, won the Castlewood Country Club's Annual President's Cup Golf Tournament May 22 with a net low score of 66. Bob finished in front of 160 entrants in the tournament to claim the cup and a first prize gift certificate.

Don Skinrood, supervisor of Acceptance Equipment Division, also won prize money by finishing third in the fourth flight of the tournament with a net score of 71. Other Sandians participating in the event were Lou Guintard, Product Evaluation Division; Bob Frost, Project Engineering Division; and Bill Ryan, supervisor of Employment, Placement, Training, and Records Division.



FIFTH AEC SAFETY AWARD is presented by P. W. Ager (left), AEC/SAO Livermore resident representative, to C. H. DeSelm, Director of Staff Services.

## Livermore Laboratory Earns AEC Safety Award

Employees at Sandia Livermore Laboratory have earned their fifth Award of Merit from the Atomic Energy Commission for on-the-job safety.

The record of 1,177,128 man-hours without a disabling injury was compiled during the period Aug. 19, 1964, through Apr. 6, 1965.

The bronze plaque was presented last week by P. W. Ager, Livermore resident representative of the AEC's Sandia Area Office. Accepting on behalf of the laboratory employees was C. H. DeSelm, Director of Staff Services.

The plaque will become part of the safety award display in Bldg. 911.

## Three Sandians Installed As Local ASME Officers

New officers for the 1965-66 season of the Mt. Diablo Subsection of the San Francisco American Society of Mechanical Engineers (ASME) were installed May 13 at a dinner meeting held at the Castlewood Country Club.



Three officers named to the executive committee were Sandians Arlyn N. Blackwell, supervisor of Applied Mechanics I Division, chairman (pictured); Jack D. Foster, Acceptance Equipment Division, secretary; and Alec R. Willis, Applied Mechanics I Division, director.

Two other Sandians, Howard C. Merchant, Applied Mechanics II Division, and Ralph D. Cozine, Project Engineering Division, were appointed to committee chairman posts for the 1965-66 season. Howard will head the Student Affairs Committee; Ralph will head the Honors Committee.

The meeting included a talk on "Ocean Mining" by James Goodier of the U.S. Bureau of Mines.



A. L. (BUD) PEARSON (left), Exalted Ruler of the Livermore-Pleasanton Elks Lodge, congratulates Pat Hindmarsh on his recent installation as Exalted Ruler of the San Leandro Elks Lodge. Both men work in Plant Maintenance Division.

## Two Sandians Serve As Exalted Rulers In Order of Elks

Of the 14 Benevolent and Protective Order of Elks (BPOE) lodges in the Bay Area, two are ruled by Sandians.

A. L. (Bud) Pearson is the Exalted Ruler of the Livermore-Pleasanton Lodge for 1965. And last month, Pat Hindmarsh was installed as Exalted Ruler of the San Leandro Lodge. Both men work in Plant Maintenance Division, reporting to George Mincks, a Past Exalted Ruler of the Livermore-Pleasanton Lodge.

Founded in 1868, the BPOE is a national fraternal organization whose primary objective is charity through service. This year's major state project is a good example of the charitable work done by the Elks. The project provides mobile therapy units for children in California and Hawaii who are victims of cerebral palsy.

Both Bud and Pat attended the 50th Annual State Convention of the California Elks Association in San Diego May 16-21, where 157 lodges contributed \$322,000 to the mobile therapy project.

## Weddings

LeOra Church and Gerald Matlow were married May 23 in a private afternoon ceremony in Lafayette, Calif. LeOra, a secretary in Special Projects Division, has worked at Livermore Laboratory since April 1963. Jerry, a security inspector with Federal Guard Services, Inc., has been assigned to the Livermore Laboratory installation since August 1960.

Sandians June Tomsic and Bill Ryan were married June 6 at 2 p.m. at the Presbyterian Community Church in Pleasanton, Calif. Following a family reception at the Castlewood Country Club, the couple left for a 10-day wedding trip to the Hawaiian Islands. June, a secretary in Publications and Graphic Arts Division, has worked at Livermore Laboratory since November 1958. Bill, supervisor of Employment, Placement Training, and Records Division, joined Sandia at Albuquerque in October 1949 and transferred to Livermore Laboratory in April 1958.

## Congratulations

Mr. and Mrs. Steve Wilcox (8122), a son, Daniel Steven, May 25.

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LAB NEWS

JUNE 18, 1965

## Welcome Newcomers

May 28 - June 4

California	
Douglas A. Bluhm, Livermore	8232
Mary D. Monser, Pleasanton	8211
Texas	
*Conrad H. Rogers, Cross Plains	8222
Transferred from Albuquerque	
Kenneth W. Henry	8148
Returned from Leave	
Richard B. Craner	8141
*Denotes rehire	

## Events Calendar

July 9—Shipstads and Johnson "Ice Follies of 1965" at Winterland, San Francisco. Discount tickets for a block of 300 reserved seats available from Employee Benefits on a first-come, first-served basis.

## Livermore Library System Depicted at National Meet

A graphic exhibit of the computerized indexing system in use at Livermore Laboratory's technical library was on display at the national convention of the Special Libraries Association in Philadelphia, June 6-10.

The Documentation Division of SLA requested the exhibit.

Beryl Hefley of Technical Library and Documental Control Division attended the convention and answered questions about the library's operating and indexing system.

ARTIST EVELYN BACHMAN discussed her Computerized Library Systems display with Beryl Hefley before he accompanied the exhibit to Philadelphia.





SHARE SMILES—Gov. Jack M. Campbell (center), M. D. Fimple of Applications Oriented Systems Division (left), and Lynn Hayward of the Houston, Tex., Medical Center exchange pleasantries at a SHARE conference in Albuquerque recently. SHARE is an international organization of 1300 large computer users who meet regularly to exchange information. Sandia was official conference host, and Mr. Fimple served as conference chairman. The governor delivered the main luncheon address, while Mr. Hayward discussed his work in the area of tying computers into actual surgical practices.

### Academically Speaking . . .

## Rigors of Third Degree Endured by Three Sandians

Three Sandia employees have just undergone the rigors of a third degree.

Each received the degree—a second master's—at commencement exercises at the University of New Mexico. Those accepting and already having master's degrees were Walter Joseph, Aerospace Nuclear Safety Division IV; Horace Poteet, Advanced Systems Research Department II; and Thomas Martin, Advanced Development Division.

Why a second master's?

"For years, I'd read in technical publications about how hard it was to put engineers into management and management into engineering," Walt explained. "I figured the logical thing was to get some training in each field."

Walt, who received a degree in industrial administration, had earned an MS in mechanical engineering at UNM in 1960, and his BS at Drexel Institute of Technology in Philadelphia.

Horace, who already owned BS and MS degrees in physics from North Texas State, received a master's in electrical engineering. He did so because this field is associated with his work at Sandia. "I've been involved with electrical engineering since joining Sandia in 1951," Horace commented. "And I felt the formal study would certainly help me in my work."

Tom's achievement was also job-inspired. When he joined Sandia, Tom had BS and MS degrees in electrical engineering from Purdue University. "I found that I needed a knowledge of mechanical engineering too," Tom said, "so I decided to go back to school." Tom's "third" degree is a master's in mechanical engineering.

All three had to overcome the barriers that face full-time workers who seek additional college education—barriers like time away from the family to attend night classes, time to study, and into-the-night sessions to prepare for one test or another.

Or, as Tom pointed out, "getting a little peace and quiet around the house when I wanted to study." He has in his household a wife, two boys five and eight years old, and a cat.

Horace's major problem was "simply getting around to studying." Generally, he did so after the children—four boys aged eight, six, five, and three—were in bed. On weekends, he would often study at his office in Bldg. 836.

Walt thought the greatest hardship was spending as many as four nights a week in the classroom. But today he has sur-

prisingly few complaints about the rugged schedule.

"It kept me busy, and I didn't get out to spend money," he joked.

As for the future, Tom said that he will probably continue his education in mechanical engineering. He already has 70 credits which might be applied to a PhD program, and he is planning to enroll at UNM again next semester. He finds that working in the classroom is a "good way to keep current."

Horace is also considering going on to earn a PhD. "But," he commented, "having just completed the work for this master's, I'd be hard pressed to say right now whether or not I'll continue going to school."

Walt, who joined Sandia in 1952, has mapped out a break from the textbook grind. "I plan to rest awhile and spend some time with my family," he remarked. "I've had to neglect my family pretty much, and I have some catching up to do with them."

Walt and his wife, Audrey, have twin boys eight years old, and chances are the youngsters will grow up to know the value of a college education—especially in light of their parents' achievements. Audrey also was in the UNM graduation line to receive a bachelor of arts degree in history. She will begin work at the graduate level in the fall, thanks to a Woodrow Wilson Fellowship she was awarded a short time ago.

## Two International Conferences Attended By Peter J. Chen



Peter J. Chen of Deformation of Structures Division attended two international conferences on continuum theories in northern Italy this month.

The first meeting was the International Mathematical Summer Center session on "Non-linear Continuum Theories" scheduled May 31-June 9 in Bressanone, Italy. This center is sponsored by the North Atlantic Treaty Organization, the Italian National Research Council, and the Italian Ministry of Public Instruction. This session was under joint direction of Prof. G. Grioli of the University of Padova (Italy) and Prof. C. Truesdell of the Johns Hopkins University.

The second conference, also in Bressanone, on June 11 and 12, was sponsored by the Society for Natural Philosophy and was on the subject "Irreversibility in Modern Continuum Mechanics."

At both conferences, technical papers, lectures, and seminars were presented by men considered expert in the subject.

Mr. Chen received his BS degree in mathematics from the University of Hawaii, and his MS degree in aeronautical engineering and PhD degree in engineering mechanics from the University of Washington.

### Part of a continuing study . . .

## Sandia Firing 18 Rockets from Hawaii for Upper Air Research

A series of 18 rocket firings from Barking Sands launch site in the Hawaiian Islands is now in progress. The launches are part of a continuing study of the upper atmosphere conducted by High Altitude Nuclear Burst Physics Department. Scientific Director for the current series is L. B. Smith.

Under investigation is the region of the atmosphere between 100,000 and 500,000 feet. Measurements are being made of wind currents, atmospheric temperatures, and densities. This region is above the maximum range of balloons and below the altitude of orbiting satellites.

The rockets are being fired in groups of six. The first rocket of each group is launched at twilight. It spews a concentrated cloud of trimethylaluminum (TMA) between 450,000 and 500,000 feet. TMA reacts with the sparse atoms of oxygen in this region and produces a chemical glow. Also, radiant energy of the sun strikes the high-altitude TMA cloud causing variations in certain wavelengths of the light from the cloud. These variations are recorded and measured by two Sandia-developed spectographs located at Barbers Point on the Island of Oahu. J. M. Hoffman of Radiation Phenomena Division, assisted by M. A. Palmer and D. M. Zagar of the division, developed these instruments and operate them during the rocket flights. Temperatures can be computed from the data gathered by the spectrophotograph by comparison of the light intensities in the different wavelengths.

At four camera stations positioned in the Islands, men of Photometrics Division photograph the TMA cloud with various sequence and plate cameras. From this photographic data, upper air wind currents can be plotted.

The remaining five rockets in each group are fired at intervals during the three hours following the first launch. Another TMA rocket is part of the group. This one is programmed to spread a trail of the glowing TMA cloud from 250,000 feet up to and beyond 500,000 feet, and then down to 100,000 feet. Photographs of this cloud provide a profile of the winds in the region.

Two of the rockets in each group eject small spheres which inflate to a diameter of 26 inches after release and follow the trajectory of the rocket through apogee and descent. The balloon-like spheres col-

lapse at about 100,000 feet. Through their long flight, however, the spheres serve as radar targets, and their rate of acceleration and deceleration provides a measure of air density. The "drag" of the sphere can be mathematically calculated from the radar track. When density and altitude are known, temperatures can also be computed.

One rocket in each group carries a pressure sensing experiment designed by K. J. Touryan, supervisor of Re-Entry Studies Division. This experiment, tested and calibrated in Sandia's hypersonic wind tunnel, determines the pressure inside the rocket which can, in turn, be extrapolated to indicate the undisturbed ambient atmospheric pressure beyond the shockwave of the rocket. Here again, from atmospheric pressure and altitude data, temperature can be computed. C. A. Coonce of Engineering Aerodynamics Division is the project engineer.

The final rocket in each group ejects thin strips of aluminum "chaff" at about 230,000 feet. Subsequent movement of the chaff through the atmosphere is tracked by radar to provide wind current data.

From all of these various measurements, a profile of winds, temperatures, pressures, and densities of the region can be computed.

The data has a number of applications in Sandia programs such as Aerospace Nuclear Safety where knowledge of the mechanism of particle dispersion through the upper atmosphere is of prime consideration. Sandia's upper air research data is also incorporated with similar data from other countries and locations as part of a worldwide effort to obtain such information during the international year of the quiet sun.

Rocket design, rocket assembly, and launch activities for the series are performed by Carrier Development Division under K. F. Crowder. W. J. Patterson is the project leader.

Providing ground support and telemetering instrumentation design for the rocket activities is Projects Division under R. R. Moore.

J. M. Berry is the range manager for the current series.

Responsible for the four camera stations and in charge of camera operations on Oahu is D. C. Hanson of Photometrics Division. W. G. Foy is in charge of camera operations at Maui; M. E. Bush at Hawaii; and J. T. Cowie at Kauai.

## Take Note . . .

Charles E. Shipley of Design Information Services Division was among Sandia Corporation employees who received Bachelor's degrees at the University of New Mexico this month. His field of study was business administration.

A WALL STREET JOURNAL award was presented to Bill Hickerson recently for being the outstanding student in business administration in the graduating class at the College of St. Joseph. The selection is made by professors at the school.

Bill received a certificate and a one-year subscription to the newspaper, and the college received a plaque.

At Sandia, Bill is supervisor of Drawing Reproduction and Distribution Section.

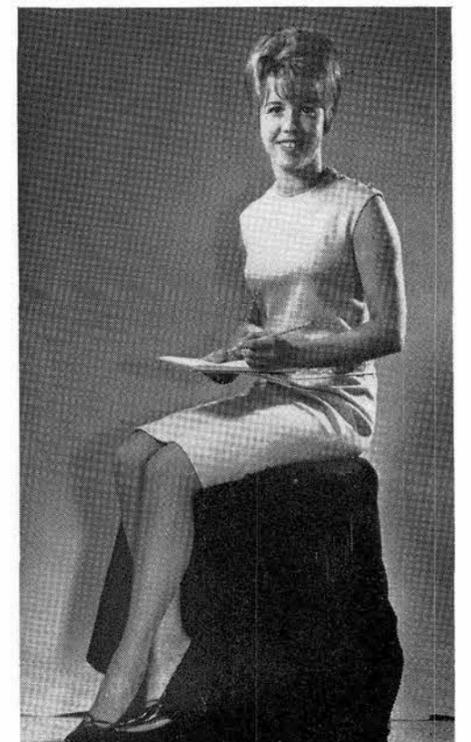
Donald Spatz of Advanced Systems Development Division III heads the Albuquerque Chapter of the American Society for Metals for the coming year. He was installed with other officers by retiring chairman V. G. Nelson of Metallurgy Division.

Installed as vice chairman was John L. Ledman of Dynamic Mechanical Properties Division. Elected to the executive committee were D. E. Munson of Deformation of Materials Division and J. R. Holland of Dynamic Stress Research Division.

At the dinner meeting, held May 20, N. J. DeLollis of Surface Chemistry and Adhesives Division discussed "Structural Adhesives."

Magician Willard Scranton of Unit Development and Product Control Division will be the featured speaker at a meeting of the Free Lance Orators Thursday, June 24. Willard will discuss "Watching Magic" while performing magic. The group meets in Rm. 123 of Bldg. 836 during the noon hour. Spectators are welcome.

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JUNE 18, 1965



Suzanne Burgess (9222)

### Take A Memo, Please

Know the hazards of your work. Don't learn them by accident.

### Sympathy

To Severn Starzynski (1511) for the death of his wife, Nina, in a two-car accident near Greenville, Ill., June 3. His 17-year-old son John died of injuries in a St. Louis, Mo., hospital the following day. Mr. Starzynski and the couple's three other children were also injured in the collision.

To Emma Gonzales (3126/3241) for the death of her father in Albuquerque, June 1.

To JoAnn Aiken (2512) for the recent death of her father in San Antonio, Tex.

# Sandia Engineers to Evaluate Results Of Deliberate Reactor Destruction

Sandia Laboratory will participate this month in the deliberate destruction of a simulated nuclear rocket reactor at the Aberdeen, Md., Proving Ground as part of the Rover Flight Safety Program.

The test is being conducted to determine the destructive effects of four especially designed 105mm projectiles on a full-size NERVA reactor. The projectiles are supplied by the Picatinny Arsenal and will create a blast yield of 120 pounds of conventional high explosives.

The NERVA reactor, a nuclear propulsion engine, was developed for space applications by the Los Alamos Scientific Laboratory. Although the device used in the test is not identical to an actual NERVA, it resembles the reactor as closely as possible without using the radioactive fuel material.

Sandia and Aberdeen Proving Ground (APG) are conducting independent evaluations of the blast effects at the request of the Space Nuclear Propulsion Office (SNPO) of both AEC and NASA.

SNPO decided on joint participation by APG and Sandia because of the testing skill available at both facilities. In connection with this program, Sandia has conducted a number of similar experiments with scale model devices to develop instrumentation techniques for this test.

For this destruct experiment, the non-nuclear mockup of the NERVA reactor will be suspended on a framework with its base five feet off the ground. The four projectiles are positioned within the reactor equidistant from the core center at 90° intervals, and will be triggered electrically.

R. E. Berry of Aerospace Nuclear Safety Division II and Sandia project engineer, refers to the experiment as another step in the overall Aerospace Nuclear Safety Program. Its specific objective is reducing radiological hazard to a level which can be tolerated in case of a launch pad failure, launch abort, short-lived orbit, or re-entry from orbit.

Mr. Berry said that burnup during re-entry will usually reduce radioactive material to micron size which is dispersed in the upper atmosphere. However, with a device as large and heat-resistant as the NERVA reactor, measures must be taken to reduce the radioactive matter to this micron size.

A series of tests by APG have confirmed the feasibility of an explosive destruct system. "However," Mr. Berry said, "additional data is needed to provide a complete description of the explosive destruct environment."

The "unknowns" include the distribution of particles by size and weight, the velocities of particles by size, the particle mass and geometrical distribution, and the graphite content of the cloud generated by the explosion.

To obtain the desired information, Sandia is using a number of instrumentation systems. These include pressure transducers, rotating foam particle collectors, fixed foam particle catchers, a number of cameras for photographic coverage, equipment to measure detonator fire and case break-up, and an array of 24 air sampling stations.

Two arrays of Sandia-designed fixed foam particle collectors will be located 40 feet from ground zero. Consisting of several thicknesses of polystyrene foam material, these collectors serve to intercept particles in flight.

The foam softens the impact so that particles are not broken up further. After the test, the foam material will be dissolved, and the imbedded particles will be collected, graded as to size, and classified as to shape.

Sandia also designed, fabricated, and installed six arrays of rotating foam particle collectors. Although several different designs are used, they basically consist of polystyrene foam discs rotated by electric motors.

The flying particles can strike the foam only by passing through a narrow slit in the shield surrounding each disc. A timing mark will be made on the rotating disc at the time of detonation.

The average velocity of the flying particles can be calculated by measuring the distance between the timing mark and the point on the foam disc where the first particles are imbedded.

Nineteen Sandians are participating in the effort. They are H. J. Bolles, Polymer Chemistry Division; B. A. Ball and C. C. Thacker, Elastomers, Molded Plastics, and Foams Division; R. L. Baca, Procurement Services Division; R. A. Matthews, Industrial Photographics Division.

D. R. Parker and Anthony Juskiewicz, Environmental Health Division; N. E. Corlis, Ordinance Test Projects Division I; James Karo, M. E. Bush, and R. J. Sorace, Photometrics Division; H. J. Plagge, Blast and Earth Motion Division.

B. S. Hill, J. B. Boyd, R. R. Middlesworth, H. J. Gay, and Mr. Berry, Aerospace Nuclear Safety Division II; and J. P. Martin and L. E. Nelson, Aerospace Nuclear Safety Division III.

# Three to Receive Certificates For Competence in Data Processing

Three men in Sandia's Computer organization—C. E. Roehrig, W. F. Jemison, and R. H. Carden—are scheduled to receive Certificates in Data Processing.

The certificates are awarded by the Data Processing Management Association on the basis of at least three years direct work experience in data processing, passing the CDP examination, and other conditions having to do with professionalism.

CDP is designed to establish high standards for data processing personnel by emphasizing a broad educational framework and practical knowledge in the field, and to provide a foundation for the

continued growth of the data processing field.

The examination encompasses a wide range of subjects considered mandatory for professional competence in the field of data processing and management information systems. It also tests knowledge of electronic computer programming concepts and techniques.

This recognition in the field of data processing has previously been given to D. K. Robbins, P. H. Arnold, and N. A. Smith, all of Programming Department, and H. E. Anderson of Reliability Department.



PREVIEW of the Coronado Club's Independence Day picnic is presented by Gordon Moe, his wife Marlene, and daughter Desiree, as Club employee George Crespi lends a patriotic note. The patio party from 1:30 to 7 on July 3 will feature swimming, free hot dogs and other refreshments, sack races, and pie-eating contests.

# Luau Coronado-Club Style Almost Better Than Real Thing

The Coronado Club's annual Hawaiian Luau will be held Saturday, June 26, with South Sea decorations and an elaborate menu to match the occasion.

Activities will get underway at 7 with the buffet served on the patio (weather permitting) or in the ballroom. At 9 p.m. Sol Chavez' band will begin playing songs of the Islands—and music of the other 49 states as well—for dancing.

Reservations should be made at the Club office by June 23, members—\$3, guests—\$3.50.

The luau will culminate a full day of work for Club Chef Rudy Adams and

his kitchen crew. The actual cooking and preparation of the many dishes will begin at about 3 a.m. The roast suckling pig will weigh about 30 pounds and requires something like six hours of baking, with frequent basting. There will be 10 salmon of approximately 10 pounds each, also due for oven baking.

Other items on the buffet table will be sweet and sour pork, baked fresh ham, a large chuckwagon roast, corn on the cob steamed in the husks, tossed green salad, and fresh fruit salad served Hawaiian-style in watermelon and pineapple shells. Anyone for Hawaii?

# Coronado Club Invitational Meet Attracts Full Slate of Swimmers

The Coronado Club's Ninth Annual Invitational Swimming Meet will be held tomorrow, and about 250 youngsters are expected to compete. The Club's two large heated pools will be closed all day to recreation swimmers.

The meet is officially sanctioned by the AAU and is attracting teams from Durango, Colo., Farmington, Los Alamos, and Santa Fe. Charlie O'Keefe is director of the meet, which is sponsored by the Coronado Aquatic Club.

Activities will get underway at 8 a.m. with 78 individual events scheduled throughout the day in the parallel pools. The age groups are 8 and under, 9 and 10, 11 and 12, 13 and 14, and 15 to 17. Events range from 25-yard freestyle for the smallest children through all the swimming strokes to the 200-yard event for the older groups.

Trophies will be awarded after the final event to the high point winning individual and high point winning team. Medals and ribbons will be presented to the individual winners.

The Coronado team is coached by Jim Rhudy. Children on the team who are expected to place well in the meet include 10-year-old Kim Cosner whose specialties are backstroke and freestyle; Bob Stover, age 10, breaststroke and individual medley; Barbara Artherr, backstroke, freestyle and diving—she was high point girl in her age group (17 years) in Santa Fe June 5; and Keith Schulein, age 16, individual medley and freestyle.

The Coronado Aquatic Club is comprised of parents of team members, and promotes a competitive swimming program. This year, for the first time, arrangements were made for a winter swimming and practice program at the indoor Olympic Pool on Sandia Base. During the summer, the practice sessions are from 6 to 8 p.m. at the Coronado Club. Officers of the aquatic club are Mrs. Paul Pewe, president; Ed Ronan, vice president; James H. Kelly, treasurer; and Mrs. Billy Hickerson, secretary.

In July, the club will be one of the sponsors of the Junior Olympics to be held in Albuquerque.



HOPEFUL ENTRANTS in the forthcoming Coronado Club Invitational Swimming Meet receive a final word from Coach Jim Rhudy. They are (l to r) Jim, Barbara Artherr, Pam Pewe, Robert Stoever, Kim Cosner, and Jeff Pewe.

# Wide Variety of Food Offered Coronado Club Members on Fridays

In addition to the Hawaiian luau and the invitational swimming meet, two social hour buffets will round out Coronado Club activities for the next two weeks.

Tonight, Lee Sprague's combo will play for dancing, and a chuckwagon roast beef and shrimp buffet will be served—adults \$1.75; children, \$1.50.

Next Friday, The Gems will provide entertainment, and a chicken buffet will be available at \$1.25 for adults and \$1 for children.

The Coronado Bridge Club plans a bridge dinner for Monday, June 21, and the monthly master point bridge competition will be on the following Monday.

# Coronado Club Noon Hour Fashion Models Named

Sandia women modeling dresses and sports apparel at the Coronado Club during forthcoming Wednesday noon hours are:

June 23—Faye Spellman of Design Definition Division C

June 30 — Gene Bowden of Component Development Division

If you would like to model, or would like to suggest a possible model, please contact Tom Morgan of Employee Benefits Division.

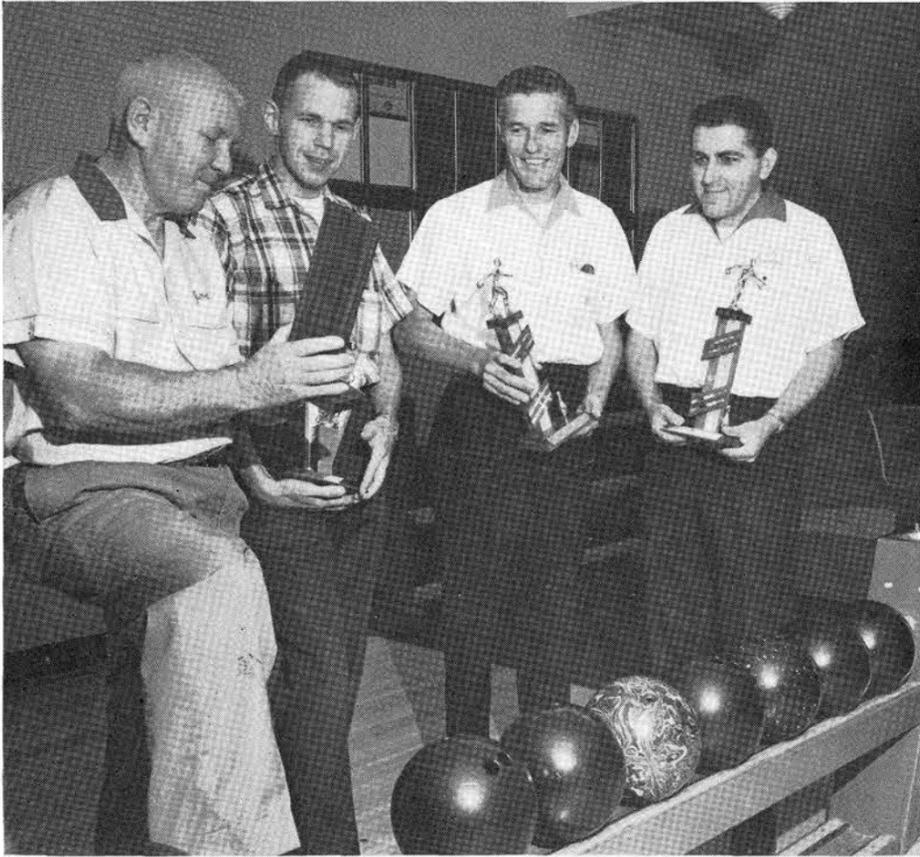
# West Wins at Bridge

Thirty-six Coronado Club members competed in the Coronado Bridge Club's Individual Championship, June 7. First place honors went to R. E. West of Electronic Development Division. Mrs. R. J. Grossett was second and Alma Mischke was third.

The next major competition will be the American Contract Bridge League on July 12.

COMPUTER KNOWLEDGE assisted (l to r) R. H. Carden, W. F. Jemison, and C. E. Roehrig in qualifying for Certificates in Data Processing.





**INDIVIDUAL HEROICS**—Four bowlers who supplied much of the fireworks during the recent Sandia Laboratory Handicap Bowling Tourney are (l to r) Joe Gordon, singles champ; Paul Gregg, all-events; and Bob Parker and George Kamboureis, doubles.



**WINNING SMILES**—This is the team which captured first place in the first annual Sandia Laboratory Handicap Bowling Tournament. From left to right, Jim Hinson, Roy Brett, Richard Michaels, Roy Tackett, and Marlin Klemm flash winning smiles.



**KEGLING KINGS**—These five Sandians comprised the winning team in the fourth annual Sandia Laboratory Team Championship bowling playoff. From left to right, Dick Kidd, Chris Christensen, Gaynor Atkinson, and Bill Fulcher watch Stan Meyer tally up the scores.

# Sports Potpourri

The Sandia Laboratory recreation program last week took a quick time out to give recognition where recognition was due.

Trophies were awarded to the winners of spring tournaments by Employee Services Division, the organization administering the recreation program.

Of course, the pause to honor was a brief one. Today, Sandia sportsmen are at it again on several fronts, including weekly fast-pitch and slow-pitch softball action and several men's and women's golf tournaments.



**VOLLEYBALL VICTORS**—Champion of the Sandia Lab Volleyball League was this No. 1 team from the environmental testing organization. Team members (front row, l to r) are G. C. Garcia, J. V. Otts, W. R. Kampfe, and L. O. Seamons. Behind them are W. V. Hoffman, R. M. Workhoven, A. W. Sharpe, H. J. Blechinger, and D. L. Preston.



**BRIDGE CHAMPS**—Winners of the Sandia Laboratory Open Pairs Bridge Tournament were Pat Waggoner and Dick West.

**FEM GOLFERS**—Checking their winning card after a recent tourney at Belen are Genie Turner (left) low net, and Ann Michele, low gross.

## Given Memorial Golf Tournament Tees Off Tomorrow

A field of more than 100 Sandia Laboratory golfers is scheduled to tee off tomorrow in the sixth annual Fred J. Given Memorial tournament.

Play will be over the 6591-yard, par-72 University of New Mexico course, where Tom Kelly of Special Test Equipment Design Division won the Given Memorial Award last year. Tom, who bested Jim Leonard of Aerospace Nuclear Safety Division IV in a "sudden death" playoff, will be back again this year to defend his title.

The 18-hole tourney is named after the late Frederick J. Given, vice president at Sandia Laboratory from 1956 until his death in 1959. Traditionally the tournament winner is recognized as Sandia Laboratory's individual golf champion for the year.

Past winners, in addition to Tom, include Wendell Nelson, 1963; Walt Green, 1962; Richard Kidd, 1961; and Lawrence Smith, 1960. A permanent silver trophy in the Bldg. 802 display case bears the name of each winner.

In addition, medalists in Given Memorial play receive miniature replicas of the permanent trophy.

## Sandians Help Boost Ice Hockey for Boys

Here's a cool idea—the Sandia Mountain Hockey League is going to hold practice sessions for boys, up to age 12, interested in playing ice hockey.

Rol Hewitt of Diagnostic Aircraft Operations Division, who is league president, announces that the initial meeting will be held July 10 at 10 a.m. at Iceland (Copper and Truman NE). Boys and their parents are invited to attend to hear an outline of the proposed program which will include instruction in skating fundamentals as applied to hockey as well as hockey rules. Times and dates for the practice sessions will be announced at that time.

Rol and two other Sandians—Stoughton Bell of Systems Analysis Division II and Don Rigali of Aerodynamic Research Division—are officers in the league and have played on local ice hockey teams for many years.

# Service Awards

## 15 Years



Robert E. McCallum  
2412  
June 19, 1950



Charlie Chavez  
2553  
June 22, 1950



Clement F. Toft  
2532  
June 28, 1950



Clifford L. Pecha  
4514  
June 28, 1950



Billie L. Pierce  
7223  
June 29, 1950



William C. Myre  
9231  
June 29, 1950



Manuel Vallejos  
4513  
June 29, 1950

# Deaths . . .

John F. Berger, a security inspector for 14 years, died suddenly June 4. He was 40.

Survivors include his widow, Bertha, who works in Evaluation Division B, and three children—Mrs. Evangeline McCoy, David Berger, both of Albuquerque, and a son Daniel serving with the Army in Germany.



Word has been received from Hollywood, Fla., of the death Apr. 23 of Harry Hunter, a retired Sandia employee who lived there.

Mr. Hunter began working at Sandia in November 1946. At the time of his retirement in October 1963, he was an administrative staff assistant in Electronic Components Division.

He is survived by his widow, Lillian.



## 10 Year Service Awards

June 19 - July 2

\*Ferne L. Saylor 8253, George Voids 1532, Richard T. Othmer 1541, Roman S. Heuer 4214, G. M. Minshall 4611, Kenneth H. Cordes 7253, Edward S. Phinney 9319, Philip T. Boling 1323.

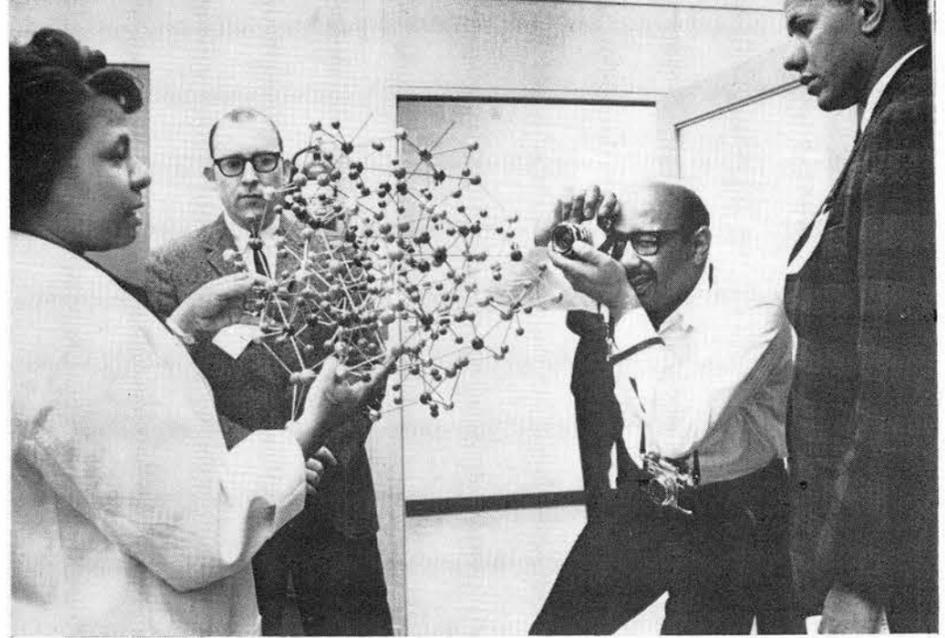
Eldon B. Frame 2121, Elden L. Prawitz 2551, Jay D. Gilson 8151, George W. Elliott 3151, Richard F. Ashmore 1333, Wayne R. Lewis 3242, Helen M. Hayes 4131, Warren H. Arthur 4573.

Lewis A. Hanchey 9319, Bruce A. Wickesberg 2441, William L. Gibson 4251, Eugene C. Cnare 5141, Donald R. Lewis 7255, Carroll A. Coonce 9325, Glenn R. Norris 5612, Curtis D. Ouwerson 1424, Daniel H. Freshman 4136, William H. Jackson 4151, and Delbert D. Stewart 4252.  
\*Bridged service

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KATHERYN LAWSON of Crystal Physics Division was photographed by Ted Williams for a feature article in EBONY magazine. Jim Mitchell (second from left) of Public Information Division assisted in arrangements here. Louis Robinson (right) is EBONY's West Coast Editor.

## Atomic Industrial Forum Meets at Sandia June 21 On Aero Nuclear Safety

Sandia Corporation's Aerospace Nuclear Safety Program will be outlined to members of the Atomic Industrial Forum during a one-day meeting here June 21. A. Y. Pope, Director of Aero Projects, is chairman of the meeting.

The Atomic Industrial Forum is an organization of industrial firms associated with the Atomic Energy Commission under contract for development of nuclear power for space. About 25 representatives of the organization are expected to attend the meeting.

Members of Aerospace Nuclear Safety Department will discuss Sandia's activities in this area during the program. J. L. Colp will outline ground testing activities, J. W. McKiernan will discuss analysis and evaluation, H. E. Hansen will discuss Sandia's applied research program in aerospace nuclear safety, and A. E. Bentz will discuss flight testing.

During the afternoon, P. H. Adams, supervisor of Radiant Heat Division, will conduct the group on a tour of environmental testing facilities in Area III.

## 'Ideal Community' Described by Sandian In National Magazine

The June issue of EBONY magazine carries a six-page feature article on Katheryn Lawson of Crystal Physics Division and her husband, Kenneth. The article is entitled "Scientific Couple Finds Success in Albuquerque."

The majority of the article's 17 photographs were taken by Ted Williams of Chicago, who contributes regularly to the magazine; however, a photo of the Lawson's backyard waterfall and fish pond was snapped by Bill Laskar of Sandia's Employee Publications Division.

The photographs taken at Sandia Laboratory include one of Kathy conducting an experiment with Frank Gurule, another shows her scanning the results of an experiment with her supervisor, Duane Wallace, and a third pictures Kathy in discussion with Walt Rosenberg with whom she serves on the city's Fair Housing Board.

### 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

ROBERSON, \$19,500, 4-bdr., den, utility rm., garage, carpeted, 1 1/2 bath, built-in, AC, sprinklers, landscaped, large corner lot. Neas, 11617 Snow Heights, NE.

4-BDR., DEN, 1680 sq. ft., garage, 14x30 patio, bar-b-q, fireplace, carpet, AC, CFA, sell below \$18,350 FHA appraisal. Berger, 11620 Bellamane NE, 298-4234.

21" GE TV, \$25 or best offer. Peabody, 344-8022.

WEDDING GOWN, size 16, new; Roper gas stove. Gonzales, 296-1144 after 5.

3-RM. CABIN w/carpot. Manzano Mts., 8 miles south of Highway 66; 5-yr. old gelding, fair roper, good all purpose ranch horse. Bluet, 282-3686.

TIRES, used Royal WW 8:50x14, \$4, \$6. Burns, 1319 Dartmouth NE, 255-3737.

FREE DOGS, 1-yr.-old male, mostly German Shepherd, Hepatitis, distemper, rabies shots current; also free, 4 kittens, 6 wks. old. McCampbell, 264-2550.

'52 CHEV, 1/2-ton pickup, 13,000 miles on engine, \$225; gas stove, \$10. Bauhs, 282-3497.

BOAT, 12', fiberglass w/enclosed bow, \$90. Benson, 268-3585.

SOFA BED, \$25. Hill, 243-3493.

3-BDR. BRICK, Inez addition, 1 1/2 bath, study, large screened porch, attached garage, sprinklers, \$17,500 FHA appraisal. McCutcheon, 299-6655.

TRAVEL TRAILER, 14', sleeps 4; man's wrist watch, stainless steel Green Autowind. Bailey, 268-1140.

CHILD'S old-fashioned school desk; also bulletin board, both painted white w/pink, \$8. Parks, 268-0875.

24" TV, Magnavox console, needs H.V. transformer, has auxiliary input to speaker, \$10. Walker, 299-6039.

BOXER DOG, full-blooded, male, 1 1/2 yrs. old. Kelly, 345-1214.

HARMONY ELECTRIC GUITAR and amplifier, 4 mos. old, cost \$130, sell for \$95 or take over payments of \$8.50/mo. Cowham, 298-4249.

ROBERSON, 3-bdr., 1 1/2 bath, den, pitched roof, landscaped, VA, Coonce, 296-1089.

2 BICYCLES, 26", your choice, \$7.50 ea. England, 299-0464.

'64 CHEV. IMPALA V8, 2-dr., HT, PS, PB, AC, large engine, NADA \$2725, sell for \$2425. Bourne, 299-0788 after 5.

'49 CHEV., running condition, \$30. Bartholdi, 268-1982.

FOUR HILLS, tri-level, 3-bdr. upstairs, 1-bdr., den downstairs, storage room, over-size double garage, landscaped, 2200 sq. ft. Law, 298-0287 after 5:30.

FREE KITTENS, housebroken, weaned, free delivery. Tatum, 877-0997.

'59 FORD station wagon, V8, Fordomatic, AC, PS, 57,000 miles, \$730. Kreiter, 299-8494.

4-BDR. HOUSE, NE, near schools, carpeting, drapes, AC, 1700 sq. ft., \$16,000 FHA or assume present 4 1/2% GI. Shunmy, 299-2787.

FIVE-FOOT GLASS TUB ENCLOSURE, deluxe model, \$20. Gustafson, 299-3270.

TWO-CUSHION Lawson style couch, print cover. Clark, 299-6410.

SELL OR TRADE: television mast and antenna, mast in 3 sections, extends from 10' to 26', \$12. Stuart, 299-9190.

DRAPES, short lined, Early American, fit Roberson master bdr. and bath, \$15. Young, 299-3102.

FISHING and hunting cabin in Colorado on the Conejos River, modern w/large screened porch, \$12,000. Mahoney, 298-5711.

TRUNDLE BED w/mattress (low slip-under bed on casters), \$25. Paul, 268-5609.

STORE COUNTER w/cash drawer, 12'x3'x3'; storage cabinet 8'x12', 40 compartments, best offer. Dunn, 255-9213.

GE 19" table model TV; double bed w/springs and mattress; misc. chairs; electric skillet; electric clock. Suber, 298-3029.

HOFFMAN BRICK, 3-bdr., 1 1/2 bath, carpeted, landscaped, patios, corner on park, \$15,850. Shaum, 299-5333, 8735 Fairbanks NE.

ENCYCLOPEDIA BRITANNICA set, 24 vols., 2 language dictionaries, 1 world atlas, 7 year books, 1 book case, \$260. Lucero, 298-7961, 2129 Eton SE.

1 YR. OLD, 3-bdr., 1 1/2 bath, built-in range and disposal, carpeting, SE Heights, near schools and Bases, MacDowell, 268-2184.

'65 SEAR's gas range, cost \$200, sell for \$100, used 3 mos., 7820 Pickard NE. Thomas, 299-6118.

'60 VW BUS, recent engine overhaul, new battery, \$700. Tucker, 299-7711.

FIVE 6.50x13 tires, make offer. Nevin, 298-0383.

COMPLETE SET wood power tools, would trade for a jeep. Jones, 344-6196.

3-BDR. HOUSE, carpeted, large covered patio, \$85; will sell below FHA appraisal of \$11,750, convenient to Bases and schools. Mason, 299-3580 after 5.

NEW LENOX "Chanson" china, 30% off original price; Admiral refrigerator and freezer, \$450; baby stroller, \$12.50; \$25 white quilted spread \$12.50. Jackson, 299-5996.

BLUE DANISH MODERN COUCH, cane ends, 110" x88"; barkcloth brown lined drapes, Cassidy, 268-1106.

8-PIECE blonde dining room set w/china cabinet, \$85; 7-piece maple dinette set, \$40. Chaves, 255-6155.

80CC SUZUKI, \$75 down and take over payments; 5-piece Danish modern livingroom set; orthopedic mattress and box springs. Best, 247-3914 after 5.

12' BOAT, 5H Seaking motor, oars, anchors, life jackets, less than 10 hrs. on motor, all together \$300, 8006 Morrow NE. Brown, 299-1689.

BASSETT PUPPIES. Shinnick, 268-0240.

MISC. ENGINE PARTS for 283 Chevy; misc. engine parts for B-16 Volvo; child's rocking horse. Wilson, 298-0049.

OLD, metal drop-center typewriter desk, five drawer, \$25. Olson, 299-0617.

NEWLY-REDECORATED brick veneer Hoffman home, 3-bdr., 1 1/2 bath, landscaped, sprinklers, low equity. Robertson, 299-6148.

3-BDR., den, electric kitchen, 501 nylon carpeting, foam padding, patio, landscaped, shop, near schools, \$13,500 FHA-VA. Tilley, 268-7733.

DISHWASHER, portable Kitchen Aide, \$50. Magnuson, 268-5955.

ROBERSON, 3-bdr. and den, \$600 worth of new carpeting, FHA appraisal. Everett, 9627 Towne NE.

HORSES: 5-year mare, green broke; 20-year mare, good kids horse; will trade for hay or ?. Harrington, 282-3188.

ROBERSON 3-bdr., 1 1/2 bath, DR, utility room, recently repainted inside, AC, patio, sprinklers, FHA appraisal, \$13,500, 9722 Morrow Rd. NE. Scully, 299-9373.

HIGGINS camping trailer, new tires, sleeps four comfortably, \$250. Schmierer, 299-2352.

METAL LAWN CHAIRS, three for \$5. Hawk, 256-6264.

LAWNMOWER, S8. Hart, 299-8832.

'62 FORD Fairlane, 4-dr. sedan, 6-cylinder, stick shift, new tires, 32,000 miles, \$1100. Duncan, 299-2415.

'58 MICROBUS 9-passenger, luggage carrier, radio, 4 new tires, \$630. Kent, 299-8821.

'58 HARLEY-DAVIDSON (74) FL, w/extras, \$595. Griego, 877-2327.

'61 AUSTIN HEALEY SPRITE, selling \$150 below book price of \$835, \$685. 114 Mesa SE. Ludwick, 243-6544.

ADMIRAL CONSOLE 21" TV-radio-record player, make offer. Garcia, 256-6609.

NATIONAL NC 303 amateur band receiver, AM, CW, SSB, also covers CB band, \$189.95. Bauer, 255-7774.

'63 TRIUMPH TR4, red roadster w/OD, 628c Alcazar SE. Magnuson, 255-3921.

ALL METAL CAMPER SHELL, fits Corvair side ramp pickup, \$125. Arvin, 243-6286.

WALNUT DESK; walnut bookcase; coffee table. Warnke, 268-1877.

ONE REGULATOR, oxygen and acetylene, two-stage, \$50. Range, 299-2971.

STORKLINE BABY CRIB. Perea, 265-0861.

LAND ROVER, long wheelbase station wagon, 30,000 miles mostly on highway, \$4300 new, asking \$2700. Linn, 282-3986.

COMPACT CAR, DKW, 1961, \$450. Matlack, 256-7371 evenings.

'51 4-DOOR Pontiac body, AT, R&H. Gladis, 299-7729 after 5:30.

FULL SIZE walnut bookcase bed, Sealy mattress and box springs, \$45 or trade for bunk beds in real good condition. Doggett, 299-7957.

POWER MOWER, 18" rotary, new, \$23. Sweeney, 299-1630.

10' FLAT BOTTOM BOAT, w/2 seats, paddles, car rack, \$60; Briggs & Stratton power mower, 18", 1 yr. old, \$35. Hansen, 298-8993 after 5.

'58 FORD ranchwagon, R&H, OD, V8, \$250. Beavis, 344-6360.

SIX-YEAR CRIB w/mattress; wooden high chair; convertible baby buggy-car bed; metal double bed frame. Johnson, 256-3473.

HOUSE near base, schools, shopping; 3-bdr., AC, fireplace, hw/floors, FHA, landscaped, \$700 below appraisal, must sell, 8311 Roma Ave. NE. Bemis, 296-1305.

20 ACRES WOODED 12 miles South on Highway 10. Romero, 344-0302.

'58 MERCURY 9-passenger station wagon, below Blue Book for quick sale, \$300. Ault, 282-3280.

TRAILER TENT, built-in 3-burner butane stove, sink w/20-gal. water heater tank, and ice chest. Williams, 298-2671.

'57 BUICK Estate wagon, Caballero, \$475. Reynolds, 255-4196.

CAMP STOVE, \$5; gas range, \$20; luggage bars, child's slide, \$5; rocker-spring horse \$2; folding clothesline, \$1. Stixrud, 298-0478.

'56 CADILLAC, air, power, \$425; roll-away bed, \$25; electric sewing machine w/cabinet, \$50. Browne, 344-9675.

'62 VESPA 150cc, spare tire, buddy seat, windshield, Gluwa, 299-8027 after 5.

PIANO, \$140; violin, \$100; motor scooter, \$125; cedar chest, \$25; upholstered rocker, \$40; tea cart, call after Sunday. Copeland, 255-4688.

'50 CHEVY CONV., \$75. Swain, 265-0098.

FORTABLE Travelaire evaporative cooler w/stand and casters, directional louvers, twin fans. Auerbach, 242-6478.

16' KINSKILL CAMPER w/heater, used 4 times, self-contained. Chapman, 299-3946.

CHOICE CABIN SITE, Pecos River, fronts on all-year road, good spring, spruce trees; all-steel utility trailer. Collins, 268-3612.

CAR BED, car seat, infant seat, diaper pail, dressing stand, and potty seat, \$9.50; 3 pr. curtains, nursery print, \$5. Baxter, 298-1567.

HOLLYWOOD BED, \$15 or best offer; pole lamp, \$4; band saw, \$15; 30" doors w/hardware, \$4 each. Binder, 299-2937.

'7 POOL TABLE, \$40, includes cues, bridges, balls and chalk. Puccini, 255-0568.

'63 FORD Galaxie 500 Sunliner convertible, black-white top, red interior. Becht, 898-2095.

'54 CHEVROLET, high-bodied station wagon, \$300. Quigley, 256-6622.

SIMMONS Hide-a-bed; kitchen set, oval table, 4 chairs; bed, chest, nite table, matching; Hoffman 21" TV; pole light. Campbell, 299-4830.

'64 FORD Galaxie 500 Tudor HT, standard shift, Thunderbird engine, 11,500 miles. Kern, 265-1042.

'54 BUICK SPECIAL, 4-dr., AT; Simmons mattress; table lamps; Lady Sunbeam hair dryer. Love, 298-6640.

'60 T-BIRD HT, all power and air. Smith, 898-3517 evenings.

AKC REGISTERED, champion sire, Pembroke Welsh Corgis, 4 month-old-male, red w/white, Cote de Neige linebred, all permanent shots. Dauphinee, 255-6367.

2-BDR., carpeted, drapes, AC, CFA, garbage disposal, attached garage, walled, landscaped, sprinklers, large patio, \$350 down FHA. Jesse, 268-7886.

'56 CADILLAC, full power and air; also need good home w/running room for female black and silver AKC German Shepherd. Calvery, 255-9545.

COLLAPSIBLE PET CRATE, size 21" high, 18" wide, 29" long; metal floor pan; dishes; sectional book case. Yunker, 299-5389.

3-BDR. family room, 2 1/2 baths, large screened patio, two fireplaces, landscaped, near schools, 1212 Parsifal NE. Forsythe, 299-2785.

3-BDR., wb fireplace, kitchen, living, dining, utility rms., attached garage, NE Heights, below FHA appraisal, terms; new green Restal bathtub-39" sq. Meahl, 282-3861.

MANKIN 3-bdr., carpeting, evaporative AC, drapes, near shopping, schools, terms. Rudolph, 345-1326.

### WANTED

V-8 ENGINE for '57 Ford. Gonzales, 243-5283.

OLD HUNTING KNIVES, also books about knives, will pay cash or trade. Smitha, 8607 Menaui, 299-1096.

HOME FOR free kitens; also need home for beautiful Persian mother cat, will help pay for spaying. Bauer, 268-9735 after 5.

TRUMPET in excellent condition, reasonable price. Ricker, 712 Kentucky SE, 255-2678.

HOMES for kitens, will deliver. Shumway, 2704 Alcazar NE 299-3951.

6-HOLE RIM AND USED 6:50x16 tire for '57 Chevy 1/2-ton pickup. Gluwa, 299-8027.

RIDE from Bryn Mawr NE and Indian School Rd. to Bldg. 880. Moore, 268-5053.

RIDE from Constitution NE and San Mateo NE to Bldg. 880. Miller, 255-8993.

DEPENDABLE HIGH SCHOOL senior will do baby sitting, \$.75/hr., own transportation. Flinchum, 344-1072.

TRADE: 1600 sq. ft. SW valley home for income property near bases. Roth, 877-4997.

BABY SITTING in my home. Ristine, 256-2708.

TRADE tent 10'x13' plus side room, no leaks, tears or holes, for smaller tent in equal condition, about 11'x11' umbrella type, possibly wall tent. Richardson, 344-4324.

BASEBALL CATCHERS GLOVE for left handed thrower. Stuart, 299-9190.

JOIN or form small car pool from area near 7800 blk. Pickard NE and Wyoming to 880. Thomas, 299-6118.

### LOST AND FOUND

LOST—Black and grey ear clip w/tear drops, pink cameo tie clasp, Timex watch w/leather band, 4"x6" black leather notebook, steel thimble. LOST AND FOUND, tel. 264-2757.

FOUND—Ladies white sweater, Shaeffer pen, safety glasses, keys. LOST AND FOUND, tel. 264-2757.

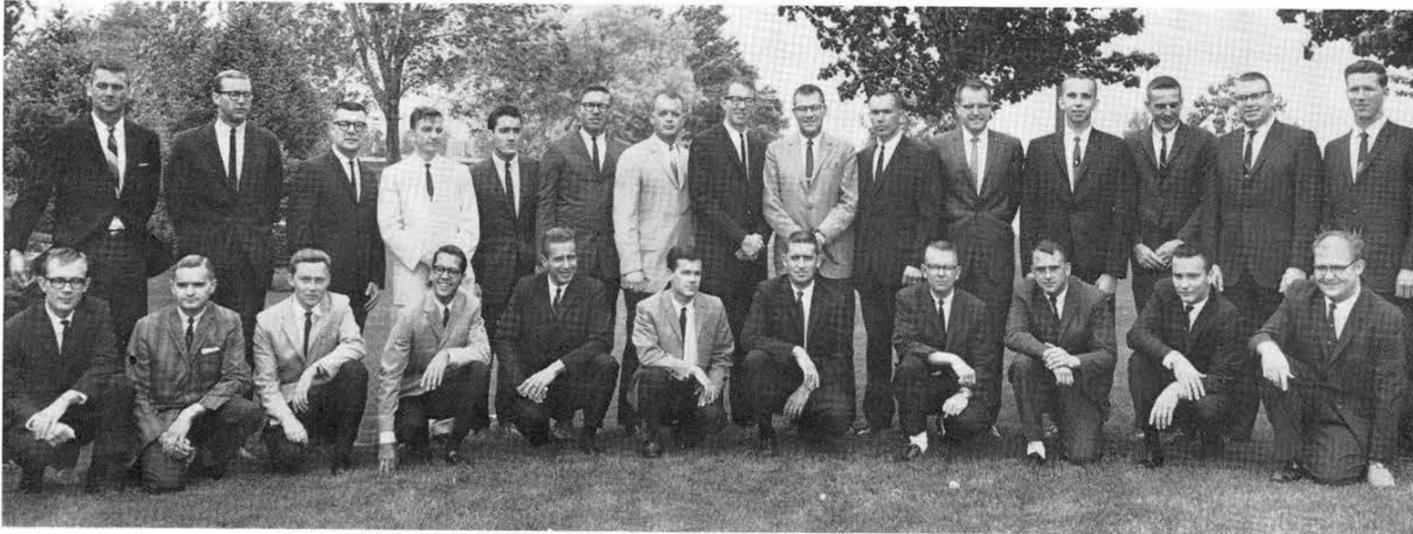
### FOR RENT

15' TRAVEL TRAILER, sleeps 5, butane equipped, lightweight, tows easily, reserve now for vacation. Colp, 268-8035.

DELUXE 1-bdr. furnished apt., electric kitchen, nylon carpets, AC, storage rm., utilities furnished, \$95, 10104 Comanche NE. Stone, 298-4620.

2-BDR. FURNISHED APT., AC, patio, no pets, married couple only, \$100, 2718 Eubank NE. Shaffstall, 298-3749 after 5.

UNFURNISHED 2-bdr. house 1 blk off Ridgecrest, 1 blk from Whittier School, near base and Highland shopping center, \$85, 1616 Anderson Place, Padilla, 255-8060.



Technical Development Class of 1965 — "This is a time of great technical challenge."



## 52 Employees Complete TDP Program

Fifty-two graduates of the Technical Development Program were honored recently with an informal luncheon at the Coronado Club. The men had just completed two years of advanced work at the University of New Mexico.

The TDP program emphasizes mathematics, statistics, and modern analytical methods as well as calling for advanced work in mechanical and electrical engineering. Sandia needs engineers with a much broader understanding of statistical techniques and modern physics than that obtained normally in a bachelor level degree program. TDP students divide their time between work assignments at Sandia Laboratory and classes at UNM.

Members of Sandia's Small Staff and members of the Education Committee attended the luncheon and congratulated the graduates. They commented on the investment the Company has in the TDP

### Sandia Authors

C. W. Harrison, Jr., of Advanced Electronics Systems Division, R. W. P. King (a Sandia consultant) and D. G. Tingley, both of Harvard University, "The Current in Bare Circular Loop Antennas in a Dissipative Medium," July issue; C. W. Harrison, Jr., and Charles H. Papas of California Institute of Technology, "On the Alteration of Transient Fields by Imperfectly Conducting Spherical Shells," November issue, both papers for publication in TRANSACTIONS OF THE IEEE ON ANTENNAS AND PROPOGATION.

J. P. Spacer, Jr., of Instrumentation Design Division, "Multiphase Signals from a Disc," July 19 issue, ELECTRONIC DESIGN.

A. L. Roark of Applied Mathematics Division and G. Milton Wing (formerly of Sandia), "A Method for Computing the Eigenvalues of Certain Integral Equation," Vol. 7, 1965, NUMERISCHE MATHEMATIK (published in Germany).

R. D. Driver of Applied Mathematics Division, "Existence and Continuous Dependence of Solutions of a Neutral-Differential Equation," Vol. 19 (February), 1965, and "Note on a Paper of Halanay on Stability for Finite Difference Equations," Vol. 18, 1965, both in ARCHIVE FOR RATIONAL MECHANICS AND ANALYSIS.

C. J. MGarr, Director of Service Operations, "A Definitive Operating Concept for Service Organizations," May-June issue, SYSTEMS AND PROCEDURES.

program and the return expected from the participants.

"This is a time of great technical challenge," R. W. Henderson, Vice President, said. "And I have never seen a time when the Sandia future looked brighter. Our many achievements over past years have attracted important attention resulting in our being asked more and more frequently to undertake tasks requiring the skills and facilities we have developed. Looking to the future, I can see a highly rewarding role for the Laboratory in the pursuit of goals of national importance."

Members of the 1965 TDP class are Alvin E. Arave (2441), James J. Baremore (2422), Robert V. Baron (1423), Barry A. Bodhaine (7254), Frank W. Bolak (2453), Thomas A. Budge, Jr. (1331), Michael K. Bumgardner (1421), Gerald D. Cain (2413), Duane L. DeWerff (2543), Richard E. Fairley (7331), Louis V. Feltz (7423), Malcolm R. Fisher (7245), Thomas R. Gardner (1322), James F. Gover (1312), Jimmie D. Guy (2441), James O. Harris (1313).

George M. Heck (1322), Richard A. Hernquist (1443), William H. Hodge (1511), Clarence J. Howard (7418), Kenneth J. Kutac (7334), Larry M. Lee (1443), James A. Leineweber (2422), Paul T. Lubbeck (1443), James P. Martin (7413), James M. McIntire II (2313), Carl G. Murphy (1414), Larry T. Nelms (2444), John M. Nielson (7245).

### ECP Members Give \$114,617 to Agencies

At the halfway mark in the current contribution period, members of the Employees' Contribution Plan have given a total of \$114,617 to the United Community Fund and seven other agencies. Sandians contributed \$95,526 during the same period in 1964. As the May checks—totaling \$17,638—were mailed recently, the following distribution had been made:

	May	Year-to-Date
United Community Fund	\$14,463	\$ 93,483
American Cancer Society	846	5,501
Bernalillo County Heart Association	740	4,799
National Arthritis and Rheumatism Foundation	264	1,717
N. Mex. Society for Crippled Children and Adults	529	3,435
National Multiple Sclerosis Society	229	1,522
Cerebral Palsy Association of Bernalillo County	141	914
Muscular Dystrophy Association of America	246	1,591
Reserve Fund	176	1,136
	\$17,638	\$114,617*

\*This total includes the cash contributions and specific donations made at the beginning of this year's ECP drive.

James F. Ney (1552), Larry M. Parker (1313), Dean R. Pedersen (2453), Orren T. Pickard, Jr. (2412), John M. Portlock (7435), David T. Putnam (7214), Ronald R. Reynolds (7331), James P. Rybak (7245), William S. Saric (7311), Victor Schulze, Jr. (1532), Larry Seamons (7323), Blynn D. Shafer (1433), James E. Solberg (2543), David L. Streeter (1322), Junior K. Thiry (2541), Henry Tolsma (1121), Raymond M. Uhler (1423), Samuel G. Varnado (1314), James D. Warner (7419), Gary West (7222), Clifford A. Wilson, Jr. (7435), and Clarence W. Young (7412).

### Sandia Speakers

T. B. Cook, Director of Nuclear Burst Physics and Mathematical Research, "Recent Considerations of Nuclear Explosions," Western Electric Company Engineering Symposium, El Paso Area, May 20, El Paso.

D. C. Bickel of Track, Rocket Launcher and Guns Division, "Sled Track Facility, Sandia Laboratory," Naval Research Reserve Company 8-7, May 26, Albuquerque.

Marvin Moss of Materials Research Division, "Scattering of Phonons by Dislocations," American Physical Society meeting, June 23-25, New York City.

R. L. Schwoebel of Atomic Interactions Research Division, "Condensation of Gold on Gold Single Crystals," American Physical Society meeting, June 23-25, New York City, and Third Annual Surface Physics Symposium, Washington State University, May 21-22, Pullman, Wash.

Albert Narath of Solid State Research Department and A. T. Fromhold (former Sandia employee), professor in Department of Physics, Auburn University, "Nuclear Spin-Lattice Relaxation in Metallic Ag, Rh, Mo, W, Y, YH<sub>2</sub>, and Na<sub>2</sub>WO<sub>3</sub>," American Physical Society meeting, June 23-25, New York City.

Neith Pollard of Solid State and Thin Film Devices Division, "Some Microelectronics Techniques," Albuquerque Chapter, IEEE Professional Group on Electron Devices, May 20.

Albert Goodman of Seismic Systems Division, Iben Browning (Sandia consultant) and Selden L. Stewart, both of Thomas Bead Foundation, "Computer Modeling Experiments on 'Neutral Nets' with Feedback Via Function Generators," Invited Symposium on Fundamental Biological Models, June 17, Stanford University.

### All-Arabian Horse Show At Tingley June 19-20 Free to Spectators

More than 200 participants from across the nation are expected for the All-Arabian Horse Show at Tingley Coliseum June 19-20, according to show chairman J. W. Galbreath, manager Public Relations Department.

Several Sandians will be entering their prize horses in the show. Included will be W. A. Otero, supervisor of Packaging-Shipping and Commercial Inspection Division; W. R. Lincoln of Plant Systems Division; Mara Mulenburg, secretary to Vouchering Division; A. I. Redlinger, supervisor of Services Section II; and R. C. Walter of Configuration Management Data Division.

Arabians and Half-Arabians will be shown at halter and in performance classes, Mr. Galbreath says, with performance classes including Western, English, Costume, Cutting Horse, Driving Class, and others.

On Sunday, June 20, beginning at 8 a.m. the National Championships at halter for registered Half-Arabian mares and geldings will be held.

"It will be a great event for horse lovers," Mr. Galbreath says, "and a colorful show for all. Admission is free. Spectators are welcome."

### K. S. Spoon President Of Purchasing Agents Ass'n of New Mexico

K. S. Spoon, Sandia Corporation's Purchasing Agent, was recently elected president of the Purchasing Agents Association of New Mexico. Mr. Spoon was one of the organizers of the Association in 1963. Last September, the 50-member organization was accepted and granted a full charter by the National Association of Purchasing Agents.

Mr. Spoon has been active in the national organization for more than 10 years, previously holding membership in the El Paso Chapter.

L. R. Neibel, manager of Purchasing Department IV & Traffic, serves the New Mexico Association as chairman of the professional development committee. J. W. Hughes, Senior Buyer, Contract & Purchase Service, is program chairman.

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LAB NEWS

JUNE 18, 1965

## Sandia's Safety Scoreboard

**Sandia Laboratory:**

**123 DAYS  
4,601,500 MAN HOURS  
WITHOUT A  
DISABLING INJURY**

**Livermore Laboratory:**

**300 DAYS  
1,543,800 MAN HOURS  
WITHOUT A  
DISABLING INJURY**