

A. E. Bentz Heads IFT; Tom Hoban Named Ass't Treasurer



Mr. Bentz

Mr. Hoban

Arnold E. Bentz (9236) was reelected chairman of the board and president of the International Foundation for Telemetry at its annual meeting May 7 in Los Angeles. Thomas J. Hoban, Jr., (7222) was reelected to board membership and named assistant treasurer. Both Sandians are charter members of the organization.

Arnie has served as president since June 1965. Tom has been a director of the organization and served as chairman of the International Telemetry Conference in 1966 and program chairman of the National Telemetry Conference in 1963.

The Foundation is a non-profit organization dedicated to advancing the theory and practice of telemetry and allied arts and sciences. Major activities include the annual conferences and exhibits, publication of the *TELEMETRY JOURNAL* and sponsorship (with the Instrument Society of America) of the Telemetry Standards Coordination Committee.

Alfred Noble Prize To Richard Holland



A young electrical engineer, Richard W. Holland of Electro Physics Division 5142, has been named recipient of the 1968 Alfred Noble Prize for outstanding technical papers.

The national award is presented annually by a committee of representatives of various engineering disciplines. Dick's paper, "The Equivalent Circuit of a Symmetric N-Electrode Piezoelectric Disk," appeared in the January 1967 issue of the *IEEE TRANSACTIONS ON SONICS AND ULTRASONICS*.

Alfred Noble, a civil engineer, was in charge of the construction of the tunnels which provided railroad access to Manhattan just after the turn of the century. Earlier, he served on a commission which investigated the feasibility of a Great Lakes seaway and a canal across the Central American isthmus. Noble died in 1914, and the award bearing his name was established to encourage the work of young engineers.

The award consists of a \$600 check, a certificate, and travel expenses to the meeting where the presentation is to be made.

Dick first became associated with Sandia as a summer hire in 1964, when he worked on piezoelectric devices with Cecil E. Land of Ferroelectric Research Division 5143. He returned to postgraduate studies at Massachusetts Institute of Technology that fall and "decided to do my thesis on what I was doing at Sandia—devising a method for analysis of piezoelectric devices."

In the spring of 1965, Dick returned to Sandia to make experimental measurements, for his thesis this time as an unpaid consultant, since he had a National Science Foundation fellowship which would not allow him to work for a salary. That fall he returned to Sandia permanently, and the next year, at the age of 25 he received his PhD from MIT.

Dick's award winning paper demonstrated mathematically and proved by laboratory experimentation that in electrical excitation of thin, electroded piezoelectric plates the material deforms "as though stressed by mechanical forces acting only at the edges of the electrode."

Dick has published about 20 papers, mostly concerning techniques for designing piezoelectric devices.



SANDIA LAB NEWS

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SANDIA LABORATORIES

ALBUQUERQUE, NEW MEXICO; LIVERMORE, CALIFORNIA

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

Optical Development Division Projects

Small Planes Saving Sandia Money

Dan Parsons' interest in radio-controlled model airplanes has led to their use on a number of projects for Sandia's Optical Development Division 7224 saving the company time and money. In addition to the economic aspects, the planes make the tasks easier.

Dan, supervisor of Division 7224, has long been involved with the design, development and operation of Sandia's 16- and 24-inch tracking telescopes and associated cameras and tracking systems. He first thought about using the model planes to provide tracking practice for the operators of the tracking telescopes at Tonopah Test Range. It takes considerable skill and practice to visually track a military jet making a drop test of an instrumented test shape at the Range.

During one of his trips to the Range, Dan brought a radio-controlled plane and conducted a tracking session with the Range personnel. There was general agreement that the radio-controlled plane provides realistic tracking practice.

Since the model plane flies relatively close to a tracking camera, the size and speed ratio is about the same through the operators' tracking sight as the real thing appears at normal test distances.

With the newer radio control equipment and servo-mechanisms available for the models, the small craft can perform any maneuver that a full-scale airplane can make and some that the big ones can't. In addition, many more test runs can be made in a given time.

For the current projects, Sandia has contracted for aircraft service from Ted White, a local radio-controlled equipment manufacturer and model flying enthusiast who has a national reputation among hobbyists as "the best in the business."

Ted's planes were called in primarily to provide the targets for an evaluation project of an Air Force-developed tracking mount. The system is on loan to Sandia from Vandenberg AFB to see if it could

(Continued on Page Six)



CLARENCE ROBINSON, at camera position, tells Ted White where to fly the model planes for best filming position. The small planes are saving a considerable amount of money in a number of Division 7224 projects.

Edward M. Lenard Joins Sandia's 6000 Staff; R. Y. Peters to WE

Edward M. Lenard, an attorney from Western Electric's general attorney's office, joined Sandia's 6000 organization June 10; and Robert Y. Peters, attorney 6030, will return to Western Electric July 1 as an attorney in the general attorney's organization.

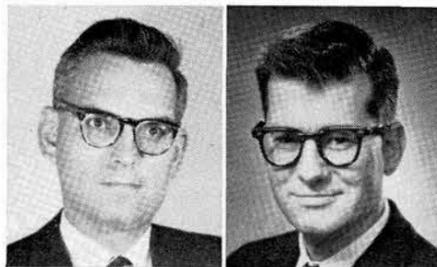
Mr. Lenard, who is on leave of absence from WE, joined the general attorney's organization in 1964. Before that he practiced general law with the firm of Everett, Johnson and Breckinridge for two years.

Mr. Lenard received an AB degree from Fordham College in 1952, an MBA degree from Harvard University in 1956 and his LLB from Fordham University in 1962. He received his commission as an officer in the U.S. Army in 1952 and served two years in Korea. He is currently a captain in the Army Reserve.

He is a member of the New York State and American Bar Associations.

Mr. Peters, who is on a leave of absence from WE's legal organization, joined Sandia in July 1965 after serving as a patent attorney in WE's Washington, D.C. office.

Mr. Peters joined Michigan Bell Telephone Company in 1955 as an electrical engineering trainee and received his BS degree in electrical engineering from the University of Detroit two years later. He then transferred to WE as a patent law



Mr. Lenard

Mr. Peters

clerk in Washington and began attending law school.

In 1959 he was admitted to practice as a patent agent and received his LLB degree from Georgetown Law School in 1960. The following year Mr. Peters became a member of the District of Columbia Bar.

As a patent attorney, he worked at several WE locations in New York City and at WE's Engineering Research Center in Princeton, N. J. In 1962 Mr. Peters returned to Washington where he worked as a patent attorney for WE both in Washington and Baltimore and later resumed his law study. He received his LLM degree from George Washington Law School in September 1965.

Mr. Peters is a member of the American Bar Association, Eta Kappa Nu and Tau Beta Pi.

Freedom Share Interest Increased to Five Percent; Other Rates Announced

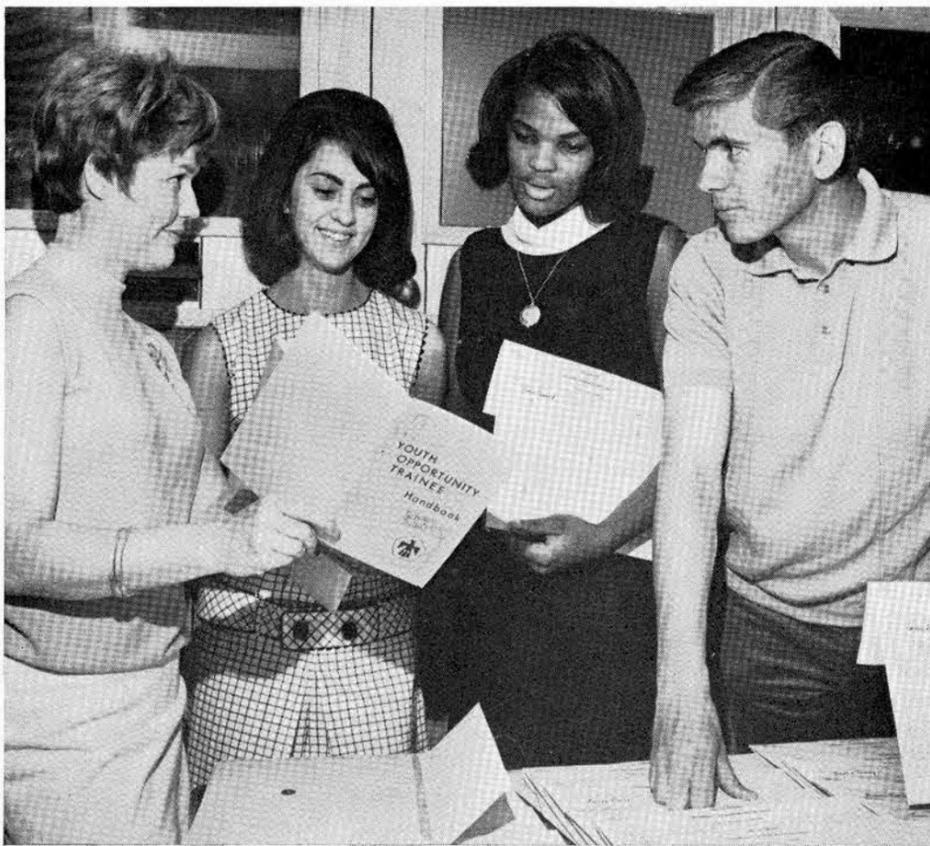
Beginning June 1, Freedom Share yields increased to five percent, President Johnson announced recently. Interest paid on Series E and H Bonds was increased to 4.25 percent in the same action. To obtain the higher yields, the Bonds must be held to maturity.

The increase was made effective in the case of older E and H Bonds to cover all previously issued Bonds. Here again, the new rate became effective June 1, and the Bonds must be held to maturity. Older Freedom Shares will remain at a yield of 4.74 percent.

Robert Lynes (9413), chairman of the Sandia Savings Bond Committee, hailed the new interest rates as another incentive for investing in America. The recent Sandia Bond drive was completed before the new rates were announced.

As a result of the drive, some 345 employees joined the payroll deduction program for Bonds to bring the total Sandia participation from about 80 to 85 percent. Sandians currently purchase \$116,416 in Savings Bonds each month.

"Payroll deduction cards for Savings Bonds are still available from Division 4131," Mr. Lynes says. "The new interest rates make a good buy even better. Those who did not enroll in the program before may do so by filling out one of the payroll deduction cards."



SIGNING IN—Alice Miner (3232), left, assists the first of 165 Youth Opportunity Campaign participants who joined the company for the summer. The national program provides meaningful work and training opportunities for the students. The trainees are, from left, Eva Lopez, Faye Aiken and John Hedquist.

165 Join Sandia for Summer

Trainees Signing In for Start Of 4th Youth Opportunity Program

For the fourth summer, Sandia will be participating in President Johnson's Youth Opportunity Campaign to provide temporary summer work and training experiences for students returning to school in the fall. Some 165 students have joined the company to participate in the program. Selection is based on their academic qualifications and degree of economic need.

At Sandia Laboratory, 150 students have signed in. At Livermore, 14 have joined the company. Tonopah Test Range has one trainee.

Of the group, 59 are rehires from last year. In 1965, Sandia hired 80 students. In 1966, 81 were hired; and last year, 110 joined the company.

In recruiting the students, Sandia had the cooperation of schools and state employment offices. An effort was made to solicit the interest of last year's trainees to realize as much savings as possible on the cost of required security clearances and training.

Trainees will work primarily on assignments in clerical, manual and laboratory areas. The summer at Sandia will provide valuable experience for the trainees and, in so far as possible, assignments are consistent with their educational goals.

In the past, trainees have commented on the benefits of this exposure to the industrial environment. In addition to developing new skills, the employment at Sandia will help make it possible for the students to continue their education.

A number of them have already signed up for Sandia's out-of-hours courses this summer. This opportunity was made possible because students of previous years stated that they wished they could have participated in Sandia's job-related education programs.

Early in May, the Training organization mailed a list of available courses to the selected students. The response was grati-

fying, according to Division 3132. Some 89 students are enrolled in 21 courses ranging from a special Student Problems Seminar to Basic Computer Principles.

Fifty-nine of the trainees have at least one year of college. Fourteen were recruited from state technical institutes. Seventy have completed high school and 22 will be returning to high school.

In past years, the students came primarily from local communities. A special effort was made this year to recruit students from the economically deprived areas of New Mexico. Twenty-three responded from these areas.

The Youth Opportunity Program at Sandia is administered by Dick Chapman, Alice Miner and Helen Kluver of Personnel Division II 3232 under W. L. Martin. Employment interviews were conducted by Eleanor Kelly and Frieda Salazar of Employment Division 3251.

Death



Thomas G. Ogden, who retired from Sandia Laboratory last April, died May 30. He was 62 and had been ill for some time.

He joined Sandia in October 1962 and worked in the Quality Assurance organization until his retirement, working in systems analyses and more recently in statistical analyses.

Survivors include a son, a daughter and five grandchildren.

Supervisory Appointments



T. PATRICK CONLON, JR., to supervisor of Specialties Division B 4224, effective June 16.

Pat joined Sandia in March 1965 to work in the plastics shop and was promoted to supervisor of Plastics Section 4224-2 four months later. Before coming to Albuquerque, he worked in the plastics technical services laboratory of Goodrich-Gulf Chemical Company in Port Neches, Texas, for four years, including two years as supervisor. He also was a refinery engineer with Esso Standard Oil Company in Baton Rouge, La., for two years.

Pat received his BS degree in chemical engineering from Kansas State University in February 1959 and is doing graduate work at the University of New Mexico. He is a member of the Society of Plastics Engineers, Phi Kappa Phi, Phi Lambda Epsilon and Sigma Tau.



KENELL J. TOURYAN to manager of Aerothermodynamics Research Department 9340, effective July 1.

Ken joined Sandia's aerophysics group in August 1962 where he conducted high-temperature aerodynamic and plasmadynamic research for almost three years. In May 1965, he was promoted to supervisor of Re-Entry Studies Division.

He received his BS degree in mechanical engineering from the American University of Beirut (Lebanon) in June 1958, MS degree from the University of Southern California in June 1959 and PhD degree in engineering science from Princeton University in June 1962.

Ken is a member of the American Institute of Aeronautics and Astronautics, American Physical Society, Pi Tau Sigma, Tau Beta Pi and Sigma Xi.

President Hornbeck Speaks at Ceremony

31 Complete Tech Development Program

The 31 members of the 1968 Technical Development Program class received congratulations from President Hornbeck during a luncheon at the Coronado Club May 29.

In his introduction H. R. Shelton, supervisor of University Relations Division 3134, pointed out that this was the smallest class to complete the program which combines advanced study at the University of New Mexico with half-day work assignments. One more class will "graduate" from TDP before it evolves into the new Graduate Education Program which was recently introduced by the Education Committee, headed by G. A. Fowler, vice president 9000, and subsequently approved by Small Staff.

Mr. Hornbeck, in congratulating members of the group, said he was confident of their abilities and hoped that some of them would avail themselves of the recently-created Doctoral Study Program.

In emphasizing the continuing need for self-education, he recalled going to work for Bell Telephone Laboratories after World War II as a research physicist, "convinced that is what I would do the rest of my life." But there were constant changes. "The transistor was invented and I was asked to look into semiconductors," Mr. Hornbeck recalled. "There was the need to extend technology into solid state devices other than semiconductors. Microwave tubes and microelectronics became important fields. Then there was a requirement for systems engineering and control of orbiting spacecraft to get to the moon. These things were unheard of 20 years ago, and the same will be true in your case. Technology is changing and other disciplines are coming along. You may not be able to conceive now what you will be doing even 10 years from now."

He reaffirmed opportunities at Sandia Laboratory through technical ability to meet changing conditions.

In closing, Mr. Hornbeck expressed his thanks to Arthur M. Hill (3134) who has been administrator of the TDP program since its beginning. Mr. Hill will retire June 30.

Fourteen of the participants in the program were hired with Master's degrees in mechanical or electrical engineering and took only the TDP advanced "core" courses

developed specifically for Sandia Laboratory's areas of interest. Employees in this group were Johnny H. Biffle (1542), David O. Lee (1543), Lyle D. Gerdes (1543), E. Frederick Hartman, Jr. (2113), David N. Harstad (2442), Marcus L. Bunting (5331), Richard C. Beckman (5612), Joel Sweet (5635), Donald B. Longcope (5636), Christian Hartwigsen (7332), Larry W. Bickle (7343), Clinton N. Waggoner (9222), Kurt E. Putz (9326), and Ragon D. Kinney (9333).

The balance of the participants, 17 men, joined Sandia with Bachelor's degrees in mechanical or electrical engineering and completed two years of advanced study under TDP. Members of this group were Charles R. Borgman (1315), John E. Davenport (1344), L. Thomas James (1425), Roger M. Gray (1514), Roger W. Kennedy (1514), David L. Johnson (5221), James P. Quint (7211), Charles N. Bloyd (7214), G. Joseph Hartman (7323), William K. Tucker (7335), Clinton Van Blaricum (7342), Manuel G. Vigil (7343), Frank M. Raymond (9226), Alfred C. Watts (9226), Ernest M. Harper (9235), David W. Larson (9314) and Russell T. Hurlburt (9323).

The men came to Sandia from 19 different schools.

Authors

J. R. Banister (5120) and R. A. Hill (5122), "A Spectroscopic Study of an Expanding Hydrogen Plasma in the Impulse Tube," June issue, PHYSICS OF FLUIDS.

F. L. English (5143), "Electron Mirror Microscopy Study of BaTiO₃ Surface Layers," June issue, JOURNAL OF APPLIED PHYSICS.

W. C. Busby (4112), "Gaining Cooperation in Cost-Cutting," March issue, HOSPITAL ACCOUNTING.

K. L. Goin (9322) and W. R. Lawrence (AEDC), "Subsonic Drag of Spheres at Reynolds Numbers from 200 to 10,000," May issue, AIAA JOURNAL.

G. L. Cano (5235), "Total Ionization and Range of Low-Energy Recoil Particles in Pure and Binary Gases," May issue, PHYSICAL REVIEW.

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1968 Graduates of Sandia's Technical Development Program



Nine SCLL First Aid Instructors Receive Emergency Care Training

Nine Livermore Laboratory employees completed an Ambulance and Emergency Care Personnel Training Course recently at the Highland General Hospital in Oakland.

The course, sponsored by the Alameda-Contra Costa Medical Association, is an effort to advance the training received by ambulance drivers and first aid instructors in emergency care of the sick and injured. Thirteen medical doctors in various specialties participated in the presentations and discussions which included a report on "Recent Recommendation of American College of Surgeons."

Six of the Sandians who attended are fully-certified First Aid instructors: Jerry Maloney (8128), Dick Myers (8128), Ray Newton (8222), Wil Vandermolen (8125), Bill Wall (8124) and Jack Wilson (8112).

These employees received their certification through a First Aid instructor's training program conducted at SCLL by the Safety Services Group of the Oakland Chapter of the American Red Cross. In turn, they instruct other employees in all phases of first aid techniques.

Other Sandians attending the emergency care training course were Bob Martin (8125), head of the first aid team in Bldg. 914, and Irv Troyky and industrial nurse Gail Patton, both of Environmental Health and Medical Services Division 8215.

Last October, Bruce Held, Ron Hoffman and Joe Ruiz (all 8215) completed a similar course of instruction, also sponsored by the Alameda-Contra Costa Medical Association.

Sandians Installed As Local ASME Officers



Mr. Baroody

New officers for 1968-69 season of the Mt. Diablo Sub-section of the San Francisco American Society of Mechanical Engineers (ASME) were installed May 23 at a dinner meeting in Pleasanton. Two officers named to the executive committee were Roger Baroody, supervisor of Product Engineering Department 8160, chairman; and Louie Tal-lerico of Preliminary Systems Division 8131, treasurer.

Two other Sandia employees, Marv Beck-tell, Product Control Division 8161, and Burnie Grange, Applied Mechanics Division I 8146, were appointed to committee chairman posts for the 1968-69 season. Marv will head the publicity committee; Burnie will head the professional divisions committee.

The installation meeting included a talk on "Air Pollution in the Livermore Amador Valley," by Dr. Todd Crawford of the Lawrence Radiation Laboratory.

Take Note

William T. Ashurst of Applied Mechanics Division I 8146 will present a technical paper at the Fluid and Plasma Dynamics Conference of the American Institute of Astronautics and Aeronautics in Los Angeles, June 24-26. The paper, "Use of Heavy Gases in Explosive Driven Shock Tubes," was co-authored with Ashley Emery, Assistant Professor in the Mechanical Engineering Department at the University of Washington and a consultant at Livermore Laboratory.

Mary Ellen Jacob of Library Division 8232 presented a paper at the annual meeting of the Special Libraries Association held June 4-6 in Los Angeles. The paper was entitled "Book Catalogs: Their Function in an Integrated System."

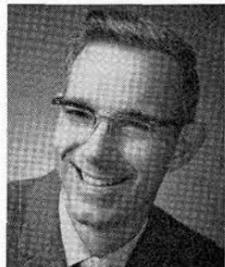
She also was the author of an article which appeared in the April issue of SPECIAL LIBRARIES, a journal published monthly by the Special Libraries Association. Title of the article is "Standard Format for Data Exchange."

Al Baker (8154) won the first place trophy in the Sandia Employee Golf Club

Perry Lovell, supervisor of Division 8215, says that first aid training serves as insurance that can really pay off in the event an emergency situation arises. "We want to be sure SCLL has trained first aiders located throughout all the physical areas of the Laboratory, so if a serious injury should occur there will be someone on the spot immediately to administer emergency treatment until professional medical aid arrives."

Those attending the training course were awarded shoulder patches and certificates of completion.

Sandians Named To ASCET Posts



Mr. Vandermolen

Wil Vandermolen (8125) has been elected vice president-Western Region of the American Society of Certified Engineering Technicians (ASCET). As vice president, he will represent ASCET members from Arizona, California, Hawaii, Nevada, Utah and Guam. Certification of engineering technicians is sponsored by the National Society of Professional Engineers.

Joining Sandia Laboratories at Livermore as a staff assistant in July 1957, Wil's work has been primarily concerned with instrumentation systems related to environmental test data acquisition. Since March 1965, he has been assisting in the development of test facilities in Environmental Test Division II 8125.

A graduate of Oregon Technical Institute, Wil also attended Oregon State University. In addition, he has completed work in Sandia's programmed self-study courses.

Three other Sandia employees have been elected officers of the East Bay Chapter of ASCET. Named as president was Les Romp (8154); vice president, Loren Converse (8112-1); and secretary-treasurer, Jimmie Bauman (8121). All three will take office at the monthly meeting of ASCET at 7 p.m. on June 14 at the Pleasanton Hotel. Guest speaker at the meeting will be Leo Ruth, vice president of the Western Region of the National Society of Professional Engineers.

Welcome . . . Newcomers

May 4 - June 14

California	
Sherlon J. Fortenberry, Oakland	8115
*Roy E. Maxwell, Livermore	8253
Donald G. Palmer, Livermore	8252
Helen V. Petersen, Hayward	8243
Returned from Leave	
Stephen R. Burnam, Oakland	8252
*Denotes rehire	

tournament at the Manteca Golf Course on May 11. He shot a net low score of 71.

The tourney was played on a straight handicap basis with participants divided into two flights. Gene Springer (8117) was the winner of the first flight (handicap of 22 or less) with a net score of 74 and Bennie Odegard (8142) won the second flight (handicap 23-36) with a net score of 72.

Awards went to Gene Aas (8161) and Doug Dahl (8252) for the fewest number of putts.

Patent No. 3,378,416 on "Novel High Explosive Compositions" has been awarded to the Atomic Energy Commission in the names of Carl Schoenfelder, Material Science Division 8141, Donald D. Perry and Marvin M. Felin. The patent relates to work done before Carl joined Sandia.

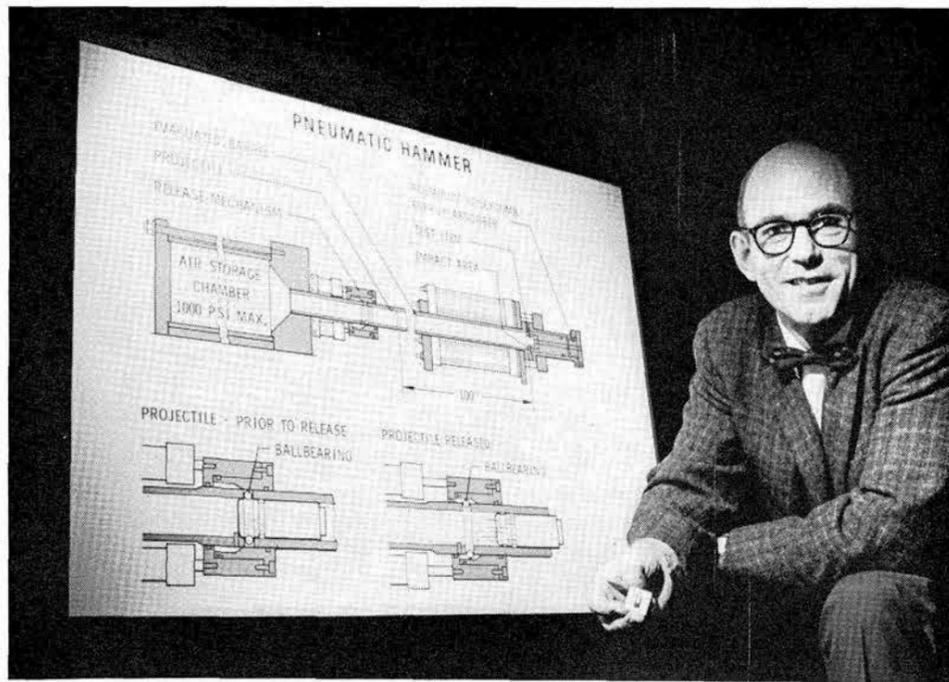
The invention concerns the preparation of explosive mixtures of polynitro organics and organic boron compounds. More specifically, the object of the invention was to prepare an auto-detonating liquid high explosive whose individual components are stable until mixed at the blasting site.

LIVERMORE NEWS

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MANGANIN GAGE, held in fingers of Edward O. Williams (8112), was used in development work for which he received the annual Vigness Award as the author of the outstanding paper on the subject of shock and vibration. Laboratory tests on the illustrated helium-driven pneumatic hammer have proved the ability of the Manganin gage to measure up to 104 kilobars of pressure while installed inside a material sample.

Manganin Gage Development

E. O. Williams Wins Institute of Environmental Sciences' Top Award

Edward O. Williams (8112) has received the annual Vigness Award for the outstanding paper on the subject of shock and vibration. Established by the Institute of Environmental Sciences in honor of Dr. Irwin Vigness, a Naval Research Laboratory expert in shock and vibration, the award was presented for Ed's paper on "An Etched Manganin Gage System for Shock Pressure Measurement in a High Noise Environment."

Through his work with the Manganin gage, Ed has designed a device (a transducer) capable of measuring the shock pressure internal to a material without either the device itself or extreme electrical noise distorting the results. Pressures of one and one-half million pounds per square inch (up to 104 kilobars) lasting for one microsecond have been measured.

Before recent Manganin gage developments, pressure-time measurements have been limited to determining particle velocity at the back surface of the sample material (as in high-speed photographs of shock waves). And, commonly, the pressures obtained were experienced in the measuring device rather than in the sample (as with quartz crystals). Furthermore, pressure measurements over the span of a few microseconds or greater than 352,000 pounds per square inch (24 kilobars) couldn't be achieved. Also, radiation and electromagnetic effects distorted the results.

In contrast, development work with Manganin — an alloy of copper, manganese and nickel — has shown that it has the potential to measure pressure-time histories above four million pounds per square inch (300 kilobars). In addition, when exposed to pressure changes, it exhibits a predictable change in electrical resistance. Stanford Research Institute in California, where extensive studies on this material have been done, achieved measurements in the range of two million pounds per square inch (130 kilobars). Further development of the Manganin gage, the insulating material, and the associated electronics by Ed make it possible to measure pressures of short duration under adverse noise conditions.

The Manganin gage has been used to measure high pressure in test assemblies as well as in material samples.

In a typical material sample test using the Manganin gage, two insulated wires are inserted through the center of a piece of the material being tested. On one surface of this piece, the wires can be extended several inches; on the other, only the tips of the wires are exposed. The lat-

ter surface is then plasma-sprayed with aluminum oxide (alumina) to provide electrical insulation between the gage which is to be mounted and the material. The sprayed surface is lapped until the wire tips are exposed. To these tips the extremely thin, chemically-etched Manganin gage is welded. Another plasma spray is applied, allowed to cool, and the surface lapped. A second piece of the sample material is now bonded to the surface containing the gage. The final test configuration is literally now a transducer, approximately the thickness of a piece of writing paper (three mils).

In laboratory experiments, pressure is provided by a helium-driven pneumatic hammer ("gas gun") firing a projectile against the sample at a velocity greater than 1250 miles per hour. The test sample, with one or more embedded Manganin gages, is placed at the muzzle. Gage leads are connected to an electrical power supply and an oscilloscope.

At the instant before the projectile hits the test sample, six amperes are applied to the gage. On impact, the gage resistance changes and is measured by monitoring the corresponding change in the six-ampere current. The difference — recorded on an oscilloscope — indicates the actual pressure going through the material sample. The measurement therefore occurred before the back side of the sample moved. Consequently, a direct time history of the pressure change inside the sample has been recorded rather than a back surface or transmitted pressure.

Laboratory work demonstrates the ability of the gage to make repeatable pressure-time measurements verifying the calculated pressures. Studies continue in an attempt to parallel this pressure-time accuracy in field tests where the electrical noise environment is different from that of the laboratory.

Sympathy

To Bob Badger (8245) for the death of his father in Oakland, May 22.

To Dorothy Fones (8252-5) for the death of her husband in Livermore, May 26.

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JUNE 14, 1968

SANDIA LAB NEWS

Doctoral Degrees Awarded

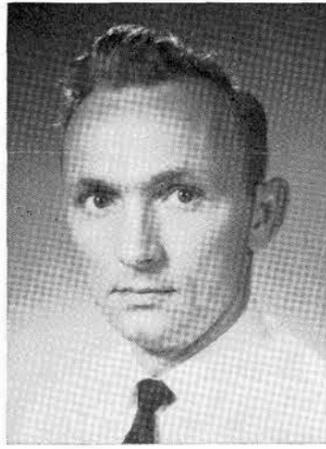


David W. Braudaway of Electrical Standards Division 2412 received his PhD degree in electrical engineering from the University of New Mexico during commencement exercises last week.

His doctoral dissertation was entitled, "Optimal Feedback Control of the Radioactive Voltage Standard."

He received his BS degree in electrical engineering from the University of Colorado in 1954 and his MS degree from UNM in 1962.

Mr. Braudaway has been in standards measurement organization since he was hired at Sandia in December 1956. He was on educational leave of absence from last fall until recently.



David E. Merewether of Signal Processing and Transmission Division 1425 received his PhD degree in electrical engineering from the University of New Mexico last week during commencement exercises.

His doctoral dissertation was on "Transient Pulse Transmission Using Impedance Loaded Cylindrical Antenna."

Both of his previous degrees, a BS in 1960 and MS in 1962, were also from UNM.

Mr. Merewether has been at Sandia for eight years in advanced systems development work and was in the Technical Development Program. He was on educational leave of absence from September 1966 until last March.

Local Universities Confer Degrees On Sandia Employee-Students



H. L. Floyd

D. B. Hayes



R. P. Roberts

T. L. Workman



J. D. Rex

P. E. Brewer



R. T. Lassiter

C. E. Shipley

Bachelor's and Master's degrees were conferred upon a number of Sandians during the recent commencement exercises at the University of New Mexico and the University of Albuquerque.

Most of the student-employees completed their studies under Sandia's Educational Aids Plan.

Those receiving Master's degrees from the University of New Mexico were:

Herbert L. Floyd, Jr. (1435), MS in electrical engineering. His BS in EE was from Ohio State University.

Dennis B. Hayes (5637), MS in physics. His BS in physics was also from the University of New Mexico.

Roger P. Roberts (1434), MS in electrical engineering. He received his BS in EE from the University of Missouri.

Thomas L. Workman (1326), MS in electrical engineering. His BS in EE was from Ohio State University.

Jack D. Rex (4622), Master of Business Administration. His Bachelor's degree in management was from the University of Indiana, and he also has done graduate work in psychology and counseling at Ball State University.

Paul E. Brewer, Jr. (4111), Master of Business Administration. His BBA is also from UNM.

Robert T. G. Lassiter (4112), Master of Business Administration. His BBA is from Texas A&M.

Charles E. Shipley (2225), Master of Business Administration. He also received his BBA at UNM.

Stephen W. Sherman (5231), MA degree in mathematics. He received his BS



S. W. Sherman

degree in applied mathematics from the University of North Carolina at Raleigh and a MS in computer science from the University of Wisconsin.

Those receiving Bachelor's degrees from UNM were: Bert A. Ball (1113), BS in chemistry; Thomas K. Devlin (7112), BS in physics; Leo S. Miller (1422), BS in electrical engineering; Eugene L. Neau (5142), BS in electrical engineering; Stanley B. Roeske (9322), BS in electrical engineering; Joseph R. Doyle (7121), BS in mechanical engineering; John M. Levesque (7111), BA in mathematics; and Malcolm J. Snyder (4135), BBA in industrial administration.

Those receiving Bachelor's degrees from the University of Albuquerque were: Jose E. Rivera (4136), BS in business administration; John T. Sandoval (9413), BS in business administration; Thaddeus L. Werner (9411), BS in business administration; Jacob Castillo (2554), BA in economics; Cecilio E. Sanchez (2213), BA in art; and Gerald M. Goralczyk (5263), BS in mathematics.



Charles W. Gwyn of Transient Effects Division 5212 received his PhD degree in electrical engineering from the University of New Mexico during commencement exercises last week.

His doctoral dissertation was on "An Analysis of the Effects of Ionizing Radiation on One Dimensional Metal-Oxide-Semiconductor Structures."

Mr. Gwyn received his BS degree in electrical engineering from the University of Kansas in 1961 and his MS from UNM two years later. He was a member of Sandia's second Technical Development Program group.

A Sandia employee since 1961, he has been on educational leave of absence since last August.



Walter A. von Riesemann of Analytical Development Division 1541 will receive his PhD degree in civil (structural) engineering from Stanford University during commencement exercises in Palo Alto, Calif., June 16.

His doctoral dissertation is on "Large Deflections of Elastic Beams and Plates Using the Finite Element Method."

He received his BS in civil engineering from the Polytechnical Institute of Brooklyn in 1958 and an MS from the University of Illinois in 1959.

A Sandia employee for eight years, he was on educational leave of absence from August 1965 until last March.



Philip L. Stanton of Advanced Explosive-Electrics Division 1314 received his PhD degree in engineering mechanics from the University of Texas last month.

His doctoral dissertation was entitled, "An Explosive-driven Flying Plate Plane Wave Generator."

He received his BS degree in mechanical engineering in 1960 and an MS in engineering mechanics a year later, both at the University of Texas.

Mr. Stanton was a full-time employee from March 1961 until January 1964 when he went on educational leave of absence. He also worked at the Laboratory during the summers of 1960, '64 and '65.



Raymond D. Krieg of Analytical Development Division 1541 received his PhD degree in mechanical engineering from the University of New Mexico last week during commencement exercises.

His doctoral dissertation was entitled, "On the Foundations of Large Deformation Shell Theory."

He received his BS degree in EE at the University of Texas in 1960 and his MS from UNM two years later.

A Sandia employee for eight years, he worked five years in Electronic Development Division 1422 and last summer was assigned to Solid Dynamics Department 1140. He was in the Technical Development Program. Mr. Krieg was on educational leave of absence for four semesters.

Speakers

R. T. Johnson, Jr. (5132), "Fast-Neutron Irradiation Effects in CdS," Kansas State University Physics Seminar, May 17, Manhattan, Kan.

J. L. Entekin (1425), "Rain Erosion of Ablation Materials at Supersonic Speeds," Ninth Electromagnetic Windows Symposium, June 12-14, Atlanta, Ga.

J. C. Weydert (9224), "Dynamics and Structural Problems of Rocket Vehicles," annual general meeting of the Canadian Aeronautics and Space Institute, May 6-7, Toronto, Canada.

A. J. Ahr (9414), "ADE—Reduction of Repetitive Input"; C. J. Fisk (9424), "Color Slide Production by Machine," 1968 Spring meeting of the Rio Grande Chapter, Association for Computing Machinery, May 14, Scottsdale, Ariz.

W. H. Chandler (3112), "Budgeting Process"; G. A. Fowler (9000), "Agency Agreements," second Board Member Institute, United Community Fund of Albuquerque, May 22.

M. R. Scott (5223), "Invariant Imbedding and the Calculation of Eigenvalues for Sturm-Liouville Systems," SIAM 1968 National Meeting, June 11-14, Toronto, Canada.

L. S. Nelson (5234), "Ultra High Temperature Chemistry with the Falling Droplet Technique," University of Toledo Department of Chemistry, May 16, Toledo, Ohio.

G. W. Elliott (9331), "So You're Graduated—Now What Are You Going to Do?" Utah Technical College commencement

address, May 28, Provo, Utah.

Mary M. Campbell (3126), "Training and Teaching Employees," American Management Association Seminar, Managing the Secretarial and Stenographic Services Function, May 9, Chicago; "Secretarial Positions and Duties," Commercial Class, St. Pius X High School, May 14, Albuquerque.

D. L. Caskey (9424), "Computers as Applied to Printed Circuit Design, and Computer Graphics," Digital Computers in Engineering Design course at the University of Tennessee Space Institute, June 17-27, Tullahoma.

M. J. Forrestal (5636) and W. E. Alzheimer (1541), "Transient Motion of a Rigid Cylinder Produced by Elastic and Acoustic Waves," National Applied Mechanics Conference, June 12-14, Providence, R. I.

R. E. Nettleton (5155), "Self-Consistent Phonons and Ferroelectricity in Strontium Titanate," University of Pennsylvania Materials Science Department Seminar, May 21, State College.

A. Y. Pope (9300), "Experiences with a Thousand Rockets," Third Aerospace Mechanisms Symposium, May 23, Pasadena.

J. C. Golden, Jr. (3312), "Analytical Expressions for Bremsstrahlung Spectra Emitted by Highly Filtered, Thick High-Z Targeted X-Ray Devices from 2 to 20 MeV"; with H. D. Christiansen (3312), "Health Physics Considerations at Sandia Pulsed Reactor Facility II," national meeting of the Health Physics Society, June 17, Denver.

Service Awards

20 Years

Welcome . . . Newcomers

May 27 - June 7



Jack Babb
2133



R. C. Coffey
4332



Everett Cowan
4221



G. G. Curry
7133



J. W. Dillon
7231



R. A. Glenn
5143



A. M. Hoge
1325



Marie Ream
3100



J. W. Reed
7111



W. E. Reed
7256



J. A. Teresi
2133



R. A. Ware
8161

15 Years



R. J. Burnett
2546



C. A. Denney
7253



G. O. Folkins
1515



E. V. Forsman
1343



K. D. Hardin
1434



Margaret Harper
3462



R. C. Hildner
5311



T. K. Hill
1525



Edith Jolly
4212



Alma Mischke
4152



L. P. Navoda
7336



C. G. Sain
7311



C. E. Sanchez
2213



Odilia Silva
1621



O. E. Smith
5233



J. D. Stewart
9222



S. Thunborg, Jr.
5613



D. T. Weems
2452

Albuquerque	
*Dorothy M. Boyer	4315
Mabel G. Bracken	3126
Soila Candelaria	4364
Cecilia E. Coons	3126
Betty J. Mathis	2232
Mary H. Muth	3126
Elizabeth A. Robinson	3126
Sylvia L. Sloan	4135
Deanna Valucci	3126
Arizona	
*O'Neill J. Burchett, Tempe	1112
Kansas	
Danny D. Drummond, Salina	5132
Massachusetts	
Richard C. Powell, Bedford	5213
Oklahoma	
Herbert D. Abbott, Norman	3312
Donald D. McAllister, Jr., Stillwater	2211
Texas	
David E. Barnes, Beaumont	7211
Arthur L. Smirl, Beaumont	7000
Temporary Summer Hires (Albuquerque unless otherwise noted)	
*M. Henry Allen, El Rito, N.M.	2210
Frank H. Brittain, Ames, Iowa	5637
James W. Burgmeier	5262
Sarah L. Christiansen	5231
*Gilbert B. David	7344
Michael F. Driscoll, Tucson	5223
Roger Eichhorn, Lexington, Ky.	9326
*Iosl S. Gilbert, Gainesville, Fla.	9314
Leland Gion	2452
*E. Neal Gruetter	3351
James A. Gunn, Stillwater, Okla.	4117
James E. Just, Cambridge, Mass.	5520
Michael Kaplit, Philadelphia	5143
George E. Kaye, Norman, Okla.	3313
*Cecil R. Lennox	2412
Kenneth B. Lyons, Norman, Okla.	5151
Stephen F. Martin	5132
Joseph J. Mullane	2210
*Alexandro C. Peralta	7216
Thomas N. Roberts, Durham, N. C.	5211
*Thomas R. Rogge, Ames, Iowa	1310
*Richard S. Sanchez	7342
Herbert C. Schade, Pittsburg, Kans.	5154
*John W. Simons	7221
*Stanley R. Sleeter	5155
*Frank Torres	3311
*Harry T. Weaver	5150

10 Years

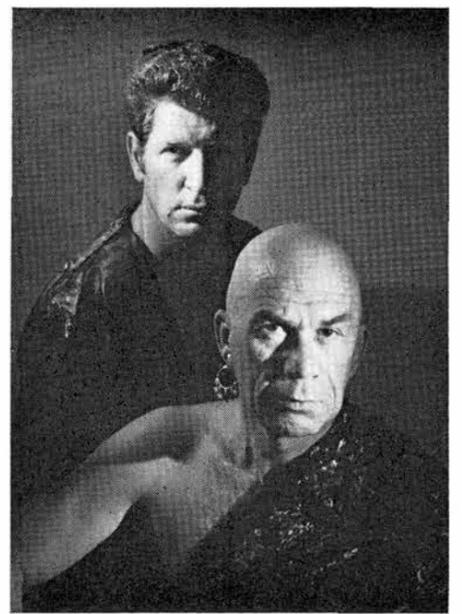
June 14-27

W. H. Fulcher 1344, K. R. Jones 2211, R. T. Jankowski 2541, F. H. Johnson 3341, F. G. Higgins 4372, W. D. Love 7222, R. J. Gossett 9232, W. D. Olson 9232, W. B. Converse 1000, H. L. Floyd, Jr. 1435.

T. W. Eglington 4543, R. A. Baker 7322, H. G. Short 8115, L. M. Bossart 9221, R. A. Keen 2546, R. C. Dougherty 5624, D. W. Doak 1542, K. C. Goettsche 2564, Mary L. Peckum 3122, Margaret E. Kennedy 4135.

L. J. Merrell 8159, Melbra J. Clark 3126, R. O. Johnson 1422, S. V. Asselin 1514, L. F. Miller 1546, B. F. Coleman, Jr. 2111, H. M. Courtney 3242, H. A. Bennett 5311.

L. E. Janssen 8243, S. R. Booker 2412, D. C. Callahan 4363, J. A. Smith 2212, J. B. Wright 8158, W. E. Boettcher 2454, Glenn L. Brooks 4331, Marian P. Goddard 7216, J. R. Hubner 8243.



"THE KING AND I," as produced by the Albuquerque Civic Light Opera Company, will have Gene Ives (8159) and Phil Mead (3412), front, in leading roles. Performances will be June 20-22 at UNM Concert Hall.

Sandia Lab Papers at Southwest APS Meet

A number of Sandia scientists will present technical papers at the Southwestern Meeting of the American Physical Society to be held June 15-19 at Los Alamos.

Authors and their papers are: G. W. McClure (5121), "Experimental Studies of Collision-Induced Dissociation"; J. M. Peek (5121), "Theory of High-Energy Electron-Molecule Collisions"; F. K. Truby (5121), "Dissociative Electron Attachment in I₂ Vapor at 295° K."

R. H. Plumlee (5143), "High Field Polarization Reversal in Polycrystalline Ferroelectrics"; D. R. Smith and E. H. Beckner (both 5142), "A Study of the Spatial and Spectral Characteristics of X-Radiation from Coaxial Tubes"; J.R.A.J. NiCastro and E. H. Beckner (both 5142), "Interaction of a Plasma Flow with a Nonsymmetric Z-Pinch."

R. A. Damerow (7114), "A Conical Theta-Pinch Plasma Source"; L. C. Bartel (5131), "Rotation of the Magnetization in Cubic Single Crystals Due to Uniaxial Strain; Application to Nickel Ferrite and YIG."

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

CARS & TRUCKS

- '55 STUDEBAKER Commander 4-dr. V8, \$125. Lowe, 11404 Bellamah NE, 299-7725.
- '56 BUICK Special, PS, PB, AT, V8, \$200. Cox, 299-5855.
- '64 DKW, \$325. Stephenson, 298-5902.
- CHEV. Greenbrier, 4-spd. trans. Nogle, 299-3863.
- '68 FORD 1/2-ton pickup, cost \$4100, sell \$3600, 2400 miles, AC, PS, LB, 4-ply oversized w/w tires, other extras. Armijo, 345-0137.
- '63 CADILLAC, full power, new tires, factory air, low mileage, will trade for good pickup. Cox, 256-1977.
- '64 VW camper, folding bed, icebox, closet, water tank, 1500 cc engine. Holt, 299-5943.
- '66 CUSTOM CHEVY pickup, 327 engine, Powerglide, R&H, Positrac axle, below blue book. Smith, 298-4709.
- '67 FORD Cortina GT, 27,000 miles, 4-spd., tach, disk brakes, radio, \$1360. Stark, 296-4971.
- '66 PORSCH 911, low mileage, AC, AM/FM/SW radio. Kjeldgaard, 296-2212.
- '57 CHEVROLET SIX, 4-dr. sedan, stick shift, R&H, 72,000 miles, one owner, yellow/white. Lynes, 268-0144.
- '54 FORD 2-dr., \$350 or trade for SWB camper shell to fit '63 Ford pickup. Bodine, 296-3620.
- '65 GALAXIE 500, 352 V8, all power, air, new tires-battery-shocks-brakes-etc. past year, \$1475. Watkins, 299-0411.
- '63 DODGE 1/2-ton pickup, 4-spd. trans., 6-cyl. engine, No Slip differential, stepside bed, 6:50x16 tires, \$750. Andrews, 256-7328 after 5.
- '64 CORVAIR MONZA coupe, 4-spd. trans., R&H, 26,000 miles, \$825. Stone, 298-4620.
- '60 FALCON station wagon, ST, R&H, major engine overhaul 9000 miles ago, make offer or trade for fishing boat & motor. MacDougall, 299-8496.

'66 RAMBLER American sedan, R&H, seat belts, 1409 Georgia NE, Strome, 268-2689.

'60 RAMBLER wagon, new tires-battery, tuneup, \$225. Norris, 242-2159.

'55 OLDSMOBILE & '65 MG 1100 sedan, one owner cars, Shoemaker, 255-8820.

'55 CHEVY PICKUP, burns oil but good town & hauling transportation. Edgington, 299-9458.

MISCELLANEOUS

EARLY AMERICAN Provincial print couch, \$35. Whitford, 299-4271 after 6 p.m.

SPINET PIANO & bench, walnut, \$650, cost \$895, used by owner 1 1/2 yrs. Quinlan, 265-0445.

NEW RANGER reverberator, ready for auto installation, \$11.50. Gallo, 298-1089.

BICYCLES: boy's 20", girl's 20", \$10 ea. Sisson, 296-3883.

'65 YAMAHA Big Bear Scrambler (YDS3C), 250cc, 5-spd. trans., 6400 miles, extra sprocket for trail use, \$425. Gerstle, 268-6557.

COMPLETE HOME AQUARIUM, includes 20-gal. tank, lighting, air pump, filter, thermostatic heaters, gravel, tropical fish, plants, vacuum cleaner, \$60. Stewart, 298-0439.

GIBSON electric guitar, case & Fender 3-pickup amplifier, complete set, \$145. Snelling, 268-5895.

AQUA SLIDE for swim pool, new, never used, \$50. Baxter, 1610 Bayita Lane NW, 344-7601.

SIDE MIRROR, used when pulling trailer, detachable, \$3.50. Johnson, 255-5427.

SEWING MACHINE, late model Universal w/cabinet & attachments, very little use, recent maintenance. Ross, 296-5720.

POODLE, apricot white, miniature, male, 1 yr. old, shots & current license, \$50 or best offer. Russell, 299-3137.

DOORS: flush panel, 30"x80" including all brass hardware & jam casing, \$8.95 ea., 3 for \$25; umbrella, lawn or patio, 6' opening, adjust tilt, \$15. Browning, 299-6384.

SCHWINN 3-spd. man's bike, \$50, used 6 mos., oversize frame, light, tote baskets, cable lock. Hollingsworth, 298-4217.

SPECIAL PADLOCKS, six ea. keyed alike, 12 identical keys, master brand size 3, \$6. Illing, 298-1889.

15' TRAVEL TRAILER, sleeps 5, \$550. Harker, 282-3435.

SLIDE RULE; Magnifier; K&E equipment; drafting board 21x26; calculus math books; Harmony classic guitar, case, music standard, accessories. Easton, 256-7717.

WINCHESTER .22 auto rifle, \$40; Hy-Hunter .22 single action revolver, \$25; wanted S&W .22/.32 kit gun. Svensson, 344-7700.

KING-SIZE plus bed, 78" wide x 94" long, \$125. Servis, 299-0228.

MINIATURE Schnauzer female puppy, AKC reg., permanent shots. Stewart, 298-0439 after 6.

21" EMERSON B&W TV, needs new picture tube, \$10. Paul, 256-6228.

2-YR.-OLD Bronze Schwinn 5-spd. bike. Wilkins, 268-5971 after 5.

HIDE-A-BED, \$250 new, for \$75 including new mattress. Smith, 344-2221.

SPINNING REEL, new, never used, original box & instructions, Johnson, retails for \$19.95, make offer. Nichols, 247-2564.

TRAVEL TRAILER, 16', butane heat & refrigeration, electric brakes, \$600; Baldwin Acrosonic spinet piano, Korina blond, \$500; Roth violin, \$100. Rousselet, 898-0721.

BOSTON TERRIER, screwtail bulldog puppies, AKC reg., 3 females, good bloodlines, excellent house pets. Simpson, 298-1277.

MOTORCYCLE, '68 Yamaha 100cc twin jet, original owner, \$325 cash or terms. Morrow, 298-1762.

SHORTWAVE RECEIVERS; electronic test equipment; ham Band converters; power supplies; transformers; tubes & misc. Nielsen, 625 Pennsylvania SE, 298-5864.

REFRIGERATED room air conditioner, \$60. Puccini, 255-0568.

TINY, male Pomeranian puppy, 7 wks., AKC reg., excellent blood lines; kitchen table; light meter, 40-lb. practice bow. Stuart, 265-7315.

14 1/2 FT. fiberglass boat w/trailer, 70hp Merc., 18 gal. tank, extras, \$950. Brown, 256-0048.

ACRILON double-pile carpeting, 13'x17', blue, \$4/yd.; plush bed w/walnut headboard, \$60; modern stuffed chairs, \$10 ea. or \$15 for both. Chandler, 296-3323.

3-IN-1 steel cabinet w/combo lock, \$32.50; electric bug catcher, \$10; Israel mint tab single collection, \$150. Groll, 898-0641.

PRIVATE tutoring by Colorado State College senior majoring in secondary educational work with any age child. Houghton, 299-3386.

FRISKY YOUNG PARAKEET w/cage & supplies, \$6. Shaum, 299-5333.

SEALPOINT Siamese kittens, \$15, will be 6 wks. old on June 15. Hagan, 296-4481.

HOOD for stove, 36" copper color w/fan & light, \$10; new baby bottle warmer, 12-volt type, \$1.50. Wade, 299-2050.

FOUR MAPLE kitchen chairs; GE portable electric rotisserie/oven; hand lawn mower. Schmitt, 296-3267.

FREE, black & grey tiger kittens, 8 wks. old, personality plus and they like people. Swartz, 898-3086.

DRYER, electric, Westinghouse, \$40. McGuckin, 298-8091.

26" GIRL'S bicycle, Sear's, \$10. McVeety, 299-5718.

'67 YAMAHA 100-Trailmaster, \$295. Trujillo, 256-3840 after 5:30.

EPIPHONE, solid body guitar, dual pick-up, vibrato, w/case, \$89. Tholburn, 243-4347 or 268-8103.

CUSTOM '64 Elcar Gold Medallion 10 x 55 mobile, 14 x 16 expando LR, front kitchen, many extras, \$3995. Burkhardt, 282-3335 after 7.

GE refrigerator, \$75; baby crib set, \$28; 24" boy's bicycle, \$7; camp stove, \$7. Fretten, 299-1588.

ANTIQUE early Victorian sofa upholstered in green wool velvet w/2-ft. stools to match. Eagan, 2908 Rhode Island NE, 298-0196.

AIRSTREAM travel trailer, 22' self-contained, sleeps 3 adults & 2 small children, \$2750. Sims, 255-6967.

3/4 STUDENT CELLO w/bow & case, \$100. Coonce, 296-1089.

GUITAR & amplifier, Epiphone guitar w/case, 2 pickup-thin body, \$150; Gibson-Lanier amplifier w/15" speaker box included, \$200. Milesosky, 255-8904.

REAL ESTATE

MOUNTAIN ACREAGE, 12 miles from Wyoming & Central, terms. Lathrop, 298-4235.

3-BDR. 1 1/2 bath, brick home, 75' wide lot, completely landscaped, \$19,000, 2708 Alvarado Dr. NE. Villa, 268-0568.

40 ACRES inside forest Manzano mountains, commuting distance to Sandia. Causey, 299-0089.

3-BDR., den, utility rm., pantry, landscaped, mountain view, covered patio, 1/2 block tennis-basketball-badminton. Spray, 299-0412.

CABIN SITE, Brazos River tall pine country, has electricity & water, good hunting & fishing, \$1495, terms. Krumm, 299-2279.

3-BDR., assume 5 1/4% mortgage, \$12,500. Down \$2100 or terms, monthly \$83, 613 Grove St. NE. Bockelman, 265-0910 after 5:30.

3-BDR. MOSSMAN, pitched roof, hw/floors, den, fp, 1 1/2 baths, sprinklers, near schools & shopping. Moyer, 345-0567.

NW VALLEY, adobe style 2-bdr., 2 fireplaces, den, built-in kitchen, hw/floors, 1 acre w/barn, \$17,500, more acreage available. Bell, 898-3033.

CUSTOM 2-bdr. mountain home on 1/2 acre, Tres Pintas Canyon, 10 mins. to Sandia Base, view, fp. Bowman, 299-7734.

MOUNTAIN HOME, 2600 sq. ft., 3 acres, carport, tennis court, fine view, private & convenient, \$46,000. Linn, 282-3986.

3-BDR. ASHCRAFT, 1 1/2 bath, 5 1/4% FHA loan, carpeting, hw/floors, drapes, landscaped, lg. patio, dbl. garage, KitchenAid dishwasher. Huff, 256-9426.

ROBERSON, 2865 sq. ft., including basement, garage, extras, \$20,800, 5 1/4%. Call Tuesday. Hurley, 298-5250.

3-BDR. PRIDE, 1 1/2 baths, carpet-drapes, dbl. drive-thru garage, \$17,600, payments \$130/mo. 8804 Lagrima de Oro NE. Woolsey, 299-5186.

HOUSE, 2 acres at Cedar Crest, 1 1/2 baths, central heating, 2 fireplaces, lg. rms., heated kennel & service buildings. Barth, 345-0172.

5-RM. MODERN log cabin, fully furnished, oak flooring, fp, 10 miles north Jemez Springs, will take terms. Clyde, 298-7111.

LAND: 1/2 acre lot in Echo Canyon, good water, 2 miles east of Western Skies Hotel. Winkler, 282-3337 after 6.

4-BDR., FR. fp, carpeting, lg yard, covered patio, gas bar-b-que, fruit trees, equity to 5/4 loan. Bruckner, 29

Coronado Club Activities

Wear Your Grass Skirts and Wild Sports Shirts to Club Luau June 22

Annual Spring Luau tops the remaining June calendar at the Coronado Club. The outdoor patio festival on Saturday, June 22, will feature special entertainment, Polynesian food in its supreme form, and dancing to Sol Chavez and the mighty Duke City brass.

The menu calls for such delicacies as sweet and sour pork, lomi lomi salmon, corn on the cob, a variety of fruits and salads and very special South Sea type refreshments. Grass skirts and wild sport shirts are in order as costumes.

Performing a selection of Polynesian dances will be Dee Gee Snow, a blonde native of the Islands.

Tickets (\$4.25 for members, \$4.75 for guests) should be reserved by 9 p.m. June 21. Call the Club office, tel. 264-4561.

* * *

Teenage Go-Go

Summer hedonism begins Thursday, June 20, when teenagers celebrate the end of school with a go-go at the Club ballroom. The Eternal Nothings will be on the bandstand from 7:30 until 10:30 p.m. (The Eternal Nothings?) Member parents should pick up tickets (25 cents for members, 50 cents for guests) by 5 p.m. on June 20.

* * *

Social Hours

Tonight, Tommy Kelly will be swinging on the bandstand while the Mexican food buffet (\$1.25 for members, \$1 for kids) is served. The fun starts right after work and the band plays until 9 p.m. The buffet is served from 6 until 8 p.m.

On Friday, June 21, the Club's famous chuckwagon roast beef will be wheeled out while Elton Travis makes the happy music. The buffet costs \$1.75 for members, \$1.50 for children.

The Aristocrats will play for the June 28 social hour. The seafood buffet will be served.

Pat Reich and piano will entertain in the main lounge until 12 p.m. each Friday in June.

* * *

"Camelot" Discounts

The Coronado Club has arranged for reduced prices for the showing of the movie "Camelot" beginning June 19. Club members and Sandia employees can obtain a 20 percent discount by showing their Club card or Sandia ID at the box-office. Also, special discount coupons for Saturday morning showings can be obtained for students by picking up a discount coupon at the Club office. The coupons admit students to the movie for \$1.

Sandia Safety Signals

Retroreflective: (Reflective Tape)

The Public Health Service recently suggested that pedestrians and cyclists can help protect themselves from injury at night by wearing materials that reflect automobile headlight beams. The material is called Retroreflective and can be attached to clothing or accessories. While inconspicuous in daylight, at night a light beam will bounce off this material with considerable glare. It can be purchased in most hardware stores in the form of gummed tape in yellow, orange and red colors.

Water Safety

The National Safety Council advises that each person needs to learn how to swim, how to hold someone in trouble in the water, how to row to someone in need, how to stay afloat with clothes on, and how to use simple life-saving skills.



TAHITIAN DANCES performed by Dee Gee Snow, a blonde native of the Islands, will be featured at the Coronado Club's Spring Luau Saturday, June 22. A Polynesian menu of exotic foods is also offered.

David A. Watt's Quick Action Saves Youngster's Life



Fast and determined action of David A. Watt, supervisor of Electrical Division 4233, has been credited with saving the life of a three-year-old Kansas boy recently.

Dave and his wife had stopped at a motel in Trinidad, Colo., on the first day of their vacation. After checking in, he walked out of his motel room to look at the swimming pool when he heard screams coming from a balcony. Glancing up he saw the excited woman's attention was focused on the pool. Looking at the pool Dave saw a 12-year-old boy from Artesia dive in to rescue a little boy at the bottom.

Dave ran to help the youth pull the youngster from the pool and quickly started giving him mouth-to-mouth resuscitation. A local police officer reported that the youngster wasn't breathing at all and no one seemed to know how long he had been under water.

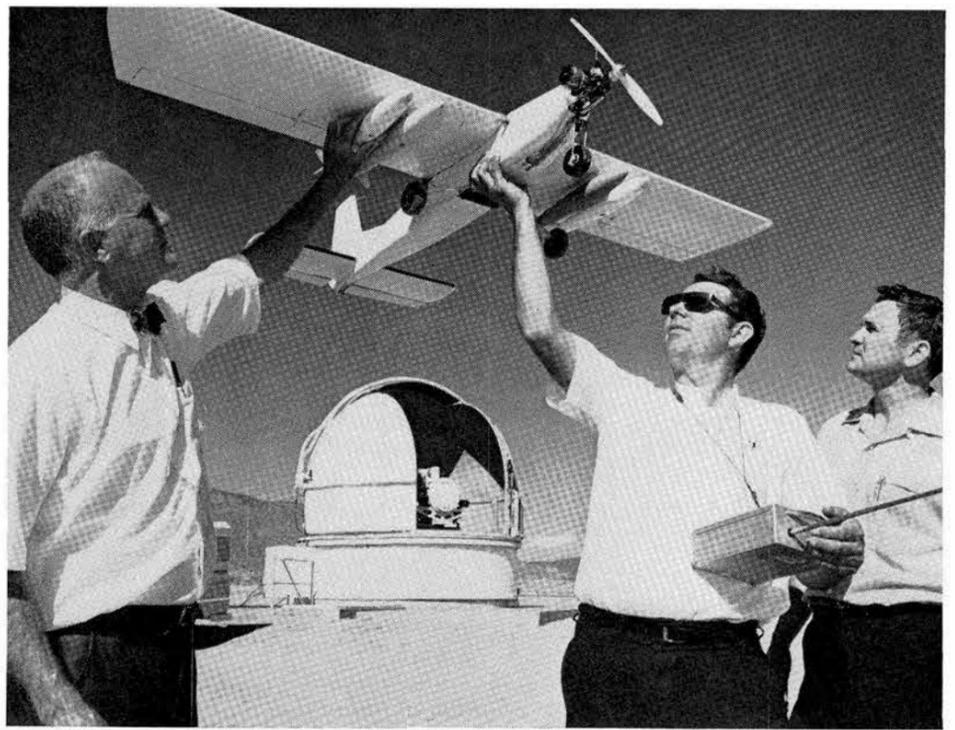
Dave reportedly (he is still vacationing out of town) worked over the boy until he was breathing. The tot was apparently none the worse for the accident, according to police. However, if Dave had not happened to have been there to give mouth-to-mouth resuscitation, they reported that the tot probably would have died.

Jim Leonard Champion Of Given Tourney

Jim Leonard (9331) emerged winner of the recent Fred Given annual golf tournament after a playoff with J. E. Stang (1613) who tied the first time around at 80 for low gross honors. This was Jim's second win of the Given tournament. He was Sandia's top golfer, based on season records, from 1961 through 1966.

The tournament is held annually in memory of the late Fred Given, Sandia Vice President, who was an avid golfer. The low gross winner's name is inscribed on the permanent trophy located in Bldg. 802, while the champ takes home a small replica of the big cup.

Ben Conklin took the tournament's low-net trophy with a score of 69. Some 112 Sandia golfers competed on the University South Golf Course under windy conditions during the tourney.



RELEASE MECHANISM for dropping the test shapes is checked by (l to r) Dan Parsons, Ted White and Clarence Robinson before photographing a test flight. In background is Sandia's East Mesa tracking telescope facility.

Continued from Page One

Small Planes Save Sandia Money

be adapted to company use. Many flights under varying conditions will be necessary to complete the evaluation project.

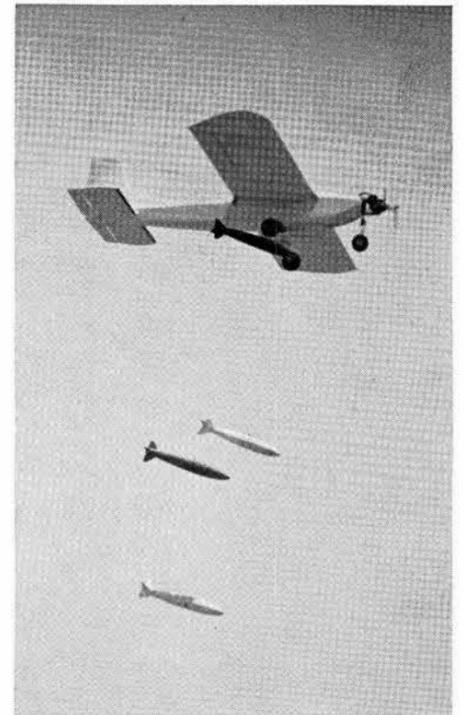
The model planes are ideal for this project since they can provide almost instantaneous response to the tracking operator's requests (a communications system would have to be set up for contact with a chartered aircraft); they provide broad flexibility under the varying conditions required by the project; they can duplicate the intricate maneuvers of tactical aircraft; they can easily be painted different colors; and they can perform the required flights in much less time than can a chartered aircraft. And the overall cost of this system is very nominal.

Ted's planes are also being used for a continuing project of Clarence Robinson (7224). Clarence is doing a systematic study of the resolution of all types of color film on targets painted various colors and patterns under varying lighting and cloud conditions. He hopes to arrive at an optimum combination of these for any given test situation. He also is trying black and white film with different filters.

Several years ago, Dan experimented with a system to drop dummy test units from his radio-controlled models. With consulting help from Jim Stark (9325), he made a 14-inch-long balsa wood bomb shape and perfected a support and release mechanism.

Using the same idea, Ted has rigged his model aircraft to drop up to four different colored test shapes one at a time or all at once. Clarence photographs the drops with the tracking telescope located at Sandia's East Mesa facility. Capturing four different colored units on one piece of film allows the four colors to be compared directly under identical conditions of lighting and background.

Here again, the small radio-controlled plane can be rapidly loaded and flown into position for a drop. The "turn-around" time is less than three minutes. Clarence and the pilot are in constant voice contact with each other. Ted can



SALVO of 14-inch-long, four-ounce balsa wood test units, each painted a different bright color, are dropped on command by a radio-controlled model airplane. The units, photographed with the East Mesa tracking telescope, are targets for a study of resolution and color characteristics of all types of color film.

put the aircraft in any required position and drop the test units on command.

Another project with the model planes is yet to be proved, but Dan and H. G. Laursen of Instrumentation Fielding Division I 7123 plan to adapt the model planes to carry a blast pressure gage over one of the cratering tests using conventional high explosives in Coyote Test Field. Currently, balloons with dangling strings of instrumentation are used to obtain air blast measurements. Model planes could augment this system by being flown at a predetermined altitude into an exact position over the explosion.

Events Calendar

- June 16, 19, 23, 26—June music festival. Albuquerque Little Theatre.
- June 15-16—Yiddish comedy "Grine Felder," Old Town Studio. For reservations tel. 242-4602.
- June 18-29 — Tennessee Williams' "A Streetcar Named Desire," Santa Fe Theatre Company, Greer Garson Theatre.
- Weekends of June 15, 22, 29 — Tennessee Williams' "Night of the Iguana," Corrales Adobe Theatre. For tickets tel. 898-2932.
- June 20-22—Albuquerque Civic Light Opera Association presents "The King and I." UNM Concert Hall. For tickets tel. 277-3121.
- June 21-23—Fiesta. Old Town Plaza.
- June 23—Capilla Peak in the Manzanos. N.M. Mountain Club, leader Bill Grohe, tel. 256-2739.
- June 24—Corn dances, Taos and San Juan Pueblos.

Take Note

Gov. David F. Cargo on May 18 appointed Dennis Cordova (4615) to serve on the board for the New Mexico Girl's Welfare Home in Albuquerque. There are four other members on the board.

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The June 1 issue of FORTUNE magazine carries a two-page article about Alan Y. Pope, director of Aero Projects 9300, and some of his theories on mutual funds. The article is entitled "The X Factor and the High Flyers." Mr. Pope's interest in mutual funds has already resulted in a book, "Financial Success for Salaried People," published by Vantage Press in 1966, and several later compilations of data and trends. In the FORTUNE article, he contends that the rise and fall of open-end mutual funds is directly related to the fund's rate of "cash flow."