

Society Honors Jim Shreve



Sandia physicist Jim Shreve (9511) will be honored tonight by Rio Grande Chapter of the Health Physics Society as recipient of the group's annual award for "excellence and noteworthy contributions in health physics."

The Nambewear plaque will be awarded at the Los Alamos Inn during the group's fall meeting banquet. Previous recipients were Carl Jensen, director of the New Mexico State Health Department, and Dr. Tom Shipman, leader of H-Division at Los Alamos Scientific Laboratory.

Jim came to Sandia in 1951 after receiving his BA degree in physics from Franklin and Marshall College, and MS and PhD degrees from Lehigh University. At the Laboratories, he has been supervisor of divisions concerned with full-scale effects, model studies, nuclear burst studies, nuclear burst simulation, aerospace sciences, and radioactive materials behavior.

The Health Physics citation notes in particular his work as director on Operation Plumbbob of Test Group 57, the first full-scale experiment on plutonium dispersal from the accidental non-nuclear detonation of plutonium-bearing atomic weapons. Jim was also scientific director of Operation Roller Coaster, a joint US/UK four-shot series of experiments to investigate plutonium dispersal in greater detail. Findings from TG57 and Roller Coaster formed the basis for current US and British criteria for all transport and storage of plutonium-bearing weapons.

The Sandian also served from 1958-67 as a member of the AEC-DOD Nuclear Safety Working Group which developed and periodically reviews these criteria.

Jim will be leaving Sandia Oct. 31 to join Kerr-McGee Corporation's "idea group" (Corporate Division) in Oklahoma City.

Underground Nuclear Test On Amchitka Island Is Successfully Detonated

An underground nuclear calibration test, called Milrow, was successfully detonated Oct. 2 at Amchitka Island, Alaska, the AEC reports. The nuclear device, equal to about one megaton of TNT, was detonated 4000 feet beneath the surface.

Results of the test were as expected, with a seismic magnitude of 6.5 on the Richter scale at the point of detonation. No radioactivity was released above the surface.

Sandia Laboratories provided instrumentation for earth and underwater measurements of the shock wave created by the detonation, and Sandia scientists are now evaluating the data. Included is a study of the effects on wildlife and wildlife environment. Very little effect on either of these is expected as a result of the detonation.

Ben Benjamin, supervisor of Instrumentation Fielding Division I 9123, is the Sandia Test Group Director. Mel Merritt of Test Effects Department 9150 is Test Effects Evaluation Scientist.

Virgil Dugan Awarded PhD at Miss. State



Virgil Dugan of Planetary Quarantine Systems Studies Division 1741 recently received his PhD degree in electrical engineering from Mississippi State University.

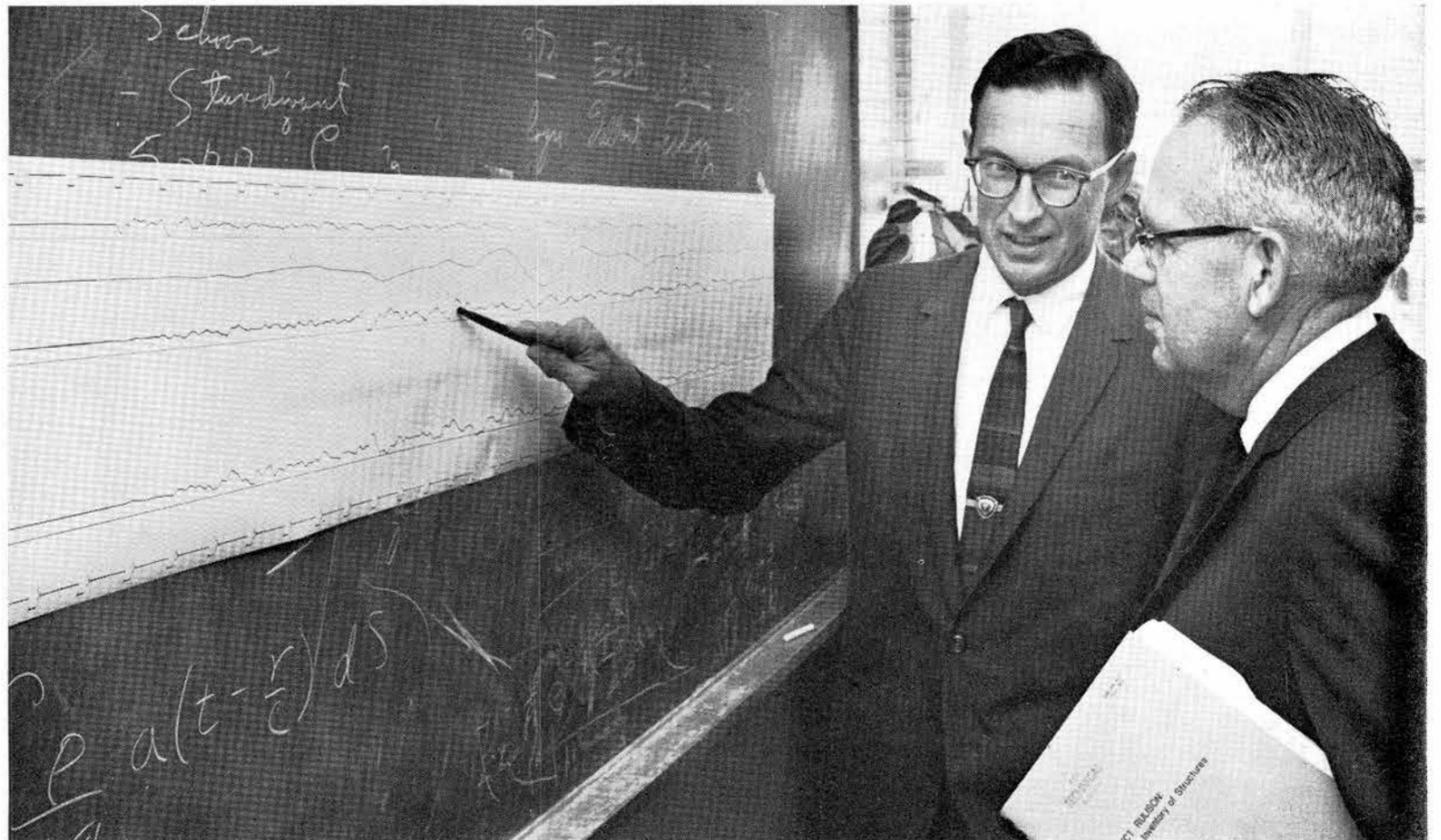
His doctoral dissertation was entitled "Topics on Optimal Control of Linear Systems with Inaccessible State Variables."

Virgil received his BS degree in 1964 from Mississippi State University and his MS degree from the University of New Mexico in 1966 under Sandia's Technical Development Program. Both degrees were in electrical engineering. From 1964 until 1967 (when he went on educational leave of absence), Virgil was in the advanced data systems and planetary quarantine organizations and was instrumental in developing the vacuum probe.



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GROUND MOTION RECORD is subject of after-the-shot study by Dee Ellett (left) and John Banister, both of Test Effects Department 9150. These Sandians were among those assigned to Project Rulison,

the recent underground nuclear event in Colorado in which an attempt was made to free natural gas in a sandstone formation.

Project Rulison Controversial But Predictions Verified

It might have been called "a bucket of worms" — for that is the way weary participants felt about an underground nuclear event of peaceful intent.

Project Rulison, an underground blast near Grand Junction, Colo., encountered the full range of problems until the moment when the 40-kiloton nuclear device was fired (finally) on Sept. 10. There were the usual difficulties — like unsuitable weather — but there were also specific worries about the earth-filled Harvey Gap Dam, possible air and water contamination from any radiation leak, and lawsuits and picketing by "anti" groups.

When the device was exploded, a bouncing jolt was felt by nearby observers, a few bricks tumbled from old chimneys at Grand Valley (seven miles away), and clouds of dust appeared above mountain crests within a radius of 10 miles. However, 45 minutes after the detonation, readings taken at ground zero indicated no radiation leaks. John Banister, manager of Sandia's Test Effects Department 9150 and Rulison scientific manager for ground motion, structural response, and air blast, was correct in his prediction of possible damage.

"I estimated that the probability was extremely remote that the dam would go or there would be venting," he says.

What are the elements that go into an educated guess such as this? Well, primarily it is a matter of extensive experience in this field, interpretation of data from previous nuclear tests, and the ability to pull together reports from the various sub-contractors studying different effects for AEC/Nevada Operations Office. Sandia Laboratories Test Effects Department exercises technical direction for AEC of these sub-contracts. Sub-contractors included John A. Blume & Associates Research Division, Environmental Research Corporation, U.S. Coastal and Geodetic Survey, and the Bureau of Mines.

Project Rulison was a 40-kiloton nuclear device detonated 8430 feet underground in the Mesa Verde formation, a gas-bearing sandstone. This was the second joint government industry experiment in the AEC's Plowshare program to develop peaceful uses of nuclear explosives. An earlier experiment, Project Gasbuggy in northern New Mexico, used a 26-kiloton nuclear device at a depth of 4240 feet to fracture the surrounding sandstone gas reservoir.

"Gasbuggy was abundantly successful as an experiment," John says. "The well has already produced as much gas as a well some 400 feet away produced over a 10-year period, but there are many practical problems that have not been resolved. There are no standards regarding contamination in natural gas (such as tritium, a radio-nuclide present after a nuclear explosion). However, these should eventually be set after further study. Gas from the well is being examined continually — none has been distributed for public use."

The key phrase here is "Gasbuggy was abundantly successful as an experiment." The commercial benefit from obtaining natural gas by fracturing the gas-bearing shale has not been determined. The same can be said for Project Rulison. The experiment went as planned, but it will be at least six months before the co-sponsors, the Atomic Energy Commission, the Department of Interior, and Austral Oil Company, flare the natural gas to check the flow and determine the presence of radioactive isotopes. The tritium content is expected to be only about a quarter of that at Gasbuggy because a fission device was used in Rulison rather than a fusion device.

Meanwhile, the AEC has reported that preliminary ground motion analyses from

the Rulison site indicate that the explosive achieved its design yield of 40 kilotons, the ground shock intensities conformed generally to the pre-detonation predictions, and property damage was less than anticipated.

Ground motion studies for both Gasbuggy and Rulison pointed up decided differences between these areas and Nevada Test Site. "After 70-million years of volcanic activity and folding, the surface of Nevada is a jumble of rock types which change every few miles," John explains. "These discontinuities have a scattering effect on ground motion waves. Where you find continuous layers of sandstone and shale, the local accelerations are about twice as high." Studies at Environmental Research Corporation have suggested that the greater depth of burial also contributes to high acceleration.

The Rulison site is about 40 miles northeast of Grand Junction. Some 110 persons live within five miles of ground zero and another 200 live between five and eight and a half miles away. All structures within this area were examined by engineers before shot day and precautionary measures, such as bracing, were taken to prevent anticipated damage.

The AEC's policy on hazards associated with a nuclear detonation is: "A nuclear (Continued on Page Two)"



CLOUDS of dust on mountain ridges up to 10 miles away were caused by rock falls triggered by underground shock from explosion.

BRICKS from this old chimney were jarred loose by jolt from Project Rulison. House is in Grand Valley, seven miles from ground zero.



(Continued from Page One)

Project Rulison

device can be detonated safely when it is ascertained that the detonation can be accomplished without injury to people, either directly or indirectly, and without unacceptable damage to the ecological system and natural and man-made structures."

Although the test (after six days delay) was scheduled for 3 p.m., preparations actually began at 6 a.m. All residents were informed, schools were dismissed for the day, mines were closed, traffic on several major highways and railroad lines was halted because of danger from rock slides, even the water level of the Grand Valley Municipal Reservoir was lowered two feet to avert any damage to a corrugated aluminum roof in case of a "seiche" (a small shock-caused wave).

What happened a little over three miles from ground zero when the shot was detonated? Dee Ellett of the Department 9150 staff was standing outside the John Clem home at the time. He felt a very sharp bump of ground motion and a very slight aftershock. Two horses in a pasture closer to the shot area continued to graze without noticeable reaction.

Two things impressed Dee. "One of

them," he says, "was the way the power lines swayed between the house and the power pole beside the front gate. The other was the effect the jolt had on an electric lantern hung on the porch. It literally jumped off the ceiling hook and swung wildly from the electrical wire."

Although there were paint chips on the floor underneath many window openings, none of the glass in the windows or doors was broken. There was essentially no structural damage.

"In the front yard, a round rock was balanced on an old tree stump — it could easily be rolled off the stump. There was also a stack of loose bricks piled near the front gate. Neither the stone or bricks was disturbed by the shock," Dee reports.

Wendell Weart (9111) and John Banister, who were observers at Grand Valley, especially noted a high level of noise lasting several seconds after the ground motion, apparently from the vibrations of buildings and rattling of windows.

As of Oct. 3, the AEC reported 122 damage claims, of which 102 have been paid for a total of \$19,075, most for chimney damage and cracks in plaster, masonry, sidewalks and other property in the Grand Valley area.

Considering the wide range of problems in the experiment, everything seemed to turn out as planned after all.

Events Calendar

- Oct. 10-12—"Mime, Music, Malarkey and More" by Bill Hayden and Judy Sierer. Old Town Studio, tel. 242-4602.
- Oct. 11—Lava beds southeast of Grants. N.M. Mountain Club, leader Norm Bullard, tel. 268-1812.
- Oct. 12—Enchanted Mesa near Acoma. N.M. Mountain Club, leader Dan Petersen, 296-2463.
- Oct. 15-19—Jean Anouilh's "Antigone." UNM Rodey Theatre.
- Oct. 15—Fiesta Mexicana. UNM Popejoy Hall.
- Oct. 16-26—"You Can't Take It With You," Albuquerque Little Theatre.
- Oct. 17—Laguna fiesta at Paraje.
- Oct. 18—Casa Angelica presents Mrs. Jeane Dixon ("Gift of Prophecy" author). Johnson Gym, 8 p.m.
- Oct. 21—Opera star Phyllis Curtin and The Romeros. UNM Popejoy Hall.
- Oct. 25—YWCA charter bus trip to southwest New Mexico. For reservations, tel. 247-8841.

Toastmaster Club 765 Celebrates Tonight

Sandia Toastmasters Club 765 is celebrating tonight. The Club is marking its own 20-year history and the 45th anniversary of Toastmasters International with a dinner meeting at the Elks Club.

"Through the years literally hundreds of Sandians have participated in Toastmastering and in so doing have benefited themselves and Sandia," says Jerry Long (9111). "Among the ranks of former Toastmasters Club 765 members are vice presidents, directors and many, many supervisors. Men who can communicate effectively are recognized. Toastmasters provides valuable training in listening, thinking and speaking."

Anyone interested in joining the group is urged to contact Jerry at 296-2590 for reservations to the dinner or for Toastmaster membership information.

Already Yet?

Forget the Summer, Think Snow—Coronado Skiers Get in Gear

Those skiers don't wait for even the first snowflake to fall before they start talking and organizing.

Coronado Ski Club officially opens the new season Tuesday, Oct. 21, at the Coronado Club. The meeting will start at 7 p.m. with a half-hour get together featuring free beer, popcorn, and soft drinks. Balance of the program includes a talk by Ednae Gross (3311) on Taos Ski Valley facilities and ski school, a winter sports style show, and two movies.

Tickets to the Ski Patrol-sponsored feature film "This Is Skiing," to be shown at the Civic Auditorium on Nov. 8, will also be sold at the meeting at a special club rate.

Membership in the Coronado Ski Club is open to any member of the Coronado Club with an interest in skiing. Ski club

dues are \$1.50 per person yearly or \$3 per family.

The club's purpose, according to President Ron Syler (9221), is to promote a skiing fraternity by means of monthly meetings and to organize ski activities for both adults and juniors. The large membership (over 500) and the Coronado Club subsidy make possible ticket discounts for ski lifts and lessons, charter bus trips to different ski areas, and a variety of social events.

This year the club will encourage the first-time-on-skis set with a free ticket at Sandia Peak for the beginner's first lesson.

For more information contact George Kupper (3114), club treasurer, or just go to the first meeting. Other officers are Norm Elliott (7451), vice president, and Susan Hughen (wife of Bob, 1551), secretary.

Experimental Nuclear Rocket Engine Tests Completed at Jackass Flats

Testing of an experimental nuclear rocket engine, called XE, has been completed successfully at the Nuclear Rocket Development Station, Jackass Flats, Nev. Completion of the test series is a major step in the joint AEC/NASA program to develop a nuclear rocket for the nation's use in space.

The nuclear rocket engine produces thrust by the high velocity exhausting of hydrogen heated to a high temperature in the engine reactor.

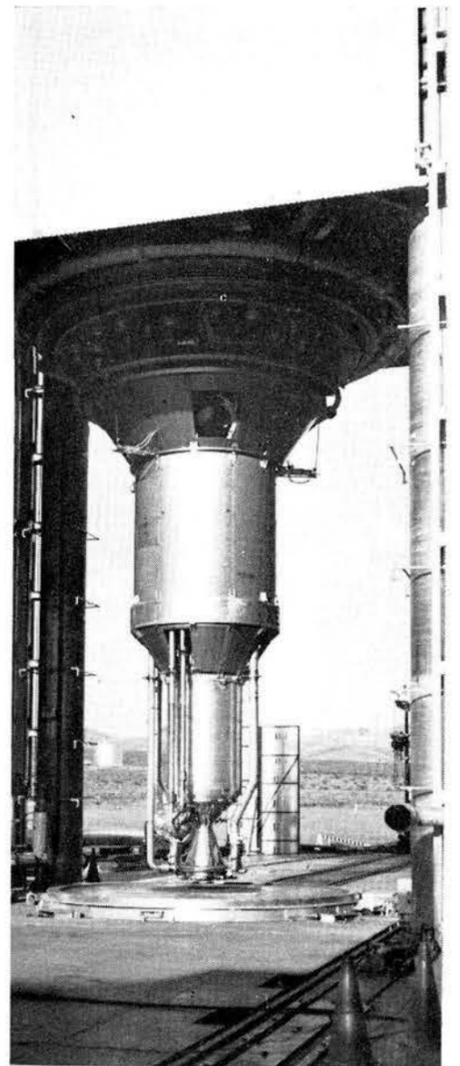
First checkout and calibration tests of the XE engine were designed to assure that the engine and test stand were ready. During the test period, 28 engine startups were successfully completed, and the engine was operated at various thrust levels for a cumulative test time of nearly four hours. Three and a half minutes were at full thrust (about 55,000 pounds).

In the test program a wide variety of operating modes and different pressure and temperature conditions were investigated, including automatic startups which did not require external sources of energy, multiple re-starts and throttling. The tests again demonstrated the stability of nuclear rocket engine performance.

The XE engine runs conclude a series of successful tests. Based on this experience,

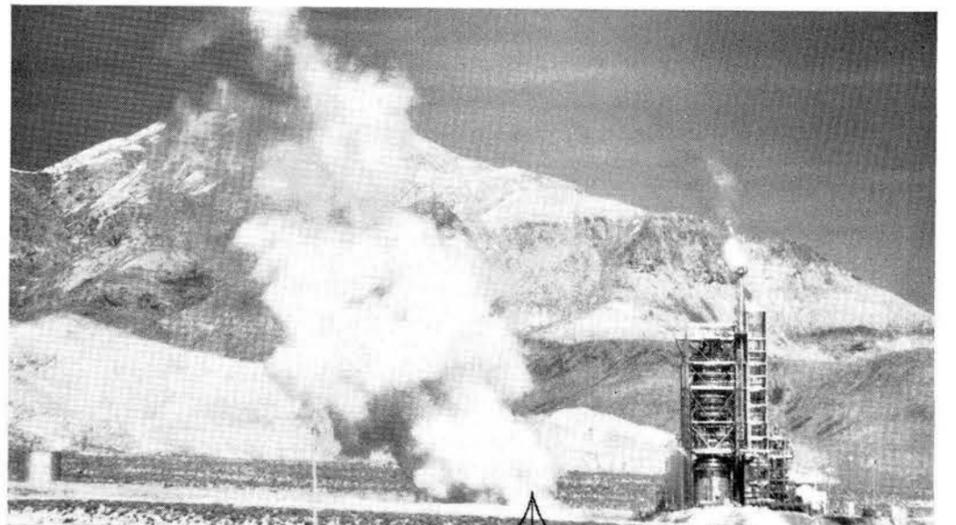
the design and development of a flight-rated 75,000 pound thrust nuclear rocket called NERVA is being initiated.

Overall management of the nuclear rocket program is the responsibility of the joint AEC/NASA Space Nuclear Propulsion Office in Germantown, Md.



SPECIAL TEST FACILITY at Jackass Flats, Nev., allows the nuclear rocket engine to fire downward under simulated altitude conditions. The engine produces thrust by the high velocity exhausting of hydrogen heated to a high temperature in the engine reactor.

NERVA XE nuclear rocket engine is shown during an intermediate power test in 1969. Based upon the successful tests of the XE, which developed 55,000 pounds of thrust, development of a flight-rated 75,000 pound thrust nuclear rocket engine is being initiated.



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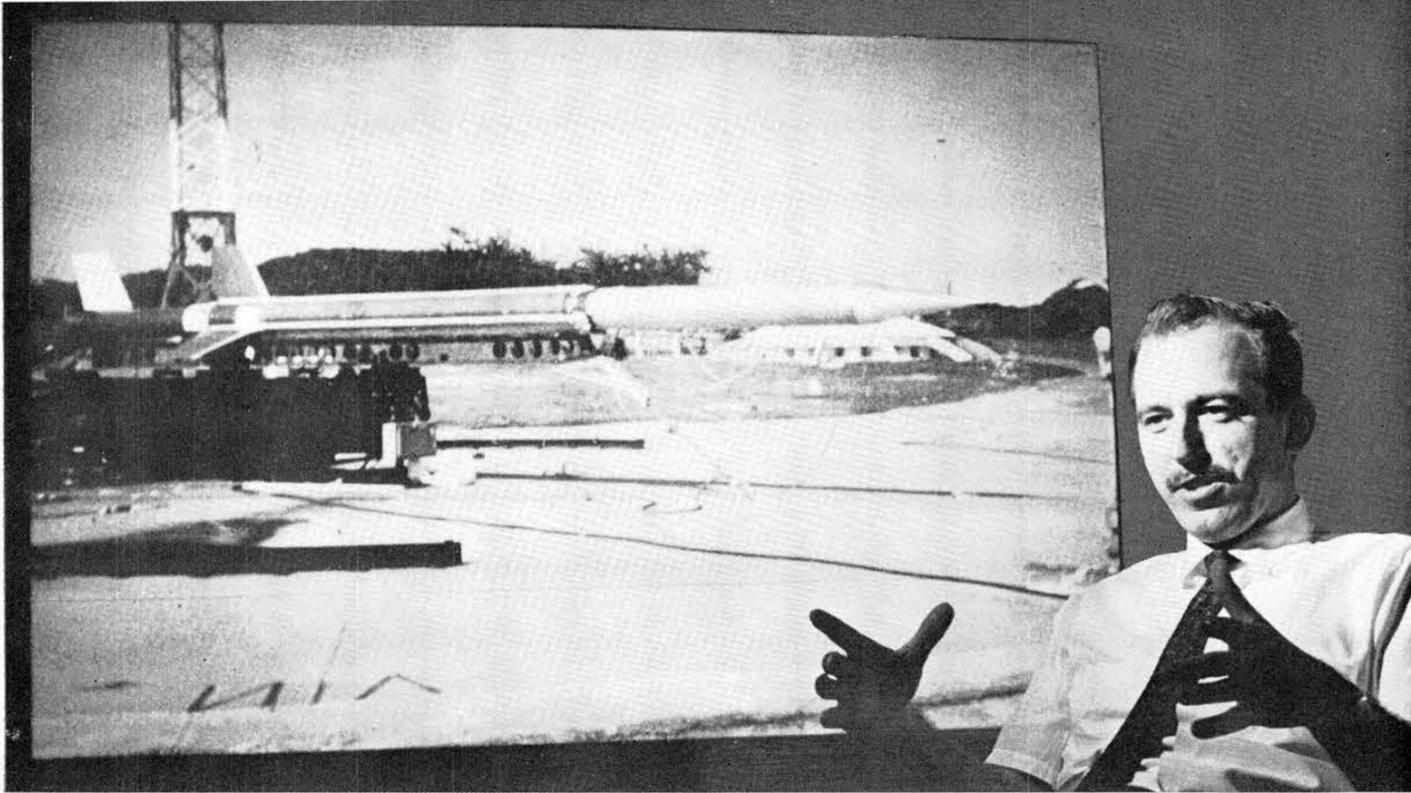
October 1, 1969	1.622
September 1969	1.564
Average 1968 Value	1.647

Sympathy

To Amadeo S. Ortiz (4153) for the death of his son, Samuel, in an auto accident near Las Vegas, N.M., Sept. 17.

To Roy Furrow (4574-4) for the death of his mother in Albuquerque, Sept. 21.

Robert Utter (3132) for the death of his mother-in-law in Long Beach, Calif., Sept. 24.



DESIGN OF ASTROPHYSICAL RESEARCH ROCKET PAYLOAD is described by Ralph Thompson (8122). Ralph revisited Brazil recently to help scientists and engineers from the Brazilian government and

UC/Berkeley launch two of the rockets. During 1968, Ralph designed the rockets' x-ray counter payloads, used to obtain data on 30 x-ray emitting stars.

BTL Scientist Heads Materials And Metallurgy Department

Robert Meinken of Bell Telephone Laboratories, Allentown, Pa., has been transferred to Sandia Laboratories Livermore to serve as manager, Materials and Metallurgy Department 8310, effective Oct. 1.



A Bell employee for 15 years, Mr. Meinken has been head of the Materials Development Department with the responsibility for developing oxide-type materials and metallurgical systems for substrate applications. His department is also working on semiconductor contacts and magnetic materials.

Former assignments include development of magnetic material and memory devices and other electronic materials. He has also been involved in the development of semiconductor and solid state electro-optical devices.

He received his BSc, MSc and PhD degrees in ceramics from Rutgers University in 1949, 1951 and 1954 respectively.

Rocket Tests in South America Observed by Ralph Thompson

Earlier this year, mechanical engineer Ralph Thompson (8122) took a three-week leave of absence to assist the Brazilian government in launching two Aerobee rockets 120 miles into the atmosphere. His interest in the events, however, started well before those three weeks.

In 1968, Ralph was part of a group of engineers and scientists doing astrophysical research under a joint arrangement with the University of California's Space Science Laboratory and the Brazilian government. Object of their study was to obtain additional data on some 30 stars known to emit x-rays in the 0.1 - 100 kilo electron volt (keV) range.

"My job," Ralph relates, "was to design the 260-pound rocket payloads containing the x-ray counters. These counters fit between the nose cone containing the telemetry and the liquid fueled rocket. To measure stellar x-rays, we used argon proportional counters (argon-filled chambers equipped with mylar windows 1/10,000ths of an inch thick). The x-rays pass through the windows into the argon where their numbers and energy levels were determined. The data was telemetered back to earth for evaluation."

But why go to South America for the rocket tests?

"The launch site was at Natal—300 miles below the equator—on the eastern tip of Brazil," explains Ralph. "At this location, instruments in the freely spinning rocket could scan the southern sky to discover new x-ray emitting stars, and they could also measure x-rays from stars previously observed in the Northern Hemisphere."

For three months in 1968, Ralph worked and lived in Sao Jose Dos Campos, a town of 60,000 people about 60 miles north of Sao Paulo.

"Our staff of five engineers and scientists," says Ralph, "worked with 40 engineers and 100 support people of Brazil's NASA, the CNAE (Comisso Nacional Atividades Espaciais). Because Brazilian technical people speak English in addition to their native Portuguese, language was no problem."

"Educational opportunities are limited, though. While in Sao Jose, I taught a course in heat transfer to six Brazilian engineers working on their master's degrees. Those who complete requirements and want a PhD plan to study in Europe or the United States. Then they'll return to Brazil for further research. In fact, all 40 engineers at CNAE have similar goals."

Although Brazil's research activities are limited, CNAE is receiving data from a United States weather satellite and is working on a data system for an earth resources satellite. When launched by the United States, this satellite will transmit infrared data about the temperature of trees and crops. From this data, CNAE can tell if vegetation is diseased or getting adequate moisture, and if it's time to harvest the crops.

"Living in Brazil was not too different from life in the United States," remarks Ralph. "My wife, year-old daughter and I lived in a modern apartment about a mile from downtown Sao Jose. The apartment didn't have central heat so when nights got cool, you piled on more blankets. Water

was heated by small, electric heaters attached to faucets.

"Washing machines and driers were in short supply. They're expensive and electricity isn't abundant. Clothes were washed by hand and usually took two days to dry in the relatively high humidity. Cooking was done with butane. My wife did like the way groceries were delivered to your kitchen table by the supermarkets and the availability of fresh fruit (bananas 1 cent each; pineapple 25 cents each) twice a week at the door of the apartment. We also managed well without a car—they are expensive to buy or rent. And city busses made trips every 20 minutes to downtown Sao Jose.

"Working and living in Brazil was quite an experience—still it's great to be back home again," concludes Ralph.

Chabot College Offers Film and Lecture Series

As a community service Chabot College is offering its Film and Lecture Series for the 1969-70 season to the public.

The Film Series includes many award winners that have not been shown commercially, and admission is free. Showings start at 7:30 p.m. in the Chabot College Community Auditorium. The schedule includes:

Oct. 22	"The Organizer"
Nov. 5	"Mademoiselle"
Nov. 26	"Phaedra"
Jan. 14	"Wir Wunderkiner"
Feb. 4	"Black Orpheus"
Feb. 18	"The Seven Deadly Sins"
March 11	"Shakespeare Wallah"
April 15	"Hamlet"
May 6	"The Battle of Algiers"
May 20	"Wild Strawberries"
June 3	"Los Olvidados"

Speakers of national and international fame are featured in the Lecture Series. Two will be held at the Livermore High School Auditorium. Charles Evers, civil rights leader, will speak on "What It Means to Care" at 8 p.m. on Nov. 21. On Jan. 29, Ian McHarg, ecologist, regional planner, and landscape architect, will speak on "Man and the Environment."

The other lectures, to be held in the Community Auditorium at Chabot include: Nov. 14, Karl Steinbrugge, "Earthquakes—Why and When?"; Jan. 10, Congresswoman Shirley Chisholm, "Progress Through Understanding"; Feb. 19, Meredith Wilson, "An Evening with Meredith Wilson"; March 14, Dr. Octavio Romano, "The Mexican-American and Civil Rights"; April 10, Rod Serling, "Creative Writing for TV"; and May 2, Dr. Julian Nava, "Mexican-American History and Culture."

Tickets for the lecture series and further information are available from the College's Office of Community Services, 25555 Hesperian Blvd., Hayward, tel. 782-3000, ext. 414.

Congratulations

Sharon Ritter (8212-1) and John Heckler married in Carmel, Sept. 6.

Mr. and Mrs. Dave Dean (8343) a daughter, Leslie Denise, Sept. 13.

Mr. and Mrs. Jerry Strandin (8133) a daughter, Julie Gail, Sept. 26.

Monte Nichols (8331) and Barbara Piper (formerly 8233) married in Livermore, Aug. 2.

Mr. and Mrs. Bob Schaefer (8172) a daughter, Nancy Elizabeth, Aug. 14.

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Races and Regattas for Sailboat Enthusiasts

Sailboat owners and others interested in sailing may want to investigate membership in the local Diablo Sailing Club. Organized two years ago, the club has nearly 80 family memberships. The club uses the East Bay Regional Park's launching, swimming and picnicking facilities at Contra Loma Reservoir between Antioch and Brentwood and expects to have the use of San Pablo Reservoir and others by next summer.

Activities of the club include racing and cruising events for sailboats 8 to 21 feet long. Many classes of boats are represented including fleets of El Toros, Sunfishes, Flying Juniors, Day Sailors, Ventures and "one-of-a-kind." Experienced sailors (some champions in their own boat classes) are available to teach sailing to newcomers. Fleet races are held on the fourth Sunday of each month in addition to club-sponsored regattas.

The Diablo Sailing Club belongs to the Small Boat Racing Association (SBRA) of Northern California (making them eligible to participate in SBRA racing events in the northern part of the State) and the Pacific Interclub Yachting Association (providing reciprocal use of yachting club facilities).

The club meets on the fourth Tuesday of every month at 7:30 p.m. in the Walnut Creek Recreation Center. Dues are \$10 per year plus a \$5 initiation fee.

Further information may be obtained by contacting Len Bedinger (8254).



LOCAL EMERGENCY FUND CENTER president Pat Cooper (left) accepts a check for \$320 from Carl Holmes (8333), right, and Joe Darginis (8311) who presented the gift on behalf of employees at Sandia Laboratories Livermore. The money covers the cost (including bus transportation and admission fee) of a day's jaunt to Frontier Village, a recreation and amusement park near San Jose, Calif., for 100 boys and girls from low income homes in the Livermore/Amador Valley. The contribution was made possible through donations to the Sandia Employees Youth Activity Fund which each year sponsors Little League and Babe Ruth baseball teams, as well as other youth projects in the community.

Take Note

Wes Estill of Materials Division 8311 was general co-chairman for the second annual technical meeting of the International Metallographic Society held in San Francisco recently. He presented a paper entitled, "Electron Microprobe Analysis of Fractured Uranium Alloy Surfaces."

Over 250 scientists and engineers investigating the properties of metals attended the three days of technical sessions.

Jack Dini and John Helms (both 8311) were co-authors of an article appearing in the August 1969 issue of METAL FINISHING. Title of their paper was "Properties of Electroformed Lead."

H. R. (Rudy) Johnson (8311) was the author of an article published in the August 1969 issue of PLATING. Title of his technical brief was "Applying Hard Anodic Aluminum Coatings to Various Substrates."

E. D. Loughran, LASL GMK-2, phone 7-4894, has accepted the chairmanship of a special committee on Mass Spectrometry.

Mr. Loughran is inviting comments to determine areas of interest in the mass spectrometry field. Membership for this committee is also being solicited at this time.

The "Oakland Nighthawks," a six-man chess team captained by Raymond Ng (8174), recently took first place in a play-off tournament sponsored by the Chess Friends of Northern California. The team previously won first place in the East Bay League, and won the top honor after defeating the winners of the West Bay and Peninsula League.

For the past eight months, 28 teams have been competing for league ranking and championships. Individual games are usually completed in one evening after about three hours' play.

Members of Ng's team will receive medallions for their win plus a team trophy.

Sympathy

To Roy Rychnovsky (8133) for the death of his brother in Minneapolis, Minn., Aug. 16.

To B. M. Biergiel (8252) for the death of his mother in Massachusetts, Aug. 9.

To Charles Drummond (8162) for the death of his son in Livermore, Aug. 7.

To Henry Hanser (8332) for the death of his father in Cathedral City, Calif., Aug. 4.

To Sam Mancuso (8212) for the death of his mother-in-law in Plainview, Tex., Aug. 19.

To Jean Stuart (8245) for the death of her father-in-law in Rushville, Mo., Sept. 11.

OUR MAN IN

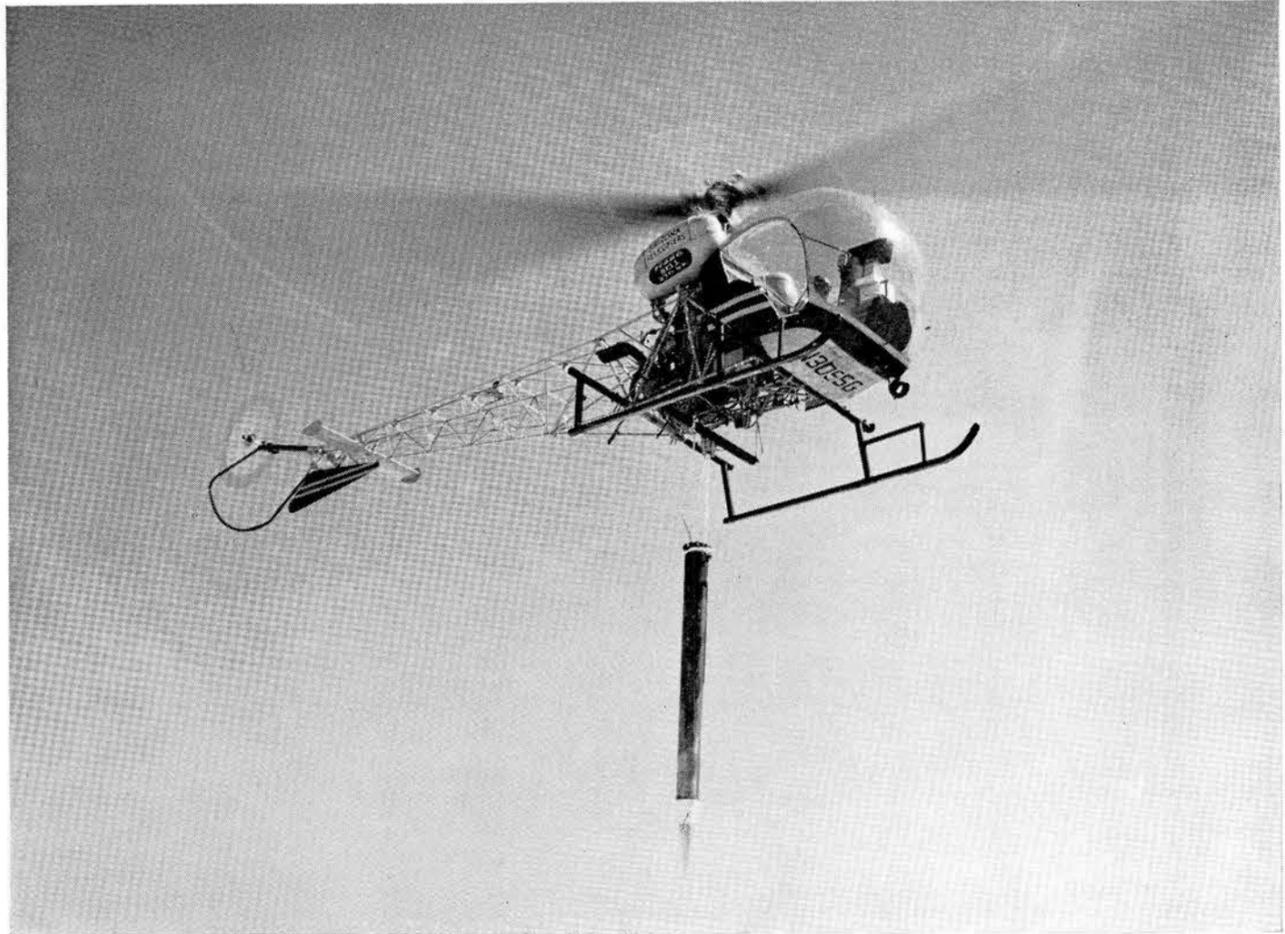
**Skaggs Island, Montana, Salt Flats,
The Arctic, Arkansas, Santa Cruz, etc.**

"Recovery is part of our business," says Gordo Miller, supervisor of Division 7264. When a test unit is dropped — be it in the mountains, rain forest, swamp, or ocean — Gordo and his group are likely to be present.

The Remote Site and Mobile Range Division provides technical facilities, data acquisition and logistic support on all remote site tests. Drop vehicle recovery is frequently necessary to get final data on performance. The group also helps in special kinds of operations such as the recovery of a Nimbus weather satellite from the ocean floor last fall.

Members of Gordo's team have taken part in recovery operations at several locales in New Mexico, and they have dug, dived, or waded for units in the Salt Flats of Utah, Skaggs Island in California, the Arctic, Texas, Arkansas, and several oceans.

Pictured here are a few of the ways they go about the recovery business.



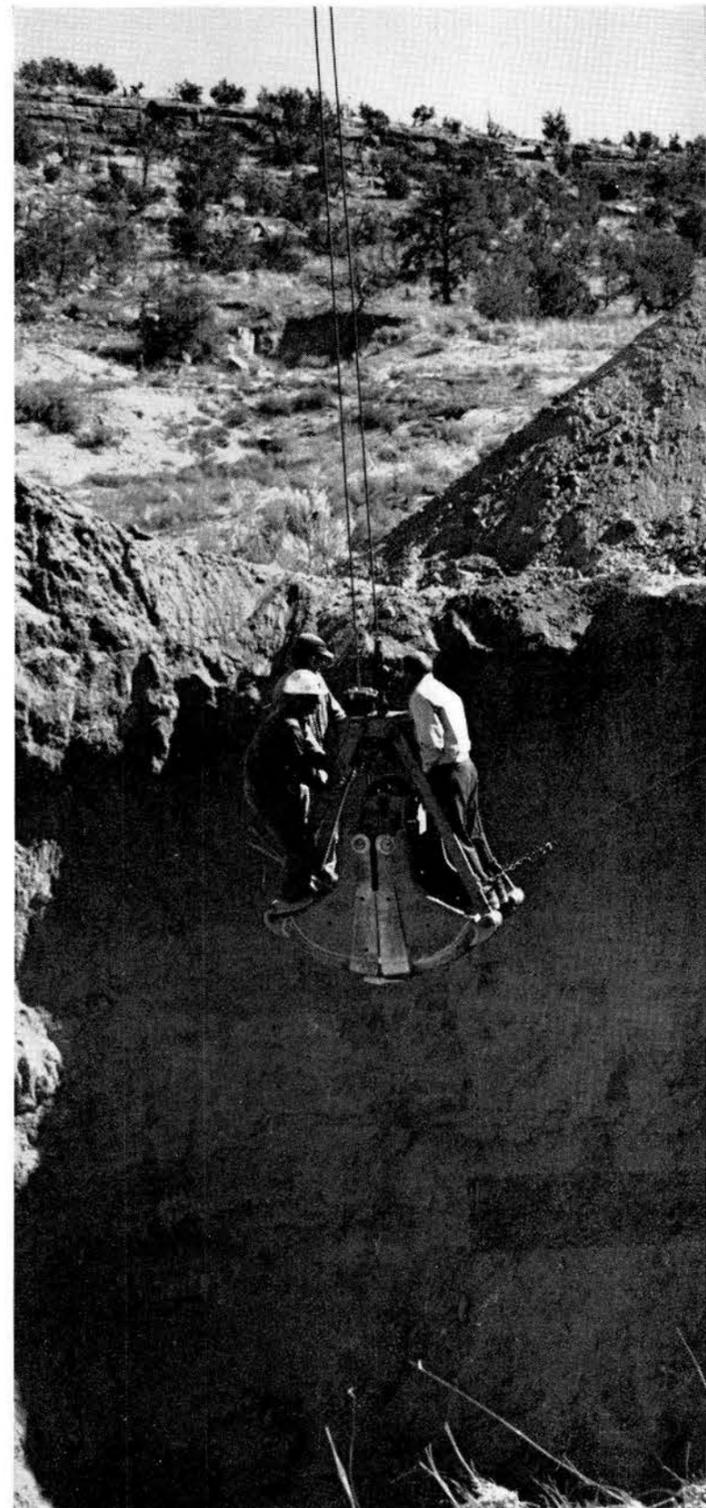
What comes down must be found and Gordo's roving group usually finds it. When this penetra-

tion vehicle was dropped at White Sands, Division 7264 was there to locate and retrieve it.

It's gotta be there somewhere. Wayne Young (9327) fishes for a unit buried in the Salt Flats at Wendover, Utah.

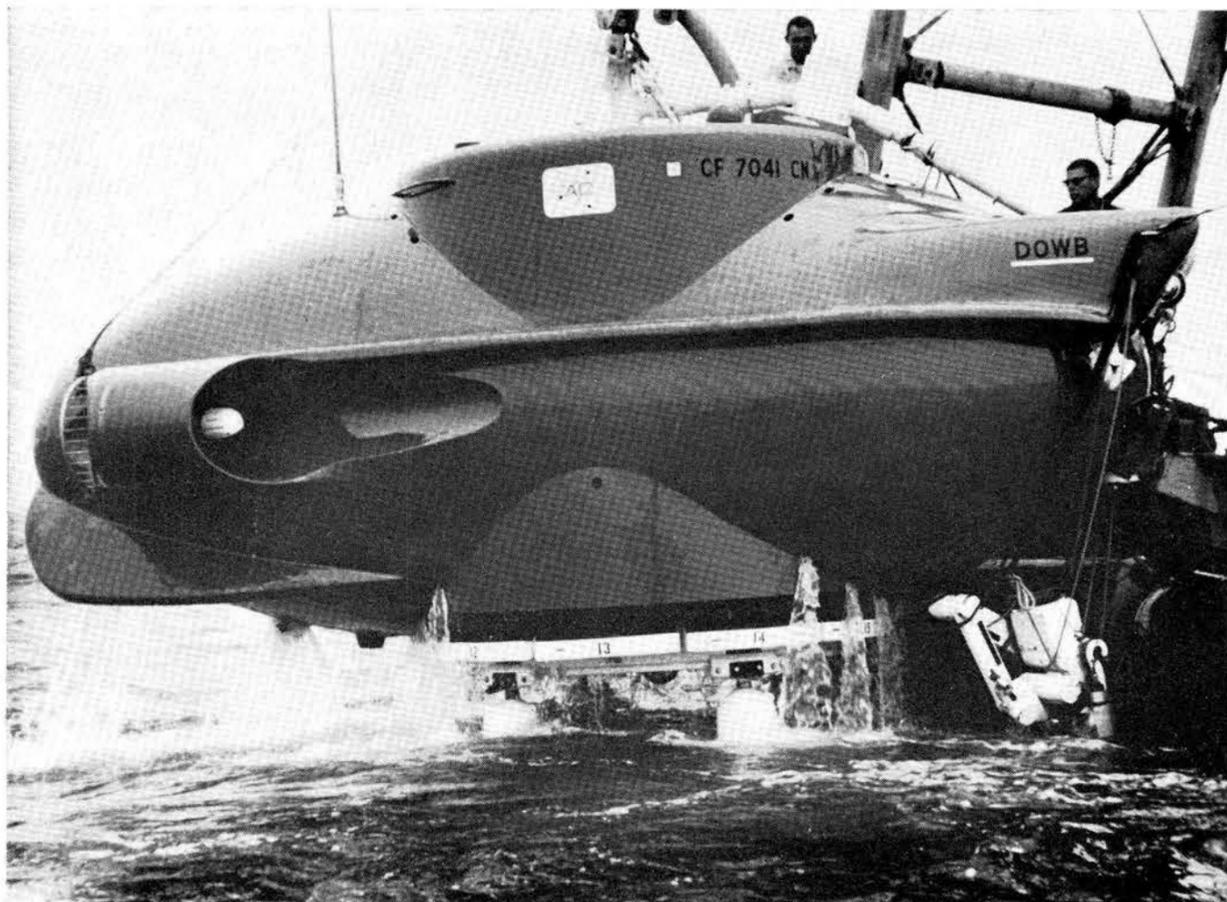


Going down in a makeshift elevator, workers prepare to recover a unit dropped near Grants. A dragline was used to dig the hole.



Up and Away. This DOWB (deep ocean work boat), with Bob Hedberg (7264) inside, is hoisted out of

the ocean following a Nimbus recovery dive.



Supervisory Appointments



Part of the function of the division is to get the right tool at the scene to recover test units. Locale is southern New Mexico.

Muscle to pull a unit out of the Salt Flats was provided by his chopper. Don Fifield (right), one of the oldtimers in the recovery business, is credited with the idea of using the drop aircraft rather than a crane.



Recovery groups have been known to get their feet wet and even to make use of that primitive implement, the shovel, as on this occasion at Skaggs Island.



TAYLOR ABEGG to manager, Electro-Chemical and Explosives Department 2340, effective Oct. 1.

Taylor has been supervisor of the Explosives Advanced Development Division since 1962. He joined

Sandia as a staff member in the Component Development Division in 1959.

He previously worked for nearly five years at LRL in the development of explosively-shocked ferroelectric transducers.

Taylor has a BS in fuel technology and PhD in physical chemistry and fuel technology from the University of Utah where he was a research fellow.

He is a member of Sigma Pi Sigma and Sigma Xi professional societies.

From 1943-46 he was a member of the Army Chemical Corps and served in the Caribbean Defense Command.

Taylor, his wife Patricia, and their eight children live at 6601 Dodd Place NE.

* * *



ED KJELDGAARD to supervisor, Explosives Research and Advanced Development Division 2341, effective Oct. 1.

Ed has been a staff member in that division since he joined Sandia in 1966. His duties included synthesizing new explosives.

He has a BS in chemistry from St. Olaf College, Minn., and a PhD in organic chemistry from the University of Colorado. As a graduate student he was a National Science Foundation research fellow.

He is a member of the American Chemical Society.

Ed, his wife Linda, and their one child live at 901 Poco Cerro Ct. SE.

* * *



BOB PINKHAM to supervisor, Mechanical Timers and Mechanical Coded Switches Division 2335, effective Oct. 1.

Bob has been at Sandia since 1952 and first worked in the Component Development Division. He since has worked in Coded Switches Division, Advanced Systems Development Division, and Electromechanical Division.

Before joining Sandia he was an engineer in the packaging industry in Massachusetts.

He has a BS in mechanical and industrial engineering from the University of Massachusetts and has done graduate work in mechanical engineering at UNM.

Bob is a WW II Navy veteran.

Bob, his wife Connie, and their three children live at 3607 Florida NE.

* * *



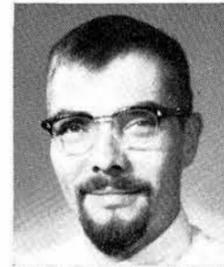
BILL ALZHEIMER to supervisor, Applied Mechanics Division II 1544 (newly created), effective Oct. 1.

Bill joined Sandia in 1966 and was assigned to the Analytical Development Division where he did research on the structural responses of reentry vehicles. He has stayed with that organization until his present promotion and recently has been doing experimental work on the response of structures to impulsive loads.

He has his degrees in mechanical engineering: a BS and MS from Montana State University and PhD from Virginia Polytechnic Institute where he was a teaching and research assistant.

Bill is a member of the American Society of Mechanical Engineers and the American Society of Civil Engineers.

Bill, his wife Becky, and their two children live at 4321 Andrew NE.



JAY BENSON to supervisor, Measurements Development Division I 9115, effective Oct. 1.

Jay joined Sandia in 1965 as a staff member in Radiation Phenomena Division where he has been until his present

promotion. He has been studying and measuring radiation phenomena.

He has BS, MS, and PhD degrees in physics from the University of Minnesota. As a graduate student he held teaching and research assistantships.

Jay, his wife Rita, and their four children live at 1806 Cardenas NE.

* * *



DAVID SALAS to supervisor, 3rd Shift Computer Operations Section 9411-3, effective Oct. 1.

Dave joined Sandia in 1956 as a material handler in a field test support group. He later became a receiving clerk and in 1963

transferred to the computing organization as a computer operator.

He previously had worked as a mail carrier in Albuquerque.

Dave attended UNM where he studied journalism.

A Korean veteran, Dave served in an artillery unit of the Marine Corps from 1949-52.

Dave, his wife Stella, and their five sons live at 3501 Palomas NE.

* * *



VERN EASLEY to supervisor, Coordinating, Field and Plant Operations Engineering Division 4541, effective Oct. 1.

Vern joined Sandia in 1958 as an electrical design engineer and four years ago was named project leader in the buildings and facilities group.

He previously had worked as a design engineer at Convair in Ft. Worth, Texas, and for seven years he was electrical superintendent at the Deming office of the Public Service Co. of New Mexico.

He has a BS in electrical engineering from UNM where he also has done some graduate work.

Vern is a registered professional engineer in New Mexico and a senior member of the IEEE.

From 1943-46 he was in the Navy and served as communications officer aboard a destroyer escort.

Vern, his wife Betty, and three children live at 2728 Alcazar NE.

* * *



KENT PARSONS to supervisor, Impact Fuze and Explosive Power Supply Division 2314, effective Oct. 1.

Kent started his Sandia career in 1959 as a summer hire. He returned in 1964 as a staff member in the Physics of Solids Division where he did acoustic-electric amplifier research. Two years ago he transferred to the Solid State Electronics Research Division where he studied ferroelectric field effects.

He has a BS and MS in electrical engineering from the University of Nebraska and a PhD, also in electrical engineering, from Northwestern University. He did post-doctoral work at the Northwestern Materials Research Center.

Kent is a member of IEEE.

Kent, his wife Sandra, and their three children live at 3308 Utah NE.

Speakers

C. H. Karnes (5165) and L. D. Bertholf (5162), "Numerical Investigation of Two-Dimensional Axisymmetric Elastic-Plastic Wave Propagation Near the Impact End of Identical 1100-0 Aluminum Bars," Colloquium on the Inelastic Behavior of Solids, Sept. 15-19, Columbus.

R. S. Reynolds (9211), "IRIG Telemetry Standards — 1969," ITC/USA 69 Conference, Sept. 15-17, Washington.

G. S. Mills (2443) and P. A. Stickler (7424), "A Data Acquisition and Processing System," First Annual Electronic Manufacturing Exposition and Conference, Sept. 16-18, New York City.

F. M. Roddy and L. L. Miles (both 2633), "An Integrated L Band 10-Watt Pulse Amplifier," Government Microcircuit Applications Conference, Sept. 16-18, Washington.

P. B. Herrington (9226), "A Pulse Counting System Used in a Vacuum Ultraviolet Spectrometer" and "A Logarithmic Electrometer Designed for Use in a Filter Wheel Photometer," Electro-Optical Systems Design Conference, Sept. 16-18, New York City.

C. E. Land (5153), "Recent Developments in Electrooptic Ceramics," Symposium on Physics and Nondestructive Testing, Sept. 23-25, Chicago.

L. B. Smith (5235), "Data from Falling Sphere Experiments Including Comparison Tests between Different Systems," Symposium on Inflatable Falling Spheres for Obtaining Atmospheric Measurements to Altitudes of 100 km, Sept. 23-24, Hampton, Va.

J. A. Leonard (9521), "SNAP-27 Program Review," Fourth Intersociety Energy Conversion Engineering Conference, Sept. 23, Washington.

H. R. Vaughn (9325), "RV Flight Mechanics," AFSC Annual Review of Reentry Systems Programs, Sept. 8-9, Air Force Academy, Colorado Springs.

M. M. Robertson (5525), "Optical Reentry Studies," Society of Aerospace Material and Process Engineers, Sept. 15, Albuquerque.

D. C. Williams (5321), "DWBA Analysis of the $^{40,44}\text{Ca}(t,p)$ Reaction at 7.5 MeV," American Physical Society Division of Nuclear Physics, Oct. 30-Nov. 1, Boulder, Colo.

R. J. Baughman and R. A. Lefever (both 5154), "Effect of Pressure on Melt Vaporization," ACCG Conference on Crystal Growth, Aug. 11, Washington.

A. J. Clark (9520), "Space Applications of Radioisotopic Thermoelectric Generators," Utah Section of the ASME, Oct. 3, Salt Lake City.

R. F. Davis (on educational leave) and R. R. Berlind (9425), "Sandia Area V Data Acquisition and Display System," Semi Annual AEC Computer Information Meeting, Oct. 6-7, Idaho Falls.

T. W. H. Caffey, W. R. Hale and J. B. Noe (all 7211), "A Predetection Combiner Using FM-to-FM Conversion," International Electronics Conference, Oct. 6-8, Toronto, Canada.

D. M. Mattox (5332), "Interface Formation, Adhesion and Ion Plating," American Society of Automotive Engineers, Oct. 6, Los Angeles.

J. C. Crawford (5153) "Piezoelectric Field Effect Studies," Piezoelectric Ceramics Seminar, Oct. 9-10, Cleveland.

S. E. Logan (1514), "Remote Areas of the Grand Canyon," New Mexico Mountain Club, Sept. 17, Albuquerque.

N. C. Anderholm (1224), "Lasers and Quasars," Lions Club, Oct. 2, Albuquerque.

O. L. Wright (4610), "History of Sandia," Lions Club, Oct. 9, Albuquerque.

Death



Gene Redic, a Sandia security inspector, died Sept. 28 after a long illness. He was 40.

He had worked at Sandia since September 1950.

Survivors include Mrs. Redic, a Sandia Credit Union employee, and one son.



TAKE ONE—Chuck Cockelreas (seated at desk), writer/director for the Motion Picture Production Division 3454, doubles as talent in some recent test shots in the new sound stage. Manning the clapperstick is cinematographer/editor Bob Matthews. On sound (right) is

Howard Hayden. Cameramen are Bill Geck (left) and Wayne Hancock. With completion of the new studio, the division has increased capability for full-length sound/color movies. A specialty of the house is the short report film, produced cheaply and quickly.

New Facilities

Effective, Professional Films Produced

A soon-to-be-released film entitled "Our Aching Backs" will give Sandians — many of them for the first time — a look at the exceptional capabilities of the Motion Picture Production Division 3454.

The movie, filmed for the Safety Engineering Department with the cooperation of the Medical Services Department, utilizes color, sound, animation, studio acting, still photography, and a variety of cinematographic techniques in a delightful and light—yet highly informative—treatment of a prosaic subject, protecting the back from injury.

"The thing about this film is that it demonstrates the wide range of our capabilities," says Bob Colgan, supervisor of the division. "Not only can we produce films of professional quality, but we can do them considerably cheaper and faster than a commercial studio."

"Our fast production time, that is the time from when we start shooting to when we distribute a finished print, should be of particular interest to persons or groups who can use short report films," says Bob. The report film, usually only 3 to 10 minutes in length, has advantages over other kinds of presentations such as graphic dis-

plays, talks, slides, etc. "For one thing, size and time relationships become clearer, and we can use techniques such as stop-framing, high speed photography, and time lapse photography to demonstrate relationships difficult to describe orally or by other conventional means."

The reasons the division can now produce cheaply and quickly a variety of films—from full-length documentaries to report films and short film clips—are that new techniques have been developed and the physical facilities have been expanded.

The new time and cost-saving techniques are demonstrated in a series of report films recently produced. Two of the films, made for different purposes and for different groups, used much of the same footage. Narration simply was altered according to the point of view. Both films were ready for use within two weeks after filming.

One of the shortest turn-around times was achieved with a report film on dust erosion of a nose cone. The film, shot at the sled test track, included footage shot by Bob's and a field test group. Dave Bickel (7343) narrated and was not aware he had a role in the film until a microphone was hung around his neck minutes before the

cameras started rolling. Not only did this technique eliminate the time usually needed to research and write a script, it also added a good deal of spontaneity to the film. The movie was shown eight days after shooting began.

Physical facilities of the division recently have been expanded to include a new sound stage. The unit has the capability to handle either single or double system movies (that is, sound recorded directly on the film or recorded separately on tape and later added to the sound track). Animation, special effects, and multi-channel sound dubbing facilities are also available.

Motion Picture Film Processing Section 3455-2 has acquired new film processors which should be in operation within a few weeks. The new equipment was acquired to provide processing capabilities needed for data and test films, but it will also handle documentary footage currently sent to commercial processors.

The division offers consultation services to any groups that feel that film might be useful but who are unsure of its feasibility. Also, the division maintains a catalog of Sandia films.

An entertaining, informative color/sound movie entitled "Our Aching Backs" is now available for showing from Safety Engineering Department 3350. Six copies of the 14-minute film are available and may be scheduled by calling 264-2659.

Produced by Motion Picture Production Division 3453, the film features several Sandia beauties, animated cartoon characters, and some sound health and safety advice in a package well worth viewing.

The film is available for distribution to AEC agencies, and has been approved for general public release.



TELEPROMPTER, also called the idiot board, is part of well-equipped studio. The device is mounted on an Auricon 1200, a 16-mm single system camera.

Service Awards

20 Years



Eugene Aas
8323



Robert Culley
7511



Robert Flaxbart
4510



Eugene Hopkins
4235



Paul Krogdahl
7411



Randall Parsons
7214



John Stark
9413



Joseph Sylvestre
4253

15 Years



Marvin Barnett
7215



Leonard Beavis
2613



William Benedick
5131



Robert Berry
9512



Robert Butler
7342



Manuel Chavez
9411



Leonard Clausen
1612



John Dankworth
2634



Rafael Garcia
4614



Robert Hostetter
9222



George Janser
2316



Donald Markwell
8164



Roy Martin
2322



Albert Miller
4254



Marston Skidmore
7652



Hester Stiver
6021



Vincent Strascina
9224

10 Years

Josephine Gibbons 6010, William Brown 8161, James Hudson 9511, Raymond Wilkinson 7321, Mary Walker 9413, Arlyn Blackwell 100, Oracia Garcia 4574, and Sanford Markowitz 9252.

Authors

E. L. Clark (9322), "Aerodynamic Characteristics of the Hemisphere at Supersonic and Hypersonic Mach Numbers," July issue, AIAA JOURNAL.

R. J. Baughman and R. A. Lefever (both 5154), "Czochralski Encapsulation Growth of GeTe, SnTe and PbTe Single Crystals," October issue, MATERIALS RESEARCH BULLETIN.

H. J. Stein (5111), "Photoconductivity Study of Divacancy Formation in Neutron-Irradiated Si," Vol. 15, No. 2, APPLIED PHYSICS LETTERS.

C. W. Harrison and E. A. Aronson (both 2625), "On the Bistatic Scattering Cross Section of a Reentry Capsule with Ionized Wake"; Harrison and R. E. Jones (9422), "On the Reflection Coefficient of a Plasma Profile of Exponentially Tapered Electron Density and Fixed Collision Frequency," both papers in Vol. AP-17, No. 3, IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION.

F. L. English (2633) and M. K. Parsons (5153) "Potential Distributions and Topography of npn-Type Junctions in Photosensitive Epitaxial PbS Films," Vol. 40, No. 8, JOURNAL OF APPLIED PHYSICS.

R. T. Johnson (5132) and B. T. Kenna (5521), "Radioactive Decay and Associated Electrical Changes in Fast-Neutron Irradiated CdS," Vol. 182, No. 3, PHYSICAL REVIEW.

D. C. Wallace (5151), "Pseudopotential Calculation of the Elastic Constants of Simple Metals," Vol. 182, No. 3, PHYSICAL REVIEW.

K. H. Zimmermann (7431), "An Easy Way to Find the Capacitance of a Coaxial Cable," September issue, WIRE AND WIRE PRODUCTS.

L. A. Harrah (5113), "ESR of Radicals Produced in Co⁶⁰ Gamma-Irradiated Polystyrene," Vol. 9, pages 197-213, MOLECULAR CRYSTALS AND LIQUID CRYSTALS.

D. W. Johnson (9324), "Development of Recovery Systems for High-Altitude Sounding Rockets," Vol. 6, No. 4, JOURNAL OF SPACECRAFT AND ROCKETS.

G. P. Steck (1723), "The Smirnov Two Sample Tests as Rank Tests," August issue, ANNALS OF MATHEMATICAL STATISTICS.

W. B. Pepper (9324), "Development of a Composite Structure Hypersonic Parachute," Vol. 6, No. 4, JOURNAL OF SPACECRAFT AND ROCKETS.

J. N. Johnson (5133), "Constitutive Relation for Rate-Dependent Plastic Flow in Polycrystalline Metals," Vol. 40, No. 5, JOURNAL OF APPLIED PHYSICS.

A. D. Middleton (5224-retired), "Operation Cat's Paw" and "ARRL Board and Amateur Radio," October issue, 73 MAGAZINE.

R. G. Easterling (1643), "Discrimination Intervals for Percentiles in Regression," September issue, JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.



The Postman Cometh — Eventually

We're not suggesting that the mail is slow these days, but last week LAB NEWS received a letter dated April 11 — that is, April 11, 1860! The delay probably derives from the fact that the writer failed to use a zip code.

Rain, sleet, and recalcitrant pony express mounts notwithstanding, the mail really isn't that tardy. This particular letter arrived via Bill Bray (9325) who found it lying in the hall of Bldg. 632. Bill, who assumed that the letter is not just a late delivery but rather a treasured memento of the past for some Sandian, asked our help in locating the owner.

The letter is written to his parents by an unidentified pioneer farmer in California who praised the bountifulness of the land and the health of his children.

So, if you're expecting a letter from home or you lost one your great-grandmother received, contact the LAB NEWS.

Buying on Local, State, Federal Levels Is Topic

The Southwest Conference on Federal, State, and Local Procurement, being held today and tomorrow at the University of New Mexico, professes to be a "first" in the field.

There are numerous seminars dealing with federal procurement, but seldom any to aid suppliers and contractors who do business with state or local governments. This conference is made up of panels of knowledgeable persons who will present a concise review of the similarities and differences in procurement methods.

Sandians participating in the program are Kenneth Weidner of Product Acceptance Division I, 7411, who will be a member of the panel discussing specifications and standardization inspection acceptance and testing, and Jay Hughes of Procurement Computer Systems Division 4331. Jay will be a member of panels on small order problems and on in-state preference awards and Buy America Act.

Congratulations

Mr. and Mrs. Ron Jacobson (5131), a daughter, Jenifer Grace.

Mr. and Mrs. Sam Beard (9328), a son, Glenn Allen, Sept. 6.

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SANDIA LAB NEWS

OCTOBER 10, 1969

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 Laboratories and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE MISCELLANEOUS

- DANISH MODERN COUCH, \$100 or offer; small old fashioned dresser w/mirror, \$25 or offer. Campbell, 268-8445.
- PUPPIES: half Collie, will be large dogs, can be seen on weekend. Miller, 282-3189 after 6.
- STARCRAFT 14' Jon boat, painted green. Dan-clovic, 255-4927.
- WURLITZER SPINET piano, light wood, \$450; dining room suite w/6 upholstered chairs, drop-leaf table w/extension leaves, \$65. Montoya, 265-9642.
- TWO full size sofa beds. Halliday, 265-2643.
- TWO bicycles, 26", 2 spd., American made, \$15 each. King, 299-8976.
- B FLAT Evette (by Buffet) clarinet & case, \$65. Robertson, 298-7167 after 5:30.
- PIANO, upright, \$100. Wenzelburger, 256-9370.
- STRING BASS, 3/4 size, best offer over \$200, includes cover & bow. Ray, 299-1253 after 6.
- DOUBLE size rollaway bed, innerspring mattress. Pops, 299-2276.
- POWER MOWER, \$10; 2 hollywood bed frames, \$5 ea.; luggage rack, \$2.50; metal storage cabinet w/rod, \$7.50. Eckart, 299-3888.
- KITTENS, white long haired mother cat & 2 kittens needs good home, free. Magee, 256-1358.

- SCHWINN 5-spd. racing bicycle; Accutron watch. White, 842-9804.
- WEAVER RIFLE SCOPE, variable power, 2 1/2 to 8, w/mounting rings & bases for Winchester model 70. \$40. Burnett, 298-1078.
- BABY CRIB, stroller & feeding table. Schamsun, 298-5192.
- ARISTOCRAT LO-Liner, 16' camper, '66 model, \$1350. Wyr, 255-8190.
- 9 x 9 UMBRELLA TENT, \$12.50; Underwood typewriter, \$15; Corvair tire chains, \$5. Smith, 298-9092.
- REFRIGERATOR, Gibson electric, \$25 or best offer. O'Bryant, 268-9049.
- PIANO, Cable & Nelson upright, \$125. Houston, 255-4658.
- SKI BOAT, 16' Thunderbird tri-hull, top & curtains, 105 HP Chrysler motor, E-Z load trailer, extras, \$2800. Tucker, 877-9405.
- FOOTBALL SHOES, size 7, \$8. Wilkins, 268-5971.
- GE DELUXE electric dryer, white. Grimes, 265-6234.
- DAISY 25 BB gun, \$5; .45 auto pistol, holster, 182 rounds ammo, \$70; Bushnell .22 scope, \$10. Klett, 298-7892.
- BEDSPREADS, 2 pink ruffle (twin-bed size), one white (Dual-King size); 18 cu. ft. Coldspot freezer chest, \$150. Chandler, 296-3325.
- BLUE FLORAL arrangement; Coldspot refrig.; brown matching lamps; white plastic chair; 2 girl's bicycles, 26"; used wooden screen door. Higgins, 298-0235.
- SEATS for Econoline Ford bus; 410 ga. shotgun; 12 ga. shotgun; 303 cal. Savage; 30.06 cal. Army rifle; 300 Savage cal. Remington. Gutscher, 298-7203.
- LAWN MOWER motor, Briggs & Stratton, 4-cycle. Shepherd, 299-9066.
- SPANISH style couch & chair, dining room table w/4 chairs (6 mos. old), electric stove, Maytag washer, refrigerator. Hollingsworth, 299-8171.
- FREE long haired kittens, 8 wks. old. Lynes, 268-0144.
- SELL OR TRADE for used furniture etc.: male Beagle pups, pure bred, 2 1/2 months, small, good w/children, can be trained for hunting. McCutchan, 255-7215.
- ANTIQUE bedroom suite. Huston, 842-9049 after 7.

- BABY GRAND PIANO, \$595. McRae, 298-0844.
- MOTORCYCLE, '68 Yamaha 100 cc Twin, low mileage, \$275 cash. Duvall, 299-8744.
- EARLY AMER. COUCH, \$35; bookcase bed w/box spring & mattress, dbl. dresser & chest, \$65; full size baby crib w/mattress, \$17.50; drapes, 60"x84". Gendreau, 268-3436.
- .30 CAL BULLETS, \$1.100, tracer—165 gr. or \$8/1000. Ristine, 298-8383.
- TIRES, rim, Dunlop snow, 7.75x14, \$9; Goodyear, 8.00x14, \$9; both nylon tubeless; 5-lug rim for either, \$4. Hawkinson, 282-3241.
- WEATHERBY .300 Magnum, Beaulier mounts, Unertl 4X scope, extras, \$200. Tessier, 296-1025.
- DANISH style sofa, walnut arms & brown cushion, \$15. Tommasen, 265-4947.
- BICYCLE, boy's 26" Schwinn 2-spd. w/coaster brakes, light, generator, saddle bags, \$25. LeRoy, 296-2953.
- RADIO CONTROLLED aircraft equipped w/F&M digital 5, proportional control gear & Enya 60 engine, \$300. Harlow, 299-1495.
- KITTENS, orange & black, 6 wks. old, free to good homes. Norris, 299-4676.
- USED tricycle, \$8; Wonder Horse, \$10. Anderson, 299-8576.
- AKC Beagle pups, Lincoln, 282-3817.
- BED, w/mattress, box springs & frame, \$25. Miller, 5308 Constitution NE, 255-8993.
- 1/6 SHARE '58 Cessna 172, dual OMNI, Mk. 12-90, marker beacon receiver, heated pitot, FGP, new annual, established club, Roberts, 242-2026, Beck, 299-7225, Klein, 255-4564.
- STEREO-8 cartridge tape player, for plug into home system, auto, radio brand, \$40. Barton, 282-3349.
- FULL fairing, BMW, \$40; fabric windscreens, BSA, \$8; 8.50x15 tire and rim, \$5; Shunmy, 265-1620.
- APT. SIZE 22" gas range, \$20; 25 lb. cotton filled punching bag, \$12.50; boxing gloves, \$4; wrestling tennis shoes, size 10 men's, \$3. Stein, 299-8875.
- ELECTRONIC FLASH UNIT, Honeywell Md No. 65C, \$65; youth chair, Cosco, chrome w/vinyl, \$9.50; cedar chest, large, \$65. McIntire, 298-6145.

- PEDIGREED German shepherd puppies, available in 2 weeks, make your choice now, \$40 ea. Candelaria, 877-3738 after 5:30.
- CLARINET, B-flat, Pedler make, \$65; roll film holder for 4x5 graphic, \$10; Hoover vacuum cleaner w/accessories, \$20. Alvino, 255-6339.
- HALF PRICE, Formica top, maple, 2 end tables, \$20 ea., one coffee table, \$25. McGuckin, 299-1342.
- ### CARS AND TRUCKS
- '61 DODGE sport HT, 6-cyl., auto., 4 new tires, \$250. File, 344-8853.
- '64 GMC 3/4 ton w/Open Road camper, self contained, sleeps 4, many extras, see at south parking lot, Norton, 282-3749.
- '67 DATSUN 4-dr. sedan, 4-spd., 25,000 miles, red w/black interior, Smith, 265-3250.
- '64 BUICK Riviera, all power, air, 8-track tape deck, new 40-mo. guarantee tires, below book. Becker, 299-2539 after 6.
- MODEL A FORD, 1930 2-dr. sedan, original equipment, runs, \$300. Stuckey, 255-2442.
- DUNE BUGGY, '65 VW engine, fiberglass body, toe bar, chrome roll bar, extra wheel, skid plate protection. Kingsley, 299-1226.
- '65 INTERNATIONAL Travelall, V-304 engine, 4-spd. trans., power lock diff., 2 tanks, radial tires, tinted glass, 32,000 miles. Fox, 256-2606.
- '56 INTERNATIONAL Travelall, 4-wd, front hubs, 4-spd. trans. w/2-spd. transfer case, dual gas tanks, heater & electric wipers, \$475. Elliott, 299-2782.
- '62 CHEVY Impala conv. less engine. Dryer, 299-5329.
- '63 CHEV. 1/2-ton Flareside truck, 4-spd., Posi-traction, HD springs & radiator, w/aluminum camper cover. Hillman, 299-8438.
- '69 DODGE Charger, V8-383, 2-dr., 4 sps., PS, HD brakes, vinyl top, \$3500 or best offer. Vath, 299-1448.
- '68 VOLKSWAGEN BUS, average retail \$2300, make offer, will consider older car in trade. Campbell, 268-8445.
- '61 OLDS 98, 4-dr., sport sedan, air and full power, \$500 cash. Hyllton, 268-1339 after 6.
- CHEV. pickup, 1/2-ton V-8, R&H, Hindi, 299-8996.

REAL ESTATE

- MOSSMAN all brick, 7 yrs. old, 5 1/4 FHA loan, 1 1/4 baths, FR, new carpet, 7312 Gladden NE, May, 299-2624.
- 4-BDR., 3 baths, den, tri-level, 5 1/4% loan, substantial down or trade mobile home, 11005 Lexington NE, Rannigan, 299-7967 evenings or weekends.
- 3-BDR., 1415 Quincy NE, \$2500 cash, assume 5 1/4% loan, vacant. Paul, 296-6500.
- 160 ACRES in foothills west of Las Vegas, N.M., \$8000, title insurance. Steck, 299-2513.
- 2-BDR. HOUSE, corner lot, 8' gate, \$11,750, terms or will discount equity for cash, could be re-zoned for duplex. Fisher, 265-0626.
- 3-BDR., paneled den, carpeted, landscaped, fenced, sprinklers, \$16,800. Montoya, 344-4510.

WANTED

- 35 CAL. lever action rifle. Stuart, 299-9190.
- GOOD HOME for kittens. Rand, 299-1048.
- 26" GIRL'S BIKE, York, 265-1601.
- RELIABLE Sandia High student wants babysitting jobs. Henning, 299-0318.
- LLAMA .22 and Colt .45 auto pistols, Rem. Mod. 10 or 29 shotgun for parts. Svensson, 344-7700.
- YAMAHA Enduro, 250cc, scrambler. Wentz, 298-2630.

FOR RENT

- GUARDED storage available, store your: camper, boat, car, truck or whatever, \$5/mo. Villella, 298-7955.

LOST AND FOUND

- LOST—RX half glasses in black case, Rx glasses w/brown frame in brown case, portable TV, 1 key on swivel, black frame Rx glasses, plastic zippered lunch bag, stamped and addressed deposit to Albu. Nat'l. LOST AND FOUND, tel. 264-2757, Bldg. 610.
- FOUND—Gold flower earring, gold button-type earring, silver earring w/blue stone, ladies Rx sunglasses, rosary, 2 keys in VW key case, ladies watch. LOST AND FOUND, tel. 264-2757, Bldg. 610.



FILM STRIP from fast scanning mass spectrometer interests Dr. Dennis Price of the University of Salford, England, and Dick Meyer (5224).

Take Note

At the recent organizational meeting of the Albuquerque chapter of the Society for Experimental Stress Analysis, area scientists and engineers were told of miniaturization techniques developed by Sandia and LASL which are being applied to the field of speech pathology.

Dr. Samuel Fletcher, director of speech pathology at UNM, told of a project in which a false palate with up to 50 electrodes is inserted in the mouth to measure tongue movement. The array is miniaturized to the extent that it does not interfere with normal speech.

At the group's second meeting on Nov. 18, members will hear Charles Anderson of LASL discuss model studies of blast effects.

Membership of the newly-formed group includes Mark Percival (5315), chairman, and Olden Burchett (5225), membership chairman. The group is planning bimonthly meetings. Anyone interested in attending or joining should contact Mark or Olden for details.



who has left the city.

The Albuquerque City Commission, at its Sept. 29 meeting, approved the appointment of Julian Sanchez to the City Personnel Board. He will replace Bob Garcia, former manager of Sandia's Personnel Department 3230,

The board is concerned with personnel policies for city employees.

Julian has been with Sandia Laboratories 19 years. He has been assigned to security, weapons systems programming, field testing and medical organizations and for the past three years has been with Salary Job Evaluation Division 3111.

Cliff Taylor (4252) was presented a trophy by Director R. J. Hansen as winner of the eighth annual 4200 golf tournament. Thirty-three golfers turned out for the event Sept. 28 at Arroyo del Oso. Cliff shot a low net 73.

As a service for nimrods, the Sandia Gun Club is sponsoring a hunter's sight-in on Saturday, Oct. 18, from 8 a.m. to noon at the Sandia Base rifle range. The range is near the intersection of Pennsylvania and Ordnance Road (the road to Kirtland AFB). There is no charge. For further information call Dick Vivian (1611), tel. 265-4355.



OCTOBERFEST means beer and pretzels, a fabulous German food menu, and dancing to Tommy Kelly's big band at the Coronado Club Saturday, Oct. 18. Vickie Vivian (4334) reminds you to pick up your tickets early.

Coronado Club Activities

Octoberfest Scheduled for Oct. 18

The Coronado Club's annual Octoberfest Hofbrau will break loose at 6 p.m. Saturday, Oct. 18, when Jim Noonan, Club manager in lederhosen, taps the keg of 10-cent beer. A tremendous German food dinner featuring sauerbraten mit kartoffel-

puffer, kalter lachs mit remoulden sauce, eisbein mit sauerkraut and salads mit der works, will be served from 7 to 8:30 p.m. Tommy Kelly's big band will start the oom-pah-pah music (and other things) for dancing about 9 p.m.

Tickets (\$3 for members, \$3.50 for guests) should be picked up by next Friday for this affair.

Oct. 14 Sanado Meeting To Feature Fashions

"Fashions in Contrast" is the title of a style show to be presented by member models at the Sanado Club's Oct. 14 meeting at the Coronado Club. Sherry will be served at 1:15 p.m. followed by the fashion show and tea afterwards.

Models include Mmes. Jim Ayers, Gerald Barr, Lew Bartel, Norm Corlis, Dan Hardin, Don Heisterman, Al Koontz, Fred Milsap and Ozzie Tjeltweed. Mrs. C. S. Gaylord is coordinating the show.

Mrs. Joe Martinez of Rhodes will be commentator.

Reservations should be mailed today to Mrs. Vern Smith, 1508 Valencia NE.

Social Hours

Tonight, Elton Travis and the Westernairs will play the sagebrush shuffle for western music fans while the kitchen staff wheels out the Club's famous chuckwagon roast beef for the buffet spread. The buffet costs \$1.75 for adults, \$1.50 for kids.

Social hours start right after work on Friday evenings with special prices in effect until 9 p.m. The band plays for dancing from 6 to 9 p.m. while the buffet is spread from 6 to 8 p.m.

Pat Reich, who usually runs the sing-along with piano in the main lounge from 9 to midnight, is recovering from an auto accident. In the meantime, Yolanda Adent will entertain.

On Friday, Oct. 17, the southern fried chicken will be the buffet feature while the Four Keys play for dancing.

Tommy Kelly and the trio of smiling Irishmen will return to the bandstand for the Oct. 24 social hour while the Mexican food buffet is scheduled.

The mid-week social hours continue on Tuesday evenings from 5 to 8 p.m.

Teen Go Go

The monthly teenage bash continues at its roaring pace tomorrow night. "The Nautilus" will be wired into the bandstand about 7:30 p.m. and amplify until 10:30. Member parents should pick up tickets for their youngsters tonight for this affair.

Seafood Dinner

Reservations are already starting to roll in for the fabulous New England Dinner scheduled Saturday, Nov. 15. Live Maine lobsters and cherrystone clams will be flown in for this event which, in addition to dinner, features a free wine taste and dancing to Sol Chavez and the mighty Duke City Brass. The tab is \$6 for members and tickets should be picked up by Nov. 1. A limit of 250 persons has been set.

Bridge

Duplicate bridge meets Mondays at 7 p.m. Ladies bridge meets Thursday, Oct. 16 at 1 p.m.

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SANDIA LAB NEWS

OCTOBER 10, 1969

British Visitor Co-Author With Sandia Scientist

A recent visitor to Sandia was Dr. Dennis Price of the University of Salford, Lancashire, England, who spoke at a special research seminar on "Flash Photolysis — Time-of-Flight Mass Spectrometry."

Dr. Price and Dick Meyer (5224) collaborated on a chapter on "Flash Photolysis Reactions" in a forthcoming book for which Dr. Price served as editor. "Time-of-Flight Mass Spectrometry" will be published by Pergamon Press in Oxford, England.

The book was an outgrowth of a European symposium on the subject, organized by Dr. Price. Interest in the field has grown to the extent that discussions have become international in nature, and future symposia will alternate between the United States and England.

The visitor complimented Dick Meyer's pioneering in flash photolysis and time-resolved mass spectroscopy. By this method, the chemistry of a gaseous system is changed by an intense brief flash of light and the change is studied by a fast scanning mass spectrometer.

Dr. Price received his PhD degree from the University of Wales in 1959, then spent two years at Cornell University before becoming a lecturer in physical chemistry at the University of Salford.

Sandia Safety Signals

DELAYED BRAKING

YOU are driving your motor car and observe a group of children playing alongside the curb ahead. Knowing the ways of children, you slow down cautiously as you approach.



When almost opposite the children, suddenly one of them dashes out in front of you! But you are ready—you are going slowly—you save that little life!

But suppose you had NOT slowed cautiously as you approached the children. Suppose that in spite of frantic efforts you could not stop in time!

That would have been DELAYED BRAKING.

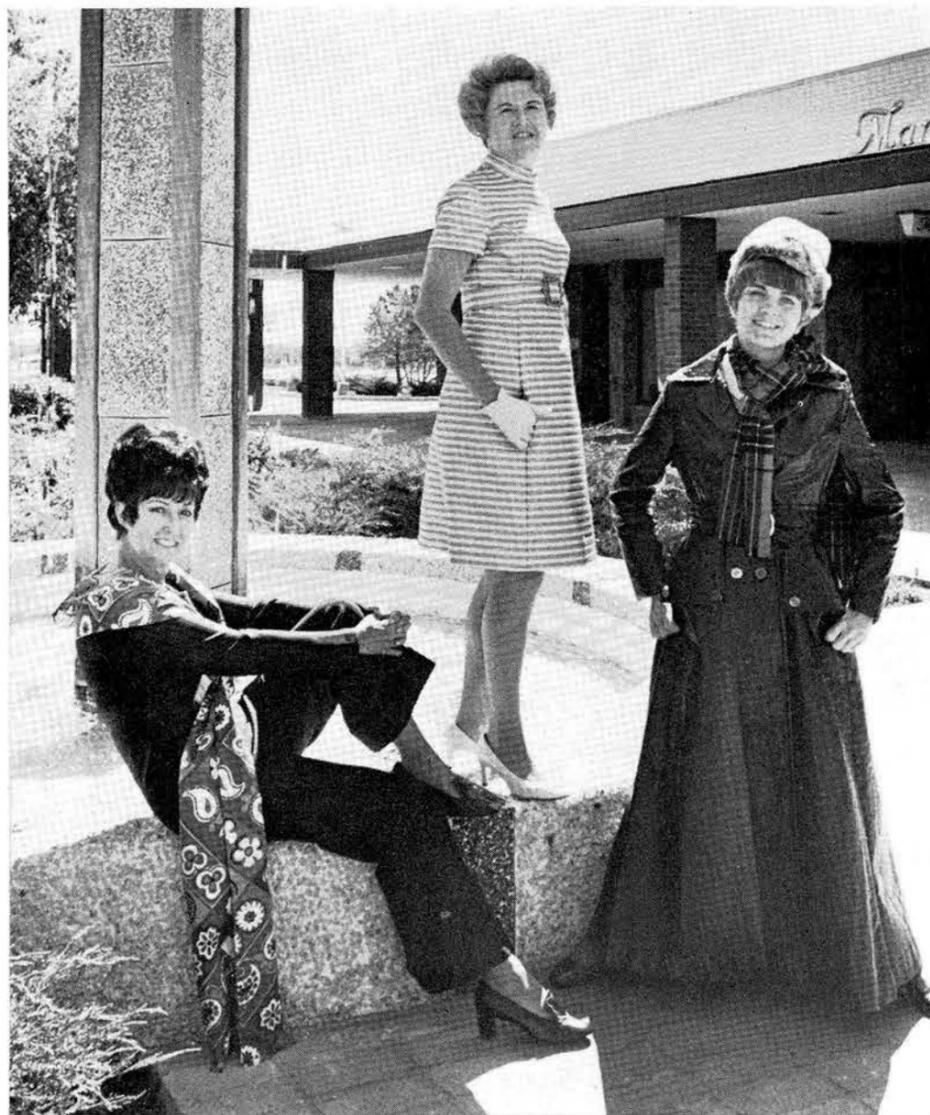
A driver, unwilling to slow down, waits until the critical moment—waits too long—and sometimes a life is sacrificed.

There are many examples of delayed braking

We do not slow at the intersection, something obscures another car, there is a crash. On the highway we do not slow for the side road ahead, a farm vehicle appears—too late for us to stop. Although the road ahead is congested, we think traffic will open up in time, we do not slow down, there is another accident.

Delayed braking is just another name for reckless driving.

SAFETY INSTRUCTION CARD No. 405
National Safety Council PRINTED IN U. S. A.



FALL FASHIONS will be modeled by Sanado Club members at their Oct. 14 meeting. Models include, from left, Mrs. Jim Ayers, Mrs. Al Koontz and Mrs. George Barr.