



BOMB IN DISGUISE. This pressurized spray can suddenly became a lethal weapon after it inadvertently was placed on top of a transformer. Induction heating caused it to explode. The razor-edged and shattered can narrowly missed Sam Waldorf (4221).



SANDIA LAB NEWS

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One-of-a-Kind

Automated Electron Beam Welder Is Versatile, Rapid and Accurate

Bombs Away

Spray Can Explodes But Sandian Is Lucky

A Sandian narrowly escaped serious injury a few days ago in the Welding Laboratory when a pressurized can exploded after being inadvertently placed on top of a transformer enclosure.

The can of freon degreaser — the same kind of pressurized container commonly used in the home for everything from paint to whipped cream — blew up only inches from the face of Sam Waldorf (4221) with such force that it sailed over the head of a worker in the next cubicle and crashed into a wall some 50 feet away.

The unusual thing about the incident was that the transformer was not radiating heat. Instead pressure was built up in the can through the phenomenon of induction heating because it had been placed directly into a magnetic field (transformer coil).

The circumstances of this incident were unusual. Nevertheless, the incident emphasizes the necessity to heed the warning printed on all pressurized containers — **“CAUTION: CONTENTS UNDER PRESSURE. DO NOT PUNCTURE. EXPOSURE TO HIGH TEMPERATURE MAY CAUSE VIOLENT BURSTING. STORE . . . AWAY FROM DIRECT SUNLIGHT, RADIATORS, STOVES, HOT WATER, AND ANY OTHER HEAT SOURCE. KEEP OUT OF REACH OF CHILDREN . . .”**

That handy little can of whatever you have in your lab, your pantry at home, or in the glove compartment of your car is a potential bomb. So treat it accordingly.

Recall 20 Years Ago

WE Assumed Management of Sandia Labs

It was a relatively formal announcement. The story in the Sandia Laboratory Weekly Bulletin began: “Effective Nov. 1, 1949, the operation of Sandia Laboratory was assumed by the Sandia Corporation. This newly established . . . Corporation is a subsidiary of the Western Electric Company. The key officials of the Sandia Corporation have had a wealth of research and industrial experience which will prove invaluable to all Sandia personnel.”

This statement gave little clue to the many challenges and accomplishments the company would face in the following 20 years under WE and Bell Telephone Laboratories leadership.

Bill Barth (2454) and Cec Russell (5521) began work at Sandia on that date. They talked about the significant changes during these two decades.

“I think we’re all aware of our growing technical competence,” Bill says, “but I personally am most impressed with the maturity gained by both the company and the people working for it. Individual capabilities plus technical advancements and teamwork have increased our technical output several fold. Many complicated jobs are accomplished in a fraction of the time previously taken.”

Bill also points to the diversity of work within Sandia. “I find it remarkable,” he says, “that so many different activities can be handled so well under one ‘roof.’”

One of Bill’s first major jobs was to serve as liaison engineer on the Mk 8, one of the first in the postwar generation of bombs. “It was designed to give the Navy a capability to destroy reinforced

A newly-operational item of equipment in the Welding and Joining Laboratory provides Sandia with an electron beam welding facility that combines versatility, speed, ease of operation, and accuracy.

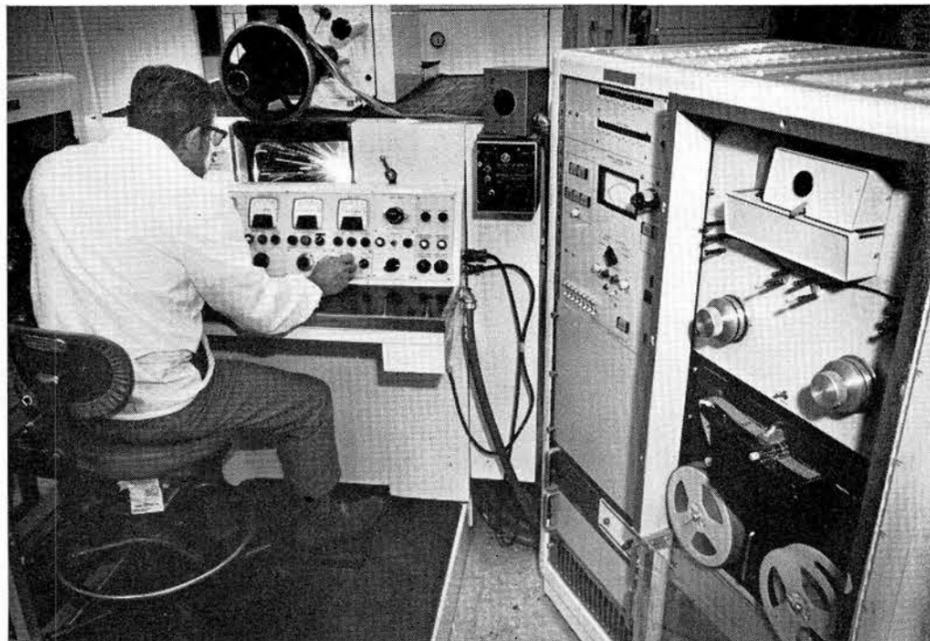
A numerical tape control unit coupled to an electron beam welder gives Division 4221 the capability not only to weld at rates up to 40 inches per minute with an accuracy of plus or minus three thousandths of an inch, but also to weld on any contour of a single plane.

“It is this—the ability to weld contours—that we particularly wanted when we had the unit designed,” says Roman Heuer (formerly 4214) who drew up most of the original specifications.

There are some machines in existence which can weld contours, but these are designed for mass production welds of a specific contour. For any other contour, the machine must be reprogrammed — at considerable expenditure of time. “With our welder, a trained operator can simply track the contour of the desired weld joint and have the piece finished minutes later,” says Roman. “Now, finally, we can accommodate the engineer who walks in and says ‘can you weld this for me today.’”

Chet Corbin, section supervisor of 4221-5, notes that “. . . this machine allows us to weld one-of-a-kind parts for research and development groups where circumstances often do not warrant the time or expense of machining or forming precision parts.”

The Sandia welder, the only one of its kind in use, is manually programmed by the operator who traces the weld pattern with foot and steering wheel controls coupled to a movable positioning table. He views the weld pattern or follows the joint of the pieces to be welded through an optical system. X-Y coordinates of the weld



ELECTRON BEAM welder becomes a versatile tool when coupled to numerical tape control unit (right). Jim Taylor (4221) operates the newly-operational equipment which was designed specially for Sandia. The operator manually programs a weld path for each part to be joined and the numerical tape control then drives the welder when the tape is played back.

path are automatically recorded by a tape punch-playback unit. The operator can follow the path at speeds as slow as one-half inch per minute and, by use of cross hairs in the optical system, can split a .001-inch joint with the electron beam.

The control unit, which defines the part numerically, drives the welder by playing back the punched tape. On playback, the

welder can be driven at speeds between 3 and 40 inches per minute; stops, passovers or other welding maneuvers can also be programmed.

“What we have here is a machine that simply looks the part over and then goes ahead and welds it,” says Roman.

Sandia has had electron beam welders for several years. Equipped with servo-mechanisms, which automatically control the high voltage output and beam current, the machines are particularly well-suited to many Sandia jobs. Since the positioning table and beam gun are located inside a vacuum chamber, the electron beam can be used to weld materials requiring environmental control. The welder is also useful for joining temperature sensitive materials where the heat must be restricted to small areas of the joint, for parts where deep weld penetration is desired, and for welding dissimilar but compatible materials.



Bill Barth

Cec Russell

concrete submarine pens,” he says. “For some of the testing, we fired the weapon out of 14-inch coastal defense guns, at point blank range, into a 12-foot cube of steel reinforced concrete. Today we consider the Mk 8 an antique.”

Bill stayed with the Gun Weapon Division until he transferred into a test equipment organization where he has since been designing testers, including some which were used in the Nike and Polaris missile programs.

One of his lighter memories: how frequently on out-of-state trips he was treated as a foreign visitor and how often suppliers worried about U.S. customs laws in shipping goods to “Mexico.”

The thing that really impressed Cec Russell about Sandia in 1949 was the sense of urgency. “Lots of Sandians came directly from wartime defense agencies and brought with them a real conviction about the job to be done,” he says.

With a change in Sandia’s responsibili-

ties there came a change in make-up of the work force. “In those days,” he says, “we were actually assembling some parts of weapons, but today we have gone from a nuts and bolts operation to research and development. Of course, the growth in size of the company has made the climate more impersonal—you no longer seem to know everyone.”

Perhaps the most dramatic difference, in Cec’s opinion, has been the way the material we work with has become steadily smaller. “In the early days Sandia’s fleet of fork lifts was a necessity. Perhaps the greatest hazard was the possibility of being run down by a fork lift carrying a heavy weapon or huge wooden crate. Now miniaturization is the thing,” he adds.

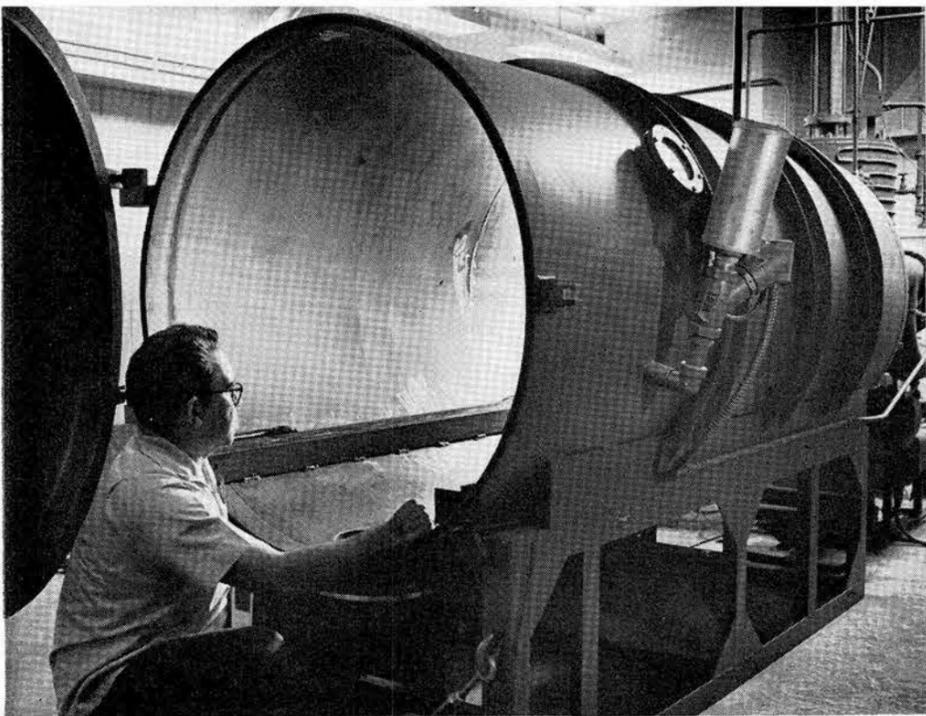
Cec recalled when the Military Police guarded the Sandia tech area rather than our own security force. “If you were working at night,” he says, “a pair of MPs with drawn .45 pistols might challenge you. It wasn’t a matter of merely showing your badge, you were supposed to place your badge on the ground or where directed, and one MP would examine it while the second MP held a gun on you. Sometimes you had to recite your E-number and it had better match the number on your badge.”

Cec has worked in essentially the same organization since he hired in. It’s still Analytical Chemistry even though the number has changed five times. 1949’s group of five people gradually evolved into the 5300 and 5500 organizations.

What will the next 20 years bring?



UNIQUE CAPABILITY of the electron beam welder in the Welding Laboratory is evident in the weld on this electronic component. Most electron beam machines will weld only straight lines or circles, but the Sandia unit will weld any contour of a single plane. Roman Heuer (7512) drew up the specifications for the unit, the only one of its kind.



WE GOT PLENTY OF NOTHING—This ultra high vacuum chamber used by Woody Reger's group of leak sleuths can attain a vacuum of 1×10^{-11} torr, about what is found $2\frac{1}{2}$ million feet in space.

Have Detectors, Will Travel

Molecule Detective Group Locates Leaks, Simulates Space

Anyone lose a molecule? If so, call on Woody Reger and his Leak Detection and Vacuum Testing Division 7531.

Woody's group of molecule detectives may not capture the errant molecule but they will locate the escape route and tell you how many molecules are getting loose.

The service is part of that offered by the division to research and development groups and others who suspect there may be a minuscule gas leak from an internal, controlled environment.

Glenn Haughness, section supervisor of 7531-1, says his molecule sleuths can detect leaks as small as 5×10^{-10} cc's/sec. That's about like finding one molecule in space big enough to hold 10 million.

In addition to locating leaks, the division establishes "standard leaks," used to calibrate leak detection instruments for other groups. The division also develops specifications for leak rates, i.e., the maximum allowable leaks in various systems and calibrates vacuum gauges for

other organizations. For this purpose, a number of vacuum chambers are used, including one that can attain a vacuum of 1×10^{-11} torr — about the same as that found some two and a half million feet in space.

Another important tool is the leak detector, essentially a single element mass spectrometer. From samples of an atmospheric environment, the detector spectroscopically locates and measures molecules of the gas of interest. Multi-elements mass spectrometers are used when more than one gas may be present and an analytical profile of the atmosphere is desired.

"This is really just a research and development service," says Glenn. "We can provide our customers with information concerning the size, location and reason for leaks — we can give them the information they need. We also provide standards when necessary."

The division's several mobile units enable technicians to perform the service in the field.

Bell's Pioneers Aid Amblyopia Detection Program for Area Kids

For the fifth year the local chapter of the Telephone Pioneers of America, Bell System employee organization, is providing the manpower for an amblyopia detection program for children in the Albuquerque area. Last year alone more than 2500 children were tested by Pioneer teams.

The testing program, sponsored by the National Society for the Prevention of Blindness, is aimed at detecting amblyopia in children at an age early enough for successful treatment. The Society says that amblyopia, often called lazy-eye or one-eye blindness, must be caught early, at least before age six if treatment is to be successful. Age seven may be too late. The optimum time for treatment is at age three or earlier.

Consequently, the Pioneer's effort is directed to pre-schools, kindergartens, and Headstart classes. The screening program

is manned by volunteers of Pioneers club for Bell employees with over 20 years of service and those who are retired.

Amblyopia is a dimness of vision characterized by the disuse of one eye. Because of a muscular imbalance of the eye, or other defect present when the eye is still learning to see, the child learns to see only with his stronger eye, and the unused eye sees less and less until vision in the weaker eye is virtually lost.

The treatment for the weak, or amblyopic, eye is to patch the good eye forcing the child to use the weaker one and improve it. Then too, the basic trouble which caused the condition — crossed eyes, muscle imbalance, refractive error or other condition — must be corrected for the child to get and maintain good vision.

Based on current estimates, one to two percent of children entering school for the first time have some degree of amblyopia. For most, it is very late for successful treatment, and they may have impaired vision for the rest of their lives.

Speakers

C. P. Skillern (3311), "Problems Using MIE Scattering Photometers for In-Place HEPA Filter Tests and Aerosols Studies," Rocky Mountain Section of American Industrial Hygiene Association and the Rio Grande Chapter of Health Physics Society, Oct. 10, Los Alamos.

M. I. Weinreich (3421), "The Inter-linguistic Catalyst or the Posthorses of Civilization," Rio Grande Chapter, Special Libraries Association, Oct. 18, Chimayo, N.M.

Frank Biggs (5231), "Efficient Handling of Photon Cross Sections in Computer Programs"; J. H. Renken and K. G. Adams (both 5231), "Generation of Photon Cross Sections for Discrete Ordinates Calculations which Include Secondary Radiation Effects," Radiation Shielding Information Center Seminar Workshop, Oct. 1-3, Oak Ridge, Tenn.

M. M. Karnowsky (5535), "Precipitation from a Rapidly Quenched Aluminum Manganese Alloy," Materials Engineering Congress and Exposition, Oct. 13-16, Philadelphia.

M. J. Forrestal (1222) and H. C. Walling (7342), "An Experimental and Theoretical Study of the Response of Rings to Explosive Loads"; R. I. Butler (7342), "Line Initiation of High Explosives with Long Exploding Bridgewires," Society for Experimental Stress Analysis, Oct. 14-17, Houston.

K. W. Schuler (5161), "Determination of Instantaneous Response of Viscoelastic Materials from Plate Impact Experiments," 40th annual meeting of the Society of Rheology, Oct. 20-22, St. Paul.

H. W. Nunez (7323), "Impact Tests of Nuclear Fuel Matrices Using a Vacuum Tube Launcher"; M. H. Woodward (7334), "Effects of Strong Time Varying Magnetic Fields on Balanced Bridge Transducers"; S. L. Fluent (7341), "Gas Spring Firing and the Soft Recovery of a Hard Wire Instrumented 155mm Shell," 40th Shock and Vibration Symposium Committee, Oct. 21-23, Hampton, Va.

M. K. Linn (3400), "Planning for Equilibrium," Land Use Planning Symposium, Oct. 16-17, Albuquerque.

P. J. Chen (1721), "Theory of Singular Surfaces as a Model for the Studies of Wave Propagation in Materials," Rice University Department of Mathematical Sciences, Oct. 16, Houston.

G. W. Elliott (3251), "Who Is Your Technician," American Society for Metals Materials Engineering Exposition and Congress, Oct. 14, Philadelphia.

R. T. Meyer (5224), "A Time-of-Flight Mass Spectrometer Technique for the Analysis of Picomole Quantities of Gas and Its Application to the Explosion of Burning Zirconium Droplets," 11th Annual Time-of-Flight Mass Spectrometer Symposium, Oct. 8, Rochester, N.Y.

This is Bread?

Porcelain-Like Flower Scenes Require Patience and Talent

After working around artists for 15 years, Voris Hope (3417) finds some of the artistic ability has rubbed off. But, she's doing her own thing and it requires both skill and patience.

Although she calls her craft "bread dough artistry," the finished product looks more like fine porcelain. The "recipe" sounds unbelievable. Take three slices of white bread, add white glue, combine watercolors with small batches of the dough and you end up with a quick drying clay. The clay sets so fast once exposed to air that Voris keeps small balls of it wrapped in several layers of plastic in the refrigerator.

Each tiny petal or leaf is formed by hand and later glued on a wire stem. Veins on the leaves are lightly carved with a knife.

"I became interested in this when a friend brought me a piece of bread dough sculpture from Mexico," Voris says. "I found a

craft book last May which gave the recipe for the dough and I have been experimenting ever since."

Since then she has tried to make a new flower every week — always using a real flower for her pattern. "The work is exacting, but it fascinates me and I've certainly learned a lot about flowers," she adds.

A flower sculpture, such as those shown here, takes from 8 to 20 hours to complete. Voris' husband makes the frames. Both pansies and day lilies require hand painting of details after the petals are joined. Voris estimates that each pansy represents an hour of work. A finished cattail in an autumn scene will be about $\frac{1}{2}$ inch long, the orange berry on a branch of bittersweet about $\frac{1}{16}$ th inch in diameter.

We asked Voris what a beginner needs to start. "This is a very cheap hobby — all you need is a little dough . . ."



"BREAD DOUGH ARTISTRY" by Voris Hope (3417). Each petal and leaf is fashioned by hand from a bread-glue clay. The clay was grated to depict pollen on the daisies (shown under the magnifying glass).

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Editorial Offices in Albuquerque, N. M.
Area 505 264-1053
ZIP 87115

In Livermore Area 415 447-2387

John Shunny is Editor, Don Graham Ass't. Editor

Cherry Lou Burns & Don Wolfe are Staff Writers
Matt Connors & Lorena Schneider
are Staff Writers in Livermore
Bill Laskar is Photographer
Norma Taylor/ All The Rest



Antimatter



"I prefer older men - someone I won't have to put through college!"



SCOUTMASTER HERB ZENGER (8262) observes how trail cook prepares sourdough biscuits. Meals were prepared for 35,000 boys attending the 7th National Boy Scout Jamboree in Idaho's Farragut State Park.

With 35,000 Boy Scouts

Herb Zenger Attends Idaho Jamboree

Camping with 35,000 boys from every state in the Union and 25 foreign countries may not be your idea of a vacation.

But to Scoutmaster Herb Zenger (8262), being at the 7th National Boy Scout Jamboree in northern Idaho's 5000-acre Farragut State Park was a "once-in-a-lifetime" experience.

"Being outdoors and sharing the fun the boys had while they lived and worked with others," says Herb, "suits me fine for a change-of-pace activity."

Active in scouting for nearly 18 years, Herb had the job of guiding 29 boys (including his 14-year old son, David) through a week's outing.

"Getting squared away for the Jamboree was one thing," says Herb. "The bus trip to Idaho and the plane trip back was another. But my efforts were paltry when I think of the organization necessary to stage the Jamboree."

Reports on the event indicated that some 7600 patrol fires lit each day consumed about 95 truckloads of charcoal during the Jamboree.

Food quantities were awesome—400,000 boxes of cold cereal; 402,000 quarts of milk; 13,000 cans of baked beans; 443,000 cans of soup to flavor meat dishes; 300,000 eggs; 400,000 packages of cocoa; two tons of sliced cold meat; 10,000 frozen chickens. Each evening fresh meat, produce and dairy products were trucked in and dropped off at 19 camp commissaries. The following morning, troop service patrols picked up the food and took it to the campsites. Meals (over a million in all) were cooked by the boys in patrol units—usually 10 people.

"Didn't need an antacid during the entire stay," relates Herb. "The food was well prepared."

Yet all was not eating.

"One of the more popular games the boys played," continues Herb, "was the 'Wide Game.' Each of the 35,000 scouts received one letter of the Jamboree theme, 'Build to Serve' on a card about eight inches high. The idea was to go into surrounding camps and find 11 other scouts with the letters required to spell the theme. And it had to be done in three hours. Getting 12 boys with proper cards took some doing because the letters were widely scattered throughout the subcamps in the huge tent city. The fastest group did it in 12 minutes, but I can assure you it was not done without a lot of tumult and shouting.

"Skill-O-Ramas were also popular. These were outdoor areas arranged to rival state fairs, complete with stages, exhibit and demonstration booths, pitch men and samples. Areas where scouts were preparing southern fried chicken, hush puppies and roast pig were especially popular. So was the 700-foot flight of a one-to-one-hundred scale model of Saturn 5, the launch rocket that lifted Apollo 11 to the moon. Two scout troops built ski slopes and demonstrated ski techniques. One slope was 60 feet long and 20 feet wide. Its ski surface was covered with 500 pounds of small, plastic flakes sprinkled on indoor-outdoor carpet and wet down to give the

silicon coated skis needed slipperiness. The other slope was 85 feet long. Its skiing surface was made of heavy plastic brushes in a waffle weave pattern. The brushes bent with the weight of the skier and gave him the sensation of traveling over snow."

Camp Forums held in each of the Jamboree's 19 camps provided the scouts with ideas of how to put the "Building to Serve" theme to work when they returned home.

The boys were concerned about several things: the lack of communication among people; misuse of natural resources; the increasing use by youth of drugs, tobacco and alcohol; lack of community pride;



"THIS IS SUPPER?" asks Herb Zenger at the Boy Scout Jamboree. On closer inspection specimen turned out to be laundry.

Livermore Employees Contribute Over \$30,000 to LEAP Fund Drive

A total of \$30,065 was contributed by SLL employees to the recent Livermore Employees Assistance Plan (LEAP) fund drive. The figure represents a 15 percent increase over the \$26,128 given during last year's contribution campaign.

The average gift per contributor was \$35.70, an increase of 12 percent over the 1968 amount. Almost eighty percent of the employees participated in the drive, up two percent over 1968 participation.

The percentage of employees contributing was greatest in Information Systems Department 8180, followed by employees in Product Engineering Department 8160. Fair Share giving was highest in Industrial & Public Relations Department 8210, with

one out of seven employees receiving the golden check pin.

Bob Norvill (8233), chairman of the LEAP drive, was pleased with the results. He noted that, "Not only was the total amount contributed up nearly \$4,000, but a greater percentage of the Laboratories force participated."

"I wish to express my appreciation to each of the contributors and to the employees who worked on the committee for their efforts in making the drive a success," he continued. "We can be assured the eight local and national health and welfare agencies and the 180 UBAC agencies receiving our contributions will be helped greatly by this support."

Congratulations

Mr. and Mrs. Jack Wirth (8340), a son, Joel Brian, Oct. 4.

Mr. and Mrs. Carl Wackerly (8161), a daughter, Pamela Marie, Sept. 30.

To Jerry Moore (8253-2) and Joelle Smith married in Livermore, Sept. 20.

Sympathy

To Helen (8212) and R. T. (Pete) Petersen (8129) for the death of his brother in Hayward, Oct. 4.

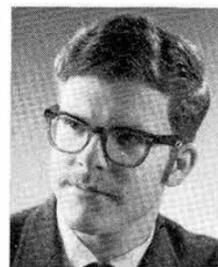
To Bob Gaeddert (8000) for the death of his father in Inman, Kans., Oct. 6.

scouting's relationship to the community, especially to poverty areas; lack of youth involvement in decision-making in the Boy Scouts and the public image of scouting.

"All in all," Herb states, "the Jamboree was a great success—despite six appendectomies, three broken legs and two broken arms. Providing for 40,000 people was a big job and it was done with scarcely a hitch."

Fellowship Awarded to Larry Dorety For Graduate Study in Materials Science

A fellowship from the Fannie and John Hertz Foundation has been awarded Larry Dorety for continued graduate study at University of California's Department of Applied Science at Davis/Livermore.



Larry received his MS degree from UC-Davis/Livermore in January. His graduate work was completed as part of the Sandia Laboratories Livermore Graduate Education Program (GEP) in which he participated under the University Part Time Plan. At the time of the fellowship award, Larry was an engineer in Systems Hardening Division 8174.

The fellowship runs for one year, is renewable for two additional years, and pays a sufficient sum so that the recipient need not be employed while continuing his studies.

Principal objectives of the Hertz Foundation are to promote education and improve the defense potential of the United States by aiding in the schooling and

training of worthy students, particularly with respect to engineering and applied sciences. It grants postgraduate fellowships leading to doctor's degrees in these fields with special emphasis on the stimulation of imaginative and inventive development. This year, the foundation granted 30 new graduate fellowships, and renewed approximately 67.

The choice of Larry as a recipient was based upon his academic record and a recommendation from Dr. Edward Teller, founder and first chairman of the Applied Science Department.

Larry joined Sandia in June 1967 after receiving his BS degree in engineering physics from the University of California at Berkeley. While working on his Bachelor's degree, he participated in the Sandia Laboratories Livermore Cooperative Work-Study Program for three years—1964-1966. The Co-op Program is a plan of education whereby students alternate three six-month periods of regular employment in industry with equal periods of class attendance.

Larry is a member of Phi Beta Kappa. He plans to specialize in materials science while working on his doctorate.



AEC COMMISSIONERS VISIT LABS—Recently appointed Commissioner Dr. Theos J. Thompson (above center), formerly professor of nuclear engineering and director of the nuclear reactor facility at MIT, chats with Jim King (8300) and Leo Guierrez (8100) during tour of Laboratories. Also visiting Sandia



for technical briefings was Commissioner Dr. Clarence Larson (above left) shown talking to Tom Cook, Vice President at Livermore, W. B. McCool, Secretary to the Commission and J. A. Griffin, Special Assistant to the Commissioner.



FINGERS cut easier than boards which is why Doomas Easton (4512) keeps his out of the way when using a power saw. Doomas urges power equipment operators to read directions furnished by the manufacturer for proper — and safe — techniques.

For Health's Sake . . .

Home Workshop—Doing It Right Usually Means Doing It Safely

From the American Medical Association comes this description of an accident that could easily have happened to many of us.

"A few months ago the owner of a well-equipped home workshop prepared to sharpen a few chisels. In his haste he dropped the emery wheel on the basement floor, picked it up without inspecting it and installed it without a guard. He switched on the wheel and began grinding without any face covering. Minutes later he was sitting in his car, a red-soaked towel at his mouth, and his wife was driving him to the hospital. Today he has a fresh scar where his lower lip was divided from chin to teeth after a broken segment of the wheel hit him."

That accident was completely preventable. If a few rules had been followed the wheel might not have broken in the first place, or if it did break it would not have struck the man in the face. First, he should not have used the wheel after it had been dropped because chances are it acquired a fault which made it dangerous. Also, he should have made sure the wheel-guard was in place before starting. Finally, he should have stood to one side when he switched on the machine and let it run for a few moments before starting to grind.

These rules are basic, but there are others on the proper operation of a grinding wheel: every grinding wheel has a safe operating speed; it is made to fit a shaft of a certain size; and there is a specific way to mount it.

Invariably, correct operation and safety are inseparable.

Any user of a power saw, a jointer, a bandsaw or other power device who has not read the manufacturer's instructions or who has not had knowledgeable coaching is flirting with danger. Factors such as selection of the proper blade, correct operating speed, height of the saw blade above the table, sharpening and setting of the teeth — all these are as important to safety as they are to good work.

Following these simple rules will add to safety:

—Don't wear flopping sleeves, a trailing necktie, or any loose clothing that can get caught in the machinery.

—Odds and ends lying around the shop floor are a hazard; in the presence of moving blades a stumble may mean quick disaster.

—Eyes usually need protection. Many home workshops nowadays have small arc welders. Before using such equipment, make sure the colored glasses or eye shield is the right kind to filter out damaging light rays. Many power tools produce flying debris — from sawdust to steel particles. Good safety glasses or goggles are not as expensive as an operation.

Hazards in work at home are not confined to the workshop. The amateur gardener often uses organic phosphorous compounds or nicotine preparations as insecticides and fumes from these and many types of cleaners, solvents, and dryers used in paints or lacquers may be harmful. Read the instructions on the labels — and pay attention to them.



PROTECTION from grinding wheel accidents is afforded by using tools properly and wearing the appropriate safety device such as a face mask. Dale Easton (4512) demonstrates.

Russian and U.S. Research in Confined Plasmas Reported by VP

Vice President Sol Buchsbaum was in Oak Ridge last week to summarize for other members of the AEC's Standing Committee on controlled fusion research progress reported in this field at a recent meeting in Russia, which he attended.

The Russian meeting was the Invitational Conference on Toroidal Plasma Confinement. In attendance were scientists from Great Britain, France, East and West Germany, Italy, Japan, Czechoslovakia, Hungary, Yugoslavia and Rumania, in addition to those from the U.S. and U.S.S.R.

This meeting was held Sept. 29-Oct. 3 in Dubna, a town about 75 miles north of Moscow on the Volga River. Dubna is a nuclear and high energy research center, and located there are heavy ion accelerators, meson factories, and the new electron ring accelerator for achieving very high energy levels in ions.

"One highlight of the conference," Mr. Buchsbaum said, "was the work on Tokamaks (a Tokamak is a toroid in which a plasma is produced, confined and heated by passing a large current around the major diameter of the torus). The Russians with the help of some British scientists from Culham Laboratory have now ascertained that a hot dense plasma can

be produced and maintained this way. The interesting thing for controlled fusion is that under certain conditions — so far, rather restricted conditions — plasma loss seems to be governed by classical mechanisms. That is an important step for toroidal research. It is similar to the accomplishments which LRL (Livermore) scientists achieved in open-ended systems and which LASL scientists obtained in theta-pinchings."

(United States research has not used a Tokamak; however, a facility of this type is under construction at Princeton and at Oak Ridge.)

The second result which Mr. Buchsbaum considered important was reported by Gulf General Atomic with its D.C. Octupole machine. With this device, confinement times of relatively cool plasmas have been extended 30 times the previous record, and there are indications that the times can be extended further.

Mr. Buchsbaum was interested to learn that the Russians had heard of Hermes-II, Sandia's giant flash x-ray machine. "They asked about its parameters," he said, "and were obviously envious of this facility."

While at Dubna, the Sandia vice president visited the heavy ion accelerator where scientists are searching for a stable isotope of mass number 114, but he was not able to see the new electron accelerator. "The head of the laboratory ostensibly was absent and his workers were reluctant to show it to us," he said.

None of the Russians attending the conference lived in Dubna so there was no opportunity for entertainment in private homes, but at mixed dinners Mr. Buchsbaum found the Russians extremely friendly.

Any noticeable change in the Soviet Union between this visit and a previous one a year ago? "Well, yes," he said. "The men are wearing their hair longer and the women are wearing their skirts shorter. That's progress!"

Groundbreaking Ceremony Oct. 31 For New Credit Union Building

Eight of the fifteen charter members of the Sandia Laboratories Credit Union will take part in groundbreaking ceremonies for the new building for the Credit Union. Architect is Art Dekker.

The ceremony takes place at 12:15 p.m. on Oct. 31 and all Credit Union members are cordially invited. Site is at the location of the present Credit Union Building.

Entertains at Downtowner

Denny Gallegos Is Singer with Guitar

The smile is more than a showman's smile. It's real. The singer with guitar is Denny Gallegos (3428). He has more fun than the paying customers. They are the second-cocktail, late-evening crowd and they think he's great.

Behind a blue spotlight and a small microphone, Denny entertains at the Downtowner lounge six evenings a week. He plays the best of the new songs and some of the old standards interspersed with popular Spanish classics such as "Malgueña" and "Granada."

Strangely enough, visitors to Albuquerque and New Mexico request these tunes more often than others. For the Spanish ballads, Denny sings softly with the guitar weaving rhythmic and intricate chords.

Denny does have power. He can fill the room with a big baritone voice.

"But I don't do this often," Denny says, "I match the music to the room, to the people and to the mood of the evening. I like people and I like to sing. Whatever they want, I try to play for them."

This means that Denny plays a lot of different styles — popular, rock, country and western, Mexican rancheras and old standards.

The Downtowner is Denny's second extended engagement as a solo singer. He worked a cabaret at Jackson Hole, Wyo., several summers ago. He has been a member of the Bourguet Brothers orchestra for the past two years but left the group for more opportunity to sing as a single. He's been playing guitar and singing to any available audience since he was nine years old. With no formal training, Denny learns a song by listening to it. He has about 700 songs in his repertoire.

"Singing is my hobby," Denny says. "Some people collect stamps. I also like excitement like riding my motorcycle on the open road or sky diving."

Unmarried at 25, Denny also likes girls. "But when you work 'til midnight six nights a week, you can't spend much time with them. I sing the blues a lot . . ."



DENNY GALLEGOS (3428) has more fun than the paying customers.



1889



1939



1969

MA BELL has had another face lift. As with many familiar trademarks, the Bell System symbol undergoes periodic redesign yet retains much of the original graphic concept. Pictured here are three of the six symbols used since the first was introduced in 1889. The designs reflect values of the era: 1889—explicit; 1939—busy; 1969—abstract. As part of Ma's new face, the Bell System has adopted new colors for its vehicles: they will be two-tone white and gray with reflective blue and yellow competition stripes.

Fire Up Your Snowmobile, It's Time to Visit Gwen

Whatever happened to that editorial assistant who left Sandia to teach grammar school in the Alaska boondocks? She's adjusting nicely.

Gwen Warnick (formerly 3412) writes that her house at Fortuna Ledge, about 450 miles west of Anchorage, sits on the side of a small hill which slopes down to the Yukon River. About 1/4 mile across is a long wooded island, "beautiful in all the fall colors," with the main part of the river beyond.

The new school marm reports her house has electricity, but no running water. The only bread available is what you bake yourself, but she didn't have to buy a nine months supply of food in advance after all, thanks to an Anchorage store that sends out a monthly "bush order." "Talk about honesty," Gwen writes, "I send in my order and attach a check all made out except for the amount. They pack the order, parcel post it to me, total the charges, fill in the amount on the check, cash it, and send me a copy of the sales slip."

Meat is easier to come by. A neighbor offered to share a moose.

The river is the highway in Fortuna Ledge. "There is only one road," Gwen relates, "and it goes to the flight strip a mile away. It is merely two car tracks with poles across it in places where water collects, making it like an oldtime corduroy

road. Nearly every family has a skimobile, a dog team (and all 900 dogs fight all day and howl all night), and an outboard motor for their old wooden rowboat. The residents jump in their boat and dash off somewhere just like we run down to the corner grocery in our car."

The plane service is twice weekly except in the fall and spring when high school children are flown to and from boarding schools.

As to the Alaska state-operated schools, Gwen reports that the schoolrooms are equipped with every visual aid imaginable as well as textbooks, workbooks and supplies. She has 18 pupils, but six are in first grade, three in second, three in third, and six in fourth grade — and each one on a different learning level.

Even the flight from Anchorage is an event. First she flew to Bethel in an F-27 (the same plane Tonopah Test Range people use to commute from Las Vegas), then changed to a Sky Van, which Gwen described as a "clumsy-looking hybrid." The plane landed three times on dirt strips partially overgrown with weeds and Gwen recalled, "We flew so low I could have seen the whiskers on a grizzly!"

"But when I got off the plane (at Fortuna Ledge), and looked at that airstrip, I marvelled how that pilot could ever have landed such a monstrosity at 80 mph," she said. "The strip is shaped like a huge 'C,' 1200 feet long, with a hump in the middle, and the whole thing slanted downhill. Now I really know what a bush pilot is."

Gwen plans to remain at Fortuna Ledge through the school year — until next May.

Supervisory Appointment



LOUIS ROPER to supervisor, Maintenance Section A 4512-1, effective Oct. 15.

Lou came to Sandia in 1967 after 16 years with the service organization of Honeywell, Inc., at Denver and Albuquerque. He was the service and installation manager of the Honeywell office at Albuquerque when he joined Sandia.

Lou first worked as design engineer with the buildings and facilities design group. A year later he transferred to the Operations Engineering Division where he has worked in mechanical plant operations until his present promotion.

He has a BS in electrical engineering from the University of Colorado.

A World War II veteran, Lou served in the European Theatre from 1943-46 as an x-ray technician in a field hospital.

Lou, his wife Mabel Lou, and their three children live at 9713 Mesa Arriba NE.

National Acclaim Given For Decorative Gunstocks

The 24th annual 1970 Gun Digest contains a two-page article about Dale Goens (4232-5) and his ability to make and decorate gunstocks.

Dale's interest in guns goes back 20 years. He prefers working from highly figured raw blanks and uses hand tools for the checkering. The whole operation from blank to finished gunstock may take 70-80 hours.

According to the article, Dale feels that to excel in this hobby, a person must be a good mechanic with artistic ability, have a world of patience, and be able to determine and execute the proper proportions as well as as a line of beauty. "The finished stock," he says, "must be fundamentally a sound, strong and practical tool."

Two of the three photographs which accompany the article show walnut stocks with fleur-de-lis checkering, 24 lines per inch. A bit different challenge from Dale's Sandia job as a sheetmetal worker.



RAPID FORMING is done with this Electroshape which transforms electrical energy into mechanical motion. The hydroelectric effect enables the Sheet Metal Section 4232-5 to make formed parts in as little as 0.0004 seconds.

Electrohydraulic Former Makes Metal Parts Quickly, Accurately

A machine which forms sheet metal parts in as little as 0.0004 seconds is now being used by the Sheet Metal Fabrication Division 4232-5.

The machine, called an Electroshape, uses the electrohydraulic effect to form complex shapes in a single operation. The effect consists of transfer of stored electrical energy into mechanical motion. When the electrical energy is discharged into a fluid-filled tank, a pressure wave results. The pressure wave then forces the metal into a female die.

Bernard Brown, supervisor of Sheet Metal Section 4232-5, says the principal advantages of the machine are that "no male die is needed and parts are formed with extreme accuracy — to tolerances of plus or minus one-thousandth of an inch."

The Sandia machine, built by the Cincinnati Electroshape Co., has capacitor banks capable of storing up to 50 kilojoules.

In ordinary forming machines which shape metal at a much slower rate, the metal tends to work harden and must be heat-treated to prevent cracking. When complex shapes are desired, the forming process may require several stages of drawing and heating. With the Electroshape, however, the metal is drawn so rapidly that it retains sufficient plasticity to form without breaking. Most common use of the machine to date is for forming of tube assemblies, caps, and small covers.

The Electroshape, only recently put into operation, was installed and calibrated by Shop Engineering Division 4214. Steve Neff (4214) served as technical consultant.

Retiring



Alexander Thom of Radiation Source Diagnostics Division 5223, is retiring Oct. 31.

"I've been in the atomic business for 25 years," Mr. Thom says. "I joined the Manhattan Project at Oak Ridge in March 1944 and transferred to Sandia in August 1952 as a quality assurance analyst; however, most of my work at the Laboratories has been with nuclear dosimetry."

Mr. Thom, who was born in Aberdeen, Scotland, says he comes from a family of sailors and he, too, would like to live near the sea; so following retirement, he and his wife will move to Vancouver, Wash. "Our daughter and her family live in Vancouver, so we have two reasons for making our home there." The Thom's also have two sons — one at LASL and the other in Albuquerque. They have six grandchildren.

37-acre farm at Los Lunas with most of the land in alfalfa. "I'm unable to take care of it," Mr. O'Connor says, "so I have the land rented. My plans are indefinite — I have to take things easy and don't get up and about too much. My daughter eventually wants to go to school in Texas, but until that time, we'll continue to live here."



Charles Lewis of Janitor Service Section 4574-4 is retiring Oct. 31. He was employed by Sandia in February 1962 and before that time had been self-employed as a painter.

A native New Mexican, Charley is a descendent of men who had a role in the early history of New Mexico as a territory and a state. As a young man, his great grandfather came with Kit Carson to New Mexico. He engaged in beaver trapping, Indian fighting, prospecting and mining. He married the daughter of the Quartermaster of the King's Command at Santa Fe. Charley's grandfather, in addition to cattle and sheep raising (at one time he owned 67,000 acres in the Rio Puerco Valley and 68,000 sheep), was a pioneer merchant and freighted goods from Kansas City.

Charley inherited his interest in mining and prospecting from his ancestors. He owns a mining property in the state and following retirement he expects to do lots of prospecting. "I just like to get outdoors," he says, "and will be looking for metals and precious stones."

Charley, who was recently widowed, has two married daughters and five grandchildren living in Albuquerque.

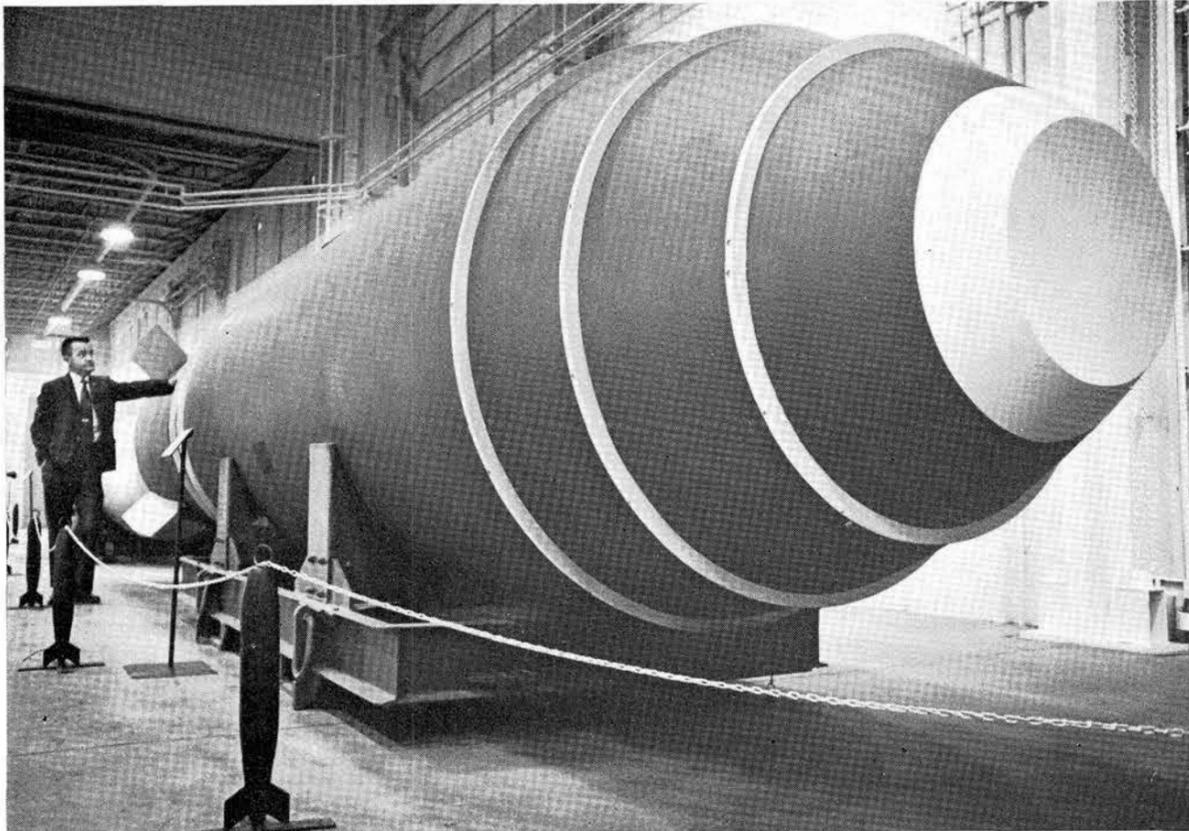


Charles O'Connor, supervisor of Processing Section 4623-3 of Receiving and Shipping Division, will retire Nov. 13. He was employed by Sandia in August 1948 and has worked in reclamation, general stores and receiving. He was promoted to section supervisor in reclamation in 1952 and has been in his present position since 1960. Mr. O'Connor has been in ill health and has been on sick leave since July 1968.

Mr. and Mrs. O'Connor have a daughter in high school in Los Lunas. They have a

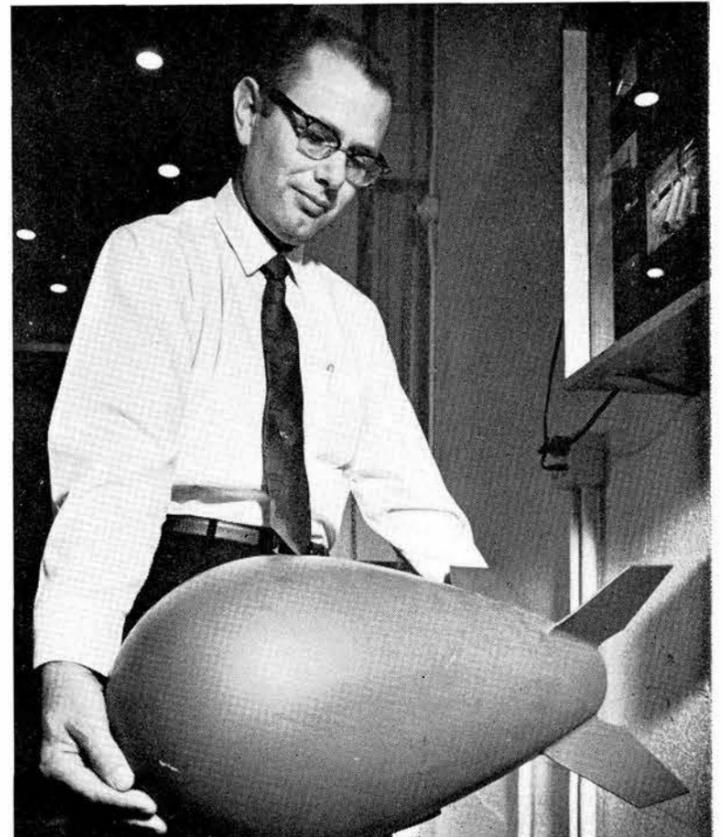


SING-A-LONG WITH MICHNOVICZ—Part of the program at the annual retiree banquet last week was a songfest with Mike Michnovicz (7632) playing the accordion. Among those attending were Mr. and Mrs. I. F. Chavez (left) and Mr. and Mrs. Don Lovato. Vice President Charles Campbell (4000) welcomed the former Sandians and President John Hornbeck reviewed Sandia's past accomplishments and provided a brief look at the future. Honors for the couple who travelled the farthest to attend went to Mr. and Mrs. William Phillips of Long View, Tex.



THINGS BIG AND LITTLE are found in Field Command's new Sandia Atomic Museum which opened this month. The Mk 17, one of the bigger things to be found there, is one of the first thermonuclear devices tested. Albert Sensel (1521) stands next to the unit which he helped to de-

velop while a member of the Mk 17 project engineering group. Among other exhibits are the Little Boy, Fat Man, Little John rocket, the 280-millimeter atomic cannon, and a number of other nuclear weapons.



DICK JORGENSEN (1511) demonstrates the portability of the Davy Crockett, a nuclear weapon he worked on as a member of the project engineering group in charge of evaluation. The museum is in Bldg. 358 (on Main St. southwest of the Credit Union), and hours are 10 a.m. to 5 p.m., Wednesday through Sunday.

Events Calendar

- Oct. 25-Nov. 9—Open season on deer in northern New Mexico.
- Oct. 25-26—Weekend backpack in White Sands National Monument. N.M. Mountain Club, leader Ed Clark, tel. 296-4541.
- Oct. 26—Tree Springs Trail in the Sandias. N.M. Mountain Club, leader Freda Stanfield, tel. 265-4049.
- Nov. 1—Annual United Nations Day Banquet. Sen. Wayne Morse on "Resolving Conflicts in the 70s," UNM Sub.
- Nov. 8—Ski Patrol sponsored Warren Miller movie, "This Is Skiing," and preview of N.M. Ski Areas, Civic Auditorium.
- Nov. 8—New rock musical, "Your Own Thing," UNM Popejoy Hall.

Authors

P. J. Chen (1721), "On the Growth and Decay of Temperature Rate Waves of Arbitrary Form," Vol. 20, No. 4, ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND PHYSIK.

R. Y. Lee (1733), "On Uniform Simplification of Linear Differential Equation in a Full Neighborhood of a Turning Point," September issue, JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS.

F. R. Nierwood and W. E. Warren (both 1721), "Wave Propagation in the Generalized Dynamical Theory of Thermoelasticity," August issue, QUARTERLY JOURNAL OF MECHANICS AND APPLIED MATHEMATICS.

G. C. Tisone (5232), discussion of paper by J. B. Pearce "Rocket Measurement of Nitric Oxide Between 60 and 98 km," September issue, JOURNAL OF GEOPHYSICAL RESEARCH.

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

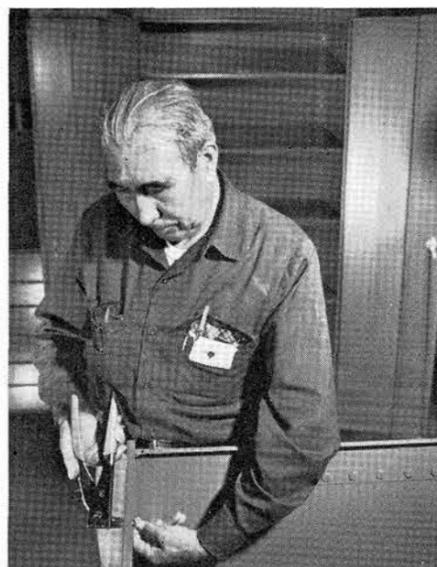
R. G. Easterling (1643), "Discrimination Intervals for Percentiles in Regression," September issue, JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.

Sandia Employees Golf Association (Women's Division) elected officers and awarded trophies during the group's annual banquet Oct. 7 at the Sandia Base Officers' Club.

The Championship trophy (low gross) was presented Ann Michele (4500) and Rose Hainlen (4152) received the President's trophy (low net). These awards are based upon play in SEGA's major tournaments.

New officers are Bea Whittaker (4335), president; Beulah Amole (2000), vice president; Fredericka Weber (1616), secretary; and Doris Willard (4152), treasurer. The outgoing president was Wanda Bishop (3341).

The group's regular membership drive will be held in January.



COST SAVINGS of about \$1000 a year are realized because of an innovation suggested by Jose Valdez (4575). He proposed that hand-held mechanical rivet guns be used to assemble office supply cabinets instead of a bolt, washer, and nut assembly. The rivets provide a tighter clamp in addition to savings of time. The Cost Improvement Policy Committee commended Jose for the time-saving suggestion.

Take Note

Pete Stirbis (1542) joined a rather exclusive group last week when he was named a National Ski Patrolman. There are only about 3400 members in the country — a small proportion of the total membership of the National Ski Patrol.

A person must be nominated to the honorary position by other National Patrolmen who take into account leadership qualities, experience as a Patrol leader or in administrative work for the local Patrol, and completion of special avalanche training.

Pete has skied for 10 years (since he moved to Albuquerque), has been on the Sandia Peak Ski Patrol for eight of those years, was Assistant Leader for three years, and Leader one year. The Sandia Peak Patrol has 40 adult Patrolmen and 10 Junior Patrolmen. Job of the Patrol is to rescue and give first aid to injured skiers.

Others Sandians who are National Patrolmen are Zelma Beisinger (5162), Kevin Mcriarty (4121), John Shunny (3432), Hup Wallis (1611), and Ray Harrison (9133).

The 36-hole SEGA golf championship was won by Dave Klein (AEC/ALO), whose total score of 148 took the low gross trophy, and Ivars Gals (9251), who won the low net trophy and the first flight with a net 137.

The tournament was played Oct. 4 at UNM South Course and Oct. 5 at Arroyo del Oso. Tourney co-chairmen were Don Longcope (1222), Ron Rodeman (1542), Bill Gardner (4116) and George Horne (9414).

Other flight winners were: second flight, Walt Halpin (1641); third flight, Jack Reynolds (4372); and fourth flight, Paul Blaylock (9132).

New Mexico state horseshoe pitching champion is Tom Towne (9124) who won the title recently in the state tournament. He took seven games in a row with a ringer percentage of 62.8. Tom was also state champion in 1967.



OUT, OUT, FOUL FIRE, intones Nick Delollis (5333) and with a little help from the CO₂ extinguisher it is out. Demonstration was one of several for Sandia's part-time fire fighters during Fire Prevention Week and was accompanied by firey lecture.

Service Awards

20 Years



James Bell
4253



Dale Goens
4232



Edward Neidel
2312



Cecil Page
5539



Richard Strome
3417



Hazel Vance
7294

15 Years



Charles Allen
1613



Charles Bates
2321



Roger Buehler
2624



John Byrne
2491



Robert Crow
8261



Sverre Johannesen
2352



Clarence Mehl
5230



Robert Patton
2632



Claurys Pine
4150



Louis Rosnoski
8124



Richard Vivian
1611



Jay Wardlow
1211



Joe Weihe
8320



George Wladika
7614



Doris Young
7415

10 Years

Marjorie Geisler 3256, Howard Phillips 4254, Cecil Morrisett 4543, Dick Shead 7612, Harry Aikin 8233, Marilyn Rozelle 9411, Diego Gonzales 4212, Helen Bond 8129, James Grund

8222, William Crosley 9413, Alfredo Chavez 4574, Emery Postenrieder 3121, Dean Miller 4120, and Wayne Ebaugh 9224.

Mud, Construction Sandia's 'Face' in 1949

What was Sandia like 20 years ago when Western Electric took over?

Well, Administration Building was occupied, but 802 was still a hole in the ground with power shovels excavating the basement. Mock-up buildings 808 and 835 were complete as was 804 (military liaison) and 860; 892 and 894 were under construction. Area II consisted of buildings 904, 907 and 901. Other smaller structures, built during war-time, were taken over from the military.

Some of Sandia was located at West Lab (later AEC headquarters and now the Kirtland Officers Club) and a number of people worked at Salton Sea Test Base in California, a forerunner of Tonopah Test Range. Livermore Laboratories and Area V were not even someone's wildest dreams.

Office and lab space was at a premium. An early Sandia Corporation Bulletin warned: "In some cases space has been vacated and either the same day or shortly thereafter the vacated space was taken over by other organizations without regard for the plans made by Plant Engineering for its use."

The tech area was a maze of trenches for burial of utility lines. It was more than a year before most of the tech area streets were paved, but parking problems already existed in front of the Administration Building.

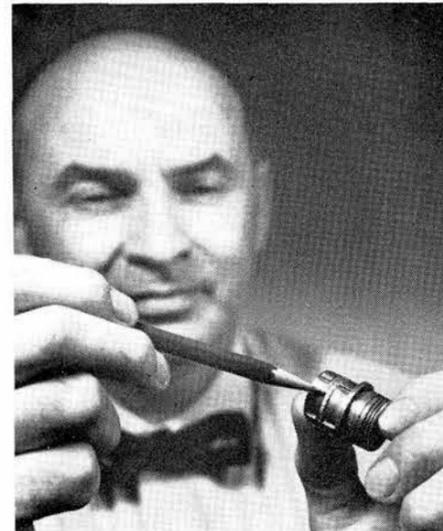
The main thoroughfares from town were Wyoming, Menaul, Gibson, and Central — all narrow strips of asphalt. Central looked wider because it had ample gravel shoulders. Employees' cars bore oval metal Base tags, and ID cards had to be displayed to MPs at the Base gates. All visitors had to have temporary passes, and taxis were carefully logged on and off Base.

A number of employees and their families lived on Base in AEC housing. These were primarily employees recruited from distant points and those whose job assignments required them to live nearby, otherwise there was a lot of vacant land between Sandia and the nearest housing development. Townspeople were inclined to think of Sandians as "intruders on the mesa" probably because of the air of mystery about the lab's purpose. Since that time, Sandia has grown along with Albuquerque and has become an integral part of the community.

Sympathy

To A. D. Pepmueller (3420/8240) for the death of his mother in Washington, Mo., Oct. 15.

To W. B. Benedick (5131), for the death of his mother.



DESIGN of this beryllium copper spring band in an electrical connector earned Bob Sylvester (5512) an AEC patent. The band design minimizes the possibility of a break and eliminates the need to solder the spring in place.

Bob Sylvester Earns Patent

A couple of years ago when he was working as a manufacturing engineer in Division 2561, Bob Sylvester designed a more reliable grounding spring to reduce the electro-magnetic radiation (EMR) problem in electrical connectors. The method has earned him an AEC patent.

The problem that Bob solved had to do with improving the method of making the connector resistant to EMR, a kind of "static" which could, in extreme conditions, interfere with its proper functioning.

Previous EMR-resistant connectors used a cantilevered grounding spring that was soldered in place. The cantilevered spring tended to break, and the design was temperature-limited because of the solder. In Bob's design both ends of the spring are mechanically retained — a stronger design that eliminates the need for soldering as well.

Since that time Bob has transferred to Plastic Materials and Processes Division 5512 and has submitted another patent disclosure.

He has worked at Sandia Laboratories 17 years, 15 of them in manufacturing engineering.

Congratulations

Mr. and Mrs. Louis Nogales (9411), a daughter, Theresa Maria, Oct. 6.

Mr. and Mrs. Donald Bates (9411), a daughter, Cinda Lea, Sept. 2.

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

MODEL 70 Winchester, 30-06 w/sling, butt pad & Redfield receiver sight, \$120. Elliott, 299-2782.
'69 175 HONDA Scrambler, 5000 miles, w/turn signals, luggage rack, street sprocket & helmet, \$450. File, 344-8853.
60" TRAVERSE ROD; casement windows, 49x52", 36x37" Gendreau, 268-3436.
ENCYCLOPEDIA AMERICANA w/year books from 1955. Martin, 282-3794.
WATER PRESSURE SYSTEM, includes centrifugal pump, 1/3 hp motor, tank, pressure switch, foot valve, \$50 or best offer. Copeland, 344-1133.
SHERIDAN pellet gun w/sight, cost \$45, sell \$35, used 3 times — 2 crows & 1 window. Merillat, 242-4873.
TWO BIKES, 20" & 24", both girl's, both for \$35. Frinkman, 298-7948.
TRADE WINDS fold down trailer, fiberglass top, refrig., stove, portable toilet, wash sink, plenty storage, sleeps 6. Hostetter, 256-3803 after 5:30.
NEW, never used, Super 8 Hawkeye Instamatic Kodak movie camera. \$20. Heidrich, 344-7669.
TINY TOY POODLES, AKC, will be very small. King, 268-9911.
EXTERIOR FRENCH door & frame, 30" w/15 panes. Sullivan, 299-1348.
LOWREY spinet organ, Heritage model; Motorola console B&W TV, Bracken, 299-3682 after 6.
'69 HONDA 350 Scrambler, less than 3000 miles, Dunlop Trials tires, electric start, \$650. Martin, 256-7015.

RUGER .44 magnum, Blackhawk, w/holster & box of ammo. Holland, 898-3118.
AKC reg. toy poodles. Jacobs, 296-4522.
352 FORD ENGINE, almost complete, \$40; auto air conditioner, under-dash type, \$25; Jeep transmission w/overdrive, \$20. Frasier, 299-6933.
MATERNITY CLOTHES: salmon crepe dress, sz. 14-16, \$8; knit slacks, sz. 14, \$5; back brace, sz. 36-37, \$10. Smith, 265-5447.
ROOM HEATER, butane, 50,000 BTU (approx.), \$15; cook stove, uses butane or natural gas, \$25. Gallagher, 1-636-2742 after 5.
SMALL POODLE at stud, AKC reg., excellent pedigree, breed for pick of litter. Bowen, 255-8195.
6.5 X 55 SWEDISH M94 Mauser, Lyman M57 peep, sling, sporterized stock, 1 box cartridges, \$50. Barnett, 298-9227.
TRAVEL TRAILER, 12' Aristocrat, ice box, stove, oven, spare wheel, sleeps 4, \$595. Zikert, 898-3475.
2-WHEEL TRAILER; weed burner; ice cream freezer; bunk beds; television w/stand. Patterson, 877-3158.
MOTORCYCLE, 1966 Yamaha 305 (street), \$300; electric bass guitar & amplifier, \$75. Roeschke, 282-3234.
CAMPING TRAILER, 14', sleeps 4, Silva, 344-6714.
FISH, common male guppies, 12c each, Bell, 299-4643.
CAMERA, 35mm, range finder w/flash attach., Mamiya-Sekor model Z-32, purchased 1966, \$85. Christy, 256-0711.
MAHOGANY door, unpainted, 30"x80", w/all hardware, best offer. Hodyke, 268-5210.
'67 SUZUKI X6 Scrambler, 250cc, 5400 miles, \$395 or best reasonable offer. Schuler, 296-2271.
TWO VINYL COUCHES, one tan, other orange, \$50 ea. Vandi, 255-0685 after 5.
12' STARCRAFT aluminum boat, 5 hp motor, used about 8 hrs. Gelwicks, 299-3909.
WEDDING & engagement rings, valued at \$600, sell for \$500. Morrow, 299-0512 after 5.
2-HORSE TRAILER, '66 Safari, purchased new, '67 tandem axels, tack comp, floor pads, less than 250 miles, \$750 or offer. Corwin, 256-0779.
35,000 BTU central heating furnace, made by Rheem, uses 16"x20"x1" filter pad, complete w/wall mounted thermostat, \$60. Frasier, 255-7195.
ANTIQUE POOL TABLE, regulation Brunswick w/accessories. Elsik, 299-2806.

POODLE, white toy male, 9 wks. old, AKC reg., & pedigree, pick of the litter, \$50. Cundiff, 256-0043.
TYPEWRITER, Underwood std., working condition; roller skates, man's size 10, woman's size 6, \$5 ea. Devlin, 299-1450.
GERMAN SHEPHERD puppies, championship stock, AKC reg. Looney, 255-7349.
AKC poodle puppies, show stock, 1 male, 1 female, silver gray toy. Boeck, 298-6495 after 5.
ROPER GAS RANGE, white, 4 burners, oven, broiler, 2 storage drawers, timer, fluorescent light, 38"x26"x36" high to cooking surface, \$75. Stark, 299-5953.
AKC miniature poodle, black male, 2 yrs. old, champion background, good disposition; bookcase for den or child's room. Seaburn, 299-2215.
GENERAL ELECTRIC refrigerator, 14 cu. ft., LH110 model w/8-lb. freezer section, \$55. Mason, 299-2836.
.22 TARGET PISTOL, Colt Match target Woodsman, 4 1/2" barrel, \$75; 7.65 Argentine Mauser rifle, \$30. Stephenson, 299-3914.
KLIPSCH Horn loudspeaker, 3/4" marine plywood model A, acoustone finish. Marker, 298-3985.
SWING SET, \$8. Hall, 298-8617.
CHIHUAHUAS, AKC males, 1 yr. old & 8 wks. old, excellent w/children, \$35. Summers, 298-1001.
19" TV, Motorola B&W, table model w/fitted walnut cabinet, 12" deep, \$40; boy's bike, 24", \$10. Van Deusen 299-4328.
GARAGE SALE Saturday & Sunday: Fruitwood coffee table, bed spread, curtains, men's & women's clothing, etc., 3725 Mt. Rainier NE. Biffle, 298-2866.
SAVAGE 12 gauge shot gun, \$50. Martinez, 299-3017.
PROFESSIONAL hair dryer, \$35; foam mattress & box springs, \$30; twin headboard, \$12; bun warmer, \$1.50. Mueller, 299-1079.
300W FENDER GUITAR amplifier w/2 ea. Altec Lansing speakers, half price; microphone stand, \$10. Shock, 877-3728.
DRUM SET, Ludwig snare w/case, bass tom toms, high hat and crash cymbals, sticks and brushes, \$200. Cotter, 255-0653.
TWO 8:25x14 snow tires, \$15. Surface, 298-1394.
SKI BOOTS, 1968 Lange, size 10 narrow, used 9 times, do not fit owner, \$60. Taylor, 265-9387.
MODEL 2003C Coleman floor furnace, 35,000 BTU HR, used one season, model 213 Cozy floor furnace, 24,500 BTU/HR. Campbell, 268-8445.

METAL BED springs, double size, \$5; AM/FM tuner, Heathkit preamp, 20 watt Williamson amplifier w/power supply, \$35. Bassett, 898-1840.
AMMUNITION, 3 boxes 30-30 Silvertip, 170 grain, \$3.20/box; 7/8 box 30-06, 150 & 180 grain, \$3.80/box. Russell, 299-0159.
STROLLER chair outfit, makes into 2 pcs. of baby furniture; N-gauge railroad, landscaped w/rolling stock. Rosborough, 298-3645.
COLDSPOT freezer, chest, over 18 ft.; maple bedroom suite; Philippine rattan section; TV & stereo combination; bedspreads, twin & dual king, Chandler, 296-3323.
REMINGTON, 30.06/721, \$85; NATO, .243/60, \$55; Springfield, auto., 12 ga./745B, \$95; Stevens, dbl., 20 ga/311, \$70; padded, cases. Logan, 299-0252.
DRAW DRAPES, floor length, 74-94 width, pleated valences, blues & white, heavy cotton, custom made, w/Kirsch rods, \$45. Hughes, 299-6674.
'59 CESSNA DOYN, 180 Lycoming, constant speed prop, many extras, \$6000. Riley, 299-3162.
2 8:45x15 tubeless snow tires, 2 6:50x16 tube-type, 6 PR casings, \$5 ea. Overmier, 268-4992.
2 SNOW TIRES & RIMS, 8:25x14 GM size, \$30. Stirbis, 299-5363.

CARS & TRUCKS

'68 A-H SPRITE, 10,000 miles, yellow w/black interior. Ellis, 298-0488.
'66 PONTIAC LeMans, 4-spd., reg. fuel engine. Dornhoff, 299-7267 after 6.
'61 FORD, six, 4-dr.; '59 Chevrolet wagon, PS, PB, AT. Wilhelm, 296-7172.
'62 FORD Falcon station wagon, 6 cyl., stick shift, 35,000 miles, R&H. Zucuskie, 268-3105.
'55 CAD sedan 69,000 miles, \$280; 9:00x15 tire rim, \$5. Shummy, 265-1620.
'64 GMC w/camper has everything, jumbo tires, self-contained, gas refrigerator, heater, sleeps 4, extras. Norton, 282-3749.
'65 FORD Ranchero deluxe w/tonneau cover & 289 V8 High P, 4-spd. trans., \$1395 or best offer. Earhart, 265-2615 after 5:30.
'59 FORD, white 2-dr., rebuilt trans. Reid, 296-3454.
'66 JEEP, V6 w/cab & Ramsey winch, actual miles 1370, cost over \$3200, will sacrifice. Burns, 255-3737.
'60 MERCURY wagon, PS, PB, AC, white, best offer. Benson, 265-4188.
'64 DODGE DART 2-dr., 170 slant six, std. shift, AC, 4 new tires & new seat covers, \$800. Raymond, 268-7477.

REAL ESTATE

2-BDR. HOME, NE heights, lg. walled yard, near schools & shopping, \$9500, will rent pending sale. Abbott, 842-9692.
2/3 ACRE, between Arenal & Blake, 3 blocks east of Foothill. Benton, 877-2473.
4-BDR., 1 1/2 baths, lg. FR, wb fireplace, 1926 sq. ft., will sell for loan value, \$16,200. Summer, 299-1912.
VACANT, Roberson 3-bdr., 1 1/2 baths, carpeted, DR, stove, refrig., many extras, \$15,500, 4 1/2% GI, terms available. Parker, 299-6654.
3-BDR, FR, 2 baths, bonus rm., patio, garage, new carpet, AC, payment \$107, \$2200 down. Snidow, 298-6163.

WANTED

PORTABLE TYPEWRITER. Houghton, 299-3386.
GUITAR. Fisher, 299-4235.
SHOP MANUAL, 1963 Pontiac. Devlin, 299-1450.
USED 5-gal. butane bottle. Wilkinson, 299-8327.
CHILD CARE, ages 2-5, limited to 4 including mine, hot lunches, 50c/hr., 2204 Glorieta NE. Lassiter, 299-7006.

FOR RENT

ADJUSTABLE dress form, size 8-14. Hanna, 299-0583.
ISSUES of GUN DIGEST of 1957 and older. Stark, 298-6139.

FOR RENT

GOOD home for 4 mo. old, black male poodle-spaniel cross, paper trained, puppy shots, last of litter. Pretzi, 299-4039 after 6.

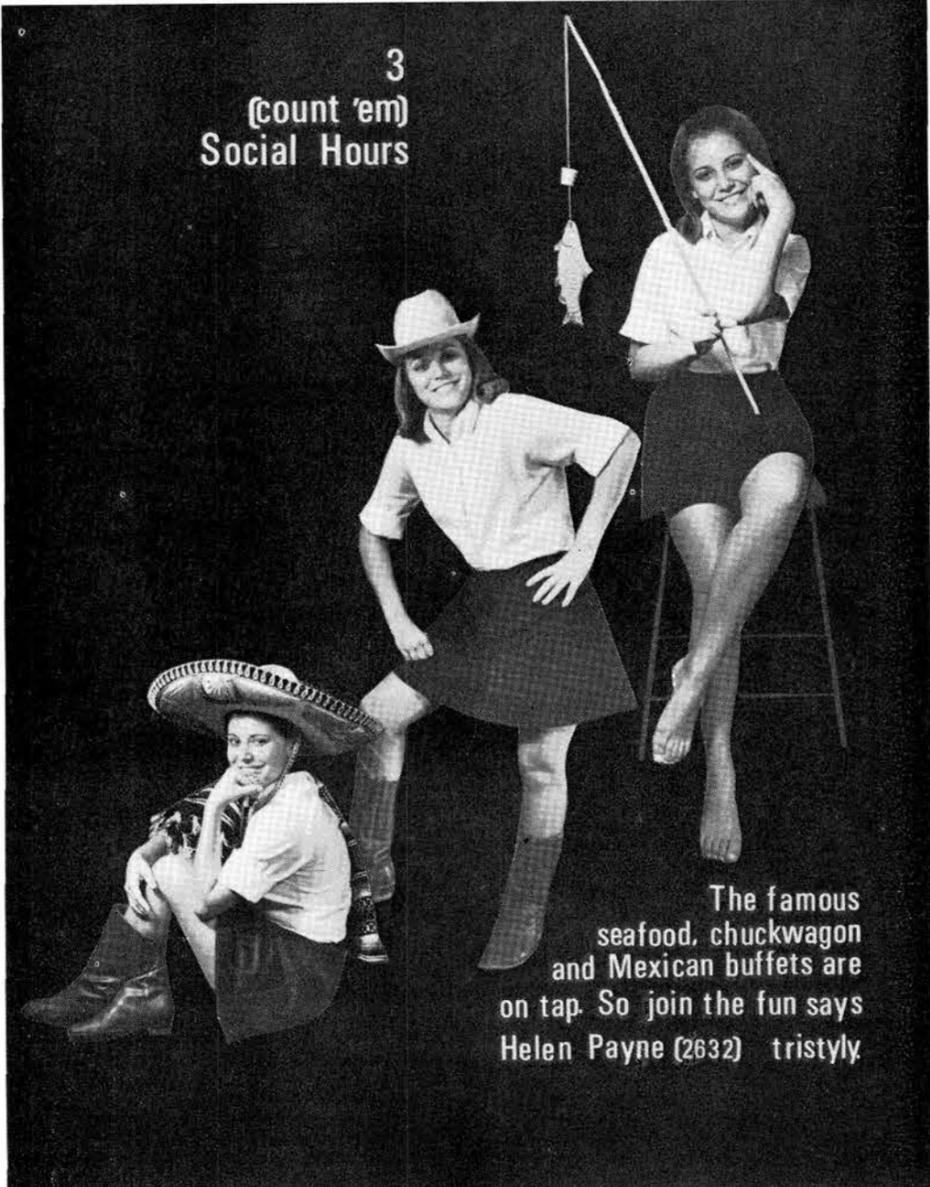
FOR RENT

INDOOR boat storage, \$8/mo, Sayers, 898-3851.

LOST & FOUND

LOST—Letter to Albuq. Natl. Bank, pocket knife, Rx bi-focal glasses w/grey blue frames, man's yellow gold Bulova watch, ladies Rx sunglasses, 3 Corp. keys in leather case, silver square w/turquoise stone cuff link, 5-yr. pin, silver lizard w/turquoise charm, ladies white gold Bulova watch, LOST AND FOUND, tel. 264-2757, Bldg. 610.
FOUND—2 Ford keys w/NM medallion, man's silver wedding band, Rx bifocal w/grey frames in black case. LOST AND FOUND, tel. 264-2757, Bldg. 610.

3
(count 'em)
Social Hours



The famous seafood, chuckwagon and Mexican buffets are on tap. So join the fun says Helen Payne (2632) tristly.

Coronado Club Activities

Social Hours, Seafood Featured at CC

Three social hours are scheduled for the next couple of weeks at the Coronado Club. Tonight Tommy Kelly's Trio will make the happy music while the Mexican food buffet is spread. The buffet costs \$1.25 for adults, \$1 for kids.

Social hours start right after work on Fridays with special prices in effect until 9 p.m. The buffet is spread from 6 to 8 p.m. and the band plays for dancing from 6 to 9 p.m. Then the TGIF crowd moves to the main lounge where Yolanda Adent and piano entertain with a sing-along until midnight.

On Friday, Oct. 31, the Club's seafood buffet, the kind New Mexicans like, will be the buffet feature while Phil Graham plays for dancing.

The Aristocrats will be on the bandstand for the Nov. 7 social hour. The Club's famous chuckwagon roast beef buffet will be spread. It costs \$1.75 for adults, \$1.50 for kids.

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

New England Seafood Dinner

Tickets to the fabulous New England Seafood Dinner scheduled Saturday, Nov. 15, are sold out indicating the popularity of this annual Coronado Club event. For those early-bird 250 who will attend, the evening will go like this: a wine taste starts at 6 p.m., dinner will be served from 7 until 8:30 p.m., Sol Chavez and the mighty Duke City Brass will play for dancing from 9 to 12 p.m.

Bridge

Duplicate Bridge meets Mondays at 7 p.m. Coronado Ladies bridge meets Thursday, Nov. 6, at 1 p.m.

Football Bus

The Coronado Club bus to University Stadium where the Lobos face Arizona State on Saturday, Nov. 8, will leave the Club at 1 p.m. After the game, the bus will return to the Club where social hour prices will be in effect for one hour.

Ablation Testing Standards Subject of Meeting Here

Standards for ablation testing will be discussed Nov. 4 and 5 during a sub-committee meeting at the Coronado Club of the American Society for Testing Materials.

According to George Wright (5322), host of the meeting, task force leaders will report on progress in adoption of industry-wide standards for ablation testing as well as on development of diagnostic instrumentation for use in plasma jets and other devices which simulate reentry environments.

High-Temperature Properties of Materials Division 5322 and R/V Aero Thermo Division 9328 are both involved in this type of work and members of both divisions are assisting in the conference.

This group meets twice a year. Its chairman is Robert Bearman of General Electric, Philadelphia.

PAGE EIGHT

SANDIA LAB NEWS

OCTOBER 24, 1969

Get One for Christmas

Table-Top Atom Smasher on Market

Are you hard pressed for a Christmas present idea for Junior? For a mere \$280,000 you can order a mini-atom smasher and have it delivered in time.

As soon as Junior pulls off the wrappings, he'll know he has an "isochronous azimuthally varying field cyclotron for use as an intense source of energetic hydrogen and helium nuclei."

Engineers and scientists have long been interested in developing miniaturized machines to study the atom. A 27-inch "sector-focused" cyclotron has been developed by scientists at the AEC's Lawrence Radiation Laboratory as a result of research to perfect methods for identifying minute quantities of material through a process known as activation analysis.

The small and relatively inexpensive table-model atom smasher (the big ones cost millions) was developed to accelerate light helium nuclei for use in activation analysis. The machine has proved to be especially valuable for detecting and measuring extremely small amounts of light elements such as oxygen, carbon, and nitrogen. And this technology has important applications in industry, medicine, biology, space research, and criminology.

If you want yours by Christmas, the mini-cyclotron is being manufactured by a firm in Berkeley, Calif. Most of the units have been sold to hospitals and to research and training institutions. Several have already been placed in cancer research centers.

The Lady Is A Car

Sandian Ron Hill Likes Elegance -- In the Form of 1939 Rolls Royce

"She's a lady," says Ron Hill (9342) describing one of the loves of his life. "She's elegant, has classic lines, is very well appointed and handles like a dream." She also is a car.

When Ron talks about his 1939 Rolls Royce "Wraith"—one of two he owns—he becomes slightly moony, his eyes light up, and he is given to extravagant praise. It's an affliction he shares with some 2100 other Rolls Royce owners in this country.

Of the two Rolls Ron has, one is in near perfect condition and the other is being restored. The one that is running, which Ron uses for everything from commuting to work and grocery shopping to participating in parades, is particularly rare. It has a body by Corsica of Wicklowood who, as everyone knows, is one of the better coach builders in the Empire. Corsica built very few coaches for Rolls, however, and the one Ron has is probably the only 1939 model in the states and may be the only one in existence. Ron bought the car by mail sight unseen, an act of faith that could only be exhibited by a collector. However, he had the counsel of the Auto Association, the British counterpart of our AAA, and got a car in good condition with only 80,000 miles on it—for a Rolls, just nicely broken in.

The second car, which Ron rescued from a used tractor lot in the North Valley, is also a Wraith but has the more common body by Park Ward. There may be as many as 20 of these in existence. It needs considerable restoration, a task Ron is doing himself.

Ron gets a kick out of driving around in his big, black Rolls. People react differently to the car but they always react. "Some people wave or gesture wildly to show their admiration, some scream like a teenage girl at the sight of the Beatles,

and some studiously ignore me, at least until I'm past," says Ron.

"People also tell me legends about Rolls-Royce," he says. A common one goes like this: A Rolls owner wrote to the factory asking for the horsepower rating of his car (which the company never discloses). The answer: "sufficient." To respond to the Rolls owner who asked what torque he should use on the headbolts, the factory advised, "Use a skilled fitter (mechanic) with a six-inch wrench."

Not all of the Rolls fame is legend however. A Rolls does run quietly and it does run for a long time (a half million miles or more is not uncommon). The car combines craftsmanship with function. Ron's car, for instance, has automatic radiator shutters, hydraulic jacks on each wheel which are operated from the driver's seat, ride control (adjustable shocks), and a picnic table that folds out in the rear seat. It even has a recessed roof in the back seat for the gentleman wearing a tophat.

Service offered by the Rolls Royce company is not just legend either. The company has provided Ron with a history of his car from the day work on it began until it was finished four months later. Ron also has been in contact with all three previous owners, including the woman who originally bought it. This elderly lady, still in England, wrote Ron that she is "pleased the car has been given a good home."

Ron, who by day is supervisor of the Experimental Aerophysics Division 9342, can be found on weekends either restoring the one car or polishing the other with a genuine sable dusting mitt, a Christmas present from his wife.

And what does Ron use for just plain transportation? Well, he tools around town in his 1958 DB2/4 MkIII Aston Martin sport coupe.



A MAN AND HIS MACHINES—Ron Hill (9342) and two of his favorite ladies. These 1939 Rolls Royce Wraiths get a good deal of Ron's attention on weekends. He is restoring the one on the left.

Sandia Safety Signals

When you cook out in the woods, be sure all you burn are the hamburgers.

Remember, only you can prevent forest fires.

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