THE ATOM

Los Alamos Scientific Laboratory

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THE ATOM

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COVER:

PUB'S Bill Regan trekked through three canyons and over four mesas to make this photographic still life of Autumn in New Mexico.

Kellogg Retires After 20 Years With Laboratory

After a diversified 33-year career in teaching, research and administration -- more than 20 of those years at the Los Alamos Scientific Laboratory—Dr. Jerome M. B. Kellogg retired last month as assistant director for scientific personnel.

Kellogg, born in Des Moines, Iowa, received both his undergraduate and graduate education at the University of Iowa, where he earned a B.A. degree in physics in 1928, followed closely by M.S. and Ph.D. degrees in the same field in 1929 and 1932, respectively.

His first job after graduate school was a position with Columbia University in 1933. For the next two years he worked at Columbia as a research associate in physics. It was here that much of his early research, devoted to molecular beams, was published. He was an instructor at Columbia for the next seven years, and in 1942, he was appointed assistant professor, a post he held for three years until he was made associate professor, serving in that capacity from 1945 to 1948.

In addition to his teaching duties, Kellogg became director of the Columbia Radiation Laboratory in 1942, a laboratory operated at the time under the National Defense Research Committee. He held this position until 1946. As a direct result of his work at the Columbia Laboratory, Kellogg received the Presidential Certificate of Merit in 1948, citing him for "outstanding fidelity and meritorious conduct in aid of the war effort against the common enemies of the United States and its Allies in World War II."

Kellogg came to Los Alamos in May, 1946, and shortly thereafter was appointed P division leader. In this position, as was the case throughout the Laboratory, the pulling together of the remnants of mass post-war exodus fell to the new leaders.

Kellogg proved not only up to the challenge, but under his 16-year direction, P division chalked up some very noteworthy accomplishments. Among these are the design and construction of a 13 MeV Van de Graaff accelerator; a 2.5 MeV Van de Graaff (since dismantled); the Omega West reactor; a variable energy cyclotron; and a Cockcroft-Walton accelerator. In addition, a tandem Van de Graaff was purchased during this time, and some new and very sophisticated electronics equipment was designed and built under his guidance.

From 1949 until mid-1953, Kellogg served as a Senior Responsible Reviewer for the Military Utiliza- capacity, he assisted in declassifying much technical and scientific information so it could be made generally available for the mutual benefit of scientists throughout the world.

On Sept. 1, 1962, Kellogg became reserach advisor for the Laboratory's Sherwood project. In this post, he was responsible for directing research into the possible avenues of controlling thermonuclear reactions for peaceful purposes, a project begun in P division while he was the leader.

At the time of Dr. William Crew's retirement in December, 1964, Kellogg was selected to succeed him as assistant director for scientific personnel. Here, among other duties, he supervised the administration of a number of the Laboratory's formal educational programs. Included are the Advanced Study Program, the Graduate Thesis Program and the Summer Consultant and Visiting Staff Member programs. He has also been in charge of arranging staff member meetings and colloquia within the Laboratory.

Kellogg is a Fellow of the American Physical Society and the American Association for the Advancement of Science.

Aside from his demanding Laboratory obligations, Kellogg served as a member of the Los Alamos

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short subjects

Robert M. Underhill, vice president and treasurer emeritus of the University of California, has received the Atomic Energy Commission's "Citation for Outstanding Service" to the United States atomic energy program.

Underhill, a frequent visitor to the Laboratory and Los Alamos, was cited for creating contractual relationships between the University and the AEC which resulted in efficient operation of the Los Alamos Scientific Laboratory and the Lawrence Radiation Laboratory from 1942-'65, and for serving as advisor to the Commission and other U.S. departments of government.

He has negotiated every contract between the University and the Los Alamos project since 1942.

The citation, with a symbolic medallion, was presented to Underhill at ceremonies Oct. 27 at AEC headquarters in Germantown, Md.

Nicholas Metropolis, theoretical physicist in T-DO, is listed as an associate editor of the new Journal of Computational Physics, published by the Academic Press of New York and London. The Journal publishes articles concerning techniques developed in the solution of data handling problems and mathematical equations, both arising in the description of physical phenomena. The first issue was published in August this year.

In a move to update shelter files, the county Civil Defense office has started a re-registration program to obtain up-to-date information on all shelter assignees. New registration forms were mailed in mid-October to persons working and living in Los Alamos County. Re-registration does not necessarily mean that shelter assignments will be changed, said County Civil Defense Director **Robert Y. Porton**, "Response of Los Alamos people to our first assignment program five years ago placed our county at the top of the readiness list in the nation," Porton said. "Continued interest in the CD program can only mean continued readiness for any emergency."

Three LASL staff members who are also members of the Los Alamos Naval Reserve Research Unit attended a four-day Aerospace Seminar in Colorado Springs, Colo., last month.

Receiving briefings on the Aerospace Defense program were Capt. **Donald L. Winchell**, W-3, LCdr. **Gale S. Hanks**, CMB-6, and Lt. **Emmett L. Brazier**, ENG-1.

Theme of the meeting was "Multi-Service Coordination in Space Defense." An estimated 150 Naval Reserve officers from five states attended the seminar, which also included tours of the Air Force Academy, Ent Air Force Base, Fort Carson and the recently completed hard-site of the North American Air Defense Command located deep within Cheyenne Mountain.

Dr. Raemer E. Schreiber, technical director of the Los Alamos Scientific Laboratory, was the featured speaker last month at a dinner meeting of the Huntsville, Ala., section of the American Nuclear Society.

Dr. Schreiber, who is also a vice president of the ANS, spoke on "Problems of Nuclear Propulsion Reactor Development."

He has been associated with LASL since the Manhattan District Project in World War II and has been technical director since 1962.

The Los Alamos Scientific Laboratory shares in a group achievement award presented recently to the Space Nuclear Propulsion Office at the annual honor awards ceremony held by the National Aeronautics and Space Administration. The award was given "for the high standard of performance established by the people making up the SNPO organization and the resulting superior technical progress of the nuclear rocket program to date."

In a letter from Harold B. Finger, SNPO manager, to Laboratory Director Norris E. Bradbury, Finger stated, "I want to formally extend to you and the people working on nuclear rockets at the Laboratory my appreciation for the contributions all of you have made to the Rover program. Your continued dedication and efforts will result in full nuclear rocket and increased space exploration capabilities for the country."

LASL Men Plan Chemical Society Meeting

A number of Los Alamos Scientific Laboratory staff members will participate in the 22nd Southwest Regional Meeting of the American Chemical Society in Albuquerque Nov. 30 to Dec. 2.

The Central New Mexico Section of the ACS will serve as hosts for the conference.

Robert A. Penneman, alternate group leader of CMF-4, is general chairman of the meeting, while Joseph A. Leary, alternate group leader of CMB-11, is technical program chairman.

More than 200 papers will be presented during the technical sessions. These will be in the fields of biochemistry, chemical education, cryochemistry, analytical, inorganic, organic, physical, nuclear and radiochemistry.

Symposia have been organized under the titles of: New Approaches in Teaching Undergraduate Chemistry, High Temperature Chemistry, Cryochemistry, Physical Chemistry of Water Desalination, and Complex Fluorides and Molten Salts.

The Southwest Regional Award will be presented Dec. 1. This award is given annually to recognize and honor distinguished service as a member of the chemical profession, both to the Southwest and to the chemical field throughout the nation.

AEC Chairman Glenn T. Seaborg will speak at the annual banquet Dec. 1.

more short subjects . . .

Dr. Carlo Polvani, chief of the Radiation Division, CNEN (National Committee for Nuclear Energy), Rome, Italy, visited the Los Alamos Scientific Laboratory Nov. 2 as a participant in the U.S. State Department's International Visitor Program.

Dr. Polvani, a physician, is a member of several radiological protection and health physics committees and has published articles, pamphlets and books on radioactivity and health protection. Prior to assuming his present position he was chief of the division of biology and health protection at CNEN from 1957 to 1964. He served as secretary for Italy at the first International Conference on the Peaceful Uses of Atomic Energy in Geneva in 1955 and has participated in numerous international meetings on radiation protection.

He arrived in the United States on September 15 and is scheduled to leave for Italy on November 14.

Lowell F. Grubbs, SP-4 carpenter, died at his Espanola home Oct. 11 of an apparent heart attack. Grubbs, 47, had been employed by LASL since 1943. He is survived by his widow, Wilma; a daughter, Elaine, and two sons, Lawrence and Tommy. Funeral services were held Friday, Oct. 14, with burial in the National Cemetery, Santa Fe.

The president of the Greek Atomic Energy Commission, **Admiral Jason J. Theophanidis,** visited the Los Alamos Scientific Laboratory last month for a one-day briefing and tour.

The day's activities included a tour of the science museum and the town in the morning; a luncheon at noon with a number of LASL personnel; and an afternoon tour of the Van de Graaff building, Sherwood, Omega West, UH-TREX and the Health Research Laboratory.

Theophanidis retired from the Royal Hellenic Navy in October, 1965. He was the deputy chief of the general naval staff at the time of his retirement.

The Greek Atomic Energy Commission is responsible for planning, development and direction of the nuclear energy program in Greece. It was established in May, 1954.

The Military Liaison Committee of the Atomic Energy Commission and the Department of Defense met Nov. 1 in Los Alamos. **Carl Walske,** theoretical physicist at LASL, was recently appointed committee chairman by President Johnson.

The committee serves as the regular channel of communication between the AEC and the Defense Department on all atomic energy matters relating to national defense. It was established by the Atomic Energy Act.

Representatives of all branches of the U.S. armed forces attended the meeting.

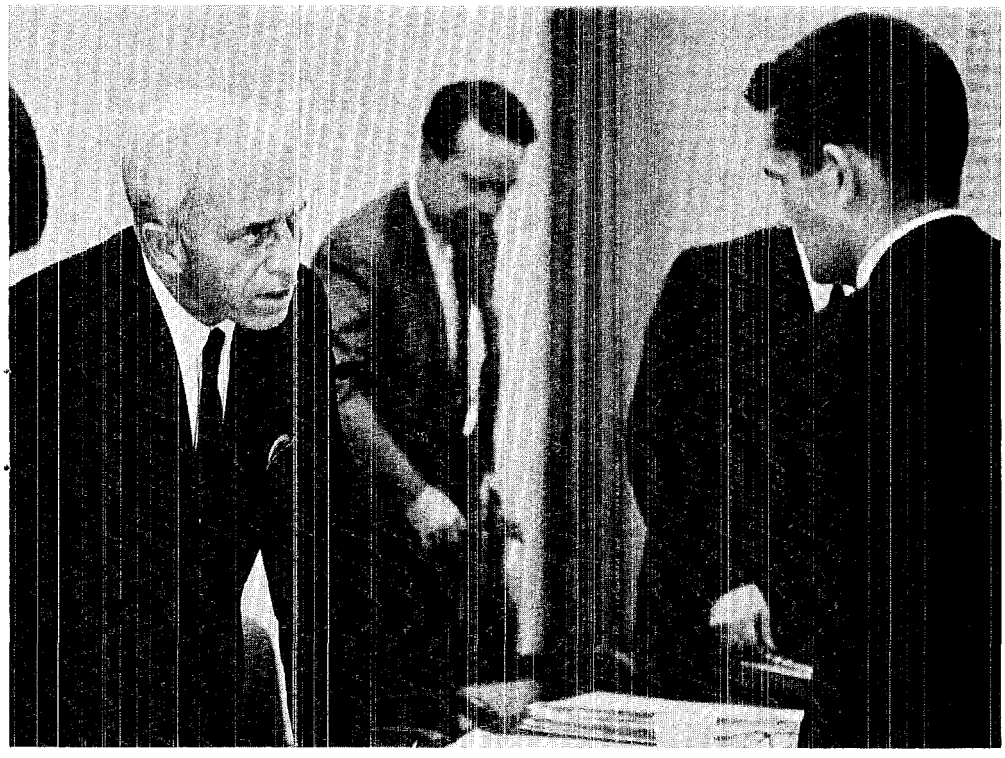
Edwin W. Stockly, Los Alamos attorney, speaks to the panel of AEC officials and representatives of the Joint Congressional Committee on Atomic Energy which held a fact finding session here on objections to commercial property appraisal, removal of the Denver Steel housing units, and controversial aspects of the sale of apartments. Panel members are, from left, Leonard Trosten, counsel for the Joint AEC Congressional Committee; L. P. Gise, AEC Albuquerque Operations Office; Robert Hollingsworth, AEC general manager; Wilfred E. Johnson, AEC commissioner; Herman Roser, Los Alamos AEC deputy manager; Glenn W. Willtrout, AEC division of military application; and Mrs. Joann Allen, administrative assistant to Congressman Tom Morris.

Richard Servas, D-10, back to camera, raises a question in the discussion on mechanics of apartment units disposal. One group of apartment dwellers asked for a continuation of the delay on formal offering of apartments until the occupants are given a wider choice and more information.

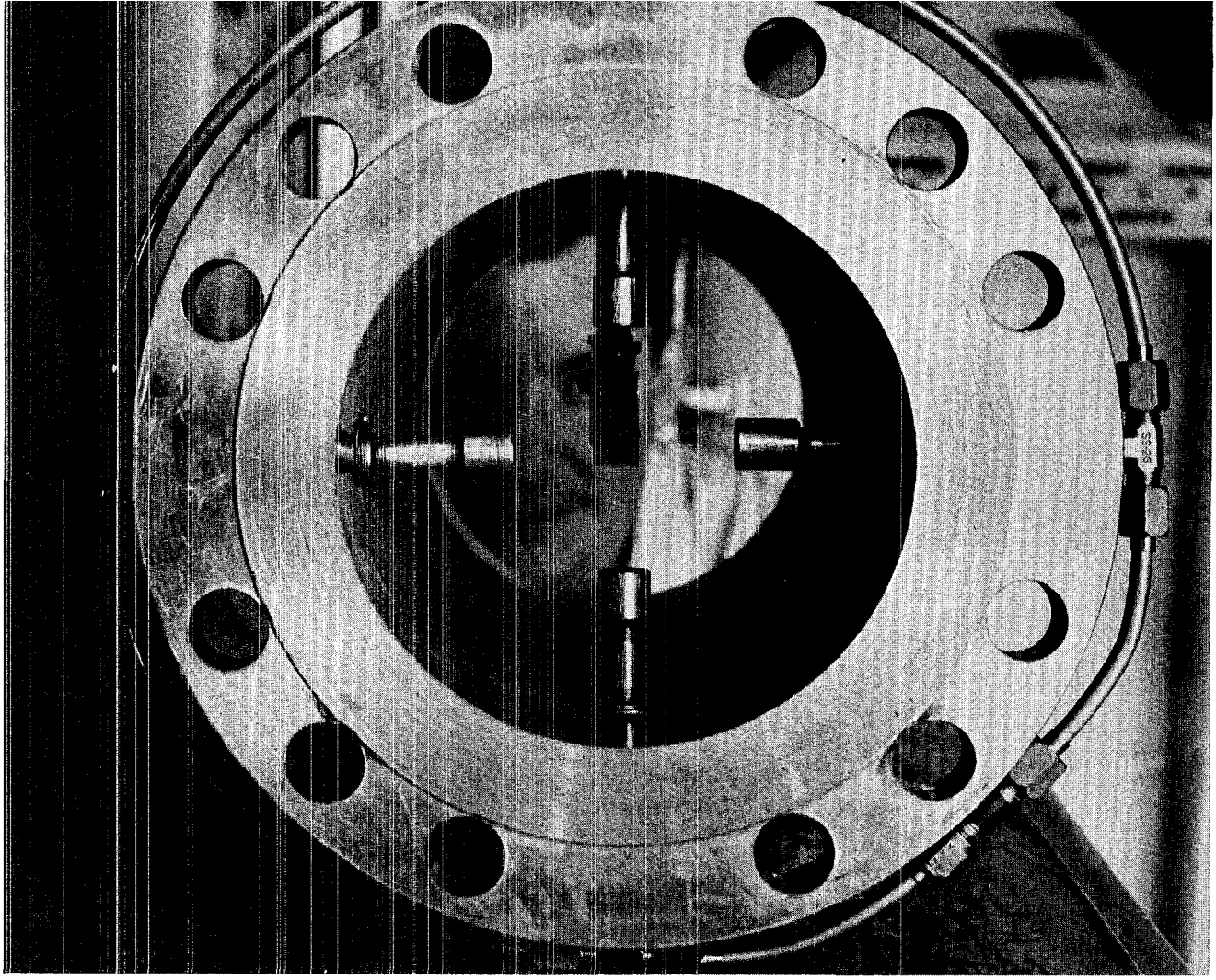
AEC Panel Listens to Transfer Problems

Bob Watt, P-DOR, speaks in favor of reversing the decision to remove Denver Steel homes. Sale of Denver Steels to the occupants was also asked for by County Commissioner Martin Gursky, P-12, and Robert Shreffler, W-DO, who pointed out the seriousness of the housing shortage, particularly from the standpoint of the school system.

Hermann Reuss, K-1, protested against alleged high pressure tactics by Los Alamos Community Homes, Inc., the so called "large co-op."



After the formal session on apartment house disposal, Howard Smith, WSD, right, who presented the statement by Los Alamos Community Homes urging going ahead with the formal offering, continued informal discussion with AEC Commissioner Johnson. Far left is Robert Hollingsworth, AEC general manager.



Karl Meier, J-5, NRDS, peers through a model of the "tunnel" with the high pressure water injection jets.

'Scrubber' May Aid in Future Rover Tests

By Bill Richmond

As any mother of a four-year-old boy knows well, kids can get mighty dirty. But they can be scrubbed clean with soap and water.

But if you have a "dirty" exhaust from a nuclear propulsion reactor—scheduled for use in a rocket engine for interplanetary travel—how can you clean the radioactive particles from the exhaust during earth testing?

"Scrub" them with water, of course.

Plans for the Rover Project call for the Los Alamos Scientific Laboratory to develop a reactor of sufficient power to be incorporated into the rocket engine of the future. In mission applications, this reactor will not be fired up until it leaves the earth's atmosphere, since a chemical engine will lift the giant planet-hopping vehicle from its launch pad on earth.

But the reactor has to be fired up and tested on this planet—at least until a testing station can be developed on an orbiting space platform.

The hazard to people from this testing stems from the fallout of the fission products at large distances from the test site. This fallout can find its way into

biological systems by contamination of pastures, for example, and subsequently can contaminate the milk products of dairy herds grazing in these pastures. The fission products of concern are iodine and its precursors.

At the present level of testing, the amount of fallout detected off-site does not exceed the federally-established limits. However, when the effects from the present reactor testing schedule are extrapolated to the test schedule required for complete engine development, it appears that one might approach or exceed these tolerances.

To investigate the possibility of reducing or eliminating this potential problem, a team of J division personnel, under the direction of Keith Boyer, associate J division leader for Rover testing, began serious studies aimed toward this goal. This team includes Charles Fenstermacher, J-18 group leader, Karl Meier, J-5, and Ernest Bryant, J-11.

First calculations showed that techniques based upon filtration or containment of the reactor exhaust were clearly out of the question because of the quantities of gas and energies involved.

"When we looked at the projected engine test schedule for the 5,000 megawatt reactors planned for the future, compared this to the present testing level and frequency and considered possible fallout or contamination, it was not clear exactly what kind of problems would arise regarding off-site fallout," Fenstermacher said. "But it was felt that some consideration should be given to these problems."

In brief, the problem concerns handling hydrogen flow rates of about 300 pounds per second or 60,000 standard cubic feet per second with an energy content of 5,000 megawatts, contaminated with fission products in concentrations of one part in 10 trillion.

To clean by filters alone would require acres of filter area, so other ways to remove the fission products in the hydrogen were considered and discussed.

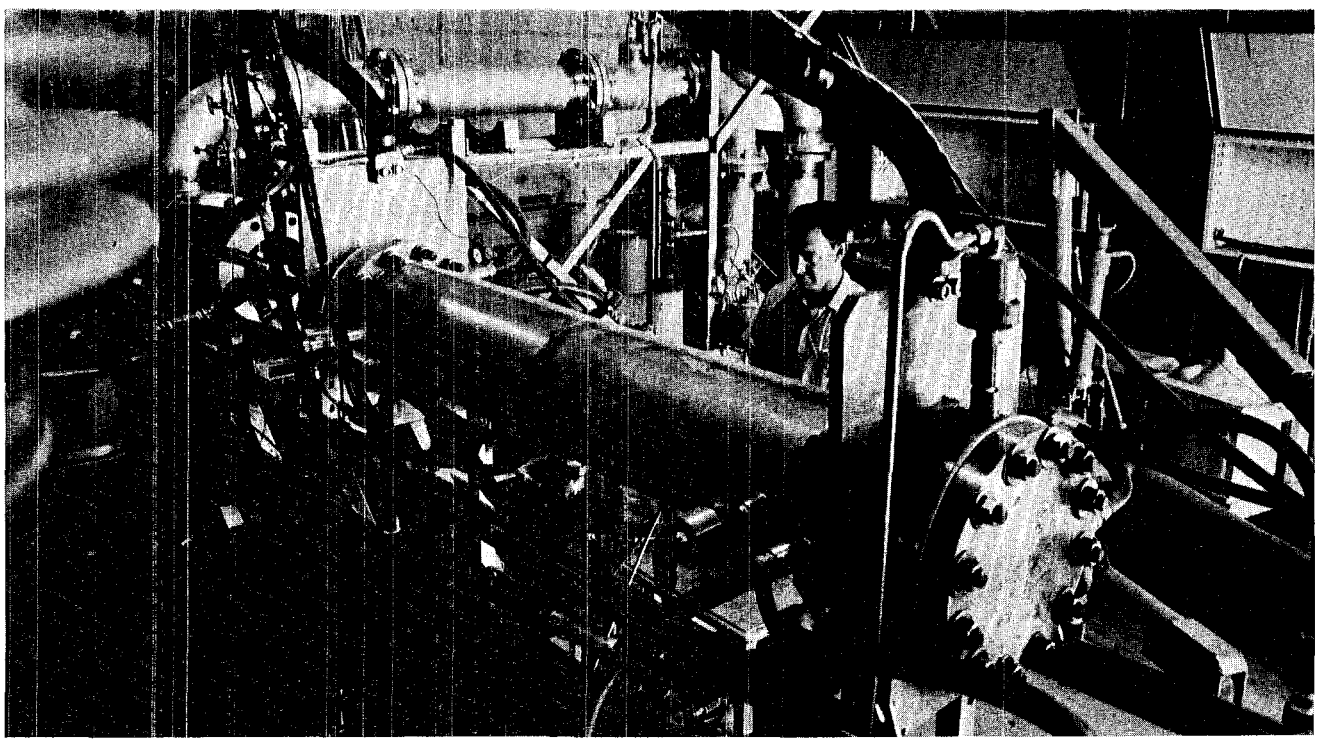
Boyer suggested a feasible technique based upon methods of removing toxic compounds from the exhausts of chemical rockets. This method involves injecting water into the exhaust stream to literally scrub out the contaminants. This technique has been successfully used in scrubbing hydrogen-fluorine exhausts.

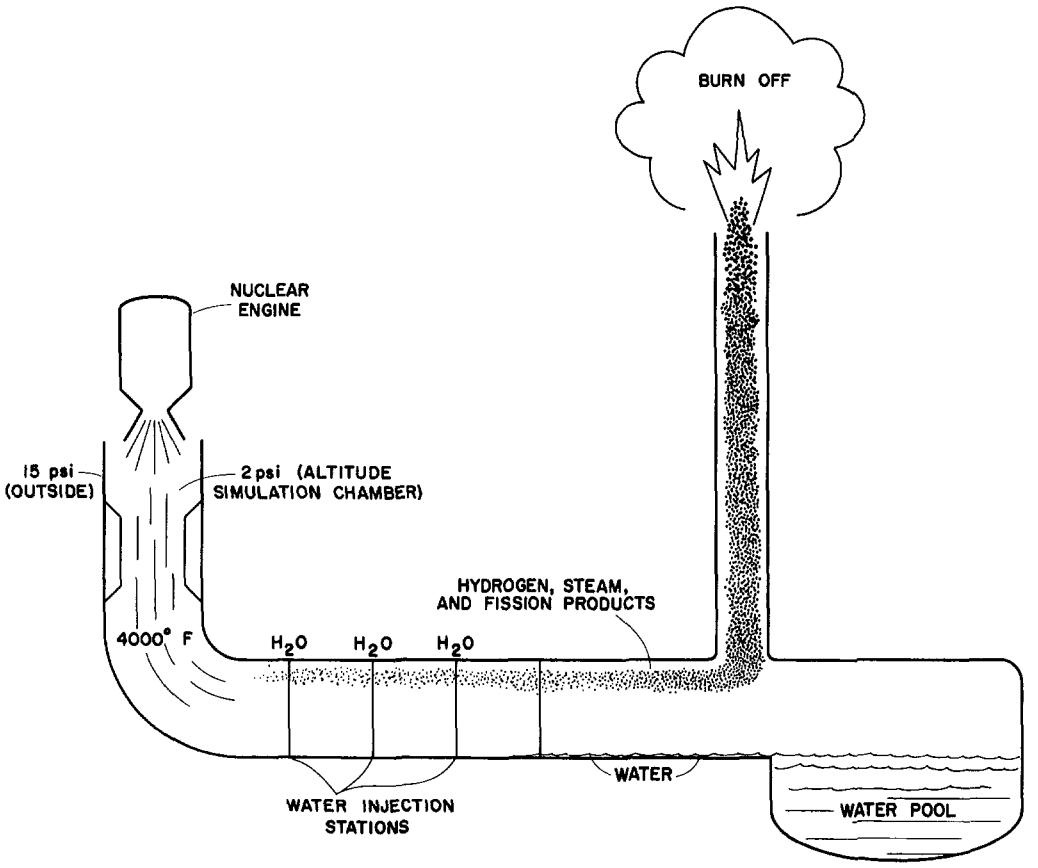
"Whether the fission products would be removed by such a water spray was not clear," Fenstermacher said, "and it was decided to perform an experiment to answer this question."

A working model of LASL's Scrubber was built and tested at the Nevada Test Site with excellent results. The experiments were carried out at Test

Continued on next page

A model of the Scrubber was built and tested at Test Cell "C" at NRDS. Karl Meier, J-5, conducted the experiments. The cylinder in front of Meier is the "furnace" which filled in for the reactor in the tests.





The Scrubber will function basically as in the diagram. The exhaust gases from the nuclear engine will pass through an altitude simulation chamber, where the pressure is only 2 psi, and through a series of water injection stations. These gases will be at a temperature of 4,000°F when they enter the tunnel. The water injection stations will "scrub" up to 90 per cent of the unwanted fission products. These products will be carried to the water pool, while the remaining gas, with only about 10 per cent of the fission products, will be burned off in a stack.

'Scrubber'

Continued from preceding page

Cell "C" by Karl Meier while Ernie Bryant made the radiochemistry measurements to determine the scrubbing effects of the water.

The tests indicated that about 90 per cent of the radioactive particles were scrubbed.

A full-scale Scrubber, when and if it is built, will operate basically in the following manner:

1—The nuclear engine will be fired vertically downward into an exhaust duct.

2—The exhaust from the engine will pass through an Altitude Simulation Chamber where the pressure is reduced to two psi as compared to the normal pressure of 15 psi on the outside of the chamber.

3—Water will be injected into the exhaust which is initially at a temperature of about 4,000°F, and its temperature will be thus reduced to about 180°F. Approximately five million gallons of water would be injected in a half-hour test. The steam, hydrogen and fission products mix as a gas and are condensed by additional water of a lower temperature. This process will be carried out inside a "tunnel" which will be about 25 feet in diameter and about a hundred feet long. It will have "bends" or "curves" where the water will be forced by centrifugal force to collect and run off on the bottom of the tunnel.

4—The remaining gas, which has been cleaned of up to 90 per cent of the unwanted fission products, is carried to a stack where it is burned off. The condensed water, with the radioactive particles, flows to a water pool where it is trapped.

"Tests have determined that the fission products of interest do remain with the water," Fenstermacher said. "There is no problem that the collecting pool would be dangerous inasmuch as the low concentration would not produce appreciable radiation fields at any distance from it."

However, it would not make a very satisfactory swimming hole.

Ed Ferdinand, SD-2, peers through opening in corona camera before lens was mounted in place. Film magazine will be attached at bottom to photograph sun's corona through polarization filters.

Sun Seekers On Target With Hydraulics

How do you photograph a moving "target" 93 million miles away through the window of a moving airplane--without letting the airplane's normal vibrations and bouncing cause your pictures to blur?

This is the problem posed to group N-4 by a team of LASL scientists planning to fly through the path of the solar eclipse this month to study the sun's corona.

The problem, somewhat akin to looking at a distant object through binoculars from a moving car, is made all the more complex by the fact that the instruments must be able to correct themselves very quickly, since total viewing time of the eclipse is only three minutes and four seconds.

But N-4, with its experience in developing and refining reactor control systems for the Rover program, seemed the logical place to turn.

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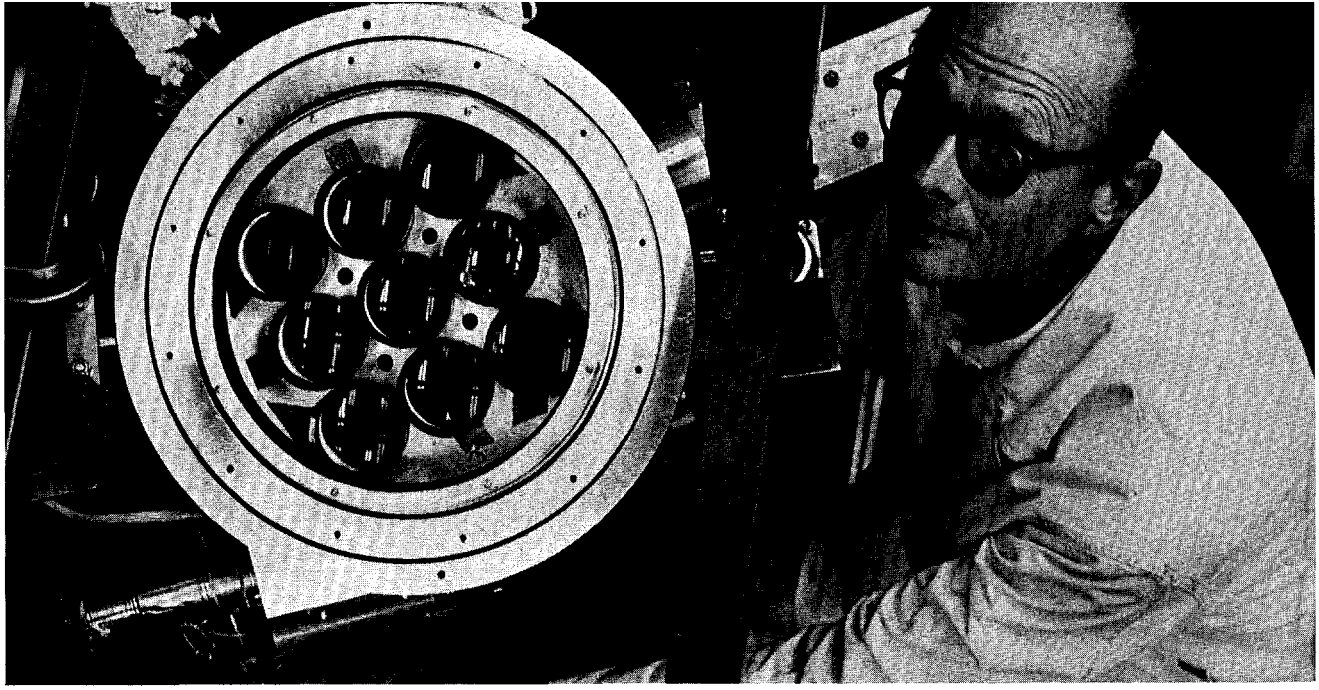


Paul Rudnick, J-16, aims emission line camera at mirror on ceiling to test tracking system. Eight of the lenses will photograph emission lines, while the ninth is connected to the tracker to keep camera in correct position.

Sun Seekers...

Continued from preceding page

N-4 personnel have designed and built a sophisticated tracking system which in preliminary tests kept the eclipse instruments accurate to a fraction of a minute of arc.

The eclipse equipment includes telescopes, cameras and a wide variety of instruments designed to measure various aspects of the sun's corona. Mounted in LASL's NC-135 test readiness jet aircraft, the equipment will be aimed at the November 12 solar eclipse from a point 445 miles east of Buenos Aires, Argentina.

Largest of the instruments, dubbed the "Rube Goldberg," is a 10-inch telescope more than seven feet long connected to a photographic interferometer, a photoelectric interferometer and a photometer. The Rube Goldberg will measure the shape, intensity and polarization of several corona emission lines.

A telescope with a 36-inch focal length will be used to photograph the corona through three polarization filters out to a distance of about five solar radii from the sun's surface in order to determine electron distribution in the corona.

Another camera—with eight separate 13-inch lenses—will simultaneously photograph several emission lines and their nearby continum to give scientists a better picture of the structure of corona activity.

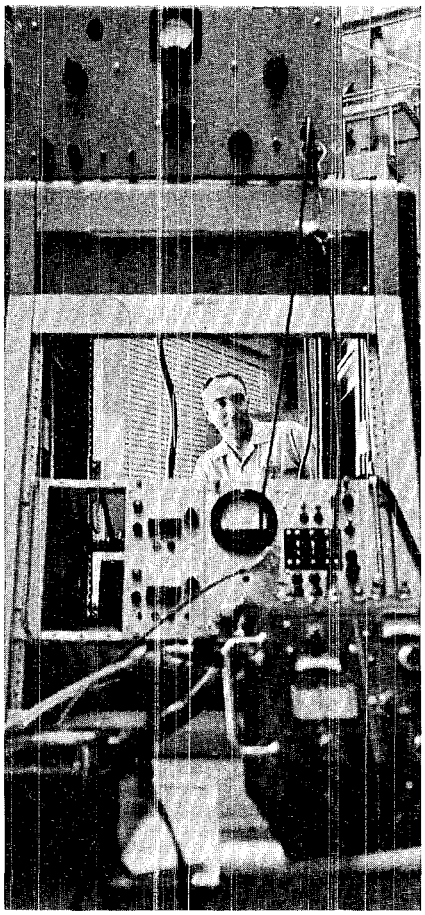
By studying the eclipse from a moving airplane, scientists can not only lengthen the viewing time and select the optimum position from which to view it, but they can fly high enough to avoid most cloud cover, a distinct advantage over earth-bound eclipse studies.

But an airborne laboratory also presents some practical problems. The equipment is large, heavy and cumbersome and must be strongly braced. And since an airplane has windows of a limited size and is, after all, moving, vibrating and being buffeted about by the wind, the view scientists get of the eclipse is very rigidly controlled by the speed and accuracy of the tracking equipment used to keep the instruments trained on the precise locations selected for study.

Each of the cameras and telescopes is "aimed" at the sun using the N-4-developed high pressure hydraulic system in three separate methods: manually, by gyroscopes and by phototracking. Joe Perry, N-4 group leader, explained that the manual system is used to roughly point the instruments toward the sun. The gyro system can then correct for most of the aircraft movement after the coronal image has been acquired manually.

But despite the acceptable accuracy of a gyro system for most purposes, the eclipse team needs a much more precise method of keeping their instruments in exactly the right place. Some of the photographic exposures will be as long as 30 seconds, and the image would be badly blurred if it moved while the film was being exposed.

The problem is not merely one of getting the instruments in the right position: the big challenge is to keep the image in exactly the right place at all times, despite aircraft motion. So, after the gyro system



Joe Perry, N-4 group leader, checks control system for eclipse experiments.

has done its best, the photo tracking system goes to work.

Eight "light pipes"—bundles of glass fibers enclosed in flexible 1/8-inch tubes—are attached to the base of each telescope where the image of the eclipse is formed. These light pipes have the unique ability to transmit light regardless of how they are bent or looped.

The other end of the light pipes is attached to photo-multiplier tubes which produce current based on the amount of light they receive through the light pipes. The signal from the photo-multipliers goes to the valves in the hydraulic system.

If the light pipes are not "reading" the proper amount of light at the base of the telescope, it means the image is not in the proper place for the experiment, and the hydraulic cylinders then move the telescope back into position. These corrections are made automatically in a fraction of a second and will occur continually throughout the 184 seconds of the total eclipse.

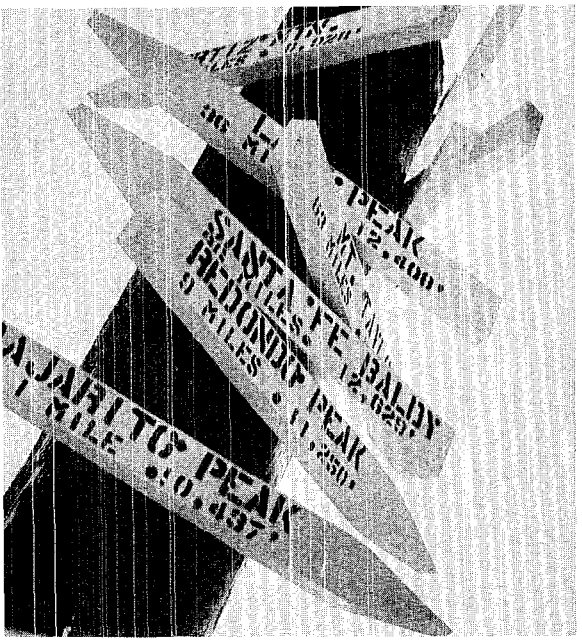
To test the tracking equipment, N-4 personnel had to devise a "fake eclipse." They directed a halo-shaped beam of light, graduated in intensity to resemble the corona, onto a mirror mounted on the ceiling 25 feet above the telescopes. The reflection on the mirror served as the "eclipse," and the light was moved in fast, erratic motions to simulate airplane motion. These motions were "read" by the tracking system which successfully kept the telescopes pointed at the right spot.

On the last eclipse expedition, in May, 1965, tracking was done through a series of mirrors which moved the image while the telescopes remained stationary. This time, however, the tracking system will move the telescopes themselves. According to one eclipse team member, the new system should be a factor of 10 improvement over the old method.

Ralph Partridge, J-DO, developed the photo pick-up system using the light pipes, while Bobby Strait, N-4, handled the electronics in the photo-trackers. The gyro tracking system was refined by Geoffrey Watts, N-4, and Ray Gore, also N-4, worked on servo-mechanism theory and problems of shock mounting to keep airplane vibrations to a minimum on the eclipse equipment. The mechanics of the hydraulic system were the responsibility of Robert Lang, N-4. Ed Ferdinand, SD-2, worked on the gimbal mounts which allow the telescopes to move in response to the hydraulic system.

The eclipse equipment was installed in the plane in mid-October. After many last-minute adjustments, practice flights, calculations and readjustments, the LASL eclipse team took off in their flying laboratory November 3, bound for Buenos Aires, headquarters for the eclipse mission, and a three-minute rendezvous with the sun.

Birds-eye view of some of LASL eclipse equipment and test gear in N-4 shop shows corona camera, lower right, with hydraulic cylinders used to keep it aimed at exactly the right spot on the eclipse halo.



Ski Mountain Gets Facelifting

Story and Photos by Bill Regan

THINK SNOW!

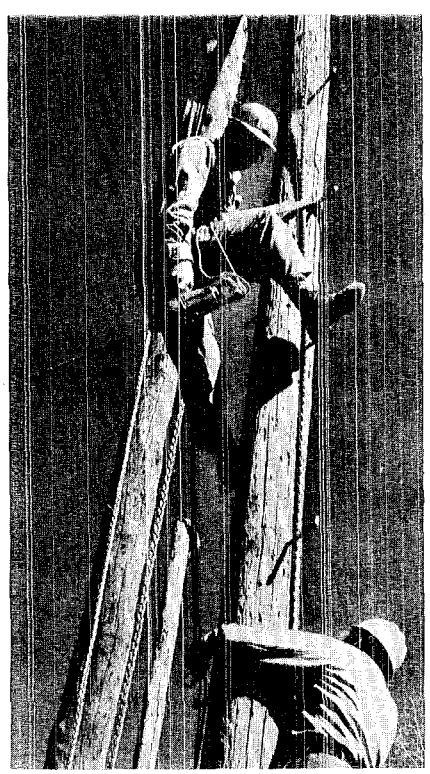
This is the cry of Los Alamos skiers, who after a busy off season of slope improvement and renovation of Pajarito mountain ski facilities, are ready to try the results of their labors.

Two new slopes, a new beginners' hill, a widened racing area, improved jeep road crossings on Aspen Slope, an electrified No. 1 rope tow and improved lodge facilities are ready for an expected 10 per cent increase in the skiing population. All this has been accomplished this year by family work parties who have served as lumberjacks, bushwhackers, electricians, carpenters, painters and general handymen and women. Los Alamos' home-grown ski area is probably unique for its size in being strictly a skier-developed project.

Last year 1292 people signed up for season tickets. An additional 4312 skiers purchased daily tickets to use the local area. Of this number, quite a large group from Santa Fe and Albuquerque regularly used the Pajarito mountain slopes. If the present growth continues, plans are being made to install a second T-bar lift next year. A recent ski club membership poll voted 476 to 4 in favor of purchasing the land under the terms of the community transfer act.

Final grooming of the area will continue until halted by the hoped for early and heavy snow, according to Glen Edwards, CMF-5, ski club president.

New rope tow poles were installed this year as part of the improvement program at the Pajarito mountain ski area. Bob Thorn, with king size drill, and Milton Gillespie, both T-2, devoted many weekends to the project.

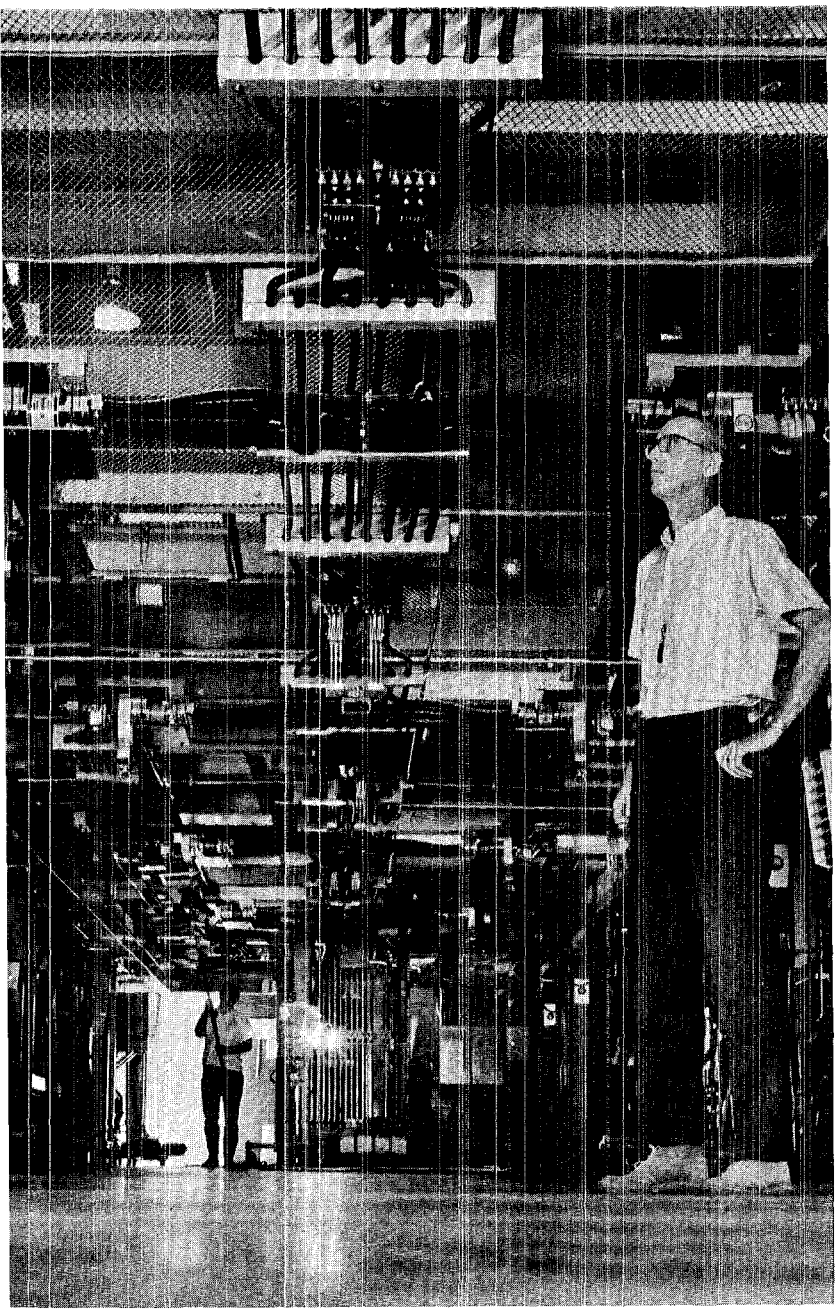


Ski Club President Edwards, CMF-5, left, and Darrell Davidson, J-8, take a break from chain sawing while a helpful visitor from Denver, Ronald Steinbach, loads the truck. Steinbach was pressed into service while visiting his sister, Mrs. Darrell Davidson.

Ski club lumberjacks cleared two new slopes during the summer-fall slope improvement season. This path, suitable for an intermediate skier, will probably be used eventually for a second T-bar lift.

Malcom Wallis, P-9, and John Orndoff, N-2, groom the slopes.

Weekend work parties at Pajarito mountain ski area are frequently family affairs as typified by the crew working on La Casa del Gato under the supervision of Jim Johnson, right, GMX-7. Steve and Larry Bottoms and father, Paul, P-7, standing at cement mixer, keep the blocks and mortar moving for Bob Henson, P-17, reaching for his trowel after a lunch break. The structure will house the ski club bulldozer.



William Prince, foreground, and Richard A. Glass, both N-7, check rheostats and power transmission system inside battery building. Nearly 1000 submarine batteries supply some 10 million watts of power for tests on Phoebus fuel elements.

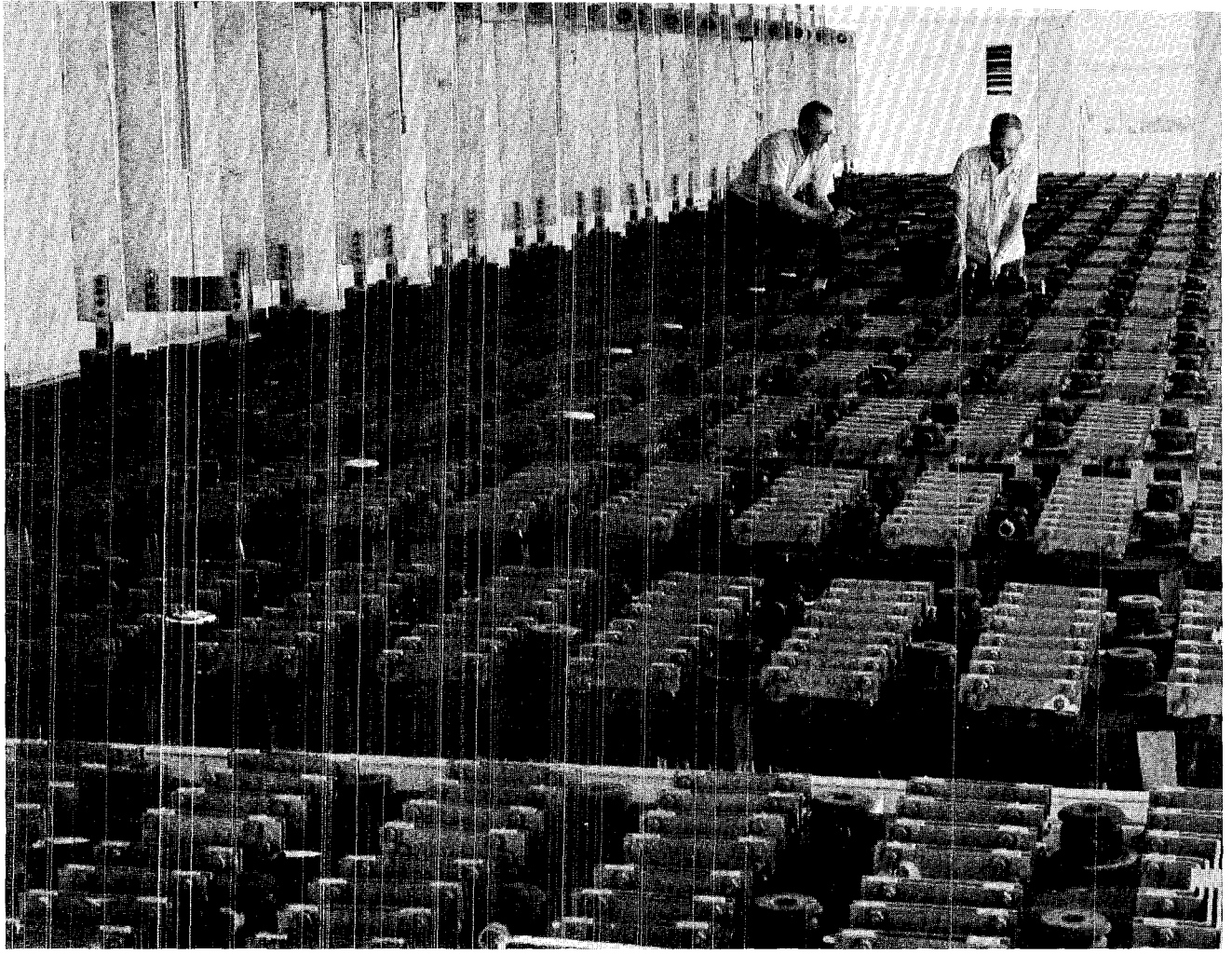
Submarine Batteries Power Fuel Element Experiments

A housewife can be reasonably sure the frying pan won't break or melt or vaporize when she cooks an egg, because she can be fairly safe in assuming the stove won't produce much more heat than her pots and pans can handle.

But nuclear rocket scientists have a somewhat different problem. They can use their "stove"—the nuclear reactor—only at temperatures their "pots and pans"—the reactor fuel elements—can take. And, because of the limits imposed by the materials used in it, the ultimate reactor temperature has not really been established.

Scientists and technicians working on the Rover nuclear propulsion program are continually conducting experiments to determine how much power the fuel elements can withstand and to develop ways to improve them—and thus permit the reactor to run at higher power.

In several such LASL experiments, four submarines' worth of huge storage batteries, salvaged by the Navy, provide the power needed to investigate some of the limitations of reactor fuel elements. Nearly



Prince and Glass check voltage on batteries on one side of the battery building. Opposite side of building houses a similar number of batteries. Aluminum transmission bussing behind Prince carries power into battery building.

1000 of the large batteries—each about five feet high and two feet square and each weighing nearly a ton—provide some 10 million watts of power for several N division scientists to use in their tests.

At present, fuel elements in the Phoebus reactors are made of graphite, which, unlike other materials, becomes stronger as it is heated. However, graphite, too, has its limitations, and it is these limitations the N division scientists are trying to determine with the help of the submarine batteries.

One of the problems in the use of graphite fuel elements in propulsion-type reactors is that the hydrogen fuel causes a certain amount of corrosion in the graphite. This corrosion has been reduced by coating portions of the fuel element with niobium carbide. However, scientists in group N-1 are continuing their research to decrease the corrosion problem even further.

Three kinds of thermal tests are carried out by N-7 scientists: experiments in fuel element thermal stress; tests on the full-scale reactor cluster; and studies on the properties and behavior of materials at reactor temperatures.

For all four kinds of experiments, a great deal of electric power is needed to achieve the kinds of temperatures reached by a nuclear reactor. The total power available from all the submarine batteries is more than has been needed thus far for any one experiment; however, there is enough power available to conduct more than one test at a time if desired, or to recharge some of the batteries while others are being used.

According to William R. Prince, N-7, the two-volt battery cells are hooked up in series in groups of 24, "forming what we call a 'row' of about 50 volts. These 'rows', in turn, can be hooked up in various series or parallel arrangements capable of producing as much as 150 volts and 64,000 amps or 300 volts and 32,000 amps of electrical power—approximately 10 megawatts—depending on the requirements of the test." The higher voltage is needed if the specimen being tested has a high resistance, Prince explained, while the high amperage is required for the resistance heating of the specimens.

The batteries are located outdoors—though under

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Batteries . . .

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a roof—to allow air circulation to cool the batteries and to dilute the hydrogen the batteries give off. Power is transmitted from the batteries to the test cells by large multiple aluminum buss bars in underground tunnels. Through a control room, the required amount of power is sent to each test cell. There, in another control room, the experimenter can regulate the power according to the requirements of his test. Some of the experiments require a "radiator" type of heating, while others involve feeding electrical current directly through the test material.

In addition to simply having a large amount of electrical power available, the experimenters must have a way to regulate it. After trying several different methods of controlling the current that were not particularly satisfactory, Prince designed the graphite rheostats that have been in use since 1959.

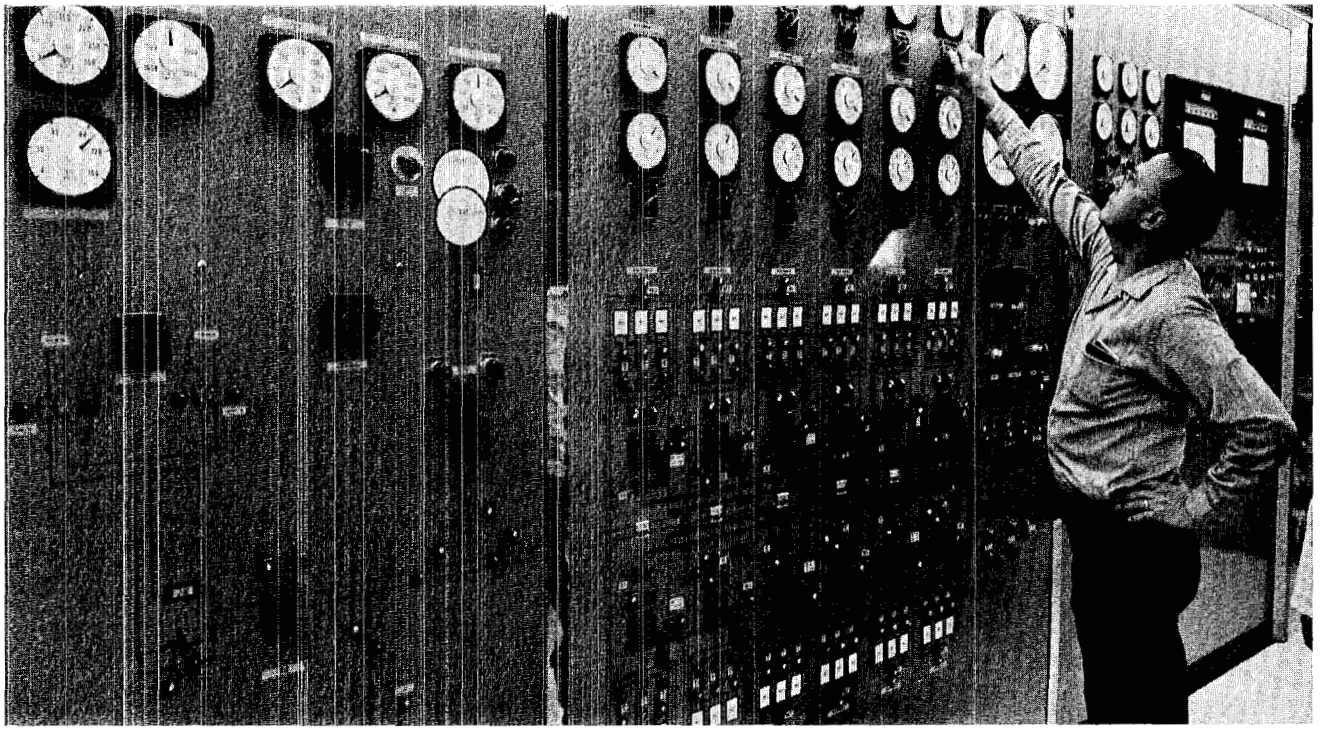
A separate rheostat with a current capacity of 7500 amps controls each grouping of three rows—72 cells. The rheostats provide an infinitely variable flow through the use of movable cross-heads which change the active length of the graphite tubes—that is, the resistance path. The problem of arcing, which can cause serious interruption in the flow of current, is solved in the design by special graphite "fingers" mounted in the movable cross-heads. Power generated in the rheostat is dissipated in water flowing through the tubes.

In addition to providing a "fine tuner" for current flow, the rheostats are remotely controlled and have a lifetime of unattended operation that can be measured in years. Since rheostat is the accepted term for such a current controller, Prince originally dubbed his device a "riostat" because of the Laboratory's proximity to the Rio Grande.

N division first began using submarine batteries about 10 years ago when the Laboratory acquired about 250 of them—the approximate number used in a conventional submarine. Later, more than 700 more were added, and by now all of them have been replaced at least once. The batteries now in use have been at the Laboratory three or four years. Two half-megawatt motor-generator sets charge the batteries in six to 10 hours. Each cell has a 6000 amp-hour life, while the average automobile battery has a life of 100 amp-hours. The Navy salvages the batteries after some 300 to 600 charge cycles—with about a half-life remaining.

So the batteries that served the Navy in good stead a couple hundred feet under the ocean's surface have been moved to the mountains to continue their usefulness several thousand feet above sea level.

Charles R. Saunders, N-7, adjusts dial in main control room, power and gas distribution center for the experiments.



Tour of laboratories took the Hammels many miles through Russia.

Low Temperature Physicists Get Warm Russian Reception

Three Los Alamos Scientific Laboratory staff members recently spent about two weeks in the Soviet Union, where they attended an international conference and toured a number of Russian research laboratories.

E. F. Hammel, CMF-9 group leader, E. R. Grilly and R. H. Sherman, both CMF-9 staff members, presented six papers at the Tenth International Conference on Low Temperature Physics held in Moscow the first week in September. One paper by Hammel and W. E. Keller, also CMF-9, was among the four lectures presented at the plenary sessions of the conference. More than 900 scientists from 26 countries participated in the meetings.

All three LASL men, along with Mrs. Hammel and Mrs. Grilly, found their Russian hosts "warm and friendly and most hospitable." The visitors were taken on extensive tours of Soviet laboratories both during and after the conference.

Speaking of two of the Soviet scientists, Grilly said, "They were very gracious in showing me their apparatus for studying the conduction of ions in solid helium and the thermal conductivity of solid helium and a movie of the solidification process, as well as raw data and unpublished results."

The two Russian scientists gave Grilly a tour of the general facilities at the Institute for Physical Problems of the USSR Academy of Sciences and at Moscow State University. Grilly also visited the Institute for Physical Problems of the Ukranian Academy of Sciences in Kiev.

"The conference provided a unique opportunity for discussions not only with Western scientists, but with physicists from Russia and the Soviet-bloc countries," Grilly said. "Some of these discussions led to confirmation of our own results, and some pointed to the need for an extension of our range."

After the conference, Hammel was one of three guests to accompany members of the Commission on Low Temperature Physics of the International Union of Pure and Applied Physics on an extensive tour of low-temperature physics laboratories in Kharkov, Tbilisi and Leningrad.

"The hospitality accorded visitors in the Soviet Union is frequently so overwhelming as to become legendary, and the welcome accorded our party wherever we went was no exception," Hammel said. The nine-member group, which included scientists from Finland, Japan, Czechoslovakia, West Germany and Holland, as well as Russia and the United States, was warmly received by the scientist hosts at each laboratory.

At the Physics Technical Institute for Low Temperatures in Kharkov, where about 500 scientists are engaged in fundamental low temperature physics research, the group visited some 35 individual laboratories. "It was an impressive visit," Hammel said, "and there was much more to see and talk about than time permitted."

Much effort on the part of the Soviet hosts had apparently gone into the preparations for this visit, Hammel said. "At each institute we were first given a brief summary of the history and general aims of the laboratory by the director, and then we had an opportunity to ask questions.

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Mr. and Mrs. Ed Hammel pause for a moment on a street in Lenigrad.

Russian Trip . . .

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"Following that we were taken on tours of the laboratories themselves. The physicists doing the work were waiting in each laboratory to exhibit their apparatus and describe their results. Graphs, charts and summaries of the relevant equations were carefully displayed to facilitate the discussion of the research. It was, in every instance, very much a two-way street in the exchange of information."

Hammel added, "Our own scientific work will certainly benefit both from the intimate awareness of the Soviet work and the introduction to the Soviet physicists the visit afforded. We also believe the Russians' opportunity to discuss their work with non-Soviet scientists provided the workers at those institutes with new perspective and insight."

In addition to tours of the laboratories, the Russian hosts arranged for visits to some of the well known places of interest. On the Hammels' itinerary were visits to a museum and the ancient monasteries in Tbilisi, the Hermitage, the Winter Palace, and Petrodvorets, the summer palace of Peter the Great on the Gulf of Finland, in Leningrad.

"The banquets given our party in Kharkov, Tbilisi and Leningrad served to introduce us more than adequately to Ukranian, Georgian and Russian hospitality," said Hammel. "Caviar, sturgeon, vodka, the wonderful Georgian wines, Russian champagne and brandies, shashlik, fresh fruits and exciting desserts, entertainment and toast upon toast to everyone and everything all made the entire experience unforgettable."

In Tbilisi the group visited the Institute for Physics of the Georgian Academy of Sciences where some 200 experimental physicists and about 40 theoreticians work on liquid helium, superconductivity, low temperature calorimetry of biological objects, low temperature radiation effects, physics of solids, radiation chemistry and reactor experiments. The group also visited the cryogenic laboratory of the Tbilisi State University, as well as a class in elementary physics.

In Leningrad Hammel's group visited the Ioffe Physical-Technical Institute where they were shown work in progress on superconductivity, hyperfine interaction in ferromagnetics, semiconductors at low temperatures and magneto-optical phenomena, and also the Institute for Semiconductors where magneto-ordered systems, electrical

Mrs. E. R. Grilly, center, chats with Mrs. C. J. Gorter, left, wife of a Dutch physicist, and Mrs. P. L. Kapitza, chairman of the ladies committee, at the Moscow conference.

Ed Grilly (above) was one of three CMF-9 staff members to attend LT-10—the Tenth International Conference on Low Temperature Physics—in Moscow.

Mr. and Mrs. Ed Hammel, foreground (below), visit summer palace of Peter the Great in Leningrad.

and thermomagnetic properties of semiconductors are being investigated.

Said Hammel, "Large conferences such as these provide a unique opportunity to find out what's going on where, and who is doing what. The most immediately useful result is the chance to discuss informally and in detail those aspects of your own research which overlaps or complements those someone else is doing in another part of the world and to talk with theorists from other laboratories about new ideas relating to your own work and the related work of others.

"The long range values of attending such conferences are the personal contacts made and the better mutual understanding of both the scientific and political matters which these visits afford."

Criticality Safety Meeting Planned For December

A symposium on "Nuclear Criticality Safety"—with the Los Alamos Scientific Laboratory as one of the sponsors — is scheduled for Los Vegas, Nev., Dec. 13-15.

This topical meeting of the American Nuclear Society will be the first national symposium on this subject. Participants will discuss both the technical and political/regulatory aspects of criticality control.

Hugh Paxton, N-2 group leader, will be general chairman of the meeting. Other LASL personnel on the general committee include Dave Smith, N-2, technical associate general chairman, and Gerald Armstrong, J-9, NRDS, tour chairman.

Delegates from several foreign countries are also expected to attend the meeting.

LASL Receives Merit Award

The Los Alamos Scientific Laboratory has been named "Employer of the Year" in New Mexico by the Governor's Committee on Employment of the Handicapped.

The Laboratory received the Employer Merit Award — from President Johnson's Committee on Employment of the Handicapped— at a ceremony last month.

The award was accepted on behalf of LASL by Dr. Thomas L. Shipman, H division leader. It cites the Laboratory for "exceptional accomplishments in extending more opportunities through selective placement in useful employment of handicapped persons and assisting in every feasible way to acquaint the public and employers with these principles."

Sir William Penney, left, consultant on the British Mission staff for Project Y at Los Alamos during World War II, reminisced with old friend Carson Mark, right, T Division leader, after speaking at a mid-October meeting in the Laboratory auditorium on "Some Aspects of the United Kingdom Nuclear Power Program". Sir William is now chairman of the United Kingdom Atomic Energy Authority. Center is Dr. Ronald George Sowden, liaison officer for the UKAEA to the AEC.

Three Laboratory Employees Retire During October

Three Los Alamos Scientific Laboratory employees, each with long records of service in their respective groups, retired in October.

Dorothy Wheitsel, EDP operator in H-1 photodosimetry records section, retired Oct. 28. She started work with the laboratory in April, 1952, and has been with H-1 continually. She and her husband, H. Leroy, an employee of SD-5, plan to do some traveling in their trailer after he retires early next year.

Felix Herrera, truck driver in GMX-3, retired Oct. 31. He hired on with LASL in August, 1948, in what was then X Division, the forerunner of GMX. His post-retirement plans include doing work on his farm in Hernandez, near Espanola.

Frank R. Slovack, a native of Texas, plans to make his home there now that he's retired. An industrial toolmaker wth SD-1, Slovack started LASL employment in January, 1950, and he has been with that group ever since. He and his wife, Ora, have purchased a place near Waco, where he says he'll "just relax . . . . for the first year, anyway."

The Technical Side

American Physical Society Meeting, Mexico City, Mexico, August 30:

"Recent work on Level Structures of Odd A Deformed Nuclei" by M. E. Bunker, P-2. (Invited Paper)

AEC Computer Information Meeting, New York University, New York, N.Y., Sept. 29:

"Computer Studies in Fluid Mechanics at LASL" by R. A. Gentry, T-3. (Invited talk).

American Industrial Hygiene Association, Rocky Mountain Section, Denver, Colo., Sept. 30:

"Industrial Hygiene Problems Associated with Nevada Test Operations" by J. D. DeField and E. C. Hyatt, both H-5. (Invited paper).

Colloquium, Department of Physics and Astronomy, University of New Mexico, Albuquerque, N.M., Sept. 30:

"Characteristics of the Plasma Sheet in the Earth's Magnetotail" by S. J. Bame, J. R. Asbridge, H. E. Felthauser, E. W. Hones, Jr., and I. B. Strong, all P-4 (Invited paper).

One Hundredth Semi-Annual Meeting of the Society of Motion Picture and Television Engineers, Los Angeles, Calif., Oct. 3-7:

"Frame Camera Development for High Speed" by B. B. Brixner, GMX-9.

AIME Nuclear Metallurgy Symposium, Delavan, Wisconsin, Oct. 3-5:

"Liquid Plutonium Fuels" by L. D. Kirkbride, K-2. (Invited paper).

Twenty-Second Meeting of the Anti-Missile Research Advisory Council, Monterey, Calif., Oct. 3-5:

"Proposal for ICBM Defense" by J. E. Whitener, Rand Corporation, and J. A. Northrop, J-DO (Invited Paper) CLASSIFIED MEETING.

Symposium on Engineering Problems of Controlled Thermonuclear Research, Gatlinburg, Tenn., Oct. 3-6:

"The Engineering Aspects of the LASL Scyllac Proposal" by E. L. Kemp, P-16.

"Evaluation of Coaxial Cable Performance at High Voltages: An Interim Report" by G. P. Boicourt, P-16.

"Comparative Evaluation of Size A Metal Anode Ignitrons" by G. P. Boicourt, M. J. Hollen, and E. L. Kemp, all P-16.

LINAC Conference, Los Alamos Scientific Laboratory, Los Alamos, N.M., October 3-7:

"Tuning and Field Measurement Techniques in a Resonantly Coupled Accelerator Tank" by L. N. Engel and E. A. Knapp, both MP-3.

"Accelerating Structure Research at Los Alamos" by E. A. Knapp, J. M. Potter, W. J. Shaler, all MP-3, P. W. Allison, MP-4, L. N. Engel, MP-3, and C. R. Emigh, MP-4.

"Transverse Modes in a Resonantly Coupled Accelerator" by J. M. Potter, MP-3.

"Mechanical Design of Drift Tubes and Quadrupole Magnets for the Alvarez Linac" by E. D. Bush, Jr., MP-3.

"Design, Development and Fabrication of Multicavity 805 MHz Accelerator Tanks" by H. G. Worstell, MP-3.

"Circuit Analog Techniques for Analysis of Resonantly-Coupled Linear Accelerator Structures" by G. R. Swain, MP-3.

"Operating Characteristics of a Full Power Cloverleaf Accelerator Tank" by D. R. Copenhagen, E. A. Knapp and J. M. Potter, all MP-3.

"Modulator Development at LASL" by R. W. Freyman and R. P. Severns, both MP-2.

"Designing Resonant Cavities with the LALA Computer Program" by H. C. Hoyt, T-5.

"Fast RF Control Work at LASL" by R. A. Jameson, W. J. Hoffert, both MP-2, and N. A. Lindsay, P-

First Materials Research Symposium Gaithersburg, Md., Oct. 3-7:

"Interference Reduction and Sensitivity Improvement in Activation Analysis" by D. M. Holm and W. M. Sanders, both K-1.

Liquid Metal Fast Breeder Reactor Program Office Seminar on Calculational Methods for Fast Reactor Safety Analysis, Argonne National Laboratory, Lemont, Ill., Oct. 4.

"Calculational Methods for Fast Reactor Safety Analysis in Development at LASL" by C. A. Anderson, Jr., K-3. (Invited paper).

Rio Grande Chapter of the Association for Computing Machinery, Los Alamos Scientific Laboratory, Los Alamos, N.M., Oct. 6-7:

"Computation of the Eigenvectors or Arbitrary Matrices by Inverse Iteration" by B. L. Buzbee, T-1.

"Some Numerical Experiments with Linear Least Squares Procedures" by T. L. Jordan, T-1.

Science Seminar, Augustana College, Rock Island, Ill., Oct. 7.

"Life Cycle of Mammalian Cells" by E. C. Anderson, H-4. (Invited paper).

High School Science Conference, Augustana College, Rock Island, Ill., Oct. 8:

"The Composition of the Lunar Surface" by E. C. Anderson, H-4. (Invited paper).

International Conference on Fast Critical Experiments and Their Analysis, Argonne National Laboratory, Lemont, Ill., Oct. 10-13:

'Comparison of Multigroup Cross Section Sets Used in Reactor Calculations" by M. E. Battat and R. J. LaBauve, both K-1.

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the technical side . . .

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First European Conference on Controlled Fusion and Plasma Physics, Munich, Germany, Oct. 10-13:

"Review of Theta-Pinch Experiments" by W. E. Quinn, P-15. (Invited paper).

IAEA Symposium on the Standardization of Radionuclides, Vienna, Austria, Oct. 10-14:

"Improvements in the Precise Measurement of Gamma Activity" by G. M. Matlack, C. F. Metz, and J. Bubernak, all CMB-1. (Invited paper).

Address to Huntsville Section, American Nuclear Society Meeting, Huntsville, Alabama, Oct. 11:

"Problems of Nuclear Reactor Propulsion Development" by R. E. Schreiber, DIR-OFF.

Third Albuquerque Operations and Albuquerque Operations Contractor Health Protection Conference, Los Alamos, N.M., Oct. 12-13:

"Health Physics Aspects of a One-Point Incident" by D. D. Meyer, H-1.

International Conference on Heavy Ion Physics, Dubna, USSR, Oct. 13-19:

"Multiple Neutron Capture Synthesis of Heavy Elements; Some Observations on the Stability of Mass 259" by G. A. Cowan, J-11. (Invited paper).

National Academy of Sciences Meeting, Duke University, Durham, N.C., Oct. 17-19:

"A New Staining Technique for Ultrastructure Research" by J. H. Manley, DIR-OFF.

Twelfth Refractory Composites Working Group Meeting, Denver, Colo., Oct. 17-19:

"Properties of Hot Pressed Metal Carbide-Carbon Composites" by L. L. Lyon, Jr., N-1. (Invited paper).

Seminar, Arizona State University, Tempe, Ariz., Oct. 17:

"Exchange-Charge Model Calculation of the Born-Mayer Repulsive Potential in Ionic Gases and Crystals" by D. W. Hafemeister, P-2, and J. D. Zahrt, Arizona State University.

IAEA Conference on Nuclear Data, Microscopic Cross Sections and Other Data Basic for Reactors, Paris, France, Oct. 17-21:

"New Time-of-Flight Measurements Made With an Intense Source" by A. Hemmendinger, W-8. (Invited paper).

"Measurement of Average Cross-Section Ratios in Fundamental Fast-Neutron Spectra" by J. A. Grundl, N-2.

"Pulsed Fast Neutron Research at the Los Alamos Van de Graaff Accelerator" by Henri Conde, P-3; D. M. Drake, J. C. Hopkins, P. W. Keaton, Jr., J. D. Seagrave, all P-DOR; R. K. Smith, P-9; W. E. Stein, P-2; and Allan Sattler, Sandia Corporation.

Information Meeting, Health Physics Division, Oak Ridge National Laboratory, Oak Ridge, Tenn., Oct. 19:

"The Plutonium Contamination Incident in Spain" by W. H. Langham, H-4. (Invited talk).

Sixth Conference on Thermal Conductivity, Wright-Patterson Air Force Base, Ohio, Oct. 19-21:

"The Thermal Conductivity of ZTA Graphite" by Paul Wagner and L. B. Dauelsberg, both CMF-13.

Thirteenth Nuclear Science Symposium on Instrumentation in Space and Laboratory, Boston, Mass., Oct. 19-21:

"Intensity Modulation Effects in Multiparameter Displays" by W. W. Steger, P-1.

Annual Meeting of the Optical Society of America, San Francisco, Calif., Oct. 19-22:

"Improvement of the Los Alamos Scientific Laboratory Automatic Comparator" by D. W. Steinhaus, CMB-1, Rolf Engleman, Jr., GMX-2, D. G. Harder, T-1, and K. J. Fisher, CMB-1.

"Computer Calculation of Atomic Spectra" by R. D. Cowan, T-DOT.

Nuclear Engineering Seminar, University of Illinois, Urbana, Ill., Oct. 20:

"Problems in the Numerical Solution of the Boltzmann Transport Equation" by K. D. Lathrop, T-1 (Invited paper).

Invited Lecture before International Atomic Energy Agency, Vienna, Austria, Oct. 21:

"The Los Alamos Scientific Laboratory" by C. E. Holley, Jr., CMF-2.

Advanced Research Projects Agency Monthly Lecture Series, Washington, D.C., Oct. 21:

"Explosive Flux Compression, Megagauss Fields and Applications" by C. M. Fowler, GMX-6. (Invited paper).

Atomic Weapons Research Establishment, Aldermaston, Berkshire, England, Oct. 24:

"Neutron Time-of-Flight Experiments at Los Alamos" by J. C. Hopkins, P-DOR. (Invited talk).

Panel of the International Atomic Energy Agency, Vienna, Austria, Oct. 24-28:

"Thermodynamic Properties of Plutonium Oxides" by R. N. R. Mulford, CMF-5, and C. E. Holley, Jr. CMF-2. (Invited paper).

Seminar, University of Arizona, Tucson, Ariz., Oct. 26:

"Nuclear Physics Experiments with 1 BeV Protons at the Cosmotron" by G. J. Igo, P-DOR. (Invited paper).

West Coast Regional Meeting, American Ceramic Society, Nuclear Division Fall Meeting, Portland, Ore., Oct. 26-29:

"Carbide-Graphite Composites" by K. V. Davidson, R. E. Riley, and J. M. Taub, all CMB-6. (Invited paper).

"Preparation and Properties of Plutonium Mononitride and Uranium-Plutonium Mononitride Solid Solutions" by J. A. Leary, R. L. Nance, M. W. Shupe, W. C. Pritchard, J. G. Reavis, and A. E. Ogard, all CMB-11.

AIME (Metals Show) Meeting, Chicago, Ill., Oct. 30-Nov. 3:

"On relating the Flow Stress of Aluminum to Strain, Strain Rate, and Temperature" by J. E. Hockett, CMF-13.

American Nuclear Society Meeting, Pittsburgh, Pa., Oct. 31-Nov. 3:

"Effective Gamma-Ray Spectra for Thermal Neutron Capture and Prompt Fission" by D. J. Dudziak, K-1.

"An Automatic Photographic System for Radioactive Reactor Fuel Elements" by R. W. Kee, J-9, R. E. PerLee, D-8, and D. G. Rose, N-1.

"Radiation Response of Man in the Intermediate Dosage Range" by W. H. Langham, H-4. (Invited paper).

"Present Situation in Neutron Data Indexing, Compilation and Evaluation Activities" by R. F. Taschek, P-DO. (Invited talk).

Information Session, ANS Meeting, Pittsburgh, Pa.

"Effects of Various Approximations in Fast Reactor Burnup Calculations" by J. J. Prabulos, Jr., and W. H. Hannum, both K-1.

Fourteenth Conference on Remote Systems Technology, ANS, Pittsburgh, Pa.:

"Remote Handling of Underground Shot Debris" by J. W. Barnes, J-11, and J. M. Lindahl, J-6.

new hires

CMB Division

Edwin E. Eaton, Circleville, Ohio, CMB-6

CMF Division

Jon B. Cross, Pasadena, Calif., CMF-4

ENG Division

Janice M. Davidson, Los Alamos, ENG-5 (Casual)

GMX Division

Thomas H. Feiertag, Whippany, N.J., GMX-1

Peter N. Neuman, Austin, Texas, GMX-2

Jerry D. Churchman, Lee's Summit, Mo., GMX-3

Eliseo Gallegos, Espanola, N.M., GMX-3

Herve H. Chouinard, Los Alamos, GMX-8 (Rehire—Casual)

John B. Medlin, Los Alamos, GMX-8

Wilbur W. Sickles, Jr., Montgomery, Ill., GMX-11

H Division

Janice G. Hartmann, Albuquerque, N.M., H-1

Julia E. Emery, Los Alamos, H-2 (Rehire—Casual)

J Division

James D. Atencio, Los Alamos, J-8 (Casual)

Barbara L. Ray, Point Mugu, Calif., J-11

K Division

Sandra M. Sutherland, Los Alamos, K-1

Mail & Records

Jose E. Gutierrez, Santa Fe, N.M., M/R

MP Division

Gilbert Suazo, Lawrence, Kansas, MP-3

Henry A. Thiessen, Pasadena, Calif., MP-4

N Division

Christopher F. Masters, Ithaca, N.Y., N-2

John M. Peterson, Los Alamos, N-5 (Casual)

Harold S. Wagner, Dayton, Ohio, N-7 (Rehire)

Personnel

Margaret A. Bentley, Los Alamos, PER-1 (Casual)

Juanita C. Chavez, Los Alamos, PER-4

P Division

Peter D. Barnes, Copenhagen, Denmark, P-DOR

Jose R. Roybal, Pojoaque, N.M., P-DO (Casual)

Earl R. Tech, Livermore, Calif., P-4

Abelardo A. Mondragon, Tijeras, N.M., P-13

Public Relations

Edward J. Humphrey, Los Alamos, PUB (Rehire—Casual)

Supply & Property

Leona M. Spence, Los Alamos, SP-3

Cheryl J. Helm, Los Alamos, SP-12

Mary J. Munyon, Los Alamos, SP-12 (Rehire)

T Division

Roger R. Magill, Fort Leavenworth, Kans., T-7

Wage & Salary

Lorraine J. Martinez, Chimayo, N.M., WSD

Kellogg . . .

continued from page 1

School Board from 1948 to 1950, and was president during the latter part of the term. In addition, he was a member of the local hospital board from 1956 to 1961.

According to his long-time secretary in P division, Jean Davis, he is a devotee of Gilbert and Sullivan, as evidenced by his participation in the early Choral Society production of these operettas.

With his wife, Emily (known as "Pat" to almost everyone), Kellogg will continue living in Los Alamos.

As to plans for the future, it is no surprise that Kellogg, with the scientist's unsatiable curiosity about things, plans to "read . . . as much as I wish, and study some of the things I have always been curious about." He'll also do some gardening and carpentry work, and he and his wife plan to do some traveling.

They have two children, Martin, a staff member in LASL's group P-9, and Mrs. Patricia Gregory of Albuquerque.

20 years ago in los alamos

Culled from the files of the November, 1946, Los Alamos Times by Robert Porton

Atomic Energy Commission Named by Truman

The all-important Atomic Energy Commission was named this week by President Truman. Members of the Commission are David Lilienthal, chairman of the Tennessee Valley Authority, chairman; Dr. Robert Fox Bacher, head of the physics department of Cornell University and one of the topflight scientists at Los Alamos in the war years during the development of the atomic bomb; Lewis Strauss, New York banker and retired World War II rear admiral; Sumner Pike of Maine, former member of the Securities and Exchange Commission, and W. W. Waymack, editor of the Des Moines Register and Tribune.

Naming of Streets Under Way

Name signs will soon be displayed on Los Alamos streets, the Post Operations Office announced this week. Patterned after the system used in Washington, D. C., north-south streets are to be designated by numbers and east-west streets by letters. This grid coordinate method will serve as an easy means of locating many addresses on the mesa, and will be a welcome improvement over the present nameless tangle which confuses all newcomers to the Hill, according to Lt. Col. Allen Fore, Post Public Relations Officer. In order that public-spirited residents may share in this important phase of the community's development, the three main east-west thoroughfares have not been included in the system, and will be named by public contest.

Turkey-Call Confuses Hunter Who Shoots Hill Resident

Hannibal M. Fraga, 35, tool-maker in V Shop, was accidentally shot Saturday morning while hunting in the Pine Springs area.

Fraga, accompanied by four hunting companions, was moving through a brushy area intermittently sounding artificial turkey calls, when a shot was fired by a hunter approximately 70 yards away. It struck Fraga in the hip.

The movement of Fraga and his party, together with the turkey calls, evidently confused a nearby hunter, not aware of their presence, who discharged his 30-30 rifle in their direction. Fraga was brought immediately to the Los Alamos hospital where he is now undergoing treatment. His condition is not critical.

HAPPY THANKSGIVING!!

what's doing

TRAVEL SLIDE and FILM PROGRAM: Mesa Public Library.

Nov. 17, 7:30 p.m. "Eniwetok and Return to Bikini," program by Roy Reider.

PUBLIC SWIMMING: Los Alamos High School Pool, Adults 35 cents, children 15 cents. Saturday and Sunday 1 to 6 p.m., Monday, Tuesday, and Wednesday, 7:30 to 9:30 p.m.

LOS ALAMOS FILM SOCIETY: "Juliet of the Spirits," Italian drama. Nov. 16, 7 and 9:45 p.m., Civic Auditorium.

EIGHTH ANNUAL CHARITY BALL: Immaculate Heart of Mary Parish Hall, Nov. 18, 9 p.m. to 1 a.m. Don Lesman Orchestra. For reservations call Mrs. Frank Hauser or Mrs. Joseph Duben.

LIGHT OPERA: Rodgers and Hammerstein's "Flower Drum Song." Dec. 2 and 3 and Dec. 9 and 10, Civic Auditorium, 8:30 p.m. All seats reserved. Tickets at auditorium box office at $3, $2.50, $2, and $1.50. Ticket chairman: Santon Waber, 2-4171.

SKI AND SKATE SALES: Sponsored by Los Alamos Ski Club, Wednesday, Nov. 30, and Thursday, Dec. 15, Recreation Hall, 7 to 9 p.m.

OUTDOOR ASSOCIATION: No charge, open to the public. Contact leader for information about specific hikes.

Sunday, Nov. 6, Jemez Falls to Battleship Rock. Ed Kmetko, leader.

Sunday, Nov. 13, Arsenic Springs to Red River on Rio Grande. Neville Black, leader.

Sunday, Nov. 20, Exploratory hike in Capulin Canyon. Jay Fries, leader.

Nov. 24-27, Trip and hike to Grand Canyon South Rim. Contact Avery Gage, leader, by Nov. 22.

LOS ALAMOS LITTLE THEATRE: "Murder in the Cathedral," by T. S. Eliot. Nov. 18, 19 and 20, Trinity-on-the-Hill Episcopal Church, 8:30 p.m. For season tickets (4 plays) call Kay Anderson, 2-3510. For reservations call Joan Dare, 8-4938. Single admission at door, $2.

LOS ALAMOS SINFONIETTA: Sunday, Nov. 20 8:15 p.m., Civic Auditorium. Rex Eggleston, director; Thomas Weber, soloist. Season tickets available from Rosemary O'Connor, or single admission at door: $1.50 adults, 75c students.

Reading the inscriptions at the new National Historic Landmark Site on the south shore of Ashley Pond are a number of townspeople and participants in the recent dedication ceremony, including Robert M. Underhill, vice president and treasurer emeritus of the University of California (hand on structure). Underhill negotiated every Los Alamos contract between the University and the AEC from the Laboratory's founding in 1942 until his retirement in 1965.

Back Cover:

Camp May's picturesque log cabin, which once furnished shelter to Ranch School boys, is again ready for use by local residents. Los Alamos county has completely renovated the once tumbledown structure at the enlarged Camp May Community Park. The cabin was dismantled and rebuilt with a new shake roof, concrete floor, stone fireplace and new rock work around the foundation. Aspen logs were cut on the site to provide new roof rafters. In addition to the cabin, which will be suitable for use by large picnic groups, the enlarged park has 19 new picnic sites with fireplaces, fresh water and restroom facilities. A new loop road has been constructed to provide access to additional picnic sites in the meadow above the cabin site.

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