

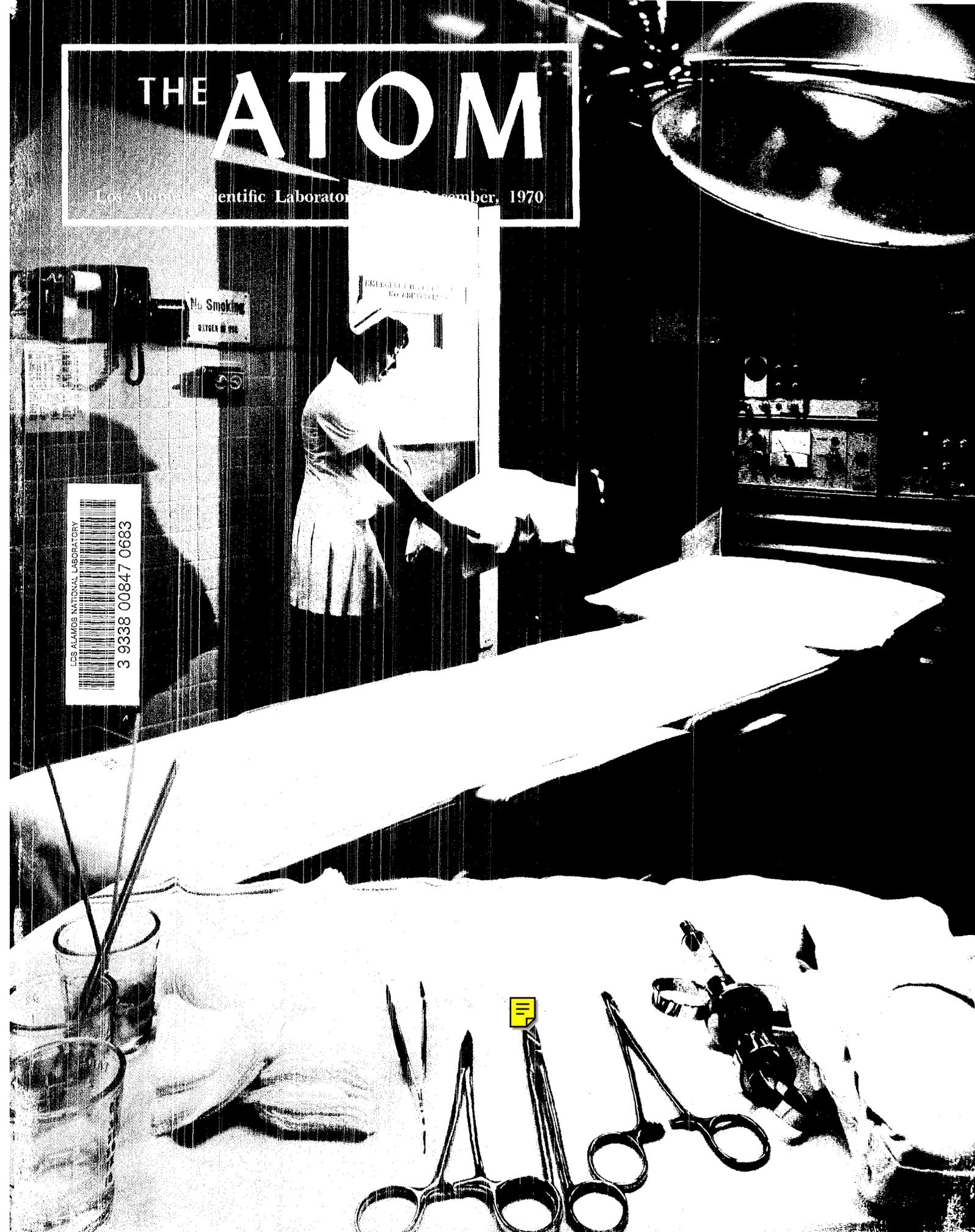
# THE ATOM

Los Alamos Scientific Laboratory December, 1970

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# THE ATOM

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## COVER:

Nurse Jean Ryan brings a patient into the LAMC's emergency operating room in this month's cover photograph taken by ISD-7 Photographer Bill Jack Rodgers. A profile of the medical center by Barbara Storms begins on page one.

# LAMC

23 doctors, 84 beds and 20 years of service



By Barbara Storms

A siren pierces the Los Alamos night and sleeping citizens stir, listen and return to sleep. But on a knoll overlooking the darkened community, the Los Alamos Medical Center is ready for action.

Since the war years, when the Hill's only two doctors were forced to learn to ski to survive the mountain rescues they had to make, the Los Alamos hospital has been ready for anything. A disaster plan, designed to mobilize all medical personnel and facilities, is kept up to date and ready to be used to whatever extent is necessary.

continued on next page

In homes around town, on-call doctors, nurses and technicians wait for calls 24 hours a day.

The hospital itself was planned with an eye toward LASL's disaster potential. Its 84 beds are far beyond the needs of a town the size of Los Alamos and are seldom more than half filled. A radiation decontamination room, complete with decontamination and monitoring equipment, stands empty and idle. There is experience to supplement these particular facilities. Los Alamos doctors were the first to be confronted with the problems of handling radiation accidents.

On the average, the Medical Center treats 2,000 outpatients in the emergency room each year. Not all of these cases, however, are true medical emergencies.

"The emergency room," explains LAMC surgeon Dr. William Oakes, "has become not just a place for emergencies but a place where people go when they don't know what to do." And it is because they don't know what to do, hospital officials agree, that there is a great deal of confusion about the use of the emergency room.

"It's very important," says Chief of Staff Dr. Sargent Horwood, "that people understand the system."

A patient arriving unannounced in the ER will find a telephone there with boldly printed instructions for getting help. A call will bring the emergency room nurse who will contact the patient's doctor. If he is not available the nurse will contact the appropriate doctor on call. In a system unique to Los Alamos, LAMC is covered at all times by four doctors: an obstetrician, a pediatrician, an internist and a surgeon.

"Anywhere else, you could go to an emergency room with a severe sore throat and be treated by the psychiatrist, if the psychiatrist happened to be on call," Dr. Horwood explained. "Here you get the right man for the job."

Ideally, a patient should try to call his own doctor first. His doctor will then decide to see the patient in his office, arrange for hospital admittance or refer him to the emergency room, but in any case, the Medical Center will be prepared before the patient arrives.

Doctors admit that choosing one's family physician is a bit confusing in Los Alamos. LAMC's staff of 23 doctors includes only one general practitioner and 22 specialists, a ratio just about opposite that found in most towns of similar size. There are five pediatricians, five internists, two general surgeons, one orthopedic surgeon, two obstetrician/gynecologists, two radiologists, one



At left are Hospital Administrator Robert Hill and Chief of Staff Dr. Sargent Horwood. Below, conducting surgery are Betty Schlarerer, Dr. Robert Miller, Jerry Mattson, Dr. William Oakes, and Lenore Dudgeon. Bottom right, Mary Davis makes another appointment for Dentist Ralph Nelson who is assisted by Marge Louck in the adjoining room.



pathologist, one anesthesiologist and three in industrial medicine. In addition there are 15 consulting physicians and a staff of seven general dentists, two orthodontists and one oral surgeon.

Though it may be difficult to choose the kind of doctor you need, Dr. Horwood pointed out, "you can't find better medical care anywhere." Every doctor, Horwood said, has at least two years of residency in his speciality and 90 per cent of the staff members have been certified by the national boards of their specialties.

The Los Alamos Medical Center itself is accredited by the Joint Commission on Accreditation of Hospitals, and is a member of the American Hospital Association and the New Mexico Hospital Association. It also is approved by the AMA Council on Medical Education for a two-year general practice residency. In the past eight years, four residents have trained at LAMC, one of the first of whom was Dr. Duane Drake, now the Hill's only GP.

Several LAMC doctors spend at least one day a week working in small northern New Mexico towns where medical care is limited or non-existent and many of them contribute their time and skills to the Los Alamos Cancer Clinic, now headed by Dr. Howard Wadstrom. The clinic was organized in 1949 primarily as a screening and educational clinic through which patients may obtain chest x-rays, blood counts and urinalysis at reduced fees.

"Los Alamos is probably the only town in the country where all women can get a free Pap smear," says Dr. Michael Stewart, staff pathologist

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and head of the LAMC laboratory which examines more than 3,000 Pap smears annually.

Under sponsorship of the cancer clinic, other tests have been performed without charge in order to determine their usefulness as diagnostic tools and some enzymatic tests for hepatitis and other liver diseases have been developed.

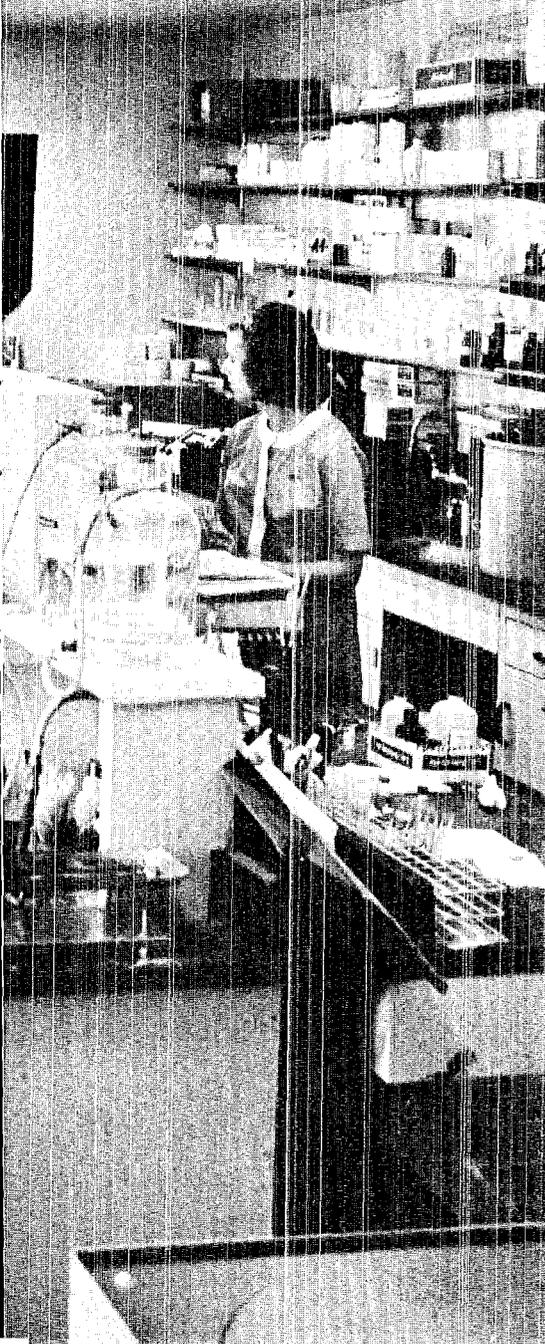
As an example, Dr. Stewart said, the clinic has provided his laboratory with a blood acid analyzer which, by determining the blood's acid balance, not only provides information for diagnosis of a variety of diseases but also gives follow-up information for evaluating the effectiveness of treatment.

The laboratory, under the supervision of Chief

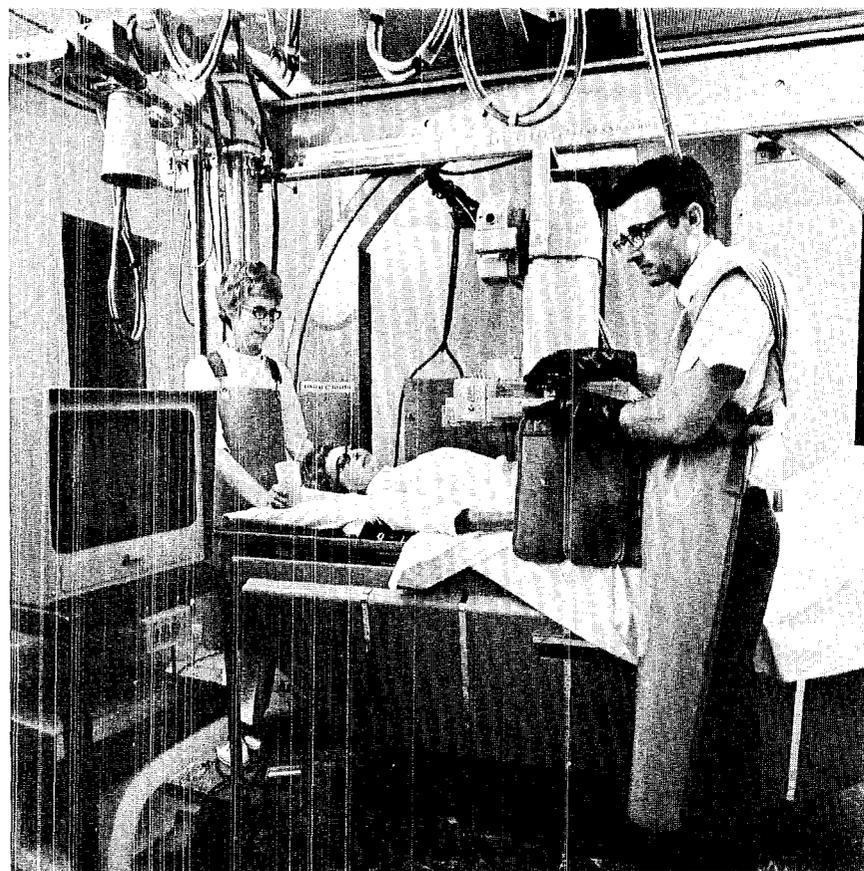
Technologist Keith Prosch, keeps a staff of eight and offers a complete line of all diagnostic tests, "an unusual number for a town this size," said Dr. Stewart.

The laboratory processes about 50 units of blood a month, uses about one-fourth that, and manages to avoid waste by shuttling blood as needed via Ross Airlines from Albuquerque. For emergencies, however, the lab maintains a "walking blood bank," an active list of local citizens willing to donate. This list is supplemented by a member-donor list provided by the Elks Club which helps in emergencies by making its own calls.

"I remember one night we drew, cross-matched



Left, in the LAMC laboratory, Chief Technologist Keith Prosch talks with Dr. Michael Stewart, staff pathologist. Below, demonstrating the use of x-ray equipment are Vivian Reynolds, Violet Chamberlin (on table) and Dr. David Williams, radiologist.



and administered 29 units of blood in a period of six to eight hours," Dr. Stewart said. "If it hadn't been for the Elks and the firemen, we'd never have made it."

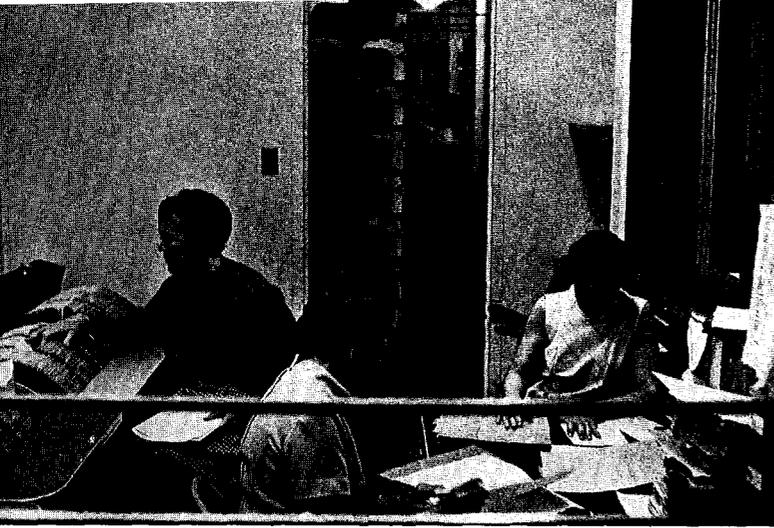
Stewart added that "in this town when you call for blood you have to stand back so you won't be trampled in the stampede."

Across the hall a fully equipped radiology laboratory is operated by Chief Radiologist Dr. Paul Lee. "Radiology has become more important in recent years," Dr. Lee said. "Ten years ago it would be unusual to have a setup like this in a town this size." The radiology laboratory is primarily concerned with diagnosis, using both x-ray and isotopes. X-ray, isotopes and radium are used

in therapy also. As one doctor said, "the overall therapeutic results are as good in LAMC as anywhere."

The relationship between the doctors and the Medical Center is another point about which there is confusion. Although all Los Alamos doctors practice in the Medical Center and have their offices there, all have private practices which are not under Medical Center jurisdiction. However, in order to practice in the hospital each doctor must meet hospital regulations and accept certain responsibilities, foremost of which is on-call coverage which is worked out and supervised by the doctors themselves.

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LAMC's unique medical records system is maintained for use by both hospital and doctors in private practice. In the background is Jean McClary. In foreground are Barbara Olsen, Medical Records Librarian Carolyn Worthington, and Kathy Wortmann.

The location of medical services under one roof offers a convenience to patients, doctors and hospital alike. "It has all the advantages of group practice plus the advantages of private practice," said Dr. Horwood.

Among the advantages is the unique centralization of medical records. Records of every patient who has ever visited a doctor, been treated in emergency or entered the hospital in Los Alamos are located in LAMC's record room and are available to doctors in their private practices. Medical Records Librarian Carolyn Worthington says the system provides an excellent patient history because "a patient forgets and records never will." LAMC has accumulated more than 62,000 records since 1950 and all previous records are available on microfilm.

The Medical Center admits an average of 2,200 patients each year and has an average daily occupancy of 35. Of its 84 beds, 30 are medical, 20 surgical, 18 maternity and 12 are pediatric. Four beds are located in the brand new coronary care unit where patients can be seen and monitored from the nursing station.

It costs \$1,300,000 a year to operate the hospital and the cost per patient per day is about \$70, according to Hospital Administrator Robert Hill. Since patients pay only \$45 a day for a single room and \$40 for a double room, a large percentage of the costs must be made up elsewhere. To help offset expenses, the Medical Center relies on income from rental of office space and of the 72 kitchenette apartments on Trinity Drive which belong to the hospital. Additional income comes

from the hospital pharmacy, cafeteria and other hospital services.

Hill hastened to emphasize that the new \$325,000 wing recently added to the Medical Center to provide office space for seven physicians is self-supporting and does not affect hospital costs.

The Medical Center staff includes 100 full-time employees, 30 regular part-time employees and an uncounted number of "some-times" employees.

"It's those part-timers who keep us going," states Mrs. Claire Greco, chief of nurses, who has 20 or 25 part-time nurses working one to four days a week on various shifts to assist 13 full-time general duty nurses, one operating room nurse and four practical nurses.

"The trouble is," adds Mrs. Greco, "with all the part-time nurses working regularly it's almost impossible to find special duty nurses anymore."

It is because of the nursing shortage that the Medical Center's new coronary care unit has not yet opened. A sufficient number of LAMC nurses already have been trained for coronary work but so far the hospital has been unable to find replacements for them on general duty.

To overcome the staffing problem the Medical Center is drafting a program of on-the-job training for registered nurses in Los Alamos who have been away from nursing for some time. The program would include lectures and demonstrations about new equipment and drugs being used in the hospital and two or three hours a day of work with other nurses in handling patients.

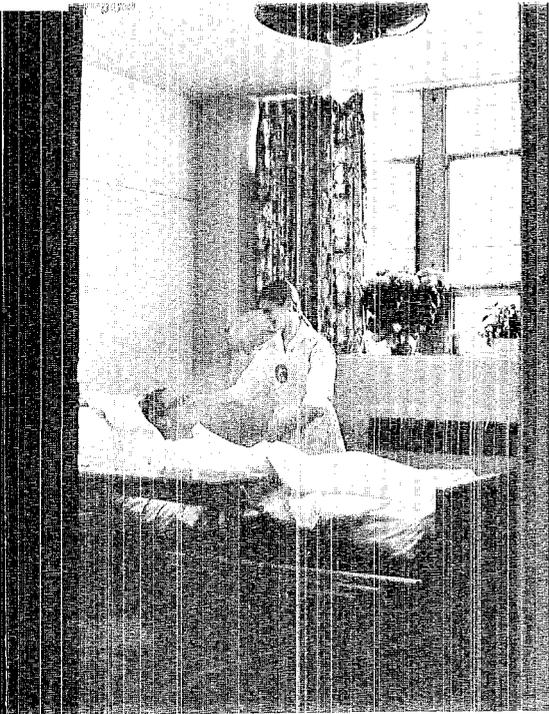
"We just want to show those girls that the equipment may be different but the job's just the same and they haven't forgotten it," Mrs. Greco said. "It's still people they are working with."

It's also a job, Mrs. Greco pointed out, with a vast assortment of duties. "Other departments are on call, but we're the only department that routinely works 24 hours a day," she said. When the other departments go home, the nursing staff takes on the job of admitting patients, answering the phone, obtaining and serving food, securing supplies, digging out records, dispensing drugs and even giving out press releases.

Help for nurses and other departments is available from the auxiliary of the Los Alamos Medical Center whose 71 adult members last year gave more than 13,000 hours of volunteer services working as secretaries, clerks, messengers and tour guides. The Auxiliary also manages and staffs the Lobby Shop and supervises the Candystripers—the teen-age volunteers who last year spent some

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Right, Claire Greco, chief of nurses, in the new coronary unit which remains empty for lack of nursing personnel. Below left, Candystriper Jeanie Stone adjusts a patient's pillow. At bottom left is the children's clinic in the new wing of the hospital. Below right, Martha Doss of the hospital's auxiliary wheels one of the LAMC's bookmobiles into a patient's room. In the background are Nurses Lina Szklarz and Jane Katz.





Special diet instructions and patients' menu selections are carefully checked as trays pass through the kitchen assembly line. "My biggest worry is getting the right food to the right people," said Dietary Supervisor Geraldine Porter.

4,600 hours helping nurses with such duties as entertaining children, running errands, making beds, answering lights and serving dinners.

The Medical Center kitchen, under the direction of Dietary Supervisor Geraldine Porter, has achieved a reputation for providing better than average hospital fare. From a standard menu with Southwest variations, patients on regular diets are given a wide choice of foods for each meal plus three snacks a day. However, there are nearly as many special diets as regular ones, Mrs. Porter says. "There are an awful lot of ulcer diets around here."

For those not suffering from ulcers, the kitchen often includes Spanish food on its menu. One especially popular dish is atoli, a mush of blue corn meal with hot milk.

The kitchen, with its staff of three cooks, three helpers, three dishwashers and a part-time dietitian, serves an average of 7,500 meals a month. Of these, about 2,500 are in-patient meals and 5,000 are served in the cafeteria which is open to the public from noon to 1 p.m. and 5:30 to 6:30 p.m.

Kitchen service, among other things, has come a long way since nurses carried meals from Fuller Lodge to their patients in the six-bed infirmary on the edge of Ashley Pond. That was in 1943 when the wartime outpost was served by one doctor, three nurses and a couple of Indian boys. But even then, Los Alamos had specialists.

Appropriately, an obstetrician, Dr. James Nolan, now of the Los Angeles Cancer Institute, was the first physician brought to Project Y by Dr. Louis Hemplemann, the Project's health director. He was quickly followed by a pediatrician, Dr. Henry Barnett. Also fittingly, Dr. Nolan's child was the first to be born in the then secret and now famed Post Office Box 1663. And that's how it all began.

Eighty babies were born during the first year of the project and the adult population grew even faster. By the end of 1944 the infirmary had expanded to a standard and fully equipped Army post hospital with about 80 beds and a staff of 100 including six doctors.

Medical care was free in those days and civilians paid only \$1 a day for a hospital room. Probably the most painful surgery ever performed in Los Alamos occurred on the day in 1947 when the Army transferred the hospital to the Atomic Energy Commission and citizens began to pay for their care.

"The government set the prices and room charges went up to only \$3 a day," recalls Dr.



John Puckett and Russell Reeves get acquainted with their new offspring, held by Leah Hall and Dottie DeDoes.

Oakes who came to Los Alamos that year, "but the transition was pretty rough."

By 1947 when plans were begun for the present Medical Center, babies were being born at the rate of 450 a year. Anticipating an even greater birthrate as the population increased, planners included a big 18-bed maternity unit. Today, with only 250 births a year, the maternity wing averages only three patients daily.

Other aspects of the Medical Center design were not so far astray. Planned with the idea that all functions related to health should be located under one roof, the Medical Center still offers space for the county health and sanitation department, the county health nurse, the Family Council and a clinical psychologist in addition to the medical and dental offices and a pharmacy with three full-time pharmacists for both in-patient and prescription service.

The hospital is now 20 years old. It opened in January 1951, managed for the AEC by the Los Alamos Medical Center, Inc., a board of directors composed of Los Alamos residents. In 1964, as the result of a referendum the previous summer, ownership and operation of the Medical Center was transferred to the Lutheran Hospitals and Homes Society, a non-profit corporation that operates 84 hospitals and nursing homes throughout the country. The Society is kept posted on the particular needs of the community by an advisory board

composed, currently, of Norris Bradbury, John Helm, John Felton, George Benner, Carl Fredrick, Duane Smith, Andrew Long, William Francis and Darrell Burns.

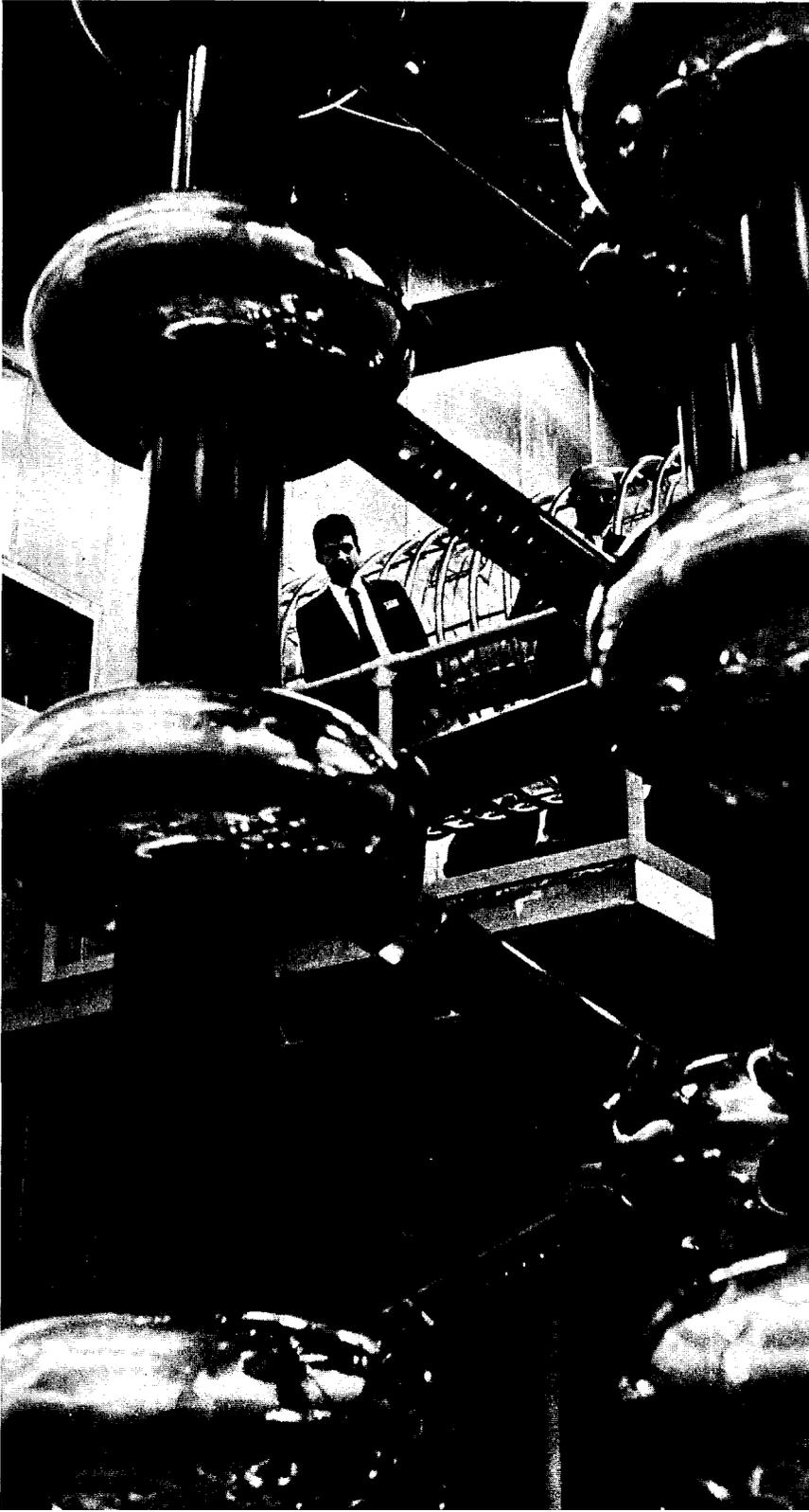
There are differences in Los Alamos to be considered. Doctors find Los Alamos patients particularly quick to seek medical advice and more attuned to preventative medicine. As a result, LAMC's emergency room business is higher than average and the hospital laboratory does an unusual amount of diagnostic work. Because the people see doctors promptly when symptoms appear, hospital admissions on the Hill are way below the national average--2.2 per 1,000 population against four per 1,000 on a national scale--and hospital stays average one day shorter.

Dr. Oakes, who has been on hand to see the entire evolution, says patient complaints follow a definite trend. In the early days when the entire population was young, illnesses were minor and doctors kept busy treating accidental injuries and delivering babies. In the past ten years, as the population aged and people began bringing their parents to Los Alamos, the Medical Center has seen many more problems of the aging, such as hip fractures and various kinds of cancer. "Some day we're going to have to think seriously about care of the aged," Dr. Oakes said. "Perhaps we'll have to use part of that big OB wing for geriatric care."





As might be expected at the annual general meeting and election of officers of the Los Alamos Meson Physics Facility Users Group, those in attendance, about 250, were treated to a tour of the site. Below, J. C. Alder, College of William and Mary, and Kenneth Lande, University of Pennsylvania, view the Cockcroft-Walton generator in the Injector building. At left, Denys Wilkinson, Oxford, England, emphasizes a point during the presentation of his invited paper, "Mesons and Nuclei: Details and Depth," during the program on medium energy physics.



## The LAMPF Users- on Tour



George Rogosa, director of the Atomic Energy Commission's Division of Research, and Louis Rosen, MP-division leader, get together during a break in the program at the LAMPF site.

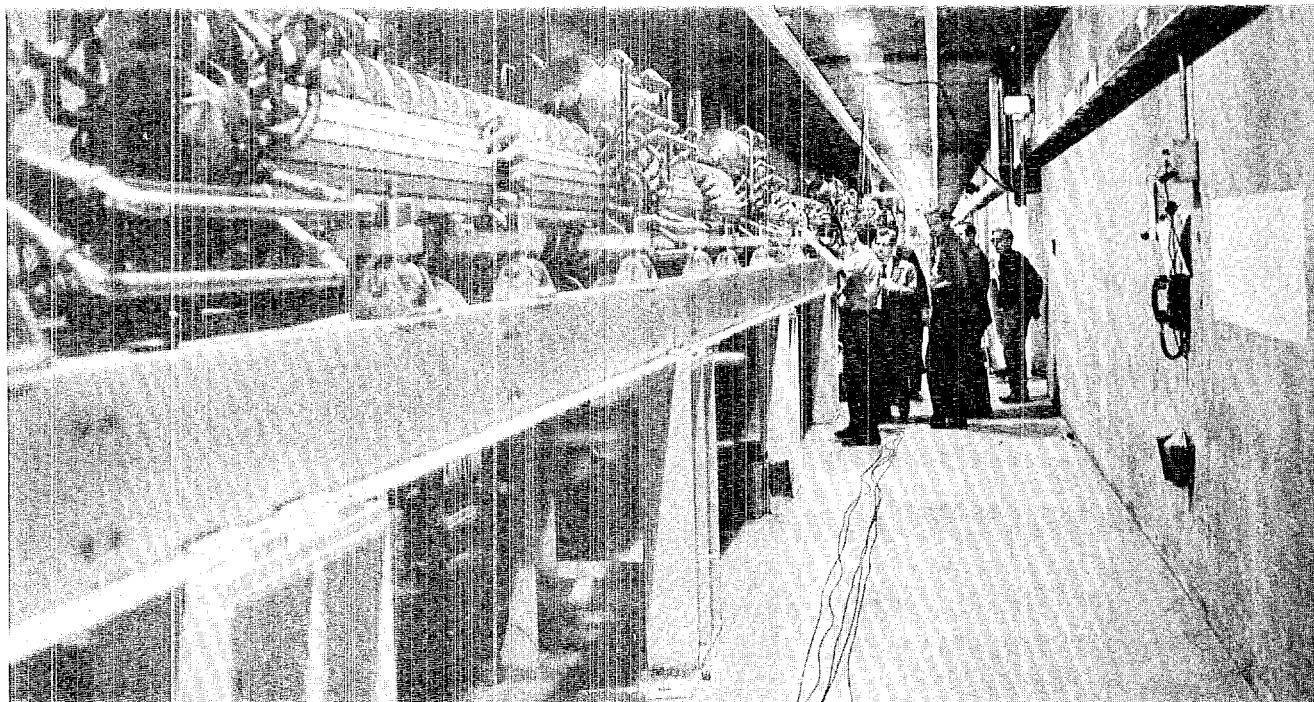


Gerald Phillips, Rice University, second from right, was elected by the Users as their new chairman. Outgoing Chairman Roy Haddock of the University of California at Los Angeles is at right.

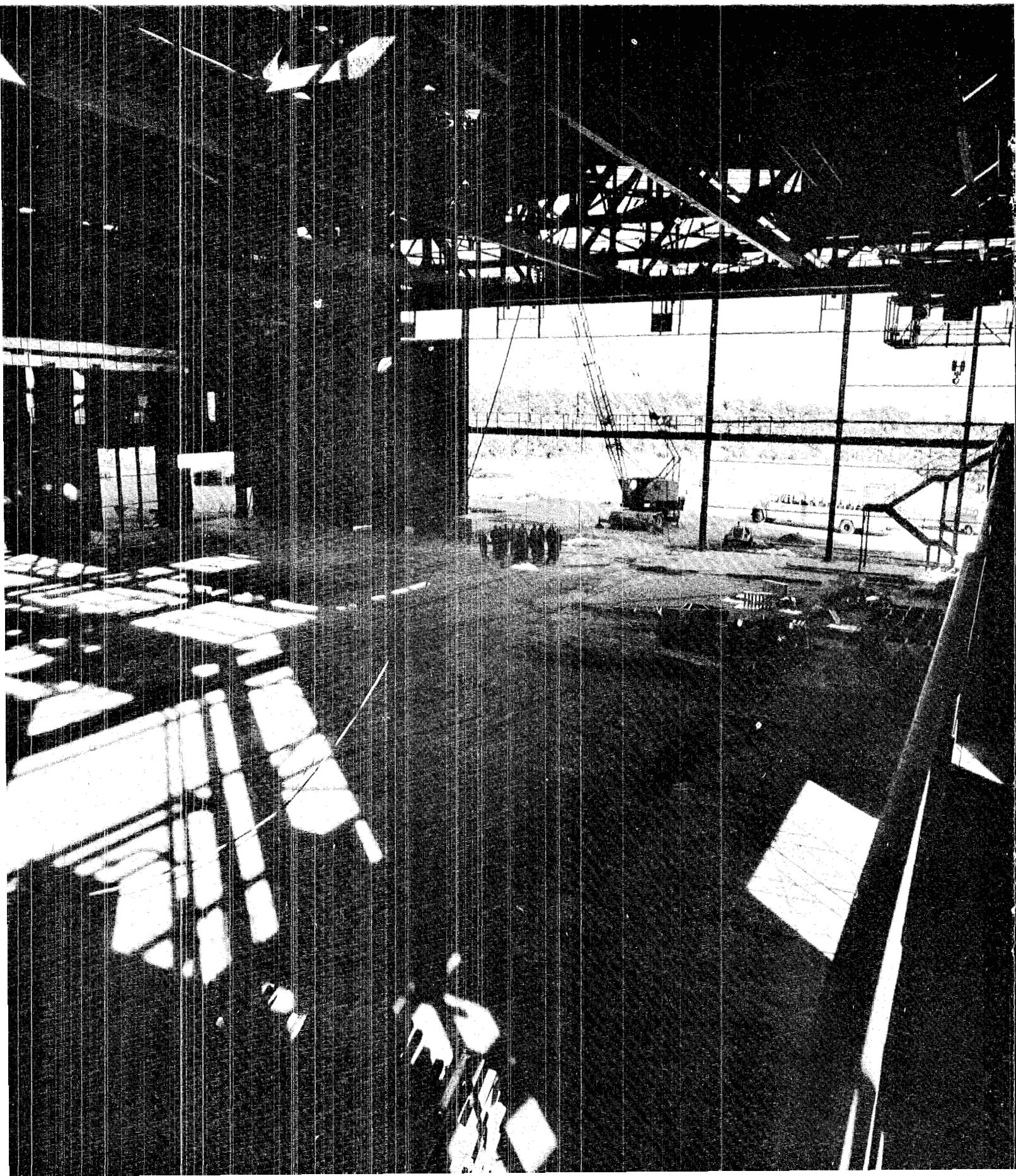
Below, E. W. Blackmore, University of British Columbia, Vancouver, Canada, and G. A. Beer, University of Victoria, British Columbia, Canada, inspect the facilities at the LAMPF Injector building.

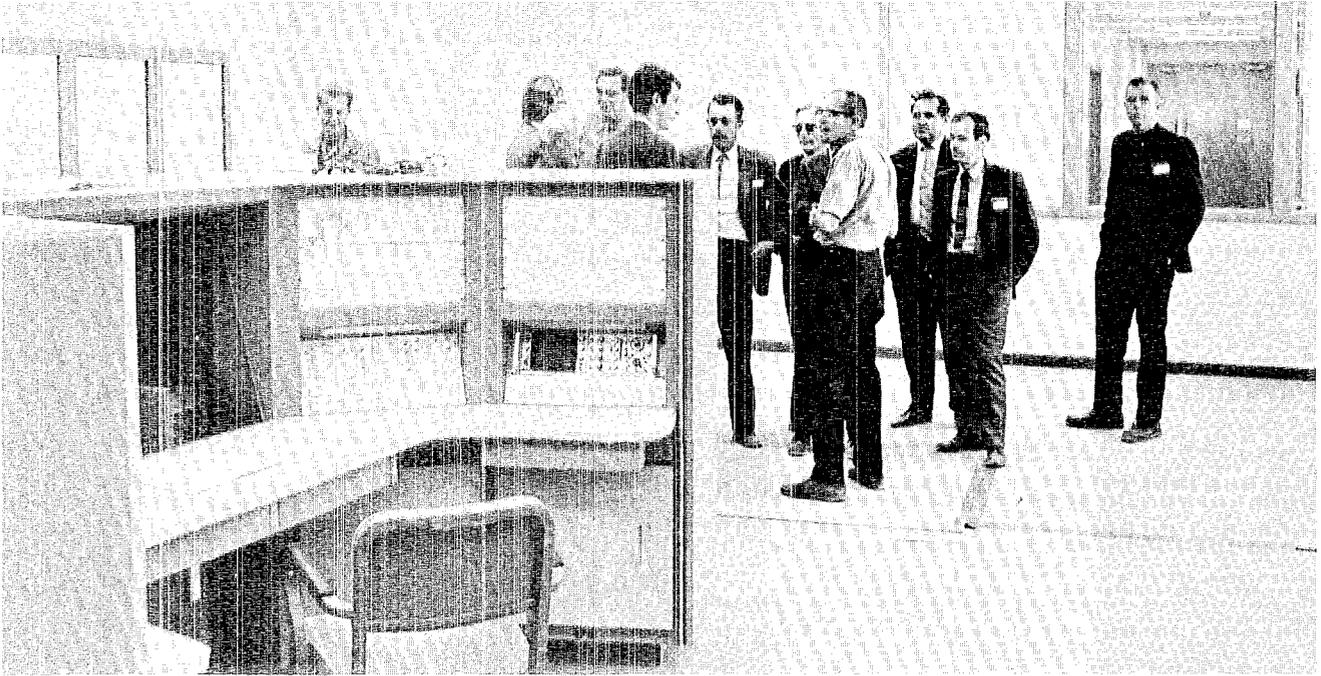


A group of Users inspect the wave guide portion of the LAMPF accelerator in the main beam channel.



The Users' tour included Experimental Area A which is now under construction.



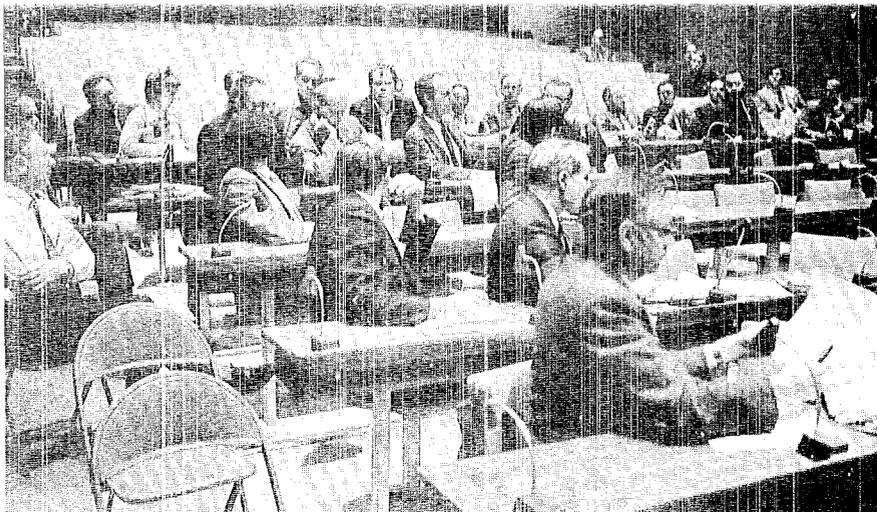


Don Hagerman, MP-2 group leader, center, guides a group of Users through LAMPF's central control center at the Operations building.

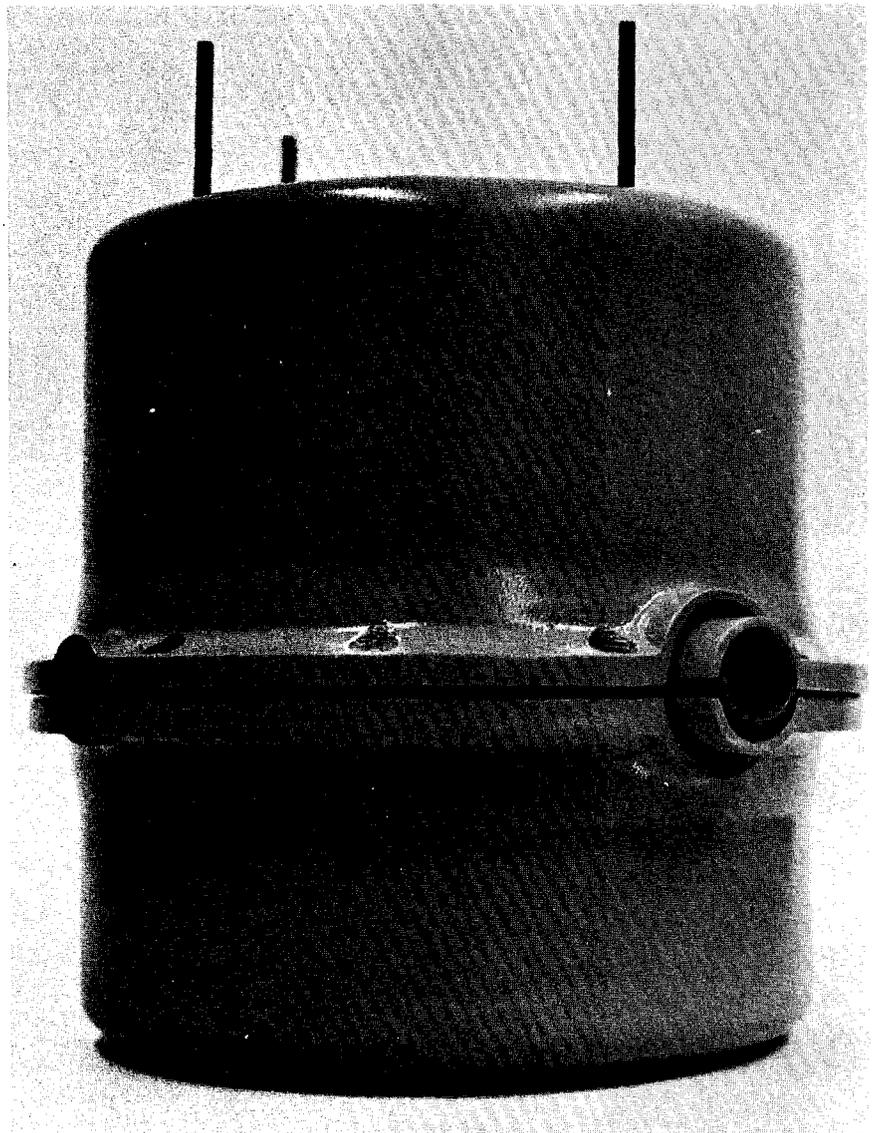


Louis Agnew, MP-7, liaison officer for the Users Group, talks with David Lind of the University of Colorado and Roy Thaler, a former LASL staff member, now with Case Western Reserve University.

Below right, Dr. R. E. Anderson of the University of New Mexico Medical School, and David Groce, JRB Associates, La Jolla, Calif., speak to Users attending the biomedical session on LAMPF, below left.



A model shows how the Mini-Thruster looks when assembled. Two of its nozzles can be seen at center. The pipes at top are feed lines for the ammonia fuel.



## *A Mini-Thrust For Satellites*

By Ken Johnson

*I*n the late 1950's, man-made satellites were such a novelty that every time a new one was launched the news media gave daily reports on when and where it could be seen. In response to this information, people all over the country watched the night sky to see a spot of light cross overhead.

Anymore, not all satellites are as easily seen as some of the first ones, because not all of them appear to move. Those that appear to be fixed in space with respect to an observer on the ground are said to be geosynchronous satellites.

Geosynchronous satellites are used to perform communications,

navigational, meteorological and strategic reconnaissance missions. With satellites of this type there is a necessity for periodic corrections in order to maintain their proper locations. This is called "station keeping." In addition, there is a need to earth-orient the directional antennas of the geosynchronous satellites. This is called "pointing accuracy."

Both of these activities are important factors in space-to-earth data transmissions and are a function of small rocket engines called control or vernier thrusters. Those currently in use are chemically fueled. But future missions will re-

quire more precise station keeping and pointing accuracy. Coupled with longer-life missions, these requirements begin to tax current propulsion technology.

Over the past five years scientists have been researching a nuclear-powered thruster to meet these future requirements, and the technology necessary to build a workable unit now appears to be in the offing.

Design and development of a prototype nuclear-powered thruster about the size of a large grapefruit has been underway at the Los Alamos Scientific Laboratory for about a year and a half. This work, which is being guided by N-division, is expected to be completed next summer according to Project Leaders Joe Neudecker of N-7 and Ken Cooper of N-3. Thrust and performance tests will then be conducted by scientists at the Air Force Rocket Propulsion Laboratory at Edwards Air Force Base in California. The thruster project is administered by the Space Nuclear Propulsion Office which is sponsored by the National Aeronautics Space Administration and the Atomic Energy Commission.

Although known formally as the Decomposed Ammonia Radioisotope Thruster (DART), Los Alamos scientists have dubbed it the Mini-Thruster because of its small size.

In addition to its size, the Mini-Thruster will have two distinct advantages over its chemically fueled counterparts. These are its operating lifetime and propulsion efficiency. Chemically powered units have an operating lifetime of from two to three years. The nuclear-powered unit is being designed to operate efficiently for seven years, thus prolonging a satellite's use. The Mini-Thruster will provide thrust at a specific impulse of 310 seconds compared with 250 seconds provided by chemical units, or a 25 per cent increase in propulsion efficiency. Specific impulse means that one pound of propellant will provide one pound of thrust for a certain time. Thus, as it applies to

the Mini-Thruster, a pound of propellant will provide a pound of thrust for 310 seconds.

The propellant for the nuclear-powered thruster is liquid ammonia which is thermally decomposed into hydrogen and nitrogen gases. The expulsion of these gases through exhaust nozzles provides the Mini's thrust.

The Mini has six basic parts. Only three of these have to do with providing thrust. Two are safety features which are an important consideration in the design of any

nuclear system. The other prevents oxidation of thruster components.

The thrust components of the system are a radioisotopic heat source, a heat transfer system, and several layers of insulation.

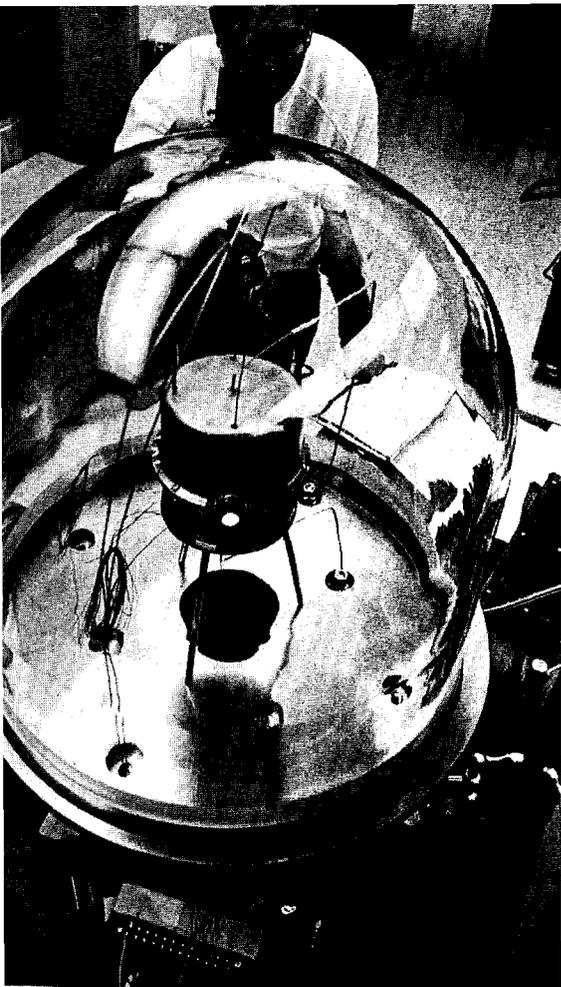
The heat source consists of six capsule-contained plutonium-238 ceramic wafers. It services the heat transfer system.

It is the heat transfer system that accepts the ammonia propellant. The ammonia flows from a storage tank into the transfer sys-

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Ken Cooper, N-3, and Joe Neudecker, N-7, show how the plutonium-238 heat source fits inside the impact capsule using model components. Other parts of the Mini-Thruster shown are the heat transfer system (left), the outside container (center), and the ablation capsule.





Thermodynamic evaluation of the Mini-Thruster is being conducted in N-7 laboratories. Here Glenn Lindholm, N-7, makes optical measurements for evaluating the efficiency of the thruster's insulation. An electrically powered dummy fuel capsule provides the heat. Vacuum inside the bell jar simulates conditions of outer space.

tem's spiraling pipeline at an inlet temperature of 70 degrees Fahrenheit. In the pipeline, where the temperature is 2,500 degrees, the ammonia is thermally decomposed into hydrogen and nitrogen gases. From here the gases are fed into one of three valve-controlled passages, each of which leads to an exhaust nozzle. The nozzles are of different sizes to provide diverse thrust values. The nozzle selected for use is dependent on how much thrust is necessary to correct the location or orientation of the satellite.

The insulation consists of 90 layers of molybdenum foil. Its function is to contain the heat produced inside the thruster by the plutonium-238 fuel.

The safety features incorporated in the system are the ablation and impact capsules. Both of these are protective devices to insure that the extremely toxic nuclear fuel will not be released into our environment in case of an accident such as a launch abort or an orbital decay. Without these devices, plutonium-238 could be released to our environment in either type of accident because of burning or fragmentation of the fuel source. The ablation capsule, made of graphite, is designed to protect the fuel source from extreme reentry temperatures. It surrounds the molybdenum-rhenium alloy capsule that is built to contain the fuel source despite the heavy shock-loads to which it might be subjected.

Prior to and during launch it will be necessary to cool the thruster. Its nuclear power source is always on and, unless the heat is removed, the combination of air and the extreme temperatures inside the thruster will oxidize some of the components. The Mini is cooled by inserting four mercury heat pipes into the ablation capsule. The pipes extend through the layers of insulation and the heat is transferred to the outside. Oxidation is no problem in the vacuum of space, so after orbit is attained, the heat pipes can be jet-tisoned. This can be done by a

spring-loaded disengagement mechanism, triggered by an electrical signal.

Many groups at the Laboratory in addition to those in N-division are supporting the Mini-Thruster project. Those in N-division are N-7, which is responsible for conducting stress and thermodynamic studies of the thruster; N-3, design of thruster components and dealing with manufacturers, vendors and suppliers; N-1, advisors on materials technology; and N-5, design of the mercury heat pipes used to remove heat from the thruster prior to attainment of satellite orbit. Group CMB-11 is developing the plutonium-238 heat source; CMB-3 is conducting materials compatibility studies; CMB-6 is developing fabrication techniques; and CMF-5 is conducting safety evaluation studies. Scale models of the Mini-Thruster used in the development process are built by ENG-2.

Several high temperature and impact tests have been conducted to determine how well current impact- and ablation-capsule designs meet nuclear safety requirements. The tests were conducted with the use of a rocket sled and wind tunnel at Sandia Laboratories, and with the help of Sandia personnel.

A sub-orbital test to demonstrate the capabilities of the ablation and impact capsules to withstand the high temperatures of reentering the earth's atmosphere and ground impact is scheduled for early next year. The test units will be put aboard a rocket that will be launched from Green River, Utah, and will impact at the White Sands Missile Range in New Mexico.

The thermodynamic evaluation of the Mini-Thruster design is being conducted in N-division laboratories using an electrically powered dummy fuel capsule instead of the plutonium-238 source. After the thermodynamic tests are completed, the project will culminate with performance and thrust tests at the Air Force Rocket Propulsion Laboratory at Edwards Air Force Base in California. ✱

# short subjects

The U. S. Forest Service has designated two areas for those planning to cut their own Christmas trees. One is on the upper Guaje road and the other is on Pipeline road. The Pipeline road area will be open until Dec. 20 only.

Maps showing exact boundaries of the tree cutting areas and permits are available at the Forest Service office in Los Alamos. It is located in Room 123 of the Atomic Energy Commission building.

In addition to normal workdays, the Forest Service office will be open from 8 a.m. until 5 p.m. on the weekends of Dec. 5-6, 12-13, and 19-20.

Cost of permits will be \$1 for trees up to 10 feet, \$2 for trees from 10 to 12 feet, and 50 cents for each additional foot above 12 feet.



**Louis Rosen**, MP-division leader has been named to the editorial advisory board of "Particle Accelerators" and to the board of editors of "Particles and Nuclei," two new technical journals.



**Robert H. Dunlap** died in Memorial Hospital in New York City. He was an administrative assistant in CM-division (currently CMB-CMF) from 1943 until 1945.

Survivors include his wife, Gladys, who resides in Niagara Falls, New York.



During the month of October, 3,793 persons visited the Norris E. Bradbury Science Hall.

From January through October, visitations numbered 73,668. Included in this figure are 1,283 visitors from 80 foreign countries.

**Henry Hoyt**, assistant director for administration at the Los Alamos Scientific Laboratory, retired in November.



A graduate of Harvard College, Hoyt served as a major in the U.S. Air Force from 1942 to 1945. He joined the Laboratory staff in 1946 as assistant associate director for administrative services.

He is currently president of the International Folk Art Foundation and a member of its board of trustees. He is also a member of the board of managers for the School of American Research.

He and his wife, Kay, plan to remain in the Santa Fe area.



A husband and wife team, **Harry and Mary Sue Morris**, have retired from the Laboratory.

Morris, a machinist, transferred from the Los Angeles office to Los Alamos in 1951 and was employed by the Shop department until his retirement. He was employed by the University of California for 20 years.

His wife was a librarian in Group D-2 for 17 years.

The Morriszes plan to move to Tucson, Ariz.



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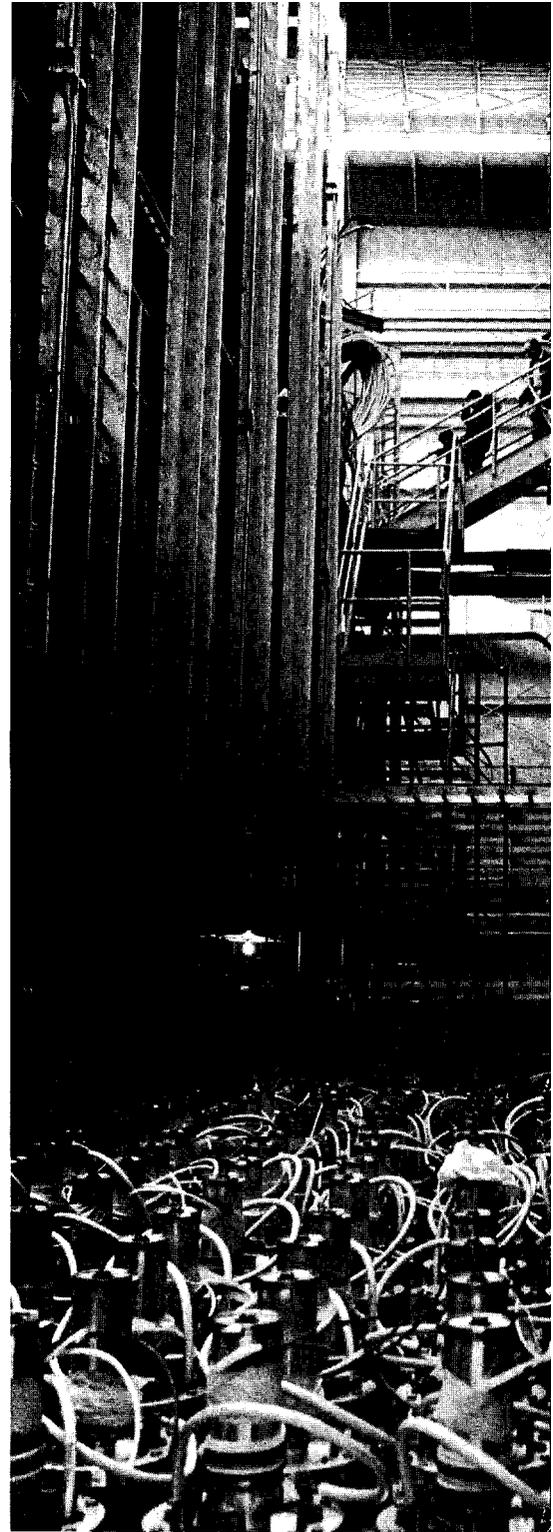
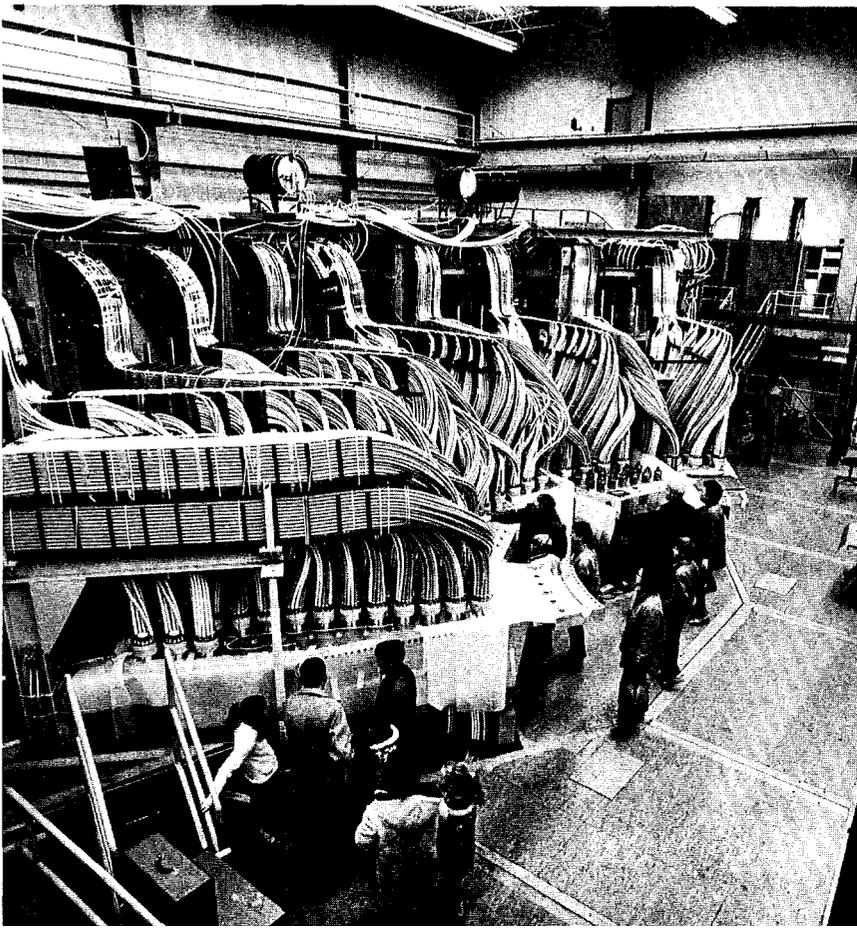
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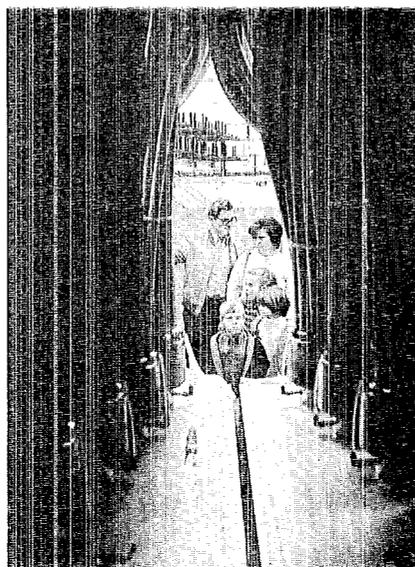
# Seeing Where "Daddy" Works



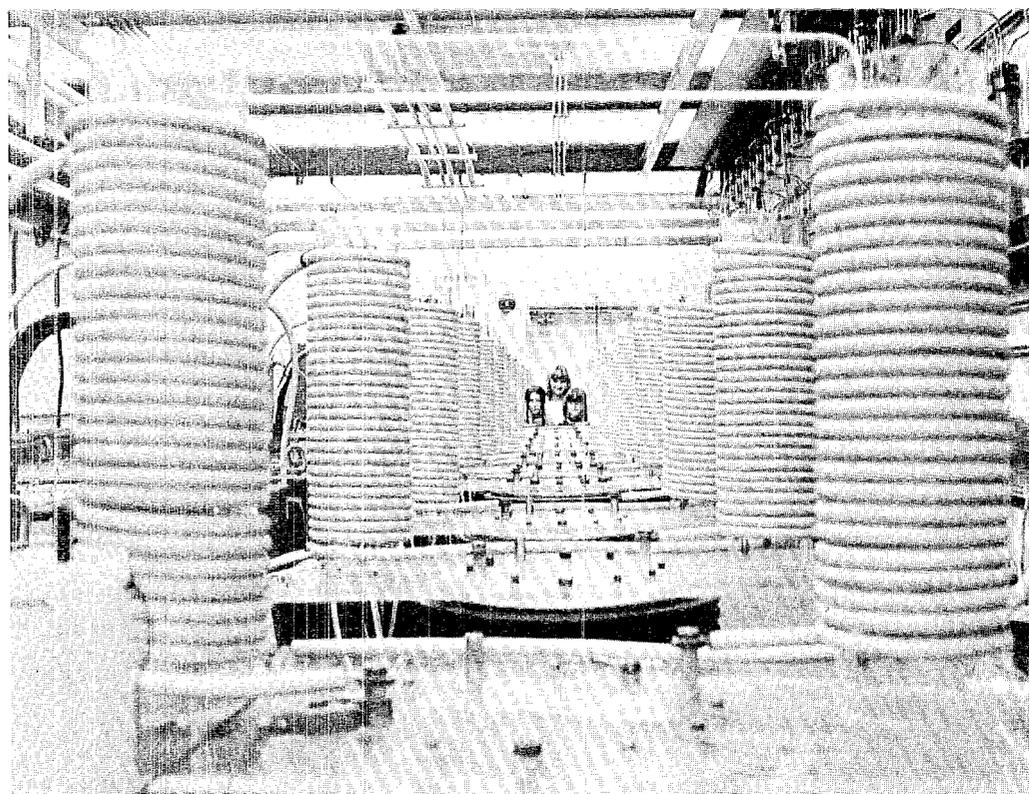
Nearly 300 persons attended Sherwood Family Days, proof that families of P-Division members are interested in seeing where "daddy" works. At top left, Horris Crane, P-15, helps a tyke interested in looking into spark-gap housings mounted on the tops of capacitors. Left, P-division members show their families the energy storage system for the first quadrant of the Scyllac torus.



Darrell Call, P-16, explains to his family the purpose of the hundreds of cables which take current from the capacitor banks to the large aluminum collector plates in the foreground.



In the Scyllac power-supply room, Dori Hafer, Diana Quinn and Patricia Quinn look down the long rows of inductance coils which make up a part of the power-supply filter network.



Above, in going from the Scyllac control room into the experimental area, visitors crossed over rows of capacitors which are awaiting installation. Scyllac will be the latest, largest and most powerful device in LASL's Project Sherwood. It will be used to study containment of thermonuclear reactions for longer periods of time than are now possible.

# The Technical Side

## **Presentation at the 10th Thermal Conductivity Conference, Boston, Mass., Sept. 28-30:**

"Thermal Diffusivity and Laser Beam Uniformity" by K. W. R. Johnson and J. F. Kerrisk, both CMB-11

"The Thermal Diffusivity of Heterogeneous Materials" by J. F. Kerrisk, CMB-11

## **Presentation at the 1970 Proton Linear Accelerator Conference, National Accelerator Laboratory, Batavia, Ill., Sept. 28-Oct. 2:**

"A Computer-Based Data-Acquisition and Control System for LAMPF Beam Diagnostics" by D. R. Nachev, MP-1

"A High Resolution Nonintercepting Beam Profile Monitor with High Sensitivity" by F. Hornstra, Jr., formerly MP-6, and M. A. Trump, MP-3

"Fabrication of LAMPF Linac Structures" by H. G. Worstell, MP-3 (invited)

"Test of LASL Ion Source with 150-kV Accelerating Column" by C. R. Emigh, E. A. Meyer and D. W. Mueller, all MP-4

"Initial Operation of the Beam Transport System in the LAMPF Injector Complex" by P. W. Allison, C. R. Emigh and R. R. Stevens, Jr., all MP-4

"An Interim Report on the Construction of the Los Alamos Meson Physics Facility" by D. C. Hagerman, MP-2 (invited)

"Bead Perturbation Measurement" by M. A. Trump, M. A. Pacioti, E. J. Schneider and D. A. Swenson, all MP-3, and D. R. Machen, MP-1 (invited)

"Operation of the First Tank of

LAMPF" by D. A. Swenson, MP-3

"Full Power Operation of the LAMPF 805 MHz System" by R. A. Jameson, J. D. Wallace, R. L. Cady, D. J. Liska, all MP-2, and J. B. Sharp, MP-1, and G. R. Swain, MP-3

## **Presentation at NASA Safety and Risk Management Conference, Cleveland, Ohio, Sept. 30:**

"Accidents, Aggravations, and Attitudes—In Science" by R. Reider, H-3 (invited)

## **Presentation at the Fall Meeting of the Optical Society of America, Hollywood, Fla., Sept. 29-Oct. 2:**

"The Proper Calculation of the Fractional Order Number at the Center of the Fringe System from a Fabry-Perot Interferometer" by D. W. Steinhaus, CMB-1

"The Spectrum of Singly Ionized Copper, Cu II" by C. B. Ross, CMB-1

"Present Status of the Analyses of U1 and U11 as Derived from Measurements of Optical Spectra" by L. J. Radziemski, Jr., D. W. Steinhaus, both CMB-1, R. D. Cowan, T-DOT, J. Blaise, G. Guelachvili, Z. B. Osman and J. Verges, all Aime Cotton Laboratory, Orsay, France

"Studies of Atomic Energy Levels and Spectra Via Computer-Produced Movies" by R. D. Cowan, T-DOT

## **Presentation at the Ninth International Gel Permeation Chromatography Conference, Miami Beach, Florida, Oct. 5-7:**

"The Use of Gel Permeation Chromatography in the Development of High-Quality Graphite" by J. M. Dickinson and E. M. Wewerka, both CMF-13

## **Presentation at the Monte Carlo Seminar-Workshop, Oak Ridge National Laboratory, Tenn., Oct. 5-7:**

"The Utilization of Coupled Sampling to Solve the Adjoint Neutron Transport Equation" by L. L. Carter, T-8

"A General Monte Carlo Photon Code" by E. D. Cashwell, C. J.

Everett, both T-8, and W. M. Taylor, T-2

**Presentation at a Communications Conference, University of Missouri, Rolla, Mo., Oct. 5-7:**

"A New Technique for Identification of Discrete Linear Systems" by B. R. Hunt, C-5

**Presentation at the Fourth International Conference on Plutonium and Other Actinides, Santa Fe, Oct. 5-9:**

"New Pressure-Temperature Phase Diagram of Plutonium" by J. R. Morgan, CMF-5

"Positron Annihilation in Plutonium-Aluminum Delta Phase Alloys" by T. R. Loree, CMF-5

"Differential Thermal Analysis Observations of U-Pu Dicarbides" by J. G. Reavis and J. A. Leary, both CMB-11

"Melting Behavior of (U, Pu) Monocarbides" by J. G. Reavis, K. A. Johnson, and J. A. Leary, all CMB-11

"The Thermodynamic Properties of the Plutonium-Carbon System" by G. M. Campbell, R. A. Kent and J. A. Leary, all CMB-11

"Low Energy Secondary-Electron Distribution Studies of Some Light Actinides" by W. P. Ellis, CMB-8, and D. D. Jackson, CMB-1

"High-Temperature Heat Content of Plutonium Dioxide" by A. E. Ogard, formerly CMB-11

"The Enthalpies of Solution of Carbon, Thulium, Titanium, Manganese, Zirconium, and Rhenium in Liquid Plutonium" by D. F. Bowersox and J. A. Leary, both CMB-11

"Evaporation Behavior of Substoichiometric (U, Pu)O<sub>2</sub>" by R. W. Ohse, Institute for Transuranium Elements, Karlsruhe, Germany, and W. M. Olson, CMF-5

"Heat Capacity Behavior of <sup>242</sup>Pu Between 10 and 373°K" by T. A. Sandenaw and R. B. Gibney, both CMF-13

"Metallic Valencies of the Early Transactinium Metals: Theoretical vs. Empirical Correlations" by E. A. Kmetko and H. H. Hill, both CMF-5

"On the Plutonium-Zirconium Phase Diagram" by F. H. Ellinger and C. C. Land, both CMF-5

"The Constitution of Plutonium-Rich Plutonium-Osmium Alloys" by F. H. Ellinger and C. C. Land, both CMF-5

"Study of the Occurrence of the Kondo Effect in Ti, Zr, and Hf Alloys Containing Pu" by R. O. Elliott and H. H. Hill, both CMF-5

"Helium Release from Alpha-Bombarded ThO<sub>2</sub>" by F. W. Clinard, Jr., Dana L. Douglass, both CMF-5, and R. Woods, P-9

"Electron Microscopy of Alpha Particle Damage in Actinide Oxides" by Dana L. Douglass and S. E. Bronisz, both CMF-5

"The Early 'Actinides': The Periodic System's f Electron Transition Metal Series" by H. H. Hill, CMF-5 (invited)

**Presentation at the Ninth National Meeting of the Society of Applied Spectroscopy, New Orleans, La., Oct. 5-10:**

"Some Recent Developments in the Recording of Low Frequency Raman Spectra of Liquids" by L. A. Blatz, CMF-2

**Presentation at Commemorative Symposium on the Oxidation of Metals, Electrochemical Society Meeting, Atlantic City, N.J., Oct. 7:**

"Nitride Layers Formed on Thorium and Thorium-Carbon Alloys in Nitrogen" by R. Benz, CMB-3 (invited)

**Presentation at the Physics Department, Massachusetts Institute of Technology, Cambridge, Oct. 8:**

"Recent Nuclear Structure Experiments at LASL" by O. Hansen, P-DOR (invited)

**Presentation to the Chemotherapy Staff of the Drug Evaluation Branch, National Cancer Institute, National Institute of Health, Bethesda, Md., Oct. 8:**

"Reversible Production of Stable G<sub>1</sub>-Arrested Populations of Mammalian Cells in Suspension Culture" by R. A. Tobey, H-4 (invited)

**Presentation at the Graduate Engineering Seminar, University of Illinois, Urbana, Oct. 8:**

"Thermal Neutron Radiography

--A Supplementary Nondestructive Inspection Technique" by D. A. Garrett and R. A. Morris, both GMX-1 (invited)

**Presentation at the Fall Meeting, Rocky Mountain Section, American Industrial Hygiene Association, Boulder, Colo., Oct. 8-9:**

"Filter Efficiency vs. Particle Size and Velocity" by R. G. Stafford and H. J. Ettinger, both H-5

**Presentation at the Association for Computer Machinery Annual Fall Meeting, Rio Grande Chapter, Cloudcroft, N.M., Oct. 12:**

"Interactive Graphics for Accelerator Control" by H. S. Butler, MP-1

"A Computer Code for the Representation of Two-Parameter Data" by N. J. Nagy, III, C-5

**Presentation at the Third Aerosol Technology Meeting, University of Minnesota, Minneapolis, Oct. 12-13:**

"Current Aerosol Research at Los Alamos" by R. G. Stafford, O. R. Moss and H. J. Ettinger, all H-5

**Presentation at the 1970 Fall Meeting, Society of Industrial and Applied Mathematics, Boston, Mass., Oct. 12-14:**

"Application of Simpson's Rule to Non-Linear Volterra Integral Equations of the Second Kind" by J. R. Sopka, C-4

**Presentation at the U.S.-Japan Ceramic Fuels Informational Exchange, Seattle, Wash., Oct. 12-15:**

"High Temperature Heat Content of Al<sub>2</sub>O<sub>3</sub> and PuO<sub>2</sub>" by A. E. Ogard and J. A. Leary, both CMB-11

"The Hot Hardness of (U, Pu)C and PuN and the Compressive Creep of (U, Pu)C" by M. Tokar and J. A. Leary, both CMB-11

"High Temperature X-ray Diffraction Studies of the Carbon Rich Fields of the U-Pu-C System" by J. L. Green, K. L. Walters and J. A. Leary, all CMB-11

**Presentation at the 14th Conference on Analytical Chemistry in Nuclear Technology, Gatlinburg, Tenn., Oct. 13-15:**

continued on next page

"Precision Computer Measurement of Spectra" by D. W. Steinhilber and Kay J. Fisher, both CMB-1

"Dissolution of Plutonium-Bearing Materials" by T. K. Marshall, J. W. Dahlby and G. R. Waterbury, all CMB-1

**Presentation at Cambridge Air Force Research Laboratories, Bedford, Mass., Oct. 14; Massachusetts Institute of Technology, Cambridge, Mass., Oct. 15; University of Pennsylvania, Philadelphia, Oct. 20; Brookhaven National Laboratory, Upton, N.Y., Oct. 22; Columbia University, New York City, Oct. 23; and Yeshiva University, New York City, Oct. 26:**

"Conjectures on the Nature of Ball Lightning" by J. L. Tuck, P-DO (invited)

**Presentation at High Energy Physics Colloquium, Argonne National Laboratory, Argonne, Ill., Oct. 15:**

"Elementary Particle Physics at LAMPF" by P. A. M. Gram, MP-6

**Presentation at the American Physical Society Meeting, Houston, Texas, Oct. 15-17:**

"Phase Shift Analysis of  $p + {}^3\text{He}$  Scattering at 13.6 MeV" by J. H. Jett and N. Jarmie, both P-DOR

"Accurate  $p-{}^3\text{He}$  Scattering Cross Sections at 13.6 MeV" by J. H. Jett, J. L. Detch, Jr., N. Jarmie, all of P-DOR and R. L. Hutson, MP-7

"L = O Transitions in Even Isotopes of Cr and Ti" by R. F. Casten, E. R. Flynn, O. Hansen and T. J. Mulligan, all P-DOR

"Curium Fission Isomers" by W. E. Stein and H. C. Britt, both P-DOR and B. H. Erkkila, P-12

"Systematics in the Production of Plutonium and Americium Fission Isomers" by H. C. Britt and W. E. Stein, both P-DOR, and B. H. Erkkila, P-12

"The Atomic Mass Law in Nucleosynthesis Calculations" by P. A. Seeger, W-8

"A Study of the Elastic Scattering of Polarized Deuterons from Iron-56" by D. D. Armstrong, L. L. Catlin, P. W. Keaton, Jr., P. W. Lisowski, G. G. Ohlsen, all P-DOR, and G. P. Lawrence, P-9

"Time-of-Flight Measurements with

Nuclear Explosions" by M. S. Moore, P-3 (invited)

"Polarization of Elastically Scattered Tritons" by P. W. Keaton, Jr., P-DOR, and D. D. Armstrong, P-12 (invited)

"Spin and Parity Determinations in  ${}^{183}\text{W}$  Using Polarized Deuterons" by R. F. Casten, P. W. Keaton, Jr., both P-DOR, and G. P. Lawrence, P-9

"Planning for N-N Problem at LAMPF" by J. E. Simmons, P-DOR (invited)

**Presentation at The Society for Experimental Stress Analysis 1970 Fall Meeting, Boston, Mass., Oct. 18-22:**

"Two-Dimensional Photoelastic Coating Techniques As Aids for Pressure Vessel Design" by J. W. Neudecker, N-7

**Presentation at the Libby-Cockcroft Plutonium Informational Exchange, Argonne National Laboratory, Argonne, Ill., Oct. 19-20:**

"High Temperature Heat Content of  $\text{UO}_2$ " by A. E. Ogard, formerly CMB-11, and J. A. Leary, CMB-11

"High Temperature Heat Content of  $\text{Al}_2\text{O}_3$  and  $\text{PuO}_2$ " by A. E. Ogard, formerly CMB-11, and J. A. Leary, CMB-11

"Elastic Constants of  $(\text{U}_{0.8}\text{Pu}_{0.2})\text{C}$ " by A. W. Nutt and J. A. Leary, both CMB-11

"The Hot Hardness of  $(\text{U}, \text{Pu})\text{C}$  and  $\text{PuN}$  and the Compressive Creep of  $(\text{U}, \text{Pu})\text{C}$ " by M. Tokar and J. A. Leary, both CMB-11

"Thermal Transport Properties of  $(\text{U}_{0.8}\text{Pu}_{0.2})\text{C}$ " by K. W. R. Johnson, J. F. Kerrisk and J. A. Leary, all CMB-11

**Presentation at the National Materials Engineering Congress, Cleveland, Ohio, Oct. 19-22:**

"Influence of Deformation History on the Stress-Strain Behavior of Aluminum and Copper" by S. S. Hecker, formerly CMF-5

"Dislocation Dynamics During High Rate Deformation" by J. W. Taylor, GMX-6

"Effect of Strain Rate on Structure" by E. G. Zukas, CMF-13

"High Temperature Creep of Arc-Melted Tungsten" by E. G. Zukas and W. V. Green, both of CMF-13

**Presentation at the 25th Annual Calorimetry Conference, National Bureau of Standards, Gaithersburg, Md., Oct. 19-22:**

"Enthalpy of Formation of Uranium Tetrachloride" by G. C. Fitzgibbon, D. Pavone and C. E. Holley, Jr., all CMF-2

**Presentation at Users of Automatic Information Display Equipment Annual Meeting, Miami, Fla., Oct. 19-22:**

"Program Controlled Color Computer Graphics" by J. P. Shannon, T-3 and D. C. Buckner, C-8

**Presentation at the Annual National Meeting of the American Society for Nondestructive Testing, Cleveland, Ohio, Oct. 19-22:**

"Resonance Neutron Radiography" by L. Forman, C. U. Benton, A. D. Schelberg, all J-16, and D. A. Garrett, GMX-1

**Presentation at seminar, University of Colorado, Boulder, Oct. 19:**

"Physical Chemistry Problems Associated with Geothermal Energy" by E. S. Robinson, CMF-4 (invited)

**Presentation at the University of Colorado Medical School, Denver, Oct. 20:**

"Carbon-13 Problems of Interest to the University of Colorado and LASL—CMF-4" by E. S. Robinson, CMF-4 (invited)

**Presentation at Front Surface Physics Meeting, Air Force Weapons Laboratory, Kirtland Air Force Base, Albuquerque, Oct. 20-21:**

"Influence of Reradiation and Ionization on Impulse" by R. S. Dingus, W-10 and F. T. Seibel, W-8

"Measurements and Calculations of Blowoff Velocities" by S. D. Gardner, GMX-7

"The Dependence of a Melt Contribution to Blow-Off On X-ray Spectrum and Fluence" by R. S. Thurston, W-4

**Presentation at seminar, Bell Telephone Laboratories, Whippany, N.J., Oct. 20:**

"Production of Light by Low-Energy Ion Impact" by R. F. Holland and W. B. Maier II, both J-10 (invited)

**Presentation at Sloan-Kettering Institute for Cancer Research, New York City, Oct. 20, and Johns Hop-**

kins Hospital School of Hygiene, Section on Nuclear Medicine, Baltimore, Md., Oct. 22:

"Future Radioisotope Production in the Los Alamos Meson Physics Facility for Medical Applications" by H. A. O'Brien, Jr., Dir. Off. (invited)

Presentation at seminar at University of California, Los Angeles, Oct. 20, and at the California Institute of Technology, Pasadena, Oct. 23:

"Vibrational Spectra, Assignments, and Normal Coordinate Treatment of the Cobaltcyanide Ion,  $[\text{Co}(\text{CN})_6]^{3-}$  and Cesium Lithium Cobaltcyanide,  $\text{Cs}_2\text{LiCo}(\text{CN})_6$ " by B. I. Swanson and L. H. Jones, both CMF-4 (invited)

Presentation at Symposium on Neutron Standards and Flux Normalization, Argonne National Laboratory, Argonne, Ill., Oct. 21-23:

"A Rationale for Neutron Standards and Flux Normalization" by R. F. Taschek, P-DO (invited)

Presentation at the American Vacuum Society Meeting, Washington, D.C., Oct. 21-23:

"Computer Control of Van de Graaff Accelerator Vacuum Systems" by R. Woods, H. K. Jennings, D. E. McMillan, all P-9, M. W. Collins, ENG-6, and D. G. Harder, C-2

Presentation at 23rd Annual Gaseous Electronics Conference, Hartford, Conn., Oct. 21-23:

"Reactions between  $\text{H}^+$  and  $\text{D}_2$ " by W. B. Maier II, J-10

Presentation at seminar, High Altitude Observatory, Boulder, Colo., Oct. 22:

"Interplanetary Shock Waves and Solar Flares" by A. J. Hundhausen, T-12 (invited)

Presentation at joint meeting of the American Nuclear Society-Health Physics Society, Las Vegas, Nev., Oct. 22:

"Plutonium in the Environment" by W. H. Langham, H-4 (invited)

Presentation at the Department of Interior, Washington, D.C., Oct. 26:

"Use of  $^{13}\text{C}$  in Environmental Problems" by E. S. Robinson, CMF-4, and D. G. Ott, H-4 (invited)

Presentation at Southeast Water Laboratory, Athens, Ga., Oct. 26:

"Use of Carbon-13 as an Environmental Tracer" by E. S. Robinson, CMF-4, and D. G. Ott, H-4 (invited)  
Presentation at the 1970 Annual Instrument Society of America Conference, Philadelphia, Pa., Oct. 26-29:

"Amorphous Alloy Resistance Thermometer Development" by C. R. Tallman, N-4

"A Computer-Based Accelerator Control System" by H. S. Butler, MP-1 (invited)

Presentation at the 1970 Institute of Electrical and Electronic Engineers Thermionic Conversion Specialist Conference, Miami, Fla., Oct. 26-30:

"Elastic Moduli and Thermal Expansion of High Porosity  $\text{Mo-}\text{UO}_2$  Cermets" by J. C. Rowley, R. G. Lawton and C. R. Saunders, all N-7

"Cermets Fuel Technology at Los Alamos Scientific Laboratory" by R. E. Riley and J. M. Taub, both CMB-6

"Developments in Pressure Bonded Sheathed Insulators and Ceramic-to-Metal Seals" by C. V. Weaver, N-5

"Stresses in Pressure Bonded Tri-Layers Due to Swelling of the Alumina Layer" by R. G. Lawton, N-7

"Radiation Induced Damage to Ceramics in the EBR-II Reactor" by W. A. Ranken, W. H. Reichelt, C. V. Weaver, A. W. Blackstock and A. J. Patrick, all N-5, and M. C. Chaney, W-3

"Effect of Neutron Spectra on the Swelling of Alumina Under Irradiation" by E. W. Salmi, C. E. Backus, T. G. Frank and C. D. Sutherland, all N-5

Presentation at Interagency Mechanical Operations Group, Numerical Systems Subgroup Fall Meeting, Las Vegas, Nev., Oct. 27-30:

"Interactive Graphics with a Storage Type Cathode Ray Tube" by D. G. Miller, GMX-3

"GMX-3 Communications Processor" by J. B. Bourne, GMX-3 (invited)

Presentation at the Nuclear Ceramics Seminar of the American Ceramic Society Fall Meeting, San Francisco, Calif., Oct. 27-30:

"Physical and Mechanical Properties of Refractory Carbide-Graphite Composites" by J. C. Rowley, W. L. Sibbitt, C. R. Saunders, all N-7 and R. E. Riley, CMB-6

"Thermal Fracture Resistance of Refractory Carbide-Graphite Composites" by R. W. Andrae, C. R. King, J. C. Rowley, all N-7, and R. E. Riley, CMB-6

"Some Porosity Effects in Graphite" by P. Wagner, P. E. Armstrong, and J. A. O'Rourke, all CMF-13

"The Effects of Manufacturing Variables on the Properties of Graphite" by R. J. Imprescia, of CMF-13

Presentation at meeting on Rover Program, Washington, D.C., Oct. 28-29:

"A Brief Review of the Development of Spaghetti-Type Carbide Fuel Elements at IASL" by J. M. Taub, CMB-6

Presentation at the 1970 Institute of Electrical and Electronic Engineers International Electron Devices Meeting, Washington, D.C., Oct. 28-30:

"The Effects of Finite Focusing Fields on Klystron Performance" by P. J. Tallerico, MP-2

"Measured Dynamic Performance of 1.25 MW, 805 MHz Klystrons" by R. A. Jameson, MP-2

Presentation at the Department of Biology, New Mexico Institute of Mining and Technology, Socorro, Oct. 29:

"Mammalian Cell Controls" by G. R. Shepherd, H-4 (invited)

Presentation at Symposium on Thermokinetics Effects in Pulsed Energy Deposition, Albuquerque, N.M., Oct. 28-30:

"Conjectures on the Nature of Ball Lightning" by J. L. Tuck, P-DO (invited)

Presentation to the Colorado Committee on Environmental Information, Boulder, Nov. 2:

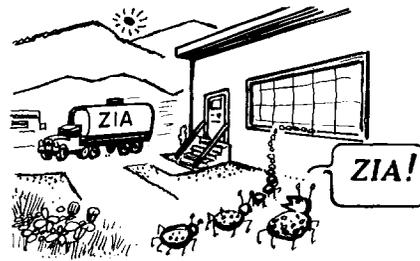
"The Environmental Status of the Nevada Test Site" by H. J. Otway, J-DOT

Presentation at seminar at University of Florida, Gainesville, Nov. 2:

"The Effect of Morphology on the Characteristics of Particulate Materials" by R. E. Riley, CMB-6

# 20

## years ago in los alamos



Culled from the files of the Dec., 1950, Santa Fe New Mexican by Robert Porton

### Los Alamos to Seek School Plan Change

Los Alamos will ask the state legislature for authority to set up a municipal-type school system for this small county. The new plan would provide for an elected school board. The board would then appoint a superintendent who would be responsible to the board. Present Superintendent F. Robert Wegner said the Los Alamos-White Rock area was in reality a municipality, but that its school system was designed for a rural area. The proposed law change would authorize a sixth-class county to inaugurate the type system now found in most towns. Los Alamos is the only sixth-class county in New Mexico.

### Edward Teller Will Speak in Oklahoma

Edward Teller, an assistant director of the Los Alamos Scientific Laboratory, will be the principal speaker at a dinner meeting of the AEC-Oklahoma University Press Seminar in Norman, Oklahoma. He will discuss "The Implications of Atomic Energy—Present and Future." Other speakers will include Sumner Pike, a member of the Atomic Energy Commission, and Morse Salisbury, director of the Atomic Energy Commission's Division of Information Services.

### The Clover Mites are Back

The little varmints are causing trouble again. But they may get their due—a snootful of insecticide. Wendell L. Miller, manager of the Zia Company, has announced that the Atomic Energy Commission has authorized Zia to start spraying again for clover mites. Clover is about as necessary to these tiny bugs as an Indian headdress is to a feather merchant. The mites seem to spend most of their energy moving from outdoors into Los Alamos houses. Tenants should arrange to be at home when spraying crews arrive or make arrangements to have them admitted to the house.

### Long Hair Thrives on The Hill

At its premier concert the Los Alamos Symphony Orchestra will perform before an audience of real long hairs. This community of 11,000 is going into its second week without a barber shop.

## what's doing

**PUBLIC SWIMMING:** High School Pool—Monday through Wednesday, 7:30 to 9 p.m., Saturday and Sunday, 1 to 6 p.m., Adult Swim Club, Sunday, 7 to 9 p.m.

**SIERRA CLUB:** Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria. For information call Brant Kalkin, 455-2468, Santa Fe.

**RIO GRANDE RIVER RUNNERS:** Meetings scheduled for noon, second Tuesday of each month at South Mesa Cafeteria. For information call Joan Chellis, 662-3836.

**OUTDOOR ASSOCIATION:** No charge, open to the public. Contact leaders for information regarding specific hikes. Dec. 6—Hot Springs Hike and Swim, Bob Kleinberg, 662-6633. Dec. 13—Arroyo Montoso, Dorothy Hoard, 672-3356.

**LOS ALAMOS FILM SOCIETY:** Dec. 30, 7:30 p.m., Civic Auditorium: "Loves of a Blond." Admission: members—\$.75, others—\$.50.

**MOUNTAIN MIXERS SQUARE DANCE CLUB:** For information call Mrs. Dee Seitz, 662-7356. Dec. 5—Canyon School, 8 p.m., Bill Wright, Farmington, caller. Dec. 19—Canyon School, 8 p.m., Henry Craig, caller. Dec. 31—New Year's Eve dance, 9 p.m. to 1 a.m.

**MESA PUBLIC LIBRARY:** Dec. 1 to Jan. 4—Beethoven 200th Anniversary display. Dec. 8 to Jan. 4—Library Christmas display. Dec. 1 to Dec. 18—Paul St. John paintings, various media. Dec. 21 to Jan. 18—Dale Armstrong, oil paintings. Jan. 5—Allen McNown family, slide program on Japan.

**LOS ALAMOS ARTS COUNCIL:** Dec. 13—Puppet show followed by Christmas carol sing at Fuller Lodge. Time to be announced. For information call Ed Storms, 672-3630.

**LOS ALAMOS SINFONIETTA:** Jemez House benefit, Civic Auditorium, 2:30 and 8:15 p.m., "Amahl and the Night Visitors (a Christmas opera)," by Gian-Carlo Menotti. Admission: adults, \$2, students and children, \$1. For information call Sandie Jones, 662-3975.

**LOS ALAMOS LIGHT OPERA:** "Man of La Mancha," 8:30 p.m., Dec. 4, 5, 11, and 12 at the Civic Auditorium. Tickets on sale daily at Fuller Lodge from 9 a.m. to 5 p.m. and at Civic Auditorium from 7 to 9 p.m. Prices: \$1.50, \$2, and \$3.



Keith Boyer, J-DO, addresses a meeting of the Military Liaison Committee at the Los Alamos Scientific Laboratory. Approximately 20 persons from outside LASL plus a like number from the Laboratory attended the recent one-day meeting. The Military Liaison Committee was established pursuant to the Atomic Energy Act which established the AEC. It has equal representation from each of the military departments and its chairman is appointed by the President with the advice and consent of the Senate. The Committee advises and consults with the AEC on all atomic energy matters relating to the military applications of atomic energy, including development, manufacture, use and storage of weapons, the allocation of nuclear material and the control of atomic information.

Henry T. Motz  
3187 Woodland  
Los Alamos, New Mexico

87544

*All the records contained in 10 file drawers, John Lucero, records management clerk, can now hold in one hand. Mail and Records Group (ISD-5), headed by David Heimbach, is having about 400 drawers of records microfilmed to reduce overall volume and to make retrieval easier. About 35 drawers of inactive medical records have been microfilmed by ISD-7 so far.*

