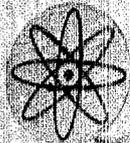


# the Atom

Los Alamos Scientific Laboratory

October 1977



## NUCLEAR ROCKET DEVELOPMENT STATION



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# The Atom

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John Armistead

### Photography

Bill Jack Rodgers, Johnnie Martinez, John Armistead. Our thanks to The Society of Nuclear Medicine for the Chicago Pile group photo on Page 8.

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### FRONT COVER

The front cover photo by Bill Jack Rodgers is of a sign that tells what used to be—activity at the Nuclear Rocket Development Station at the Nevada Test Site. The NRDS is virtually deserted now, creating a sad scene in the desert at NTS.

### SPECIAL CREDIT

The calligraphy on Page 7 was done by Doris Jackson, who also did the calligraphy for the 1978 Los Alamos Area United Way brochure.

# Archaeological Studies Of The Pajarito Plateau Began In The 1800s

**Editor's Note:** This is the first of several articles on the Indians of the Pajarito Plateau. Information for this introductory article on archaeological investigations of the Plateau from the 1880s to the present was taken from a LASL report, "Pajarito Plateau Archaeological Survey and Excavations," written by Charlie R. Steen, the Laboratory's archaeologist. The report, published in May 1977, also will serve as the basis for future articles on the archaeology of the area which will appear in *The Atom* during the coming year.

Charlie R. Steen, former chief archaeologist of the Southwest Region for the National Park Service, surveyed archaeological sites on and adjacent to Los Alamos Scientific Laboratory from March 1973 to July 1975.

The survey had 3 main objectives:

1. The survey evaluated and summarized the archaeological salvage operations that Frederick C.V.

Worman conducted on LASL as the Laboratory's archaeologist from 1950 until his death in 1971.

2. LASL lands were searched for sites in addition to those that Worman excavated or noted. The findings were summarized in a report to serve as an effective instrument in construction planning to avoid damage to the sites and to provide the lead time necessary to salvage sites that might be jeopardized by LASL operations.

3. The information gathered by Steen has been and will be used to recommend certain sites for registration with the Federal Government to ensure their preservation for future generations by establishing the formal procedures through which responsibility and authority for protecting the sites are clearly outlined.

What happens to the thousands of artifacts that are recovered from sites on LASL property?

All artifacts recovered by salvage

archaeology on LASL lands must, by law, be placed in public museums. The artifacts collected by Worman and Steen have been given to the State of New Mexico Museum Laboratory of Anthropology, the National Park Service Bandelier National Monument, and the Los Alamos County Historical Society.

Laboratory personnel have contributed representative artifacts, some of which are mounted temporarily in displays at the Clinton P. Anderson Los Alamos Meson Physics Facility and the Occupational Health Laboratory. At some suitable time they will be deposited in one of the above collections.

Archaeology is one of the several disciplines being used in a comprehensive inventory of natural resources by LASL's Environmental Studies Group, H-8, to describe the environmental background against which LASL operations are conducted. A major part of that en-

vironmental background is the Pajarito Plateau.

Pajarito Plateau is the name now commonly given to the high mesas that extend eastward from the Jemez Mountains to the Rio Grande. The name was in common use by the late 19th century and was first used in archaeological literature by Edgar Lee Hewett, a pioneer southwestern archaeologist, in describing an 1896 survey of the area from Puye to Frijoles Canyon.

The name was derived from the Tewa name for a large ruin and an adjacent canyon that has been shortened to Tshirege, meaning Bird House or House of the Bird People. Spanish-speaking settlers translated this as Pajarito. Geographers and writers in all fields seem to have settled on use of the name Pajarito to describe the area that extends from Puye on the Santa Clara Reservation to the north to Cañada de Cochiti on the south, a distance of about 35 km (22 miles).

Hundreds of pre-Columbian Indian dwellings and villages lie on the mesas of the Pajarito Plateau. Indian occupation of the area occurred primarily from late Pueblo III times (late 13th century) until early Pueblo V (about the middle 16th century). There are evidences of sporadic Indian use of the area for some 10,000 years, and continued use of the region well into the historic period is indicated by pictographic art that portrays horses.

Since the principal purpose of Steen's survey was to locate and identify ruins that might be destroyed or damaged by future construction, the search was concentrated on the mesa tops.

From 1950 until his death in 1971, Worman made surveys in advance of construction, and excavated when necessary. Results of some of his work have been published (Worman 1967, Worman and Steen, in press). Results of other Worman excavations and notes on the sites he surveyed are included in Steen's May 1977 report.

The first serious archaeological

work on the plateau was that of the Swiss-American Adolf Bandelier. During his studies at Cochiti in the 1880's, Bandelier made 5 visits to Rito de los Frijoles and went to Puye while on a visit to San Juan. His interest was primarily ethnological, but he took notes on the ruins and measured and sketched some of them.

In 1896 Edgar Lee Hewett made a brief survey of the Plateau from Puye to Frijoles Canyon. He was at that time a teacher of classics at Colorado Normal School and be-

came interested in southwestern archaeology. He was later instrumental in starting the Department of Anthropology at the University of New Mexico.

Although Hewett was not involved directly in later studies of the Pajarito Plateau, he played an important role in the development of anthropological and archaeological research in the United States. An ardent conservationist, Hewett, along with Byron Cummings of the University of Utah, argued for an American Antiquities Act. Hewett

This sign, posted at sites of archaeological investigations on LASL lands, describes the 1906 law guaranteeing protection of relics and artifacts recovered on public lands.



helped to write the bill that was introduced into Congress and which was in 1906 signed into law as the Act for Preservation of American Antiquities.

Hewett tried to persuade the Federal Government to create a National Park of the Cliff Cities or Pajarito National Park, which would have encompassed most of the Pajarito Plateau. He did not succeed, but several national monuments were designated in New Mexico, and among them was the Bandelier National Mounment, a smaller ver-

sion of Hewett's proposed park for the entire plateau.

The School of American Archaeology, which Steen terms as the operational branch of the Museum of New Mexico, did a series of summer excavations at several locations on the plateau at about the time of the creation in 1916 of Bandelier National Monument. No major reports of these digs were written, and only 2 brief papers were written in 1916 and 1918 to describe the major excavation of a large part of the Otowi ruins. This was a joint ven-

ture by Mrs. L. L. W. Wilson of the Philadelphia Commercial Museums and the School of American Archaeology.

Little work was done on the Plateau between World War I and II. A survey in 1935 by the National Park Service resulted in a map of about 200 site locations, and some excavations were made in Bandelier as part of ruins stabilization projects.

Between 1946 and 1950, small excavations associated with ruins stabilization projects were made by National Park Service people at Tyuonyi and other sites in Frijoles Canyon. In 1948 Worman, then at Adams State College in Alamosa, Colorado, dug the small site in Frijoles Canyon which he called Rainbow House. In the autumn of 1950 he joined the LASL staff.

The Los Alamos Archaeological Society, between 1953 and 1956, excavated a site where the community of White Rock was being built. The work was done under an Antiquities Act permit issued to LASL with Worman as archaeologist.

Worman surveyed 129 sites and located them on LASL's 1:50 topographic maps. He was called on occasionally to excavate sites that were to be destroyed by construction. One cluster of 4 sites that he dug was on Mesita del Bucy, and he excavated 11 sites at the LAMPF location. In addition to these sites he dug at least 13 other sites on the Pajarito Plateau between 1950 and 1969.

The sites that Worman surveyed and the ones surveyed and noted in Steen's recent survey have all been recorded in the statewide archaeological survey of the Museum of New Mexico. 



Charlie Steen, archaeological consultant to LASL, explains the construction and use of fire pits and other features of pre-Columbian Indian dwellings to members of the Los Alamos Archaeological Society.

# short subjects

The New Mexico Sheriff's and Police Association 43rd annual convention was held in Los Alamos October 14-17. **Joe I. Kavanaugh**, president of the Association, is a security inspector at LASL for the Department of Energy. Los Alamos County officials, New Mexico state legislators, and state law officers and judges participated in the activities. The Association's annual pistol match was held October 15.

Remaining holidays for the calendar year for LASL employees include Thanksgiving, November 24-25, and Christmas Day, December 26.

**Samuel Glasstone**, author, lecturer, and consultant to LASL for many years, received a special award from the Energy Research and Development Administration on September 15 "For his numerous contributions to the scientific and technical literature of the United States' nuclear and energy programs. . . ." Glasstone first came to Los Alamos in 1949 for a few months, and re-

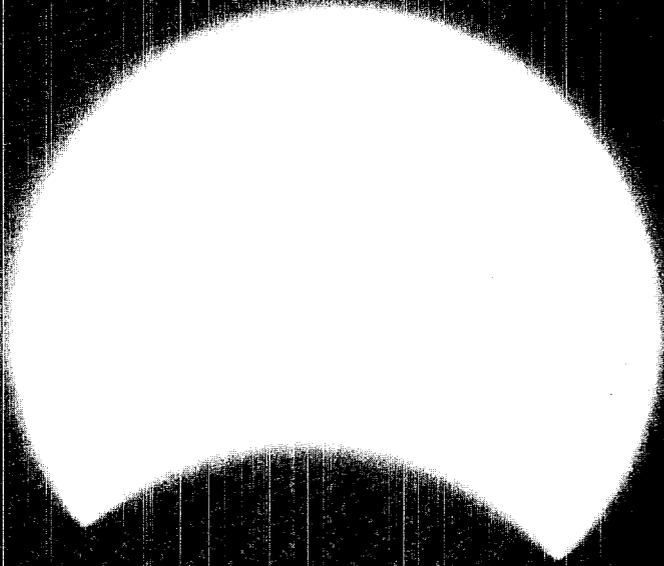
turned in 1951 to stay until 1969, when he moved to Tennessee to work with ERDA's Oak Ridge Operations. He was honored for more than 25 years of service to the Federal Government as a writer and editor.

**RETIREMENTS:** **Arthur D. Quackenbush**, SD-5, laboratory machinist; **Jean L. Dabney**, P-4, technical analyst; **Alan S. Rawcliffe**, CTR-3, staff member; **Dwight L. Stephenson**, E-5, staff member.



## PATENTS

**R. Jay Fries** and **Eugene H. Farnum**, both L-4, and **Gene H. McCall**, L-DO, were granted U.S. patent 4,038,125 on July 26, 1977, for a method for mounting laser fusion targets for irradiation. According to the summary of the invention, laser fusion target microspheres are advantageously prepared for irradiation by mounting them using thin support films disposed on a suitable target holder.



Bill Jack Rodgers set up his camera in the parking lot at ISD-1 to get this picture of the partial eclipse of the sun at mid-afternoon on October 12.



The Los Alamos Area United Way this year has set a fund drive goal of \$230,000.

This money, collected through 1 fund drive instead of 20, will support 20 member agencies that provide services for everyone for a better community. Many of the services are free, and others have a sliding scale of charges. Funds are allocated by citizen committee to ensure that community needs are met.

The fund drive is efficient, with costs under 1 per cent, and relies heavily upon volunteer workers. It is people helping people.

The member agencies provide so much help and so many services to the people of the Los Alamos area that space will not allow a description of all the services.

A brief look at 2 agencies, the Heart Association and the Arthritis Foundation, however, will reveal how involved people can become in their efforts to give hope, care, and love.

The Arthritis Foundation supports patient education, research, physician training, and modern treatment for arthritis, the nation's number 1 crippling disease. New Mexicans receive help at the foundation's clinical research center at the University of New Mexico Medical School in Albuquerque, 1 of 44 such centers in the country. The foundation in the Los Alamos area this year is hoping to receive at least \$3,000 to help area residents suffering from the disease.

The Heart Association engages in research, provides information for physicians, and educates the public about heart disease. The association provides a free hypertension screening program throughout the country through public health offices. Another service is the training of local instructors in cardiopulmonary resuscitation. The association supports the free cardiac clinic at the

Los Alamos Medical Center, where referred heart patients get extensive diagnostic tests and expert consultation. It also makes available special-training scholarships for nurses in the Medical Center's intensive care/coronary care unit. The Heart Association has \$7,400 from this year's fund drive earmarked for its services.

The Los Alamos Area United Way campaign chairman this year is Carol Ann Mullaney.

Team leaders are Charles Holley, Shirley Sundberg, Douglas Venable, LASL; Jeff Fladd, Zia/LACI; Gloria Elliott, county; Gene Ebinger, schools; Carolyn Linnebur, Medical Center; Geri Guerette, dentists; Genevieve Martinez, Federal (CFC); Lorenzo Herrera, EG&G; Winifred Amsden, retired; and Dottie Buettner, Walter Siglock, and Ernie Wells, business.

The board of trustees are Lawry Mann, president, Carolyn Linnebur, vice president, Vivian Malik, secretary, Elizabeth Dahl, treasurer, William Keller, financial secretary, and members Alice Brock, Charles Cozzens, Norma Liebenberg, William McCreary, Shirley Sundberg, and Lore Watt.

Contributions are tax deductible, and if they have not been made through payroll deduction or installment plan they can be mailed to Los Alamos Area United Way, Inc., P.O. Box 539, Los Alamos, New Mexico 87544. Telephone 662-3264. 

#### UNITED WAY PARTICIPATING AGENCIES AND CAMPAIGN GOALS

Arthritis Foundation, \$3,000; American Red Cross, \$7,000; Association for Retarded Citizens, \$10,500; Boy Scouts of America, \$12,700; Cancer Clinic, \$7,870; Casa Mesita, \$5,000; Cystic Fibrosis Foundation, \$5,000; Family Council, \$31,800; Self Help, Inc., \$5,000; Los Alamos Workshop, \$24,000; Girl Scouts of the U.S.A., \$14,310; Jemez House, \$30,740; Family YMCA, \$12,000; Visiting Nurse Service, \$16,000; USO, \$700; Salvation Army, \$6,900; New Mexico Council on Crime and Delinquency, \$1,000; Chaparral Home and Adoption Services, \$1,900; Heart Association, \$7,400, and Council on Alcoholism, \$12,500.

*Thanks to You .. It Works  
... For All of Us*

## Quality of Instruction Same

# New Laser Program Saves Money

Los Alamos Scientific Laboratory for the past 3 years has sent technicians to Texas State Technical Institute (TSTI) in Waco for intensified laser training. The cost: \$33,000 for 24 technicians.

The 24 technicians now can get the same quality intensified training rights here at LASL for about \$19,000. The savings: nearly \$25,000.

This money-saving arrangement can bring only applause from the

people who try to make every dollar count in running the Laboratory more efficiently.

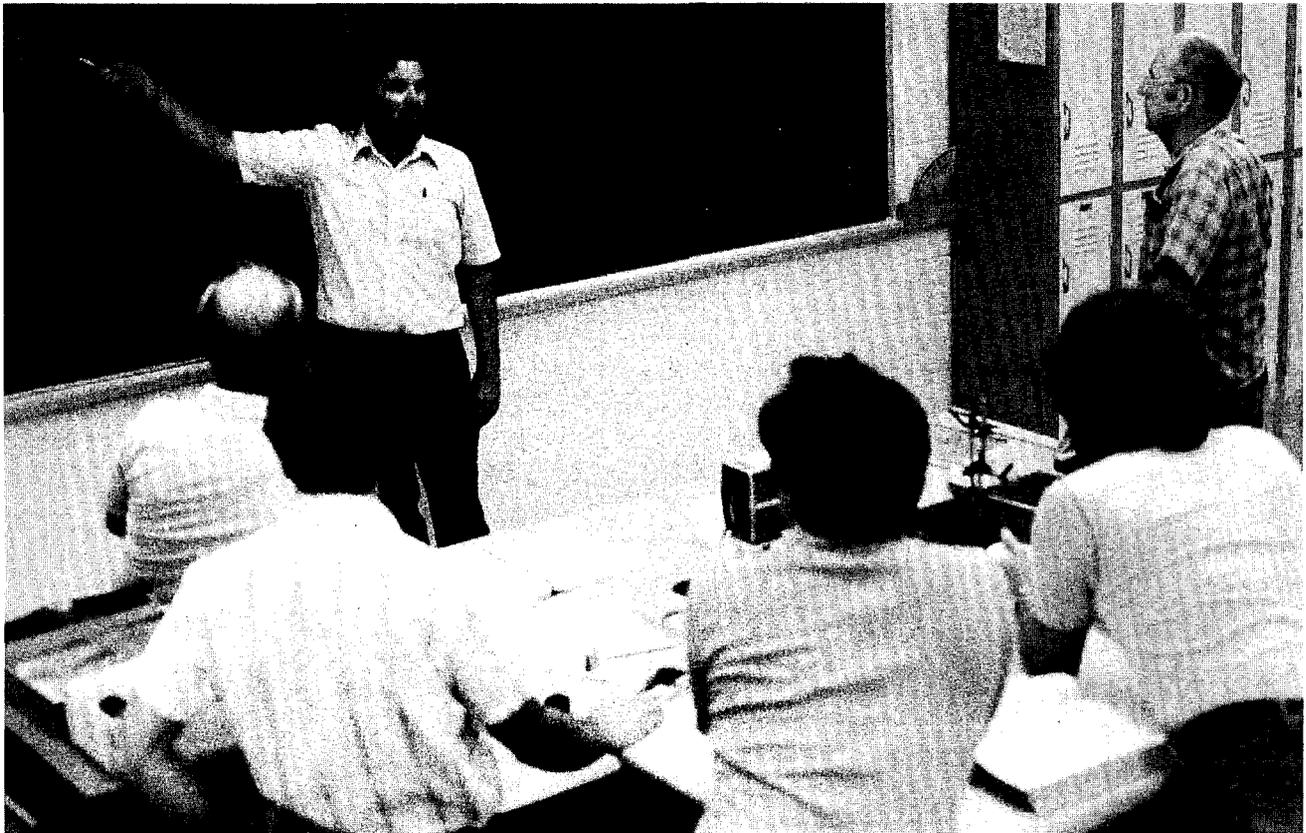
The Laboratory's training programs office negotiated a contract of \$8,000 with TSTI to have the Institute's instructors come to LASL to teach the 24 technicians. The Laboratory used the \$11,000 grant authorized by ERDA's Division of Laser Fusion for electro-optical equipment for training; the \$19,000 investment resulted in top

quality instruction for the technicians at a considerable savings to the Laboratory.

Two groups of technicians, 12 in each group, participated in the first classes here this summer. The technicians had 80 contact hours of theory and "hands-on" practical laboratory experiences with the new equipment.

The first group had classes from July 18 through 22 and from August 15 through 19. The second

Johnny Jones, instructor with the Texas State Technical Institute in Waco, lectures on lasers as part of an intense training course for 24 LASL technicians. In the photo on this and the following page, Jones explains some of the properties of light as it goes through a laser system.



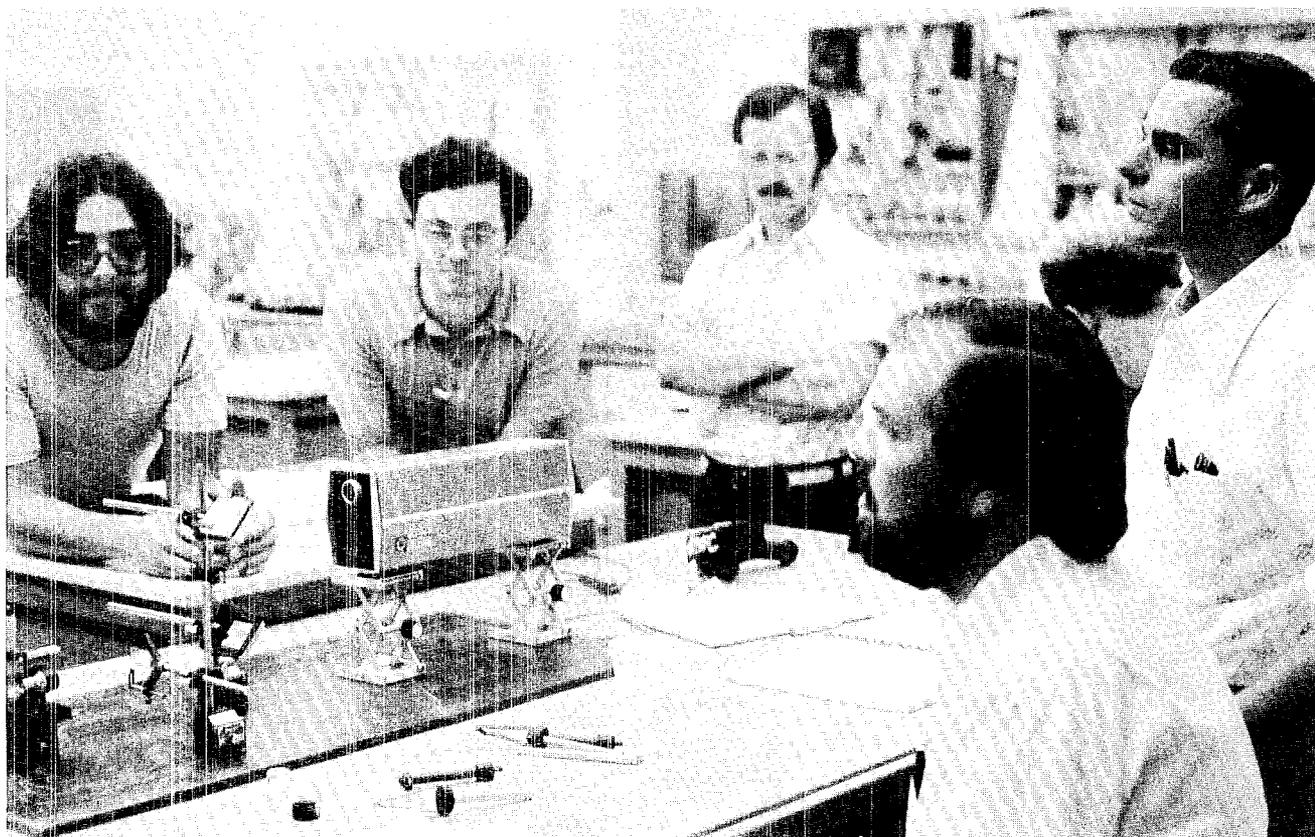
group's classes were from July 25 through 29 and from August 22 through 26. The instructors were J. D. Pierson and Johnny Jones of TSTU.

The laser electro-optics course contained instruction on the reflection and refraction of light, the 3 methods of examining the propagation of a light ray through a system, the properties and applications of optical components, the origin and nature of light, interference phenomena, pulsed laser flashlamps and power supplies, the operating parameters and characteristics of ion gas lasers and molecular gas lasers, electro-optical devices, the

theory and operation of optical isolators, modulators, Q-switches and mode locking devices, and the theory, capabilities, and operation of spectrometers, monochrometers, and spectrophotometers.

The equipment made available by the ERDA grant will be used in the Laboratory's regular semester in-house continuing education courses that are scheduled throughout the year. A course in geometric optics is planned for fall with an introduction to lasers course planned later in the spring semester. Advanced laser technology also is planned for the spring semester. 

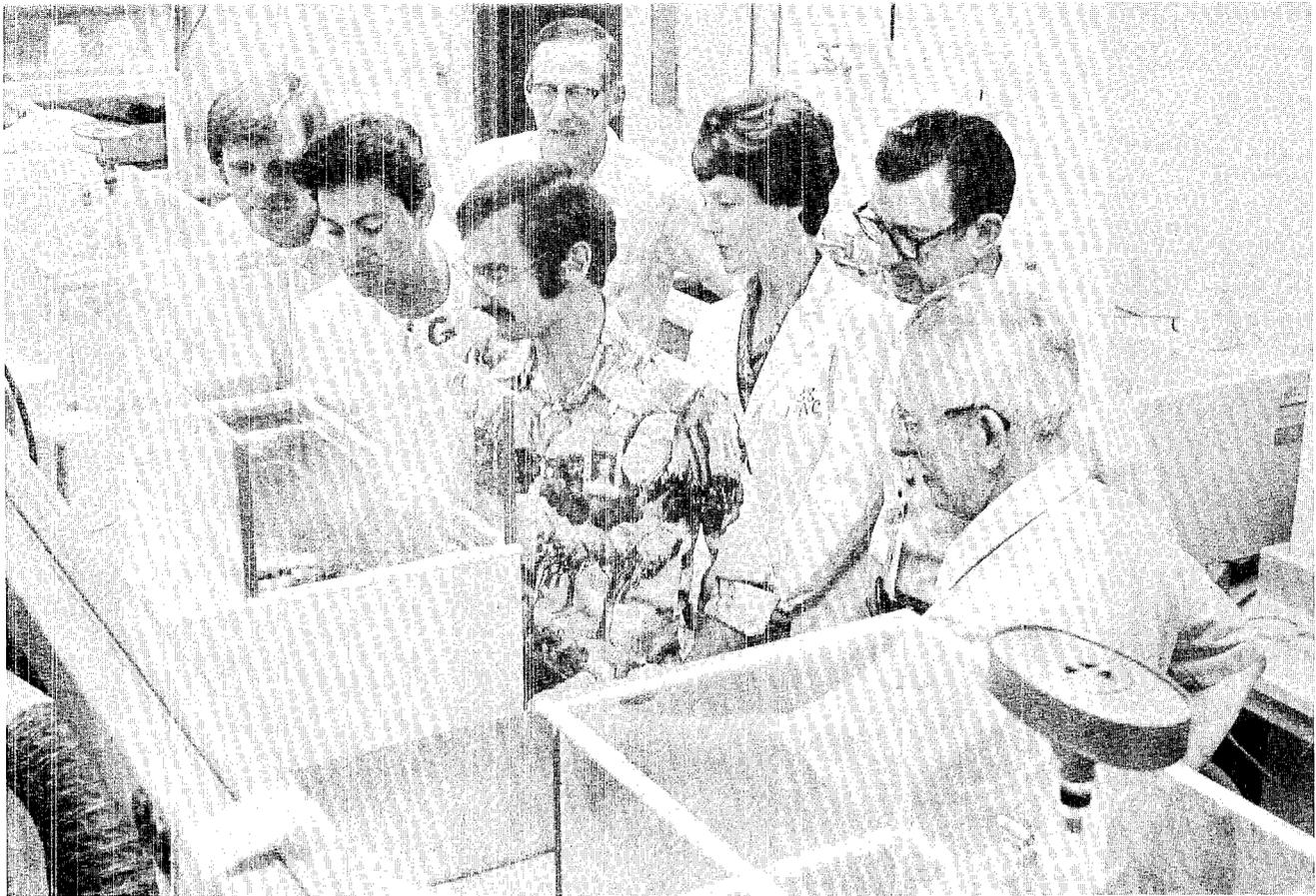
## Equipment To Be Used For In-House Education



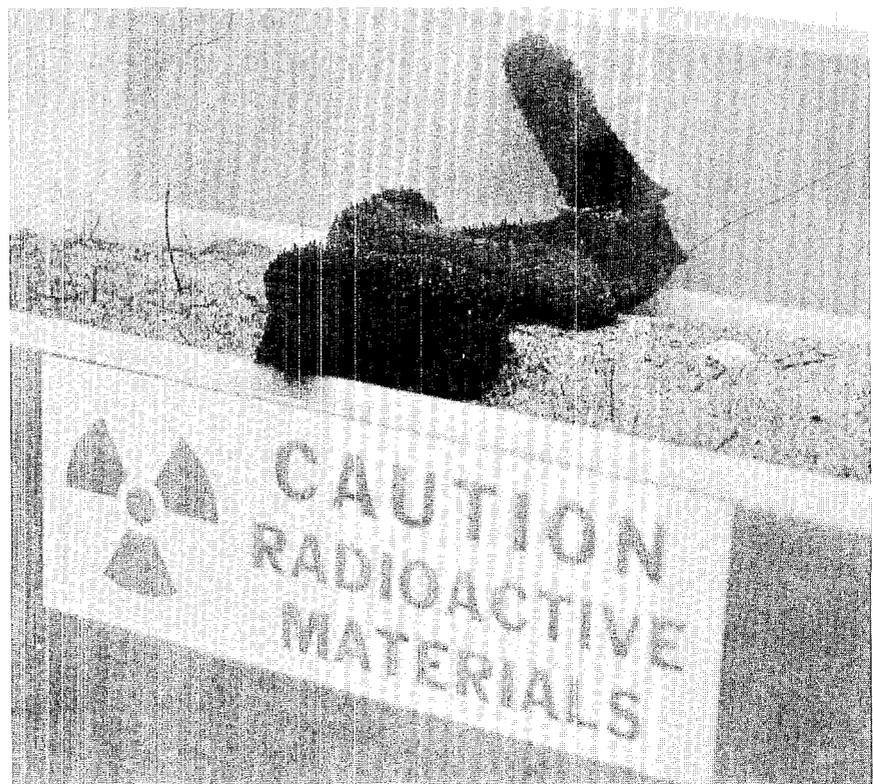
# Photo Shorts

Laura Fermi accepts the 1977 Nuclear Pioneer plaque at an award ceremony recently on behalf of the 42 members of the 'Chicago Pile' group. Nuclear Pioneer lecturer and LASL Director Harold Agnew is second from left. Other people, left to right, are Henry Newson, James B. Duke, professor of physics at Duke University, William H. Hinch, and William J. MacIntyre, president of the Society of Nuclear Medicine. Seven members of the original Chicago Pile experiment team attended the ceremony, which was part of the Society of Nuclear Medicine's 24th annual meeting. The Chicago Pile group, the people who took part in the building of the world's first nuclear reactor at Stagg Field, University of Chicago, in the winter of 1942, are the 17th in a line of Nuclear Pioneer awardees designated by the Society.





Several CMB-1 people seem intensely interested in something in the photo above. From left, Fred Steinkruger, Ben Herrera, George Matlack (in back, left), Robert Hollen, Nancy Koski, group leader Glenn Waterbury, and Jim Patterson, are looking at sea cucumbers in the photo at right. The group, which is studying the effects of sea water on  $^{238}\text{Pu}$  heat sources used for electric power generation in space missions, brought 8 sea cucumbers from San Clemente Island off the coast of southern California to LASL for experiments. In tests in the ocean near San Clemente Island, CMB-1 was determining the uptake by the sea cucumbers of trace amounts of  $^{238}\text{Pu}$  released into the water from a test source. The group will duplicate the experiments here in aquariums.



# Five Employees Graduate As Machinists

Five people in the LASL Shop Department recently completed a tough, 4-year course to earn their machinist rating. Among the 5 was 1 woman, the first to complete the course at LASL.

The graduates, Danny L. Archuleta, Grace Gutierrez, Ruben Manzanares, Jose Lino Pacheco, and David Montoya, were honored with a ceremony in the National Security and Resources Study Center. LASL Director Harold Agnew handed the 5 their certificates verifying that they completed the course.

Agnew, acknowledging that competition for the program is tough and that the program itself is very hard, congratulated the group for “having what it takes.” He compared the 4-year machinist program to a 4-year degree from any university, and added that the graduation “is a feather in your hat.”

The new machinists have learned to operate a variety of machines and equipment, and have learned techniques and principles behind operation of the machines.





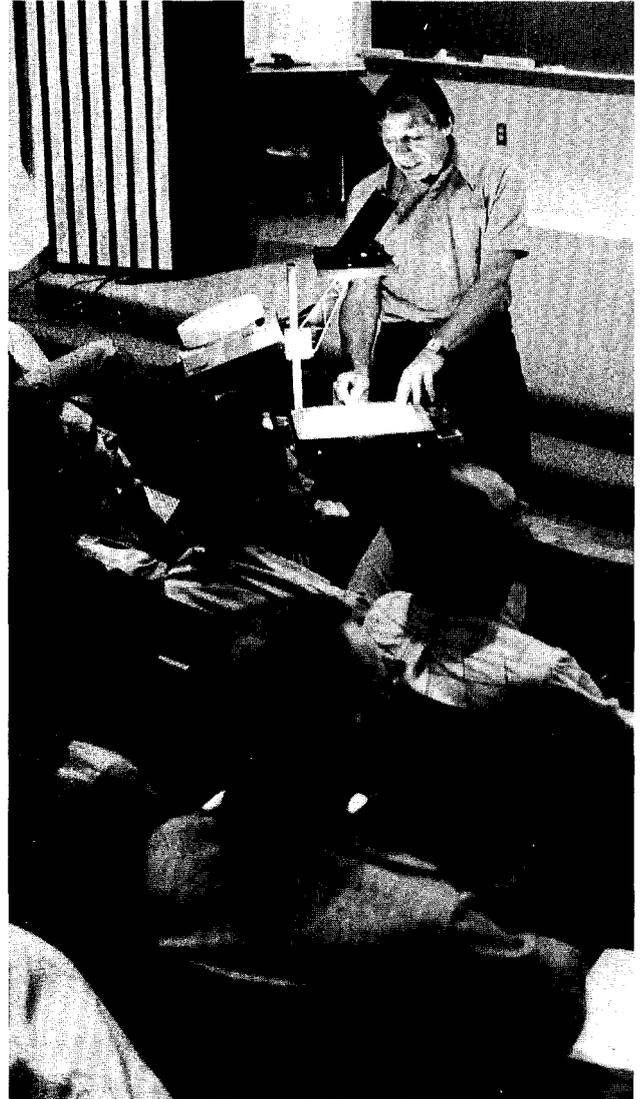
In the photo at right, LASL Director Harold Agnew congratulates Grace Gutierrez upon her graduation from an intense 4-year machinist program in the LASL Shop Department. She is the first woman to earn the machinist rating. In the photo below, Agnew, right background, and Joseph Szoo, second from left, Shop Department head, pose with other Shop Department personnel and the graduates and their families, in center of the picture.



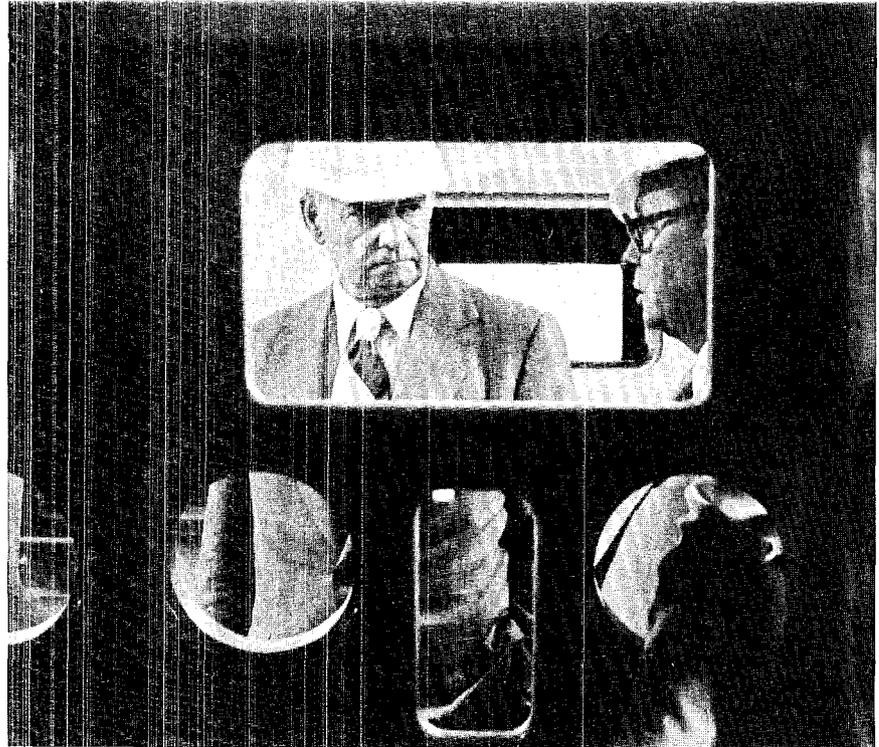
# Among Our Guests



General George S. Brown, Chairman of the Joint Chiefs of Staff, visited LASL recently for a briefing on the Laboratory's weapons activities. He was greeted at the airport by LASL Director Harold Agnew.



Bernard L. Cohen, professor of physics, chemical engineering, and petroleum engineering at the University of Pittsburgh, spoke on radioactive waste disposal at a meeting in August at LASL.



Richard T. Kennedy, left, Nuclear Regulatory Commission, tours LASL plutonium handling facilities with Bill Maraman, CME-11 group leader.

Lt. Gen. Frank A. Camm discusses LASL work in weapons and energy development with Director Harold Agnew. Camm is Deputy Commanding General, United States Army Training and Doctrine Command, Ft. Monroe, Virginia.



## Firewood Is Still Available

The public can get firewood at designated areas on the north side of State Road 4 between TA-49 and the back gate (the intersection of West Jemez Road and State Road 4) on weekends and holidays.

The hours are 8 a.m. to 6 p.m. The area was opened to wood gathering September 3, and will continue until further notice.

Zia personnel will be at the area to assist the public and enforce several regulations. People must check in with the Zia personnel for instructions.

Only felled trees may be removed, and wood cutters must remain within the designated cutting area boundaries. All parts of the tree larger than 2" in diameter must be taken, and all slash and smaller parts must be stacked.

No loads larger than 1 cord may be removed in any one trip. All chain saws must be approved and labeled by the U.S. Forest Service. This inspection service will not be available at the cutting site, but must be taken care of at Forest Service offices.

The cutting area must be left clean, and all litter removed. No fires will be allowed in the cutting area, and smoking may be restricted depending on forest conditions. ⚡

# 10

*years ago in los alamos*

Culled from the October, 1967 Files of The Atom and  
The Los Alamos Monitor by Robert Y. Porton

### ULAM RETIRES

Stan Ulam, a research advisor at the Los Alamos Scientific Laboratory, retired October 14. He will become chairman of the mathematics department at the University of Colorado. Ulam, whose basic ideas along with those of Edward Teller led directly to the development at Los Alamos of thermonuclear weapons, is an internationally known mathematician.

### FOR SALE!

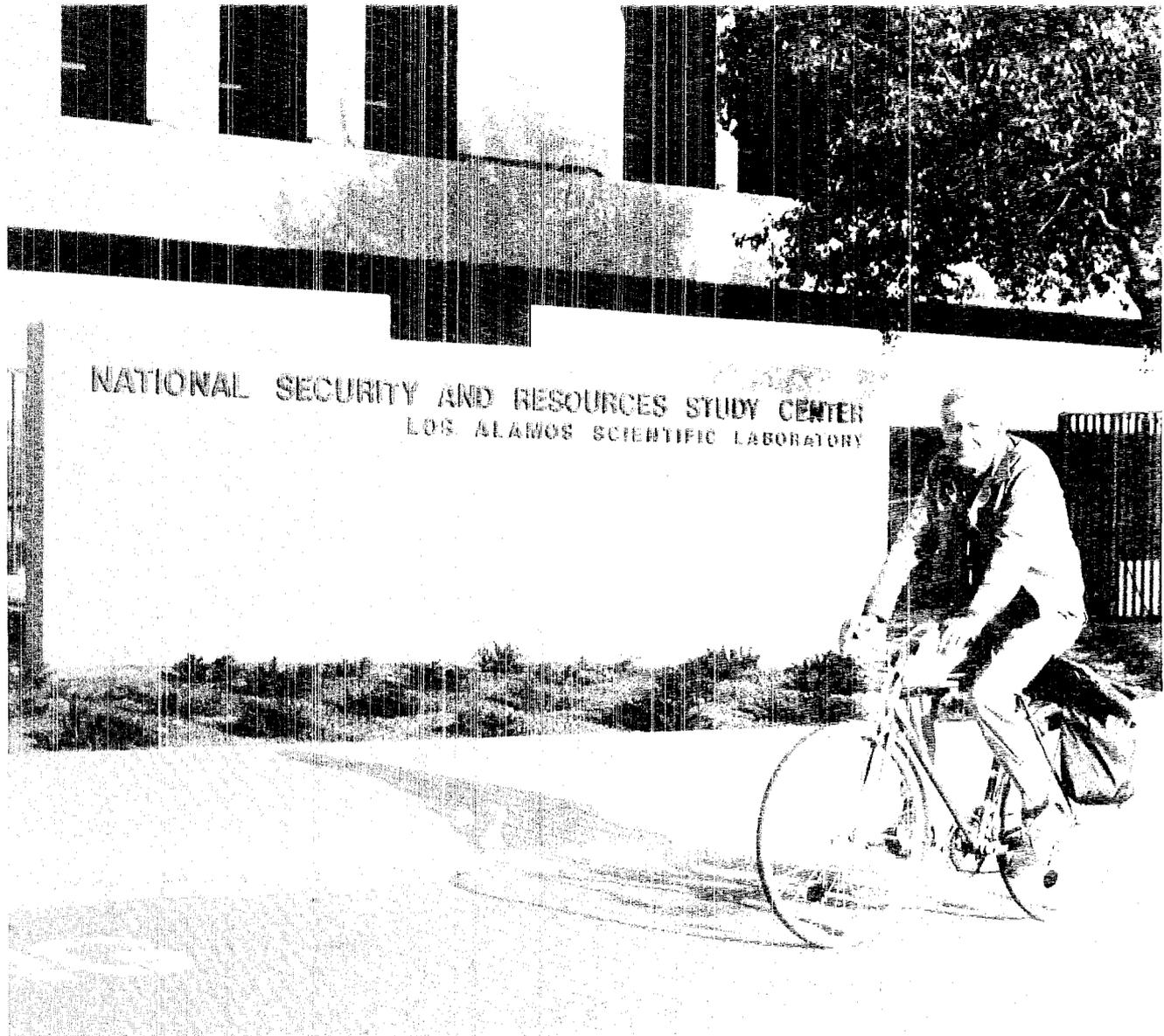
The Department of Housing and Urban Development is offering the Community Center for sale. The general offer will initiate a 30-day period during which lessees in the Center may apply for a priority to purchase the property.

### NOBEL PRIZE AWARD

Hans A. Bethe, who worked on development of the first atomic weapons in Los Alamos during 1943-46, has been awarded the 1967 Nobel Prize for Physics. The honor includes a cash award of \$62,000. Bethe's contributions to the theory of nuclear reaction and especially his discoveries concerning the energy of the sun lead to his being honored.

### EXERCISE

Approximately 60 Los Alamos Scientific Laboratory employees are participating in the joint Department of Defense-Atomic Energy Commission test readiness exercise in the Pacific this month. Conducted by Joint Task Force Eight, comprising DOD, AEC and contractor personnel, the exercise is designed to help maintain facilities, resources, and personnel proficiency in a state of readiness.



LASL Director Harold Agnew takes advantage of a sunny, mild day in Los Alamos to ride his bicycle to and from work at the Laboratory. Although his schedule does not permit his riding a bicycle often, Agnew enjoys the exercise and the opportunity to slow the pace of his busy days.



A huge cottonwood tree provided shade for ISD-1 photographer Bill Jack Rodgers while he took this picture of the mesa country rising above the Rio Grande Valley.