

LAMPF's
First Patients

THE ATOM

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THE ATOM

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CONTENTS:

- 1 Mecca on the Mesa
- 6 A Day in the Life of Dixy Lee Ray
and a Day in the Lives of Andrea and Arnold
- 12 Midnight Scholars
- 16 Photo Shorts
- 18 Short Subjects
- 19 To the Top of the Sky at the Bottom of the World
- 22 Emergency Planning
- 24 10 Years Ago in Los Alamos

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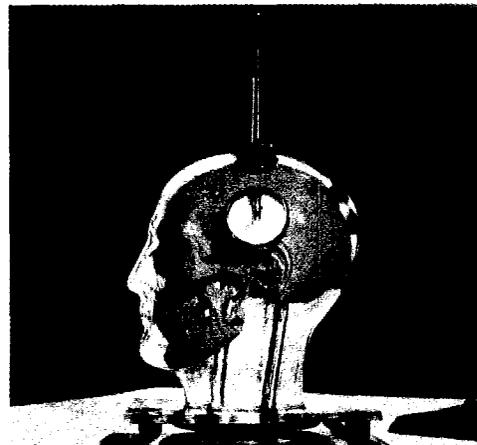
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COVER

While taking photos for the *Mecca on the Mesa* story beginning on page 2, Bill Jack Rodgers, ISD-7, became intrigued with the patient mockups used at LAMPF's Radiology and Therapy Research facility. The result is this issue's enigmatic cover photo.



This skull, encased in plastic, has dosimeters resembling antennae protruding from it. The dosimeters can be adjusted to measure radiation at any point within the skull cavity.

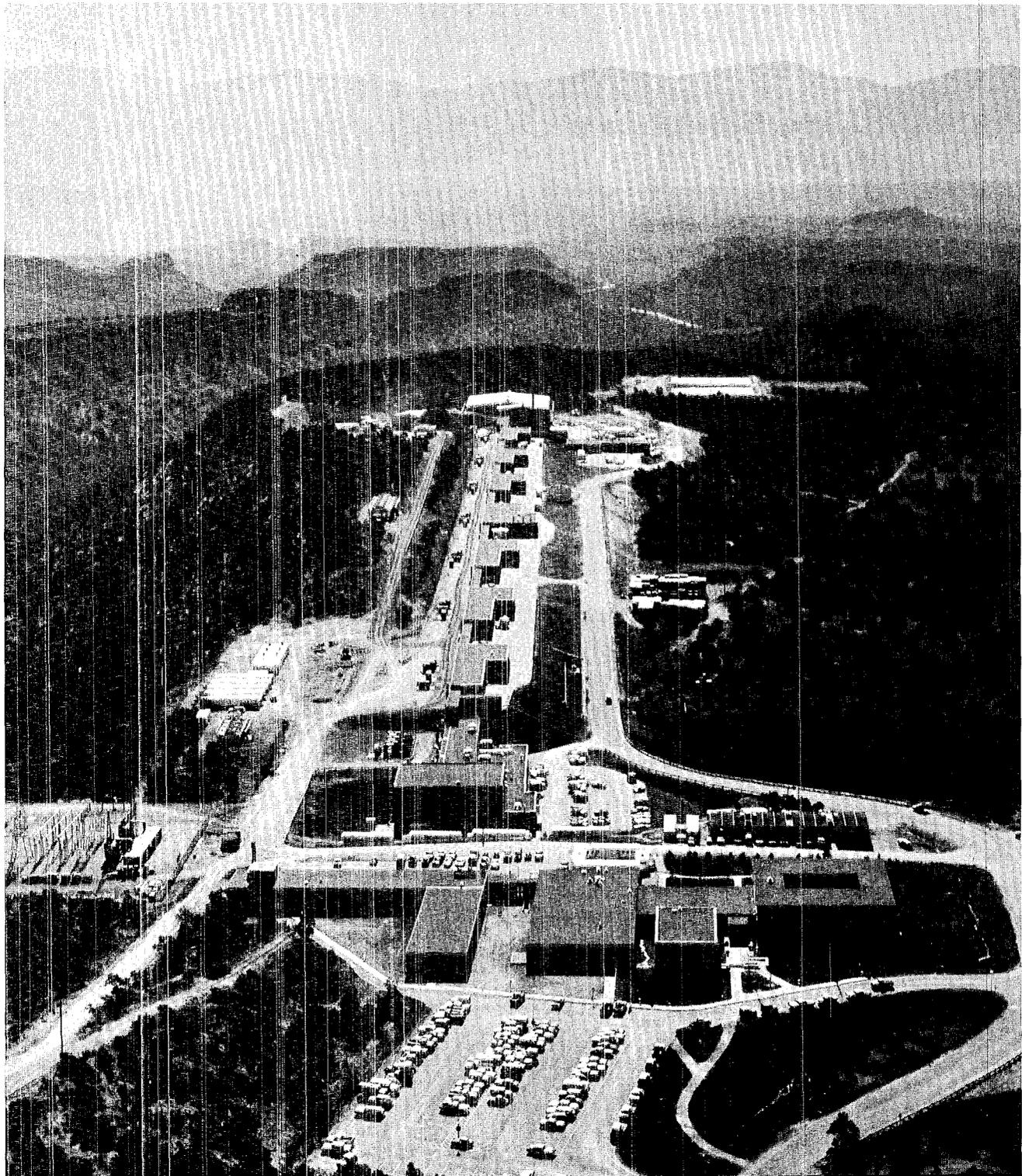


This solid, human-like mockup, shown here with Chaim Richman, H-10, is sliced into horizontal sections. Portions of the mockup can be used in pion-beam experiments, then disassembled to measure effects. Imbedded in its plastic are tissue specimens.

A third cube-shaped mockup, bearing no resemblance to a human, is described in the article.

*On the next five pages: a Special Report on how
Users from around the world have made LAMPF a*

MECCA ON THE MESA



Billie Miller, MP-DO, has no problem keeping busy during LAMPF's "rush season" now under way. When not on the phone searching for housing, she's assigning mail stops and keys to Users, such as the one patiently waiting.

by
Barbara Storms



MECCA ON THE MESA

The years of preparation are over. From laboratories and universities across the country and abroad, graduate students, post-doctoral researchers, and scientists are now converging on the Clinton P. Anderson Los Alamos Meson Physics Facility to begin the full-scale experimental program for which the facility was planned more than a decade ago.

Although significant work in nuclear chemistry began in 1972 with Los Alamos Scientific Laboratory personnel using a portion of the accelerator test beam (*The Atom*, November, 1972), the experiments which started this spring and those scheduled for this summer represent the first step toward making LAMPF a national and international research center for the use of the entire scientific community.

Of the 22 experiments which have been assigned beam time during the April-to-June run, only 7 are the responsibility of LASL investigators; the remainder are being conducted by scientists from outside the Laboratory. These scientists are among the 1,018 members of the LAMPF Users Group, Inc.,

organized 5 years ago not only to use the accelerator for research but also to act in an advisory capacity during development of the facility.

The membership includes 188 from LASL, 134 from other national or government laboratories, 425 from U.S. universities, 101 from hospitals and medical centers, 42 from industry, and 128 from foreign countries. These members represent 225 institutions.

"Until now the role of the Users Group has been to advise us during the construction and planning phases of LAMPF," says Hillard Howard, MP-DO, who, with Lewis Agnew, MP-7 group leader, handles liaison for the Users. "The group also has helped tremendously with the design, check-out, and tune-up of the secondary beam lines. But from now on the Users will become active in their own research and will play more of an advisory role for future developments at LAMPF."

What Users Are Like

Each experiment brings 4 or 5 people to Los Alamos to set up the experiment and serve as a more or less permanent staff. When the experiment goes on line, from

about 5 to 10 additional Users may arrive to participate in the experiment. Some Users come for a couple of years, some for a couple of days, but all come to work hard. While their experiments are on line, they'll often put in grueling 24-hour days, grabbing short naps or quick snacks in one of the two mobile homes installed on the site for the purpose.

Keeping track of the fast-moving band of Users is one of the jobs of the LAMPF Users Liaison Office, which checks the visitors in and out; assigns film badges, office space, mail stops, and keys for the building; arranges housing and travel; and makes necessary reports on aliens.

"At least, that's the theory," sighs Billie Miller, Users Office secretary, who finds that many of her peripatetic charges forget the details in their hectic dashes between their home institutions and Los Alamos.

The Users Office also handles all communications for the organization's meetings and elections, and publishes a quarterly newsletter to report activities, progress, and changes in policy at LAMPF.

A typical User comes to LAMPF



Constantine Cassapakis, University of New Mexico graduate student from Greece, and Philip Varghese, a University of Oregon graduate student from India, take a coffee break in mobile home near LAMPF site during experiments.

supported by a research grant from his institution. The institution, in turn, may receive support from the Atomic Energy Commission's Division of Research. Support for some projects comes from the National Cancer Institute or the National Science Foundation. Individuals without grants but participating in particular experiments receive travel and subsistence from an AEC fund administered by the Associated Western Universities. LASL provides up to \$5,000 per experiment, an amount determined by the LAMPF director, against which the outside researcher may charge supplies and equipment. Supplies and equipment remain Laboratory property after the project is completed.

Nearly all of the long-term Users who have been working at LAMPF for the past year or two have relocated with their families in Los Alamos. Many express hope for permanent employment at LASL once their present work is done.

Richard Barrett, a postdoc from Case Western Reserve University in Ohio, for example, came to Los Alamos in September, 1972, and

hopes to be able to remain after his experiment is finished, probably in the fall of 1975.

"I have profited tremendously from being here because of the professional interaction with physicists at LAMPF, the availability of excellent seminar speakers, and the outstanding facilities at LASL," Barrett says. "My wife and son like it here very much, too."

For some of the younger people—the graduate students and postdocs who are more or less permanently at LAMPF—the connection with their home institutions is tenuous.

"I was there only a couple of days," says one postdoc from a West Coast university. "I took the job with them because it meant I could be working here at LAMPF."

Many professors and scientists who have prime responsibility for the experiments drop in periodically during the year and then descend full-force during the summer. For these people, family housing must be obtained. By late April the Users Office already had received 55 housing requests.

The Laboratory maintains 20 kitchenette apartments and 5 larger

units for LAMPF Users whose short-term visits range from several days to several weeks. The Users Office arranges linen and telephone service for these units.

At the Laboratory, the Users are given whatever office space is vacant at the time of their visits. Some operate out of trailers or Quonset-type buildings that are scattered around the site and serve as office or laboratory space or both.

Computer Headache Cure

One of the biggest headaches plaguing the Users, according to Howard, is obtaining access to LASL's Central Computing Facility.

Each of LAMPF's secondary beam channels has its own data acquisition computer at the site, but for large-scale reduction and fast turnaround, use of the big computers at CCF is essential. Because most Users are uncleared they are not permitted to communicate via remote terminal with CCF. To solve the problem, LAMPF is now staffing its remote terminals for 16 hours a day with cleared operators who can serve as intermediaries. By

early next year the terminals are expected to be manned 24 hours a day.

"The problem of providing computer service has become one of the principal concerns of the LAMPF Technical Advisory Panel (TAP)," Howard says. TAP is a 12-member Users Group committee composed of both LASL staff members and Users. This committee reviews the LAMPF operation and advises on technical aspects of the operation of the accelerator and the equipment pool. It also makes recommendations on accelerator development and expansion and, in general, looks after the technical condition of the facilities.

Projects Under Way

Projects for the LAMPF research program are selected by the Program Advisory Committee (PAC) with the approval of the LAMPF director. PAC consists of LASL staff and scientists from all over the U.S. and Canada. Of 176 research proposals already received by the PAC, more than 100 have been approved to receive beam time. Once approved, projects go to the LAMPF scheduling committee, which assigns beam time for each experiment to permit most efficient use of the facility by the largest number of experimental teams.

The first physics experiment, already completed at LAMPF and reported for publication, was a search for muonium formation in noble gases performed by a Yale University group headed by Vernon W. Hughes, MP-DO and Yale, who also is chairman of the board of directors of the LAMPF Users Group.

Using the Stopped Muon Channel, the Yale group determined that muonium, an atom much like hydrogen but formed by a positive muon and an electron, is not formed in pure helium or neon but forms abundantly in argon and xenon. In a related experiment, the group found that the addition of a small amount of xenon to helium and neon resulted in almost 100 per cent muonium formation.

Although the muonium decays

in a few microseconds, the experiment provides information valuable in understanding both the muon, one of the particles formed in the decay of pions, and in testing the theory of quantum electrodynamics as applied to the structure of the atom.

Others who worked on the experiment were Ron Stambaugh, Don Casperson, Paul Souder, Heinz Kaspar, and Tom Crane of Yale; Herbert Orth and Gisbert zu Putlitz of the University of Heidelberg, Germany; Arthur Dennison of the University of Wyoming; and Pat Thompson, MP-7.

About half the proposals are concerned with nuclear structure physics, where emphasis is on investigations of strong interactions, and electromagnetic interactions.

In a multiphased study of proton-proton scattering, a group from Case Western Reserve University, University of Idaho, University of Southern California, and LASL are observing how protons interact with each other by measuring how they scatter into each angular interval. The group also plans to study the spin dependent interaction, inelastic scattering, and proton nucleus scattering.

"This is the first such experiment to be done in the LAMPF proton beam and one of the most basic experiments one can do," explains Rich Barrett of Case. "We would like a complete set of data on proton-proton elastic and inelastic scattering at 800 MeV to present to the theorists so that they no longer have to piece together results from several experimental groups."

Barrett says that the 3 major advantages of the LAMPF beam for the experiment are the ease with which a good polarized beam can be produced, accelerated, and maintained; the small diameter and extreme parallel character of the beam; and the ease with which its intensity can be changed.

Collaborating in the work are Harvey Willard, Philip Bevington, and Bryon Anderson, Case; Robert Cole and Charles Waddell, USC;

Henry Willmes and Alan Anderson, Idaho; Nelson Jarmie, P-DOR; and Ralph Stevens, MP-9.

Another experiment concerned with strong interactions is a joint effort of P-Division, Q-Division, the University of New Mexico, Texas A&M University, and the University of Texas in which the ultimate aim is to understand the basic nucleon-nucleon force at medium energy. The first stage in the program is a study of a neutron beam.

Measurements of the spectrum of neutrons produced by proton bombardment of deuterium and other light nuclear targets already have yielded very interesting new results, according to Jim Simmons, P-DOR.

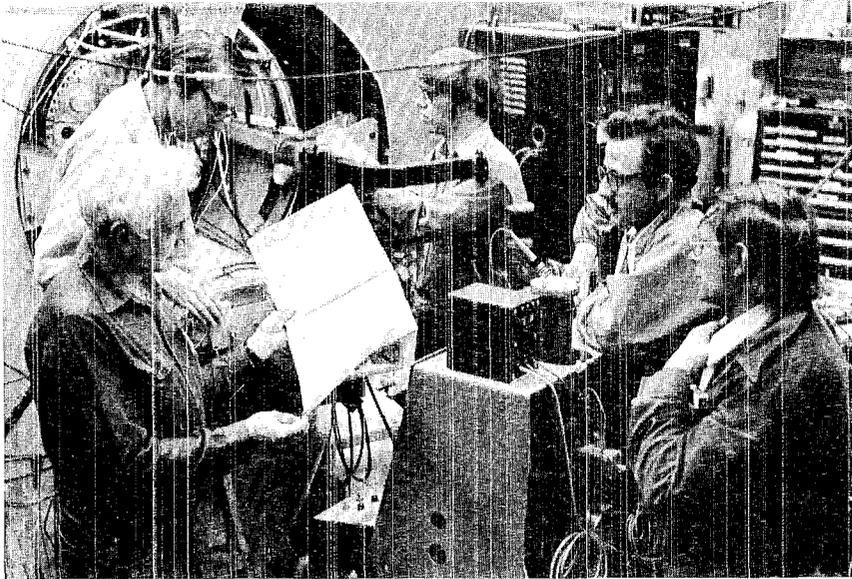
A group headed by Gerald Phillips of Rice University and John Allred of the University of Houston moved an experiment in Coulomb nuclear interference, previously in progress elsewhere, to LAMPF to take advantage of the superior momentum resolution of LAMPF's pion beam. The group is measuring small-angle elastic differential cross sections in the region of 5° to 30° angles in the high energy pion channel.

The high intensity of pions in the same channel is a distinct advantage to Ken McFarlane and John Pratt of Temple University in Pennsylvania for their elementary particle experiment studying a rare mode of pion beta decay. With the beam eventually producing about 1 billion pions per second, Pratt expects to be able to see about 1 beta decay per minute or about 150 events during a two-hour running period, a frequency far greater than has been possible before.

Toward The Biomedical Frontier

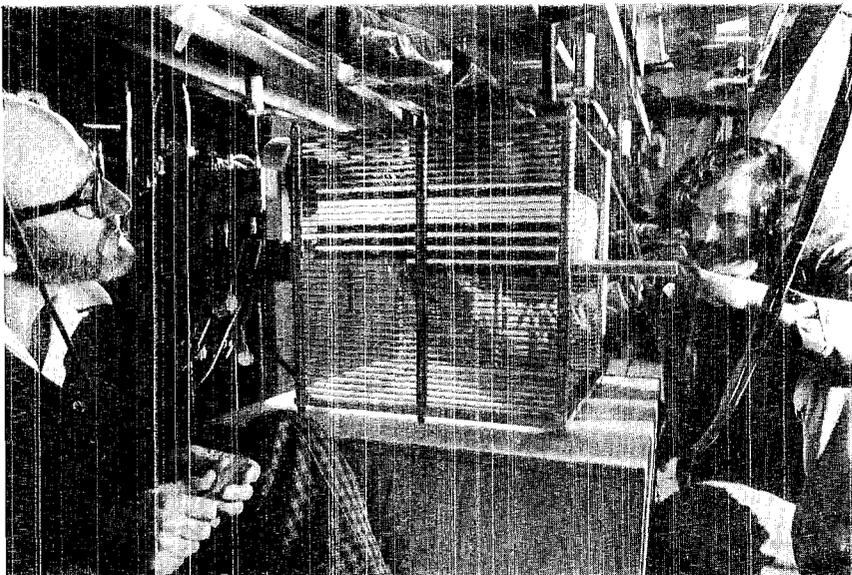
Geared toward practical application of LAMPF is a biomedical experiment that goes on line this summer to determine, by electronic measurement, how the pion beam will act in a cancer patient undergoing treatment at the LAMPF Radiobiology and Therapy Research facility.

"We are mapping the pion beam



Setting up a muonium experiment at LAMPF are (left to right) Vernon Hughes, MP-DO, Don Casperson, Tom Crane, Ron Stambaugh, and Heinz Kaspar, all of Yale University. The same group participated in the first physics experiment (on muonium formation) at LAMPF.

Underneath the pion beam channel at LAMPF's Radiobiology and Therapy Research Center, Chaim Richman (left) and James Blossom, both H-10, arrange plastic sheets in a cube-shaped patient mock-up. Varying sheets allows adjustments to simulate reactions in various parts of human anatomy.



in a patient mock-up," Chaim Richman, H-10 says. "We need to know how the beam travels in tissue, how it scatters, and how many pions will impinge on the tumor region. We have to be sure the pions will cover the entire treatment area evenly and won't go anywhere else."

The mock-up, which will be used for individual adjustments before each patient treatment, is a simple cube-shaped arrangement of layers of plastic made to simulate skin, bone, and other components of the human body.

Collaborating with Ed Knapp, associate MP-Division leader for practical applications, and Richman, are Raymond Wilenzick, Tulane University; Tony Armstrong, Oak Ridge National Laboratory; and James Reidy, University of Mississippi. Tests of the tissue-equivalent plastics used in the patient mock-up are being performed by LASL Group CMB-6. A scanning unit for the experiments was built by E-Division.

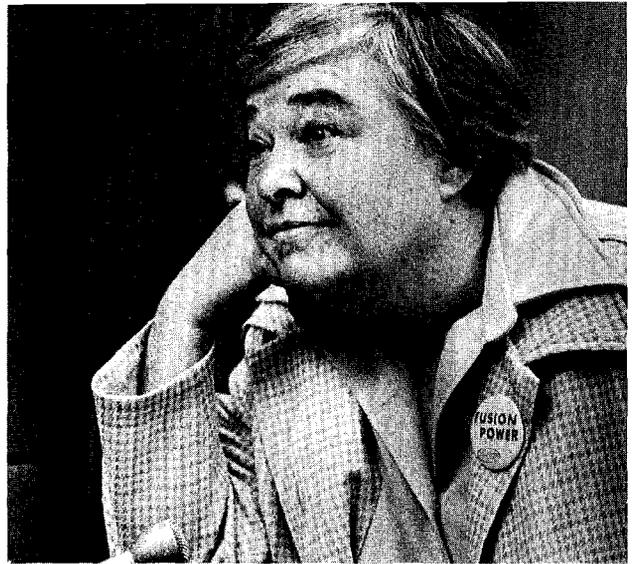
Similar experiments on animals are expected to begin in the new medical facility within 3 months. Actual patient treatment could begin this year, according to Louis Rosen, LAMPF director.

These patients will be selected on the basis of recommendations made by various hospitals to a committee headed by Morton Kligerman, director of the Cancer Research and Treatment Center at the University of New Mexico and assistant director for radiation therapy at LASL. Because of the experimental nature of the work, it is not possible for individual patients to apply.

In summarizing the current status of LAMPF before the annual Users meeting last fall, Rosen said:

"I have long nourished the hope that LAMPF will become a great arena for learning and practicing the art and science of interdisciplinary problem-solving. I am now convinced that this will indeed come to pass and society will thus be repaid many times over for its investment here."





A Day in the Life of Dixy Lee Ray

Atomic Energy Commission Chairman Dixy Lee Ray arrived at the Los Alamos Scientific Laboratory a little after 8:00 a.m. Thursday, April 25th. She had come to participate in ceremonies dedicating CTR-Division's recently completed Scyllac facility and to take a whirlwind tour of other Laboratory sites.

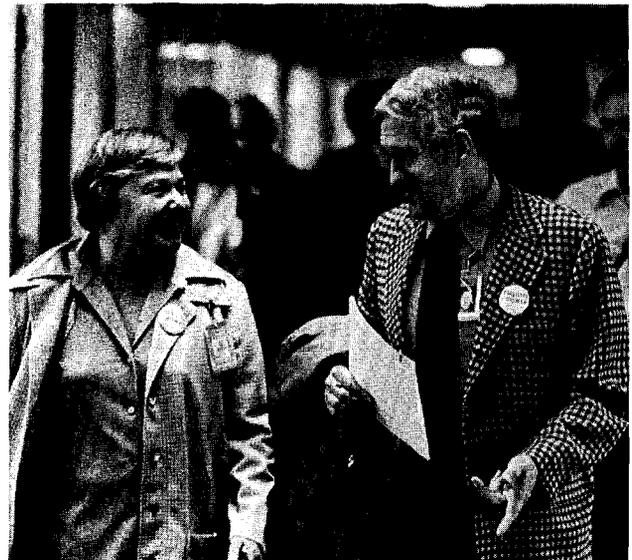
Eight hours later, Chairman Ray departed from the Los Alamos Airport. The Laboratory will never be the same again.

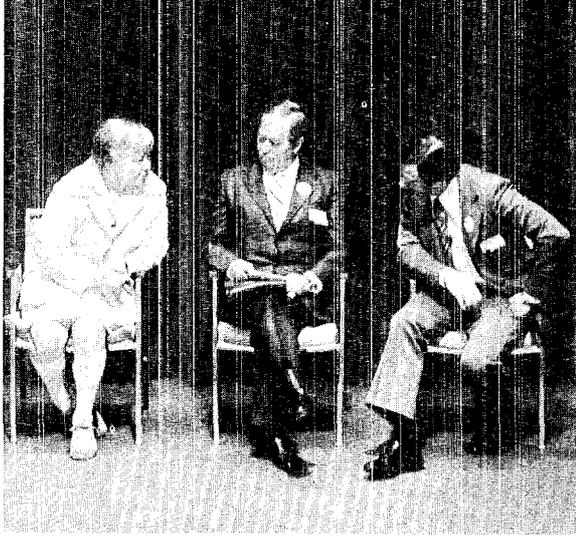
Although Chairman Ray had visited LASL briefly in 1972, this was her first opportunity to address and meet large numbers of LASL employees. It was a happy encounter. LASL employees warmed to Chairman Ray and, judging by her reactions, Chairman Ray warmed to them. Other distinguished guests of honor, such as U.S. Senator Joseph M. Montoya, U.S. Representative Manuel Lujan, Jr., and Robert L. Hirsch, director of the Division of Controlled Thermonuclear Research of the AEC, were as delighted as the audience was with the way Chairman Ray "came across."

For the benefit of employees who were unable to be among the audience of 500 who heard Chairman Ray speak in the Administration Building auditorium Thursday morning or who could not see or meet her during ceremonies in the CTR building and tours to facilities, The Atom presents this photo record of a memorable visit.

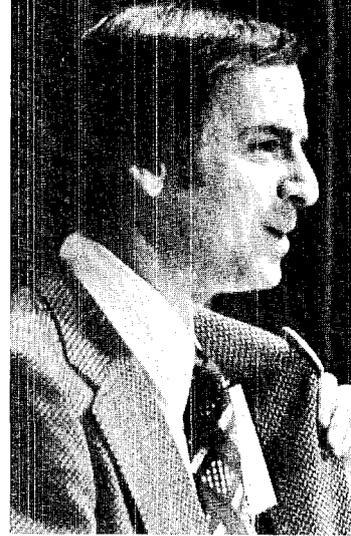


Chairman Ray's miniature poodle, Jacques, guards her mistress' coat with valor in the Director's office as Chairman Ray and Harold Agnew, Director, stride toward the auditorium.

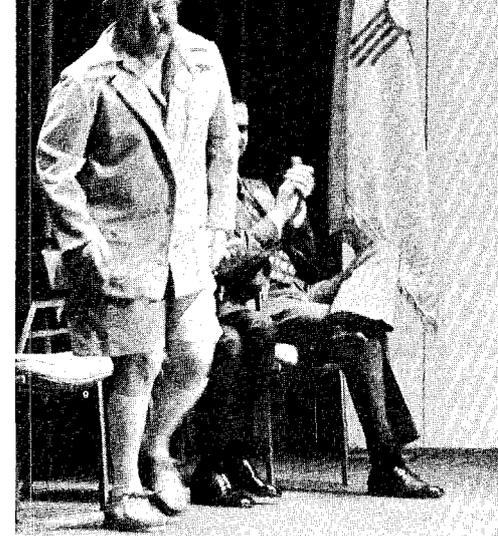




Before program, Chairman Ray chats with Senator Montoya and Robert Hirsch, director of CTR for the AEC.



Hirsch gives a comprehensive background on CTR's historic and scientific aspects.



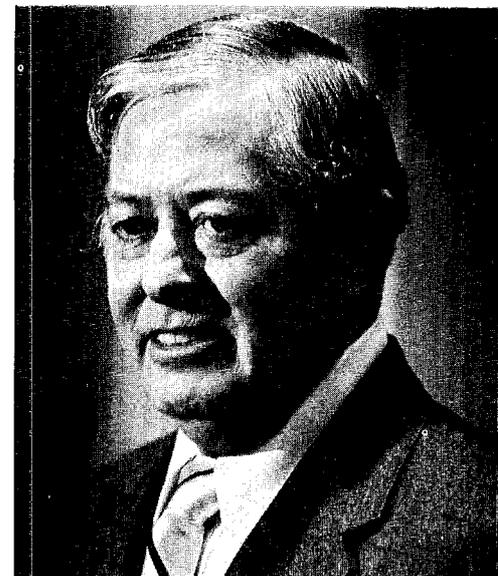
Agnew then introduces Chairman Ray to an audience that accorded her a warm reception.



Chairman Ray delivers a speech rich in humanistic and philosophic overtones.



Congressman Lujan spoke on CTR in New Mexico in a talk accented by humor.



Senator Montoya likened man's approaching development of fusion power to the discovery of fire.

Chairman Ray reacts with delight upon being presented a scale model of Scyllac.

At Scyllac, Chairman Ray grasps the cord which will sound a horn marking official dedication.

The horn sounds, all right, but for what happened next, turn the page.





Things went smoother at the Scyllac control panel where guests of honor together pressed a giant button, then awaited signs of a plasma reaction.



The dog-gone horn kept sounding—a moment of levity relished by all.

With Congressman Lujan, she examines sample collection device for laser research.



At a press conference, Chairman Ray, among other things, spiked rumors of her resignation.

Don Hagerman, MP-Division associate leader for accelerator operation, points out LAMPF features.



During afternoon tours, she visited Shop Department, talked at length with its head, Frank Stack.

Reunited with Jacques, Chairman Ray departs. Somehow, she made it all seem like fun.





Andrea Slack and Randy McMullen, both 18 and seniors at Monte Vista (Colorado) High School, were among hundreds of students from 29 schools in 4 Southwestern states who converged upon Los Alamos for Science Youth Days, Wednesday, April 17, through Friday, April 19. The annual event is as old as Andrea and Randy are and is a harbinger of spring as familiar to Los Alamos residents as the budding of forsythia. Science Youth Days are held in cooperation with the Thomas A. Edison Foundation, a national organization fostering science involvement among youth.

and a Day in the Life of Randy and Andrea



Arising at a sleepy 3 a.m. on Thursday, April 18, Andrea, Randy, and 18 of their classmates boarded a school bus and left Monte Vista—a pleasant town in Southern Colorado's San Luis Valley—at 4 a.m. A few students slept, but most horsed around to pass the time until they arrived at the Los Alamos High School parking lot at about 8 a.m.

Their bus became one of a dozen arriving at the same time, thus giving Bob Brashear and Sam Brock, ISD-2, and other LASL personnel—ably assisted by 40 students from Los Alamos High School serving as honor guides—some frantic moments. Nonetheless, they got all groups out of their busses, photographed, “logged in,” indoctrinated, back on their busses, and up to the Administration Building auditorium in time for the program beginning at 9 a.m.

To give readers of The Atom a feeling for what it would have been like to have been students in a typical group, photographer Henry Ortega, ISD-7, recorded Andrea's and Randy's experiences from the moment they jumped from their bus until they stretched out on the Administration Building lawn after completing their visit to the last of their scheduled LASL sites.

Andrea, Randy, and 600 other exuberant students like them left behind a gift that more than compensated for any slight inconvenience their visit might have caused: a reminder that science is fun and discovery is exciting.



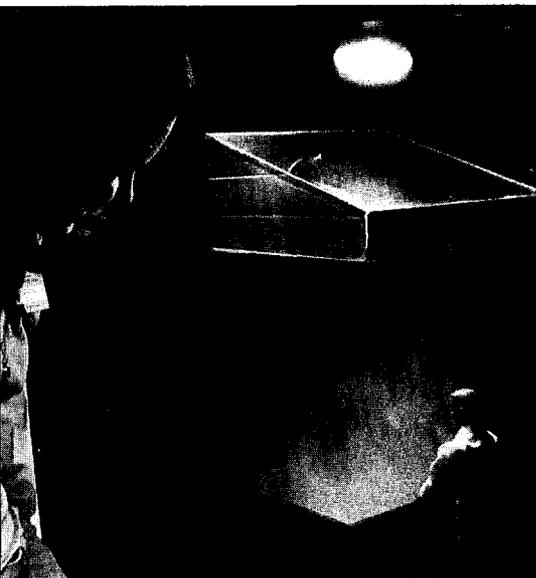
Randy and Andrea bombard Bob Burman, MP-4, with questions after LAMPF talk.



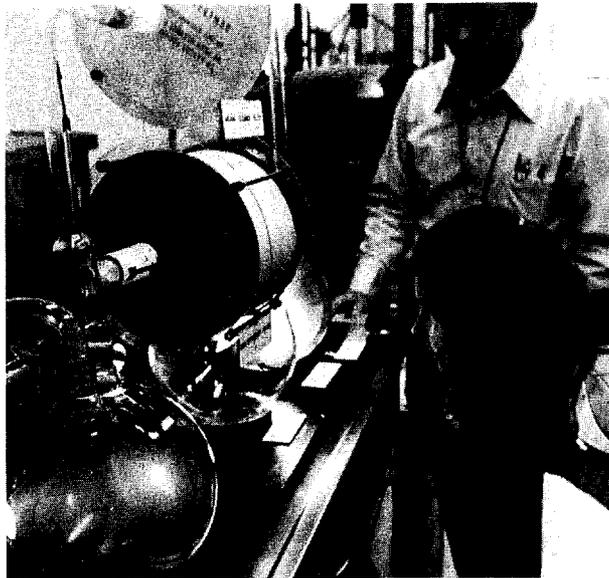
Randy listens intently as Morton C. Smith, Q-22 leader, describes geothermal energy.



Andrea roars with delight at a light-hearted CTR presentation by Jim Phillips, CTR-4.



Andrea takes a close-up look at Group H-5's model of an industrial ventilating system.



Jim Griffin, H-5, shows Andrea how a high-efficiency filter outperforms a conventional one.



Charles Richards, M-5, fits mask on Andrea in front of "airline" suit.

At the Museum, Randy finds operating a glove box is not as easy as it looks, drops bottle twice.

Monte Vista High biology teacher and trip sponsor Don Wilkinson, center, explains magnetic pinch sample.





Lunch is gobbled in a hurry before lights go out for "Computer Color Generations" movie.



Biological specimens fascinate Randy and Andrea following Felix Miera's ecology talk at H-8.

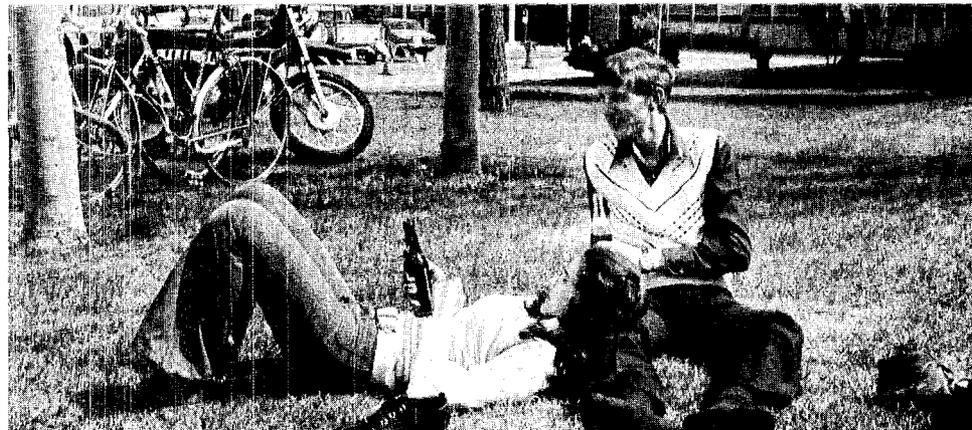
Amusement reigns at the Museum's simulated hot cell as classmate Debbie Lehnerz operates manipulator.



As Charles Hammer, CTR-4, describes Scyllac in the background, Randy plays director by a Scyllac TV camera. Randy's faces and remarks are more than Andrea can control.

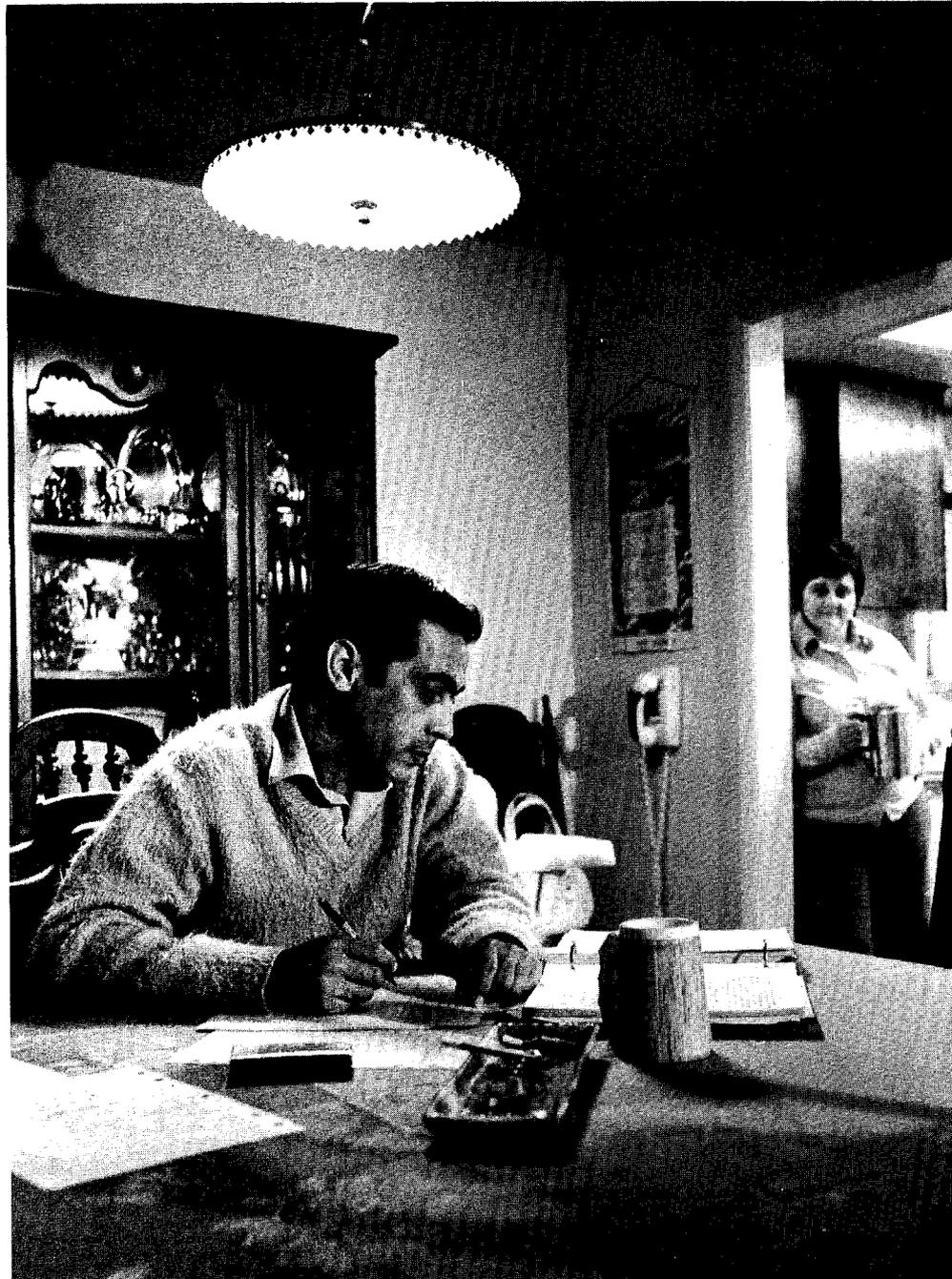


Stretching out on the Administration Building lawn at the end of a busy day, Andrea and Randy commented: "Great, but wish we had had more time at each place . . . Liked the health and ecology parts best, but I guess that's because we both plan to study medical technology in college . . . Wish we could have picked our places, but I guess that would be hard to do." All in all they found it rewarding and, obviously, fun.



A Graduation-Month Salute to L

Mel Duran, J-10, and his wife, Joan, reenact a familiar scene at the Duran home: Mel cracking the books, Joan preparing coffee. Mel has completed requirements for his B.S.E.E., may enroll in postgraduate studies, thus making scenes like this a reality in the Duran home again.



LASL'S MIDNIGHT SCHOLARS

You wrap up a day's work at Los Alamos Scientific Laboratory, wave goodbye to the guard at the gate, and take your place in traffic. Other cars are heading home. A bit wistfully, you think of their drivers stretching out before TV, relaxing with wives and kids before an unhurried dinner.

But this is not for you. Not tonight. Not for most nights.

You park at Los Alamos High School and go to a brightly lighted classroom where for an hour and a quarter you stretch your mind around the science a college professor is throwing at you and a dozen other LASL employees like you. What a campus, you think. No football afternoons. No bull sessions. No beer busts. All business.

Now it's 6:30—time for a supper break. You drive home. At last, you grab a few precious moments of shut-eye on the couch. At dinner you promise your wife, again, to fix the washer when you find time.

Back to class. Now it's higher math. Finally it's 9:30. School's out. You head home. Your younger kids are in bed, but you kiss the older ones goodnight. Your wife, too—after she puts on the coffee. No point in her staying up. From now on, it's just you and the books.

The house is very quiet. The only sound disturbing the silence is your pencil scratching out answers (you hope). You rest a moment and idly thumb through your text, looking at all the chapters ahead. You have a strong urge to chuck the whole bit.

But you don't. More coffee. More skullwork.

It's past midnight when you finally close your book, set the alarm programmed to sound all too soon, and climb into bed. Kiss your wife? She's deep asleep, but you do anyway. Gently. She never stirs.

Repeat this scene 4 nights a week, 32 weeks a year for 10 years (that's enough for your toddler to grow into a strapping high-school student), and you'll know what it's like to be a Midnight Scholar at LASL.

Common Denominators

This kind of sacrifice poses problems that discourage even the most determined.

"You're looking at an 80-hour week, minimum," explains Donald Milligan, WX-3, instrument systems supervisor, who received his Bachelor of Science-Electrical Engineering degree in May. "There's 40 hours for work, 9 hours in class, and 27 hours of study plus time in transit. I was really ready to give it up 4 or 5 times. But Sally has been the one to keep me at it as much as anything. She has the same long-term outlook I do."

Mel Duran, J-10, formerly an electronics technician and now a staff member, agrees that the support and encouragement of wives is essential. Duran received his B.S.F.E. in December.

"About a year and a half ago, I was ready to quit," says Duran. "But then Joan and I talked it over for a long time and she encouraged me to finish. We had already invested so much time it was foolish to give up."

Both men have paid a price—in sleep given up never to be retrieved,

in time they could not spend with their children during those important formative years, and in hobbies and recreation. Duran, for instance, likes to camp. But he has only used his camping trailer as a hide-away for study when isolation was required.

Both men joined LASL in the early '60's and began their after-hours education almost immediately. Both had received training in the Navy sufficient to qualify them as electronic technicians at LASL. Both shared a determination to excel. And both contemplate continuing their studies for post-graduate degrees.

Educational Opportunities

Milligan and Duran were participating in LASL's Academic Training Program administered by the Los Alamos Graduate Center and cosponsored by LASL and the University of New Mexico. Courses leading to M.S. and Ph.D. degrees have been offered since the program's inception, with residence credit undergraduate courses added in 1958.

To date, the University of New Mexico has awarded the M.S. degree to 143 LASL employees who've met degree requirements through off-hours study. Another 23 employees have earned B.S. degrees, and 45 more their Ph.D., primarily because of the opportunity to take a significant amount of coursework at the Graduate Center. Most Ph.D.'s have also participated in LASL's Advanced Study Program to meet campus residence requirements, returning to complete their dissertation at LASL.

“... it's more than just the material rewards their education may bring. It's a matter of quiet pride and inner confidence.”

During the 1973-74 academic year, about 200 LASL employees were enrolled each semester in accredited courses taught by instructors from both UNM and LASL. Running a program of this scope keeps Richard C. Allen, Jr., hopping. When not occupied in the classroom as associate professor of mathematics at UNM, Allen is likely to be commuting to Los Alamos to fulfill his responsibilities as director of the Graduate Center.

Coordinating the program for LASL is Ted Dunn, assistant personnel director, who has been associated with various forms of educational activity at LASL since 1948.

“Our educational programs originated in 1946 when a conference was held here attended by representatives of a number of colleges and universities to set up ways in which we could cooperate—their students coming to us for accredited research projects, and some of our employees going to them for advanced courses. Norris Bradbury, then Laboratory Director, and Armand Kelly, then employment director, played prominent roles at that meeting.

“Out of it came an operating philosophy about academic cooperation, training, and education that later led to programs providing research opportunities at LASL, education and research leave programs, postdoctoral appointments, graduate student summer employment, and undergraduate co-op programs enabling students elsewhere to come here for postgraduate and undergraduate studies and research work.

“For our own employees, it was only natural that being a part of the University of California we should turn to them first. We worked out an extension program with the University of California at Berkeley in 1948, and a Masters program with UCLA in 1950.

“However, the logistics proved more formidable than we had anticipated. By mutual agreement, this arrangement was terminated. By then, the University of New

Mexico, with whom we had been cooperating on a modest basis, had substantially upgraded their faculty and facilities. The idea of cooperating with them on a larger scale was attractive inasmuch as both our roots are in New Mexico and commuting distance was not a major factor. In 1956 we entered into a subcontract with them that has worked out most satisfactorily through the present,” Dunn explains.

In 1958 the program was expanded to include some undergraduate residence credit courses. These courses enabled undergraduates to fulfill most of their B.S. degree requirements at the Graduate Center.

Today's Program

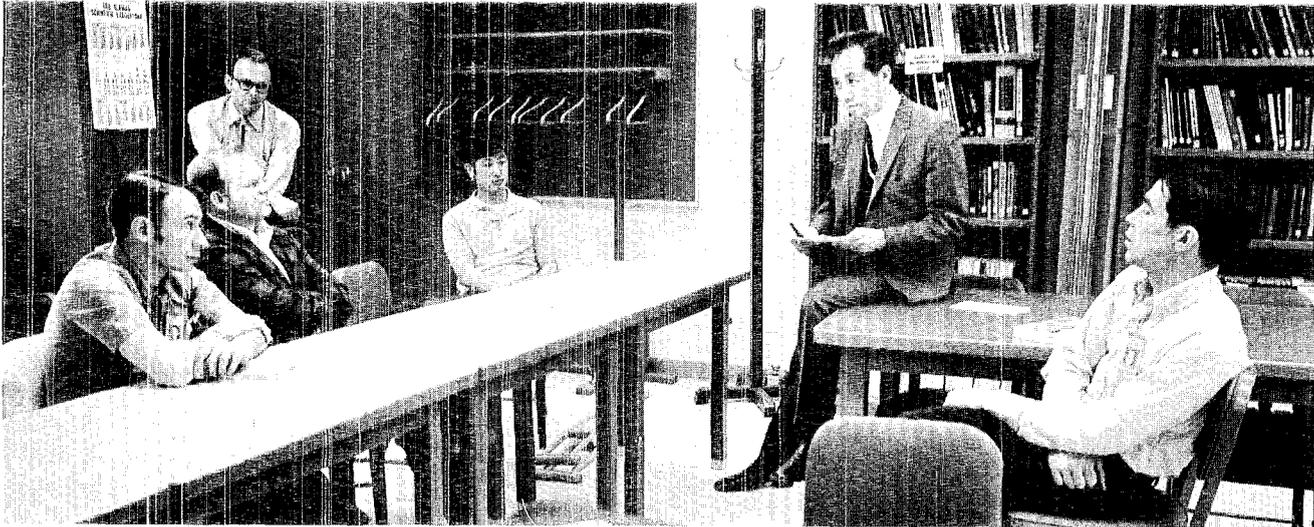
As the program is constituted today, LASL pays half of the tuition costs for employees pursuing undergraduate or graduate credit courses relevant to their present or future work. Typically, undergraduate students take 2 courses per semester or 4 courses during the academic year from September through May. The student's share of tuition for the academic year would amount to \$114 under this course load. The student also pays fees and for books.

In addition, LASL supports a number of other programs benefiting employees:

Vocational Training. A new program—LASL may now reimburse one half of tuition costs to students taking job-related courses at technical-vocational schools.

In-House Training. Occasionally, LASL conducts or sponsors special internal training courses, usually of short duration. These typically include safety, technical subjects, and supervisory training.

Advanced Study Program. Certain employees may be assigned to conduct advanced studies at recognized colleges or universities where such assignment will further program objectives. LASL may pay half tuition, family travel, shipment of household goods, and a stipend.



Undergraduate "midnight scholars" enrolled in the Los Alamos Graduate Center's mechanical engineering program meet with Richard Allen, Jr., director of the Center, during one of Allen's frequent visits to Los Alamos. Left to right, William Hutchinson, CMB-1, Francis Michaud, J-14, Allen (standing), Kenneth Imamura, M-5, Fred Ju, Jr., UNM's Mechanical Engineering Department Chairman, and Louis Morrison, P-DOR.

Professional Research and Teaching Leave. Employees with a plan of study, teaching, or research may obtain leave up to 1 year with partial salary continued.

Professional Renewal Leave. Division leaders, group leaders, and senior staff members may qualify for leave up to 6 months with salary and benefits continued.

Academic Cooperation Program. Students from various colleges and universities may be assigned to projects at the Laboratory. Students may receive subsistence of \$10 per day.

Machinist Apprenticeship Program. A Department of Labor program provides opportunities to both LASL employees and high school graduates who are not LASL employees to become employed apprentices in a program that includes a four-year course of instruction. Participants completing the program are classified as laboratory machinists.

Children of LASL employees are eligible to attend any of the University of California campuses at the same tuition paid by residents

of California. Tuition for residents is substantially lower than for non-residents. Warning: Entrance requirements are high—get your children working towards an "A" average now.

Availability of freshman and sophomore courses to LASL employees, not only in science and mathematics, but in the humanities as well, has been considerably increased since 1970 with the establishment of the Undergraduate Residence Center at Los Alamos by the University of New Mexico. In 1973, this became the Los Alamos campus of the University of New Mexico Branch in Espanola. In Los Alamos, activities are headquartered at the Little Valley School, but with most courses held at Los Alamos High School. While LASL is not formally involved, LASL will pay one-half tuition costs for employees taking accredited courses there relevant to their work or necessary for degree requirements.

This policy also applies to a two-year Instrumentation Technology Program leading to the Associate of Science degree in Engineering

Technology—a course of study of interest to many LASL employees.

Finally, you can take evening adult education courses at Los Alamos High School to learn or improve skills, or just for the fun of it. Some 20 courses are offered with tuition from \$15 to \$22 for subjects ranging from woodcarving and crocheting to languages and business. About 270 adults will have taken courses there this year.

Does education pay off at LASL? "Yes, although no one should enroll under the presumption that a promotion is thereby guaranteed," says Dunn. "In some cases, graduates have had to wait for advancement. But it usually comes.

"Almost as meaningful as the academic record a student compiles is the motivation and perseverance that just enrolling in such a course demonstrates. This can't help but impress supervisors."

But for Midnight Scholars like Milligan and Duran, it's more than just the material rewards their education may bring. It's a matter of quiet pride and inner confidence.

It comes with the diploma. ☼

Photo Shorts



On April 23 at LAMPF, a 15-ton reinforced concrete beam began tipping the crane that was moving it. The operator, thinking quickly, lowered it to prevent turning the crane over. Unfortunately, a mobile office was in the way. As standard practice, areas are cleared of nonconstruction personnel when operations like this are in progress, and thus no one was injured.

That there can be beauty in destruction is shown in this photo of a fire that started in the morning of April 19. Suspenseful moments occurred as high winds whipped the blaze up the canyon toward Omega Site, but by mid-afternoon the Los Alamos Fire Department had things under control. Moral: be careful with matches and cigarettes, and don't start campfires in other than designated areas.

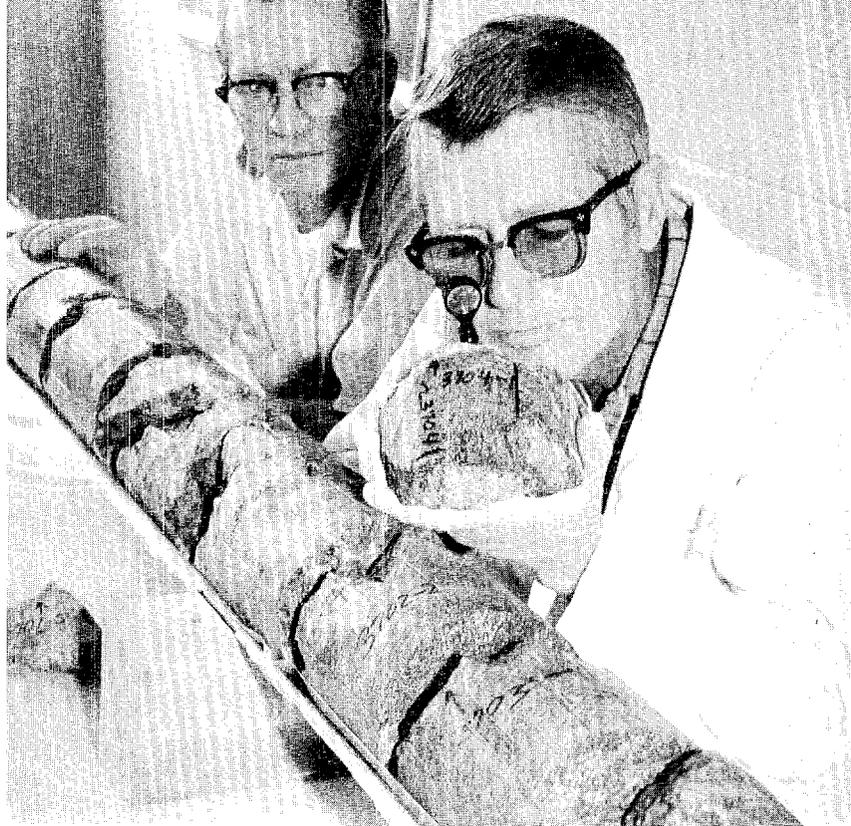


The swing is to metric, as this photo of Dick Bohl, ADWP-1 and chairman of LASL's metric committee, shows. Sign showing distance to the third green at the Los Alamos Golf Course now reads in meters as well as yards, as will markers for all holes.



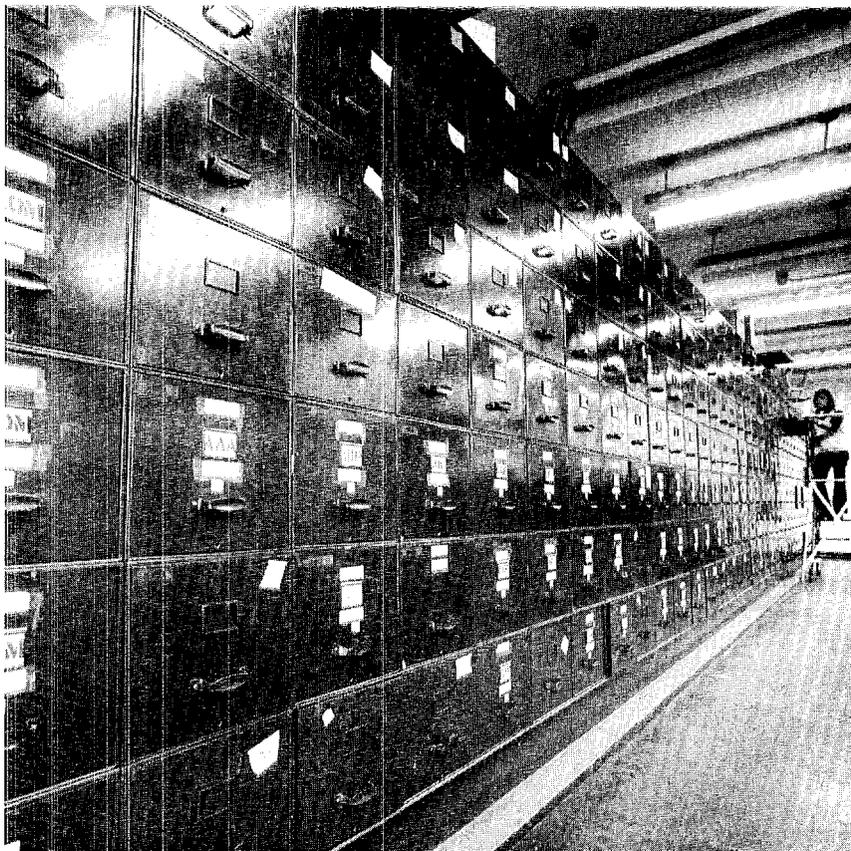


Group Q-23 completed the arched excavation shown above in April to demonstrate the subterrene's ability to make a glass-lined tunnel. The subterrene melted 47 penetrations on the periphery, leaving a glass formation as a hard lining. Dirt and rock were then removed. Here Fred Lujan and Larry Hupke, both Q-23, hold the penetrator that did the job.



An exceptionally fine core taken from 1,100 meters (3,700 feet) underground at the Fenton Hill geothermal drill site on May 12 is examined by Morton Smith, Q-22 group leader, and Francis West, Q-22. The core is composed of granitic gneiss intruded by permatite and is the same type of formation in which fracturing, at a greater depth, will later be attempted. The core measures 3 meters with a diameter of 13.3 centimeters (5.25 inches).

Enough paper to fill all the filing drawers shown in this photo—that's the amount of copies turned out every month by LASI duplicating machines. Specifically, that amounts to 1 million copies and 9.5 cubic meters (340 cubic feet) each month. To cut costs and avoid being overwhelmed by paper, the Director's Office has strongly urged cleaning out files and reducing copymaking to absolute essentials. Photo of 252 filing drawers was made at one of Mail and Records' rooms.



short subjects

President Nixon has signed into law the 1975 authorizations for the Atomic Energy Commission. The authorization bill includes \$4 million for construction of a Science Center at Los Alamos Scientific Laboratory, with an additional \$600,000 for the installation of a pilot solar heating and cooling system. U.S. Senator **Joseph M. Montoya** and U.S. Representative **Manuel Lujan, Jr.**, led successful floor flights for inclusion of these funds in the bill.



Edward J. Hammel, Jr. has been named to the newly created post of assistant director for energy, in which post he will work under the general supervision of associate director **Richard Taschek**. Two new staff organizations will report to Hammel: an energy planning office and an energy program coordinating office. Named to the energy planning office are **Eugene Stark**, **William Bennett**, and **John Marinuzzi**. Named to the energy program coordinating office are **James Phillips** (fusion), **John Rowley** (georesources), **Walter Trela** (advanced energy technology, and **Harry Schulte** (biomedical and environmental). Rowley will also continue in his post as Q-Division assistant leader.

Honors: **Chester Richmond**, H-DO, will be one of 5 recipients of the annual Ernest Orlando Lawrence Memorial Award to be presented by the Atomic Energy Commission at Germantown, Maryland, AEC headquarters on June 7. The cash award (\$5,000) is made for especially meritorious contributions in sciences related to atomic energy. **Fred Ribe**, CTR-Division leader, received a Distinguished Graduate award at the University of Texas' recent commencement in Austin, Texas. **Evan Campbell**, H-5, was installed as vice president of the American Industrial Hygiene Association during the association's annual meeting recently in Miami Beach, Fla.



Retirements: **Claud L. Martin**, WX-2, and **Arthur Montoya**, PER-4. Montoya was a night cook during Manhattan Project days. Deaths: **Edward J. Rourke**, retired and formerly in the Accounting Department.



New Mexico became the 25th state to assume licensing authority over radioactive materials when **Governor Bruce King** (left) and AEC Commissioner **William O. Doub** signed an agreement at the capitol in April. Agreement will reduce costs and speed licensing for use of radioactive materials by New Mexico institutions.

To the Top of the Sky At the Bottom of the World

The Congress of the United States would like to know:

—Would emissions from supersonic transports and other high-flying aircraft affect the stratosphere?

—Would those emissions alter the stratosphere's ozone content, thereby affecting the amount of ultraviolet radiation reaching the earth's surface?

—Would a change in ultraviolet radiation alter the average temperature and thus the climate for large areas of the world?

To find answers to these and other environmentally related questions and report them to Congress in December, the Department of Transportation's Climatic Impact Assessment Program (CIAP), in co-

operation with the Atomic Energy Commission's Airstream Program, has conducted a number of local flights (many from Albuquerque) and deployments (*The Atom*, May 1973). In Air Force usage, a deployment is a major mission, usually to a remote site, with participants from several units or organizations. Since 1972, deployments in the Northern Hemisphere have been conducted over the continental U.S.A., from Alaska to Hawaii, over Iceland, and along predicted supersonic transport routes between North America and Europe.

But to gain a truly worldwide understanding of the stratosphere—its characteristics, its natural background, and the possible effects

man-made pollutants may have upon it—deployments to the Southern Hemisphere are essential.

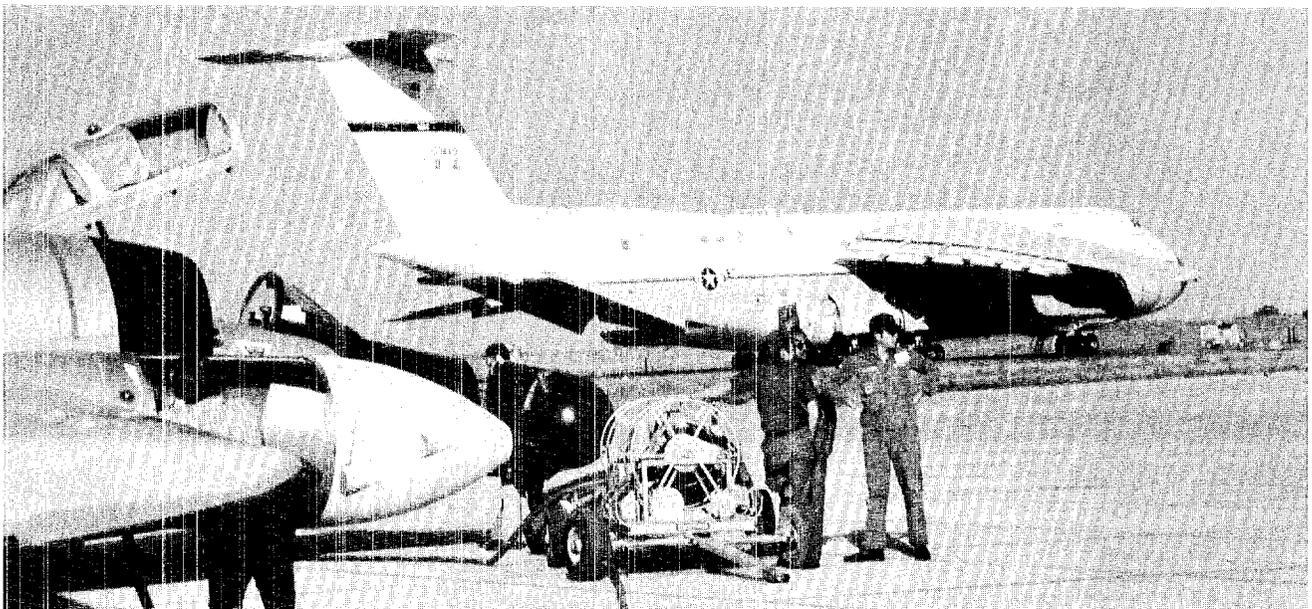
Which is why Paul Guthals and Bill Sedlacek, both CNC-11, and Earl Rutledge, J-1, reported by dawn's light to Kirtland Air Force Base on Friday, April 12, for an 8:00 a.m. flight to Panama and Argentina.

A Flight with a Difference

The Los Alamos Scientific Laboratory team had a pretty good idea what this trip would be like. LASL had participated in all previous deployments, and the same LASL team had flown to Argentina on an earlier mission in January.

But this time, something new had

World's largest aircraft, the Galaxy C-5A, brought CIAP Mission to Argentina. In the foreground, to the left is a portion of one of the 2 WB-57F's used for high-altitude measurements.





Earl Rutledge cracks dry ice to keep nitric oxide detector at constant temperature during high-altitude flights.



A tongue-in-cheek welcome in the form of a "Welcome Baggage Officer" sign greeted Major Vernon Duenos of the 58th (in flight suit to left of sign) after baggage snafu delayed his arrival 2 days.

been added. They would fly aboard the world's largest airplane: the U.S. Air Force's Galaxy C-5A.

"Accustomed as we have become to large mechanical apparatus, this plane was still pretty impressive," Guthals recalls. The plane's allowable gross weight is 315,000 kilograms (more than 350 tons). One reason the C-5A was assigned to this mission was to bring some 63,000 kg (about 70 tons) of USAF equipment back to the U.S. on its return flight.

Shortly after 8:00 a.m., the behemoth thundered down the runway and up into the clear New Mexico air. Aboard were 40 officers and enlisted men of the 58th Weather Reconnaissance Squadron, 20 men of the C-5A crew, and 6 of the 12 civilian scientists and engineers assigned to the project.

After an overnight stop at the Howard Air Force Base in the Panama Canal Zone, the C-5A touched down at 5:00 p.m. Saturday at El Plumerillo Air Field in

Mendoza, Argentina. This was the group's base for 3 days of intensive research using 20 sampling and recording devices specially installed on 2 high-flying WB-57F's which had arrived at El Plumerillo on the same day.

Data collected by the WB-57F's include measurements of gas and particulate matter in the stratosphere, water vapor, electric fields, ultraviolet and infrared radiation, ozone and nitric oxide levels, and high-altitude wind and diffusion of gases and particulates.

The stratosphere, beginning at altitudes of 9,000 meters (30,000 feet) over the poles and at 19,500 m (65,000 ft.) over the equator, is relatively static compared to the underlying troposphere. But interactions do take place. Of particular interest to CIAP researchers is the nature of the interface between the stratosphere and the troposphere and the location of sources where gasses and particulate matter well up from the troposphere and sinks

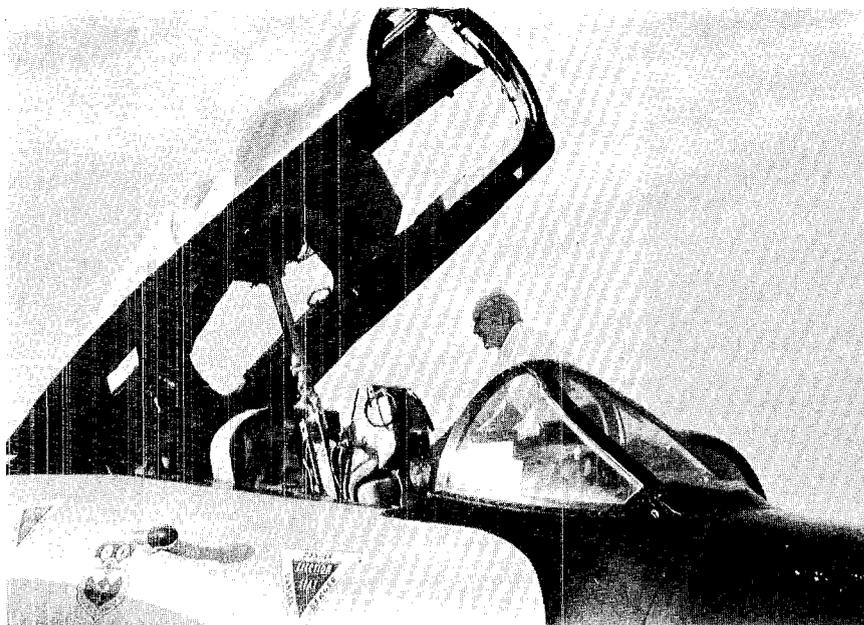
where they collect or flow back to the troposphere.

To acquire the data, the 2 WB-57F's flew 7 stratospheric flights following north-south routes over Argentina. A third WB-57F was later flown to Alaska to collect data on gasses and particulate matter as reference with which data taken from the Southern Hemisphere will be compared.

According to Guthals, the operation "had its share of the usual minor problems, which were corrected, but no major unpleasant surprises." All systems were "go" and a substantial amount of data was acquired.

Guthals attributes a major share of credit for the success of the mission to the smooth teamwork among its participants. Guthals was manager for LASL-related projects and Sedlacek was principal investigator of airborne particulate matter. Rutledge was operations and logistics liaison officer among participating agencies.

Jean Hunerwadel of Panametrics, Inc., who worked closely with LASL team in gathering data, here checks instrument installation on a WB-57F.



Nine other scientists and engineers from the University of Denver, Utah State University, Dynatrend, Inc. of Cambridge, Mass., Panametrics, Inc. of Waltham, Mass., and the Goddard Space Center of the National Aeronautic and Space Administration at Greenbelt, Md., provided expertise in other CIAP measurements. The U.S. Air Force contingent under the command of Lt. Col. Edward McGee provided the vital logistics, maintenance, and operation of the aircraft.

Life in the Vineyards

After a three-day stopover in Panama for additional high-altitude measurements in the equatorial zone, LASL's team returned to Albuquerque Saturday, April 20, with some personal as well as scientific observations.

The worldwide fuel crisis affected the mission, which was delayed a week because of the unavailability at that time of JP-4 jet fuel in Mendoza. When it became available, the price had increased from 30-35¢ a gallon in January to \$1.50 a gallon in April. Curiously, the price of gasoline in service stations there was just 16-18¢ per gallon.

Other memorable prices: \$1.70

for a Chateaubriand dinner and \$7 a night per room in the palatial Mendoza hotel.

Mendoza, a city of approximately 100,000 population 960 kilometers (600 miles) west of Buenos Aires, reminded the LASL team somewhat of El Paso, Texas, in its climate, topography, and atmosphere, but with the spectacular peaks of the Sierra de los Paramillos range—some of which soar 6,700 m (22,000 ft.) over the plains—for a backdrop. At times, air pollution all but obscures this range of the Andes Mountains. Grape growing and wine production are the major regional industries.

Security at El Plumerillo was tight—and for good reason. It was later reported that a week after the group had departed, guerillas unsuccessfully attacked the base. CIAP participants had been prepared to evacuate on 3 hours notice.

Argentine and U.S. Air Force personnel "hit it off." The Argentinians threw a memorable farewell party for their U.S. military counterparts. Somewhat sadly, another farewell party lies ahead for the "F Troops" of the 58th. Following the completion of a final CIAP mission to Alaska late in May, the

squadron will be disbanded by the end of June.

The Work Ahead

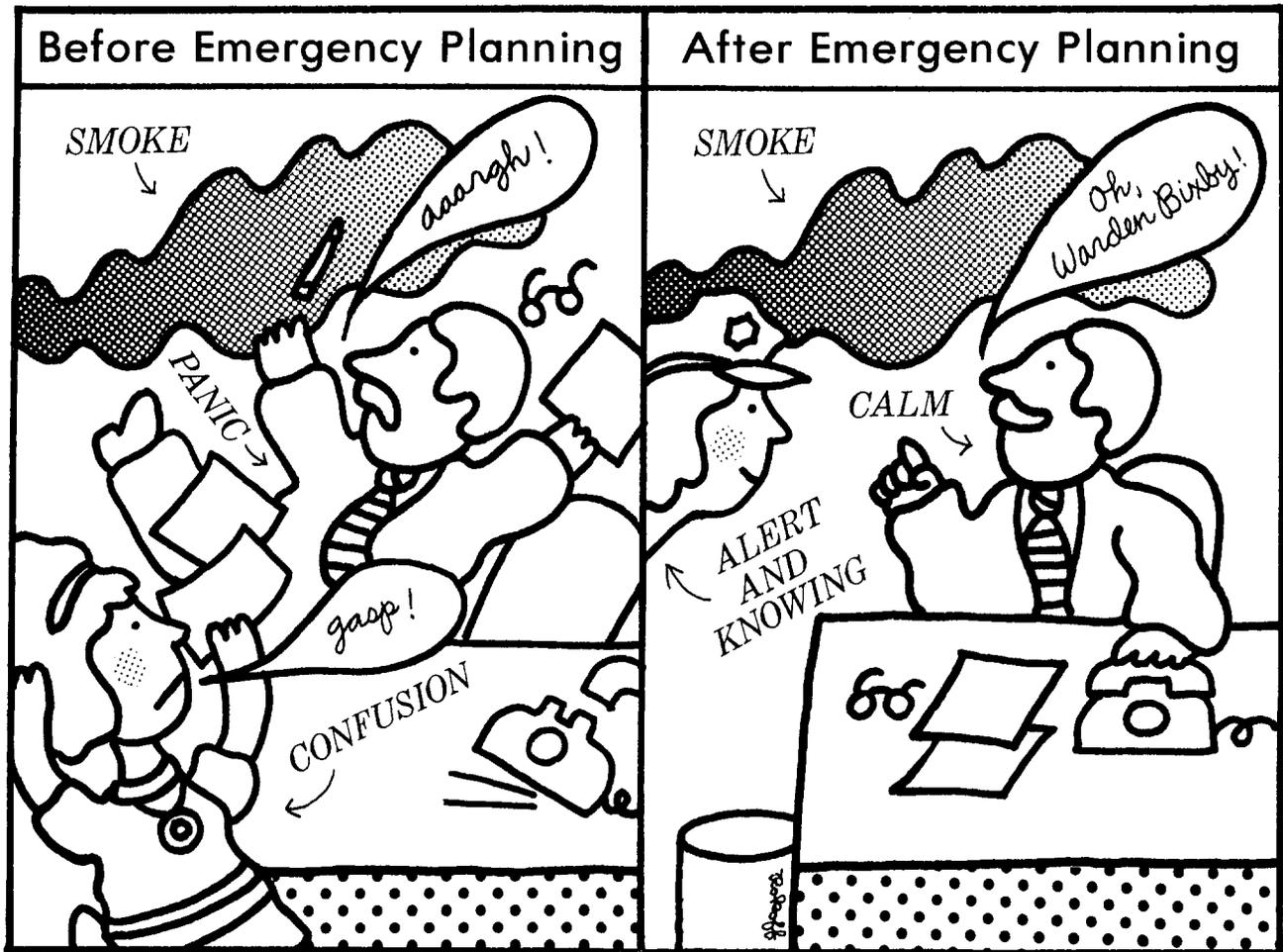
The highly visible deployments represent but the tip of the CIAP iceberg: the bulk of the program—the vast amount of data processing and analysis which must be done in preparing the report—is largely submerged from sight.

Doing this work now and through the summer are participating organizations such as LASL, the NASA Goddard Space Center, the National Oceanographic and Atmospheric Administration Center and the National Center for Atmospheric Research, both at Boulder, Colo., the National Science Foundation, and other organizations and universities with atmospheric interests.

Out of it all will come findings which may influence Congressional deliberations as to whether high-altitude jet travel over the United States should be (1) prohibited, (2) allowed, or (3) allowed with restrictions.

Regardless of the action Congress may or may not take, the ramifications for our environment, our industry, and our technology will affect us all.





EMERGENCY PLANNING

So there you are, sitting in your office trying to figure out the cross section of a polonium nucleus or whatever it is you do in your office, when you get a whiff of smoke.

You sniff and then you sniff again. Because you're taken un-awares, you do a psychological double-take. Smoke. Smoke! FIRE!

You jump from your chair and are horrified to see smoke pouring from a ventilator. You're normally a pretty cool type, but nevertheless, your throat tightens in panic.

But you quickly regain your composure and plan to take calm, rational action.

What action?

Until now, you might not have known. Call the fire department? Of

course—you know that. But then what? Who else do you tell? What else do you do or, equally important, *not* do? Do you leave the building? If so, when? And where do you go?

If you don't know the answers right now, you soon will, thanks to an Emergency Plan that is being introduced in the Administration Building and at other sites by Group H-3 (Safety).

And while the plan deals with several contingencies, it is with fire, the most common risk, that it is most concerned.

Support Your Local Warden

Key to the new Emergency Plan, as Roy Reider, H-3 group leader, explains, is the warden system. In

the Administration Building, for instance, wardens and alternate wardens have been appointed for wings on all 4 floors.

Upon learning of a fire in his area, the warden or his alternate will:

- Phone the Fire Department if this has not already been done.

- Notify the chief warden, Robert Pogna, security officer, or one of his alternates, of the fire.

- Notify everyone in his wing of the fire and direct an orderly evacuation for any but the most trivial blaze.

- Sweep his area, i.e., check rest-rooms, file rooms, and other "hidden" areas to make sure no one is being left behind.

--Advise the Fire Department upon its arrival of the location and nature of the fire, of search and rescue requirements, if any, and of any special problems.

--Conduct an orderly re-entry of employees into the building after Fire Department, Building Engineer, and Safety Engineer go-ahead.

The warden may also direct the shut-down or disconnection of hazardous systems or electrical appliances before leaving and, if the blaze appears moderate and controllable, call on 2 or more volunteers to operate fire extinguishers or fire hose.

That's quite a bundle of responsibility. Fortunately, there are a large number of employees willing to assume it.

But it takes more than this to become a warden or alternate warden. One requirement is that the nature of the person's regular job be such that the employee be in his office most of the time. In this context, secretaries make excellent candidates and many of them have been chosen.

The other requirement is training. Since early May, wardens and alternates have been attending classes to learn the fundamentals of the "trade."

Obviously, your warden and his alternate are good people to know. They'll be around to see you and explain more. But there is no reason you shouldn't drop in on them and say hello. Wardens and their alternates for the Administration Building are shown on the next page. Wardens and alternates for other sites will be announced through appropriate group leaders.

What About You?

To answer the questions raised in the opening paragraphs of this piece, here's what you now do in case of fire in the Administration Building and certain other sites:

1. Phone the Fire Department or actuate the fire alarm.
2. Notify your warden or alternate warden.

3. Do not attempt to safeguard classified material if there is the slightest doubt that you have time to do so. Your safety comes first. Do not take classified documents with you from the building.

4. Evacuate via stairs (not elevators) with employees in your wing under the warden's or his alternate's direction. Muster in the north and south parking lots. Stay there until directed to re-enter the building or go home.

5. If the warden or alternate warden judges the blaze to be moderate and one that can be fought safely, help operate fire-fighting equipment if so directed.

6. Do not at any time attempt to return to your wing to retrieve left-behind items.

Dress Rehearsals

Practice makes perfect--and in a real emergency, it pays to be perfect. To that end, drills in the Administration Building and at other sites will begin this summer.

These will be announced in advance, thus classified material can and should be secured prior to drills. No unannounced drills are planned; therefore, an unexpected alarm will mean "the real thing."

Alarm in the Administration Building will be by word of mouth. Funds have been requested for FY 75 for installation of alarm systems in the Administration Building and certain other sites.

Other Emergencies

While fire is the primary risk, others are covered in the Emergency Plan. One is the release of toxic substances. Another is bomb threats or other ominous warnings. For these, alarm and evacuation procedures are essentially the same as for fire. For bomb threats, employees are well familiar with reporting procedures printed in the front of the LASL telephone directory.

And there are plans for injuries and plans for the special problems inherent in evacuating the auditorium.

While the foregoing deals primarily with the Administration

Building, similar procedures have long been in effect at other LASL sites such as the Physics Building, or will be implemented in facilities that have not had them.

LASL sites dealing in explosives, radioactive materials, and toxic substances have had sophisticated and frequently rehearsed emergency plans in effect for many years and will be less affected.

Included in planning for these sites are contingencies, some quite remote, such as earthquake, building collapse, and civil disturbances. In the event of enemy attack, the long-established Civil Defense apparatus for Los Alamos and LASL would go into action.

Why More Safety?

"We're responding to the times," says Reider, in explaining this enhancement of LASL's existing safety program.

"The Administration Building is really a safe place. Yet, something could conceivably happen. We have to prepare for all reasonable contingencies. The same goes for some other sites.

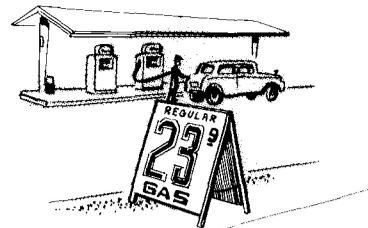
"Safety at LASL has historically been an internally generated thing since the Manhattan Project when, of necessity, we set our own standards and implemented our own programs. These often became models for others getting into our type of work. This process continues today.

"But in addition, we are now complying with standards required by the Atomic Energy Commission, by the Occupational Safety and Health Act, by the National Fire Protection Association, and by other government agencies and professional organizations.

"It makes our life more complicated, and some of these standards may seem redundant or unnecessary in the light of our special requirements and existing safeguards. However, it is appropriate for government facilities to be setting good examples for the rest of the nation in matters of safety, fire and general protective measures," Reider concluded.



10



years ago in los alamos

Culled from the May and June 1964 files of
The Atom and the Los Alamos Monitor by Robert Y. Porton

EMERGENCY CALLS

Fire Department 9-911
Protective Forces 4437

ADMINISTRATION BUILDING

Wardens & Alternates

Chief Warden, Robert Pogna 4673
Alternates, Robert Sweet &
William Showers 4673

4th Floor

Wing A-B Warden, Alita Roach 5653
Alternate, Pat Tyler 5653
Wing C-D Warden, D.A. Heimbach 4515
Alternate, Barbara Lujan 4515

3rd Floor

Wing A-B Warden, Ellen LaPlant 5057
Alternate, Peggy Bradberry 4236
Wing C-D Warden, J. B. Montoya 4676
Alternate, Kate Martinez 4676

2nd Floor

Wing A (South), Leon Brown 5201
Alternate, Jane Robyn 5201
Wing B-C Warden, R. W. Turner 6220
Alternate, Diane Montoya 5784
Wing D Warden, Carolyn Valentine 4401
Alternate, Betty Simes 4401
Foreign Technology Warden,
A. T. Peaslee 6922
Alternate, Jane O'Neal 6922

1st Floor

Wing A (South) Warden, Joe Tafoya 4336
Alternate, Margaret Klaer 4336
Wing D Warden, Velta Hampton 5143
Alternate, Linda Dimas 5143
Wing B-C Warden, I. Bergstein 4594
Alternate, Ida Kraig 4594

Basement

Wing A-B Warden, F. Alarid 4329
ISD-7 Warden, F. Berry 4064
Alternate, R. Crook 4064
Main Library Warden, Alice Wynne 4175
Alternate, Helen Ketola 4175
Report Library Warden, Viola Salazar 4446
Alternate, Dan Baca 4446
CTR-2 secretary 4465
CTR-4 secretary 5031

Los Alamos revisited

J. Robert Oppenheimer returned to Los Alamos May 18 and made his first public address in the Atomic City since resigning as Laboratory Director in late 1945. Oppenheimer was greeted by a standing ovation when he stepped to the lectern in the Civic Auditorium where he discussed "Niels Bohr and Atomic Weapons." Arriving a few hours in advance of his scheduled lecture, Oppenheimer visited the LASL museum in AP Building, watched a special showing of a documentary movie, and chatted with friends of 2 decades.

Technical Associate Director honored

Technical Associate Director Raemer E. Schreiber received an honorary Doctor of Science degree at Purdue University commencement exercises May 31. The honorary doctorate cited his contributions to the nation's nuclear weapons program and his role in the development of nuclear rocket propulsion.

And the Sundts came tumbling down

Shed a tear for the Sundt apartments. After many false starts, they are now firmly headed for oblivion. When the apartments were completed in November, 1943, an optimistic Army official announced that all foreseeable housing requirements at Los Alamos had been fulfilled. He was only off by a factor of 10. The Army also had estimated the Sundts would last 5 years—a miss by a factor of four plus. Home of many famous scientists and their families during the early years, they have served their purpose well and will always be remembered by the occupants.

Eat your heart out.

Advertisements placed in this week's paper included gasoline prices featured at 2 well-known service stations: Regular 23.9 and 24.9 cents a gallon.

So what else is new?

The housing shortage in Los Alamos is tighter today than ever before. Charles C. Campbell, AEC area manager, has asked his staff to develop a comprehensive plan to improve the situation by the end of the year. He pointed out that with prospective development of new projects at LASL, such as the Meson "factory," there could be about 400 transient consultants and other personnel annually needing a place to live here.

Among Our Guests

To visit the LASL libraries, Joshua I. Smith, executive director of the American Society for Informational Services visited Los Alamos on April 10. He's shown here (right center) with Art Freed, ISD-4 group leader, and Sandra Neville, left, and Alice Clark, right. Neville and Clark are with the University of New Mexico general library.



To speak at a colloquium and visit LASL sites, U.S. Senator Pete Domenici of New Mexico visited LASL on April 18. Here he inspects a solar collection plate as Doug Balcomb, Q-DOT, Harold Agnew, Director, Charles Gentry, legislative aide to Sen. Domenici, Bill Keller, Q-26 group leader, Bob Duffield, Q-Division leader, and Bill Richmond, ISD-1, watch.



To attend briefings, AEC Commissioner William Anders visited LASL on April 5. Here, Anders, second from left, inspects LAMPF. He is accompanied by Ed Knapp, associate MP-Division leader, (left) and H. C. Donnelly, manager, AEC Albuquerque Operations Office, and Don Kerr, ADRK (right).



To speak on "Common Cause and Citizen Action" at a colloquium, John Gardner, Common Cause Chairman and former Secretary of Health, Education, and Welfare, came to LASL on April 30. He is shown here with Andrew Nowak, L-3, local Common Cause chairman, at a reception after the colloquium.





Winner of the Miss New Mexico title in Las Cruces on March 23 was Jan Nilsson, a Los Alamos High School graduate whose father is Clifford Nilsson, SD-2. As **The Atom** goes to press, Jan has flown to Niagara Falls for the Miss U.S.A. contest which was televised May 18, the winner of which will compete in the Miss Universe contest later this year. Jan placed 4th in, would you believe, the Miss Dogpatch USA contest in Arkansas last summer. A junior at New Mexico State University majoring in fine arts, Jan is also a TV "weather gal" in Las Cruces, hopes to model and teach dancing following graduation.

DATA

Critical Mass: 50.8 kg
Parameters: 94-66-94 cm

PHENOMENOLOGY

Spontaneously elevates to a high energy state when discussing primary interests: swimming, tennis, ballet.

Presence in a random field of NMSU male students initiates reactions distributed from moderate perturbation to extreme excitation.

MGTZ HENRY THOMAS
3187 WOODLAND RD
LOS ALAMOS
87544
MM

NM