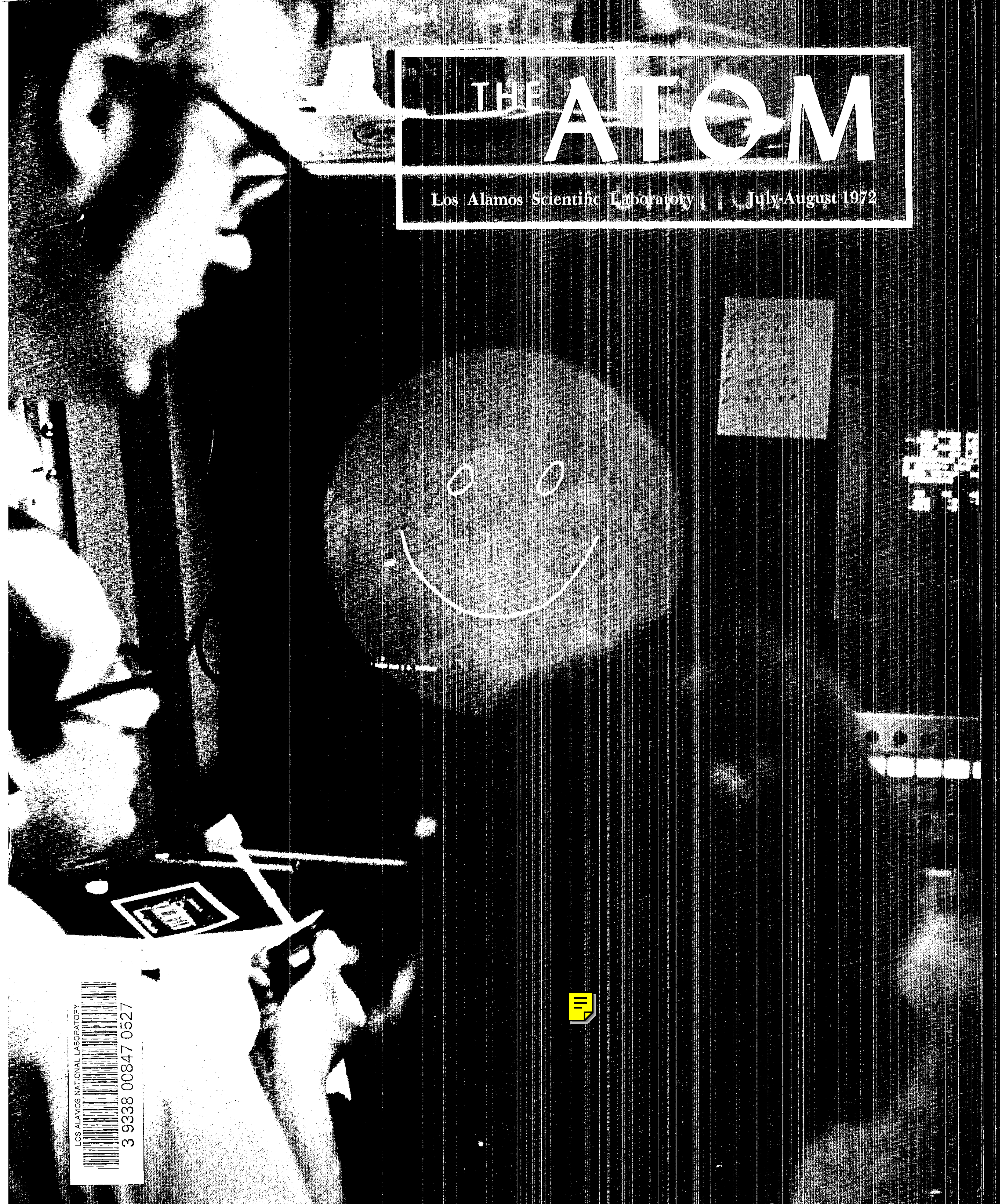
THE ATOM

Los Alamos Scientific Laboratory July-August 1972



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THE ATOM

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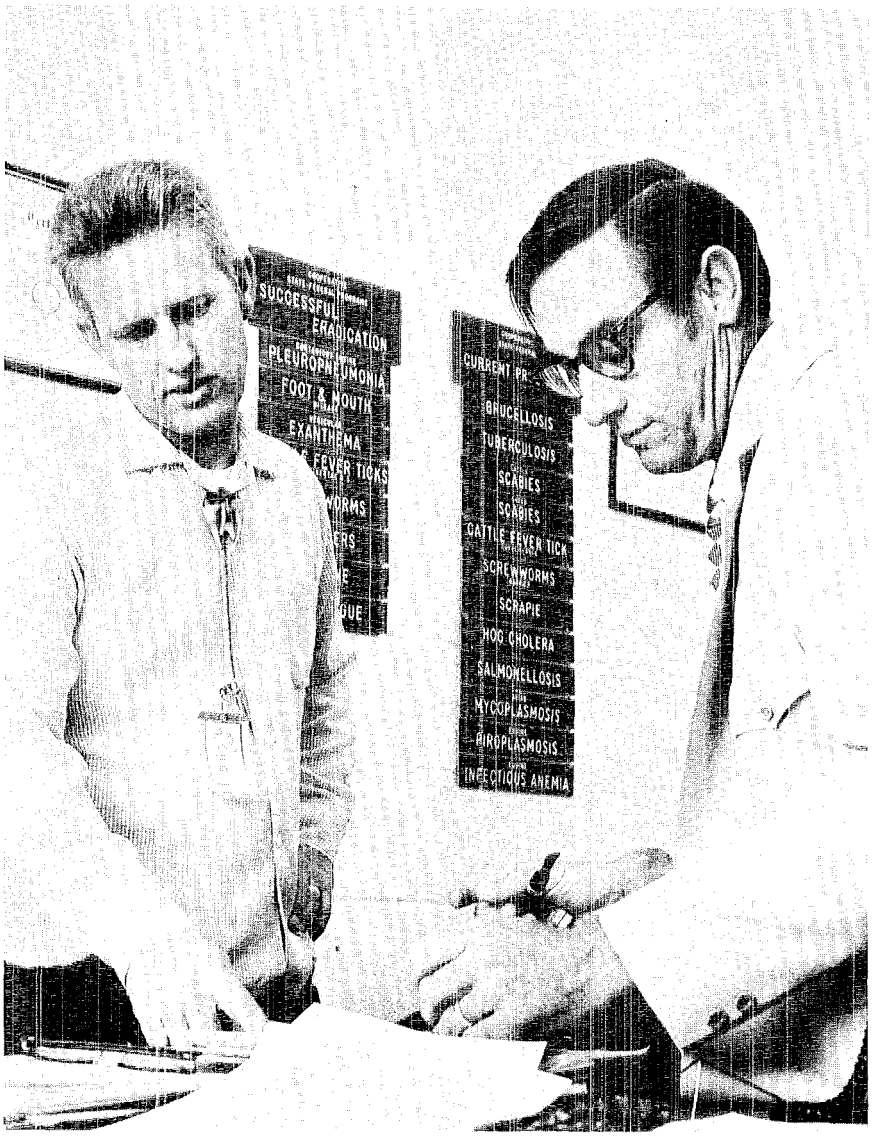
COVER:

Even the computer smiled when displays at Station 2 indicated that the LAMPF accelerator had reached its design energy of 800 MeV (million electron volts). The smiling face was a simple addition to the accelerator's computer program by Sally Shlaer of MP-1 and, by itself, suggests the elation of scientists who worked around the clock to achieve the milestone. The cover photograph was taken by ISD-1 Group Leader Bill Regan. Many others accompany the story on the LAMPF accelerator which begins on page six.

Can a Nuclear Research Laboratory Deal with Agricultural Problems?



Dale Holm, H-4, LASL's liaison officer for Department of Agriculture projects, discusses proposed projects with Coleman Hensley, the USDA's liaison in Los Alamos.

The answer to this eternal question is "yes" say officials at the Los Alamos Scientific Laboratory. Through an interagency agreement between the Atomic Energy Commission and the U.S. Department of Agriculture, the Laboratory will undertake the task of adapting its scientific capabilities to a wide variety of perplexing agricultural problems.

Project arrangements were made through the Laboratory's Office of Special Projects by Austin McGuire, and are coordinated by Coleman Hensley, USDA liaison officer assigned to Los Alamos, and Dale Holm, H-4.

Hensley came to Los Alamos more than a year ago when Group H-4 was working on a Department project to provide "proof of principle" that fluorescence antibody methods could be used to differentiate between hog-cholera-infected and uninfected cells. He was assigned to LASL by E. P. Pope, director of the USDA Animal Health Diagnostic Laboratories, who anticipated many more collaborative efforts of benefit to the Department.

In view of Hensley's assignment and the likelihood of the Laboratory becoming involved in other USDA projects, Richard Taschek, associate director for research, appointed Holm liaison officer for USDA projects. In addition, Taschek established the Interdivision Steering Committee, chaired by Holm, to evaluate proposed projects with respect to the Laboratory's scientific capabilities. Other members of the committee are Don Petersen and Marty Holland, both of H-4, John Seagrave, P-DOR, Bill Briscoe, acting E-division leader, and Nick Matwiyoff, CNC-4.

Because USDA projects are biological in nature, H-division personnel are assigned to each one. The scope of the projects, however, is such that they will involve many other technical groups at LASL.

"On-Call" Service

Among the projects to be undertaken by LASL is one to provide

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the USDA with continuing collaboration and support. The Laboratory will be "on call" to complement the Department's research, development and regulatory services. In response to specific requests, LASL is to provide materials and services of a specialized nature, not normally available to the Department, including consulting service, analysis, instrument development, instrument prototype fabrication, assistance in field tests, evaluation of prototypes and to perform some study and analysis work of a general character of long-range benefit to the USDA.

This project is especially beneficial during emergency programs initiated by the Department. The Laboratory, for example, is now providing technical assistance and consultation to the USDA emergency task force in the Velogenic Viscerothropic Newcastle Disease Eradication Program. The disease is a new strain in chickens that appeared in California in October of 1971 and that has since reached epidemic proportions.

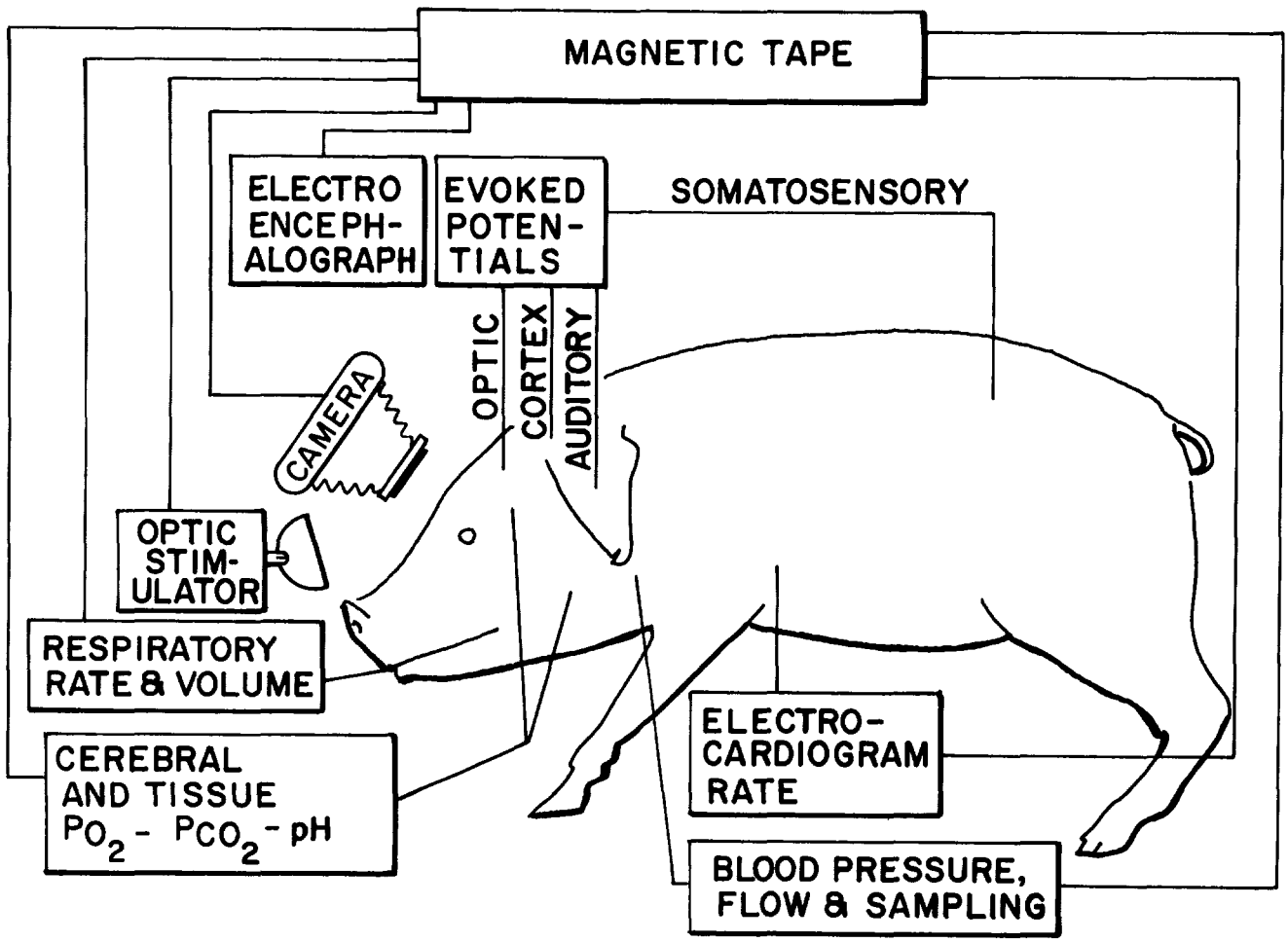
Pharmacological Agents

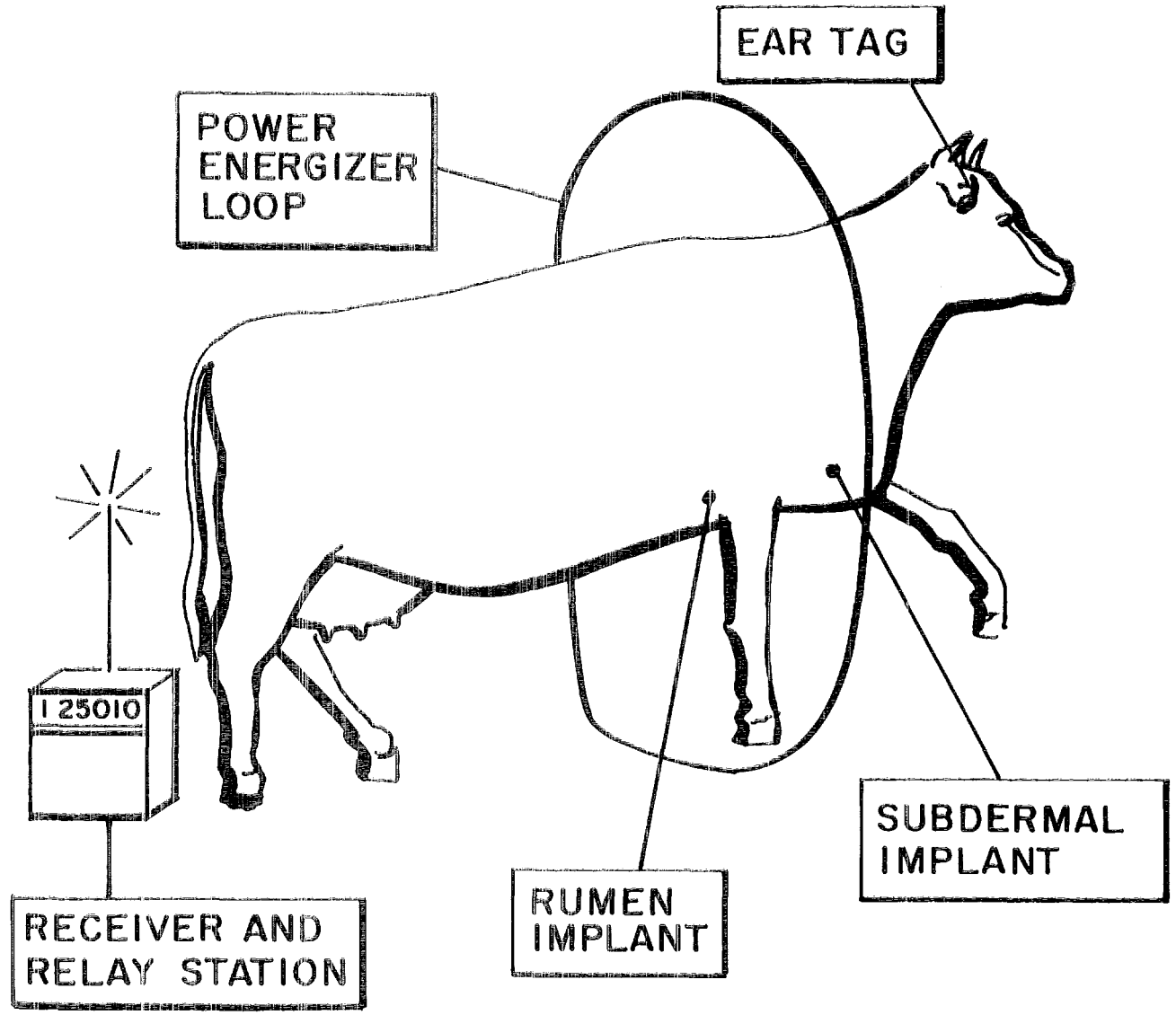
LASL has proposed to collaborate with the Surgical Laboratory at Colorado State University in a study of pharmacological agents used for disposal of infected livestock. If initiated, the study is to satisfy the USDA's concern that the most humane methods are employed in livestock disposal. Colorado State University would have prime responsibility for this project and LASL would assist with instrumentation development, testing and utilization in actual animal experiments.

Animal Identification

In cooperation with Montana State University, the Laboratory

Data supporting the use of various pharmacological agents used to dispose of diseased livestock herds will be obtained by monitoring systems such as shown in this illustration.





This artist's sketch is of a proposed method that may be used for animal identification.

will develop on-line, electronic methods for determining an animal's "herd of origin." The project will be conducted to provide more rapid methods of tracing the origin of diseased animals than brands, tattoos and conventional ear tags permit. LASL's role will be to encapsulate a rumen implant unit that will be developed by the University. LASL will also investigate the use of implants for body-temperature monitoring as a method of detecting diseased animals, although initial field instruments are to provide rapid pre-slaughter and stockyard identification of an animal's herd of origin.

Screwworm Fly Eradication

When adequately funded, automated methods of identifying screwworm flies and attracting them into traps in the field will be developed by the Laboratory to permit more rapid and effective evaluation by the USDA of its Screwworm Fly Eradication Program being conducted in the south-

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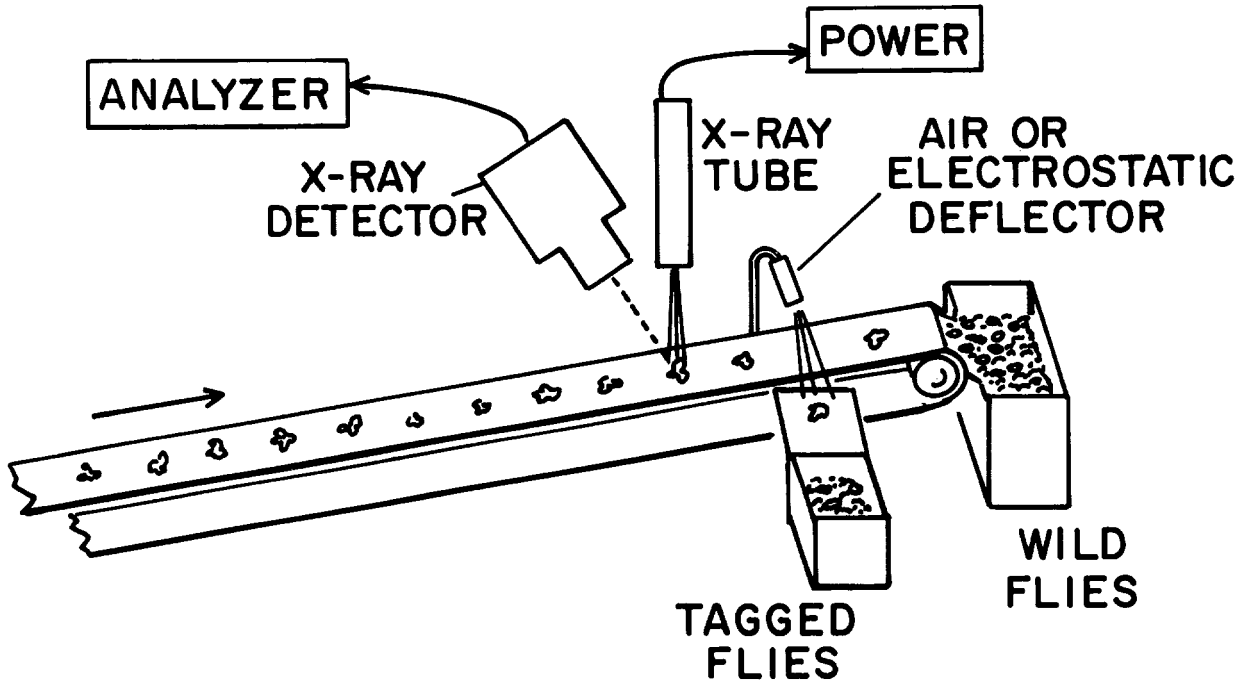


Automated methods, such as depicted in this illustration, will be investigated by LASL scientists for identifying and isolating screwworm flies.

western part of the United States.

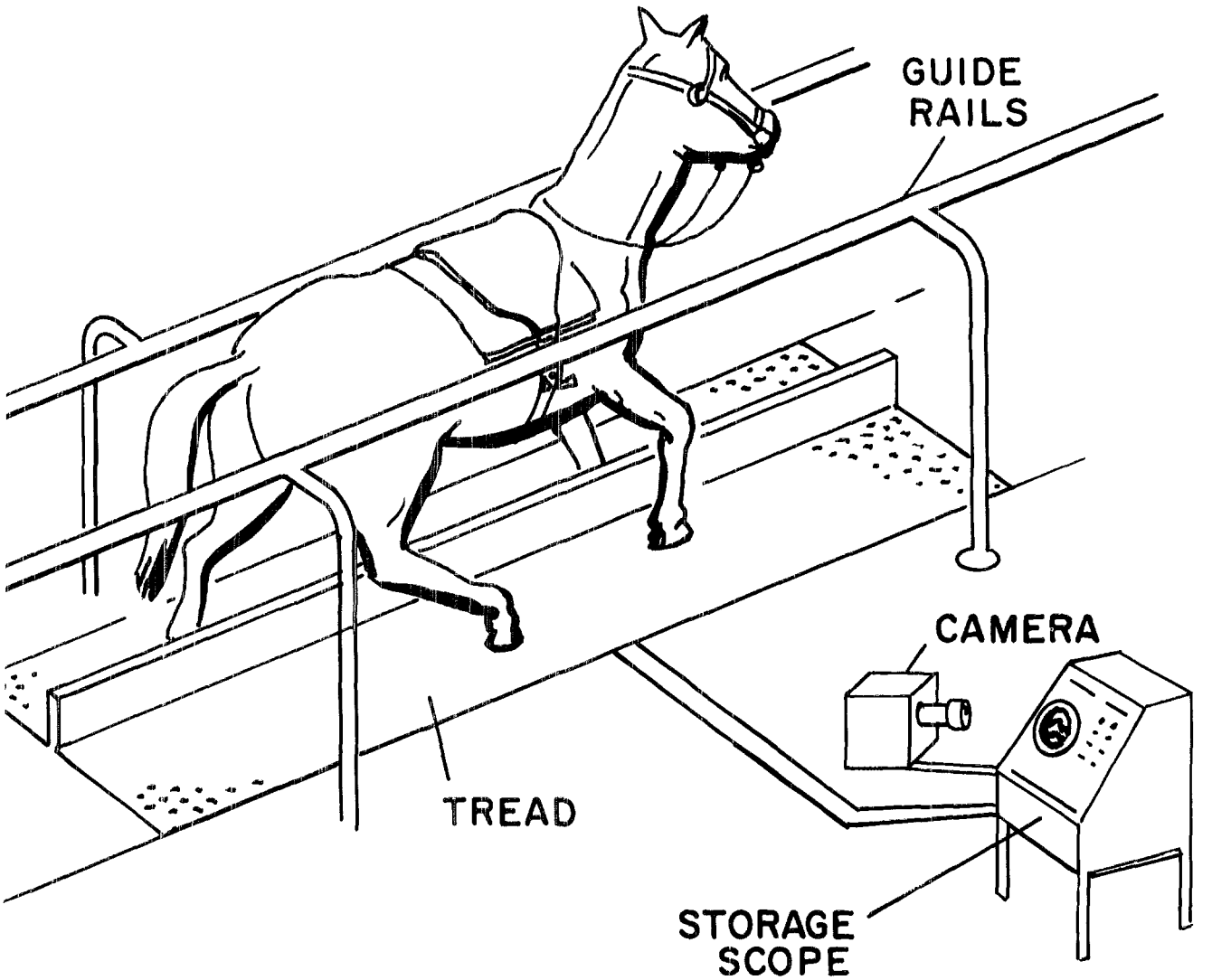
The USDA airdrops sterile, laboratory-grown screwworm flies into infested livestock areas with the idea that since sterile flies will not reproduce, the screwworm fly population will eventually die off. One of the major sources of information on the effectiveness of the program is obtained by setting fly traps, counting the number of screwworm flies trapped, and from this number determining how many of them are laboratory-grown. Present methods of doing this involve hand-sorting trapped flies into laboratory-grown and native types.

The Laboratory's proposal for this project was preempted by chromatography and mass spectrometry studies conducted by Dan Loughran of GMX-2, neutron activation investigations by John Balagna of CNC-11, and x-ray fluorescence studies by John Malanify and John Umbarger, both of A-1. Loughran analyzed materials in presently used attractants that were furnished by the USDA. Both neutron activation and x-ray fluorescence techniques verified that the native screwworm fly has substantial amounts of bromine in its system while the laboratory-grown version has essentially none. Because of this discovery, LASL scientists will attempt to introduce an element, such as iodine, into the laboratory-grown fly's diet that contrasts with the elemental makeup of the native fly and develop methods of detecting this element.

Lameness in Horses

A project to develop instrumentation and diagnostic techniques for evaluating lameness in horses is proposed to be conducted in cooperation with Veterinarian Leonard Blach of the Santa Fe Equine Center. LASL is to develop a pressure-sensitive platform and diagnostic techniques for evaluating lameness in horses by measuring and analyzing the load-versus-time waveforms generated by an animal as it walks across the platform.

Lameness and unusual locomotion patterns in animals can result from diseases or injuries. The LASL project would be aimed at regulating the practice of "horse soring" whereby a horse is intentionally injured in order to achieve a unique gait such as is customary of the "running-walk" of the Tennessee Walking Horse, or the unusual gait of the American Saddlebred, or the Pacing Standardbred. Current methods of detection de-



A pressure-sensitive platform and diagnostic techniques to detect lameness in horses will be developed by LASL in cooperation with Leonard Blach, Santa Fe veterinarian.

pend largely on the eyes and ears of regulatory officials.

Trichinosis

Laboratory scientists will develop a rapid, on-line, automated screening system for detection of trichinosis in hogs that will operate at speeds equivalent to the high rate of slaughter.

Nearly 80-million hogs are slaughtered each year in the United States, requiring 80-man-years for trichinosis inspection. The automated system will reduce the cost of this activity and provide leads to systems that are appropriate for the detection of other animal diseases of economic importance to the livestock industry.

Prior investigations to determine the feasibility and direction of the trichinosis project were made by P-Division Summer Consultant Jeff Gipson with some assistance from James Prine of H-4.

Animal Disease Diagnosis

Another project is to develop an automated fluorescence antibody screening capability to detect hog cholera and determine the technique's applicability to other animal diseases.

This project is a "follow-up" to the fluorescence antibody "proof of principle" study conducted at the Laboratory. The preliminary study was conducted by Scott Cram and Jean Forslund, both of H-4, and was LASL's first inroad into USDA problem areas.

Louis Rosen, MP-division leader, and other MP-division personnel were jubilant as console display screens indicated that the LAMPF accelerator was running at 800 MeV.

LAMPF Accelerator Reaches Full Energy

It wasn't time. They were a month ahead of schedule, but there was no reason to postpone it. The Los Alamos Scientific Laboratory's Meson Physics Facility accelerator was ready to reach for its design energy of 800 million electron volts, and Louis Rosen's MP-division personnel were anxious to get on with it.

They began on a Sunday—June 4—many working 12-hour overlapping shifts that would culminate only after the accelerator produced the full-energy beam of protons. The extended work-hours allowed for around-the-clock operation, a traditional and necessary procedure for most first-time, full-energy tests of large accelerators. This procedure is dictated by the many preparatory maneuvers required to turn on the accelerator. Sweeping potentially radioactive areas to assure they are clear of personnel, turning on, monitoring and adjusting the accelerator's numerous and complex systems, such as cooling, vacuum, power and safety, and repetitious experiments are considered to be too time consuming to conduct a full-energy test in reasonable time during normal working hours.

In the Operations Building, Don Hagerman, associate division leader for operations, gathered the scientists who would be responsible for tuning the accelerator to produce the 800-MeV proton beam. Operations crews were established just as they will be when LAMPF is completed and actual experiments are begun. At one control console—"Station 1"—Bob Warner, alternate MP-2 group leader, Bob Hill, Joe Bergstein and other members of MP-2 controlled routine accelerator operations, including systems monitor-

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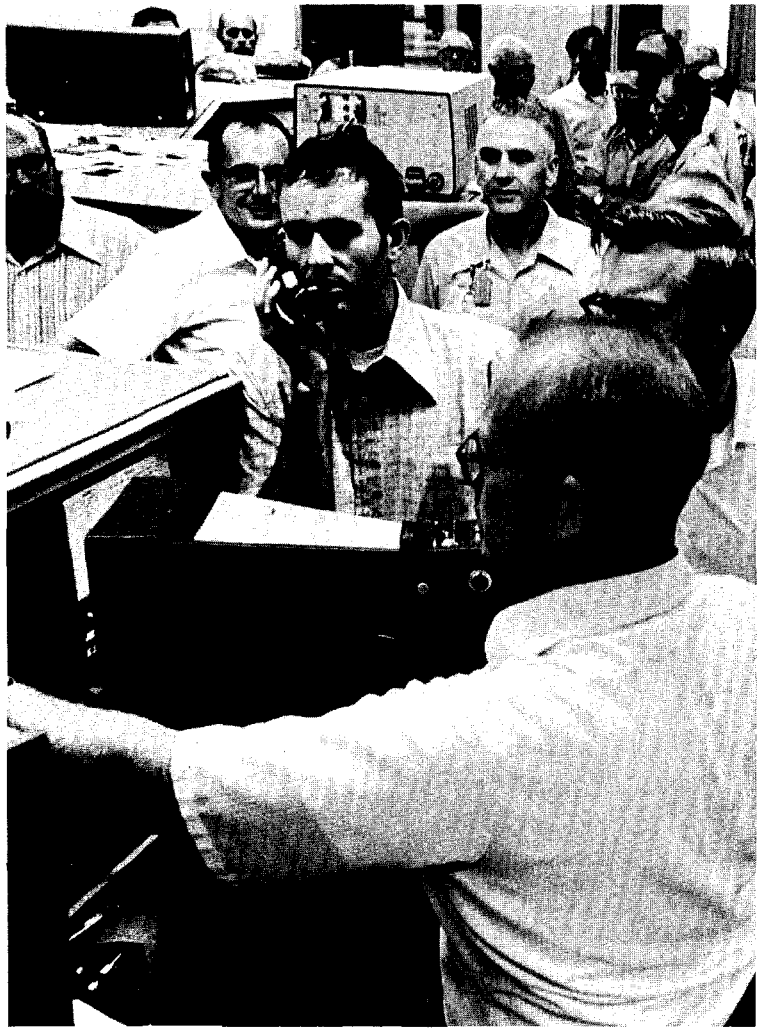
ing, thereby sparing experimentalists from all operations but those directly concerned with tuning the machine's 48 modules. Experimentalists Hagerman, MP-9 Group Leader Bob Jameson and Associate Group Leader Don Swenson, Ken Crandall, also of MP-9, and Mike Paciotti and Jerry Helland, both of MP-3, were clustered around the display screen at the control console designated "Station 2."

The tedious tuning task was in its second day and experimentalists had achieved 300 MeV when Swenson noted: "We expect to have an 800-MeV beam in a few days. As accelerators go, a few days does not mean we're having a difficult time. Actually the accelerator and its systems are operating very smoothly and it's surprising that we can expect to reach full energy so quickly. There are thousands of circuits, relays, interlocks, protective systems and other things that can't be completely checked out until the accelerator is ready for the beam. All of these have to work in order for the accelerator to work. The fact that we haven't had any failures yet is an indication that we have good system designs. Another important part of the experiment concerns steering and focusing the beam and adjusting each of the accelerator's modules to the right rf phase and amplitude to carry the beam through the accelerator. This part is coming along as well as we expected."

As test procedures continued it became apparent that the assignment of 12-hour workshifts was more formality than mandate. Many of the scientists involved in the test worked far more hours than was expected of them, napping for only short periods of time when they felt they could work no longer without sleep. Some, such as Hagerman and MP-8 Group Leader Tom Boyd, catnapped occasionally in their truck-mounted campers which they shared with other scientists. Others napped on the floors of offices and other rooms not being used. Many MP-division personnel not directly involved in the 800-MeV experiment were present at the Operations Building long after working hours just to see how their many years of effort came together with that of others to make an operating accelerator.

Said Boyd, "I can see two reasons why these men are working such long hours. One is that they've developed an expertise. They are competent in their fields and they want to exercise this competency. The other is that we've been working for this day for more than 10 years and they want to be here. It's the proof of the pudding."



Don Swenson, MP-9 associate group leader, photographs data on a display screen for the accelerator log book while Mike Paciotti, MP-3, phones a request for spectrometer verification of beam energy. Between the two men is Bob Jameson, MP-9 group leader.

Nancy Spencer and Paul Elkins, both of MP-1, monitored the accelerator's control computer in a room adjacent to Stations 1 and 2.

Bob Warner, MP-2 alternate group leader, and Bob Hill, also of MP-2, operating Station 1, confer with Station 2 operators. Second from right is Dennis Simmonds, MP-1, and at right is Arvid Lundy, MP-3.

Members of Boyd's Engineering Support group provided maintenance and repair services for acccelerator systems during the test. Although system monitoring and control is a capability built into LAMPF's complex on-line computer system, MP-8 and MP-9 personnel monitored and manually controlled some systems when it was deemed desirable during the event.

By Thursday afternoon, experimentalists had coaxed the beam of protons to 600 MeV. The operation was running smoothly and the sought after 800-MeV level appeared to be close at hand. At 5:07 p.m., console displays showed there was beam loading (meaning that radio-frequency power was being extracted by the beam) in every module. The console displays were for making the first of two corroborating measurements that indicates when the accelerator is running at full energy.

Peter Gram's delta-ray spectrometer, however, would not confirm that the goal had been reached, probably because the beam current intensity at the 800-MeV level was still quite small.

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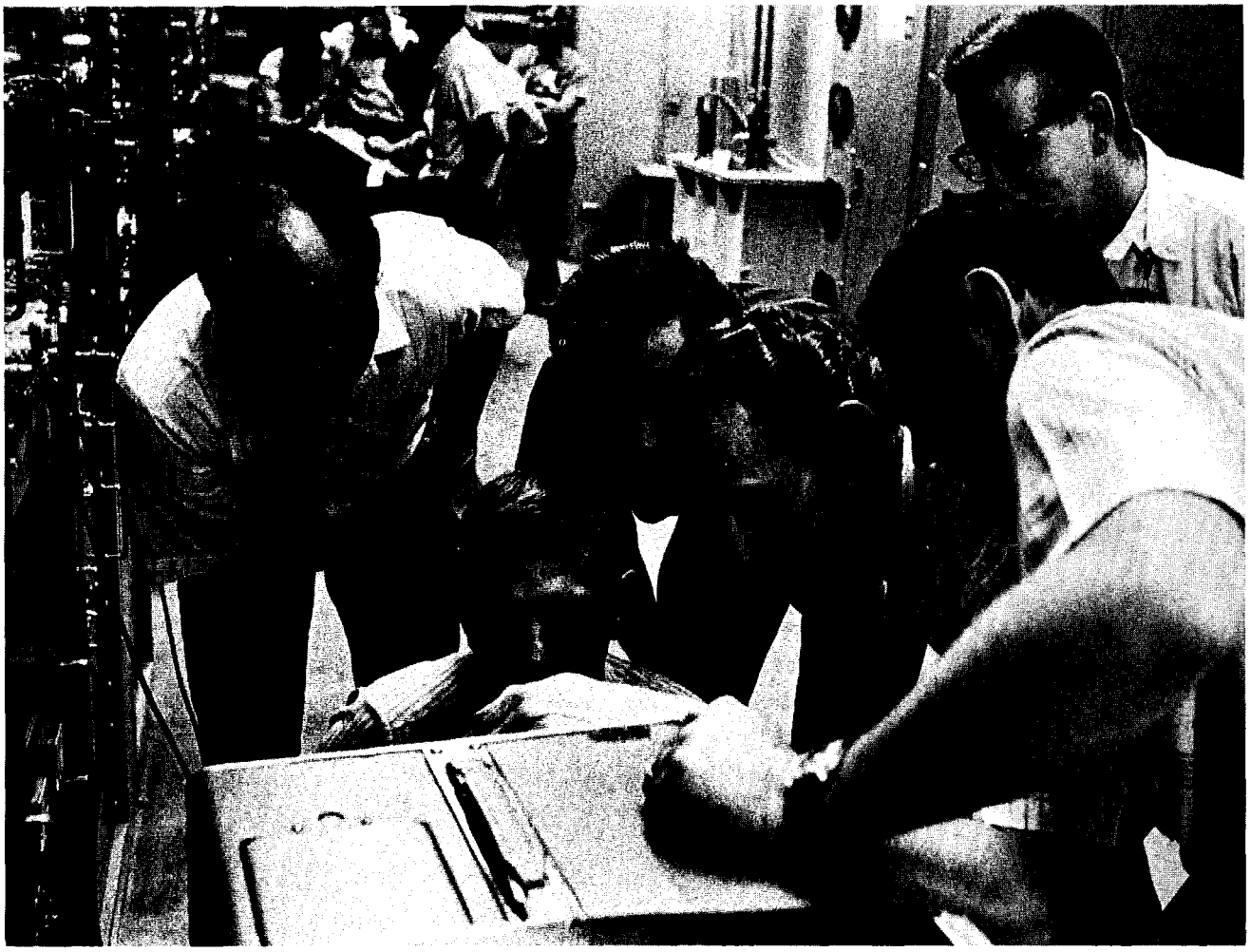
In addition to console displays in the Operations Building, recording equipment in the LAMPF accelerator's service corridor provided members of MP-8 and MP-1 with beam-loading data. Right, MP-8 Group Leader Tom Boyd and other members of his group, Arlo Thomas, Paul Tallerico and Bob Newell observe beam-loading data on Module 16. Below, near the end of the around-the-clock experiment, MP-1 members, Don Walker, Jim Little, Don Machen, Andy Conley, Jim Wilmarth and Wayne Smith, observe loading in Module 47.



The spectrometer, operated by Gram, MP-6 Group Leader Don Cochran, Alternate Group Leader Bob Masek, Frank Shively and Dennis Roeder, was to verify that the 800-MeV proton beam was achieved. Unlike other spectrometers which measure the trajectory of protons through a series of slits in a known magnetic field, Gram's instrument measured the energy of electrons emitted by a berylium-foil target in the beam path. Electron energies are an indication of the energies of protons striking the target. Although it is planned to eventually link the spectrometer to the consoles in the Operations Building, during this test it was set up in the service corridor directly over the switchyard, one floor above the control consoles.

Experimentalists resumed tuning procedures to raise the beam current and were working on the last few modules when a high voltage cable failed. The last seven modules were shut off while Boyd's Engineering Support Group replaced the cable (in a record 25 minutes). During the interim, experimentalists called for a spectrometer reading of proton energy through the 41st module. After some difficulty with background noise, the instrument was recalibrated and Cochran announced that beam energy through the 41st module was 680 MeV, within one MeV of the module's design energy.

Shortly before midnight, displays of the beam on console screens looked good to the scientists in the Operations Building, and they crowded around the spectrometer as MP-6 members made their measurements. At 12:08 a.m. Gram finished his calculations and said: "OK, that's it. We're there."

In addition to Rosen and most of his MP-division personnel and some of their wives, LASL Director Harold Agnew witnessed the event. Marking the occasion, Agnew said, "To Dr. Rosen and all those hundreds of people who have worked for and contributed so much to the Los Alamos Meson Physics Facility, I wish to offer my congratulations. I am sure I speak for the entire Los Alamos Scientific Laboratory when I say how proud and elated we all are of the achievement of the Laboratory's MP-division on attaining the desired goal of 800 MeV some 30 days ahead of schedule. LASL again reasserts its reputation as one of the finest scientific laboratories in the country."

Rosen said, "The attainment today of an 800-MeV beam of protons from LAMPF marks the happy culmination, one month ahead of schedule, of a great effort envisioned 10 years ago. Involved were scores of men and women of extraordinary competence and dedication. They came from all parts of LASL and from others of the Nation's laboratories. Moral and practical support was issued from the Washington and local staffs of the AEC, from the Joint Committee on Atomic Energy, and from hundreds of future users of LAMPF. The result is a crucial milestone on the path towards an important national goal.

"Having achieved full energy, we can now, with added confidence, proceed to the objective of high intensity, even as we complete and render operational the large and complex experimental facilities for the multifaceted programs which LAMPF is designed to accommodate. We shall then proceed to implement the main purposes for which LAMPF was constructed—improved knowledge

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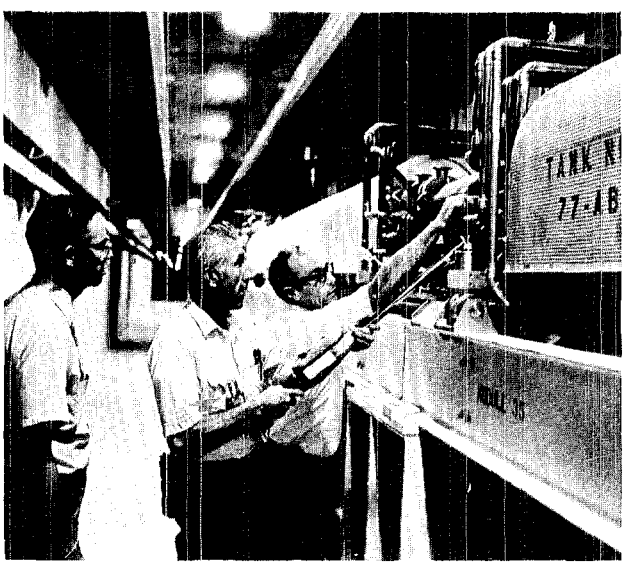
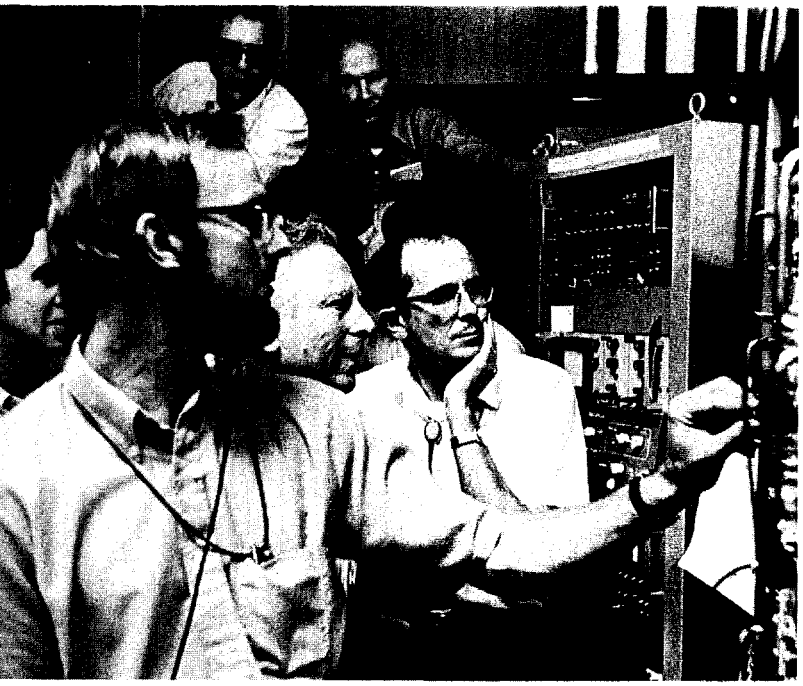


Periodic radiation surveys were made of accelerator hardware by Tom Putnam, assistant division leader for safety, and Harry Craig, H-1, and Don Nickell, MP-1.



Scientists crowded around the delta-ray spectrometer as beam measurements were made by MP-6 personnel. At 12:08 a.m. Peter Gram, foreground, announced "OK, that's it. We're there." Behind Gram are Frank Shively, MP-6, Rosen, and Don Hagerman, associate division leader for operations. Above are Jameson and Ken Crandall, MP-9.

Aftermath of achieving the 800-MeV, design-energy beam was a champagne celebration started off by Rosen, below, to the hand-clapping of MP-division personnel. LASL Director Harold Agnew, at right in photo, holds a souvenir photograph of the 800-MeV beam tracing. Opposite page, the champagne celebration was followed by *hoisting large canvas signs noting the LAMPF achievement.* The signs can be seen easily by motorists passing the LAMPF intersection on Jemez Road.

of the atomic nucleus, and the application of science and technology to the betterment of life, for people everywhere."

More specifically, MP-division still has other milestones to reach before the $57 million facility is completed and experiments begin. Now that the accelerator has achieved design energy, it will be run frequently and fine-tuned to optimize performance until it reaches its design intensity of one milliampere, or 6,000,000,000,000,000 particles per second. Intensity is a unique feature of LAMPF. The facility's accelerator will be operated at an intensity thousands of times greater than any accelerator of comparable energy, allowing more precise measurements to be made and opening up whole new areas for research. The name "meson factory" has often been tagged to the facility because the ultimate goal is to produce pi-mesons, short-lived, sub-atomic particles believed to be the "glue" which holds the nucleus together. These will be produced as secondary beams by collisions of the proton beam with target materials.

In addition to the attainment of the accelerator's design intensity, target, switchyard and experimental facilities have yet to be completed and equipped before LAMPF, which will be named for New Mexico's senior U.S. senator, Clinton P. Anderson, becomes fully operational.

The facility, the largest basic research project ever undertaken in the area of the United States, bounded by the Mississippi River on the east and California on the west, is expected to be ready for experiments to begin in July of next year. It will then be operated for the Atomic Energy Commission by the Los Alamos Scientific Laboratory as a national facility, dedicated to both basic research in the physics of the atomic nucleus and practical applications in medicine, isotope production and defense science. Many experiments in these areas have already been approved for beam time on the accelerator and experimentalists from colleges, universities and research laboratories throughout the United States and some foreign countries are preparing for them in order that they will be ready when the facility is ready.

Photographing the Walls of Deep Holes

At 44 feet in a subterrene-bored 2"x 50' hole, voids in the glass-lined wall were photographed with Bob PerLee's downhole camera.

Not many people are interested in photographs of the walls of deep holes. But, the subterrene people are, and at their request, Bob PerLee, associate ISD-7 group leader, developed a camera system that will take such pictures.

The subterrene is a device being developed at the Laboratory to melt holes in the earth. Small prototypes have been tested by boring holes two inches in diameter as deep as 80 feet.

Rock, made molten by the subterrene's white-hot penetrator, forms a glass-like lining on the walls of the hole. "We wanted to know the condition of the lining at various depths," said Leo McDonough, N-7. "We contacted Bob PerLee to see if there was some way of photographing the bore walls and he came up with a camera system to do it."

Before the photographs could be taken, several problems had to be overcome. First of all the job would require a very small camera whose shutter could be triggered remotely from the surface and whose lens could be focused at so near a subject. Also, the walls would have to be lighted well enough to expose the film.

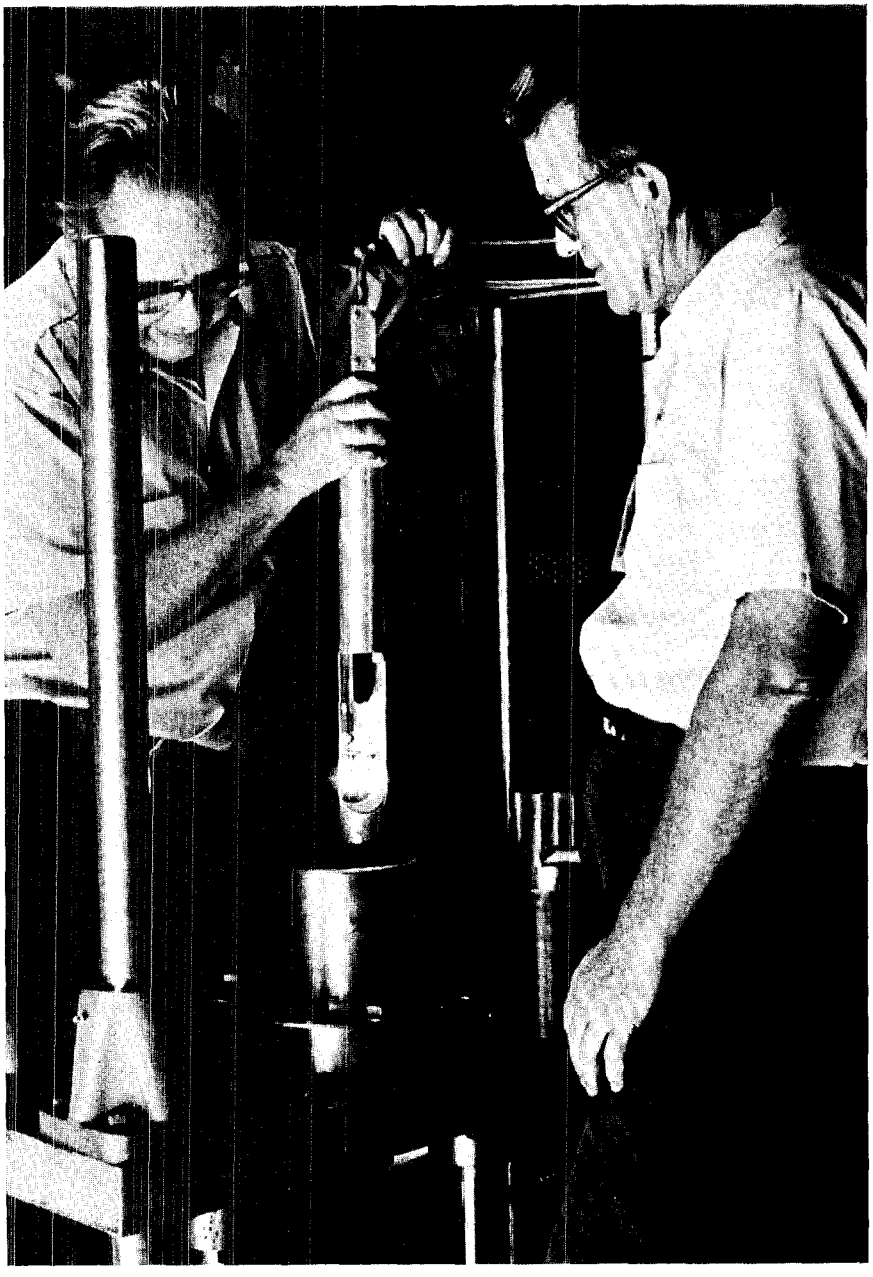
From Group J-10, PerLee borrowed a miniature 9mm camera which would focus as close as eight inches. Although not close enough, PerLee overcame this problem with a system of two mirrors provided by Buddy Montoya of GMX-9. One mirror reflects the image of the bore wall to the other mirror which, in turn, reflects the image into the camera lens. The mirrors were placed seven inches apart. This distance plus one inch from the camera's lens to the film plane made eight inches.

PerLee mounted the camera and mirror system in an aluminum cylinder whose outside surface was machined by SD-5 machinist Emmanuel Spanos to a diameter small enough to fit into the two-inch-diameter bore. A cutaway section in the cylinder exposes one of the mirrors to the hole wall. In this cutaway section PerLee also mounted two ordinary flashlight bulbs to provide the necessary lighting, and a solenoid to trigger the camera shutter.

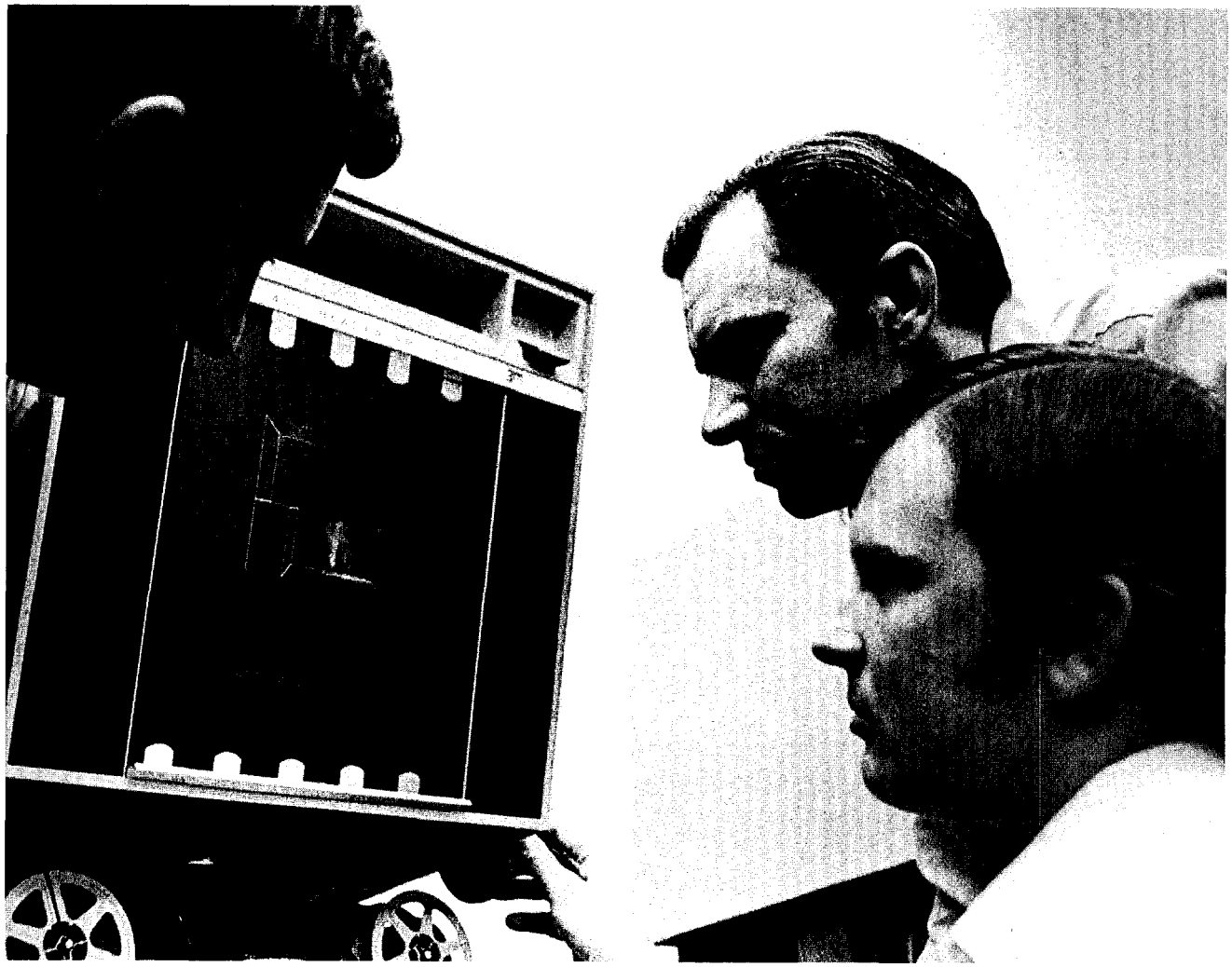
A cable, secured to one end of the cylinder permits lowering and retrieving the system and carries power to the two light bulbs and solenoid. The solenoid is triggered by a pulse from a six-volt power supply, and lights are operated by batteries remotely from the surface.

PerLee took 32 pictures at various levels in both 50- and 80-foot subterrene holes. The photograph image appears within a half-moon shaped area, a configuration governed by the shape of the cylinder containing the camera system. At the widest points of this area each photograph depicts a wall area equal to about 1″x2″, PerLee said.

"We're very satisfied with the pictures Bob is taking for us," McDonough said. "The only other way we could look at the hole linings would be to core them out. But we'd have to look around and find someone who could do the coring job and we'd have to move our rig. This would be pretty expensive and time consuming."



PerLee is assisted by Leo McDonough, N-7, in lowering the downhole camera system in the 80-foot shaft.

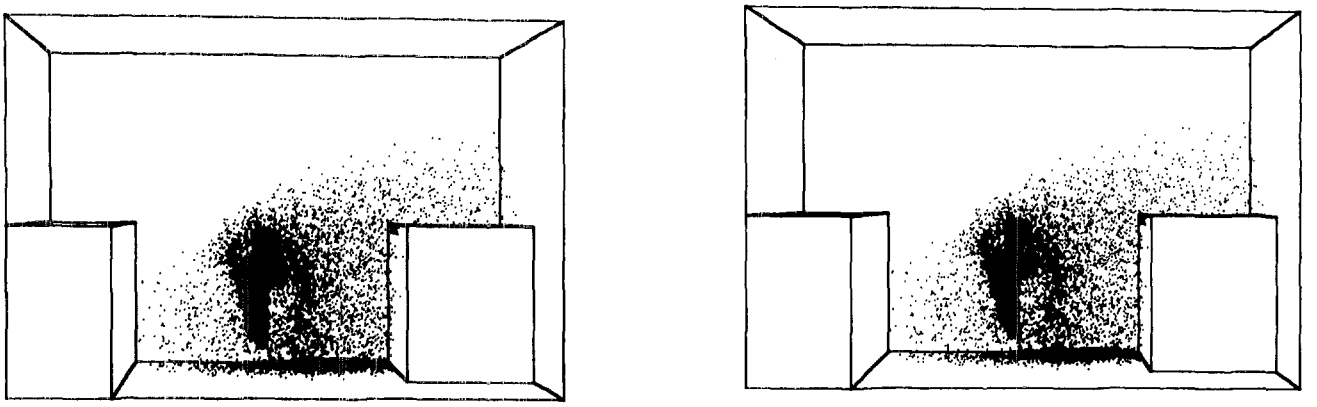


Studying a calculated pollution pattern on one of Group T-3's printer-plotters with Bob Hotchkiss, center, are Dan Butler and Bill Nichols.

Predicting the Behavior of Pollutants

Basic technology cuts a broad swath across many lines. Group T-3, which is responsible for the development of numerical techniques that can be used on the Los Alamos Scientific Laboratory's high-speed computers for predicting fluid motions in a variety of unusual circumstances, recently developed a program for calculating three-dimensional fluid flows around obstacles. The program, STRES is one of the first three-dimensional programs ever written for fluid-flow calculations.

Although intended for Laboratory investigations of the mechanics of the transport and dispersal of radioactive debris, members of T-3 recognized the program's potential for applications to a variety of the nation's most perplexing air and



This computer-generated, stereoscopic photograph depicts how airborne pollutants would be expected to behave if emitted by an industrial plant in the bottom of a canyon. The square at left represents a long mesa, and the square at right a short mesa. When viewing this and other photographs included in this article, the right and left figures merge to give a single, three-dimensional illustration. This effect may be observed without a stereoscopic viewer, either by crossing the eyes or by holding a piece of cardboard vertically between the two figures. View the illustrations from directly over the cardboard so that the left eye sees only the figure on the left and the right eye the figure on the right. Vary the distance from eyes to the photograph until the two illustrations merge.

water pollution problems. Accordingly, Tony Hirt and Bob Hotchkiss developed a method for using the code to predict the behavior of airborne pollutants near buildings.

So promising were the results that the Atomic Energy Commission and the Environmental Protection Agency entered into a one-year contract whereby Group T-3 is undertaking the task to develop and evaluate the feasibility of numerical techniques in the environmental field.

The project centers on two specific air pollution problems. One is to predict the flow and diffusion of pollutants over and around a single building. The other, a more complicated calculation, is to predict the air and pollutant flow and trapping characteristics of a busy street intersection bounded by buildings.

According to Hotchkiss, T-3's predictions of the behavior of air pollutants in these two situations will be matched against data derived from wind-tunnel experiments that have been conducted at Colorado State University, Fort Collins, and open-field experiments being conducted at the National Reactor Testing Station, Idaho Falls, Idaho, and urban pollution measurements in the streets of downtown San Jose, Calif.

"This is our first opportunity to match theoretical predictions of the behavior of pollutants against experimental data," Hotchkiss said.

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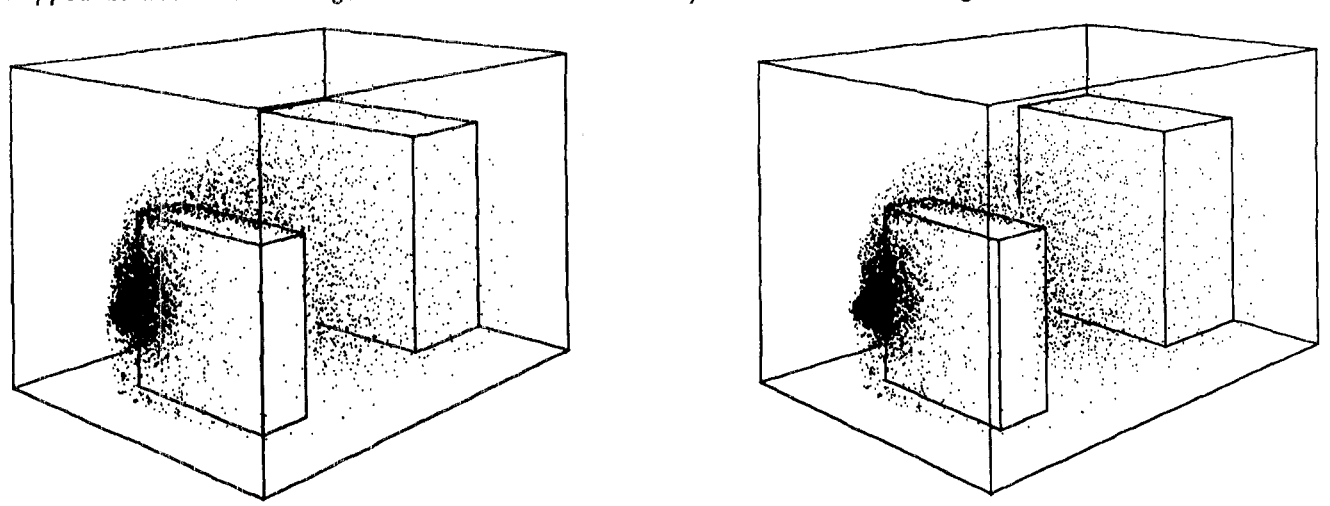
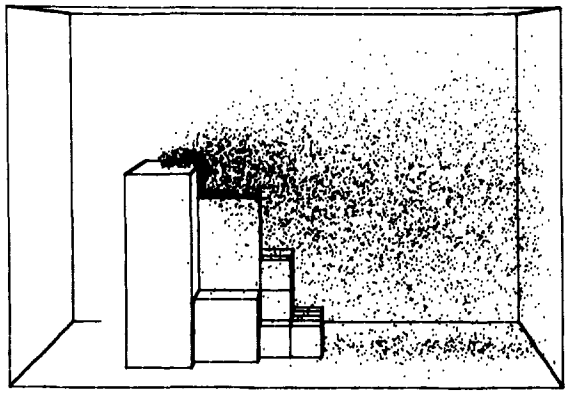
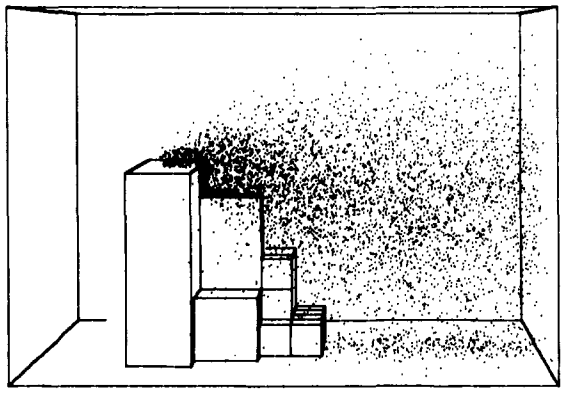
How buildings influence the flow of pollutants emitted by an industrial plant is predicted in this illustration. Air flowing from left to right forces the airborne pollutants to flow over and around the small building. Some pollutants become trapped between the buildings while others are carried beyond the second building.







This calculated pattern shows what would happen when smoke particles are emitted near the roof of an apartment complex. Some of the particles are trapped behind the building and can reenter the complex through windows and intake vents.

"When the technique was first developed, we made a number of qualitative comparisons, but this will be our first experience in the comparison of fully three-dimensional flow calculations.

"Little is known about how pollutants flow around buildings, especially when the winds vary rapidly in direction and magnitude, so every situation is a separate problem. The numerical technique we've developed promises to be a rapid way of obtaining good three-dimensional information on air-flow patterns around buildings, and how pollutants caught up in these flow fields are distributed. We can also include heat transfer in the problems, such as when the sun heats a building, so that the nearby air rises and distorts the flow field.

"For example, these studies provide an understanding of pollutant behavior in an industrial building complex or in a street canyon where auto exhaust pollutants can be trapped between rows of tall buildings. It enables urban planners to locate housing and industry to avoid various pollution problems. If it were known in advance how wind would carry smoke from a power plant, urban planners would know better where to locate and how to orient the plant with relation to the rest of a city. Likewise, if street-canyon pollution could be closely correlated with meteorological conditions, then effective traffic control procedures could be devised to avoid the build-up of intolerable concentrations."

Hotchkiss said that some of the attractive features of theoretical predictions are that they are less expensive and time consuming than experimentation, behavior patterns of pollutants can be derived in more detail, and overall time-dependent features can be included. "The basic purpose of the calculations is to supplement experimental data used in the derivation of pollution control guidance formulas, and to provide a practical tool that can be used for the realistic prediction of complex pollution problems not covered by simpler models. The beauty of such a development program is the surprising spinoff which benefits LASL programmatic responsibilities as well as a variety of investigations sponsored jointly by the AEC and other agencies."

A version of the three-dimensional technique is being used by Bill Nichols to conduct studies of surface waves interacting with submerged or rigid penetrating obstacles. Byron Thompson and Lee Stein are about to investigate the forces of tornadoes on buildings in a study funded by the National Science Foundation and based on Lubbock, Texas, tornado data. Bill Pracht is creating a somewhat different version to study high altitude bursts. Other eventual extensions are likely to include methods for studying of blood flow in obstructed arteries, silt deposition around underwater obstacles, thunderhead formation and cloud-seeding problems, and a host of engineering applications.

short subjects

James Lilienthal, assistant division leader in both CMB- and CNC-divisions at the Los Alamos Scientific Laboratory, has been elected president of the American Nuclear Society.

Lilienthal was also one of two LASL personnel named a Fellow of the ANS. The other was **Kaye Lathrop,** T-1 alternate group leader.

Fellowships are ". . . reserved for acknowledged attainment in the nuclear field by notable original research or invention, by technical leadership of substantial scope, or by outstanding leadership as a teacher."

Lilienthal's citation states: "The candidate's membership in the ANS has been one of total commitment in promoting the technical growth of this Society by the application of his well-balanced administrative talents."

Lathrop was honored ". . . for his outstanding contributions to the understanding and numerical solution of problems in neutron and radiation transport theory—in particular in respect to acceleration of convergence of iterative methods of solution and to improvement of reliability and accuracy of multi-dimensional calculations.

⚛

Eugene Robinson, an employee at LASL since 1944, died recently in an Albuquerque hospital following a long illness.

Robinson was recently appointed associate CNC-division leader. Prior to this appointment he was CNC-4 group leader.

His interests included the ICONS (Isotopes of Carbon, Oxygen, Nitrogen and Sulfer), geothermal energy and the subterrene project. He was chairman of a committee pursuing these matters. He is survived by his wife Evelyn, and two children: Eugene and Deborah.

Donald Byers, alternate TD-division leader died recently as a result of injuries received in an automobile accident in which his wife, Janet, and two daughters, Laura and Lisa, were also injured.

Byers, a Laboratory employee since 1958, was alternate W-division leader before his TD-division appointment which was effective July 1.

⚛

Bill Steyert, P-8, has been appointed adjunct professor in physics at the College of Science, Utah State University.

Steyert, who was recently named a Fellow of the American Institute of Physics, is to work with University officials to supervise USU graduate students who are studying nuclear orientation at low temperatures at LASL.

In this capacity, Steyert is supervisor for **Bruce Murdoch,** a USU student doing his doctoral dissertation work in Group P-8 under an Associated Western Universities Graduate Student Fellowship.

Murdoch's work is expected to be completed in two years. Steyert will serve on his dissertation committee.

⚛

Reginald and Erma Jones have retired from the Laboratory. Reginald, SD-5, was employed by the Shop Department for 21 years. Erma, E-2, was employed by the Laboratory for 20 years. They will return to Los Alamos after a year of travel.

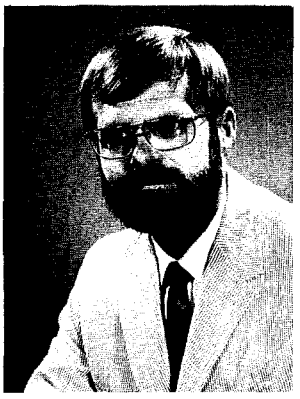
William Martin, assistant CMB-6 group leader, has retired after 19 years at the Laboratory. He and his wife, Dorothy, will continue to live in Los Alamos.

Temple Chronister, CMB-11, has retired after more than 25 years at LASL. He and his wife, Frances, will remain in Los Alamos.

Phyllis Dube, GMX-7, is retiring after six years of service at the Laboratory. She and her husband, Arthur, T-1, live in Los Alamos.

Glenn Champion, A-3 group leader, an employee at LASL since 1956 has retired. Champion was the Laboratory's Source and Special Nuclear Materials Accountability Representative. He and his wife, Theresa, will continue to live in Pojoaque.

Robert Masterson, a former Laboratory employee, has returned to Los Alamos as alternate head of the Information Services Department. His appointment, made by Department Head, Delbert Sundberg, was effective July 1.



Masterson, 39, will be joined in Los Alamos by his wife, Jeannene, and son, Robert, 13.

The newly appointed LASL official is a U.S. Army veteran and is a member of the American Nuclear Society and the Society for Technical Communication. He is a native of Pittsburg, Kans. He received the B.S. degree in physics from the University of Kansas in 1957 and spent the academic year 1957-58 at the University of Munich, Germany, as a Fulbright Scholar. Upon his return to the United States, Masterson worked at Remington Rand Univac, St. Paul, Minn., while attending classes at the University of Minnesota. In 1959 he joined Hanford Laboratories, Richland, Wash., as a physicist in the Critical Mass Physics Group. In 1962 he moved to the Plans and Reports Section in the Brookhaven National Laboratory Director's Office and, in 1964, became assistant information officer in the BNL Public Information Office.

Masterson joined LASL in 1966 as a technical information specialist. He left Los Alamos in 1969 to work for Martin Marietta Company in Denver. He became a technical writer-editor for the National Center for Atmospheric Research, Boulder, Colo., in that year, and, in 1971, was promoted to supervisor of NCAR's Technical Writing and Editing Group.

Don Cromer, CMB-5, began a one-year Professional Research and Teaching Leave of Absence July 1, to do work in neutron diffraction at the Centre National de la Recherche Scientifique in Grenoble, France.

Cromer is accompanied by his wife and three of his five children.

George Shepherd, H-4, has been awarded a North Atlantic Treaty Organization Senior Fellowship in Science to visit biophysical and molecular biology research establishments at Portsmouth, England, and Edinburgh, Scotland.

The fellowship, administered for NATO by the National Science Foundation, will be in effect for 28 days in October. Its purpose is to permit Shepherd to evaluate recently developed biophysical methods for probing chromation structure and to determine the feasibility of using these methods in chromatin research programs at the Los Alamos Scientific Laboratory.

Shepherd was co-chairman of the recent Gordon Research Conference on Nuclear Proteins, Chromatin Structure and Gene Regulation at Wayland Academy, Beaver Dam, Wisc.

Herman Roser, assistant director of the Atomic Energy Commission's Division of Military Application and former manager of the AEC's Los Alamos Area Office, has been appointed deputy manager of the Commission's Albuquerque Operations Office. Roser's appointment is effective Sept. 1. He succeeds James McGraw who retired June 20.

Roser was employed by the Zia Company at Los Alamos from 1948 until 1961 when he joined the local AEC area office as assistant area manager for community affairs. He became deputy area manager in 1964 and was named area manager in 1967, a position he held until he was appointed assistant director of the Division of Military Application.

Elmer Bowen, who retired from SD-1 in 1967 after 24 years of employment at the Laboratory, died at the Los Alamos Medical Center. He is survived by his wife, Louise, and three daughters: Mrs. Jean Brown, Huntington, Calif.; Mrs. Marilyn Leech, Woodland Hills, Calif.; and Mrs. Arlene Black, Melbourne, Australia.

Charlie Stallings, ENG-4, died recently while visiting in Oklahoma. He is survived by a daughter, Mrs. Lena Mae Reid, and a son, Charlie, Jr.

William Cruise, SD-1, died at the Los Alamos Medical Center. He is survived by his wife, Mae Fern, a daughter, Connie Jo, and a son, William.

William Hendry, III, T-1, died in a Fresno, Calif., hospital following a mountain climbing accident. He is survived by his wife, Marilyn, and two sons, Gregory and Jeffrey.

Martha Chabin of the Santa Fe New Mexican's Los Alamos Bureau, interviews LASL's prize-winning photographers: Bill Jack Rodgers, Julie Langham, Eugene Lamkin, Billy Claybrook and Ivan Worthington. Photographers from the Los Alamos Scientific Laboratory won 15 of the 17 awards presented at the Industrial Photographers of the Southwest Convention in Ruidoso, N.M. The LASL cameramen took all the blue-ribbon first prizes and "Best of Show" for both "On the Job Photography" and "Off the Job Photography." Eugene Lamkin, photographer in L-division, received the "Best of Show" award in both categories. Lamkin won first, second and third places in "On the Job Photography (color)." In this category's black and white counterpart, Ivan Worthington, ISD-7, took first place and Mitzie Ulibarri, also of ISD-7, won the third place award. In "Off the Job Photography (color)," Lamkin received the first place award and Bill Jack Rodgers, ISD-7, won the second place award. Rodgers took first, second and third places in the black and white competition in this category. In "Technical Achievement," Julie Langham, H-DO, was first. Billy Claybrook, ISD-7, was second, and Lamkin was third.

the technical side

Taken from LASL Technical Information Reports submitted through ISD-6

Physics Department Colloquium, Carnegie-Mellon University, Pittsburgh, Pa., April 3:

"Fission and Superheavy Nuclei" by J. R. Nix, T-9

San Jose State College, Calif., April 12:

"Lasers: Principles and Practices" by D. H. Gill, L-2

University of New Mexico, Albuquerque, April 21:

"Polarized Ion Sources, Polarization Phenomena Using Gadgets to Demonstrate Principles" by J. L. McKibben, P-9

American Physical Society Meeting, Washington, D.C., April 24-27:

"Theory of Multiple Scattering of Pions from Nuclei" by W. R. Gibbs, T-5 (invited)

Seminar, Department of Nuclear Engineering, University of Arizona, Tucson, April 26:

"Neutron Coincidence Counters for Nuclear Safeguards Applications" by J. E. Foley, A-1

Los Alamos Rotary Club Meeting, April 26:

"Radioisotopes for Medicine and Research from LAMPF" by H. A. O'Brien, Jr., CNC-11 (invited)

Joint Meeting, Southwestern and Rocky Mountain Division, American Association for the Advancement of Science, and Colorado-Wyoming Academy of Science, Fort Collins, Colo., April 26-29:

"The Enthalpies of Formation of Praseodymium Oxides" by C. E. Holley, Jr. and G. C. Fitzgibbon, both CNC-2

"Growing Potatoes (Solanum Tuberosum Variety Sebago) Using 31 Atom % $^{13}CO_2$ as the Sole Source of Carbon" by J. R. Buch-

continued on next page

holz, C. W. Christenson, and E. B. Fowler, all H-7

"Preparation of Carbon-13 Labeled Sugars by Photosynthesis" by V. H. Kollman and C. T. Gregg, both H-4

Santa Fe and Los Alamos Chapters, New Mexico Professional Engineers Society Meeting, Los Alamos, April 27:

"Production of Stable Isotopes at Los Alamos" by B. B. McInteer, CNC-4 (invited)

Highlands University, Las Vegas, N.M., April 28:

"Science Consortium of Southwestern Universities" by R. E. Schreiber, Dir. Off.

Seminar, University of New Mexico School of Medicine, Albuquerque, April 28:

"Lipogenesis from Carbon-14 Labeled Carbohydrates *in vivo* in Humans" by W. W. Shreeve, H-4 (invited)

Symposium on Nuclear Science, Washington, D.C., April 28-29:

"Nuclear Science and Its Future" by L. Rosen, MP-DO (invited)

Thirteenth Experimental NMR Conference, Asilomar, Pacific Grove, Calif., April 30-May 4:

"^{13}C NMR of Paramagnetic Metal Ion Complexes" by N. A. Matwiyoff, D. F. Shepard, and L. O. Morgan, all CNC-4

"On the Worship of ICONS, or Stable Isotopes, at Los Alamos" by B. B. McInteer, CNC-4

Third Conference on Chemical and Molecular Lasers, St. Louis, Mo., May 1-3:

"Electron-Beam Controlled CO_2 Laser Amplifiers" by T. F. Stratton, G. F. Erickson, C. A. Fenstermacher, and E. O. Swickard, all L-1

"CO_2 Laser Induced Explosions of Mixtures of N_2F_4 and H_2" by J. L. Lyman, AWU Fellow in J-10, and R. J. Jensen, L-3

"Chemical Efficiency in a Pulsed HF Laser" by W. H. Beattie, G. P. Arnold, and R. G. Wenzel, all L-3

"Evaluation of Chemical Lasers Based on ClN_3" by W. W. Rice, Jr., and R. J. Jensen, both L-3

Ninth Institute of Electrical and Electronic Engineers Photovoltaic Specialist Conference, Silver Spring, Md., May 1-3:

"Laser Activation of Solar Cells" by C. E. Backus, visiting staff member in N-5

Applied Superconductivity Conference, Annapolis, Md., May 1-3:

"Superconducting Magnetic Energy Storage and Transfer" by H. L. Laquer, and J. D. G. Lindsay, both P-8, E. M. Little and D. M. Weldon, both P-15

Seminar, Biophysics Department, University of California, Berkeley, May 2:

"Cell Analysis and Cell Sorting" by M. A. Van Dilla, H-4 (invited)

Los Alamos High School physics classes, May 3:

"Certain Principles of Physics" by J. L. McKibben, P-9

Dedication of Nuclear Medicine Laboratory, Cincinnati General Hospital, Ohio, May 4:

"Isotope Production Facility at LAMPF" by H. A. O'Brien, Jr., CNC-11 (invited)

Seminar, Northern Illinois University, DeKalb, May 4, and Argonne National Laboratory, Ill., May 5:

"The Effect of X-Irradiation on DNA Precursor Metabolism and DNA Replication in Chinese Hamster Cells" by R. A. Walters, H-4 (invited)

Annual Meeting of the Regional Environmental, Education, Research, and Improvement Organization, Las Cruces, N.M., May 4-5:

"Nuclear Energy and the Environment" by L. P. Reinig, ENG-DO

Miami Geological Society, Fla., May 6:

"A Search for ^{244}Pu in Sedimentary Phosphates and Its Relationship to Solar System History" by G. A. Cowan, CNC-DO

American Ceramic Society's 74th Annual Meeting, Washington, D.C., May 6-11:

"Hot Pressing of (238) Plutonium Oxide" by A. W. Nutt, W-7

"The Influence of Creep Strain on the Elastic Modulus, Crystallographic Orientation and Density of an Isotropic Graphite" by E. G. Zukas, W. V. Green, P. E. Armstrong, and J. A. O'Rourke, all CMB-13

Fifth International Conference on Electron Beam Technology of the Electrochemical Society, Houston, Texas, May 7-12:

"Power Density as a Control Parameter in Electron Beam Welding" by D. J. Sandstrom and G. S. Hanks, both CMB-6

"Tin Solvent Activity-Composition Equations in Light of Metallic Solution Fine Structure and Two-Liquid Regions" by D. A. Griffiths, J. Braithwaite, L. W. Beckstead, all University of Utah, Salt Lake City, and G. R. B. Eliott, CNC-2

"'Inert' Electrode Behavior in Cadmium-Cadmium Iodide Molten Electrolytes" by D. Wong, and C. Pitt, both University of Utah, Salt Lake City, and G. R. B. Elliott, CNC-2

Spring Meeting, Rio Grande and Phoenix Chapters of the Association for Computing Machinery, Phoenix, Ariz., May 8:

"Computational Aspects of Digital Image Enhancement" by B. R. Hunt and H. J. Trussell, both C-5

"An Overview of the LASL Computer Network" by R. D. Christman, C-2

Senior Staff, Ames Laboratory, Iowa, May 8:

"Science and Society—A Complex Interaction" by L. Rosen, MP-DO

Department of Physics, Ames Laboratory, Iowa, May 8:

"The Emerging Research Program for the Los Alamos Meson Physics Facility" by L. Rosen, MP-DO

The Metallurgical Society and the American Institute of Mining, Metallurgy and Engineers Conferences, Boston, Mass., May 8-9:

"Materials Problems in Pulsed Systems" by W. Green, CMB-13, and F. L. Ribe, P-DO (invited)

Naval Ordnance Laboratory Research and Development Program on Reentry Vehicle Materials Meeting, Silver Spring, Md., May 9:

"Graphite Processing" by M. C. Smith, CMB-13 (invited)

San Francisco Peninsula Chapter of the Association for Computing Machinery Meeting, Calif., May 11:

"Evolution of Programming Languages" by M. B. Wells, C-7

National Center for Atmospheric Research, Boulder, Colo., May 11-12:

"A Survey of Methods for the Direct Solution of the Discrete Poisson Equation" by F. W. Dorr, C-6

"Results of Polarization Observations of the Outer Corona from a Jet Aircraft" by C. F. Keller, J-15 (invited)

"Collocation at Gaussian Points" by B. K. Swartz, C-6 (invited)

Seventh International Quantum Electronics Conference, Montreal, Canada, May 11-14

"Parametric Studies of the Electron Beam Controlled Discharge in CO_2 Laser Media" by C. A. Fenstermacher, W. T. Leland, M. J. Nutter, and J. P. Rink, all L-1, and K. Boyer, L-DO

Seminar for Graduate Nuclear Engineering Students; University of New Mexico, Albuquerque, May 12:

"Radioactive Waste Management" by C. W. Christenson, H-7

Lecture, Industrial Hygiene Course, University of California School of Public Health, Berkeley, May 12:

"Industrial Hygiene in Nuclear Industries" by H. F. Schulte, H-5

Classes in Physical Chemistry and Chemical Kinetics, University of New Mexico, Albuquerque, May 12:

"Complexities in Simple Reactions" by J. H. Sullivan, CNC-4

Spring 1972 DECUS Symposium, Boston, Mass., May 13:

"A Microprogrammed Branch Driver for a PDP-11 Computer" by L. R. Biswell, MP-1

Twentieth Annual Meeting, Radiation Research Society, Portland, Ore., May 14-18:

"Effects of X-Irradiation on DNA Precursor Metabolism and DNA Replication in Chinese Hamster Cells" by R. A. Walters, L. R. Gurley, R. A. Tobey, M. D. Enger, and R. L. Ratliff, all H-4

Tenth Informal Conference on Photochemistry, Stillwater, Okla., May 14-18:

"Vibrational Inversion of CN Produced by Flash Photolysis of BrCN in Xe" by R. Engleman, Jr., GMX-2

Colloquium, University of Wyoming, Laramie, May 15:

"Superfluidity" by D. H. Liebenberg, P-8 (invited)

Institute of Electrical and Electronic Engineers Computer Society, Symposium on Computer Arithmetic, University of Maryland, College Park, May 15-16:

"Analyzed Binary Computing" by N. C. Metropolis, C-DO (invited)

High Power Molecular Lasers Symposium, Laval University, Quebec City, Canada, May 15-17, and Massachusetts Institute of Technology, Cambridge, May 17:

"High-Energy Short-Pulse CO_2 Amplifier Systems Based Upon Electron Beam Controlled Discharge Pumping" by C. A. Fenstermacher, L-1 (invited)

U.S. Department of Commerce Symposium of Quality Control and Reliability, Buenos Aires, Argentina, May 15-17:

"The Economic and Industrial Role of Quality Assurance and Reliability" by G. H. Tenney, Dir. Off.

American Industrial Hygiene Association Conference, San Francisco, Calif., May 15-19:

"The Industrial Hygienist as a Social Scientist" by H. F. Schulte, H-5

"Affect of Humidity Stress on the Aerodynamic Size of Non-Hygroscopic Aerosols" by O. R. Moss and H. J. Ettinger, both H-5

"Respirator Cartridge Filter Efficiency Under Pulsating and Steady Flow Conditions" by R. G. Stafford, formerly H-5, H. J. Ettinger and T. J. Rowland, both H-5

"Effect of Facial Hair on Respirator Performance" by E. C. Hyatt, J. A. Pritchard, C. P. Richards and L. A. Geoffrion, all H-5

"Respirator Performance Measurement Using Quantitative Sodium Chloride Aerosol Man Tests" by E. C. Hyatt, J. A. Pritchard, L. A. Geoffrion, and C. P. Richards, all H-5

"Mercury Losses During the Analysis of Biological Samples" by Patricia C. Stein, B. C. Eutsler and E. E. Campbell, all H-5

"Mercury in Man" by Patricia C. Stein, E .E. Campbell, B. C. Eutsler, all H-5

Colorado State University, Ft. Collins, May 16:

"Dissipation in Superfluid Flow" by D. H. Liebenberg, P-8 (invited)

New Mexico Chapter, American Statistical Association, Albuquerque, May 16:

"Stastistics at LASL" by R. K. Lohrding, C-5

1972 Spring Joint Computer Conference, Association for Computing Machinery, Atlantic City, N. J., May 16-18:

"Computer Architecture and Very Large Problems" by R. B. Lazarus, C-DO (invited)

"Patricia-II Two-Level Overlayed Indexes for Large Libraries" by J. L. Clark, C-2

Division of Public Administration, University of New Mexico, Albuquerque, May 17-18:

"The Impact of Current Technological and Social Developments on the Public Administrator" by L. Rosen, MP-DO

Seminar on High Temperature Chemistry, Sandia Laboratories, Albuquerque, May 19:

"Some Techniques in High Temperature Chemistry" by C. C. Herrick, CMB-13 (invited)

Seminar, Picatinny Arsenal, Dover, N.J., May 19:

"Time Dependent Detonation Theory" by C. L. Mader, T-4 (invited)

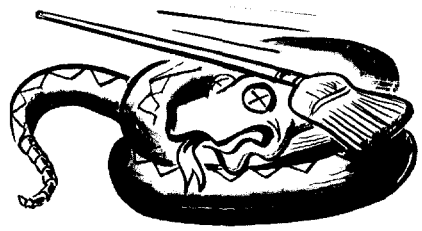
Kiwanis Club Meeting, Los Alamos, May 22:

"Laser Research at LASL" by K. Boyer, L-DO

High-Level Programming Meeting, Courant Institute of Mathematics, New York University, N.Y., May 22:

"Programming in Madcap VI" by J. B. Morris, C-7

20 years ago in los alamos



Culled from the July-August, 1952, files of the Santa Fe New Mexican
by Robert Porton

Los Alamos AEC Information Office Closes

The Atomic Energy Commission's Information Office here made its third swan song as its two members made plans to move to other jobs. Thomas Tunston, information officer, said queries should now be addressed to Arnold Olson, administrative assistant to the field manager. The office, established in 1946, served as a question-answer agency to newsmen seeking information on the atomic project. The office had been reactivated twice—once in early 1950 and again in January.

Weekend Specials

Prices listed in the produce section of a Hill grocery store included the following: bell peppers—17¢ a pound; cucumbers—10¢ a pound; beef steak tomatoes—10¢ a pound.

Laboratory Employee Recalls A-Bomb Flight

It's an old story to Harold Agnew—that flight he made seven years ago when the first A-bomb dropped over Hiroshima. He described the clockwork precision of the raid, the perfect weather conditions, all adding to the success of the experiment. Agnew, a former resident of Denver, now is a technical advisor in the office of the director of the Los Alamos Scientific Laboratory. He was one of four civilians who made the historic trip.

AEC Warns of Rattlesnakes

Yesterday's warning from the Atomic Energy Commission to Hillsters telling them that the rattlesnake season is here was punctuated sharply when a rattler was killed on the sidewalk in a crowded residential area. Only hours after the announcement was broadcast, C. H. Miller strolled within inches of the snake when he heard it rattle. The serpent was coiled, ready to strike, and suddenly met its end by means of a broom handle. Two other rattlesnakes were killed recently—one in the Western Area and one in North Community.

what's doing

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

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

LOS ALAMOS SAILORS: Meetings at noon, South Mesa Cafeteria, first Friday of each month. For information call Dick Young, 662-3751.

SPORTS CAR CLUB DEL VALLE RIO GRANDE: Meetings, 7:30 p.m., Hospitality Room, Los Alamos National Bank, first Tuesday of each month. For information call Gerry Strickfadden, 672-3664 or Frank Clinard, 662-4951.

PUBLIC SWIMMING: High School Pool—Monday through Friday, 1:30 p.m. to 5 p.m. and 7:15 p.m. to 10 p.m.; Saturday and Sunday, 1 p.m. to 5 p.m.

NEWCOMERS CLUB: July 26, 7:30 p.m., Los Alamos National Bank, "Old Times in Los Alamos." For information call Linda Hertrich, 662-9355.

MOUNTAIN MIXERS SQUARE DANCING CLUB. Pinon Park, 8 p.m. For information call Ruth Maier, 662-3843.
- Aug. 5—Nelson Watkins, Roswell
- Aug. 19—Bones Craig, club caller
- Sept. 2—Ray Rogers, Albuquerque

MESA PUBLIC LIBRARY:
- June 28-July 26—library display, poetry books
- July 6-July 31—sea shell display
- July 24-Aug. 15—Laurie Calkin, woven wall hangings
- July 27-Aug. 22—Cadet Troop 62, birds and flowers of Los Alamos area display
- Aug. 16-Sept. 13—Secundino Sandoval, acrylics
- Aug. 23-Sept. 10—Los Alamos Garden Club's 25th anniversary flower display

LOS ALAMOS COUNTY FAIR: July 29-Aug. 6 (Events each day.)
- July 29-30—Junior Rodeo
- Aug. 5-6—Horse Show

OUTDOOR ASSOCIATION: No charge, open to public. Contact leaders for information.
- July 19—evening bicycle tour, Hal Olsen, 662-4077
- July 20—evening hike, Barbara Skaggs, 662-6957
- July 22-23—Ute Mountain*, Ken Chellis, 662-3836
- July 22-23—Lincoln, Bross and Democrat, Colo., Ken Ewing, 662-7488
- Aug. 5-6—Mt. Harvard, Colo., Reed Elliott, 662-4515
- Aug. 12-13—Navajo Reservoir*, Cecil Carnes, 672-3593
- Aug. 20—Gold Hill, Norris Nereson, 662-3839
- Aug. 23—evening hike, Dorothy Hoard, 672-3356
- Aug. 26-27—Sierra Mosca, Dave Brown, 662-2185
- Sept. 2-4—Clear Lake, Colo., Bob Skaggs, 662-6957

*denotes river trip

Major General Frank Camm, center, the Atomic Energy Commission's newly appointed assistant general manager for military application, listens intently to an orientation on the Los Alamos Scientific Laboratory during his recent visit. Camm succeeds Major General Edward Giller who has been named assistant general manager for national security. To Camm's left are T. R. Clark, member of the Division of Military Application and Colonel W. B. Haidler who accompanied him to Los Alamos.

Henry T. Motz
3187 Woodland
Los Alamos, New Mexico 87544

Two prominent additions to the Bradbury Science Hall are exhibits of the Los Alamos Scientific Laboratory's Central Computing Facility, foreground, and Scyllac, LASL's latest machine for research toward controlling a thermonuclear (fusion) reaction. The exhibits replace those of the computer STRETCH which was recently retired from service, and nuclear rocket reactor testing facilities at Jackass Flats, Nev. The Scyllac exhibit was displayed at the Fourth International Conference on the Peaceful Uses of Atomic Energy in Geneva, Switzerland, last year. Both exhibits were built by the ENG-2 Model Shop.