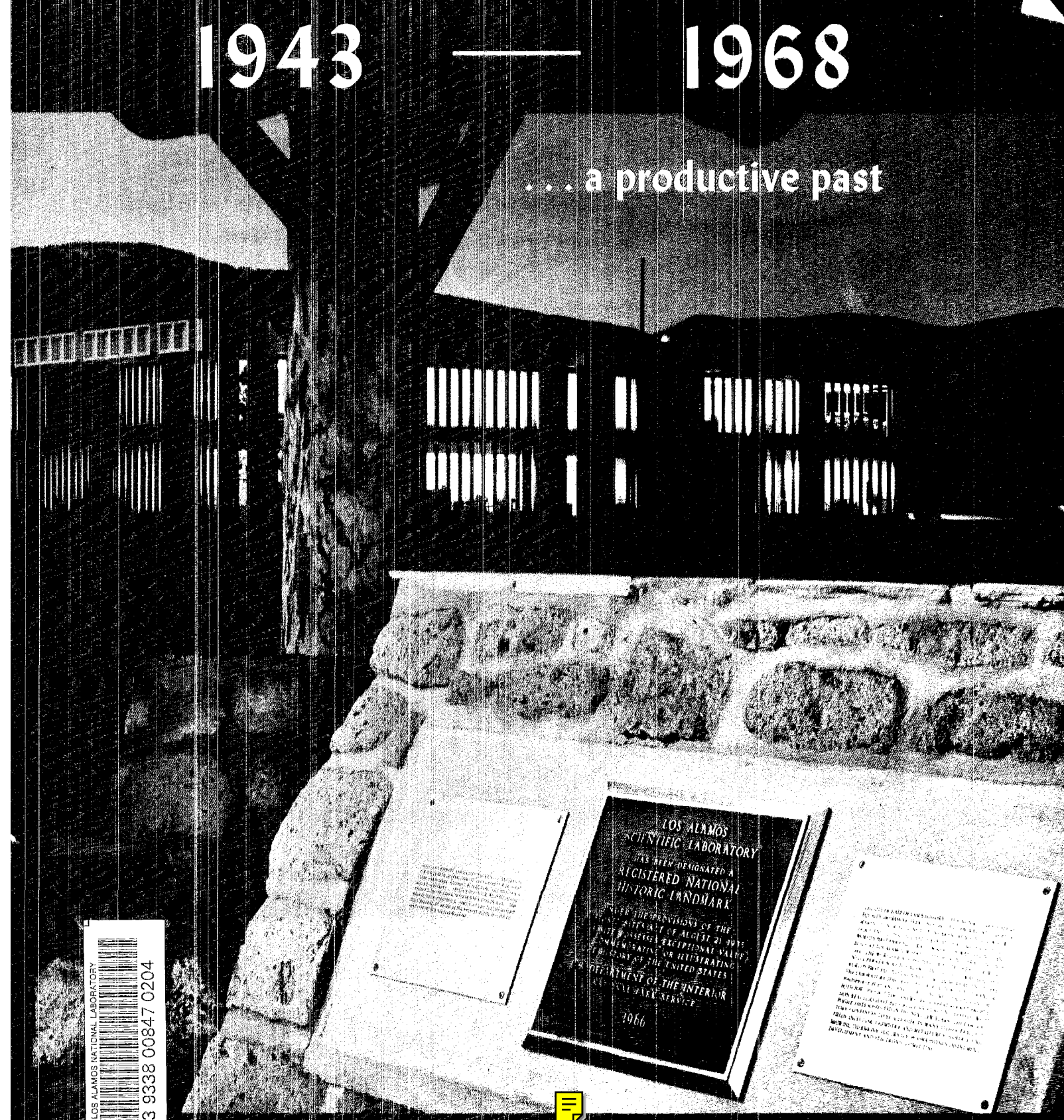
1943 —— 1968

. . . a productive past



A Promising Future

Volume 5 Number 3
March, 1968

THE ATOM

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CONTENTS:

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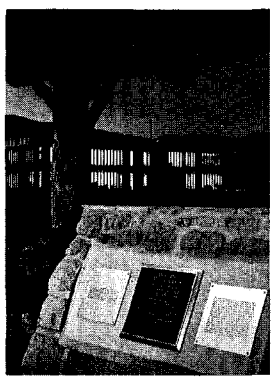


COVER:

"The camera had to be set during the day for accurate focus . . . plaques sprayed to cut reflections . . . lights and extension cords and 6 blown fuses) set . . . county personnel alerted to control lights in building . . . and then the wait for the exact instant when sky light, building lights and flood lights reached the right light balance—coupled with below freezing temperatures—were a few of the problems in getting the shot." So said Bill Jack Rodgers, PUB-1 photographer, who spent a total of 16 hours in preparation for the split second in time to make the cover photo.

LASL's quarter century of growth in the nuclear age

1943-1968

THE WHITE HOUSE

WASHINGTON

January 5, 1968

Dear Dr. Bradbury:

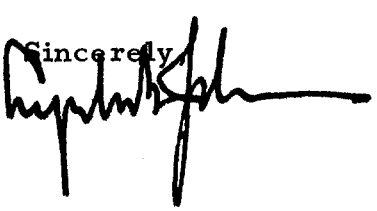
For a quarter of a century, the Los Alamos Scientific Laboratory has been a vital outpost in the defense of America and of the entire free world.

The early work at Los Alamos, resulting in the first atomic weapons, is recorded on a dramatic page of our history.

The new historic chapter being written there today -- in the development of atomic energy for the purposes of peace -- carries promise and hope for all mankind.

This month marks the Laboratory's 25th anniversary. I want to take the opportunity to express my appreciation to each one of you for your contributions to our nation's welfare and to the cause of peace.

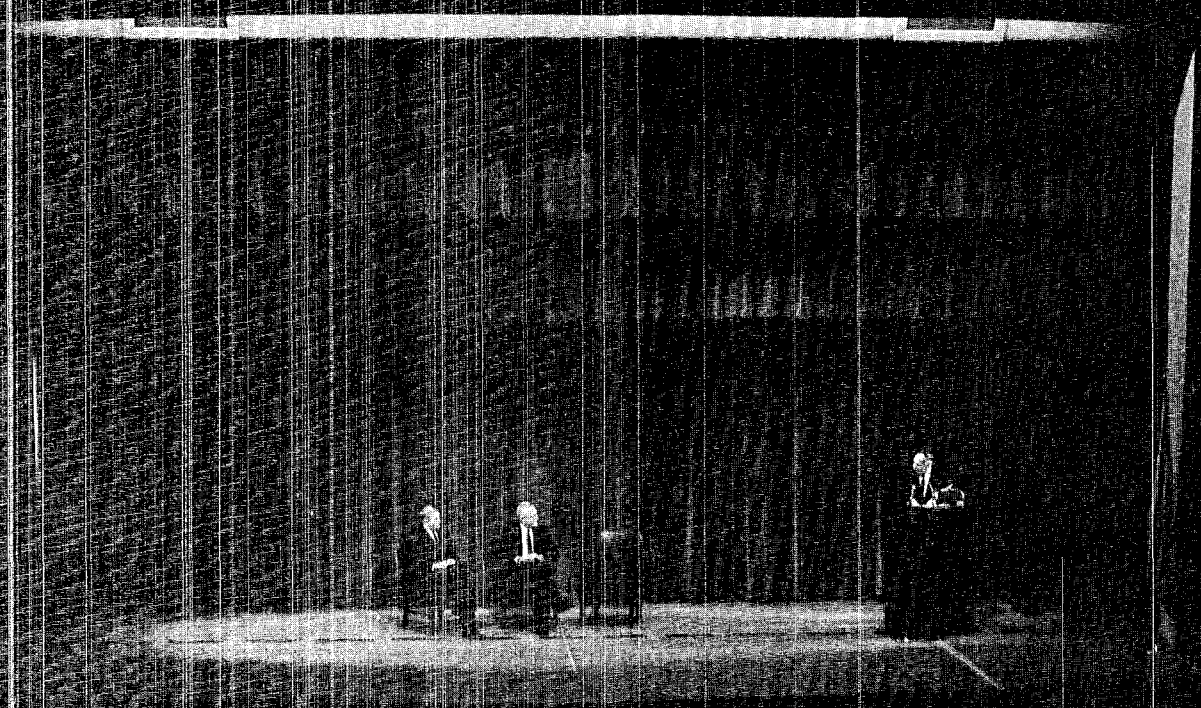
Sincerely,



Dr. Norris Bradbury, Director
Los Alamos Scientific Laboratory
Post Office Box 1663
Los Alamos, New Mexico 87554

LOS ALAMOS

25 Years In The Service of Science And The Nation



Remarks by

Dr. Glenn T. Seaborg

February 15, 1968

"The transformation of this pastoral setting into a modern, bustling community began in the summer of 1942. . . . To the east we can still see much of the dense pinon forest which then covered the slope up to the Ranch School."

WITHIN THE PAST FEW MONTHS we have been reminded by several anniversaries that the Nuclear Age is a quarter-of-a-century old. But no matter from what single event we date the birth of the Nuclear Age, we know the Los Alamos Scientific Laboratory played a leading role in that birth—and, perhaps more significant today, continues to advance that age as one of the nation's leading nuclear laboratories. It is, therefore, both in the spirit of celebration and expectation—looking back at a *productive past* and ahead to a *promising future*—that I would like to speak this evening.

Standing here in this large auditorium tonight, it is difficult to believe that 25 years ago this site contained nothing but a few barns and stables of the Los Alamos Ranch School. To the east we can still see much of the dense pinon forest which then covered the slope up to the Ranch School at the eastern end of the mesa. The transformation of this pastoral setting into a modern, bustling community began in the summer of 1942 when Robert Oppenheimer, in the company of General Leslie R. Groves, returned to the school he had often visited on pack trips from his summer home across the Rio Grande Valley.

After visiting Jemez Springs and other possible sites in the region, the two men decided that the Ranch School would be the best place to establish a small laboratory for designing and building the world's first nuclear weapon. The War Department took over the school in December, 1942, and by January, 1943, General Groves had formally established the Los Alamos Laboratory known then as Project Y. By the end of February the school personnel had left the premises and another saga of American pioneer history began as scientists this time, rather than ranchers, sought with Army assistance to create a new community in the vast reaches of the West.

Many of you, I am sure, remember those exciting if uncomfortable first months on the Hill—the dirt, the construction, the trailers and plywood buildings, the lack of water and telephone service, the barracks, and the high security fences. Inside, despite the chaos and inconvenience, Oppenheimer and his associates were rapidly building one of the most illustrious scientific laboratories in the world, or as General Groves is said to have jokingly described it, "the greatest collection of crackpots the world has ever seen." The Los Alamos roster in those days read like a scientific who's who: Niels Bohr, Oppenheimer, Hans Bethe,

"Inside, despite the chaos and inconvenience, Oppenheimer and his associates were rapidly building one of the most illustrious scientific laboratories in the world."

". . . In the spirit of celebration and expectation—looking back at a productive past and ahead to a promising future . . ."

Enrico Fermi, Robert Bacher, Edward Teller, George Kistiakowsky, plus a score of talented young men and women who were destined to leave a lasting mark in the history of American science.

But to a large extent the greatness of Los Alamos lay in Robert Oppenheimer. An exceptional theoretical physicist and an extraordinary teacher, he provided the spirit and inspiration needed for the incredible job the laboratory faced. As a young chemist at Berkeley in the 1930's I had spent many hours with Oppie discussing scientific problems I then thought important. Whatever he thought of my questions, he always accorded me a full measure of patience and understanding, and he earned in my estimation a unique kind of admiration and respect which I have never forgotten. I saw him only occasionally during the war when he visited the Metallurgical Laboratory in Chicago, but I know from what many have said that the same qualities which had inspired us at Berkeley provided the motive force at Los Alamos.

Although I never visited Los Alamos during World War II, I naturally had a keen interest in the research going on here, particularly in the chemistry and

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Los Alamos . . .

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metallurgy of plutonium. Joe Kennedy and Art Wahl, who had worked with me at Berkeley in first identifying the element plutonium, carried much of the plutonium effort at Los Alamos. Kennedy's extreme youth at the time caused authorities in Washington to question Oppenheimer's wisdom in appointing him head of LASL's Chemistry and Metallurgy division, which was responsible for final purification of plutonium and uranium 235, but Kennedy's abilities were too obvious to be denied.

I especially remember the work that Los Alamos did in the summer of 1943 in determining whether plutonium 239 emitted neutrons in the process of fissioning. If it had not, it would have had no value for weapons. Bob Wilson, now director of the National Accelerator Laboratory at Weston, Illinois, borrowed almost all the plutonium we had in Chicago at that time (then about 200 micrograms) to make the all-important plutonium fission experiments at Los Alamos. I recall very well that he completed his experiment while I was in Santa Fe on a short vacation. Before dawn one morning, with a rifle in his car for security protection, Wilson brought the plutonium sample to Santa Fe and met Mrs. Seaborg and me in a restaurant. I then escorted the sample on my train ride the rest of the way to Chicago in my suitcase without benefit of firearms. It may never be possible again to use such informal methods of transfer, but they served their purpose in the exigencies of war.

Important to the successful development of the nuclear weapons was the work in the fast neutron physics connected with uranium 235 and plutonium 239. The contribution of John Manley and his fast fission team from Chicago and the work of Diz Graves and Jim Coon were significant during this time.

During most of those legendary twenty-eight months of Los Alamos' history in World War II, plutonium seemed to be the hinge of fate. The splendid work done by Navy Captain "Deke" Parsons, my former colleague Ed McMillan, and the people working with them seemed to guarantee the success of the gun-type weapon using uranium 235. But the plutonium approach always seemed to be in trouble. Although we were confident after Wilson's experiments that plutonium would provide enough fission neutrons to sustain the chain reaction, we still were not sure that we could produce plutonium pure enough to use in a gun-type weapon. With encouragement from John von Neumann and Edward Teller in the fall of 1943, Parsons and his associates began to supplement the earlier work of Seth Neddermeyer on the implosion method of assembly.

Robert Carter, Enrico Fermi, David Inglis

". . . talented men destined to

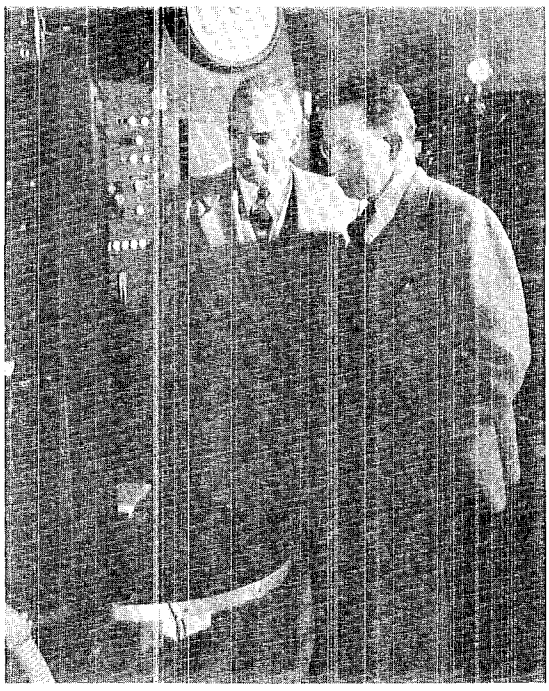
The difficulties of developing the implosion method were not a matter of great concern until July, 1944, when the first samples of plutonium arrived in Los Alamos from the X-10 reactor at Oak Ridge. Unlike the small samples we had obtained from cyclotron runs, the reactor-produced plutonium contained a significant amount of plutonium 240, whose high spontaneous fission rate, discovered by Emilio Segre and co-workers, made it impractical for use in a gun-type weapon. Joe Kennedy, Cyril Smith, and their associates were by this time confident of removing most of the impurities in plutonium, but they could not hope to develop a separation process for extracting the plutonium-240 isotope. If plutonium was to have any use during the war, Los Alamos would have to solve the implosion puzzle. Taking this disappointment in stride, Oppenheimer reorganized his forces to concentrate on the implosion system. Bacher and Kistiakowsky put full time on the effort; Bethe helped on theoretical problems, and Samuel K. Allison coordinated the work of all groups working on implosion. A year later, almost to the day, Los Alamos was successful. On July 16, 1945, the world's first nuclear detonation, produced by an implosion device using plutonium, occurred at Alamogordo.

continued on page 8

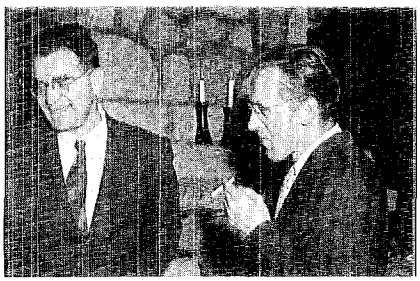
Robert Serber with James Lawson

Ed McMillan (foreground), Stan Ulam, Ray Herb

leave a lasting mark in the history of American science."



Norris Bradbury, Robert Bacher



Victor Weisskopf, Carson Mark

Robert Wilson, I. I. Rabi

Hans Bethe, Nick King (son of L. D. P. King), Enrico Fermi, Henry Bethe

Los Alamos . . .

continued from page 6

Within a few weeks the triumphant scientific success of Trinity was tempered by the awesome news from Hiroshima and Nagasaki. The feverish work of the past few years ended almost overnight. As the world began to comprehend the destructive power of the atom, some prominent Americans voiced the opinion that war was no longer conceivable. If there was to be any future at all for a nuclear weapons Laboratory, it was not likely to be for one located on a remote mesa in New Mexico after the veil of wartime secrecy had been torn away. Before the summer of 1945 ended, the spectacular constellation of scientific talent at Los Alamos began to disintegrate. Former professors were eager to return to their universities and their wives were just as anxious to rediscover the joys of central heating, modern kitchens, and urban living. Oppenheimer's departure seemed to mark the end of Los Alamos' brief moment in history.

General Groves did his best in 1946 to hold Los Alamos together. The Army upgraded the unreliable water supply system, started building some permanent homes in the Western Area, and made plans for a shopping center near the Lodge; but the continuing existence of Los Alamos was far from certain even by the end of 1946, when the new Atomic Energy Commission took over the project from the Army. Los Alamos was still a military reservation, and there were no assurances that the new civilian commission would see a need for the laboratory on the Hill.

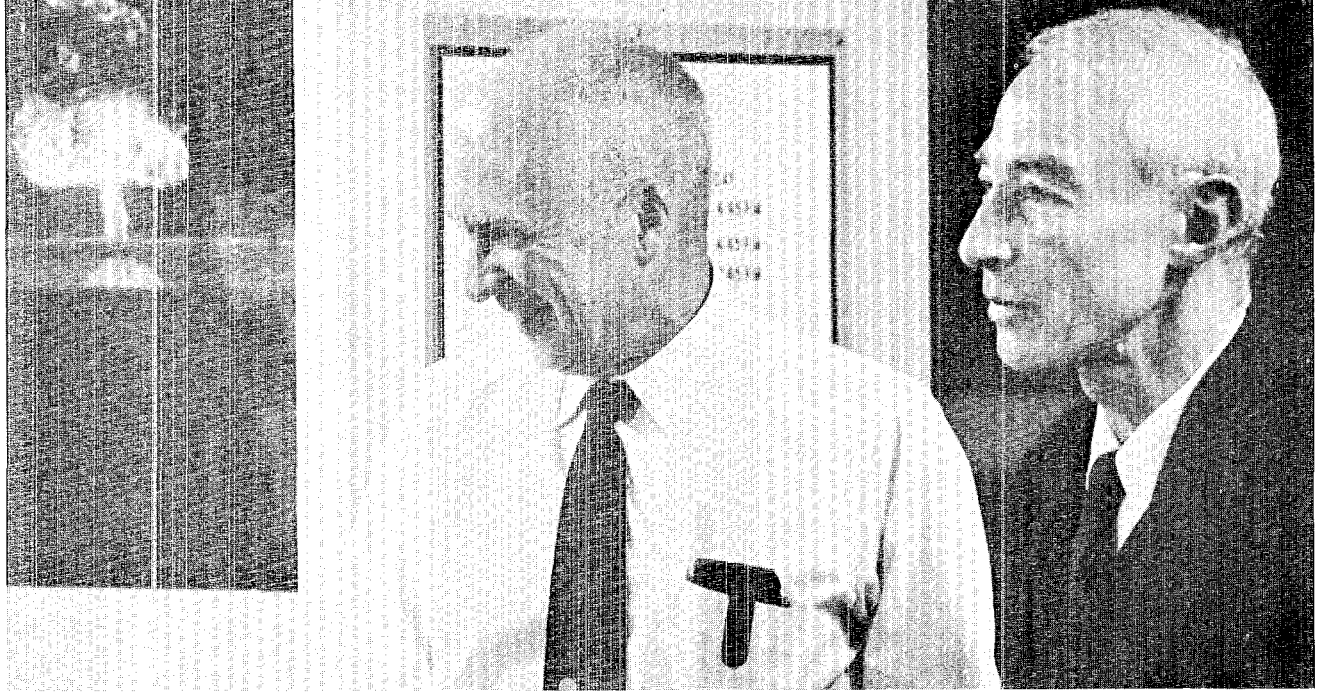
I recall that when I joined the Commission's first General Advisory Committee (GAC) as the most junior member of an otherwise illustrious group, Los Alamos was one of the first subjects of discussion. Some of my colleagues maintained that it would never be possible to make Los Alamos attractive for competent scientists. It was too remote from civilization. The wartime buildings were already falling to pieces, and the cost of building permanent structures in such an isolated spot would be too costly. Furthermore, most of the "big name" scientists had left Los Alamos with Oppenheimer. Those remaining might be competent young men with more than average ability, but they could hardly be compared to the giants of the war years. To be specific, some of the GAC members questioned the capabilities of the young Navy Commander who had succeeded Oppenheimer as director. Norris Bradbury was an excellent physicist and had done an outstanding job on the Trinity test, but could he fill Oppenheimer's shoes? In early 1947 at least a substantial minority of the GAC believed that neither Los Alamos nor Norris Bradbury would long be on the atomic energy scene.

That this unhappy prognostication did not come true is, I think, more a tribute to Bradbury and his Los Alamos team than a reflection on the prophesying ability of the GAC. Early in 1947 Oppenheimer himself visited Los Alamos with some members of the GAC. They reported back to the rest of us that there were indeed problems at Los Alamos, but Bradbury and his staff had demonstrated a determination to push ahead with weapon development despite these difficulties. At that time you may remember there was no such thing as a ready stockpile of nuclear weapons. There were some components of the two wartime types of weapons, but they were custom-made and not adaptable to production-line methods. I remember that during most of 1947 Los Alamos had to devote most of its energies to producing components until new facilities could be constructed elsewhere.

Despite these necessary diversions, Los Alamos never lost sight of its primary mission as a research and development center. Before the end of 1947 Sandia was able to take over many of the assembly and testing jobs on weapons while the Laboratory turned to developing new weapon models and preparing for the *Sandstone* tests in the Pacific. The stunning success of those tests in the spring of 1948 made it perfectly clear that Bradbury, with the assistance of Darol Froman, Max Roy, John Manley, Robert Richtmeyer, Raemer Schreiber, Eric Jette, Jerry Kellogg, Al Graves, Marshall Holloway and many others, had firmly re-established the excellence of Los Alamos as a research center. *Sandstone* opened a new era for weapons development, and Los Alamos moved ahead quickly on several fronts to exploit various possibilities for building more efficient and more reliable weapons.

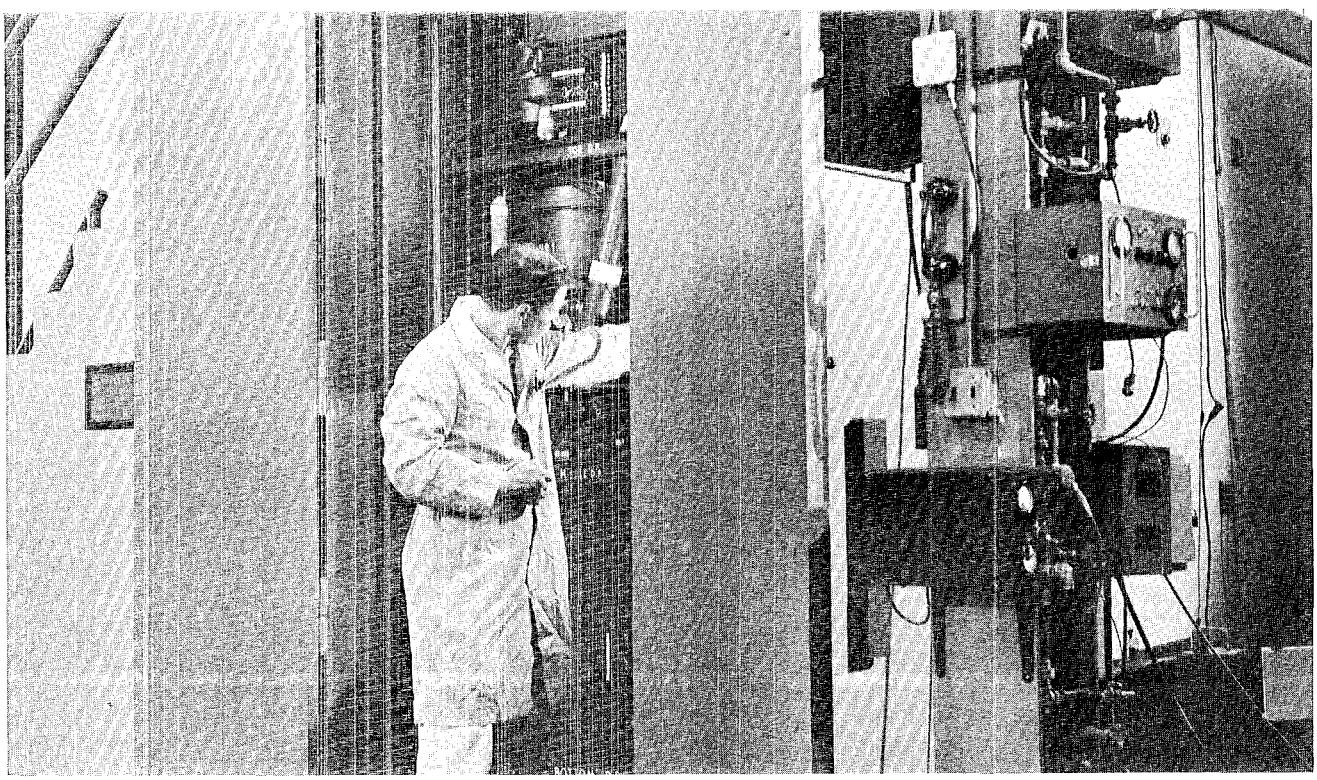
At the same time Bradbury and his staff were planning other kinds of research with less direct application to immediate weapons requirements. Following pioneering work by Phil Morrison and Louis Slotin, started in 1946 and continued by David and Jane Hall, the fast neutron reactor "Clementine" went critical in 1947. A report to Washington in September, 1948, proposed research with "Clementine," basic studies of plutonium and tritium, construction of an electronic computer, continuing theoretical studies on various approaches to a thermonuclear weapon, and further investigation of advanced weapon design. Basic research in nuclear physics, chemistry, and biology would complete the transformation of Los Alamos from a task force with a narrow mission into an applied physics laboratory. A special Commission consultant, after visiting Los Alamos in the spring of 1949, reported that Los Alamos was the finest Government laboratory in the nation, a tribute to Bradbury and those who worked with him.

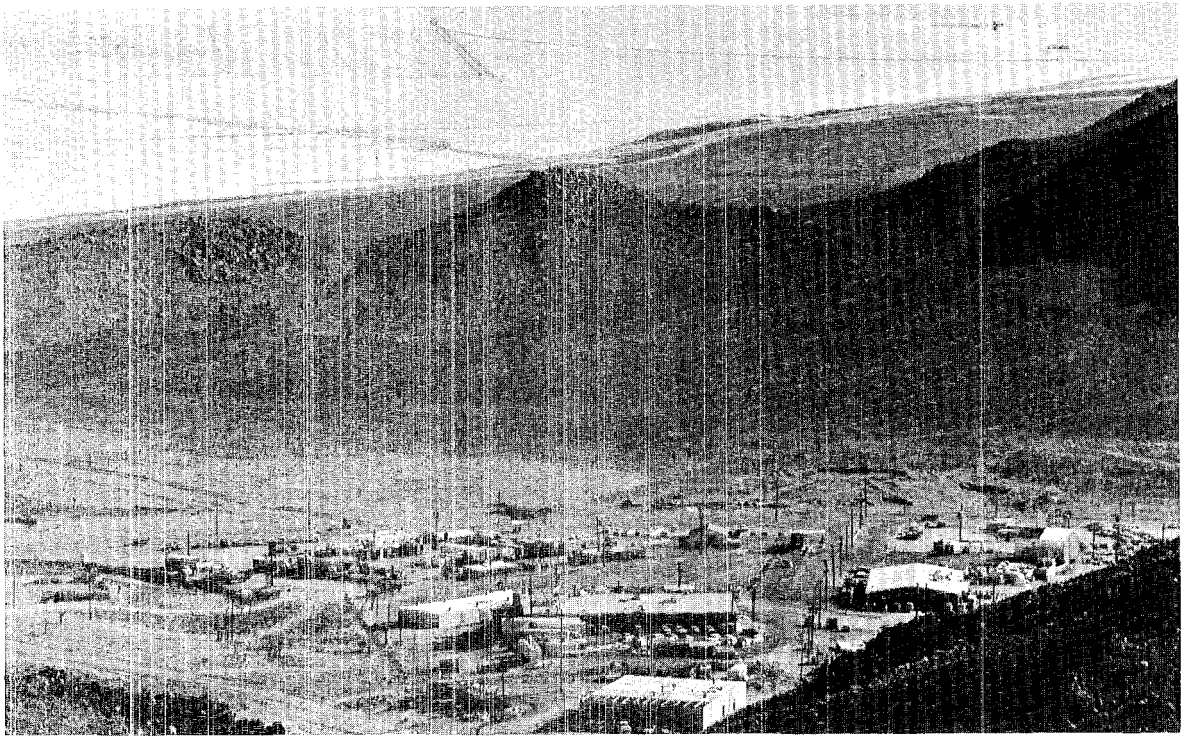
continued on page 10



"Norris Bradbury was an excellent physicist and had done an outstanding job on the Trinity Test, but could he fill Oppenheimer's shoes? . . ."

"Los Alamos moved ahead quickly on several fronts . . . (proposing) basic studies of plutonium and tritium, construction of an electronic computer, continuing theoretical studies on various approaches to a thermonuclear weapon, and further investigation of advanced weapon design . . . The fast neutron reactor 'Clementine' (below) went critical in 1947."





"The early 1950's were the years when the Nevada Test Site, created largely by Los Alamos personnel, first became a key installation in weapon development.

Los Alamos . . .

continued from page 8

The revitalization of Los Alamos seemed to come none too soon. In September, 1949, the United States first detected a nuclear detonation in the Soviet Union. Early in 1950 came the revelation of Klaus Fuchs' espionage activities, and a few months later the Korean War began. In February, 1950, President Truman had ordered the Commission to accelerate research and development on a thermonuclear weapon. Naturally the burden fell largely on Los Alamos. Carson Mark and the Theoretical Physics division, building on earlier theoretical studies by John von Neumann, Stan Ulam, and Edward Teller, turned most of their attention to this problem. In little more than a year Teller and Ulam proposed what seemed to be a practical design. Froman and Holloway organized a group in the Laboratory to build the test device detonated at Eniwetok in November, 1952. Less than two years of concerted effort had produced a new weapon of unprecedented power.

During these same years the Laboratory as a whole was devoting most of its efforts to developing a family of fission weapons for a variety of uses, all the way from large strategic weapons to artillery shells and underwater bombs. The early 1950's were the years when the Nevada Test Site, created largely by Los Alamos personnel, first became a key installation in weapon development. The increasing tempo of weapons tests in those years is a rough indicator of the rapidly growing capability of Los Alamos in designing and testing new weapon models.

As a full-scale development laboratory, Los Alamos inevitably required the tools for fundamental research. Just as weapons research requirements had led to the construction of "Lopo," the world's first homogeneous reactor, followed by "Clementine," the world's first fast-neutron reactor, so the Laboratory in the 1950's continued to have a leading role in reactor development. In 1956 the Omega West Reactor replace Clementine. Like its predecessors, OWR was primarily a neutron source but the growing interest in nuclear power also had its effect at Los Alamos. Two experimental power reactors, the Los Alamos Plutonium Reactor Experiments (LAPRE) I and II were extensions of the Laboratory's interest in homogeneous reactors, as were the two Los Alamos Molten Plutonium Reactor Experiment (LAMPRE) reactors of the following decade.

Reactors were not the only product of weapons development activities in the 1950's. The intensive effort to create the thermonuclear weapon naturally stirred an interest in controlling the same reaction as a source of power. Just a few weeks before the famous MIKE shot at Eniwetok in the fall of 1952, Jim Tuck first attempted to operate a device for containing a plasma of hydrogen ions. Stressing the experimental nature of the device, Tuck called it the "Perhapsa-

tron." It didn't work but it did lead to further research on the "pinch effect." By the time of the Geneva conference in 1958, Tuck and his associates had already explored the linear pinch and magnetic mirrors and had built Scylla, which approached thermonuclear temperatures in such a dramatic fashion in the exhibit hall in Geneva. Similar spinoffs from weapon work occurred during the 1950's in the Chemistry and Metallurgy division which completed some pioneering studies of the properties of elements at very low temperatures. Many other examples of outstanding research in physics, chemistry, metallurgy, and biology could be cited, but they hardly seem necessary to demonstrate the breadth and depth of basic research at Los Alamos during those years.

The decade of the 1960's has brought the Laboratory new challenges and new opportunities. The accelerating tempo of weapons development and testing to which I referred earlier reached its climax in the *Hardtack* series at Eniwetok in 1958. That summer a group of technical experts meeting in Geneva agreed that within certain limitations it was feasible to set up a control system to detect nuclear tests. On August 22, 1958, President Eisenhower announced that the United States would suspend weapons testing for one year while negotiation of a test ban treaty proceeded. This announcement, many of you will recall, marked the beginning of a new era in the history of Los Alamos. During the first year of the moratorium there was plenty of data from *Hardtack* to keep the Laboratory busy, but as the moratorium stretched on from month to month into 1960 and 1961, new approaches and techniques were necessary. Information once routinely obtained in tests now had to be gathered by less direct, more difficult methods. Despite these handicaps, the Laboratory continued to develop new weapon models of more sophisticated design, incorporating new features of reliability, safety, and efficiency. When the Soviet Union abruptly terminated the moratorium on September 1, 1961, with the first of what proved to be an obviously long-planned series of atmospheric tests, Los Alamos had a number of new designs to be proof-tested. These were largely accomplished in the *Dominic* series beginning in April, 1962.

Dominic, however, marked only a brief return to the conditions that prevailed before 1958. Since the beginning of the Limited Nuclear Test Ban Treaty in August, 1963, the United States, the United Kingdom, and the Soviet Union have refrained from testing weapons in the atmosphere and in any of the other prohibited environments. We are now hopeful

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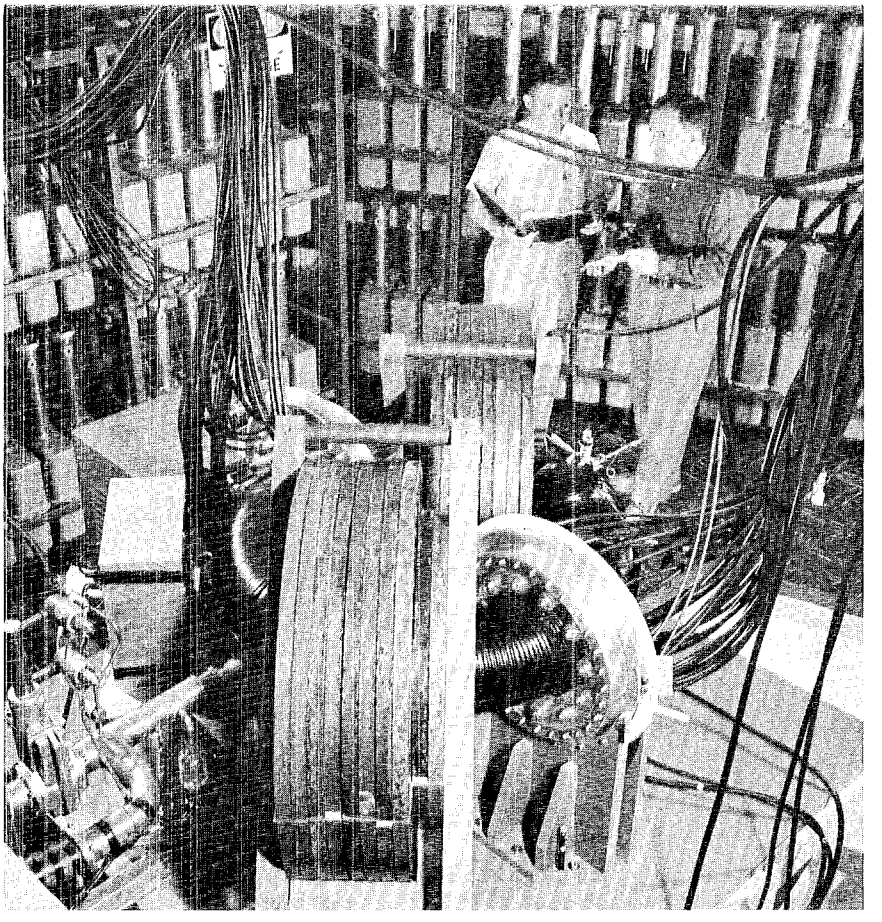
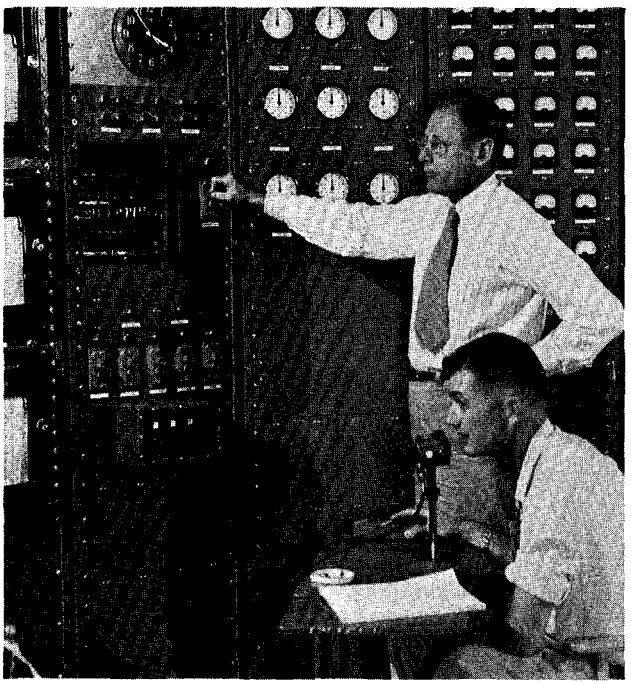


"The intensive effort to create the thermonuclear weapon stirred an interest in controlling the same reaction as a source of power . . . In the fall of 1952 Jim Tuck first attempted to operate a device for containing a plasma of hydrogen ions . . . the Perhapsatron."



Los Alamos . . .

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that atmospheric testing by any country may soon be a practice of the past. Now we are heartened by the favorable prospects for a Non-Proliferation Treaty because of the tabling of such a treaty in Geneva just last month.

These historic developments obviously have had profound implications for Los Alamos. The test ban negotiations themselves and the 1963 treaty gave new impetus to the Laboratory's work in the Vela program, particularly to projects involving the development of surface and satellite instrumentation to detect nuclear tests. And as the years have gone on there have been other important tasks for which Los Alamos has had special resources and talents. But where does LASL stand today and what can it look forward to for the future?

First of all, let me say a few words concerning what is still the major role of the Los Alamos Scientific Laboratory—nuclear weapons development. Twenty-five years ago LASL was created for the sole purpose of producing nuclear weapons to end World War II. It served that purpose well. And in the intervening years it has served the nation well in a continuing capacity for which it is often publicly difficult to give the most deserving credit. But I believe that the day of full recognition of the sacrifice and contribution of LASL—of its outstanding scientists and engineers —will come. Through all the tension and turmoil of today's world one can see the vision of a new era being born. It is an era that is being shaped under a nuclear shield for which this Laboratory holds a major responsibility. And that shield must be continually reshaped—made stronger and more responsive to any dangers at hand—until such time that it may be laid aside with conviction and confidence.

We decry "the balance of terror," the uneasy peace under which the world lives because of the existence of nuclear weapons. However, history may show that it was in part our maintaining that balance that forced men and nations to a new level of rationality which is our hope for a true and lasting peace on this earth.

Our nuclear deterrent buys us precious time to settle differences that could lead to a worldwide conflagration. As Norris Bradbury said: ". . . the whole object of making the weapons is not to kill people but to find time for somebody to find other ways to solve these problems . . ."

As Abba Eban, the Israeli statesman, has said, "Men and nations do act wisely—after all other alternatives have been exhausted." The potential of nuclear weapons narrows those alternatives. Hopefully, with time will come wisdom, and all responsible men and nations will peacefully assume the major responsibility of building a better world for all men together. Until such time, the challenging work here at LASL will continue to hold a high priority in this nation's efforts toward maintaining world peace.

In addition to the outstanding work performed in the interest of national defense, the Los Alamos scientists and engineers have devoted an increasing portion of their time to the peaceful uses of nuclear energy. Even now the Laboratory is applying more than 40 percent of its resources to such programs as

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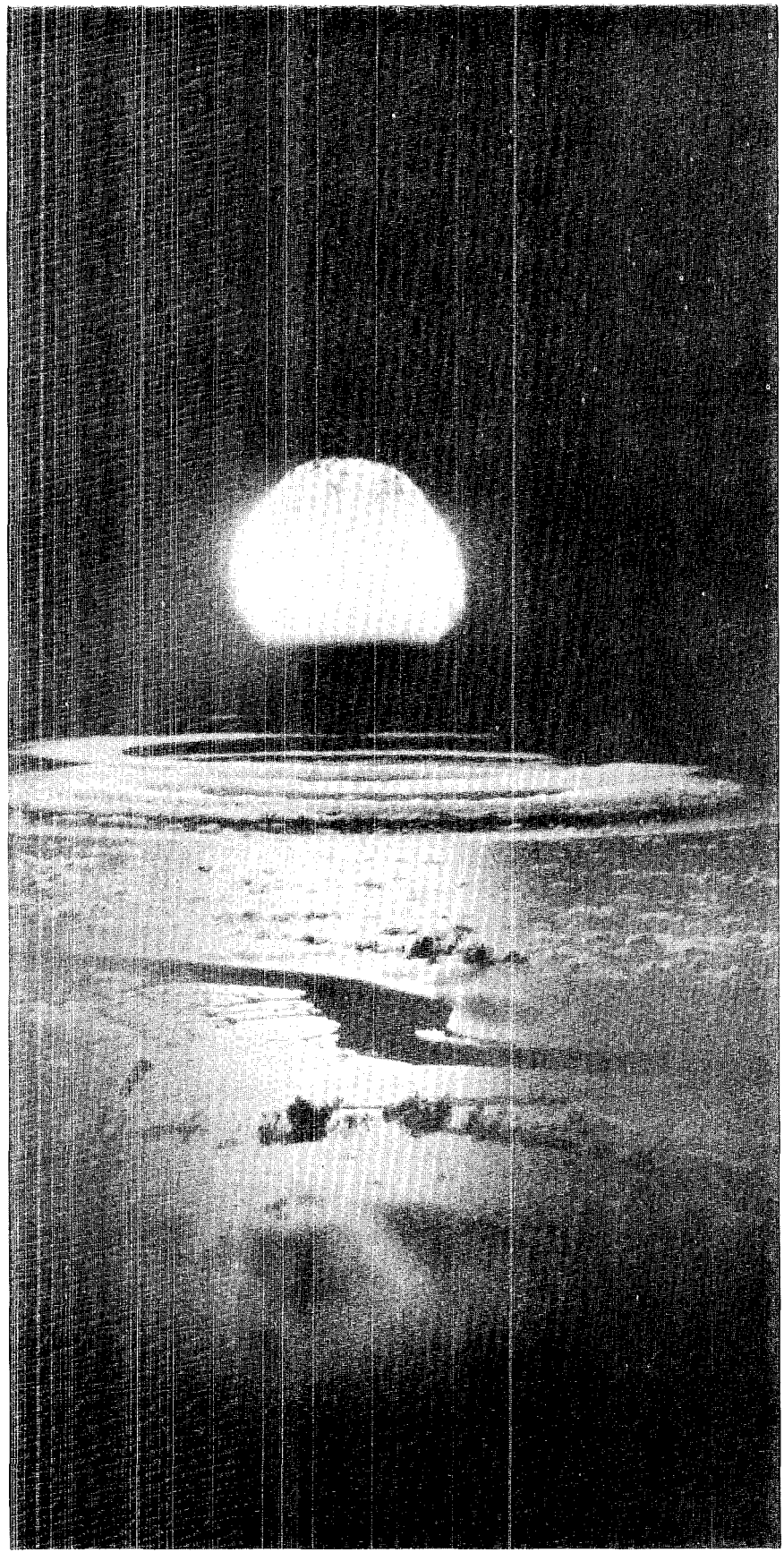
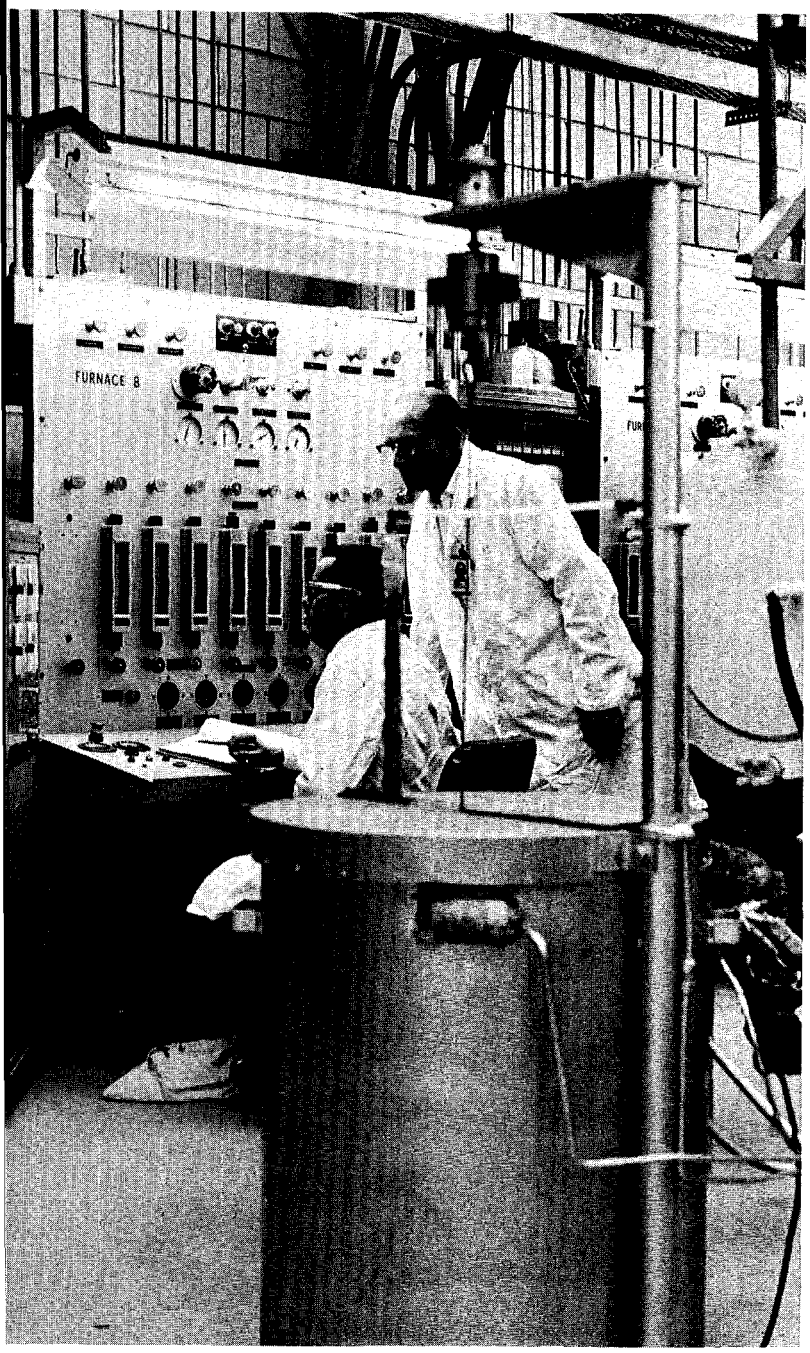


"As Norris Bradbury said: '. . . the whole object of making the weapons is not to kill people but to find time for somebody to find other ways to solve these problems.' "



"In order to support the (Rover) program, the Laboratory has swung its emphasis increasingly to research and development to improve materials capability."

Los Alamos . . .

continued from page 12

space applications, reactor programs, controlled fusion research, the Meson Physics Facility, biology and medicine, and academic research and training. Let me briefly discuss each of these important areas and LASL's contribution to them.

As you know, LASL has been an outstanding contributor to the attainment of major milestones in the nuclear rocket program—the Rover program—including the KIWI effort which resulted in the first successful full power test, the Phoebus series of higher power tests, and fuels and materials technology activities in support of a nuclear rocket effort. Such an effort is a vital part of our long range space plans because of the essential role that nuclear rockets must play in logistic supply to support extensive manned operations on the moon and eventually in order to carry out manned missions to the planets. In addition to its work directly on the nuclear rocket reactor, the Laboratory has demonstrated outstanding capability in creating major handling and testing facilities which in and of themselves were significant research and development efforts.

The continuing role of LASL in the nuclear rocket program is to provide advanced reactor technology to serve as the basis for improvements leading to higher performance nuclear-powered rocket systems. In addition, LASL provides technological support to the NERVA engine development program on a broad basis in areas where the Laboratory has attained exceptional competence. For the reasonably near future the primary goal of these technological improvements will be higher temperature, higher power density, and longer duration fuel. The laboratory is now preparing for a test in calendar year 1968 of a new reactor concept which is intended to serve as a rocket fuel element testbed. This reactor concept, known as the Pewee, can achieve realistic high power density, high temperature performance in a closely simulated environment so that fuel element performance in the Pewee reactor may be translated directly to the NERVA reactors and engines.

In order to support the Pewee reactor program discussed above, the Laboratory has swung its emphasis increasingly to research and development to improve materials capability. Several new and promising materials are in early stages of investigation and development at the Laboratory, including composites of metal carbides and graphite and solid solutions of metal carbides with uranium carbides. These materials are the highest melting point materials known.

In a related space effort—the thermionic reactor project for our space electric power program—LASL will continue to explore a variety of ideas in significantly advanced areas of this relatively new technological effort. The development of reliable thermionic reactors for space would be useful for long-range manned space missions. Such reactors would supply the power for life-support systems, communications equipment and the scientific packages for those extended manned space missions.

As I indicated before the requirements of nuclear weapons development led Los Alamos into pioneering work in experimental reactors and particularly into plutonium technology, so much of which is applicable to today's interest in the fast breeder reactor. We believe that the fast breeder holds great promise for the future, and hence LASL, so well qualified to work in certain areas of this technology, will play a vital role in the future of the fast breeder reactor.

Early in 1965 LASL was asked to set aside its then on-going program leading to a molten plutonium fuel reactor experiment, and to reorient the resources (people and dollars) to work in support of near-term Liquid Metal Fast Breeder Reactor (LMFBR) program needs. Over the past two years, the Laboratory has accomplished this reorientation in a most creditable and responsive manner. Accordingly, LASL is now contributing to the fast breeder program both needed data and base technology in the areas of sodium technology, ceramic and metallic plutonium fuels (e.g., mixed uranium-plutonium carbide), instrumentation and fast reactor physics. LASL is particularly capable in the development of fast reactor calculational techniques and has made many contributions in this area in the past.

Over the foreseeable future, the AEC plans to support LASL's efforts in the area of fast breeder fuels and coolant technology development. We believe that the LASL contribution to fast breeder technology is (and will continue to be) high quality work of great significance to the program. We expect that LASL will be called upon to make even greater contributions in the fast neutron physics area, particularly in code development.

On August 3, 1967, the Ultra-High Temperature Reactor Experiment (UHTREX) went critical. Since then, checkout tests of components and systems have been carried out and additional cold critical experiments are being conducted. The purpose of UHTREX is to operate a graphite moderated helium gas-cooled reactor at unusually high temperature (above 2000° F); and through High Temperature Gas-Cooled Reactor (HTGR) -related experiments, investigate the inherent behavior of such reactors, particularly in possible reactivity excursions and transient tests.

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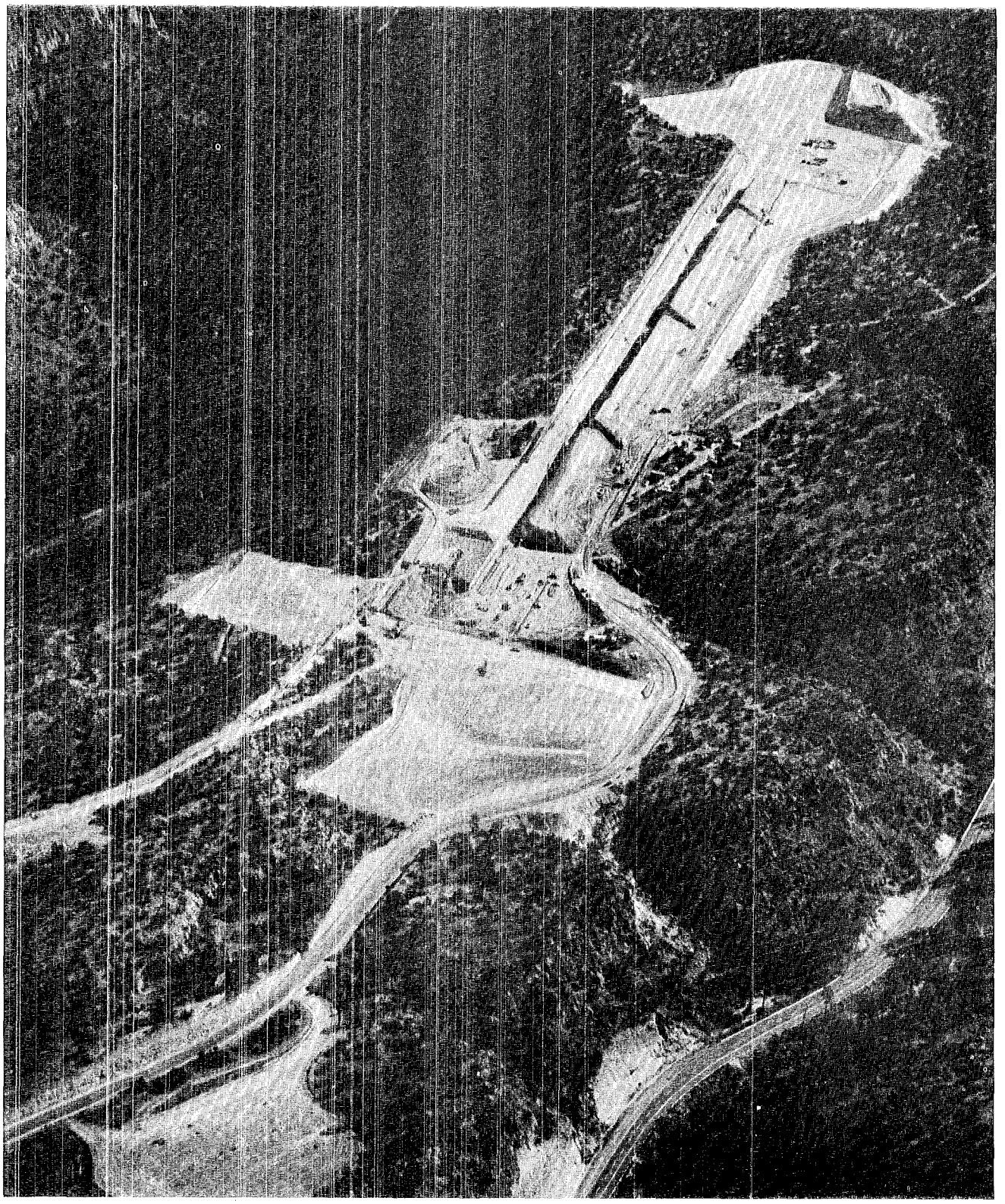
"On August 3, 1967, the Ultra-High Temperature Reactor Experiment went critical. Since then, checkout tests of components and systems have been carried out and additional cold critical experiments are being conducted."



"The Los Alamos Meson Physics Facility will be the first national facility for research in medium energy physics to be established anywhere . . . Scientists will be coming to Los Alamos from all over the Rocky Mountain region, the U.S., and the world to use this facility when it is completed."

Los Alamos . . .

continued from page 15

All that I have discussed to this point naturally implies that Los Alamos will continue to be a leading nuclear laboratory in theoretical and fundamental research associated with nuclear disciplines. I believe that this scientific community, which probably has the highest number of Ph.D.'s per capita in the world, will continue to be one of our leading nuclear laboratories for many years to come. I also cannot help but believe that the outstanding contribution it has made in such areas as chemistry and metallurgy, mathematics and computers, and health research and high speed photography (in which it is a world leader) will continue to grow.

Physics in the AEC and at Los Alamos can be expected to turn increasingly to such areas as astrophysical problems, geophysical problems, and the earth sciences. Those fundamental problems associated with nuclear weapons, controlled thermonuclear research and nuclear physics all come together and are linked in a basic way by the problems of nucleosynthesis, stellar evolution and such geophysical problems as the motion of ions and plasmas in magnetic or gravitational fields. Such basic work in the environmental sciences also ties very closely to some of the most important human problems of our day—earthquake prediction, meteorology and atmospheric pollution.

The future of physics and mathematics at Los Alamos is closely tied to the increasing sophistication of our equipment and techniques in the area of automatic computation. Los Alamos and Livermore have, for many years, led the country in the mathematical simulation of real problems and we can expect this trend to continue. In basic physics, for problems of plasma simulation, atmospheric physics, and the motion of ions in complicated systems, computers are increasingly the way of the future. I would also look to a continuing and strong T division backed up by the best and most sophisticated computing systems this country can provide.

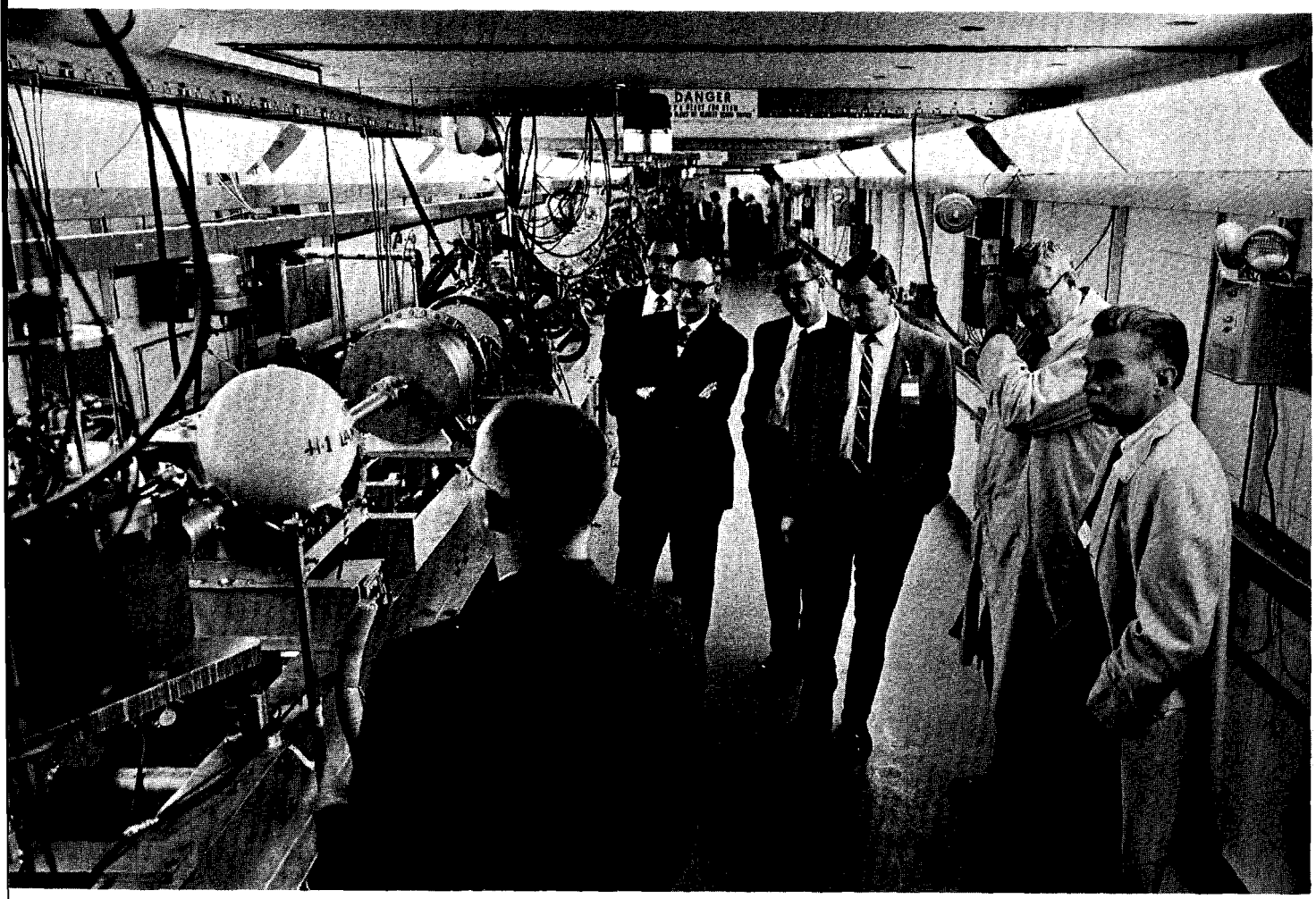
As most of you know, recent advances in accelerator technology have made possible the design and construction of the Los Alamos Meson Physics Facility (LAMPF), for which I had the pleasure of participating in ground-breaking ceremonies earlier today. This facility will provide external beams of nucleons, pions, and muons thousands of times more intense than any presently available. These nuclear probes will provide a far more detailed picture of the structure of the nucleus and of nuclear forces than has heretofore been possible, thus enhancing the understanding of nuclear phenomena and facilitating the exploitation of nuclear energy. The net result is that LAMPF will make it possible to conduct an enormous number of experiments which could not be done with higher energy, low intensity machines. In addition, LAMPF has many practical applications to other disciplines; for example to chemistry, to solid state physics, to nuclear weapons development and to biology and medicine. Also, the use of high intensity negative pi-meson beams appears to offer a very promising possibility for the treatment of deep-seated inoperable tumors.

The LAMPF will be the first *national* facility for research in medium energy physics to be established anywhere and the first truly national research facility to be established at the Los Alamos Scientific Laboratory. Scientists will be coming to Los Alamos from all over the Rocky Mountain region, the U.S., and the world to use this facility when it is completed. Both the Laboratory and the Commission are committed to build and operate this important new accelerator as a unique national facility where the basic research to be conducted on it will be determined solely on the basis of its scientific merit and not on the basis of where the proposal originates. It is planned that 50 percent of the beam time will be made available to non-LASL scientists. The Commission plans to bolster its support of medium energy physics both at Los Alamos and in the participating universities in order to make this possible.

LAMPF will be a valuable asset for the Los Alamos Scientific Laboratory, which is devoted to the development, utilization, and control of nuclear energy and to the application of nuclear technology. The Laboratory is vitally interested in the best ways of using existing knowledge to accomplish its mission, and in the means of furthering the basic understanding of the properties of matter and the fundamental laws of nature that determine its properties. Traditionally, a large portion of the information obtained from basic research activities here at Los Alamos has, in a short time, gone directly into support of applied weapons programs. In particular, the nuclear physics activities, especially the new undertakings from time to time, have proved to be a strong attraction for top personnel throughout the United States.

Medium energy physics activities at Los Alamos will be closely tied to the Meson Facility. It may be anticipated that this unique facility will help us to achieve a unified understanding of the structure of nuclei and other forces by which that structure is governed. This is one of the great hopes for the future.

A new hydrogen-like chemistry, muonium chemistry, will be developed and exploited. This will entail the formation of large quantities of short-lived molecules which have much intrinsic interest and



"It may be anticipated that this unique LAMPF facility will help us to achieve a unified understanding of the structure of nuclei and other forces by which that structure is governed." This electron linear accelerator is a prototype to investigate in detail some of the problems associated with the LAMPF proton accelerator.

Los Alamos . . .

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will contribute to our understanding of classical chemical processes.

Intense beams of muons will permit detailed studies of the muon-catalysis of nuclear reactions, including the fission and fusion processes.

The tantalizing questions involved in the interaction of muons with electrons may see successful resolution within the next ten to fifteen years by making use of the intense muon beams available from LAMPF.

Before the end of the 1970's we should see large-scale use of negative pions in biomedical research. The availability of LAMPF plus the aggressive biomedical program at LASL and the strong involvement of the University of New Mexico Medical School will make this Laboratory a worldwide focus for biology and medicine.

One of the most important components of the Los Alamos work is its program in controlled thermonuclear research, to which I referred earlier. This program is part of a worldwide effort which has as its goal the controlled release of nuclear energy from the process of fusion. If successful, it will provide a new and virtually unlimited source of power for peacetime purposes.

The work at Los Alamos has been concentrated mainly on the technique of theta-pinches, in which very hot and very dense plasmas can be produced. Indeed, the world's first laboratory-controlled thermonuclear reactions were achieved at Los Alamos in a theta-pinch device known as Scylla I. Since then, the devices have been successfully scaled twice in size, and the Scylla IV device now routinely produces plasmas with temperatures of 50 million degrees and densities of greater than 10^{16} ions/cm^3.

The next important step in this work is to increase confinement time of this so-called high-beta plasma. If Los Alamos is successful in confining such plasmas, this development will have important consequences for fusion power, since higher beta means higher plasma density, and hence greater power density. Congressional approval has already been given for the construction at Los Alamos of a large new theta-pinch experiment known as SCYLLAC. With this new facility, which is to be built by an experienced team headed by Dr. Fred Ribe, there is real promise that

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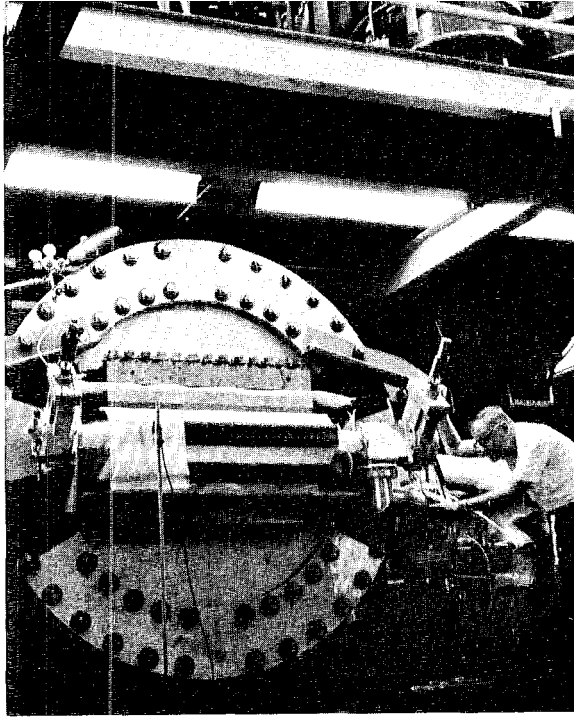
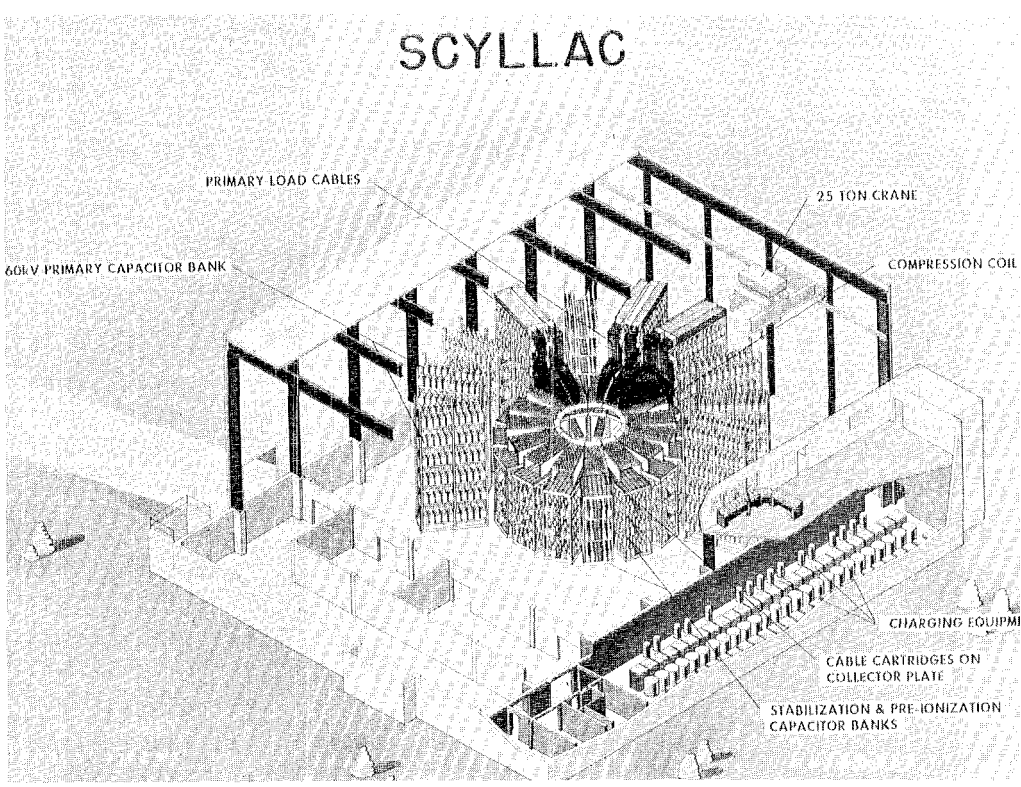


"The world's first laboratory-controlled thermonuclear reactions were achieved at Los Alamos . . . the Scylla IV device (above) now routinely produces plasmas with temperatures of 50 million degrees."



". . . with a large new theta-pinch experiment known as SCYLLAC there is real promise that the critical question of high-beta confinement can be be answered during the next four to seven years."

Los Alamos . . .

continued from page 19

the critical question of high-beta plasma confinement can be answered during the next four to seven years. If these answers are encouraging, then reactor prototype design could begin in about seven years. Consequently, LASL could well be engaged in the development of a prototype thermonuclear reactor in the next 15-year period.

I made a reference a few minutes ago to biology and medicine here at LASL, and this is also an area for which this Laboratory deserves recognition and praise. Important work in nuclear-age biology and medicine has been carried on at Los Alamos over the years. Foremost among this has been the development of the whole-body liquid scintillation counter pioneered in the early 1950's at Los Alamos. LASL has also been among the leaders in studying the biological effects of radiation. In this field the outstanding work of Dr. Wright Langham with plutonium has made him a favorite consultant to the Air Force on such occasions as when they inadvertently dispose of some of their unarmed H-bombs.

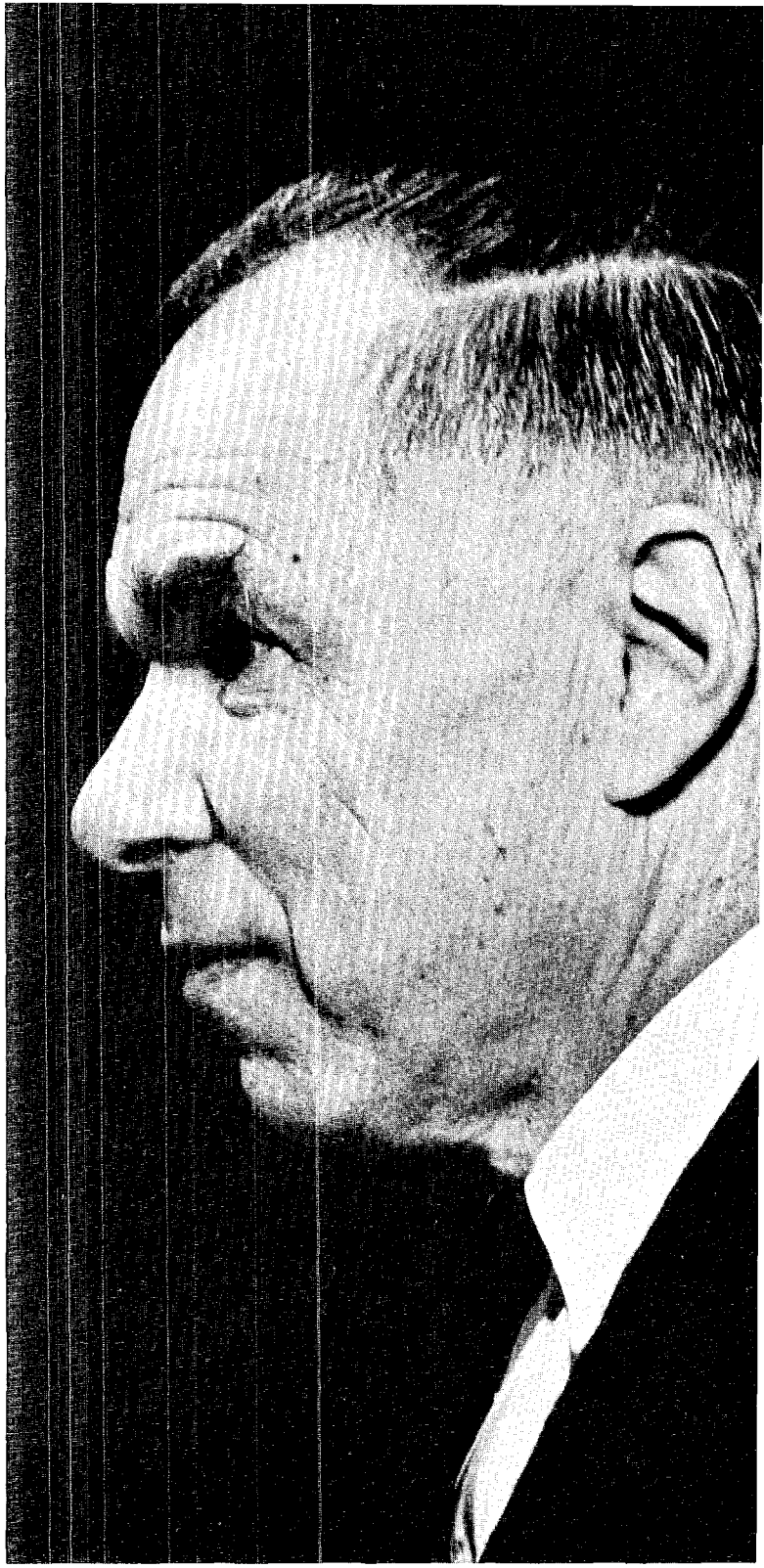
Here at LASL's Health division, continuing emphasis is being placed on basic research with expansion into the fields of molecular and cellular biology. And experimental work in radiobiology, radiopathology, biochemistry, organic chemistry and low-level counting continues utilizing facilities in the Health division and other divisions of the laboratory. All this work has an important future in a Nuclear-Space Age in which we must continually advance our knowledge of radiation and nuclear medicine.

While LASL will remain a major nuclear weapons laboratory for some years to come, I believe that it will also play an increasingly significant role in advancing many areas of our scientific knowledge. And I see Los Alamos making great strides in the years ahead toward becoming a "center of excellence" for the entire Rocky Mountain region. Its area of academic research and training can be expected to grow to strengthen both LASL and the academic institutions of this region. In this context I can see Associated Western Universities, with its 16-member universities, and the Los Alamos Scientific Laboratory working in close harmony to advance education in the Rocky Mountain area to the point where it will be someday on a par with the very best the nation has to offer in higher education and graduate training. We have entered an era when all regions of the country must have their centers of excellence and the development and growth of such centers will have a pervasive influence on the quality of education in each region. National laboratories and national

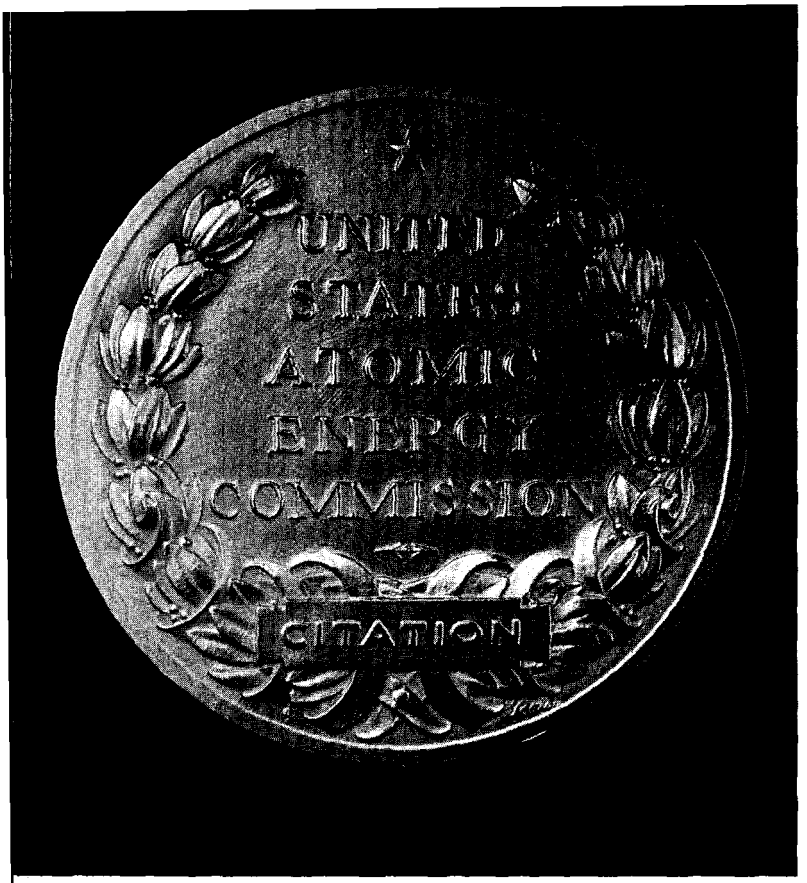
". . . National scientific facilities such as Los Alamos can and should expand their cooperative efforts with the educational community."

scientific facilities such as Los Alamos can and should expand their cooperative efforts with the educational community. As we find more and more ways to use scientific and technological means to achieve economic and social progress, and as our institutions of higher education become increasingly involved in guiding our society, the partnership between the universities and such government laboratories as Los Alamos should take on a greater significance in fostering the nation's well-being. The decades ahead will see a new and more meaningful era of progress if we can combine and focus our tremendous resources of knowledge and human talent toward common goals.

I have tried today to summarize some of the history and accomplishments of LASL—the latter are far too numerous to do full justice to in so short a time; the former, many of you have lived through quite closely. I have also tried to project something of the future of this great laboratory. In conclusion, let me say that on this 25th anniversary the Los Alamos Scientific Laboratory can celebrate the past with pride and look to the future with hope. You have earned the right to do both. My congratulations and best wishes to every one of you.



"On this 25th anniversary the Los Alamos Scientific Laboratory can celebrate the past with pride and look to the future with hope."



The

UNITED STATES ATOMIC ENERGY COMMISSION

Grants this Award

to

Norris E. Bradbury

FOR HIS CONTRIBUTIONS AS DIRECTOR OF THE LOS ALAMOS SCIENTIFIC LABORATORY TO THE DEFENSE OF THE UNITED STATES; FOR HIS ACCOMPLISHMENTS AS A SCIENTIST AND ADMINISTRATOR IN TRANSLATING BASIC CONCEPTS INTO PRACTICAL INSTRUMENTS OF NATIONAL SECURITY AND PEACETIME NATIONAL GOALS; FOR HIS COURAGEOUS AND IMAGINATIVE LEADERSHIP AFTER WORLD WAR II IN TRANSFORMING A TEMPORARY WARTIME INSTALLATION INTO AN OUTSTANDING MODERN CENTER FOR RESEARCH AND DEVELOPMENT; AND FOR HIS DEDICATED SERVICE BOTH AS A LABORATORY DIRECTOR AND AS A PRIVATE CITIZEN TO THE LOS ALAMOS COMMUNITY.

JANUARY 20, 1968

Glenn T. Seaborg

James J. Ramey

Gerard F. Tape

Dwight E. Johnson

Commissioner Gerald Tape Said . . .

I HAVE THE HONOR, and for me the distinct privilege, of presenting Norris Bradbury with the Atomic Energy Commission Citation. This Citation publicly acknowledges the esteem and honor with which we on the Commission have always regarded Dr. Bradbury. Through his untiring efforts and outstanding accomplishments, Norris Bradbury has made possible the advancements which this country has made in atomic science. His understanding of the intricate aspects of many programs has been an essential contributing factor to the stature which the Los Alamos Scientific Laboratory enjoys as one of the finest scientific laboratories in the world today.

I feel, however, that Dr. Bradbury's most unique and significant contribution is his ability to lead and inspire others toward exemplary citizenship, humanitarianism, and productivity. His is unparalleled in winning the complete respect, admiration, and devotion of the entire LASL staff and others with whom he has contact. It is important to note that the altitude makes no difference. Dr. Bradbury is as

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Commissioner Gerald Tape, who presented the AEC's Citation to LASL Director Norris E. Bradbury was first in line with congratulations at the end of the ceremony at the Civic auditorium. At left with applause are: Dr. Raemer Schreiber, LASL technical associate director and AEC Chairman Dr. Glenn T. Seaborg.

Tape Said . . .

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respected and admired in Washington, D.C., as he is in Los Alamos. I and my fellow Commissioners know this to be true not only because of our contacts with Norris and the LASL staff, but because of our contacts with heads of other agencies of Government and with members of the U.S. Congress.

Norris, I hope this presentation of the Atomic Energy Commission Citation conveys to you our appreciation for giving of yourself so generously to your country during the many years gone by. The Department of Defense has provided recognition to you both for your work in uniform and for your civilian contributions to our national defense. It is now the Atomic Energy Commission's privilege to provide such recognition.

Norris Bradbury Replied —

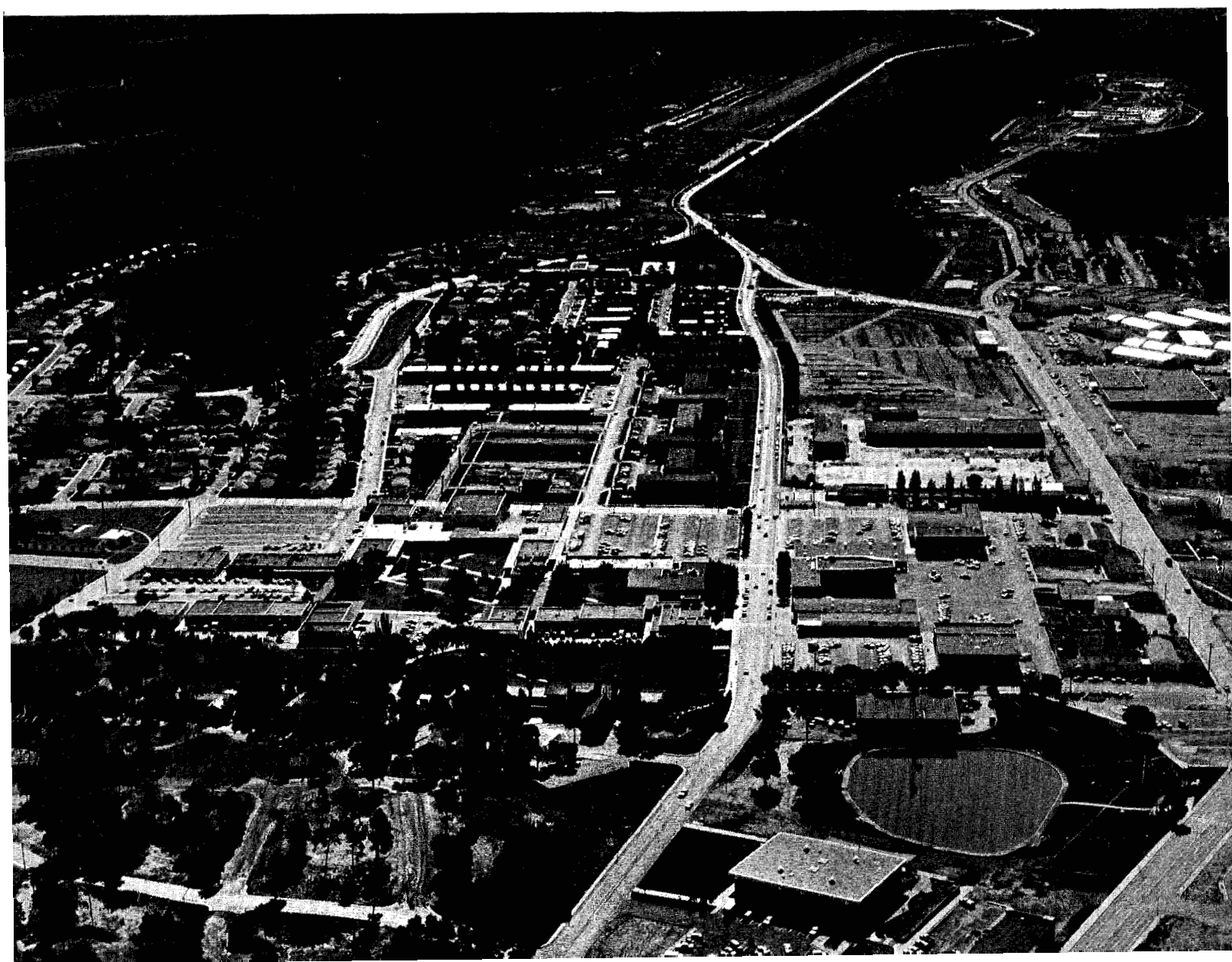
It is clearly needless to say that one can only be overwhelmed and deeply grateful--deeply and humbly grateful--for the words which Jerry Tape has said, for the words which Glenn Seaborg has said, for the presence of Jim Ramey, for the presence of the Commission staff here today, but there is something I would like to add to them—Los Alamos is not, and never has been, one individual.

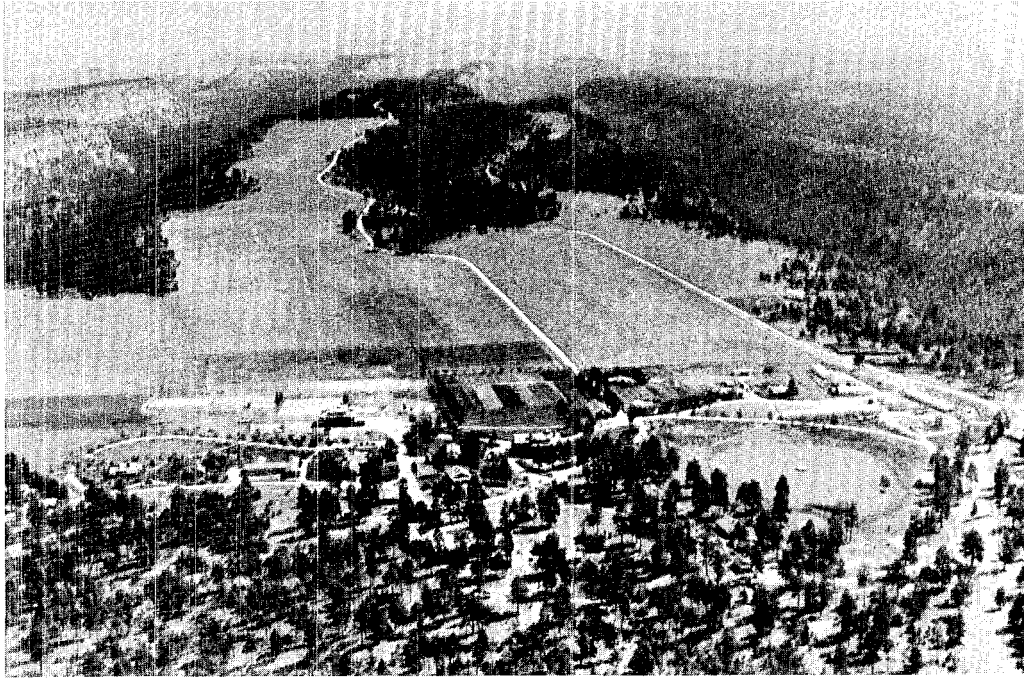
It was not Robert Oppenheimer's Laboratory; it is not my Laboratory. Los Alamos is a place. It is a community of dedicated people—a Laboratory of dedicated people—a group of people dedicated in a community of effort to their country—to the national need. It is not just Ph.D.'s; it is not just scientists; it is not technicians; it is not clerks; it is not secretaries; it is not teachers; it is not doctors; it is not merchants; it is not those who build; those who maintain and those who fix and those who repair; or those who keep the order and keep the peace and guard, but it is all of these people—all of you--working for our country.

The Laboratory director is only an individual who sits behind a desk, signs letters, argues, is argued with, but it's you—the people of Los Alamos—that make this Laboratory what it has been and what it will be, and it is to you and to the Commission, the Congress, the University, this country, that I am grateful, and to all of whom, if I could, I would extend my own thanks for making Los Alamos what Los Alamos is and what Los Alamos will be. I thank you.

this is

The Place . . .





Circa 1937

1967

By Barbara Storms

TWENTY-FIVE YEARS AFTER the first residents arrived on the Hill, Los Alamos has become a self-governing and almost completely privately-owned city of nearly 17,000. But the achievement of this status as a "normal" community was a long and painful process.

The Atomic Energy Commission Act of 1955 provided that "government ownership and management of the communities owned by the AEC shall be terminated in an expeditious manner which is consistent with and will not impede the accomplishments of the purposes and programs" of the AEC. The act, which became Public Law 221, specifically provided for the disposal of federally-owned properties at Oak Ridge and Richland. Los Alamos was excluded on the recommendation of a 1952 advisory panel whose investigations revealed four factors which could interfere with the purposes and programs of the Laboratory.

First, security required close area control at Los Alamos. There was little demand, the report said, for

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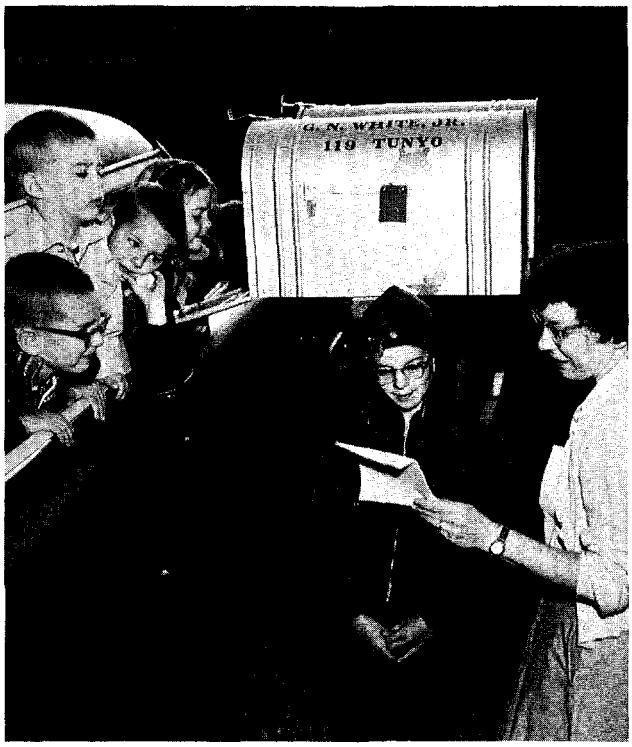
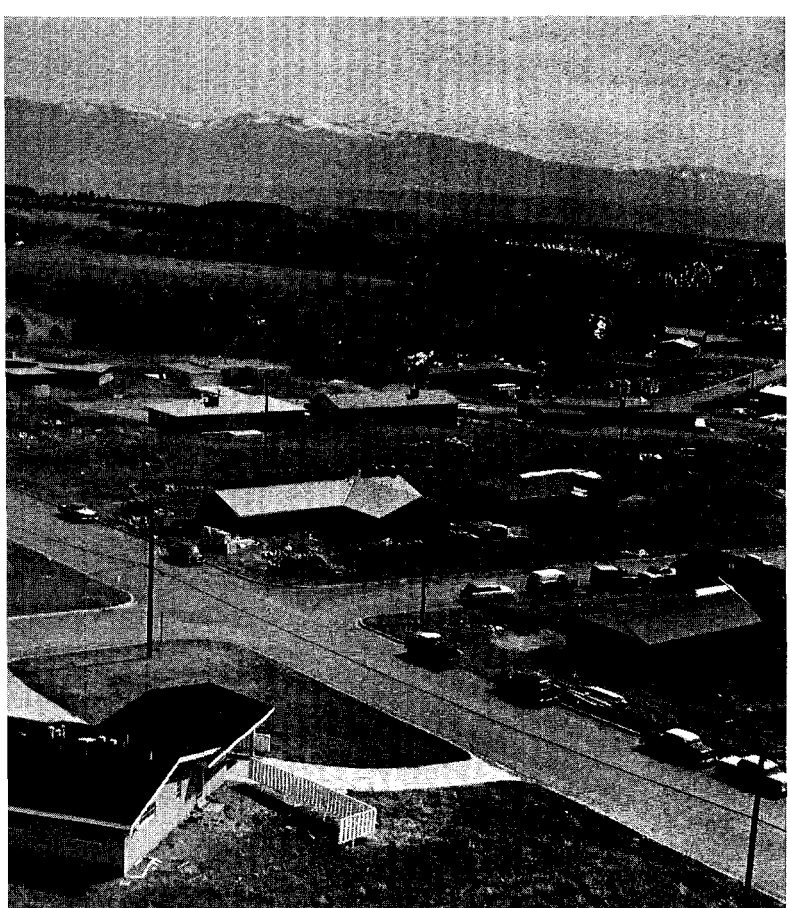


First home owners were the George Whites and Phil Bendts.

By late 1960, there were 19 completed Barranca Mesa homes.



The Place . . .

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incorporation and private home ownership, and the fiscal requirements of the community indicated a continuing need for high federal subsidies. Finally, the nature of housing (only one-third were single units) was an obstacle to fair disposal.

As the fifties progressed, security problems were gradually easing but the need for federal subsidies showed no signs of diminishing and the housing situation had gone from bad to worse. Even so, by 1958, rumors were circulating that disposal was just around the corner.

To quell such talk, the AEC announced in January, 1959, and again in August that "until and unless private housing construction provides an adequate cushion of vacant houses and apartments in Los Alamos, the AEC does not intend to take any further steps toward selling government-owned houses."

But the ball had already begun to roll.

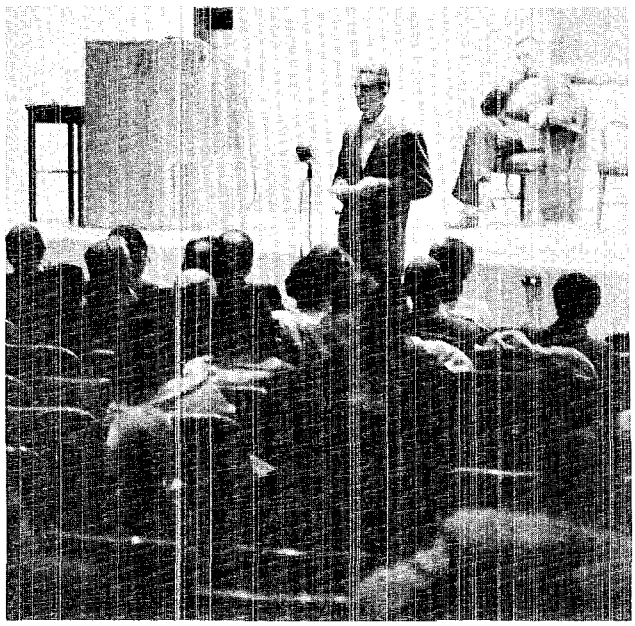
Hopes for increasing home construction were raised by the opening of Barranca Mesa for privately-built homes, and ground work was being laid for development of the White Rock area.

Late in 1959 the AEC appointed the Los Alamos Planning Committee to make a thorough study of all municipal functions and operations with an eye toward "the possibility of transferring greater control of these functions to the people and the local government." While the question of disposal was not given as a direct mission, it was clear that disposal was to be examined by the study group.

Then, in December that year the Subcommittee on Communities of the Joint Committee on Atomic Energy held a public hearing. Its publicized purpose was to discuss community problems in general, but testimony was clearly oriented toward forthcoming disposal.

By mid-1960 the planning committee had completed its study and reported that "complete self-government, normal free enterprise and adequate opportunity for home ownership can be achieved in Los Alamos." The report predicted that sale of government-owned residential and commercial real estate could start by 1965 if the committee's recommendations were followed. Among these was the recommendation that at least 1100 new houses would have to be built before complete disposal could be undertaken. And therein lay the problem.

Housing, especially single units, had always been short, and by 1960 available housing of any kind had reached an all-time low. In addition, private construction was running into trouble. Invitations to bid on development of White Rock had received no response at all, a situation attributed to the fact that



Public meetings to discuss the problems and possibilities of disposal were held in the spring of 1962. This one, sponsored by the County Commission and the Los Alamos Planning Committee, preceded a hearing by the Joint Committee on Atomic Energy.

A bulldozer clears the ground as development of White Rock gets underway in May, 1961. The prospect of 200 homes in the new area eased the housing problems and paved the way for disposal.

the FHA was refusing to insure mortgages in White Rock because of the remoteness of the area and its dependence on the community's one industry. In desperation, the Laboratory and local AEC issued an ultimatum to Washington: If private capital would not build houses in White Rock, the government would have to. By fall, Congress had passed a bill authorizing the AEC to guarantee FHA loans, and by early 1961, development of 200 houses in White Rock was under way.

Although there was a serious effort by various groups to educate the public in the mechanics of disposal during 1960 and 1961, public interest diminished as the town concentrated on a mammoth civil defense program that provided fallout shelter for every resident and employe on the Hill.

Then, in January, 1962, after ten months of no action and very little public discussion, the action shifted into high gear and disposal was suddenly upon the community.

It began with an out-of-the-blue announcement from an AEC official in Washington that enabling legislation should be ready for presentation to the 1963 Congress. AEC and county officials immediately went into a huddle with the Housing and Home Finance Agency to make plans, the County Planning Commission began working up changes to make PL 221 apply to Los Alamos, and a board was established to draw up priority regulations for the sale of real estate. By April, revised legislation had been introduced in Congress, and later that month the Subcommittee on Communities of the JCAE held a public hearing.

On Sept. 28, 1962, Public Law 87-719 was enacted "to amend the Atomic Energy Community Act of 1955 to provide for disposal of federally-owned properties at Los Alamos."

Passage of the legislation had a quick and noticeable effect on the community. The Laboratory Housing Office noticed a decided shift in the pattern of moves and vacancies. Desirable duplex units remained vacant longer because few people wanted to become "junior tenants" who would not be able to buy their homes. Others moved from spacious duplexes to small single houses just to be in a position to buy.

There was a sudden increase in the number of

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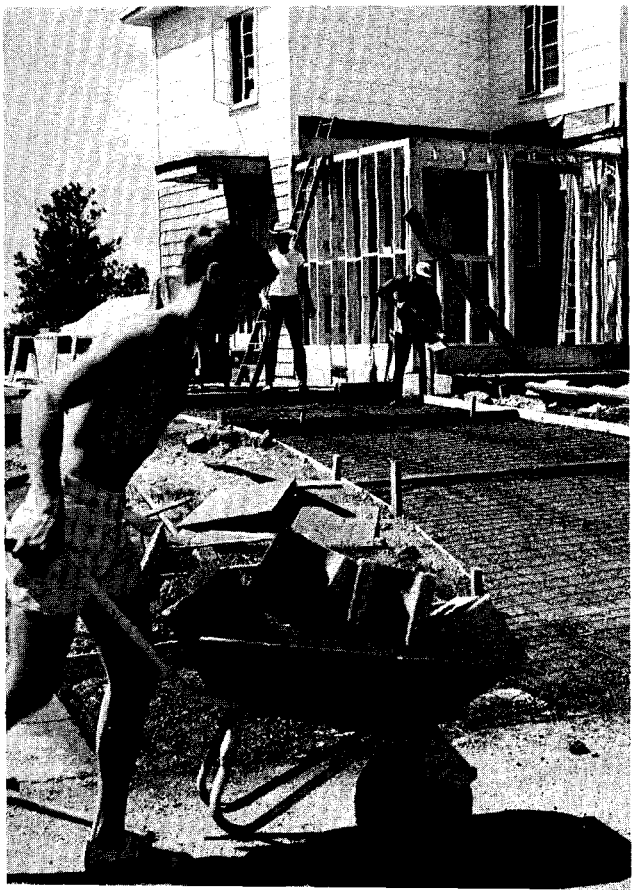
First government house was sold on November 18, 1965 to the William Overtons.

New home-owners transformed their government-built structures.



The Place . . .

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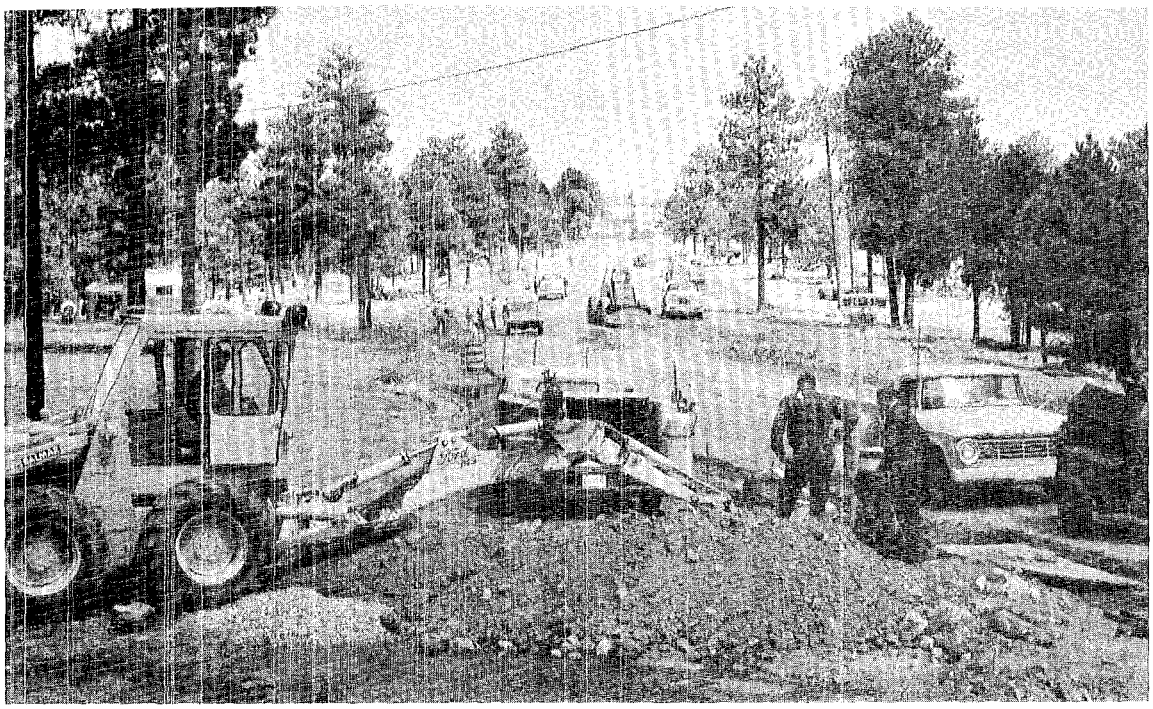
building permits issued for large and permanent additions on government houses in anticipation of the sale. Within months, the rows of look-alike houses began to show signs of individuality with additions of fireplaces, garages, whole new wings or just fresh paint and trim.

But the effects were not all positive. News reports of the proposed "disposal" had been misinterpreted elsewhere, and the rumors spread that the town was about to be abandoned, the Laboratory shut down, the scientists scattered to the winds. Laboratory employes were approached with job offers by industrial recruiters and the Lab's own recruiters were hard-pressed to convince prospective employes that a LASL job had any kind of permanence.

As a result, "disposal" became a dirty word and such substitute terms as "transfer" and "change-over" were officially encouraged. In time the rumors died, and the town settled down to wait for the painstaking preparations that preceded the actual sale.

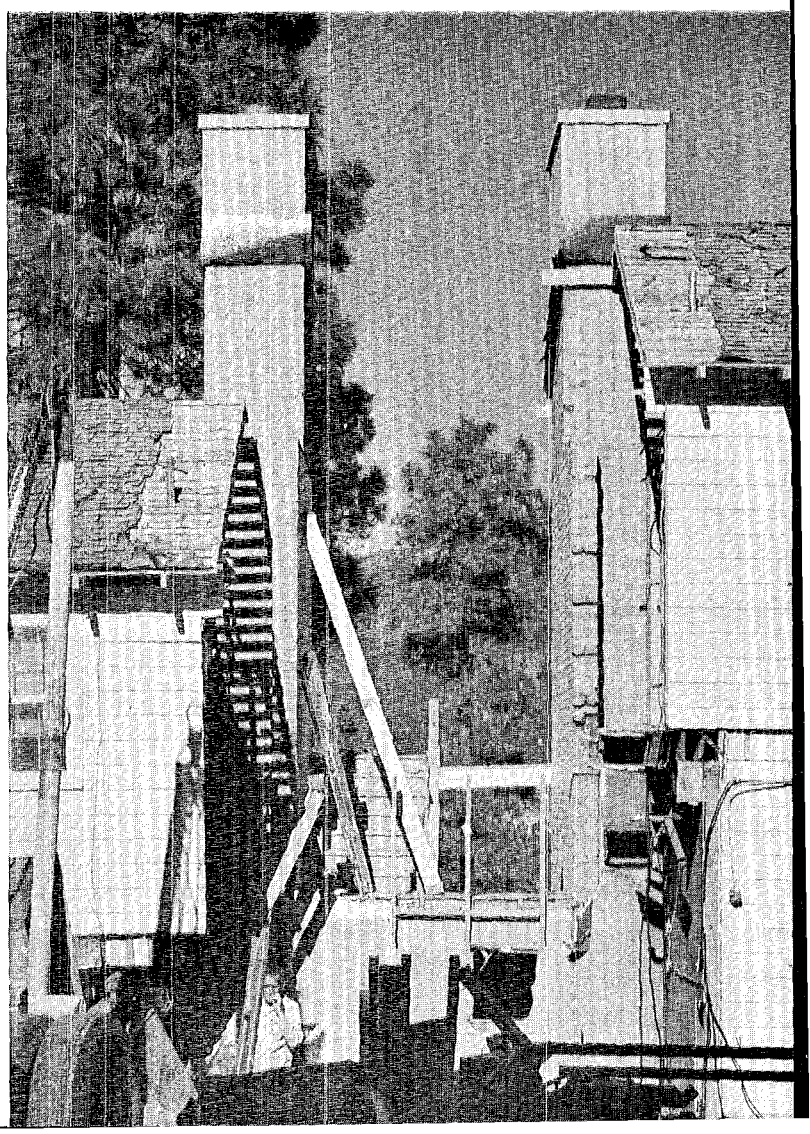
In order to carry out the specific provisions of the law, a great deal of preliminary work had to be done. An aerial survey of every inch of the community was undertaken late in 1962 to provide precise maps, and this was followed by the extensive job of platting, a prerequisite to all other steps in the transfer.

A zoning ordinance was required before appraisals could be made, and this, in turn, necessitated a master plan for the community. In early 1963 the county selected a planning contractor, and by the following year the plan and accompanying ordinance were presented and ultimately adopted.



Government's transfer package included expansion of Trinity Drive to a four-lane thoroughfare.

Historic Sundt apartments which once lined Trinity Dr. were dismantled and moved away.



After platting and classification of various types of property to be sold, the FHA made its appraisals which were posted shortly before the sales began.

By November, 1965, the preliminaries were over, and the first property, a house in Eastern Area, was sold on Nov. 18. The sale of single and duplex houses proceeded reasonably smoothly, and by late 1966 a good portion of the population had taken to home ownership as if they were used to it.

While the preparations for real estate sales were under way, the AEC launched a $8,719,000 construction program, provided in the law to whip municipal facilities into shape before disposal. Included in the package were construction of a county building, a fire station in North Community and two new schools, the widening of Diamond and Trinity Drives and Pajarito Road, rehabilitation of other roads and streets, a complete overhaul of the gas and electrical distribution systems, expansion of water and sewer systems and development of the fourth subdivision at Barranca Mesa.

To clean out sub-standard housing and prevent instant slum, the historic old Sundt apartments were sold to whomever would dismantle them and haul them away. By late 1966 the last building had been removed.

One of the first big steps in the transfer took place on Jan. 1, 1964, when the Los Alamos Medical center was turned over to the Lutheran Hospital and Homes Society of America, Inc. The operator had been selected in a referendum held in June, 1963.

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The Place . . .

The fate of the electrical and gas utilities was one of the most controversial issues in the transfer, and after a hard-fought campaign, Los Alamos voters chose to have them transferred to the county rather than to private utility companies. Transfer of the telephone facilities, too, became unexpectedly controversial when a private company challenged the current operator, Mountain States Telephone Company, for the rights to the system. After a long delay, the award was made to Mountain States.

Meanwhile, Los Alamos County, which had been functioning through a county commission since 1949, had been gradually taking over operation of municipal facilities and gaining valuable experience. Even before disposal legislation was enacted, a county administrator and county planner had been hired to relieve the commission of its increasing load of responsibility. By mid-1966 the county's list of responsibilities included parks and recreation areas, public library, schools, waste removal, roads and streets.

On June 24, 1967, at dedication ceremonies for the new County Municipal building, the AEC presented to the county more than 17 million dollars worth of public use lands, roads, buildings and the utility systems, and the transfer of municipal facilities was final.

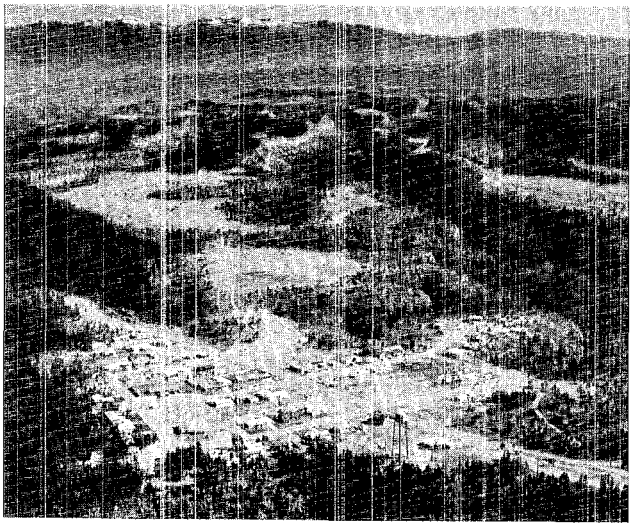
But five years after the passage of the disposal legislation, the AEC was still not out of business in Los Alamos.

In the summer of 1966 the sale of real estate had run into a stone wall, just as quadruplexes and apartment buildings were about to be offered, as prescribed by law, to legally-organized cooperatives composed of occupants of the buildings. The question of what to do with the multi-unit buildings has been a sore point in disposal discussions since the first rumors began to appear, and this time, public protest was loud enough to bring the sale to a sudden stop. At the same time, occupants of tiny, pre-fabricated Denver Steel houses beefed up their long-standing objections to the AEC decision that the houses were substandard and would not be sold.

Many public meetings and a Congressional hearing later, both protesting groups had won. AEC reversed its decision and offered the Denver Steels to their occupants, and special legislation was enacted late in 1967 to permit a more flexible and occupant-satisfying method of selling the apartments. Priority revisions and other pre-sale details were expected to delay the beginning of apartment sales until late 1968.

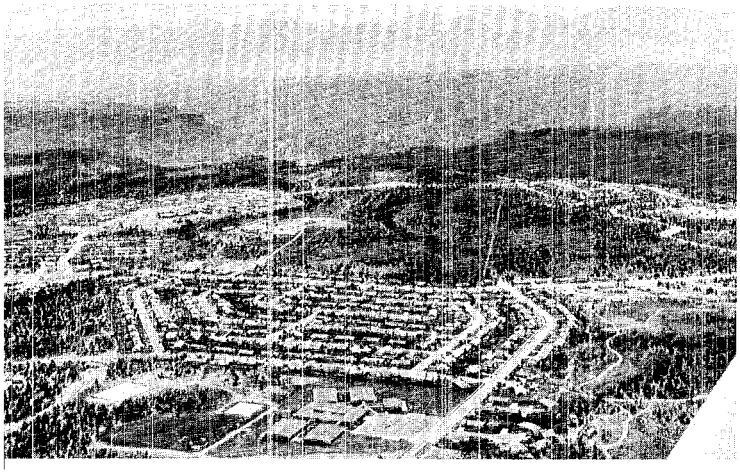
Sale of commercial property, meanwhile, had become bogged down in controversies over appraisal values and parking areas. The end is not clearly in sight, but Los Alamos has, indeed, become a city in its own right.

Increasing responsibility of government gave the Los Alamos County Commission valuable experience as disposal progressed.



Disposal years saw hoped-for housing increase. Barranca Mesa began with 19 houses in 1960.

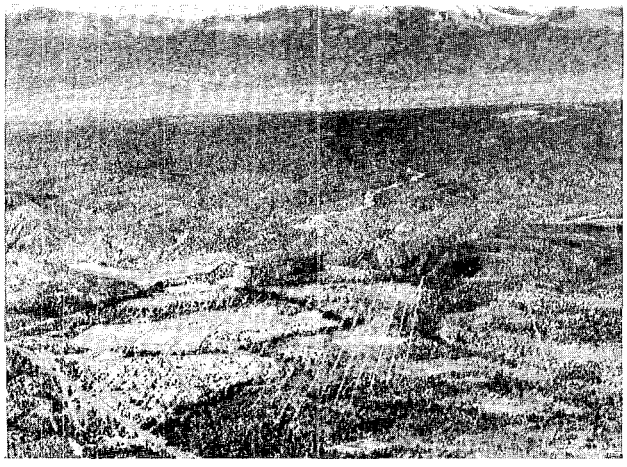
By 1967 there were more than 300 houses and the development was nearly filled to capacity.

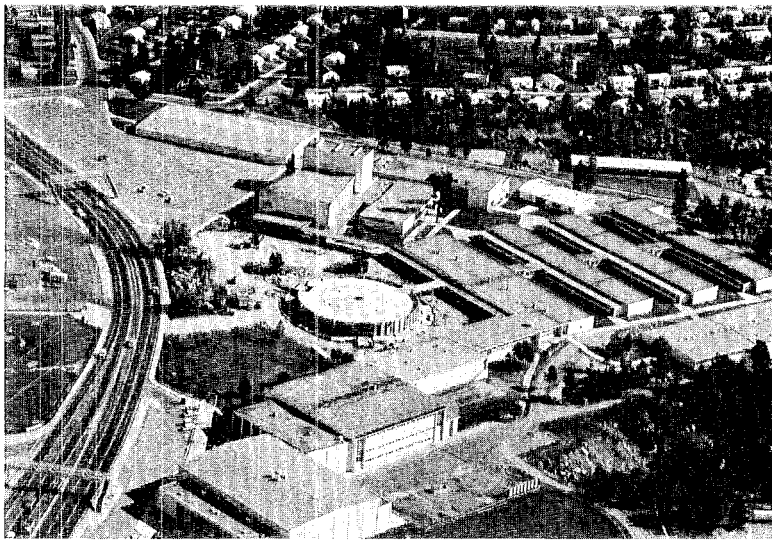


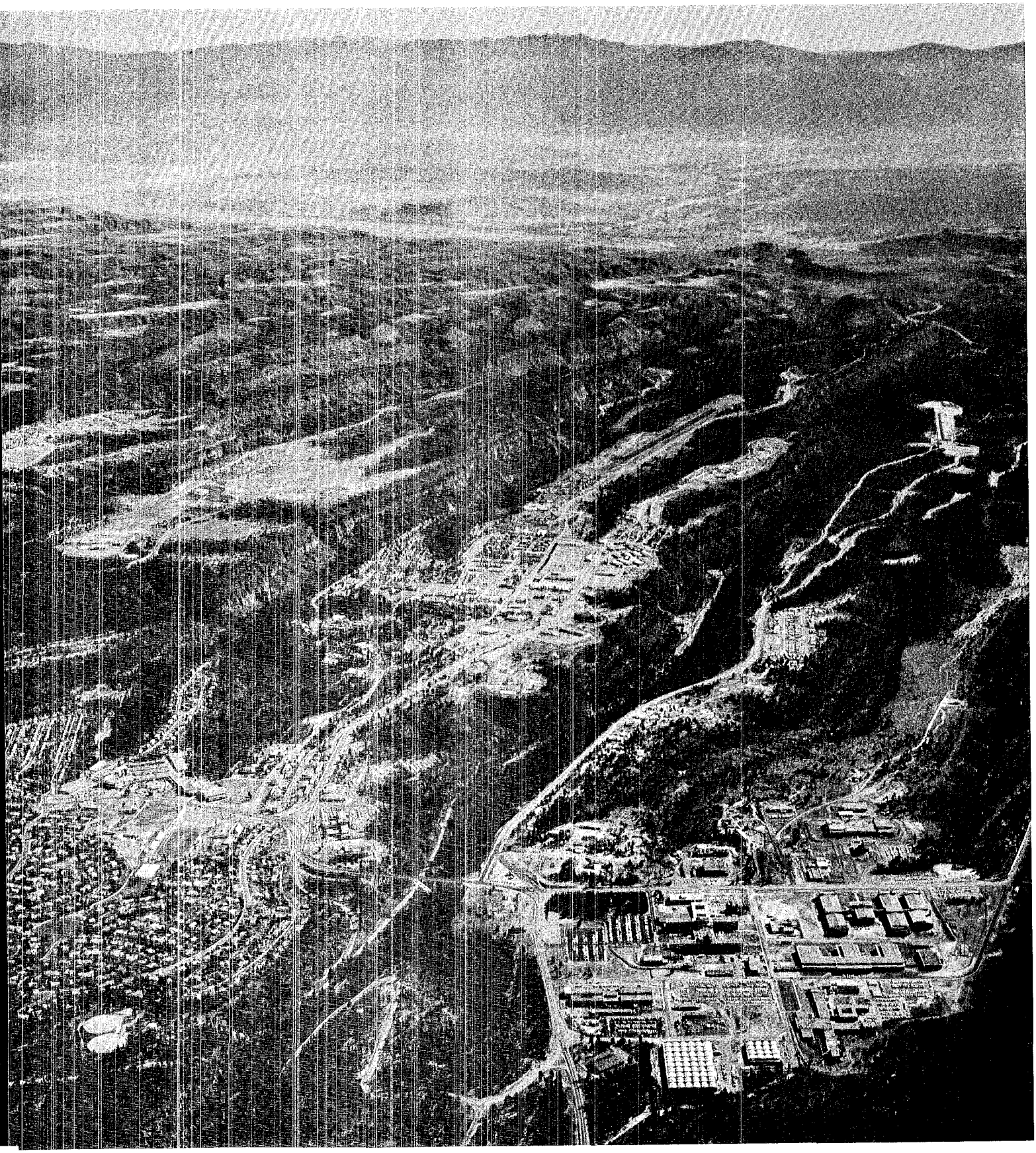
Growth at White Rock was even faster. By 1967 there were more than 700 homes, a shopping center and two schools.

In 1961 (above right) only the crumbled remains of streets of original White Rock were visible on the plateau.

The Los Alamos school system, including the expanding high school plant (right), was transferred to the county in July, 1966.







THE DAY'S TALE

By BILL RICHMOND

FEBRUARY 15, 1968, was a significant date for the Los Alamos Scientific Laboratory.

Officially, it was designated as the date for the "25th Anniversary Observance and Los Alamos Meson Physics Facility Groundbreaking." Unofficially, to those handling the logistics for the affair, it was called "The Day of the VIP's." For a listing of those three score and more dignitaries who attended the day's events could easily serve as a condensed "Who's Who" from the worlds of science, education and government.

And the amazing thing is there were no plans in the beginning for a large celebration!

It all began about a year ago when PUB started planning an "Anniversary Issue" of The *ATOM*. The special issue publication month was not considered too important as it is impossible to pinpoint an exact date that the wartime Los Alamos (Scientific) Laboratory was founded.

For example, a perusal of the official history of Project Y—the wartime Los Alamos Laboratory—reveals the following significant dates in the early history:

—October, 1942: A decision had been made to center the major scientific and technical effort involved in developing a fission bomb at one locality—to be known as Project Y.

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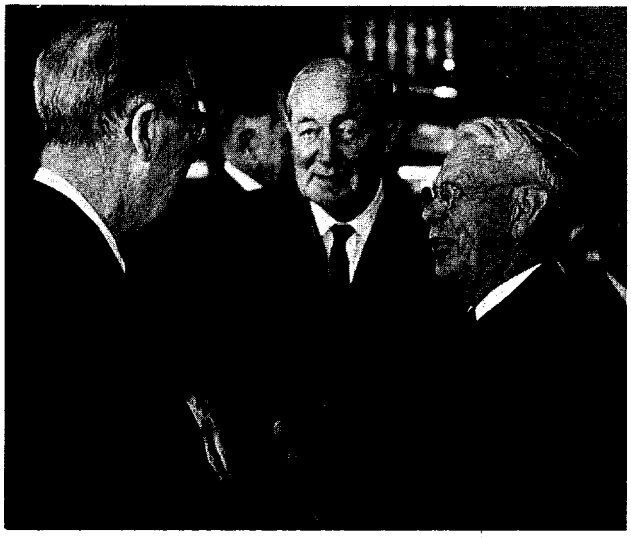
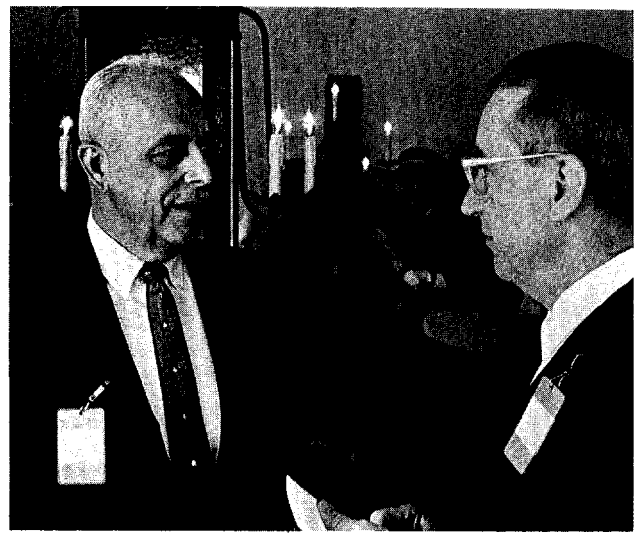


Senator Anderson, Regent Edwin Pauley and Vice President Emeritus Robert Underhill—three men who must receive a great deal of the credit for the birth and growth of LASL.



Old friends, like Highlands U's Ralph Carlisle Smith and LASL's Max Roy, got together in the Los Alamos Inn lobby. Smith was LASL's first director of classification and security.

Raemer Schreiber and John Conway, executive director of the Joint Committee on Atomic Energy, set the "mood for the day."

Tale . . .

continued from preceding page

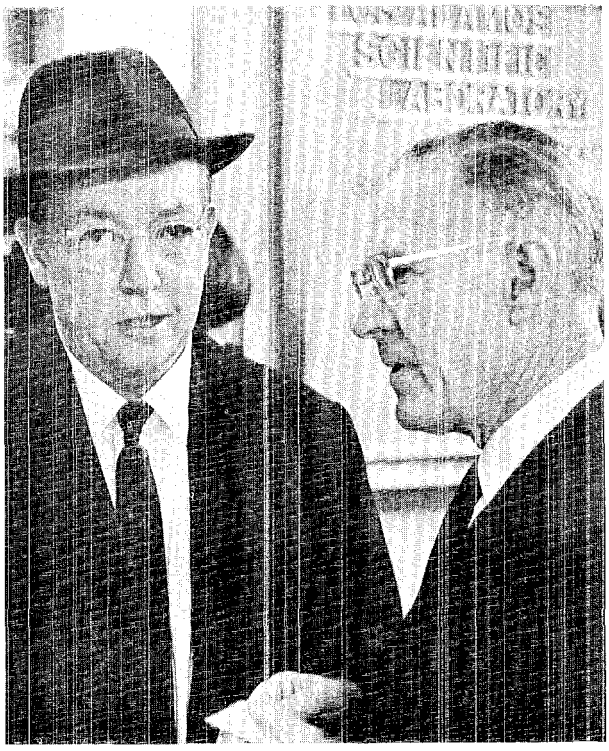
—November, 1942: The Los Alamos Ranch School, located on an isolated mesa of the Pajarito Plateau in northern New Mexico, was selected as the site for Project Y.

—December, 1942: The initial plan for the Technical Area was plotted and laid out by Dr. J. Robert Oppenheimer, the Lab's first director; Dr. John H. Manley, now a research advisor at LASL; and Dr. E. M. McMillan, currently director of the Lawrence Radiation Laboratory in California.

—January, 1943: Letter of intent between the University of California and the Office of Scientific Research and Development (OSRD) designated the University as prime contractor to handle employment of personnel plus the financial and procurement operations of Project Y.

—February, 1943: Letter from Dr. James B. Conant and Brig. Gen. Leslie Groves of the Military Policy Committee outlined the scope and purpose of Project Y—"the development and final manufacture of an instrument of war . . ." (the world's first atom bomb).

—March, 1943: Oppenheimer and a few members of the staff arrived in Santa Fe to establish permanent residence, although construction work on The Hill was incomplete.



AEC Commissioner James T. Ramey and Darol Froman, retired LASL technical associate director, chat.

Senator Anderson greets long-time friend, Stan Ulam.

LASL's Betty Hicks helped John Harris, head of AEC's public information division.

—April, 1943: A formal contract (W7405-ENG-36) was signed between the University of California and the Manhattan Engineer District of the War Department. The contract was retroactive to January 1, 1943.

Numerous other significant dates in the Laboratory's early history could also be used as a basis for an anniversary observance, but the above listing is a good sample. Obviously there is no single date that can be pinpointed as the day on which the Laboratory began.

Therefore, it was felt that the special anniversary issue of The *ATOM* should be scheduled for sometime in early 1968 in order to weave together all the various factors involved in the Lab's early history—scientific, educational, government and community.

It was initially planned that this special issue would be published in February. Plans were proceeding in this direction until early January when U.S. Senator Clinton P. Anderson, of New Mexico, announced that the go-ahead for work on the Los Alamos Meson Physics Facility had been given. (Federal budgetary considerations had slowed the LAMPF construction.)

With this announcement a flurry of activity and

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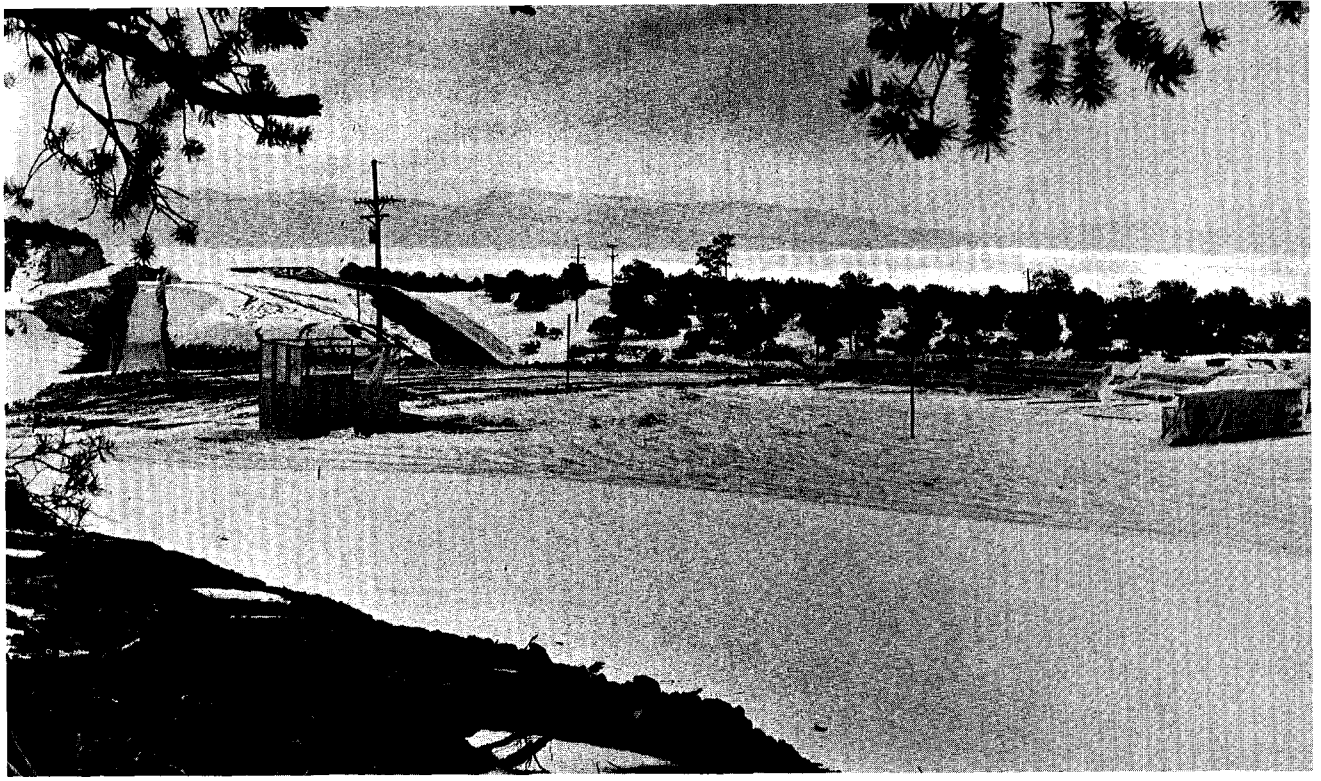

Bitter cold and snow dampened plans for on-the-site groundbreaking . . .

Tale . . .

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excitement permeated LASL at all levels. A decision was made to hold formal groundbreaking ceremonies for LAMPF on the Mesita de Los Alamos east of the main technical area—where LAMPF is to be constructed. (This decision, like so many others concerning the festivities of February 15, 1968, was later changed. But more about that later.) It was also decided to tie in the 25th anniversary observance with the groundbreaking combining "an illustrious past and a bright future."

Publication of The *ATOM* special issue was moved back a month to March in order to include a description of the "small" ceremonies and pictures of the "few" dignitaries originally expected to attend. (A new definition of "few" was written when more than 60 accepted invitations and participated.)

A tentative schedule of events for the day's activities was drafted—later revised at least a dozen times—and invitations were sent to members of Congress, the Atomic Energy Commission, the University of California, and heads of colleges and universities in the Rocky Mountain Region (specifically members of the Associated Western Universities), plus other educational institutions throughout the country.

The response was overwhelming, gratifying and frightening.

A surprisingly large number indicated acceptance—in fact the Regents of the University of California moved their meeting date back a day in order to permit a large representation to attend.

It was gratifying that so many busy and important people would rearrange their schedules to come to Los Alamos for the affair.

But it was frightening to contemplate the logistics problems in handling such a large group of VIP's. (At one of the scores of meetings held in the Laboratory prior to the Big Day, one frenzied planner observed "Good Grief! We would roll out the red carpet for any *one* of these people! What do we do with more than 60?")

The advance preparations as well as the official schedule of events were coordinated under the direction of Del Sundberg, head of the Public Relations department. A list of individuals at LASL and in the community who helped in these preparations either directly or indirectly would require a publication of telephone-book size. But those departments and divisions most directly involved, who handled most of the work, include Engineering, Medium Energy Physics (MP), Supply and Property (SP), Public Relations (PUB) and the ZIA Co.

The Engineering department performed a magnificant job in preparing the Mesita de Los Alamos for the groundbreaking. They erected bleachers for the dignitaries, news media and the public; constructed a partially enclosed rostrum for the speakers; prepared to run telephone lines for the news media and official visitors; obtained the shovels to be used in the groundbreaking, and even jack hammered a pre-softened area in the frozen ground for the ceremonial shovelling.

And then the better than 50-50 possibility of bad weather forced the ceremonies to be held indoors in the Administration Building auditorium where only the shovels were used.

Travel and lodging of the dignitaries and official visitors, preparing The Lodge for the noon luncheon, arranging for the Director's reception for the visitors and a host of other details were capably handled by PUB-2, with considerable assistance from county officials and ZIA in the Lodge preparations.

MP division conducted the LAMPF briefing and tour of the prototype accelerator for the guests while SP--once again--managed to procure the items needed for the day's events . . . including two chartered buses to transport the visitors from place to place.

A typical example of the kind of cooperation required in preparing for a day such as February 15, is seen in the matter of lights in The Lodge.

News media representatives—as well as laboratory photographers--were planning on extensive photographic coverage of the official luncheon. But the lighting system composed of 30 lamps with 40-watt bulbs was, in the words of one photographer, "available darkness."

The existing circuits would not handle a heavier load so ZIA rewired the dining room at The Lodge and 150-watt bulbs were installed replacing the inadequate 40-watter. (A painter followed the electrician to hide all traces of the job.)

And, as the pictures on these pages show, the increased candlepower did the job and photographers were able to snap away with adequate lighting.

Literally hundreds of other advance arrangements were made, running the gamut from badges for official guests to preparing frequent news releases pertaining to the affair.

But one of the strangest was "made" on the day before.

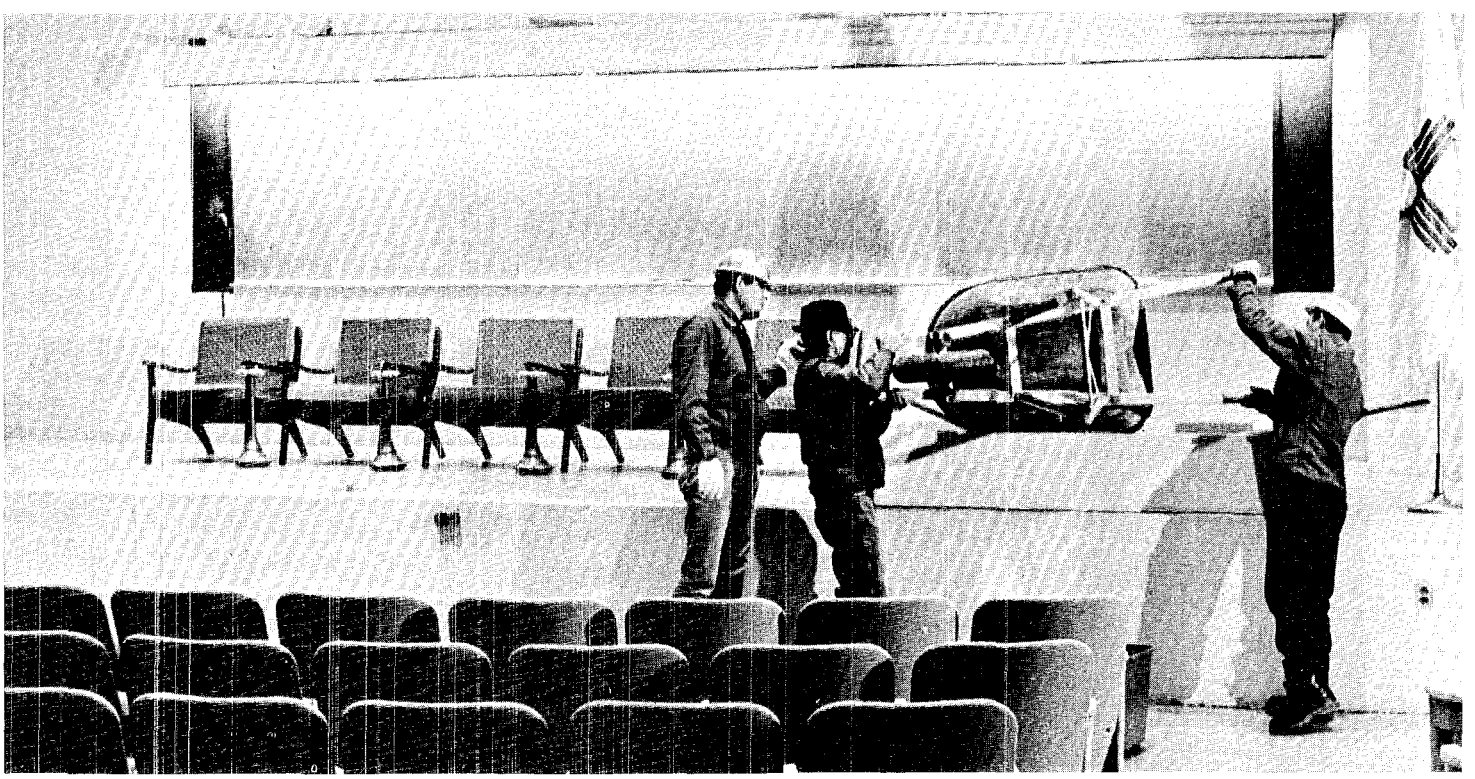
On that day, February 14, LASL officials decided to move the location of the groundbreaking ceremonies from outdoors on the Mesita de Los Alamos to the auditorium of the Administration Building. This decision was forced by the previous days of snow . . . plus a sharp drop in temperature . . . added to a weather forecast which predicted more snow on the day of the groundbreaking.

Therefore, at about 9:30 on the morning of February 14, it was decided to change the groundbreaking location.

But how can you have a groundbreaking without

continued on page 41

. . . so Zia's Napoleon Garcia, Jose Martinez and Arsenio Vigil brought ground indoors for the ceremonies.



Tale . . .

Continued from page 39

any ground to break? . . . especially since two Albuquerque television stations were sending cameramen to cover the event and several other members of the press had asked for photos of the groundbreaking.

Simple.

Call Engineering and ask for a sandbox 6 feet long, 4 feet wide and 1 foot deep. After the laughter dies down and you explain why you need it, assurances are forthcoming that the sandbox will be ready --complete with sand--by groundbreaking time.

Then a news release is hurriedly issued noting the change in location and labeling it a "symbolic" groundbreaking. (Actually, the original groundbreaking on the Mesita de Los Alamos would not have occurred at the site where the first building--the Equipment Test Laboratory--will be constructed. Because of space limitations and to avoid interfering with the contractor who is already at work, the groundbreaking site was moved about 1,000 feet from the ETL area.)

Also requiring a change was the official program which had already been printed by D-8 calling for the 2 p.m. groundbreaking ceremonies on the Mesita. Thus, the program had to be reprinted with the new location. And Engineering had to make several other last-minute changes to prepare the auditorium for the occasion.

Several persons on the official guest list, primarily representatives from universities in the Rocky Mountain area, arrived in Los Alamos the night of February 14--with the main contingent scheduled to arrive the morning of the Big Day.

The morning of February 15 saw bright, clear skies with chilly temperatures. And although it never snowed that day, the previous snows had left the initial groundbreaking site a miniature quagmire and nearly all concerned were glad the groundbreaking location had been relocated.

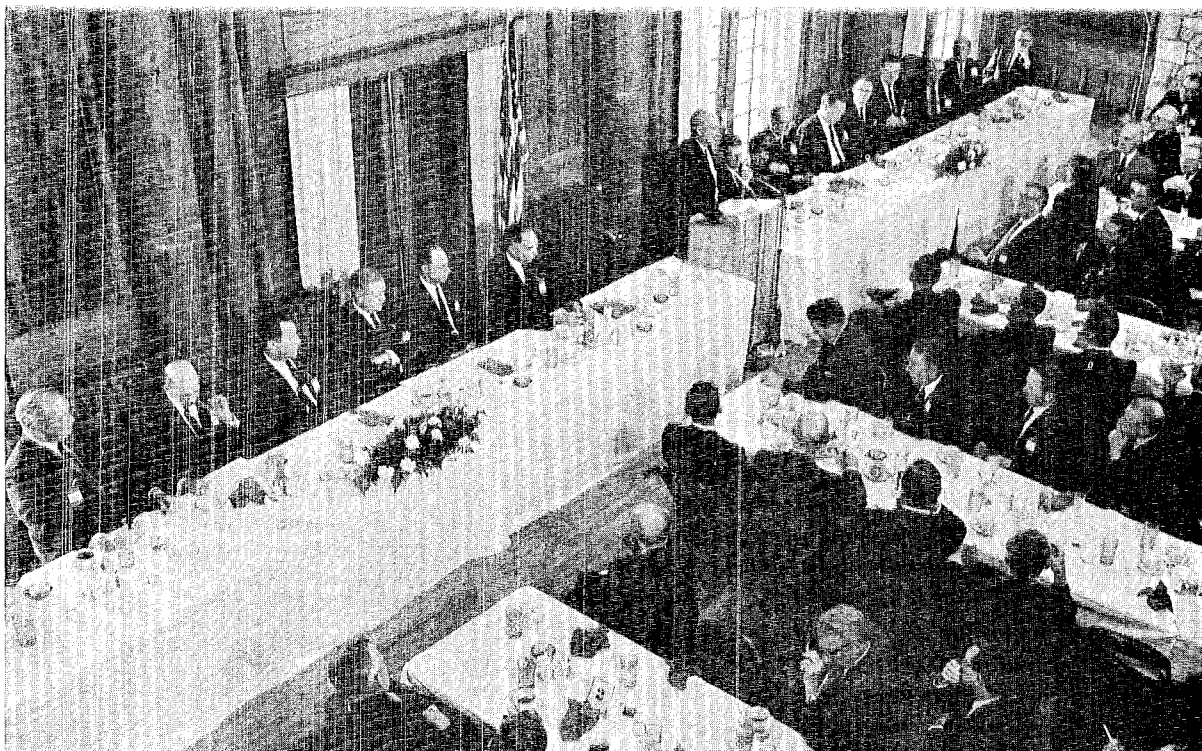
The official guests gathered at the Los Alamos Inn at 11:30 a.m. to receive their badges and locate their places on the seating chart for the luncheon at The Lodge. Return travel arrangements were also confirmed at this time.

A number of long-standing friendships were renewed in the lobby of the Inn--including one of more than two decades between the dean of the University of California Regents, Edwin Pauley, and New Mexico's senior U.S. Senator and head of the state's congressional delegation, Clinton P. Anderson. Pauley was first appointed a Regent in 1938 and is now serving his second 16-year term. He is the only member of the current Board of Regents who was on the Board when the initial contract between the University and the Government was signed 25 years ago.

The first official function on the program was the luncheon at The Lodge where LASL Director Dr. Norris E. Bradbury welcomed the assembled dignitaries--including Robert Underhill, vice president emeritus of the University of California. Underhill negotiated the first Los Alamos contract in 1943 and has been involved in each contract negotiation between the Laboratory and the AEC since that time.

continued on page 42

Historic Fuller Lodge once more assumed role as scientific gathering place.



Tale . . .

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University of California President Charles J. Hitch addressed the visitors and guests and noted: "Where else in this country, I wonder, would the regents and president of a state university have to cross two state lines and a time zone to visit one of their installations!"

President Hitch also paid tribute to Senator Anderson, saying: "I appreciate also the opportunity to greet Senator Clinton Anderson and thank him in person for the great contributions he has made to this Laboratory. It is literally true that without the work of Senator Anderson this Laboratory could not have achieved its world-wide distinction."

Following Hitch, Dr. A. Ray Chamberlain of Colorado State University, who represented Associated Western Universities, Inc., (AWU) traced the history of AWU. This group of universities will be one of the prime users of the Meson Facility.

The final scheduled speaker at the luncheon was AEC Commissioner James T. Ramey who listed a number of LASL's achievements and added: "Another of Los Alamos' contributions has been the annual weapons briefings which have always been a highlight at the beginning of each Joint Committee session. (I believe there was another laboratory or two present also whose names escape me.)"

Commissioner Ramey continued, "A further example of Los Alamos' role in the interaction of public policy and technology has involved the means of maintaining U.S. custody and control of nuclear weapons. I can attest personally to the role of Harold Agnew of Los Alamos, along with his associates at Sandia, in developing 'locks' or safety devices of U.S. nuclear weapons assigned to the NATO command. This 'permissive link' (or PAL) concept, which was developed in response to the necessities of law and public policy as determined by the Joint Committee on Atomic Energy, has been an important contribution to the command and control system for U.S. nuclear weapons, permitting greater control and flexibility by the President and commanders in the field of our dispersed nuclear weapons."

Delivering a few "unscheduled" remarks at the luncheon was AEC Chairman Dr. Glenn T. Seaborg. He noted that some of the visitors would have to leave Los Alamos before the evening's events and he wished to announce that Dr. Bradbury would receive the AEC Citation and medal that evening. This is the highest award the AEC can bestow and Dr. Seaborg praised Dr. Bradbury for his efforts at and on behalf of Los Alamos since the war years.

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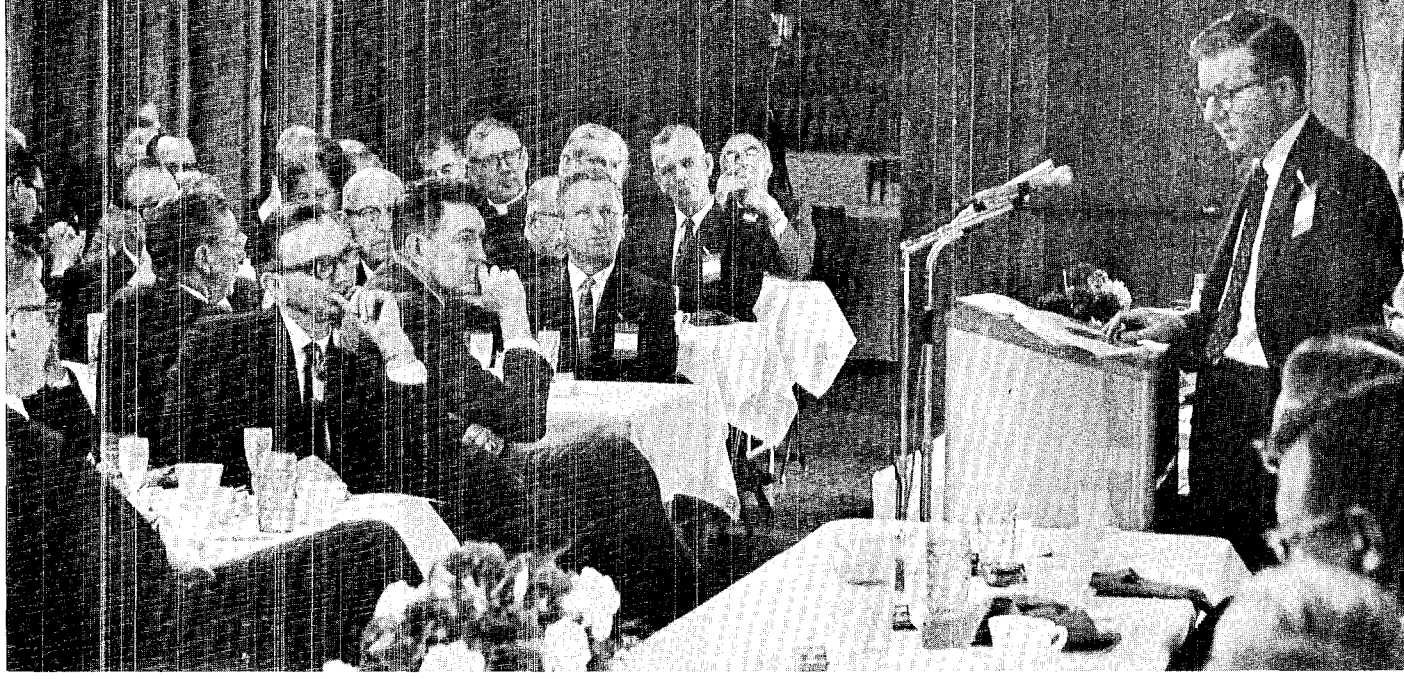
. . . AEC Commissioner James T. Ramey

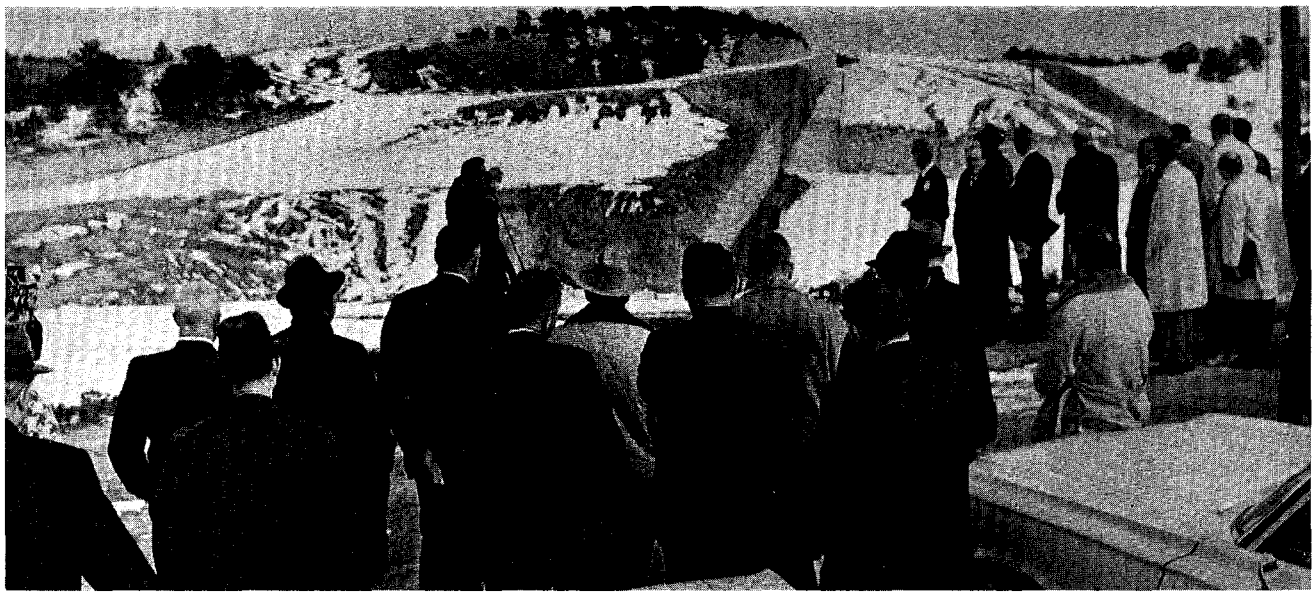
. . . Dr. A. Ray Chamberlain of Associated Western Universities



Luncheon guests at the Lodge heard a variety of speakers including University of California President Charles J. Hitch . . .

. . . Robert Underhill of University of California

. . . and Glenn T. Seaborg with high praise for Norris Bradbury



A frosted view of the Meson site . . .

Commissioner Tape, Congressman Morris, Chairman Seaborg, Commissioner Ramey, Regent Heller and Bradbury at Mesita de Los Alamos.

Following the luncheon the dignitaries boarded buses and cars for a brief visit to the Meson site on the Mesita de Los Alamos. There, they heard a brief explanation by Fred Tesche associate MP division leader, of how the LAMPF would look when built.

In the course of the briefing a television cameraman was the subject of a few black looks when he clambered on the hood of a government car to shoot some footage. He was apparently forgiven, however, when he carefully wiped the hood after he climbed down. (The black looks also disappeared when the cameraman turned his camera on the crowd.)

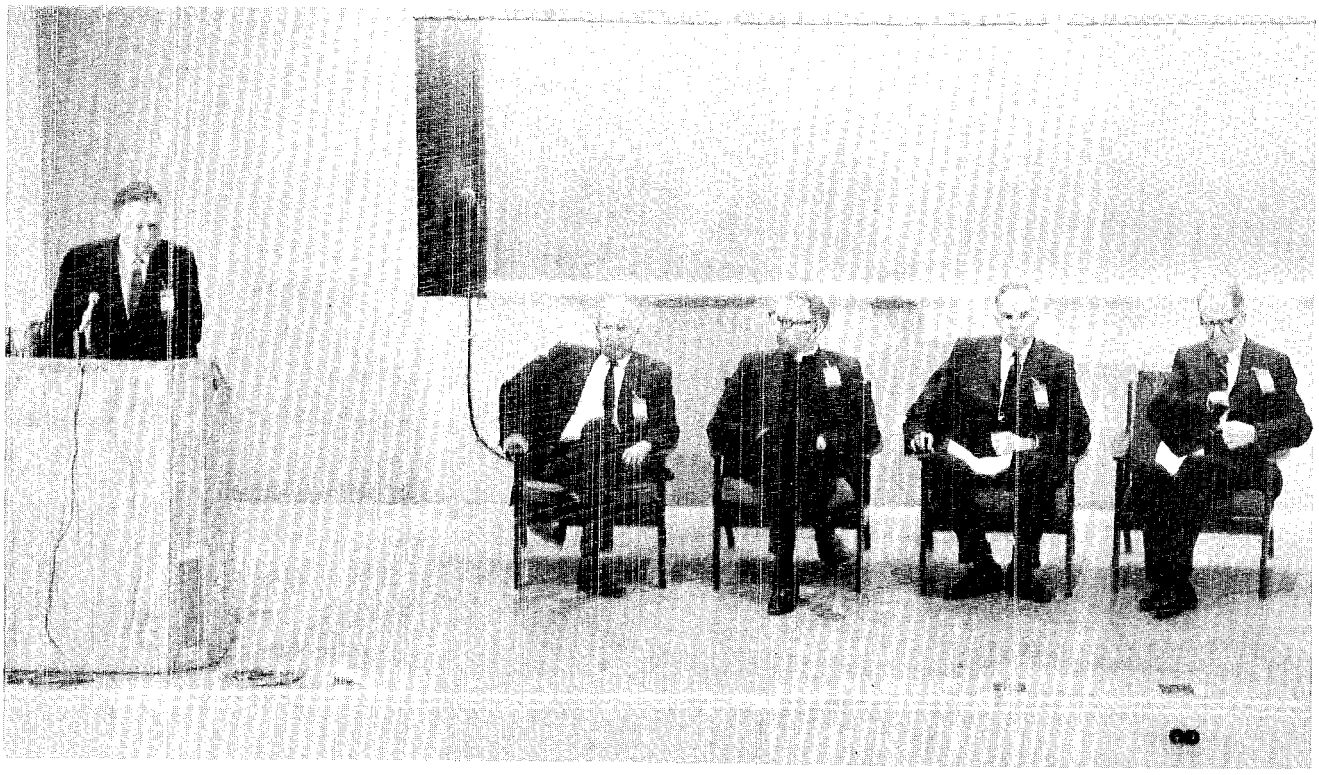
After the briefing on the Mesita, it was back aboard the buses and a trip to the Administration Building auditorium and the "indoor" groundbreaking. (The auditorium was filled for the ceremonies). Seated on the stage were the Rev. William H. Wolfrum, who delivered the invocation; Dr. Bradbury; Dr. Louis Rosen, MP division leader; Senator Anderson; and Chairman Seaborg.

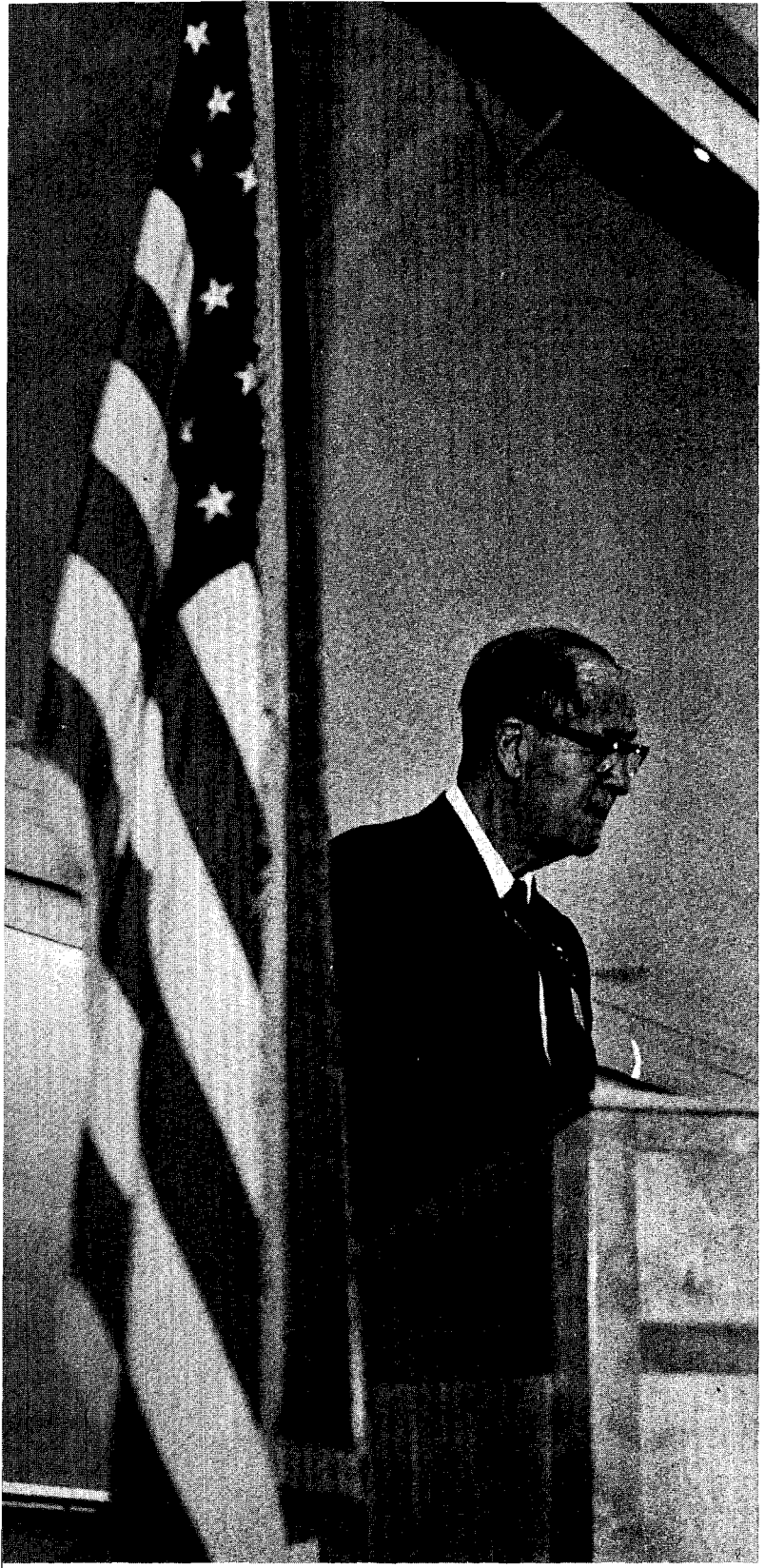
During his talk Dr. Rosen noted that Dr. Bradbury had been a good provider in the efforts to fund LAMPF and added that the Director had help from two of the men on the stage—Chairman Seaborg and Senator Anderson—and perhaps also from the third.

continued on page 46

. . . then an explanation of LAMPF plans by Fred Tesche, left.

"On this day, the Meson facility becomes a national goal and those of us charged with its implementation commit our toil and our professional prestige to its success."





". . . (it) marks the beginning of an expanding scientific and technical community that will raise the stature of the entire Southwest in the world scientific community."—Senator Anderson

". . . start of a new and great venture."—Louis Rosen

Tale . . .

Continued from page 44

In discussing the budgetary problems connected with the Meson facility, Dr. Rosen also said:

"Some of you may have attended a colloquium I presented several weeks ago in this auditorium. When Dr. Manley persuaded me to give the talk, the status of the Meson facility was very much in doubt; but two days prior to the colloquium, the Bureau of the Budget released one million dollars of construction funds. I therefore described our situation as analogous to that of the man who promises his wife a new wardrobe, but when the time comes to make good, he provides her only enough money to buy a new hat. Well, she has at least two courses of action: She can go home to mother, or she can buy the hat and, on the next formal occasion, wear it and nothing else. We adopted the latter course and we have already contracted for the first building which will soon start to rise on La Mesita de Los Alamos. I am pleased to tell you that the Bureau of the Budget released another $2.7 million; and now the lady can have a pair of new shoes as well."

Senator Anderson, in his remarks, noted the ceremony "marks a very significant event in the scientific community of the southwestern United States in that we are establishing here for the first time a 'national facility' that can become a center for the advancement of knowledge on a national and international scale. This facility marks the beginning of an expanding scientific and technical community that will raise the stature of the entire Southwest in the world scientific community."

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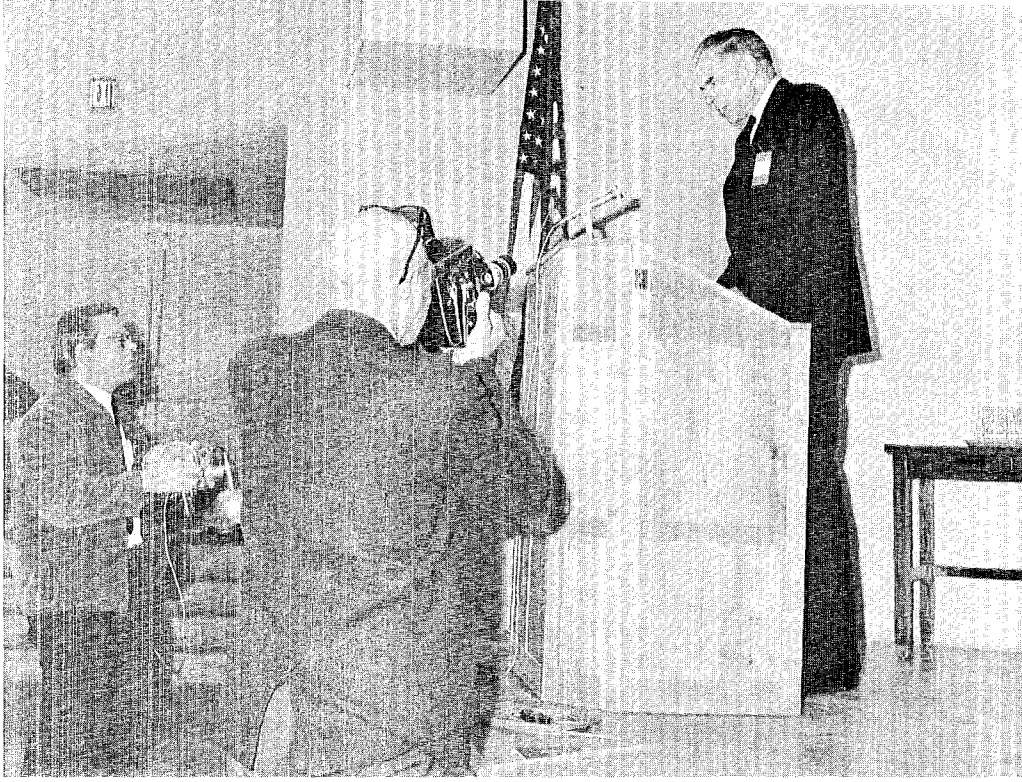

TV coverage was extensive.

One good turn deserved another. . . and another.

Tale . . .

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Before he began his prepared remarks, Chairman Seaborg jokingly told Dr. Bradbury he was wise to invite the AEC Chairman plus the former JCAE chairman to the event "to commit ourselves publicly" to build the LAMPF.

Dr. Seaborg, in his speech, said he trusted it would not be necessary to hold Dr. Bradbury to a commitment the Director made to the AEC in 1964. At that time, Dr. Bradbury was asked if he could build the LAMPF with a cost ceiling of $55 million. Chairman Seaborg said Dr. Bradbury replied: "Agree. No argument. Will build for $55 million or you can use Bradbury's blood to help our cooling system."

The Director later said he was entrusting the care of his blood to Dr. Rosen—whose division is charged with the responsibility of building and using the facility.

Wielding the gold shovels at the "symbolic" groundbreaking in the sandbox on the stage were three men who must be given major credit for the start of construction of LAMPF—Senator Anderson, Chairman Seaborg and Dr. Rosen.

For a number of years Dr. Rosen has discussed, explained and verbally fought for the facility. Chairman Seaborg, long a friend of the Laboratory's, indicated he was receptive to the project. But perhaps it was Senator Anderson who felt the greatest thrill as he lifted his first shovel of sand. Anderson, from his first day in the U.S. Senate nearly 20 years ago, has been a strong LASL supporter. It is well-known in Congress—as well as at the Laboratory—that he wanted to see the Meson facility built. And he has never ceased working towards this end.

A year ago, when President Johnson submitted his supplemental appropriation to the Congress, he included LAMPF. At that time Senator Anderson told the press: "Establishment of this facility assures the

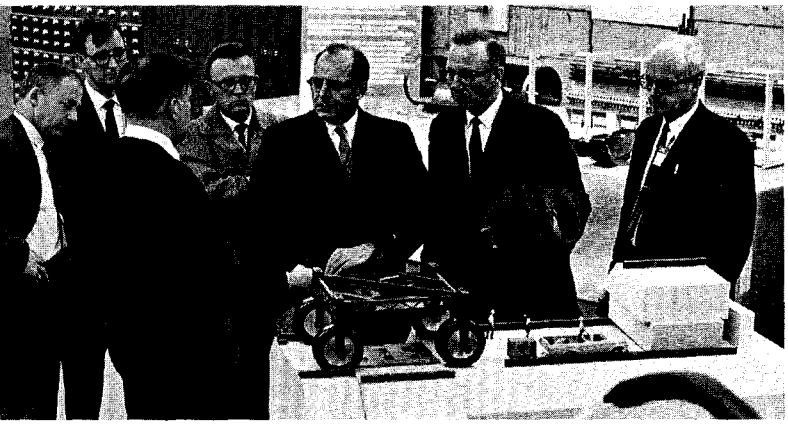
continued on page 50

Regents John Canady (left) and Theodore Meyer (right) and others discuss the festivities.

Arms around the shoulder reunions took place all over the auditorium after the ceremonial turning of sand.

Ah! At last . . .

"Norris, I always knew you could move mountains if necessary."



Guests toured the Electron Prototype Accelerator (EPA) area after attending a briefing on the Meson facility. A Red Room reception followed the tour.

John Manley and J. M. B. Kellogg greet Spofford English, AEC, Washington, assistant general manager for research and development.

Tale...

continued from page 48

long term usefulness of the Laboratory and its staff. It tells the people of Los Alamos that their community is going to continue to be a viable one." He also said the project cost was a "sound investment in scientific research" and noted that not only would the facility be important to the national security but had considerable promise of playing a major role in medical research—particularly in the treatment of cancer.

In another statement issued to the press at that time, Dr. Bradbury said: "In particular, I am grateful to Senator Anderson for his efforts—without his enthusiastic support we would not be where we are."

Thus, without a doubt, Senator Anderson is THE individual who must be credited as the man responsible for the go-ahead on the start of construction of LAMPF.

After the sand was turned (and turned, and turned, and turned . . . for the cameras) the guests adjourned to the Physics Analytical Center where they were briefed on the Meson facility and taken on a tour of the prototype accelerator.

The next item on the day's agenda was a reception in the Red Room honoring official visitors and guests and hosted by the Director.

There was no official dinner that evening—although there was a number of private get-togethers—and then it was 8 p.m. and time for Dr. Seaborg's public address in the Civic Auditorium .

Darol Froman and Leona Libby listen to Kenner Hertford, retired manager of the AEC's Albuquerque Operations Office.

Richard Taschek and R. E. Hollingsworth, general manager AEC, Washington.

then Now and Tomorrow

By Norris E. Bradbury

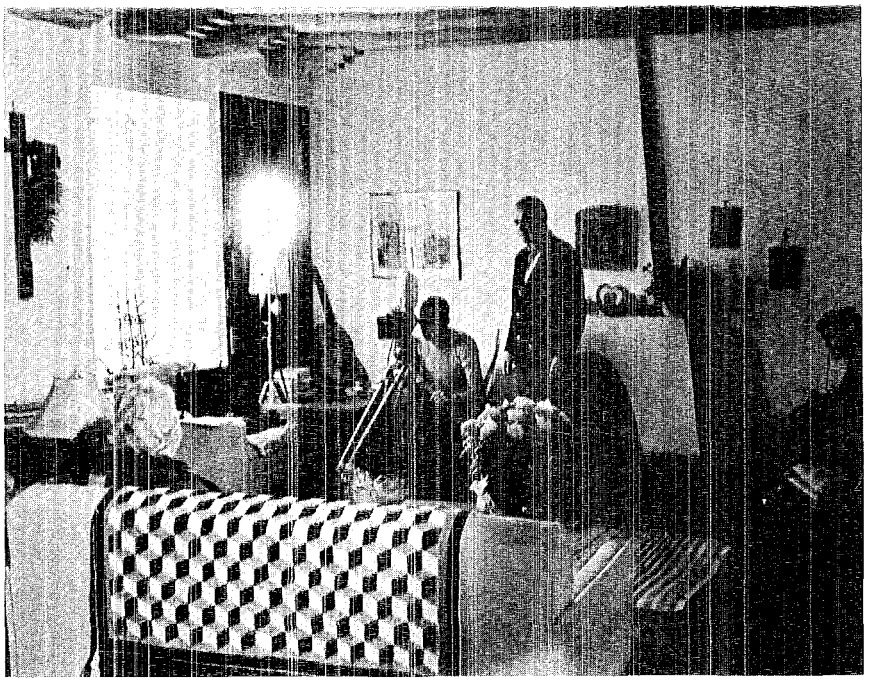
Twenty-five years have enormously changed the superficial appearance of Los Alamos, its streets, its homes, its stores, its medical facilities, its churches, its schools, and the Laboratory itself. All of these have expanded and grown. The Community has become "normal"--even better than normal! But one thing has *not* changed with the passage of time--and that is the spirit and the flavor and the philosophy of our common life together in this totally unique undertaking.

Twenty-five years ago the people of Los Alamos--both civilian and military--were brought together hastily, although not randomly, and asked to accomplish at the highest speed the almost impossible task of making an atomic bomb. This challenge fused an assortment of men and women, civilians and military, scientists and technicians, and builders and makers and repairers into a community of people whose unity in their dedication to the service of their country has never changed.

Today, twenty-five years later, the demands upon the Laboratory have grown and multiplied. Our primary responsibility for research in the application of nuclear energy to national defense remains unchanged. To this responsibility have been added many others. Among them are nuclear energy for space applications, controlled thermonuclear power, specialized nuclear reactors and reactor fuels, nuclear biology, the use and safeguarding nuclear materials in their peaceful applications, to name only a few. To these have recently been added a new and most exciting requirement: To build for the Laboratory, the Rocky Mountain region, and the United States a new and unique accelerator, our "Meson Factory." All of these challenges have a common character--a character of dedicated service to our country and to its scientific and technical needs.

Los Alamos can do these things because Los Alamos has been, is, and will remain a unique place. It is not just a Laboratory; it is not just a community. It is both, and from this comes its special character, its ability, and its accomplishments.

Los Alamos is not only greater than the sum of all its parts--it IS all its parts and must remain so.



Director Gordon Burwash, standing, interviewed Dorothy McKibbin in the room which was the scene for 13 wartime Los Alamos weddings.

Dorothy McKibbin On Camera

Mrs. Dorothy McKibbin, who became the University of California's first Project Y employe in March, 1943, and presided until retirement over the front door for Los Alamos at 109 East Palace Avenue in Santa Fe, recently recalled for a film interview incidents relating to Enrico Fermi.

Fermi's life will be the subject for an educational film sponsored by Harvard Project Physics, a curriculum development group supported by the U.S. Office of Education and the National Science Foundation.

A production crew from the Visual Education Centre of Toronto, Canada, directed by Gordon Burwash, filmed background footage at Los Alamos and Santa Fe as well as live, on camera interviews with such other LASL friends of Fermi as W Division Leader Harold Agnew and his wife, Beverly; L. D. P. King, Rover Flight Safety office; Nicholas Metropolis, TDO; and John Marshall, P-17.

what's doing

LOS ALAMOS CONCERT ASSOCIATION:
Los Alamos:
Tuesday, April 2—Guarneri String Quartet, 8:15 p.m., Civic Auditorium.
Santa Fe:
Wednesday, March 13—Edith Peinemann, violinist, 8:15 p.m., Lensic Theater, 211 W. San Francisco.

LOS ALAMOS SINFONIETTA: Chamber Concert, Sunday, March 10, 4 p.m., The Lodge. Don Beene conducting. Included will be the Kinder Symphony by Haydn; "The Hollow Men," by Persichetti (trumpet solo with string accompaniment); a brass ensemble and string quartet. Admission by season ticket or at the door. $1.50 adults; 75 cents, children.

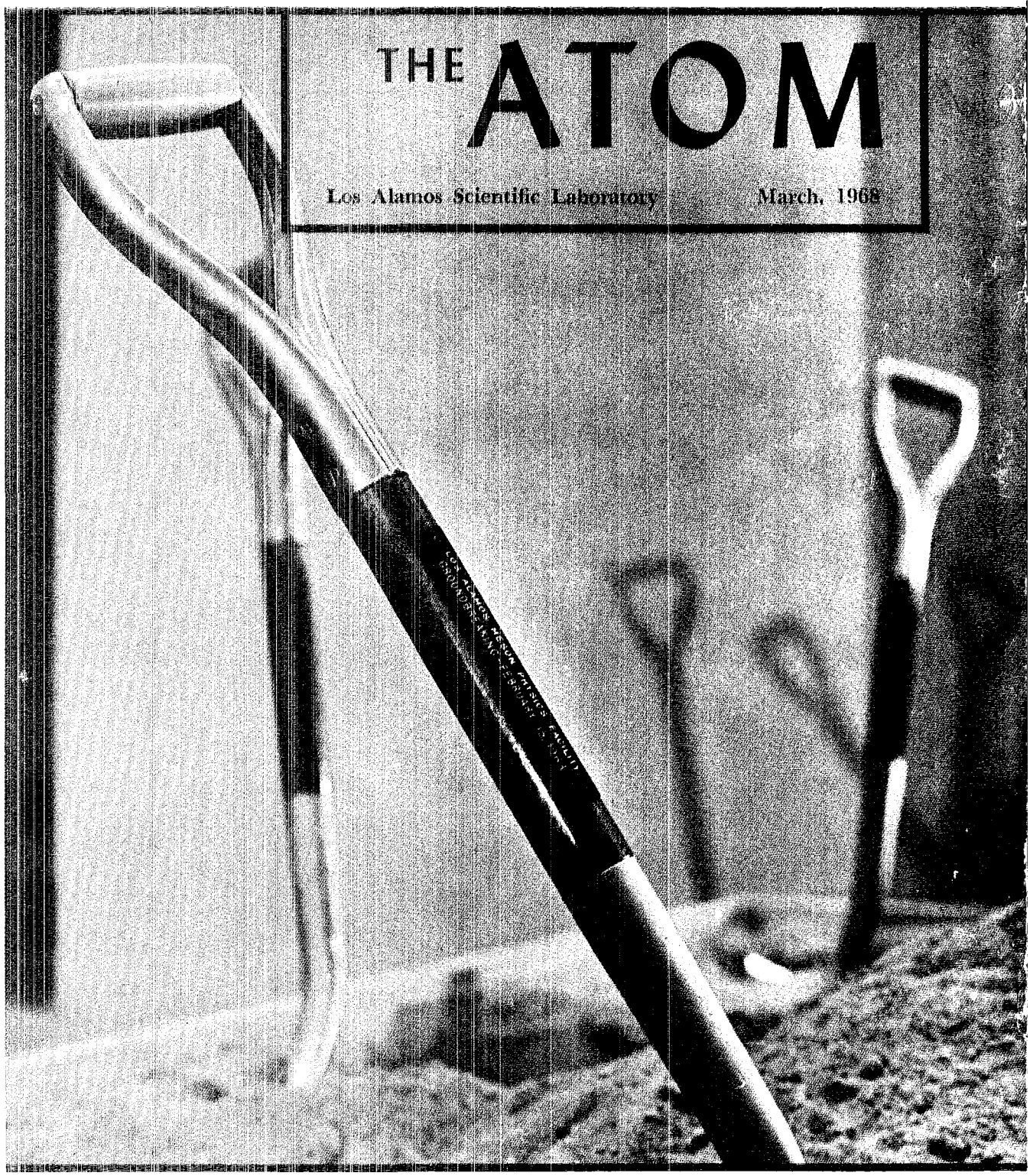
OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information about specific hikes.
Saturday, March 16, Water Canyon to Rio Grande and out Pajarito Canyon. Virginia Winsor, Leader, 2-3440.
Saturday, March 30, Short hike in Bandelier. Betty Perkins, leader, 8-4916.
Sunday, April 7, Buckman Mesa. Betty Hansbury, leader, 8-4104.

MESA PUBLIC LIBRARY EXHIBITS:
Art Exhibit:
March 1 through 31—Figures and Watercolors by William Warrell.
Case Exhibit:
March 1 through 18—Girl Scouts of America exhibit.

LOS ALAMOS CHORAL SOCIETY, with Los Alamos Sinfonietta (joint presentation), "King David," by Honegger, Sunday, April 21, 3 p.m., Civic Auditorium. Sinfonietta season tickets will apply; individual ticket sales (available April 1) from Decol's, Hayes Jewelers, Gift-World Imports, or from members. Advance tickets $1.50 for adults ($1.75 at door); students 75¢.

PUBLIC SWIMMING: Los Alamos High School pool. Adults 50 cents; students 25 cents. Pool closed Thursdays.
Monday through Wednesday, 7:30 to 9 p.m.
Saturday and Sunday, 1 to 5 p.m.
Sunday, 7 to 9 p.m. Adults only.

An aerial picture of Los Alamos and the surrounding area, taken in the mid-1920's, was presented to the Los Alamos County Commission during ceremonies marking the 25th anniversary observance of LASL. Robert Y. Porton, PUB-2 group leader (right), acquired a copy of the photograph recently from Nerses Krikorian, CMB-3. One copy of the photo is hanging in the science museum near another photograph of the same general area taken in the 1960's and a second copy was presented by Porton on behalf of the Laboratory to the County Commission for hanging in the Los Alamos County Municipal Building. The commissioners are (left to right) Steve Stoddard, CMB-6, Dr. James Loucks and Martin Gursky, T-9.



THE ATOM

Los Alamos Scientific Laboratory — March, 1968