Book Reviews

Universities and the National Laboratories

A Special Interest. The Atomic Energy Commission, Argonne National Laboratory, and the Midwestern Universities. LEONARD GREENBAUM. University of Michigan Press, Ann Arbor, 1971. xxii, 222 pp. + plates. $10.

In order to carry out its extraordinary scientific mission during World War II, the Manhattan Engineer District contracted with three universities to operate laboratories for it. Under a contract with the University of California, E. O. Lawrence's famed Radiation Laboratory at Berkeley was converted to work on the electromagnetic separation of uranium isotopes, and the weapons laboratory at Los Alamos, directed by J. Robert Oppenheimer, was established and operated. The work on nuclear piles and plutonium was carried out under a contract with the University of Chicago, in university facilities and later also in government facilities at the Clinton Laboratories in Oak Ridge. Work on the gaseous diffusion separation of uranium isotopes was centered in New York under a contract with Columbia University.

At the end of the war the dramatic success of the Manhattan Project led to a continuing national commitment to federally supported research in nuclear physics and chemistry. The pattern of operating federally owned laboratories under contract with universities was already established, but several changes were dictated by the new postwar situation. Research on gaseous diffusion was transferred to the plant at Oak Ridge and the Columbia contract terminated, the northeast being left without a national laboratory. The Clinton Laboratories had been transferred from the University of Chicago to an industrial contractor (Monsanto). In Chicago a large research staff continued work both in University of Chicago facilities and at reactor installations in the Argonne Forest Preserve. Work on electromagnetic separation was stopped and the Radiation Laboratory at Berkeley returned to its original mission of accelerators and high energy physics, but now under the same Manhattan District contract with total government financing. The contract with the University of California for Los Alamos was, of course, continued, and with an expansion of staff and dollars.

The central facility in the Clinton Laboratories was the only operating relatively high-power pile or nuclear reactor in the country. There were also strong and well-staffed physics and chemistry divisions there, but the Manhattan District did not conceive of this laboratory as playing a significant basic-research role in the postwar period. This left Argonne as the only national general nuclear laboratory in operation after the war. As those planning the future peacetime atomic energy effort then saw it, that laboratory would become the primary center of postwar research for the nation, with other laboratories playing secondary or specialized roles. In view of this expected leading role in the national program, both the laboratory staff and the University of Chicago felt the necessity of securing a broader university base for Argonne. Representatives of several other universities were invited to an exploratory meeting by the University of Chicago. A recommendation to the Manhattan District followed, calling for the formation of an advisory council of representatives of 24 specified midwestern institutions which would elect an executive board to advise the government on the operation of Argonne; Chicago would continue as the operating contractor until the permanent Atomic Energy Commission was set up, after which the council would incorporate and take over the contract, and the executive board would become the board of directors of the laboratory.

The complicated and rather sad history of what ensued from this recommendation is told in this book, which was commissioned by the Associated Midwest Universities from its own funds. The author is the assistant director of the nuclear project of the University of Michigan (the Phoenix Project) and was certainly an ideal choice for carrying out the difficult assignment. The book is engagingly written in a clear and interesting style. The author has skillfully avoided personal and institutional recriminations and the placing of guilt in what still remains an emotion-ridden situation. Judged from all this reviewer knows of the facts along the way and the individuals involved, the book achieves a high order of factual and discriminating reporting.

The organization that emerged from the midwest committee recommendation was the Council of Participating Institutions, with a smaller elected Board of Governors. This board conceived its purpose and mission to be to govern the Argonne Laboratory and control its program and policies. The Manhattan District and later the Atomic Energy Commission, however, looked upon that laboratory as one component in the total national program for which they were responsible to the Congress. Neither could relinquish or even share this responsibility with either the Board of Governors or the University of Chicago. AEC contractors are free to urge new programs and policies on the Commission, but every program is submitted and justified to the Congress by the AEC, not by the contractor. Between these two views of governing Argonne, the University of Chicago was caught in the middle. Some of the board's recommendations were followed, such as the selection of the present site for the laboratory and the construction of student housing on the site. But a series of incidents in which AEC announced major decisions without consulting or even informing the board gave rise to increasing disillusionment with the role of "governing" the laboratory.

In the meantime a group of nine northeastern universities had formed Associated Universities, Incorporated, and had a contract with the AEC to build and eventually operate Brookhaven National Laboratory on Long Island. At Oak Ridge a number of southern universities had incorporated what is now Oak Ridge Associated Universities (then called the Oak Ridge Institutes for Nuclear Studies) and had a contract with AEC separate from the AEC's contract with Union Carbide for the operation of Oak Ridge National Laboratory. ORAU has cooperated closely with ORNL for 25 years, but its

board of directors has never presumed to play any role in Union Carbide's management of ORNL or to advise the AEC concerning its management or programs. In the far west the University of California continued unperturbed with its contracts for the radiation and Los Alamos laboratories. The midwestern universities looked on Associated Universities, Incorporated, as the ideal model for the operation of Argonne, but the AEC, with a host of other pressing problems, did not want to change the contractor for a major facility which played a vital role in the achievement of its mission when it already had an established and adequate one in the University of Chicago.

When the AEC built the multi-Gev cosmotron at Brookhaven and the bevatron at Berkeley, a strong movement arose for such an accelerator in the midwest. With Associated Universities as a model, however, the midwestern universities were determined not to have the accelerator built at Argonne under the University of Chicago contract. Instead they formed a separate corporation, Midwest Universities Research Association (MURA), in 1954 and chose a site in Madison, Wisconsin. Then four years later many of the same institutions and others incorporated Associated Midwest Universities, and it contracted with AEC two years later to carry out liaison functions between the universities and Argonne. Thus arose the anomaly of two university associations, one anti-Argonne and the other pro-Argonne, a majority of whose members were the same institutions! The anomaly was intensified when in the fall of 1963 authorization was being requested which would have resulted in two 12-Gev accelerators in the midwest, one at Argonne and the other at Madison under MURA. One of Lyndon Johnson's first acts as president was to kill this authorization and along with it MURA.

Throughout this academic bickering over its control, Argonne itself was developing steadily as one of the nation's great scientific institutions. Its staff had a distinguished record of publication representing substantial contributions to 20th-century science. Increasing numbers of professors and students from midwestern institutions, particularly in nuclear engineering, were using the laboratory. One of the great discoveries of recent science, the chemical compounds of the noble gas xenon, was made there by a visiting faculty member in collaboration with Argonne staff. Thus while the controversy raged at the upper level of university deans and administrators, Argonne was all along playing the role with faculty and students originally intended for it by the Council of Participating Institutions.

By way of healing the deep wounds left in the wake of the MURA decision, the universities, with the support of the AEC, dissolved both MURA and AMU and formed in their place Argonne Universities Association, which now shares with the University of Chicago the contract for the operation of Argonne. At long last the idea of the universities' "controlling" and "governing" the laboratory was actualized. One suspects, however, that the association's board of trustees may be discovering that this is a hollow victory. In all AEC multipurpose laboratories, mission-oriented programs are controlled and governed almost exclusively by the headquarters division responsible, while basic research programs are governed by the scientific staff, as they are at universities, within the limits of the funds the headquarters division is willing to provide. The board of trustees of the contractor, after the crucial step of appointing the laboratory director with AEC approval, is left in practice with no very significant input into the process.

This book provides an interesting and informative object lesson for academic institutions and scientists in general when they choose to enter the arena of American politics. Its title comes from a comment made by Oppenheimer, who through much of the controversy was chairman of the AEC General Advisory Committee: "I think on this we probably pushed the Commission and they regarded us as people who were, after all, largely professors and university presidents and we were pleading a special interest. We did plead a special interest, but we believed it to be in the national interest, too." Many other special-interest groups in our society believe also that they are working for the national interest. But what this book teaches very clearly is that even so influential and nominally objective a special interest as a group of our most distinguished academic institutions, when they push a federal agency, and ultimately the President and the Congress, too far, must yield to the power of these authorities to finally decide what the national interest is.

The legacy left to the nation by the Manhattan District for the operation of large federal laboratories and industrial plants by private and other nongovernment corporations is a precious one from which the nation has gained great strength. The AEC has retained this mode of operation and a few other agencies have used it in a few cases. The great hope is that more federal agencies will come to see the great potential of this method for carrying out their missions. If they are to do so, the responsibility rests primarily on the AEC contractors to demonstrate that this arrangement does not generate intolerable problems for the agency employing it and that contractors can be depended upon to genuinely cooperate with the agency toward the maximum achievement of its mission. The nation faces grave problems in the '70's and '80's for which our very best science and technology will be required. The best and the most lasting service which the publication of this book will perform will be to persuade contractors, and especially incorporated university associations, of the grave responsibility that rests upon them to make the system work, not for any special interest, but for the greater national interest.

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The Uncloistering of Science

The American Ideology of National Science, 1919–1930. RONALD C. TOBEY. University of Pittsburgh Press, Pittsburgh, 1971. xiv, 264 pp. $9.95.

In this slim volume Tobey relates the fascinating story of attempts made by a group of leaders of the American scientific community to transfer the new organization and high status that science achieved during World War I into the postwar period. The war with its new demands upon science had accelerated the tendency, which had existed before the beginning of the century, toward cooperative effort and centralization of scientific activity. It had brought scientists out of their cloistered laboratories and placed them in the public eye as never before. To many scientists—George Ellery Hale, Robert A. Millikan, E. E. Slosson, and others—the days of individual effort were gone forever and science had been launched into a new era in which continued productivity would depend upon unity on the part of scientists and broad popular support. Thus they embarked