Those early days as we remember them Part V

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Editor's note: *Dr. Farrington Daniels was Director of the Metallurgical Laboratory when it became Argonne National Laboratory on July 1, 1946. At that time he returned to his chemistry professorship at the University of Wisconsin, from which he had been recruited for the Manhattan Project in its early days. He was active in the Participating Institutions Program (Argonne's first vehicle for interrelationships with the academic community), serving as a member of the organization's Council Executive Board, and he has continued his association with the Laboratory in various capacities ever since.*

Dr. Daniels went on to become Professor Emeritus of Chemistryat the University of Wisconsin, continuing his research on the utilization of solar energy, a field in which he was a pioneer, at the College of Engineering of the University.

The Argonne National Laboratory is one of the great laboratories of the world, and I am proud indeed to have had a small part in its establishment when it was created by transferring to it the assets of the old Metallurgical Laboratory at the University of Chicago. On this, the 25th anniversary of its founding, I am glad to be invited to record some of my recollections of that important event.

I remember vividly the many long conferences which, as Director of the "Met Lab," I had with Arthur Compton and Norman Hilberry in 1945 and 1946 concerning the future of the laboratory. The question was: How could this great asset for the newly emerged science and technology of atomic energy best be used after the war to maintain the leadership of the United States and to assure development of peaceful uses of this great new source of power? And how could the technical staff, the unique laboratory equipment and "know-how" be effectively shared with the universities of the Middle West?

We had to find new quarters because the University of Chicago needed the many buildings and facilities which it had so generously given to the Metallurgical Laboratory for the duration of the war. Our first attempt was to use Site A, the 40-acre site with the nuclear reactor in the Cook County Forest Preserve which also had been loaned to us for the duration of the war. But the Park Commissioners refused to consider an extension of our lease. They stated that they had had great difficulty in eliminating from the park church properties, food vendors, and a cemetery, and they could not give up even a small area of the park. We pointed out the historic value of the early nuclear reactor as a tourist attraction, but they replied that they could attract more tourists by exhibiting a twoheaded calf. We were disappointed, but in retrospect we were most fortunate. Imagine the present Argonne Laboratory crowded onto 40 acres.

We decided then to try to move to the present site of 3,700 acres in DuPage County. The land was not expensive at the time, and it was not too far from the University of Chicago and the airport. I remember the heavy fog which greeted General Groves and Colonel Nichols when they came to inspect the site that we had chosen. We took them through it with a visibility of only 100 feet, but they approved the site. The reaction of the people located in the area was mixed. One farm had been in a family for three generations and moving was painful. Some feared that the influx of personnel might change the political complexion of the community. Others welcomed the new project. I recall the eager visit of the members of the newly created Atomic Energy Commission as they were trying to obtain a background for meeting their heavy new responsibilities. I remember the challenging offer to me to continue as director of the new laboratory but which I was prevented from accepting by the transfer to Oak Ridge of the new power pile project and my obligation to return to the University of Wisconsin.

Later, I participated in the Policy Advisory Board meetings with President Kimpton and then with President Beadle of the University of Chicago.

Vivid in memory, also, is the experience while director of the Metallurgical Laboratory in 1945-46 of seeing the awakening of the social conscience of the scientists. Before the war was ended, in part through the use of the atomic bomb, the atomic scientists were deeply concerned over the social and political responsibilities of their work. This pioneering in the discussion of the human implications of atomic energy met with objections from the Army, which insisted on complete secrecy, but the young scientists of the Laboratory went to Washington at their own expense and on their own time to educate Congress on the implications of the atomic bomb and to appeal for civilian control of atomic energy. They founded the *Bulletin of the Atomic Scientists*, which ever since has continued vigorously concerning itself with limitations on atomic warfare and matters of science and public affairs-national and international.

Accomplishments of Argonne

It took three years to go from the discovery of nuclear fission to a self-sustaining nuclear chain reaction; and three years more to the atomic bomb and the end of the war. And now controlled nuclear power reactors are here on a large scale, just in time to help meet the ever-increasing demands for more electrical power. These achievements involved the imagination and cooperation of scientists, engineers, Army and administrators on a scale perhaps never before achieved. Many new technical problems were solved so quickly and so successfully that confidence in the power of organized research perhaps became overrated.

Calculated risks of the dangers involved and the money invested had to be taken, but the record shows that great wisdom was shown by Arthur Compton, General Groves, Colonel Nichols, and down through a long line of administrators. The safety record has been extraordinary. The quick scale-up from less than a microgram of plutonium to more than a kilogram, a billionfold increase, was phenomenally successful. Glenn Seaborg was active in this program.

The new developments have been extraordinary-industrial electrical power on a vast scale, the widespread use of isotopes, the development of new radiation instruments, high energy testing facilities in Idaho and elsewhere, and high voltage facilities for the basic study of nuclear physics. Throughout the atomic energy program, scientists have been eager to build new facilities and the Atomic Energy Commission has had to decide which of many worthy projects to support.

Frustrations and disappointments have been keen when decisions have been made not to complete new and worthwhile projects. The fact that there have been many more good ideas than could be supported financially attests to the vigor of the research staffs at the national atomic energy laboratories and the universities. The contributions of the Argonne staff have been outstanding. They are too numerous to record, but as one example, one can point to the achievements of the Chemistry Division in developing completely deuterated chemical and biological compounds; discovering the chemical compounds of xenon and radon, gases which were thought to have zero valence; and the hydrated electron.

Many pioneering programs were carried out as recommended by the Argonne staff and the cooperating midwest universities, including new nuclear reactors, high voltage accelerators, and adequate housing and dormitory facilities for visiting scientists from around the world.

Walter H. Zinn (left) and Farrington Daniels studying map of Argonne's proposed site.

Early Leaders

The unquestioned early leader and pioneer was Arthur Compton. The first Director of the Argonne National Laboratory was Walter Zinn, who was in the project from the beginning. He was an active experimentalist who got things done. I remember the admiration which the Russian scientists expressed for him at the first international conference in Geneva in 1955 when he described the experiments in which a new boiling water reactor was allowed to blow itself up under conditions which could be studied. Without Dr. Zinn's early drive for nuclear reactors, the present nuclear power program would not now be so far advanced. Norman Hilberry followed Dr. Zinn as director, and he was enthusiastic and friendly and strengthened the cooperation within the laboratory and between the laboratory and the midwest universities.

The University of Chicago has had the responsibility for operating the laboratory, starting with President Robert Hutchins' decision to accept the secret project in 1941 before the war started. William Harrell was in charge of the business matters for a quarter of a century, and he was able and efficient in meeting these responsibilities. Warren Johnson represented the University of Chicago on scientific and professional matters, and he was always sympathetic and made wise policy decisions. Presidents Kimpton and Beadle took active and detailed interest in the Argonne National Laboratory and its relations with the midwest universities.

Farrington Daniels (left) presenting Arthur H. Compton (right) with a certificate authored by the scientists of the Metallurgical Laboratory "in appreciation of his broad vision, courageous and inspiring leadership, and his unfailing sympathetic support in the research and development required for the production of plutonium which contributed to the successful termination of the Second World War." Looking on is Colonel Arthur V. Peterson of the Manhattan District. Image Credit: University of Chicago Photographic Archive, [apf1-01872r], Special Collections Research Center, University of Chicago Library.

Starting in 1950, Dr. Joseph Boyce was appointed to increase participation by the midwest universities in the Argonne programs. At the end of the first year, he reported seven faculty and nine graduate students from seven universities in temporary residence. He initiated film badge services to 18 institutions, and he worked diligently to expand the cooperative programs.

It has been a great satisfaction to note the successful careers of many of the division leaders who were appointed to the staff of the Metallurgical Laboratory in 1946 and transferred to the Argonne National Laboratory. This list includes, among many others: Norman Hilberry, Walter Zinn, Winston Manning in Chemistry, Stephen Lawroski in Chemical Engineering, Frank Foote in Metallurgy, Hoylande Young in Library and Records, John Rose in Health Physics, and Austin Brues in the Biological and Medical Research Division.

Conclusion

The record of Argonne's service to the midwest universities is an impressive one. The universities also have made significant contributions to Argonne through their visiting scientists and the review committees which for over a decade have continuously studied and evaluated the research programs of the different divisions of Argonne National Laboratory. These efforts have involved the devoted services of many men. The Laboratory has an excellent record of achievement and service in the development of atomic energy and in the advancement of science over the past quarter century. May it so continue.

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