A Conversation with Lee Alvin DuBridge – Part I

Judith R. Goodstein*

Physicist Lee A. DuBridge became president of the California Institute of Technology in 1946. In this interview he recalls the immediate problems he faced, including his dealings with Robert A. Millikan, whom he replaced as chief administrator of the institute; institute financing and inadequate salaries. DuBridge also talks about the advent of federal support for peacetime science and Millikan’s distaste for it; his close working relationship with Robert F. Bacher, who came to the institute in 1949 as chairman of the Division of Physics, Mathematics, and Astronomy; his recollections of the meteorologist Irving P. Krick, the physicist Alexander Goetz, and the chemist Linus Pauling; and his attempts to build up the Humanities Division.

Key words: Lee A. DuBridge; Robert F. Bacher; Robert A. Millikan; Charles C. Lauritsen; Earnest Watson; Irving P. Krick; Linus Pauling; Ira S. Bowen; Max Mason; physics history; Caltech.

As part of the California Institute of Technology Oral History Project, Caltech Archivist Judith R. Goodstein interviewed the physicist Lee A. DuBridge, president of Caltech 1946–1968, in the Caltech Archives in Pasadena on February 19 and 20, 1981. DuBridge, one of the most influential American scientists of the last century, was born in Terre Haute, Indiana, on September 21, 1901. In 1918, when he entered Cornell College in Mount Vernon, Iowa, he intended to major in chemistry, but his sophomore physics teacher, Dr. Orrin Harold Smith, inspired him to become a physicist. Smith took DuBridge under his wing, hiring him as a teaching assistant in the laboratory and arranging his appointment, following graduation in 1922, as a teaching assistant in physics at the University of Wisconsin. At Wisconsin, DuBridge plunged into the world of modern physics with a course in atomic structure from Charles Mendenhall, the department chairman, which entailed learning scientific German in order to follow the assigned text, Arnold Sommerfeld’s 400-page Atombau und Spektrallinien. He took the standard graduate courses in physics for that era: thermodynamics (with L. R. Ingersoll), electricity and magnetism (with J. R. Roe-buck), statistical mechanics (with Max Mason), mathematical physics (with Warren Weaver). In the fall of 1925, after completing his dissertation research on the photoelectric properties of platinum, DuBridge successfully defended his thesis, mailed it off to the Physical Review for publication, and married his college sweetheart, Doris May Koht. He spent the next nine months at Wisconsin as an instructor in physics, teaching a full schedule and carrying on additional research in photoelectric emission.

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DuBridge spent two years at Caltech (1926–1928) as a National Research Council fellow under Robert Millikan’s direction, followed by six years in the Physics Department at Washington University (1928–1934), moving up the ranks from assistant to associate professor in 1933. The following year, DuBridge accepted an appointment as professor of physics and chairman of the Physics Department at the University of Rochester, where in 1938 he became dean of the faculty. At Rochester, DuBridge took up nuclear physics, inspired by the work of the Berkeley physicists Ernest O. Lawrence and Donald Cooksey, and arranged for Rochester to build a cyclotron. By autumn 1938, he later wrote, “we had the equipment in operation, producing protons of energy of about 5 million electron-volts – later raised to 6 or 7. In those days, this was the highest-energy proton beam in existence.”

In 1940, a year after war broke out in Europe, DuBridge took a leave of absence from Rochester, moved his family to Belmont, Massachusetts, and set up shop at M.I.T., where he organized and directed a facility whose official name was the Radiation Laboratory but was quickly shortened to the Rad Lab. DuBridge’s wartime laboratory developed microwave equipment for detecting the position of enemy aircraft – a technique later called radar (for RAdio Direction And Range) – in the centimeter-wavelength range.

In early 1946, DuBridge returned to the University of Rochester, only to realize that he couldn’t easily go back to the prescribed routine of teaching and research in a university physics department. He had been a superb wartime administrator, and on September 1, 1946, he became president of Caltech. When the National Science Foundation was established in 1950, President Truman appointed him to the National Science Board, its policy-making branch. DuBridge served as chairman of many committees and boards in postwar Washington, including, from 1952 to 1956, the Science Advisory Committee of the Office of Defense Mobilization (later the President’s Science Advisory Committee). Meanwhile, he continued to build Caltech into one of the finest science institutes in the country, retiring from the presidency in 1969 to become special assistant for science and technology to President Richard Nixon.

Lee DuBridge died on January 23, 1993, in Duarte, California.

The following is a transcript of the first session of the interview on February 19, 1981, lightly edited, with occasional explanatory brackets and footnotes. The second session will appear in the next issue.

Goodstein: In 1946, when you came here as Caltech’s president from the University of Rochester, you must have been aware that you had a formidable predecessor [Robert A. Millikan, Caltech’s chief executive from 1920 to 1945]. I think it was Warren Weaver who remarked that “no man could possibly succeed as president of C.I.T. [California Institute of Technology] unless R.A.M. can be persuaded to take his hand off the institute.” Were there any problems along these lines?

DuBridge: Warren and I were good friends. He was obviously concerned that if I came out here Millikan would still try to run the institute. Well, that wasn’t my idea.

Warren, you know, had a great affection for Caltech. He’d been here – he was an assistant professor of mathematics here, 1917 to 1920. [He] was also my