



Herbert E. Hudson Jr.

Herbert E. Hudson, Jr

1910–1983

By Richard Hazen

Herbert E. Hudson, Jr., principal engineer and chairman of the board of Water and Air Research, Inc., died on September 13, 1983. Born in Chicago on September 21, 1910, he attended Chicago public schools, Crane Technical High School, and the Northwestern Military and Naval Academy at Lake Geneva, Wisconsin. He entered the University of Illinois at Urbana in 1927 and graduated in 1931 with a B.S. in civil engineering (he pursued the sanitary engineering study option). He and Annabelle Woods were married May 28, 1932.

Better than any school for his future career, however, were Hudson's ten years as an assistant to J. R. Baylis, director of the Chicago Experimental Filtration Plant. For many years, Chicago counted on ever longer and deeper intakes from Lake Michigan to provide good water. By 1930, however, the need for filtration could not be ignored. Baylis was unusually competent and thorough. With Hudson doing much of the legwork, the two missed few aspects of water conditions in Lake Michigan and of the best way to treat them.

Between 1941 and 1942 Hudson worked on the design of the South Filtration Plant (at 320 megagallons per day [mgd], the largest in the world) and thereafter became a research associate in the chemistry department at the University of Illinois, working on the removal of chemical warfare

agents from water and on the development of needed analytical methods.

In 1944 Hudson entered the U.S. Army, serving first in the Sanitary Corps and then in the U.S. Army Corps of Engineers. He continued his studies on the removal of chemical agents from water at the Medical Research Laboratory at Edgewood Arsenal in Maryland. Later, at the Engineering Research and Development Laboratory, Fort Belvoir, Virginia, he worked on the development of diatomite filters for field use by troops. His final assignment—to the Engineer Section, Combined Intelligence Objectives Subcommittee—took him to England, France, and Germany to gather information on German field-water-purification processes. He remained in the U.S. Army Reserves until 1958, when he retired with the rank of major.

Returning to Chicago, Hudson worked a short time for the Chicago Department of Public Works before being named head of the Engineering Subdivision of the Illinois State Water Survey in Urbana. From 1946 to 1955 he was in charge of the collection of statewide data on ground, surface, and atmospheric water resources, as well as the analysis and publication of official reports on water resources. The experience brought him a broad base of information on water resources in the Midwest, information that included both their development and shortcomings. It also gave him substantial knowledge and understanding of geology and ground-water developments, which he put to good use after leaving the Water Survey.

In 1955 Herbert Hudson joined the engineering firm of Hazen and Sawyer in Detroit. He subsequently took charge of the design of a 200-mgd addition to Detroit's Springwells plant; the project also involved the specification of the details of treatment processes and selection of major equipment. In addition, he provided the technical layout of a 160-mgd plant for Wayne County, south of Detroit. (The plant was subsequently taken over by Detroit and expanded to a capacity of 240 mgd.)

In handling the work at Detroit, Hudson looked to the universities for two sanitary engineers to spend the summer visiting the major water plants in the West, looking for good and bad features, comparing performance, and so forth. At the same time, Hudson persuaded the water system manager at the Wyandotte, Michigan, water plant to compare the performance of conventional constant rate filters with declining rate filters, in which the flow through the bed was reduced as the filters became dirty. The test, which took nearly a year to complete, demonstrated that the declining rate filters produced better-quality water and cost less to build. This same process was later adopted for the two plants in Detroit and subsequently by the Hazen and Sawyer firm and other firms throughout the country.

Hudson came to New York in 1957. He became a partner in Hazen and Sawyer and was named to head the firm's water treatment activities. He designed new water treatment plants at Luke, Maryland; Poughkeepsie and Tuxedo Park, New York; Point Pleasant Beach, New Jersey; Greensboro, North Carolina; Danville, Virginia; North Chicago, Illinois; and in both Cali and Bogotá, Colombia. He traveled to Libya twice to advise Exxon on water prospects. In addition to these responsibilities, he participated in the preparation of a report to the U.S. Army Corps of Engineers evaluating the water resources in the northeast United States following the 1960 drought. He also wrote reports on the operation of water plants at Elizabethtown, New Jersey; Bay City, Michigan; Washington, D.C.; and Bogotá and Cali, Colombia.

In 1971 Hudson resigned from Hazen and Sawyer to become president of Water and Air Research, Inc., in Gainesville, Florida. Aside from managing the firm, Hudson conducted and guided hydrological and ecological evaluations, provided guidance on the design and operation of numerous water treatment plants, and acted as a consultant to the World Bank, Pan American Health Organization, National Housing Board of Brazil, and Panama Canal Company. He was also an adjunct professor of environmental engineering

sciences at the University of Florida from 1971 until his death.

Herbert Hudson was an active member of many technical societies, but his particular interest was the American Water Works Association. He held a number of posts: director, chairman of the Committee on Education, chairman and secretary of the Illinois Section, and chairman of the Water Resources and Water Purification Division. He was also an honorary member of the association. He was elected to the National Academy of Engineering in 1978 and was both a member and president of the American Academy of Environmental Engineers, as well as a fellow of the American Society of Civil Engineers.

A regular attendant and speaker at societal meetings, Hudson authored numerous papers. Four outstanding works are Chapter 5, "Rapid Mixing and Flocculation," in *Water Treatment Plant Design* (New York: American Water Works Association, 1969); Chapter 7a in *Water Quality and Treatment* (New York: McGraw-Hill, 1971); *A Handbook of Applied Hydrology*, coauthored with Richard Hazen (New York: McGraw-Hill, 1964); and *Water Clarification Processes: Practical Design and Evaluation* (New York: Van Nostrand-Reinhold Co., 1981).

Unlike most engineers with important technical responsibilities, Herbert found time for other pursuits. He read a great deal, enjoyed music, dabbled in photography and art, and enjoyed talking with people from all walks of life in the United States and elsewhere. He was also a humorist; addressing a technical meeting, he would meet his critics with a smile and often disarm them with a joke.

Herbert Hudson is survived by his wife Annabelle and his two sons, Ken and Herbert. According to his son Herbert, "his work was his life." The accomplishments and influence of Herbert Hudson in promoting the health and welfare of millions of people by providing safe water supplies attest to his status as an engineer who has made a major contribution to society.

