



*A. T. Ippen*

# **Arthur Thomas Ippen**

## **1907-1974**

By Hunter Rouse

Arthur T. Ippen, Massachusetts Institute of Technology (MIT) Professor Emeritus, died on April 5, 1974, of a heart attack at his home in Belmont, Massachusetts. An internationally known hydraulic engineer, his many professional contributions had been almost equally divided among the fields of education, research, and consulting, and his great personal warmth made him as widely loved as respected.

Born in London, England, of German parents on July 28, 1907, Dr. Ippen was educated in the schools of Lindau-am-Bodensee and Aachen, Germany, the Technische Hochschule of the latter city granting him the Diplom-Ingenieur degree in civil engineering in 1931. During his undergraduate years he served as draftsman with the municipal waterworks of Aachen, and the year thereafter as teaching and research assistant with the Hochschule. In September of 1932 he received an exchange fellowship from the Institute of International Education and journeyed to Iowa City for graduate study and research in hydraulics at the State University of Iowa. After the sudden death of his faculty advisor, Floyd Nagler, he transferred to the California Institute of Technology in December of 1933, where he was to remain the next five years as graduate student, research associate, and instructor.

Under California Institute of Technology professors Theodor von Kármán and Robert Knapp, Ippen conducted experimental and analytical investigations in the fields of sediment transport and

high-velocity open-channel flow. His doctoral dissertation (1936) on the latter topic represented the first American development of the sonic-wave analogy to free-surface flow. Continued research and writing on this subject earned him an award from the American Society of Civil Engineers, and his experimental technique soon found application in the wave tanks supplementing supersonic wind tunnels.

Dr. Ippen received an appointment as Instructor in Civil Engineering at Lehigh University in August of 1938; there he assumed charge of instruction and research in hydraulics and was promoted to Assistant Professor in 1939. Principal among his projects was the determination of the influence of fluid viscosity on the performance of centrifugal pumps. In September 1945 Ippen accepted an appointment as Associate Professor of Hydraulics in the Civil Engineering Department at MIT. There he took over the operation of a small river hydraulics laboratory dating from before World War II and began the fourfold task of teaching, attracting a staff and graduate-student following, developing a research program, and designing a new laboratory.

The resulting two-story structure was completed in 1951 and dedicated as the MIT Hydrodynamics Laboratory. By this time a senior staff of five and thirteen graduate assistants had been enlisted, and a dozen or more contract projects were under way. Initial fields of study included the sonic analogy, transient flows, instrumentation, turbulence, cavitation, shoaling waves, stratified flow, and sediment transport. With the passage of time, the staff and student body continued to increase in size and quality, and the additional fields of water resources and coastal engineering came to receive primary emphasis in the program. Eventually, in 1970, the laboratory structure was enlarged by two more stories and renamed the Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics, and three years later Dr. Ippen retired from its directorship.

During the course of his professional life, Dr. Ippen published some fifty-eight technical papers, edited one book, and was the author or coauthor of twenty-nine laboratory reports on contract research. He held more than thirty consulting appointments with

industrial firms, governmental agencies, and foreign countries. He traveled extensively, both as a consultant and as a lecturer, and spent sabbatical leaves in Germany and in Japan. For several years he chaired the MIT Council on International Affairs, overseeing joint programs with institutions such as the Technical University of Berlin and the Birla Institute of Technology in India. A particular love was the International Association for Hydraulic Research (IAHR), which he served as President from 1959 to 1963; two noteworthy accomplishments during this period were the establishment of the association's *Journal of Hydraulic Research* and the encouragement of regional meeting, initially in Latin America and later in Asia. He was likewise active in the Hydraulics Division of the American Society of Civil Engineers (ASCE), serving in 1959-60 as Chairman of its Executive Committee; he also chaired three other committees and was involved in establishing the Engineering Mechanics Division.

Dr. Ippen was elected to the National Academy of Engineering in April 1967. He also held membership in the following organizations: Tau Beta Pi, Chi Epsilon, and Sigma Xi fraternities; the American Academy of Arts and Sciences; American Academy of Environmental Engineering; American Geophysical Union; American Society for Engineering Education; American Society of Mechanical Engineers; American Water Resources Association; and the Boston Society of Civil Engineers (President, 1960-61). Included among the many honors that he received were doctorates from the University of Toulouse, France, the University of Karlsruhe, Germany, and the University of Manchester, England; honorary membership in the Japan Society of Civil Engineers, the International Association for Hydraulic Research, and the Venezuelan Society of Hydraulic Engineers; the Vincent Bendix Award of the American Society for Engineering Education, the Prechtel Medal of the Technical University of Vienna, the Karl Emil Hilgard Prize of the ASCE, the Outstanding Civilian Service Medal of the Department of the Army, the Distinguished Alumnus Award of Caltech; a Ford Professorship at MIT; and finally the MIT Institute Professorship.

While still at Pasadena, Arthur Ippen married Elizabeth

Wagenplatz, whom he had known as a student at Aachen, and their two children-Erich Peter and Karen Ann-were born during their years in Bethlehem. His wife died in 1953. In 1955 Ippen married Ruth Calvert of Pasadena, who was to share the remaining two decades of his very productive life. His second heart attack, in 1974, proved fatal. In addition to his wife and two children, he left behind a step-daughter, a brother in Germany, and three grandchildren-not to mention the memories cherished by countless former students, colleagues, and friends throughout the world.

