



Donald Rouse

HUNTER ROUSE

1906–1996

Elected in 1966

“For hydraulics and fluid mechanics.”

BY CORNELIA F. MUTEL AND ROBERT ETTEMA
SUBMITTED BY THE NAE HOME SECRETARY

PROFESSOR HUNTER ROUSE, long-term director of the Iowa Institute of Hydraulic Research (now IIHR-Hydroscience & Engineering) at the University of Iowa and subsequently dean of that institution’s College of Engineering, died on October 16, 1996, in Sun City, Arizona, at the age of 90.

Born in Toledo, Ohio, on March 29, 1906, Rouse studied civil engineering at the Massachusetts Institute of Technology (MIT), where he received his undergraduate degree in 1929. He then spent two years as an MIT traveling fellow visiting hydraulics laboratories in Germany, where he met Dorothee Hüsmert, who was to become his wife of more than 60 years and the mother of their three children. Rouse received an M.S. in civil engineering from MIT in 1932 and a doctoral degree in civil engineering hydraulics from the Technical University at Karlsruhe the same year. Later, in 1959, he received a doctorate in fluid mechanics from the Sorbonne, University of Paris.

While in Karlsruhe, Rouse became familiar with Theodor Rehbock’s River Hydraulics Laboratory and with other newly established laboratories in Germany working on hydraulics and fluid mechanics. He quickly recognized the importance of

laboratory experiments and recent developments in understanding the fluid mechanics of turbulent flow, for advancing engineering hydraulics — that is, the mechanics of water flow processes. This recognition became the focus of his career.

In 1932, Rouse returned to MIT as an instructor and conducted research on weirs and spillways. He subsequently taught courses on hydraulics as an instructor at Columbia University in New York and then became an assistant professor in fluid mechanics at California Institute of Technology in Pasadena. At Caltech, he also conducted research at the Soil Conservation Service Sedimentation Laboratory. He came to IIHR as a professor of fluid mechanics in 1939 and was appointed director in 1944. In 1966, he was appointed dean of engineering, but he returned to a research position at IIHR in 1972.

Hunter Rouse's primary contribution was the application of fluid-mechanics theory, illuminated and validated by laboratory experimentation, to hydraulics. His hydraulics work put hydraulic engineering on a more rational plane than it had previously occupied.

Rouse championed the application of fluid mechanics to hydraulic engineering in many ways. He authored the first American textbook explaining hydraulics in terms of the principles of fluid mechanics, and he initiated and taught classes on the subject at the University of Iowa. He also established teaching laboratories, for which he designed some of the equipment himself.

He insisted that IIHR put great emphasis on theoretical research, and his own research provided early insights into general principles of hydraulics, especially the importance of turbulence. Under Rouse's leadership, IIHR became the preeminent U.S. center for hydraulics research and education, and the name Hunter Rouse became synonymous with excellence in fluids-engineering research, education, and application. Hunter Rouse was both energetic and driven. He insisted on high standards for his students, as well as for his own work. He organized several landmark conferences on

hydraulics. A world traveler, he also organized highly regarded exchange programs and tirelessly promoted international goodwill and cooperation among hydraulics research organizations.

A leading authority on the history of hydraulics, he wrote two books and established a renowned rare book collection on the subject. In all, he authored or edited seven books, including a highly praised set of textbooks, wrote more than 130 technical papers, supervised more than 80 graduate students (many of whom became leading figures in the field), and produced a set of six instructional films on fluid mechanics and hydraulics. These films and some of his books are still in use.

Rouse was elected to the National Academy of Engineering in 1966. In addition, he was a fellow of the American Academy of Arts and Science (1958) and an honorary member of the American Society of Mechanical Engineers (1967), American Society of Civil Engineers (ASCE) (1973), and International Association for Hydraulic Research (1985). He was a Fulbright Research Scholar (1952–1953), and, in 1963, the recipient of the ASCE Theodore von Kármán Medal. In 1975, he was awarded an honorary doctorate by the University of Karlsruhe, given, in part, for his “pioneering achievements in fundamental research and instruction in theoretical hydraulics.” In 1979, ASCE established an annual lectureship in his name, and, in 1980, presented him with the ASCE History and Heritage Award.

In 1991, Hunter Rouse received the American Association of Engineering Societies’ highly prestigious John Fritz Medal, “for pioneering the application of fluid mechanics to hydraulics, fusing theory and experimental techniques to form the basis for modern engineering hydraulics.” This commendation summarized both his hopes and his achievements. He also received many additional awards for his research publications and educational accomplishments.

After his retirement from the University of Iowa in 1976, he moved to Arizona, but he continued to teach summer courses in hydraulics at Colorado State University, and occasionally lectured at Arizona State University, until he was 82. He also

became an amateur lapidary hobbyist, and, characteristically, he not only polished stones, but also published articles on the subject. He also continued to publish articles on the history of hydraulics. Thus, to the end of his life, he never lost his intellectual curiosity or lowered the high standards he had always embodied.

His is survived by his widow, Dorothee Rouse; two sons, Richard H. Rouse and his wife, Mary, and Allan H. Rouse; a daughter, Patricia M. Heubner, and her husband, Glenn; and six grandchildren.

