



James W. Daily

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By Donald R. F. Harleman

JAMES WALLACE DAILY, educator and consultant in hydraulic engineering, died on December 27, 1991, at the age of seventy-eight. Jim retired in 1981 as professor of fluid mechanics and hydraulic engineering in the applied mechanics and engineering sciences department of the University of Michigan and spent the last years of his life in Pasadena, California.

Jim was born in Columbia, Missouri, on March 19, 1913. He obtained a B.A. in the school of engineering at Stanford University in 1935 and an M.S. in mechanical engineering from the California Institute of Technology in 1937. Jim remained at Caltech as manager of the Hydraulic Machinery Laboratory and instructor in mechanical engineering. He married Sarah Atwood in 1938, and they had two children, John Wallace and Sarah Anne. After the start of the second world war, Jim began experimental research on underwater ballistics related to submarine warfare. He, together with Robert J. Knapp, designed the first general-purpose water tunnel in America for the study of cavitation phenomena. Jim received a Ph.D. from Caltech in 1945 on the basis of his pioneering research on torpedo-shaped bodies. In 1946 he joined the faculty of the Massachusetts Institute of Technology (MIT) on the urging of his former Caltech colleague, Arthur T. Ippen, who had been given the charge to build up MIT's strength in fluid mechanics and hydraulic engineering.

Jim was a major participant in the design and equipping of MIT's Hydrodynamics Laboratory (now called the Ralph M. Parsons Laboratory), which was completed in 1950. He rose through the academic ranks, becoming full professor in 1955. During his period at MIT, Jim made significant contributions to the understanding of flow-induced vibration and the development of criteria to predict the occurrence of hydro-elastic oscillations. He also studied the mechanics of liquid-solid flows of fibrous materials related to the design of high-speed papermaking machinery. In 1966 he coauthored with Donald R. F. Harleman a successful undergraduate fluid mechanics textbook that remained in print for twenty-five years.

In 1964 Jim was appointed professor and chairman of the engineering mechanics department at the University of Michigan. In addition to administrative duties, he continued teaching advanced and non-Newtonian fluid mechanics. Jim relinquished the chairmanship in 1972 to return to teaching and research until his retirement in 1981.

Jim served four years (1967-1971) as president of the International Association for Hydraulic Research. In 1974 he visited the People's Republic of China as a member of the U.S. Study Tour on hydraulic engineering and water resource systems. He wrote the definitive English-language book on cavitation, and as a consultant to the Tennessee Valley Authority, he helped solve some difficult turbine vibration problems.

Jim was elected to the National Academy of Engineering in 1975. Earlier he had been made a fellow of the American Society of Mechanical Engineers, an honorary member of the Japan Society of Civil Engineers, and an honorary member of the International Association of Hydraulics Research.

Jim was genuinely concerned with improving engineering education by insisting on sound science backgrounds. His dedication and concern nurtured a generation of students, and his engineering expertise contributed to the advancement of the engineering profession in this country and throughout the world.

