



*A. M. Freudenthal*

# **Alfred Martin Freudenthal**

## **1906-1977**

By Harold Liebowitz

Alfred M. Freudenthal, Professor Emeritus of Civil Materials Engineering, died on September 27, 1977. His death takes from the George Washington University a man in whom extraordinary abilities in research, teaching, and engineering practice were richly complemented by those qualities of absolute integrity, unceasing interest in and intellectual curiosity about the world around him, and generosity of spirit.

Professor Freudenthal was one of the seminal engineers and scholars of his era. In 1975, to commemorate his exceptional contributions, the American Society of Civil Engineers established the Freudenthal Medal "in honor of his outstanding accomplishments in research, teaching, and engineering practice," to be awarded biannually to an individual in recognition of distinguished achievement in the area of safety and reliability applied to civil engineering.

Professor Freudenthal was born in Poland on February 12, 1906, and his education was the best that one could receive in Europe. He was awarded a degree in civil engineering in 1929 in Prague and in 1932 in Lwow. In 1930 he was awarded the degree of Doctor of Technical Sciences by the German Technical University in Prague on the basis on his dissertation on the theory of plasticity.

Professor Freudenthal started his professional career in 1930 as a structural designer. In 1935 he emigrated to Palestine (Israel) where he became the Chief Structural Engineer and subsequently

the Resident Engineer in planning, construction, and technical administration of a new port in Tel Aviv between 1936 and 1946. In 1936 he accepted an appointment as Lecturer, later as Professor of Bridge Engineering at the Hebrew Institute of Technology in Haifa.

In 1947, on the basis of a paper on the statistical aspects of fatigue, he was invited to visit the United States and to lecture at several universities. In that year, he accepted an appointment with the University of Illinois as Visiting Professor of Theoretical and Applied Mechanics.

Between 1949 and 1969, he held an appointment as Professor of Civil Engineering at Columbia University. In 1969, he joined the faculty of the George Washington University as Professor of Civil and Materials Engineering and Director of the Institute for the Study of Fatigue and Structural Reliability. The Institute was transferred from Columbia University, where it had been in operation since 1962.

Under Professor Freudenthal's leadership, the Institute acquired a worldwide reputation in fatigue research, which included basic research both in the metal physics aspects of fatigue as well as in the development of a new methodology in the risk and reliability assessment of structures dominated by fatigue. It was for this pioneering work that the technical community awarded Professor Freudenthal the unique accolade by referring to him as the "father" of structural reliability.

Among his many honors and awards, he twice received the Norman Medal from the American Society of Civil Engineers; he also received the Swedish Aeronautical Society Medal and the von Karman Medal, to name a few. He was elected to the National Academy of Engineering in 1976. He was the author of seven books and about 150 papers, which were published in technical and scientific journals.

Professor Freudenthal was a truly educated person with a lifelong interest in science, technology, art, music, literature, philosophy, and world events. He could always be called on as a friend and counselor and his sage advice guided many of the faculty and

students through both personal and professional difficulties. He gave of himself unstintingly when help was needed.

The legacy of Alfred M. Freudenthal lies in his outstanding research and original thinking, which will long endure. His lasting accomplishments are a satisfaction to those of us who were fortunate to know this good and gifted man.