



*Hans H. Bleich*

## Hans Heinrich Bleich

1909–1985

By Mario G. Salvadori

Hans Heinrich Bleich died of a heart attack on February 8, 1985, at the age of seventy-five. He was born in Vienna on March 24, 1909. He studied at Vienna's Technical University, from which he obtained a civil engineering degree in 1931 and a doctor of science degree in engineering in 1934. Following his graduation, he worked in Vienna as a design engineer for A. Poor Engineers until 1939, when he moved to London and became senior design engineer for the prominent engineering firm of Braithwaite and Company. Unfortunately, there are no records in the United States of his work while in Europe.

In 1945 Dr. Bleich moved to the United States. He worked briefly as a research engineer for Chance-Vaught Aircraft in Stratford, Connecticut. He then became an associate engineer at Hardesty and Hanover, a well-known firm of bridge engineers in New York City. During his tenure with the firm, he was involved in the design of a number of important bridges and special structures.

From 1957 to the day of his death, Dr. Bleich was permanently affiliated as a consultant with Weidlinger Associates, Consulting Engineers of New York City. He participated in the design of some of the most important and innovative buildings in the United States—from high-rise office buildings to exhibition halls and special structures.

In 1967 Dr. Bleich served as a consultant to the Mount Wilson Observatory and was responsible for the support design of the observatory's new two-hundred-inch astronomical mirror at Mount Palomar. In 1967–1968, as a consultant to Parsons Brinckerhoff Quade and Douglas, Inc., he participated in the design of the Fremont Bridge in Portland, Oregon. In 1969, as a consultant to the firm of King and Gavaris, he helped design the Raritan Bridge in New Jersey.

In 1947 Dr. Bleich joined the faculty of Columbia University's School of Engineering as a lecturer and was named professor of civil engineering in 1952 and director of the Guggenheim Institute of Air Flight Structures in 1954. He retired from Columbia University in 1975 as James Renwick Professor Emeritus of Civil Engineering.

Dr. Bleich was a member of the American Society of Civil Engineers (ASCE), the American Institute of Astronautics and Aeronautics, and the American Society of Mechanical Engineers. He was also associate editor of the American Rocket Society of the American Institute of Astronautics and Aeronautics and a member of the Hull Structures Committee of the Society of Naval Architects.

Dr. Bleich was honored as a fellow of the American Society of Mechanical Engineers and as an associate fellow of the American Institute of Astronautics and Aeronautics. He also received the ASCE Laurie Prize in 1951, the ASCE J. James R. Croes Medal in 1963, the ASCE Wellington Prize in 1969, and the coveted von Karman Medal of the ASCE Applied Mechanics Section in 1973.

At the early age of fifteen, he contributed a chapter to the pioneering book on finite difference equations written by his father, Friedrich Bleich, and Ernst Melan, two world-renowned structuralists. In 1935 he wrote a book on the analysis of suspension bridges entitled *Die Berechnung verankerter Hangerbrücken*, published by J. Springer in Vienna. In 1952 he edited and completely revised his father's book *The*

*Buckling Strength of Metal Structures*, which is still the standard reference book on the subject.

In 1952 Bleich coauthored the ASCE manual "Design of Cylindrical Shell Roofs" and in 1960, the "Guide for the Analysis of Ship Structures," published by the U.S. Department of Commerce, Office of Technological Services. In 1968 he was a contributor to "Support and Testing of Astronomical Mirrors," published by Kitt Peak National Observatory in Arizona.

Between 1928 and 1975 Dr. Bleich published eighty-six papers and reports of the greatest importance on problems of applied mechanics. A sampling of their titles indicates the breadth of his interests: "Bending, Torsion and Buckling of Bar Composed of Thin Walls"; "The Strain Energy Expressed for Thin Cylindrical Shells"; "Response of Elasto-Plastic Structures to Transient Loads"; "Surface Waves in an Elastic Half-Space"; "Moving Step Load on the Surface on a Half Space of Granular Material"; and "Use of Nonassociated Flow Rule for Problems of Elasto-Plastic Wave Propagation." His technical reports dealt with the gamut of those applied mechanics problems that are of practical significance in the field of dynamics and, particularly, in the interactions between fluids and elastic and plastic bodies. Of special note is that in 1932 he was the first scientist to use shakedown theory.

It is hard to describe the modesty, simplicity, and courteousness of this outstanding individual. His students, to whom he dedicated unlimited time and attention, today occupy chairs in structural engineering and applied mechanics in most of the outstanding universities of our country. He was always ready to help with suggestions and to advise both his academic colleagues and his coworkers in the many engineering offices where he was a consultant. He was one of the very few outstanding research men who was also interested in and knowledgeable about the practical application of the theories he helped to develop. In short, he was a great engineer.

Dr. Bleich's contributions to the work of many agencies of the U.S. government have been of the greatest importance and have been duly recognized.

His death represents a loss to the academy of one of its most valuable, widely knowledgeable, and generous members.

