



*Yi-Sheng J. E. Mao*

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1896–1989

By Steven J. Fenves

Yi-Sheng Mao, outstanding engineering educator, designer of major bridges in China, and influential leader of Chinese engineering and scientific organizations, died on November 12, 1989, at the age of ninety-three.

Elected as a foreign associate of the National Academy of Engineering in 1982, Dr. Mao was recognized for his distinguished leadership in the development of China's transportation system, his significant accomplishments as a bridge designer, and his guiding role in engineering education.

Dr. Mao was born in Zhenjiang, Jiangsu Province, China. After graduation from the Tangshan Engineering Institute in 1916, he came to study in the United States. He received his M. C.E. in civil engineering from Cornell University in 1917 and Ph.D. in civil engineering from Carnegie Institute of Technology (now Carnegie Mellon University) in 1919. This was the first Ph.D. granted by that university. His dissertation on secondary stresses in trusses was a major contribution to bridge theory at that time. While in Pittsburgh, he also worked for the McClintick-Marshall Company as a designer.

Upon his return to China in 1920, Dr. Mao assumed a series of educational positions, which eventually included professorships at five major institutions and the presidencies of four of these universities. Among these universities are the two oldest and most prominent engineering schools of China: the National

Beiyang University (formerly Beiyang Engineering College) in Tianjin and the National Beifang Jiaotong University (formerly Tangshan Engineering Institute) in Tangshan. Dr. Mao was widely respected as a major innovator in Chinese engineering education, introducing both new subject matter and new pedagogical approaches.

Simultaneously with his educational activities, Dr. Mao held a series of other positions, including director of bridge engineering for Zhejiang Province, director of the bridge designing and engineering division of the Ministry of Communications, and general manager of the China Bridge Engineering Company. In these positions he became recognized as a pioneering and brilliant bridge engineer. He designed and supervised the construction of two of the most famous modern bridges in China. The Qiantang River Bridge near Hangchow was completed in 1937, after a construction period of two-and-a-half years. The bridge, with a main span of 1,072 meters, provides highway and railroad connections on separate levels. Its construction required many innovative solutions, particularly in the substructure that had to penetrate forty meters of quicksand in the riverbed. The bridge was destroyed by the retreating Chinese army during the Japanese invasion and rebuilt after World War II under Dr. Mao's supervision. Dr. Mao served as chairman of the Technical Consultative Committee on the Yangtze Bridge at Wuhan, which was completed in 1957 after two years of construction. This bridge also provides highway and railroad service on separate levels. In addition to bridge building, Dr. Mao contributed to the structural design of many major buildings in Beijing. He was chief consultant for the structural design of the Great Hall of People in Beijing. The building has since then withstood a major earthquake.

Dr. Mao held a number of major positions in professional organizations, including the presidencies of the Institute of Railway Technology, the China Academy of Railway Sciences, the China Engineers' Association, and the Chinese Civil Engineering Society. He was vice president and then honorary president of the China Association for Science and Technology. Under his leadership for thirty years, the China Academy of

Railway Sciences developed into a comprehensive research institute, providing research support for railway transportation and construction and training for a large number of engineers and scientists. In the political arena, he was a deputy to the National People's Congress (NPC), member of the NPC Standing Committee, and member and vice chairman of the Chinese People's Political Consultative Conference. He headed numerous delegations of Chinese engineers and scientists to Czechoslovakia, the Soviet Union, Italy, Switzerland, France, Portugal, Great Britain, Sweden, Japan, and the United States. He personally contributed to the strengthening of technical and scientific exchanges between China and other countries.

Dr. Mao was particularly interested in the history of Chinese science and technology. He wrote a book on ancient and modern Chinese bridges, supervised the compilation of a series on the history of natural sciences, and served many organizations dealing with the dissemination of scientific knowledge in China.

Dr. Mao's numerous awards included a senior membership in the International Association for Bridge and Structural Engineering, honorary membership in the Canadian Society of Civil Engineers, and outstanding alumnus awards from Cornell University and Carnegie Mellon University.