



*Boatun Chao*

# BEI T. CHAO

1918–2011

Elected to NAE in 1981

*“For pioneering contributions to heat transfer research and leadership in engineering education.”*

BY JAMES W. PHILLIPS AND KIMBERLY GREEN  
SUBMITTED BY THE NAE HOME SECRETARY

**B**EI-TSE (“BATES”) CHAO, professor emeritus and former head of Mechanical and Industrial Engineering (M&IE) at the University of Illinois at Urbana-Champaign (UIUC), passed away March 2, 2011, at age 92.

Born December 18, 1918, in Su Zhou, China, Bates spent most of his early life in Shanghai. He received a BS degree in electric engineering summa cum laude from Shanghai Jiao Tong University in 1939 and, after working five years at a machine tool company in Kunming, China, entered the University of Manchester, England, where in 1947 he completed his doctorate degree. His doctoral dissertation was entitled “The Effect of Speed and Feed on the Mechanics of Metal Cutting.”

Dr. Chao joined UIUC as a visiting research assistant in 1948. He became an assistant professor in M&IE in 1951 and rose quickly through the ranks, becoming an associate professor (1953–1955) and full professor in 1955. He served as department head from 1975 until his retirement as professor emeritus in 1987. As department head, he built M&IE into a first-class research department. He provided critical input and helped to shape the future direction of the department, in part by participating in interviews and the evaluation process of the appointments of subsequent department heads.

Dr. Chao was elected to the National Academy of Engineering in 1981 for his pioneering contributions to heat transfer research and leadership in engineering education. A recognized expert on heat transfer and energy systems, he was the author of more than 100 articles, four US patents, and a well-received book, *Advanced Heat Transfer* (1969). In addition to his NAE membership, he received an impressive number of honors and awards: membership in the Academia Sinica, Taiwan; fellow of the American Society of Mechanical Engineers (ASME), American Association for the Advancement of Science, and American Society for Engineering Education (ASEE); Boxer Indemnity Scholar, Sino-British Cultural and Educational Foundation (1945–1948); Blackall Machine Tool and Gage Award, ASME (1957); Distinguished Lecturer, University of Washington, Seattle (1964); Distinguished Lecturer, Ohio State University (1970); Heat Transfer Memorial Award, ASME (1971); Russell S. Springer Visiting Professor of Mechanical Engineering, University of California, Berkeley (1973); Western Electric Fund Award, ASEE (1973); Ralph Coats Roe Award (1st), ASEE (1975); Service Award, National Science Council, Republic of China (1976, 1979); Five-Year Effective Teacher Award, M&IE Alumni Association, UIUC (1978); Southwest Mechanics Lecturer, Southwest Universities Association (1982); Board of Governors' Certificate of Appreciation for Service as Technical Editor (1975–1981), *Journal of Heat Transfer*, ASME (1982); Max Jakob Memorial Award, ASME and American Institute of Chemical Engineers (1983); Prince Distinguished Lecturer, Arizona State University (1984); Outstanding Achievement Award, American Academy of Higher Education (1984); Benjamin Garver Lamme Medal, ASEE (1984); Tau Beta Pi Daniel C. Drucker Eminent Faculty Award (1st), College of Engineering, UIUC (1985); University Scholar, UIUC (1985–1988); William T. Ennor Manufacturing Technology Award, ASME (1992); Centennial Medallion, ASEE (1993); and NASA Certificate of Recognition for Creative Development (1993).

In addition to teaching, Dr. Chao served as design engineer at Scully Jones Co., Chicago (summer 1951–1952); resident research associate, Argonne National Laboratory (summer 1961); member of the technical staff, Jet Propulsion Laboratory (summer 1964); Russell S. Springer visiting professor of mechanical engineering, University of California, Berkeley (spring 1973); visiting scientist, Argonne National Laboratory (1975); and consultant to Scully Jones, the US Atomic Energy Commission, University of Washington in Seattle, Clemson University, State University of New York–Buffalo, and Argonne National Laboratory.

Dr. Chao was very active in his profession. He was member of a number of professional societies, a founding member of the Society of Engineering Science, and an honorary member of Phi Tau Sigma. He was also listed in the *Dictionary of International Biography*, *Who's Who in the World*, *Who's Who in America*, and *Who's Who in Engineering*.

Bates is survived by his wife May Kiang, whom he married in 1947 in Manchester, England. They met in Chongqing, the wartime capital of China, in 1945. They had no children of their own, but for eight years they raised Bates' nephew and niece, Fred and Clara Chao, who had survived a tragic automobile accident in their home country of Brazil that claimed the lives of their father (Bates' brother), mother, and three siblings. Fred and Clara later returned to Brazil and now have families there.

Everyone who met Bates was impressed by his kindness, by how easy it was to speak with him, and by the range of his intellect, including his knowledge of science and of the stock exchange. He was a true visionary, and his death is a profound loss for his family and friends, the University of Illinois, and the science and engineering communities.