

**MEMORIAL RESOLUTION OF THE FACULTY
OF THE UNIVERSITY OF WISCONSIN-MADISON**

ON THE DEATH OF PROFESSOR EMERITUS WARREN EARL STEWART (1924-2006)

Warren Earl Stewart, McFarland-Bascom professor emeritus of chemical and biological engineering at the University of Wisconsin, died on March 27, 2006 after a long and distinguished career. Warren was born in Whitewater, Wisconsin, on July 3, 1924 to Earl and Avis Stewart. He received both BS and MS degrees at Wisconsin, in 1945 and 1947, and the ScD in 1951 at Massachusetts Institute of Technology. All his degrees were in chemical engineering. While an undergraduate at Wisconsin, he became famous as the first student in the history of the College of Engineering to graduate with a straight-A academic record. His MIT experience introduced him to numerical analysis and computational techniques, essential subjects at the dawn of the electronic computer age.

In World War II, Warren enlisted in the U.S. Naval Reserve (1944-1946). He returned to Wisconsin as a Navy engineering trainee under the V-12 program, and after graduation served as a communications officer on the aircraft carrier USS Midway. In 1947 he was married to Jean Durham Potter, who served as alderman for the City of Madison for 16 years (1977-1993). They had six children and eighteen grandchildren.

After five years at the Sinclair Research Laboratories, Warren Stewart joined the faculty in the Department of Chemical Engineering at Wisconsin in 1956 and taught there for forty years until 1997. While serving as chairman of the department, he recruited and nurtured several young faculty members who went on to become international leaders. He supervised many PhD students and postdoctoral fellows, who today hold responsible positions in universities and industry.

His more than 100 research publications are indicative of his breadth of interests and knowledge. How many chemical engineers could write significant contributions on such widely varying topics as prediction of vapor pressures, reciprocal variational principles, kinetics of benzene hydrogenation, chemical kinetics and reaction engineering, multicomponent diffusion, orthogonal collocation, measurement of diffusivities, droplet vaporization, kinetic theory of rigid dumbbell suspensions, tokamak reactors, thermal diffusion, catalysis, corrosion, parameter estimation, Bayesian statistics, strategies for process modeling and parameter estimation, viscoelastic fluid dynamics, insulation qualities of animal fur, sensitivity analysis, and distillation column design? Whereas most professors tend to get very specialized, Warren Stewart has been an impressive generalist. When he served as departmental chairman (1973-1978), he was able to discuss with all faculty members the details of their current research programs. No other departmental chairman in the last half-century has been able to do that.

Among Warren Stewart's most important technical contributions were his development of new mathematical and computational methods for modeling chemical phenomena and chemical processes. His work in this area led to better design and safer operation of chemical processes involving chemical reactions, transport of heat and mass, and the complex flow of fluids. His research results, which have been adopted around the world, increased the fundamental understanding of chemical phenomena and significantly influenced industrial practice.

Beyond influencing his own research students, he was an inspiring teacher and valuable consultant for many students and professors in the Department of Chemical Engineering. Furthermore, Warren was a coauthor of the 1958 green paperback *Notes on Transport Phenomena*, which served as a preliminary edition for the 1960 textbook, *Transport Phenomena* (published by John Wiley & Sons in New York). This textbook changed the direction of chemical engineering teaching everywhere in the world. It was translated into Spanish, Russian, Italian, Czech, and Chinese. After 64 printings of the first English

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edition, a second edition was prepared by the same trio of authors. This new edition appeared in 2002 and has been translated into Chinese and Portuguese. In the preparation of this textbook, Warren displayed important characteristics that were invaluable: very high standards for writing technical material, a photographic memory of the technical literature, and an insistence that there be no spelling or grammatical errors (this last quality earned him the nickname “gimlet eye”).

At the time of his death, he had almost completed, with Michael Caracotsios, another book, *Computer-Aided Modeling of Chemically Reactive Systems*, along with accompanying software. This book provides an overview of chemical kinetics and reactor modeling, and then presents an extensive description of strategies for parameter estimation based on noisy and incomplete data sets. An interactive software package is included that can perform all the necessary modeling and parameter estimation calculations after the problem details are entered by the user.

Despite the fact that he was a quiet and modest person, Warren received many awards for his research and teaching activities; among these are:

- 1973 Elected Fellow of American Institute of Chemical Engineers (AIChE)
- 1981 Alpha Chi Sigma Research Award of AIChE
- 1981 Benjamin Smith Reynolds Award for Excellence in Teaching (UW)
- 1983 Chemical Engineering Division Lectureship Award, ASEE
- 1983 Elected Honorary Member of Phi Beta Kappa
- 1983 Named McFarland-Bascom Professor
- 1984 Computing in Chemical Engineering Award, CAST Division of AIChE
- 1989 E. V. Murphree, American Chemical Society
- 1991 Byron Bird Award for Outstanding Research Publication (UW)
- 1992 Elected to the National Academy of Engineering

He was given honorary membership in Phi Beta Kappa because of his exceptional level of scholarship and his extensive contributions to chemical engineering in Mexico and South America. He was a visiting professor at the Universidad Nacional de La Plata in Argentina in 1962, at the Universidad Nacional Tecnológico de Celaya in Mexico in 1983, and at the Universidad Autónoma de México in 1985. At these institutions he lectured in Spanish. For 18 years he served as editorial advisor for the *Latin-American Journal of Chemical Engineering and Applied Chemistry*. Following that he held a similar position for the journal *Latin-American Applied Research*.

Warren’s hallmark throughout his career was understated excellence in his work and unfailing kindness to students and colleagues. He was also well known for his sly sense of humor and his ability to produce—instantly—jokes on just about any topic. He loved puns and had a warning sign on his desk given to him by colleagues: “Incorrigible punster—don’t incorrige.”

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