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

ON THE DEATH OF PROFESSOR EMERITUS MILLARD W. JOHNSON JR.

Millard W. Johnson Jr., professor emeritus of engineering mechanics and of mathematics, died on February 20, 2009 at the age of 81. He was born on February 1, 1928 in Racine, Wisconsin. He received his BS and MS degrees in applied mathematics and mechanics from the University of Wisconsin-Madison in 1952 and 1953, respectively, and his PhD in mathematics from the Massachusetts Institute of Technology in 1957. Professor Johnson spent his entire professional career at the University of Wisconsin-Madison. He joined the Department of Engineering Mechanics in 1958 as an assistant professor, was promoted to associate professor in 1961, and full professor in 1964. Since 1964, he had joint appointments with the Department of Engineering Mechanics and Astronautics and the Department of Mathematics. After a 36-year career at the University of Wisconsin-Madison, Professor Johnson retired in 1994. He is survived by his wife and companion of 55 years, Ruth Pugh Gifford Johnson; children Millard (Mary), Jeannette (Greg), Charles (Beth), and Peter; and numerous grandchildren, family, and friends.

Professor Johnson had numerous research interests spanning the fields of continuum mechanics, viscoelasticity, lubrication, rheology, theory of thin bodies, and mechanics of paper. A common theme of Professor Johnson's research was the use of mathematics and physics to develop rigorous theories to describe important natural phenomena and for solving important practical problems of engineering and science. His early work provided a groundbreaking and influential derivation of the theory of thin elastic shells beginning with general three-dimensional elasticity theory. He was one of the earliest contributors to establishing the theoretical foundations of the now pervasive finite element computer method of analysis where, in his *Journal of Applied Mechanics* paper of 1968, he studied the convergence properties of the method which engendered much needed confidence among users of this new analysis method. Professor Johnson's 1977 paper with former PhD student Daniel Segalman, "A Model for Viscoelastic Fluid Behavior Which Allows Non-Affine Deformation," is a classic in the field of rheology. The "Johnson-Segalman model" of viscoelastic fluid behavior introduced in that paper has been employed countless times by many investigators, and it continues to this day to be highly cited and widely used. Professor Johnson published a series of papers that laid the groundwork, from a rigorous mechanics perspective, for modeling the response of structural components made of paperboard and related materials, taking account of phenomena such as nonlinearity, anisotropy, humidity, and time-dependent effects. These results, in addition to their importance in developing fundamentally rigorous theories for response, have had a significant impact on numerous industries that produce paper-based products.

Professor Johnson cared deeply for all of his students and was proud of their achievements. He was the thesis advisor for 8 MS degree students and 19 PhD degree students. He was an advisor to undergraduate students in the Department of Engineering Mechanics and Astronautics and in the Applied Math, Engineering, and Physics Program (AMEP). He developed many new courses including Continuum Mechanics, Advanced Continuum Mechanics, Engineering Analysis I and II, Structural Theories of Fluid Mechanics (with Professors Bird and Curtiss), Rheology Seminar (with Professors Bird and Lodge), Linear Viscoelasticity and Plasticity, Variational Principles in Continuum Mechanics, Mechanics of Paper, and Theory of Viscoelasticity.

Professor Johnson was one of the five founding members of the UW Rheology Research Center, with A. S. Lodge (Engineering Mechanics), J. D. Ferry (Chemistry), J. L. Schrag (Chemistry), and R. B. Bird (Chemical Engineering). The center has hosted many distinguished national and international visitors through the years and also meetings of The Society of Rheology in 1961, 1977, and 1999. He served as a member of the Rheology Research Center Executive Committee, the Mathematics Research Center, the

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Engine Research Center, the Center for Mathematical Sciences, the Graduate School Executive Committee, and the Physical Sciences Divisional Executive Committee. He was a member of Phi Beta Kappa, The Society of Rheology, a fellow of the American Society of Mechanical Engineers, Society of Industrial and Applied Mathematics, and the American Academy of Mechanics.

Professor Johnson was a gentle, modest, and generous person. He loved the outdoors, including hiking, canoeing, hunting, and fishing; and he shared his passion for these with his family and many friends. He and his family made annual trips to their family "compound" on an island in Springpole Lake in Ontario (near Ear Falls). Through the years they built a series of log cabins for the enjoyment of the family and their friends. There they enjoyed the outdoors, the excellent fishing, boating, relaxing, and observing the wild life. With Professor Johnson's passing, we lost a dear colleague and friend. The *Professor Millard W. Johnson Jr. Engineering Mechanics Scholarship* has been established by the family and the UW Foundation.

MEMORIAL COMMITTEE
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