

MEMORIAL RESOLUTION

JOHN MARSH WILCOX (1925 – 1983)

John Marsh Wilcox, Ph.D., Professor of Applied Physics (Research) and Director of the Stanford Solar Observatory, died while swimming in surf in the Sea of Cortez near Puerto Penasco, Mexico, on October 14, 1983. Memorial services were held at the Stanford Memorial Church on October 21, 1983. He is survived by his two children, Sharon and David, by his wife Ann, and by his brothers William and Ralph.

John Wilcox was born January 31, 1925, in Iowa City, Iowa, and was graduated from Iowa State University in 1949. He obtained his Ph.D. in Physics at the University of California at Berkeley in 1954. During the first decade of his professional career, while at the Lawrence Radiation Laboratory of the University of California, Berkeley, John Wilcox concentrated on laboratory experiments in magnetohydrodynamics, the study of the interaction of plasmas and magnetic fields, and participated in the first laboratory observations of Alfvén waves. John's early development was influenced by a year spent as Visiting Physicist in the laboratory of Professor Hannes Alfvén at the Royal Institute of Technology in Stockholm, Sweden, establishing a pattern of international scientific collaboration which was to become an important component of his work. While at the Royal Institute, John became interested in the application of magnetohydrodynamics to the study of phenomena occurring over very large scales in the solar system. Over the next two decades, he pioneered the development of models and theories of the global structure of the sun and the interplanetary medium. Working with Norman Ness, John identified large scale structures in the interplanetary magnetic field, which he called sectors. Later, working in collaboration with Robert Howard of Mount Wilson, he showed that these sectors had their origin in similar large magnetic structures on the solar surface.

John conceived the idea of a unique solar observatory which, unlike the observatories then available, would be designed to emphasize the study of the large scale structure of the solar magnetic field. In 1971, he joined the Institute for Plasma Research at Stanford and, together with Philip H. Scherrer, designed and built the Stanford Solar Observatory. The scientific reputation of John Wilcox, of the Stanford Solar Observatory which he directed until his death, and that of the dedicated students and scientific colleagues who were attracted by the exciting research program of the Observatory, grew to international status over the last decade. Among the major achievements of John and his colleagues was the discovery of an as yet unexplained connection between the sector boundaries of the interplanetary magnetic field and areas of strong vorticity in the circulation of the earth's atmosphere at the lower boundary of the stratosphere. This effect may yet prove to be critical to understanding a linkage between weather patterns on the earth and the level of solar activity, which many scientists believe to exist. An important discovery was made by John and his associates in 1981, when they developed a method for identifying solar flares deemed likely to affect the earth's ionosphere. More recently,

John and his colleagues have been at the forefront of studies of the seismic oscillation modes of the sun, which provide a unique technique to study the internal structure of the sun.

John Wilcox's contributions to solar and interplanetary physics can be appreciated but not fully comprehended by examining the more than 100 scientific papers he published; to fully comprehend his impact one must include the development of many students and young scientists whom he taught or influenced, the impact of the national international meetings he helped to organize, and his influence on the many scientists from around the world who were his collaborators, his guests at Stanford, and with whom he shared his scientific insights, John will be remembered by friends, students, and scientific colleagues for his gentle humor, human concern, and unselfish sharing of his scientific and human insight. He was a contemporary Renaissance man, deeply interested in chamber music, a talented artist at the clarinet, an avid scholar and collector of early scientific instruments, and a dedicated hiker and observer of nature, as the beautiful setting and architecture of the Stanford Solar Observatory attest.

Arthur B. C. Walker, Jr., Chair
Robert A. Helliwell
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