# Resolutions of Respect

## Paul Jackson Kramer 1904-1995

Dr. Paul J. Kramer passed away in Chapel Hill, North Carolina on 24 June 1995. He was born in Brookville, Indiana on 5 May 1904 and spent his early years on a farm in Ohio. Kramer received his B.A. degree from Miami University in 1926 and did graduate work at the University of Idaho for a year. He then transferred to Ohio State University were he received M.S. (1929) and Ph.D. (1931) degrees in plant physiology. At Ohio State he was introduced to the importance of plant water relations by Professor E. N. Transeau.

In 1931 Dr. Kramer joined the faculty of Duke University, where he served until his retirement in 1974 as James B. Duke Professor of Botany. He shaped the careers of more than 40 graduate students and authored more than 200 publications. At Duke he developed a leading center of research on plant water relations and tree physiology.

Kramer's research had profound implications in plant ecology. He was a "whole plant" physiologist with strong interests in how physiological functions and dysfunctions influenced plant distribution, competition, and succession. He recognized the need for research in molecular biology, yet argued persuasively that all the problems of organisms could not be solved solely at the molecular level. "Instead of being the master of whole organism biology, molecular biology really is its useful servant, helping to explain at the molecular level why organisms behave as they do." (Kramer, P. J. 1973. Annual Review of Plant Physiology 24:1-24.)

Dr. Kramer demonstrated the existence of two water absorption mechanisms: active absorption (responsible for root pressure and guttation), and passive absorption by rapidly transpiring plants (with water pulled in through roots by tensions generated in the transpiring plants). He showed that much salt uptake occurs at some distance behind the root-tip, where the xylem is well differentiated, and that appreciable amounts of salt and water are absorbed through suberized roots of perennial plants. In addition he conducted research on pine and hardwood competition, factors controlling species ranges, measurement of plant water stress, and effects of water stress on physiological processes.

After spending a year at the California Institute of Technology phytotron, Dr. Kramer launched a campaign to establish a phytotron in the East. He recognized that some fundamental questions about the effects of environmental stresses on plants could not be adequately addressed in field experiments because of the many environmental interactions involved. For example, light,

temperature, and humidity are so interdependent that a change in one affects the others. His goal was to establish a controlled-environment laboratory in which plant responses could be quantified in a constant environment, or by changing one environmental factor but not another. His efforts resulted in funding by the National Science Foundation for construction of the Biotron at the University of Wisconsin and, a few years later, of a two-unit phytotron at Duke and North Carolina State Universities, called the Southeastern Plant Environmental Laboratories (SEPEL). The availability of these facilities to ecologists coincided with a tremendous surge of interest in the effects of environmental stresses on plants. Kramer was chairman of the SEPEL Board from 1962 to 1978.

Dr. Kramer served many national organizations. His accolades and honors included the Merit Award of the Botanical Society of America (1956); the Barrington Moore Research Award of the Society of American Foresters (1961); the Charles Reid Barnes Life Membership Award of the American Society of Plant Physiologists (1967); the Distinguished Service Award of the American Institute of Biological Sciences (1977), and the National Medal of Science. He was elected to membership in the National Academy of Science, American Academy of Arts and Sciences, and the American Philosophical Society. He received doctorates from the University of North Carolina at Chapel Hill (1966), Miami University of Ohio (1966), Ohio State University (1972), and the University of Paris (1975).

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## Laurence J. Tilly 1930-1995

The passing of Laurence J. (Laur) Tilly, Ph.D., during an early morning run on 6 March 1995, marked the end of the life of a fine scientist and remarkable human being. Laur had an unusually diverse professional career as an aquatic ecologist spanning three decades. Representative publications include the 1968 classic "The structure and dynamics of Cone Spring" in *Ecological Monographs* and "Seasonal cycling of $^{137}$cesium in a reservoir," a 1979 publication in