

MEMORIAL RESOLUTION

IRWIN REMSON

1923-2013

Irwin Remson, the Barney and Estelle Morris Professor of Earth Sciences, died of natural causes at his home on February 16, 2013, one month after his 90th birthday. He will be remembered for many things, but three immediately come to mind. First, Remson was the father of computer modeling in modern groundwater hydrology: he was instrumental in establishing numerical models as fundamental tools for analysis of subsurface flow. Remson was a pioneer, developing innovative, quantitative methods for predicting the impacts of overexploitation on groundwater resources, understanding soil moisture and plant water use processes, and developing optimal engineering design of groundwater extraction systems. Second, on the practical side, through consulting and advisory committees, Remson worked on high profile problems involving radioactive waste disposal, water supply, interstate water issues, water rights conflicts, groundwater quality, and groundwater management. Third, but certainly not least, more than anyone else of his generation, Remson produced an extensive lineage of students who have gone on to lead hydrogeology groups in academia, government, and industry around the world. The Remson academic family tree contains over one hundred PhDs.

Irwin Remson, born in 1923, was raised in the Bronx, New York. He earned three degrees from Columbia University: a bachelor's degree in physics in 1946 and MA and PhD degrees in geology in 1949 and 1954, respectively. His early work was conducted while he held research and supervisory positions at the U.S. Geological Survey and a faculty position at Drexel Institute of Technology in Philadelphia. During this early part of his career, Remson developed new insights based on field studies of subsurface flow behavior and pioneered the development and use of quantitative models of unsaturated flow.

Remson joined Stanford's Department of Geology, within the School of Earth Sciences, as a professor in 1968. Shortly thereafter, a new department of Applied Earth Sciences was established within the School, and he moved his affiliation into the new department. In 1975, Remson took over as department chair and infused it with his characteristic dynamism. In this position, he single-handedly developed and led the first undergraduate major in environmental earth science, well before the importance of such programs was widely recognized. He was a wonderfully effective departmental leader who was able to direct new hires into areas of growing importance. He provided superior departmental leadership while creating new programs and advising both graduates and undergraduates, who were attracted to his forward-looking approaches. He led the interdisciplinary department until 1982.

As a scientist, the infinitely energetic Remson was ever proactive in bringing his science into the public arena and pushing for integration of public policy themes—

such as land-use planning, environmental protection, and environmental hazards—into the curriculum and training both graduate and undergraduate earth science students. While teaching undergraduates, he co-authored the popular text, *Geology in Environmental Planning* in 1978. Remson was an admired, enthusiastic, knowledgeable, and entertaining lecturer. He received the School of Earth Sciences Excellence in Teaching Award in 1980 and won the *Walter J. Gores Award* in 1992, Stanford's highest recognition for excellence in teaching.

Equally dedicated to the research and training of graduate students, Remson published scores of important journal papers on numerous topics in his field of hydrogeology. He gained an international reputation, co-authoring the first groundwater computer model in 1965, and his 1971 textbook, *Numerical Methods in Subsurface Hydrology*, written with collaborators George Hornberger and Fred Molz, paved the way for the extensive use of computer modeling in hydrogeology, with methods that were rapidly adopted as accepted practice in the discipline. At Stanford, Remson also co-authored the first paper that described a coupled model of saturated-unsaturated flow. He published on hydrogeologic issues related to radioactive waste disposal and developed the first integrated models that combined simulation with optimization techniques for improved groundwater management.

Remson was known for his broad scope of interests and openness to new approaches to analyzing and managing groundwater resources. His research group became known affectionately as "Remson's Mafia." He did so much for so many students, both professionally and personally. Remson not only allowed students to follow their own interests, but he vigorously backed them as partners in exploring new areas of research. Throughout his career, he loved innovative ideas and methods. He was never afraid to get into new and unheard-of areas of research with his students and to learn with them.

Remson was a master at making complicated things simple. He had an astounding ability to get to the bottom of complex processes and explain them in straightforward terms. Sometimes his explanations were so simple, it was tough to see why anyone was ever confused. In 1992, a year before his retirement, he was honored at the *American Geophysical Union* meeting during "The Remson Symposium: 30 Years of Groundwater Modeling." His dedication to scholarly and practical research led to his receipt of the *M. King Hubbert Award* in 1994 for major science and engineering advances and the *Ross L. Oliver Award* in 2009 for outstanding contributions to the groundwater industry.

It is difficult to imagine the fields of hydrogeology and environmental earth sciences without the research and educational contributions of Irwin Remson. He was a "gentle giant," a genius who was opinionated, brilliant and, most of all, kind, caring and generous. He helped shape the lives and careers of the next generation of environmental earth scientists, particularly those engaged in water resources and land-use planning. It is rare for one individual to have such an enormous, positive impact, both at the personal and professional levels.

Irwin Remson is survived by his daughter, Cathy Remson Lazarus (AB '73); son-in-law, Stephen Lazarus (MS '70, PhD '79); granddaughter, Emily Lazarus; son, Ken Remson (AB '79); daughter-in-law, Jana, and grandson Keoni. We are so sorry for their loss, which is one shared by the many people he touched.

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