

factors in visual particle detection were sensitive enough to detect physiological changes in the observers. During the last decade of his life Ausländer was preoccupied with fundamental problems of estimation in statistics and their relation to detection techniques in elementary particle physics.

It is hard to imagine how much physics would have gained had Ausländer been able to work under more auspicious conditions.

Ausländer's human qualities were unusual. For those who have had the good fortune to be closely associated with him he was always a warm, loyal friend, and a source of profound humane wisdom.

ERWIN M. FRIEDLANDER
Lawrence Berkeley Laboratory

MEINHARD E. MAYER
University of California, Irvine

RICHARD M. WEINER
University of Marburg

Ralph S. Halford

Ralph S. Halford, who retired last year after more than 30 years as professor, dean and vice president of Columbia University, died on 7 December. He was 64 years old.



HALFORD

Halford was born in Vallejo, California, 21 April 1914. He earned the BS degree in chemistry in 1935 and the PhD in 1938, both at the University of California at Berkeley. He lectured in chemistry for two years at Berkeley before becoming a National Research Fellow at Harvard University, where he later became an instructor, then a lecturer.

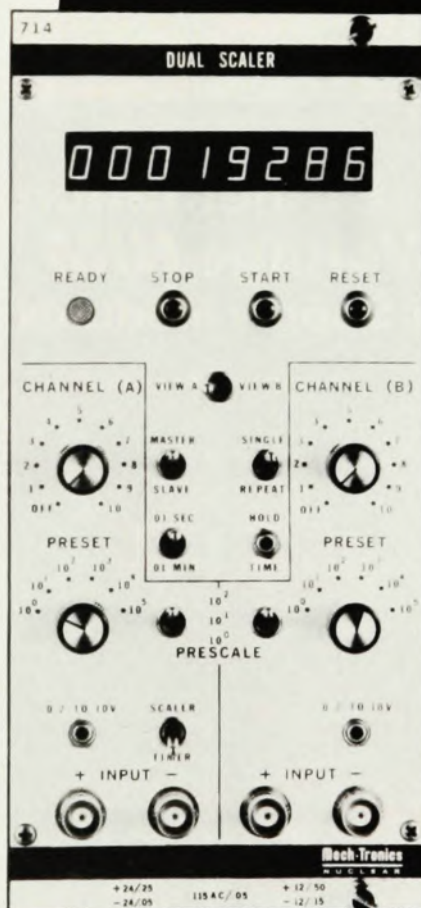
A physical chemist, Halford was former associate editor of the Journal of Chemical Physics. He was a trustee of the Associated Universities, Inc., and served on advisory committees of the Office of Ordnance Research and the Brookhaven

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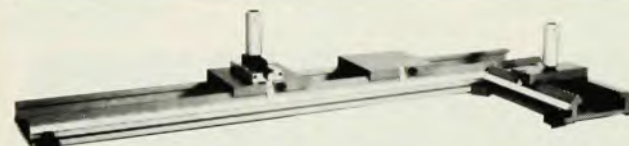
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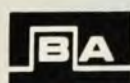


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obituaries

National Laboratory.

In his years in research he carried out a series of studies on the molecular motions of condensed systems, developing an ingenious method by which the infra-red spectra of single crystals of small molecules could be obtained.

Halford joined the Columbia faculty in 1946 as associate professor of chemistry. He was named full professor in 1952, a position he continued to hold throughout ensuing years in the University administration. He was awarded a Guggenheim Fellowship in 1952-53 and served from 1957 to 1959 as chairman of the Department of Chemistry.

He became vice provost for projects and grants in 1959. In 1961, he was appointed dean of the Graduate School of Arts and Sciences. He served as dean until 1967, when he was appointed special assistant to the president for special projects. The following year he was named vice president for special projects, a post he held until his retirement in 1977. The University Trustees named him dean emeritus and professor emeritus.

Ralph Halford possessed a keen intellect and applied to his work in teaching, research and administration the highest personal standards of quality and service. He was deeply interested in student welfare and had unusual ability to give to students an understanding of difficult theoretical principles. He enjoyed teaching on both the graduate and undergraduate levels and was proud of having taught general and organic as well as physical chemistry.

BENJAMIN P. DAILEY
Columbia University
New York City

J. Ross Heverly

J. Ross Heverly, deputy director and principal scientist with the General Research Corporation of McLean, Virginia since 1972, died 24 September at the age of 64. Heverly was project leader for studies in air defense, electromagnetic compatibility, electronic counter countermeasures and tactical nuclear warfare.

Heverly received his PhD in physics in 1948 from Pennsylvania State University. From 1953 to 1962 he was with the operations research office at Johns Hopkins University. In 1962 he became a member and later a director of the Research Analysis Corporation's European field office. In 1965 he was promoted to chairman of the avionics group of RAC, a post he held until 1969, when he was named program manager for intelligence there.

Heverly also taught physics in Penn State and at the US Naval Academy at Annapolis, and was the author of several physics texts. □