

to resume teaching. A dedicated teacher, he believed in careful planning, meticulous attention to details, accuracy as a source of new discovery, and proper care of equipment as a way to conserve funds and avoid frustration in experiment.

In 1951 Slack retired early, but he continued his interest in education, physics and his former students and colleagues, in particular through attendance at meetings of the APS South-eastern Section. In 1977 Vanderbilt University inaugurated the Slack Lecture Series in his honor.

To be in his presence was to feel the force of his personality. A man of rugged integrity, he was candid in his assessment of scientific problems and human affairs. He retained to the last his critical intellect, quick wit and interest in people and events. His death takes from us a highly esteemed mentor and an irreplaceable colleague.

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Norman H. Horwitz

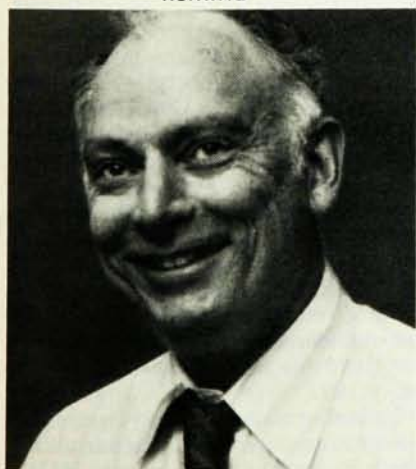
Norman H. Horwitz, director of medical physics and engineering at William Beaumont Hospital in Royal Oak, Michigan, died 28 December 1985. He was 63 years old.

He was a lifelong resident of Detroit and its environs, except for his military service during World War II (1942-46). He served in the Pacific theater and received four decorations, including the Bronze Star.

Horwitz earned his bachelor's (1948), master's (1949) and doctoral (1963) degrees in physics from Wayne State University in Detroit. His doctoral thesis was on ultrasonic attenuation in superconducting metals.

In 1953, after working for the Army at the Detroit Arsenal, Horwitz began his career in medical physics, entering

HORWITZ



the then-infant field of nuclear medicine. One of his first contributions was the development (1955) of a photographic method for recording scintillation-scanning data. Interest in imaging *in vivo* distributions of radionuclides led to his invention of the "spintaricon," a device similar to a spark chamber, which was used to image the thyroid gland. Whether combining solid-state detectors with catheters to monitor *in vivo* uptakes, applying the mechanics of a magic illusion to automatic sampling devices, putting principles of pneumatics to use in patient-care systems or rebuilding outdated laboratory nmr equipment so that it would produce microimages, Horwitz displayed a unique ability for problem solving.

In 1965 he came to Beaumont as head of the applied-physics section. He firmly believed that medical physics should not be limited solely to radiological physics, for he realized that the principles of physics could and should be utilized in all areas of medicine. In 1970, he established the department of medical physics and engineering, bringing together physicists, engineers and instrument makers to support all the services within the hospital. Horwitz served as chairman of the department until his death.

In addition to his departmental responsibilities, he helped develop the Research Institute of the Beaumont Hospital, serving as its director from 1972 until 1976, and as its assistant director from 1976 until his death.

Horwitz was a dedicated teacher who instilled the desire to learn in students, colleagues and friends. He was an extraordinary physicist as well, with a natural ability in mechanical engineering and an insatiable curiosity. He had an uncanny command of the scientific literature. Many a colleague will remember describing to him a "new" idea, only to hear in return his friendly growl of "It has already been done," followed by the literature citation. He demanded excellence of himself and asked of his colleagues that they work at their full potential. Horwitz will be sorely missed but he leaves a legacy of original, innovative ideas and methodology. His life made a difference to those of us who knew him and, in fact, to many who did not.

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Lee J. Kieffer

Lee J. Kieffer, a physicist at the National Bureau of Standards, died unex-

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