attack. He was 87. Winans joined Buffalo's physics department in 1962, when the University of Buffalo became part of the State University of New York. He retired in 1972.

Born in Mexico, Missouri, in 1902, Winans studied physics at Colorado College and Dartmouth College, and he received his PhD from the University of Wisconsin in 1927. He then became a National Research Council Fellow, spending one year at Princeton University and two years at Göttingen, Germany. In 1930 he returned to teaching and research at the University of Wisconsin, where he remained until joining SUNY. He was a Fulbright Fellow, serving at the International Christian University in Tokyo (1958–59) and Taiwan (1959–60), and at Benares Hindu University, India (1968–69).

Winans's studies were primarily in visible and ultraviolet spectroscopy. He was one of the pioneers of experimental quantum mechanics, verifying experimentally predictions of the theories proposed in 1925–30. He was also interested in aviation safety, special relativity and basic concepts in physics. As he explained in a paper in *Foundations of Physics* in 1976, he saw virtue in teaching elementary physics using displacement, time and force as the basic undefined physical quantities from which other quantities are derived.

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Emil J. Konopinski

Emil J. Konopinski, professor emeritus of physics at Indiana University, died of cardiac arrest on 26 May 1990. He was a theoretical physicist known for his work in weak interactions and nuclear structure, for his exceptional clarity as a teacher and for his contributions to the Manhattan Project.

Born on Christmas of 1911 in Michigan City, Indiana, Konopinski received his BA, MA and PhD from the University of Michigan. In his first publication, written with his thesis adviser, George Uhlenbeck in 1935, Konopinski pointed out that Enrico Fermi's recently developed theory of beta decay seemed to disagree with the available data on shapes of beta-ray spectra. Konopinski and Uhlenbeck proposed a variant of Fermi's theory that seemed to agree better with experiment, and new data a few months later seemed to confirm their version of the theory. However, by the late 1930s further experiments had shown that Fermi's original version worked best, at least for allowed transitions.

From 1936 to 1938 Konopinski was a National Research Council fellow with Hans Bethe at Cornell, working partly on problems in nuclear reactions. In 1938 he joined the physics department at Indiana University, where he, Franz N. D. Kurie, Lawrence M. Langer and the new department chairman, Allan C. G. Mitchell, began a program in nuclear physics.

After the outbreak of World War II, Konopinski joined Fermi's group at the University of Chicago. He was a member of a select panel convened at Berkeley by Oppenheimer, and finally went on to Los Alamos. An important paper (now declassified) showing that the explosion of fission or fusion weapons would not set off chains of nuclear reactions in the atmosphere was written by Konopinski, Cloyd Marvin Jr and Edward Teller. Konopinski was also credited with the suggestion of tritium as a component of thermonuclear weapons.

After the war Konopinski returned to Indiana to teach and to continue research on nuclear reactions, nuclear structure and the weak interactions. He and his students made major contributions to the analysis of beta-decay experiments in terms of fundamental couplings, to the concept of lepton conservation and to the relations between nuclear models and beta decay. He wrote a number of timely and authoritative reviews on beta decay, culminating in his monograph, *The Theory of Beta Radioactivity* (1966).

Konopinski was an excellent teacher of a wide range of graduate courses, and he wrote two outstanding textbooks, *Classical Descriptions of Motion* (1969) and *Electromagnetic Fields and Relativistic Particles* (1981). The testimony of former students led to several teaching awards for Konopinski, and there is hardly a colleague of his over the last 50 years who has not on many occasions benefited from Konopinski's wisdom, intuition and willingness to discuss any part of physics.

Emil Konopinski was a first-rate physicist and a deeply humble person who avoided any occasion to judge others. All of his colleagues and former students will keenly miss this beloved, inspiring and gentle man.

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