

ship with President Eisenhower, Rabi was largely responsible for the establishment in 1957 of the President's Science Advisory Committee and the Office of Special Assistant to the President for Science and Technology. For many years, Rabi was the US Representative to the NATO Scientific Advisory Committee, where he effectively advocated the establishment of the highly successful NATO-supported summer school and fellowship programs.

Rabi's carefully prepared public lectures were stimulating and presented fresh points of view, as illustrated by his words at the Fourth International Conference on the Peaceful Uses of Atomic Energy:

Real peace is more than the absence of violent war. To fulfill human expectations peace must be a condition which permits the release of the latent creative energies of all the people to the end of enhancing and elevating the quality of human life on this globe.

NORMAN F. RAMSEY  
Harvard University  
Cambridge, Massachusetts

## Edward C. Campbell

Edward Charles ("Scotty") Campbell died suddenly on 26 January 1988 in Oak Ridge, Tennessee, as a result of a heart attack. He had a long career teaching physics at several colleges and universities, and he worked for 23 years at Oak Ridge National Laboratory, where he conducted many successful research projects.

Campbell was born in Brooklyn, New York, in 1913. After graduating from the University of Michigan in 1934, he attended Ohio State University, where he received his PhD in physics in 1938. He did his thesis under L. H. Thomas on the theory of the ratio of gamma radiation to beta decay in Ag<sup>106</sup>. He also collaborated with M. L. Pool on the energy level diagram for this isotope. A common thread running through Campbell's later research was his interest in determining the energy level diagrams for various isotopes.

He taught physics and astronomy at Minnesota State College, Duluth, from 1938 until 1942, when he went to Princeton University to teach physics to Army and Navy officers.

In August 1946 Campbell was employed as a senior physicist at Oak Ridge National Laboratory. Here he began by taking a year's course in the theory and engineering of nuclear

reactors. He wrote up the lectures by Harry Soodak on the theory of neutron chain reactors, and they were published in 1950 as *Elementary Pile Theory*, by Soodak and Campbell. Within two years the book was translated and published by the Russians. In 1950 Campbell helped develop a laboratory course in experimental reactor physics for the Oak Ridge School.

Campbell constructed a fast pneumatic sample tube, which was irradiated with neutrons in the Oak Ridge Graphite Reactor and then rapidly transferred outside the reactor, where gamma spectra and half-lives as short as 0.1 sec could be measured. He made calculations on problems such as neutron scattering and thermal neutron transport in pulsed composite reactor systems. With many different collaborators he measured short half-lives, neutron cross sections and Doppler broadening, fission product ranges in gases, and gamma-ray spectra. From these spectra he calculated the spin and parity of excited states. He and Fred Nelson developed a widely used technique that employs ion exchange for rapid separation of short-lived radioisotopes from long-lived parents. After the Mössbauer resonance effect was discovered, Campbell, Seymour Bernstein and Charles W. Nestor Jr studied the effects of magnetic fields and chemical combination on the resonance, and the occurrence of optical anomalous dispersion in the reflection of gamma rays.

In 1957-58 Campbell was a guest researcher at the Belgian Atomic Energy Laboratory in Mol, Belgium. There he and P. F. Fettweis built a fast pneumatic tube for the BR-1 reactor and measured rates of decay and nuclear spectra for a number of isotopes with short half-lives.

He enjoyed teaching physics, and he gave a number of courses at the University of Tennessee in Knoxville. For several years he was director of the Oak Ridge Resident Graduate Program of the University of Tennessee, and he also taught classes in this program. In 1969 he went to the physics department at the University of North Dakota in Fargo to continue teaching. He retired in 1981 and returned to Oak Ridge in 1983.

Friendly and outgoing, Campbell worked well with other people. He was always ready with good ideas to assist other workers who had problems, and he enjoyed developing theory from underlying assumptions and then checking the results experimentally. He was a skilled experimenter. As a teacher, he made sure that

students really understood the question at hand. As a friend, he was loyal, helpful and a pleasure to be with, having broad interests in music, theater, photography and outdoor recreation.

HARRY H. HUBBELL, JR.  
Oak Ridge, Tennessee

## Bach Thien Vu

Bach Thien Vu, a principal research scientist at Avco Research Laboratory (Everett, Massachusetts) died accidentally on 27 September 1987 while vacationing in Paris, France.

Vu was born in Saigon, Vietnam, on 11 August 1949. He earned his undergraduate degree in mechanical engineering at Washington University and received an MS and a PhD in mechanical and aerospace engineering from Cornell University. He joined Avco in March 1979 as a senior scientist.

Vu was a dedicated scientist who spent most of his time working on his projects in the laboratory or in his private library at home. His technical work at Cornell University consisted of experimental and analytic studies of turbulent swirling flow; by conducting extensive measurements coupled with stability analysis, he developed an understanding of mixing processes and vortex breakdown in coaxial turbulent jets.

At Avco Vu was active in such varied disciplines as reentry physics, energy and the environment, and laser-related topics. His early work involved the analysis of turbulent hypersonic wakes and electron attachment mechanisms by quenchants introduced in wakes. He carried out experiments and analyses for developing a new antipollution process using electron-beam irradiation of stack gas. In later years Vu was primarily involved in projects related to the development of high-power laser systems. For infrared laser systems he conducted studies of laser beam propagation through turbulent media. He was a key scientist on a program to study the effect of diluent, or diluting agent, composition on the performance of a high-energy pulsed deuterium fluoride laser. For excimer lasers Vu helped to resolve advanced flow and acoustic issues that affect the overall output laser power. At the time of his death he was thinking of expanding his research to include optical signal processing of laser radar echoes.

B. N. SRIVASTAVA  
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