

Until afflicted with Parkinson's disease, Vernon enjoyed sports, especially tennis. He was active in music circles and sang in community choruses, including Gilbert and Sullivan operettas. Vernon was blessed with 60 years of happy marriage and a close family of two daughters, a son, and a grandson.

C. Gordon Little
Boulder, Colorado

David B. Fossan

David B. Fossan, a world leader in studies of nuclear structure and properties of exotic states of nuclei, died 27 July 2003, following a heart attack. At the time, he was swimming at Long Island's south shore during an annual beach outing he had organized for his research group. A professor of physics at SUNY Stony Brook, he had been on the faculty there since 1965.

Dave was born in Faribault, Minnesota, on 23 August 1934. He received his BA in physics and mathematics from St. Olaf College in Minnesota in 1956 and his PhD in physics from the University of Wisconsin in 1960. His doctoral thesis, under the direction of Heinz Barschall, was on fast neutron total cross sections of beryllium, carbon, and oxygen.

After a postdoctoral appointment (1961–62) at the Niels Bohr Institute at the University of Copenhagen, Dave took a research staff position (1963–64) with the Lockheed Corp in Palo Alto, California. He then joined the physics department at Stony Brook as a charter member of the new nuclear structure laboratory. His prolific research, remarkable for its breadth of focus, has long been the cornerstone of the laboratory's program. As new techniques and theory opened new avenues, he returned many times to several themes for exploring nuclei in extreme conditions.

In 1987, Dave was leader in establishing the Gammashphere detector, a national facility for gamma-ray spectroscopy at the Lawrence Berkeley National Laboratory (LBNL). He served on the detector's steering committee from its inception until 1996. He relied on measurements using the Gammashphere for his research involving the correlations of multiple photons emitted in deexcitations of highly excited nuclei. Gammashphere became notorious when, in the movie *The Incredible Hulk*, a replica was used as the main character's vehicle of wrath.

Dave led many studies of heavy nu-



David B. Fossan

clei at high spin in which many structures compete in complex quantum superpositions. Using a wide range of techniques, he investigated such phenomena as backbending, the coexistence of spherical and deformed states, prolate and oblate competition, the shears mechanism of magnetic rotation, and the g -factors of yrast states. Those studies provided the detailed understanding of how heavy nuclei acquire their angular momentum on the basis of collective motions of individual nucleons. The 1999 *Physics Reports* review article of Anatolijs Afanasjev, Fossan, Gregory Lane, and Ingemar Ragnarsson is a standard reference on the transition from collective to noncollective states and serves as a bridge to the study of other mesoscopic systems.

Dave's earlier studies of nuclear shapes matured in his last few years with the discovery of chiral doublet structures in odd-odd nuclei, in which right and left-handed triaxial nuclei were shown to have a nearly degenerate set of energy levels. Until that finding, the presence of such mirror nuclei had been unknown, and their observation opens new avenues of study of the role of symmetries in nuclear structure.

An exceptional mentor for young scientists, Dave set rigorous standards, and his energy, enthusiasm, and dedication helped him provide an unparalleled learning environment for students. He gave them real responsibility and demanded that they produce, but offered advice along the way. Enormously generous with his time, he went out of his way to work with students in both the laboratory and the classroom.

In the national arena, Dave played

a variety of important roles. He served on advisory committees at Brookhaven National Laboratory, the Indiana Cyclotron Facility, LBNL, Oak Ridge National Laboratory, and Argonne National Laboratory. He held guest appointments at BNL, the University of Munich, the Hahn-Meitner Institute in Berlin, LBNL, and the Chalk River Nuclear Laboratories in Canada. He was a member of the editorial board for *Physical Review C* and chair of the 1987 Gordon Conference on Nuclear Chemistry.

In 1989, Dave received the Humboldt Senior Scientist Award from the Alexander von Humboldt Foundation. In 2002, he was awarded the inaugural State University of New York Chancellor's Award for Excellence in Research.

Dave's affability and good nature masked a deep competitive drive, which sometimes was revealed in the demands he placed on himself to extend the understanding of physics. An even more apparent manifestation, though, was his athletic drive. His early love for basketball transformed in later days to frequent rounds of tennis, in which he would put away the opposition with a smile on his face.

We remember Dave for his many contributions to our understanding of the complex processes at work in large and exotic nuclei. His experimental skills, coupled with his deep understanding of the quantum basis for multiparticle systems, distinguished his research career. Even more, we remember him for his outstanding personal contributions to generations of physicists, his fierce honesty, remarkable cheerfulness, and deep interest in bringing out the best in others.

Linwood L. Lee
Robert L. McGrath
Gene D. Sprouse
Paul D. Grannis

State University of New York
Stony Brook

Albert Joseph Howard Jr

Albert Joseph Howard Jr, Jarvis Professor of Physics at Trinity College in Hartford, Connecticut, died at his home in New Haven, Connecticut, on 7 June 2003 as a result of a massive heart attack.

Born on 22 February 1937 in New Haven, Al resided in the New Haven area all his life. He received his BS in physics in 1958 and his PhD in physics in 1963, both from Yale University. His thesis research, under the



Albert Joseph Howard Jr

guidance of W. W. Watson and one of us (Bromley), involved the thermal-column separation of noble-gas isotopes. These he then used in a series of studies of the structure of light nuclei, in experiments carried out at the 3-MV Van de Graaff accelerator at Brookhaven National Laboratory. Thus began a long and productive career in experimental nuclear physics.

In 1962, even before he had completed his doctorate, Al was appointed assistant professor of physics at Trinity. He set up a small laboratory that provided generations of students with substantial early introductions to the art of experimental nuclear physics, particularly gamma and alpha spectroscopy. Concurrently, Al maintained an active and productive research collaboration with one of us (Parker) at the Wright Nuclear Structure Laboratory at Yale and studied nuclear reactions essential to the understanding of stellar nucleosynthesis. Over the years, he also ran experiments with groups at Brookhaven and at Princeton University, sometimes with the participation of Trinity undergraduates.

Al served three terms (1974–78, 1987–90, and 1996–2000, and for the academic year 2001–02) as chairman of Trinity's physics department, served on a full complement of college committees, and carried a full—and often heavy—teaching load. Yet his continual and varied research programs resulted in well over 50 published papers. Trinity recognized Al's distinguished scholarship by naming him Dana Research Professor for 1985–87.

Together with Wayne Strange, the physics laboratory coordinator at Trinity, Al spent much of his last decade refining techniques for accu-

rate determination of environmental radon levels and of radon emanation rates from solids.

We remember Al as an avid golfer, a friend of animals, and a teacher and friend always ready to help colleagues and students. He combined a keen sense of humor with uncompromising dedication to the welfare of his department. He is sorely missed both at Trinity and at Yale.

**D. Allan Bromley
Peter Parker**

*Yale University
New Haven, Connecticut*

Harvey S. Picker

*Trinity College
Hartford, Connecticut*

Elizabeth Ann Johnson

Elizabeth Ann Johnson, a contributor to several branches of theoretical physics and an advocate for women in science and engineering, died at her home in Guildford, England, on 11 September 2003, after battling breast cancer.

Betty was born in Philadelphia, Pennsylvania, on 18 October 1936. She received a BA in physics and mathematics from Swarthmore College in 1958 and subsequently traveled to the UK as a Fulbright fellow to pursue research in theoretical physics at the University of Manchester. There, she completed her PhD in elementary particle theory in 1961; her thesis was entitled “On Symmetry Classification of the Elementary Particles.” Soon afterward, she married; her husband Ron is a professor of theoretical physics at the University of Surrey, UK.

Over the next several years, Betty continued her research in elementary particle theory at Manchester, the University of Pittsburgh, and the University of Wisconsin–Madison. She also held short-term positions at Battersea College of Technology (now the University of Surrey); King's College, London; and the University of Auckland in New Zealand. From 1970, Betty held various part-time positions at Surrey, and her interests shifted to gas dynamics and kinetic theory. During this time, she raised her two sons, one of whom later died in a tragic drowning accident.

In 1986, Daphne Jackson, then the only female professor of physics in the UK and head of the department at Surrey, set up a fund to provide fellowships for women who had taken a break from their careers in science or engineering and wanted to resume those careers. The thrust of the program was to en-



Elizabeth Ann Johnson

able such women to join a research group and get themselves up to speed with the latest developments. Betty, one of the first to obtain such a fellowship, joined the condensed matter theory group at Imperial College London in 1986 to work on the theory of delta-doping in semiconductors.

When Jackson died, the program was renamed the “Daphne Jackson Memorial Fellowships Trust.” Betty, deeply committed to the ideals of the trust, was appointed its part-time coordinator. She divided her time between the trust and her research at Imperial College, except for a year's leave of absence during the early 1990s to fight cancer. She was also instrumental in setting up Portia, a Web site that provides a gateway for women into science, engineering, and technology, and in creating the Daphnet mailing list for women in those fields. To honor Betty for her services to those returning to scientific and technical careers, Queen Elizabeth appointed Betty an MBE (Member of the Order of the British Empire) in 2002. The University of Bath recognized her commitment by awarding her an honorary doctorate posthumously.

Betty's research evolved into work on inelastic scattering processes in quantum transport and spin-dependent effects in semiconductors. In her theoretical physics research, she was concerned that she not only understand the fundamental physics but predict the effects in real materials. She was frequently asked to repeat calculations for new systems long after she had moved on to different interests. We benefited from her insights based on her broad experience in different research fields and indeed from her expansive network of contacts, a