

amusement park physics as well as for her editorial work on *The Physics Teacher* and for founding the Long Island section of AAPT. She earned an MS in physics from the State University of New York, Stony Brook, in 1981.

Franz, a professor of physics at the University of Alabama, Huntsville, was cited "for her leadership in AAPT, the American Physical Society and other scientific societies, and especially for promoting the status of women in physics." She earned a PhD in physics from the University of Illinois in 1965.

AAPT cited Nelson, a professor of physics at Green River Community College in Auburn, Washington, for "his untiring work in improving physics education in the two-year colleges." Nelson earned an MS in physics from Colorado State University.

Peterson, a professor of physics at Iowa State University, was cited for

"his dedication to teaching and his contribution to laboratory apparatus development and laboratory instruction." He earned a PhD in physics from Cornell University in 1968.

Thornton, director of the Center for Science and Mathematics Teaching and a professor of physics and education at Tufts University, was cited for "research in physics education, for developing microcomputer-based laboratories and curriculums and for instructing hundreds of physics teachers." Thornton earned a PhD in high-energy physics from Brown University in 1976.

Zimmerman, a physics teacher at Brookfield Central High School in Wisconsin, was cited by AAPT for his "dedication to physics teaching and his leadership in the high school physics teaching community." He earned an MS in curriculum and instruction from the University of Wisconsin, Milwaukee, in 1968.

OBITUARIES

Alvin Boyd Cardwell

Alvin Boyd Cardwell, professor emeritus of physics and longtime physics department head at Kansas State University, died on 8 September 1992 in Kingston, Tennessee.

Born on 16 October 1902 in Oral, Tennessee, Cardwell graduated in the class of 1925 at the University of Chattanooga. He went on to earn MS and PhD degrees from the University of Wisconsin in 1927 and 1930, respectively. At Wisconsin he began the experimental studies of thermionic and photoelectric electron emission from crystalline metals that continued to be a research interest during most of his career.

After five years as a physics faculty member at Tulane University, Cardwell came to Kansas State University in 1936 as a professor of physics and head of the department. Except for 1944–46, when he took leave to work on the Manhattan Project at Oak Ridge, he served as department head until 1953, when he was named associate dean of arts and sciences. Cardwell returned to the physics department as a professor in 1955, and he was department head again from 1957 to 1967. Teaching and advising students were lifelong interests for Cardwell.

Cardwell contributed to the department and the university with his leadership, planning and administration. As director of the KSU Bureau of General Research, he improved the climate for research throughout the university. Cardwell led the planning for a physics and mathematics building, which was dedicated in 1963 and named Cardwell Hall in his honor. A 6-MV tandem van de Graaff accelerator for the physical science building was installed in 1969. Cardwell's vision for the department and university laid a strong foundation for the future.

Cardwell's colleagues remember him for his fortitude in times of difficulty and his love of a good story.

JAMES C. LEGG

Kansas State University
Manhattan, Kansas

Herbert G. MacPherson

Herbert G. MacPherson died suddenly in Guadalajara, Mexico, on 26 January 1993, at the age of 81. Thus passed one of the most highly respected pioneers of nuclear energy.

Mac received his PhD in physics at

NEW MEMBERS NAMED TO NATIONAL ACADEMY OF SCIENCES

On 27 April the National Academy of Sciences announced the election of 60 new members and 15 foreign associates for 1993. With the election the academy now has 1683 active US members and 298 foreign associates.

The newly elected members of NAS include the following:

Yakir Aharonov, professor of physics, Tel Aviv University, Israel, and the University of South Carolina, Columbia

Bishnu S. Atal, head, speech research department, AT&T Bell Labs

Malcolm R. Beasley, professor of applied physics and electrical engineering, Stanford University

Claude R. Canizares, professor of physics, head of the astrophysics division and director of the Center for Space Research, MIT

Steven Chu, professor of physics and applied physics, Theodore and Frances Geballe Professor of Humanities and Sciences, and chair of physics, Stanford University

John Cocke, research staff member, computer sciences department, IBM T. J. Watson Research Center

Brent Dalrymple, geologist, US Geological Survey, Menlo Park, California

Donald J. DePaolo, professor of geochemistry, University of California, Berkeley

Jerry Gollub, chair of physics and Kenan Professor of Physics, Haverford College

John Huchra, senior scientist, Smithsonian Institution, and professor of astronomy, Harvard University

Mao Ho-kwang, staff member, Geophysical Laboratory, Carnegie Institution of Washington, DC

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Shing-Tung Yau, professor of mathematics, Harvard University.

The new NAS foreign associates include:

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Bert Sakmann, professor, medical faculty, University of Göttingen, and director and professor of cell physiology, Max Planck Institute for Medical Research, Göttingen, Germany

Nikolai Sobolev, deputy director of the Institute of Geology and Geophysics, Siberian branch, Russian Academy of Sciences, Novosibirsk, Russia

Richard Taylor, professor of physics, Stanford University.

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the University of California, Berkeley. He then joined the National Carbon Division of Union Carbide Company, and soon he became a world authority on graphite. When graphite was chosen as the moderator for the Hanford plutonium-producing reactors, Mac and his colleague Victor Hamister were called upon to devise methods to rid the graphite of boron, a neutron-absorbing impurity. Their success in finding a way to produce ultrapure graphite was key to the success of Hanford.

In 1957 Mac joined the Oak Ridge National Laboratory. There he was in charge of the development of molten-salt reactors for civilian power. He initiated the design and construction of the Molten Salt Reactor Experiment, an 8000-kilowatt reactor that operated successfully at temperatures of 650°C. The MSRE was the first chain reactor to be fueled with ^{233}U . Although no commercial molten-salt reactor has been built, interest in such reactors remains in France and Japan.

Mac served as deputy director of ORNL from 1965 to 1970. When he left ORNL in 1970 he became a professor of nuclear engineering at the University of Tennessee. While at UT he acquired a reputation as one of the country's foremost experts on reactor safety, and the Atomic Energy Commission called upon him to digest and analyze 22 000 pages of testimony from hearings on the adequacy of the emergency core-cooling systems in light-water reactors.

Mac became the first director of the newly established Institute for Energy Analysis in 1974, at the time of the first oil crisis. Mac also helped to guide the work of the White House's Office of Energy Research and Development, when I was its head.

After he retired Mac became an expert on Mayan astronomy, and he published an important paper on the Mayan calendar. His interest in Mayan archaeology fit well with his growing attachment to Mexico, which he and his wife visited every year for 23 years.

Mac was one of the most highly respected scientists ever to have worked at ORNL. Above all, he displayed a rare wisdom not only about science and engineering but also about administrative matters. He led an exemplary and well-fulfilled life. His passing leaves a deep sense of loss in his many admirers, who appreciated his unusual qualities of judgment and wisdom.

ALVIN M. WEINBERG
Oak Ridge Associated Universities
Oak Ridge, Tennessee ■

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