the University of Idaho. He moved in 1942 to the Radiation Laboratory at MIT, where he was the associate group leader for radar beacons. In 1946, he became a member of the staff of Bell Telephone Laboratories, where he worked primarily on barium titanate. At this time, he developed an interest in the properties of semiconductors that continued throughout his life. He came to Iowa State University and the Ames Laboratory in 1948 as an associate professor of physics. There he established an experimental solid-state physics program in the department of physics and the Ames Laboratory. Thanks to his enthusiasm and dedication, this activity rapidly flourished.

He made many important contributions to research, including the discovery (with Cornelius Lanczos in 1942) of the fast Fourier transform, the development of transient methods for measurements of thermal diffusivity and heat capacity at high temperatures, studies of the properties of Mg_2Si and related semiconducting compounds, and the preparation and characterization of the sodium tungsten bronzes.

In recognition of his great interest in both undergraduate and graduate teaching, the Gordon C. Danielson Memorial Fund has been established with the primary purpose of endowing prizes and scholarships for physics students. Contributions may be sent to this fund through the Iowa State University Achievement Foundation, Alumni Suite, Memorial Union, Ames, IA 50011.

ERLING JENSEN
ALLAN MACKINTOSH
CLAYTON SWENSON
Iowa State University

Homer Levi Dodge

Homer Levi Dodge, a great statesman of science, died 29 June at his home in Mechanicsville, Maryland, at the age of 95. He was born 21 October 1887 in Odgensburg, New York.

Dodge earned a BA degree in physics in 1910 from Colgate University and a PhD degree from the University of Iowa in 1914, working with properties of materials and electrical measurements. He stayed on to become an assistant professor. During the First World War he worked for the war effort—doing research, for example, on sound detectors for the National Research Council. From 1916 to 1924 he wrote for the journal *School Science and Mathematics* the section "Research in Physics." His articles, presenting to teachers of physics the results of recent research, were an early example of his lifelong commitment to convey new discoveries in science to the classroom.

In 1919 he joined the University of Oklahoma as professor (1919–44) and head (1919–42) of the department of physics. He directed the School of Engineering Physics from its establishment, in 1924, to 1942 and served as dean of the Graduate School, from 1926 until 1944. He felt very strongly, on the one hand, that physics curricula were not complete without significant study of the applications of physics and, on the other, that engineering students should study more fundamental science; he established at Oklahoma pioneer curricular programs in applied physics and geophysics that put his approach to use. Believing also that faculty members of public universities should assist state government and industry, he served as Director of the Oklahoma State Bureau of Standards (1919–44) and in 1941 organized within the University and directed the Research Institute, whose major function was to attract industrial support for research programs of the University.

During World War II Dodge served as the director of the Office of Scientific Personnel of the National Research Council, and in 1944 he became president of Norwich University in Northfield, Vermont, leading the institution through the difficult period following the war. In 1951 he was a member of a special mission to study engineering education in Japan, and later he traveled extensively in the USSR, visiting centers of scientific and engineering education. Under the auspices of Sigma Pi Sigma he lectured widely across the US in 1957–58 on scientific and technological education in the Soviet Union.

Dodge played a major role in physics education in the US. In the late 1920s many academic physicists saw a need for a forum for discussions and publications concerning physics education. Such topics were deemed to be inappropriate in the meetings and journals of The American Physical Society. A group of physicists led by Paul Klopsteg agreed that Dodge should chair a meeting that was held 29 December 1930 in Cleveland (during the APS meeting) to establish the American Association of Physics Teachers. The initial officers of the Association were Dodge, president; Klopsteg, vice president; William S. Webb, secretary–treasurer; and Karl Compton and Floyd Richtmyer, members of the executive committee. From the start, Dodge insisted that there had to be a close working relationship between APS and AAPT. Recognizing the need for a journal, he persuaded Duane Roller to be the first editor of the *American Physics Teacher* (now the *American Journal of Physics*). During the two years he was president of AAPT, Dodge helped found the American Institute of Physics (1931) and joined its governing board. In 1939 he chaired a campaign to raise funds to allow AIP to purchase a headquarters building on 55th Street in New York City. It seemed urgent to him that AIP should publish a general-interest physics journal; his efforts helped speed the establishment of PHYSICS TODAY.

DODGE

Dodge was proud to be considered "Dean of American Canoeing." Even after reaching the conventional age of retirement he continued to excel in his life-long love of white-water canoeing: He won the White Water Derby in an open aluminum canoe at the age of 85.

Dodge loved—and met—challenges in science, education, administration and canoeing. He was a pioneer in stressing the importance of applied physics. He was a leader in recognizing that the vitality of science and the vitality of industry depend on each other. He felt that this relationship should be stressed in science and engineering education, in academic and industrial research and in academic and corporate planning. The importance of this linkage is being rediscovered today.

ALBERT A. BARTLETT
University of Colorado

Warren Edgar Winsche

Warren Edgar Winsche died of cancer on 19 June 1983. At the time of his death, he was deputy director of Brookhaven National Laboratory.

Winsche was born in Brooklyn, New York, in 1917 and received his doctorate in chemical engineering at the University of Illinois in 1943. After a brief stint with the Army Chemical Corps, he went to Oak Ridge, where he worked on chemical reprocessing of irradiated uranium to separate plutonium. The originality and value of his contributions were quickly recognized, and he was appointed group leader of chemical processes. In 1946 he joined the new Brookhaven National Laboratory as associate chairman of the reactor project, in charge of the engineering design of the world's first nuclear reactor dedicated solely to peaceful research. He introduced a number of notable improvements in the design of this reactor that increased its power and neutron flux by an order of magnitude over those of the Oak Ridge X-10 reactor.

He then went to the Savannah River Laboratories, which were being started to add to the US production of fissile material for defense. As research manager of separations engineering, he developed a number of chemical processes that rounded out the application of modern chemistry and chemical engineering to large-scale uranium separation.

In 1962 he returned to Brookhaven to become chairman of the nuclear engineering department, which later became the department of applied science. He conceived a new reactor concept for rocket propulsion, based on a balance of centripetal and centrifugal forces on a rotating fluidized bed of fissionable fuel. He conceived a new fast breeder using pebble-bed fuel and spectral shift. Initiating the use of hydrogen as an alternative fuel, he pointed out the potentials that metallic powders have for dense storing of hydrogen for automobiles and for separating hydrogen isotopes. He recognized very early the possibilities of surface chemistry, toward which he pointed his department's research.

He became associate director of Brookhaven in 1975 and deputy director in 1979. He used his influence to make the Lab and other institutions more receptive employers of women and native Americans.

HERBERT J. KOUTS
Brookhaven National Laboratory

Clark Goodman

Clark Goodman, a noted nuclear physicist and a pioneer in nuclear engineering, died 23 June 1983 in Coronado, California. He was 73.

Goodman earned his bachelor's degree in chemical engineering at Caltech in 1932. He then worked as a research chemist (1932–36) but was promoted, to his chagrin, to sales. When his friend from Caltech, Robley D. Evans, invited him to MIT as a research associate in 1936, Goodman promptly accepted the offer; he went on to earn a PhD in physics there in 1940.

During World War II, Goodman served with the Office of Scientific Research and Development; after the war, he worked as a senior physicist at Oak Ridge National Laboratory. While there, he helped develop the concept of nuclear propulsion for naval vessels. On his return to MIT in 1947, he joined the faculty and also developed a curriculum for the training of navy personnel in reactor operation. Goodman was the editor and a co-author of *Science and Engineering of Nuclear Power*, published 1947–48, the first unclassified text on the subject.

While at MIT, Goodman began his consulting practice with Schlumberger, Ltd. He acquired twenty-five patents in the applications of nuclear physics to oil- and gas-well logging, a field in which he was an important innovator. He spent his final three years at MIT on partial leave, during which time he served as assistant director of the Division of Reactor Development of the US Atomic Energy Commission. In 1958, Goodman became director of research and vice-president of Schlumberger. With his great interest in independent research, he stayed only four years. In 1962 he