though he knew he would be in retirement before it was completed.)

^{3}He was an even rarer commodity in 1947 than was liquid ^{4}He. Soller's group planned to start with ordinary helium from natural gas wells and to concentrate ^{3}He from its normal concentration of 10^{-6} by taking advantage of the superfluid properties of helium. Amherst would then become one of only three or four laboratories in the world doing research on the low-temperature properties of ^{3}He.

Dreams of Amherst preeminence in this field were severely affected by the commercial production of helium liquefiers by the Arthur D. Little Company and by the decision of the Atomic Energy Commission in the early 1950s to release to researchers at non-AEC laboratories small quantities of nearly pure ^{3}He (obtained as a decay product of tritium). During the succeeding years, Soller and a series of younger colleagues carried out experiments in a range of low-temperature topics—from the nuclear hyperfine contributions to the heat capacities of rare earth metals below 1 K to the superfluid properties of ^{4}He itself. The tradition of cryogenics research at Amherst College that Soller initiated in 1947 continues to this day.

JOEL E. GORDON
ROBERT H. ROMER
DUDLEY H. TOWNE
Amherst College
Amherst, Massachusetts

Joseph Edmunds Henderson

Joseph Edmunds Henderson died on 23 May 1994, at the age of 93.

Henderson was born in New Cumberland, West Virginia, on 16 October 1901. He obtained a BS in 1922 from the College of Wooster, Ohio, and a PhD in physics in 1928 from Yale, where he served as an instructor from 1927 to 1929. He then joined the physics faculty of the University of Washington as an assistant professor; he became a professor in 1942.

Henderson's career fell roughly into two segments, demarked by World War II. At Yale he carried on research into the properties of soft x rays. He brought to the University of Washington a vigorous research effort, initiating projects on topics that included conduction of electricity through gases, field emission and Čerenkov radiation. Henderson and his students began a nuclear physics research program by using at night the nearly 1 MeV voltage from a Cockcroft–Walton accelerator at the Swedish Hospital in Seattle, built for x-ray treatment of tumors. The war brought to a halt this nascent effort. The first physics PhD at the university was awarded in 1935 to one of Henderson's students.

In 1941 Henderson joined the bomb proximity-fuze project as principal physicist at the National Bureau of Standards in Washington, DC, and later he became a consultant to the National Defense Research Committee in the Carnegie Institution's Department of Terrestrial Magnetism. In 1943 he returned to the University of Washington and a year later responded to a request by the US Navy to establish the Applied Physics Laboratory to solve a nasty torpedo-exploder problem. The laboratory went on to make many valuable contributions, including significant underwater pressure measurements at the Bikini test of a thermonuclear bomb. Under Henderson's directorship it developed a special rapport with the US Navy.

Henderson made many contributions to the capabilities of the Navy, but perhaps his most significant role was as an objective critic, exercising a scientific skepticism that the armed services sorely needed. The influence exploders (triggered by a ship's magnetic field) of today's Navy torpedoes bear his stamp. He also was a prime mover in the establishment of an acoustic underwater tracking range useful in many kinds of tests and in the improvement of the antisubmarine weapon system. At the Navy's request he served on several important boards and councils. Henderson retired from the directorship of the APL in 1969 but continued as a scientific adviser until his death.

Henderson was alive to many applications of physics and had numerous connections with business and industry. In their early days in Seattle he and his wife, Evelyn Colpitts Henderson, also a Yale PhD in physics, carried on extracurricular industrial research in their home. He became a director of the John Fluke Manufacturing Company (Fluke had been a student of his) and of the Field Emission Corporation (whose founder, Walter P. Dyke, had also been his student).

Joe Henderson will long be remembered by his many students, colleagues and Navy and business associates for his curiosity and persistence, combined with a warm, genial personality.

RONALD GEBALLE
University of Washington
Seattle, Washington ■