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Indiana, McMillen conducted his graduate work at Washington University in St. Louis under the supervision of Arthur Llewellyn Hughes, receiving his PhD in 1930. Under the stringent financial conditions of the Great Depression, McMillen remained at Washington University as a research associate for three years, then held a two-year National Research Council fellowship at Princeton. He returned to Washington University for two more years as a research associate in the school of medicine, where he helped introduce electron microscopy as a tool in medical physics. In 1937 he joined the faculty at Kansas State University, becoming a full professor there in 1939. He returned to Princeton in 1944 to do research under the World War II Committee on Medical Physics. He then joined the Naval Ordnance Laboratory (1946), where he led groups in hydrodynamics and hyperballistics.

When McMillen joined NSF in 1952, physics was already being funded by the Department of Defense and the Atomic Energy Commission, and the appropriate role for NSF was far from clear. To clarify that role, McMillen supported conferences to explore physicists' opinions on the current status and needs of research, as well as possible ways that NSF might address those needs. Examples were the "Rochester" high-energy physics conferences, the accelerator-design studies of the Midwestern Universities Research Association, the Advisory Panel on High-Energy Accelerators and a conference on low-temperature physics that considered what research might be suitable for small liberal-arts colleges. As the NSF physics program and staff expanded, McMillen focused his attention on the elementary-particles program, primarily supporting university cosmic-ray research and user groups at accelerators. By the time of his retirement in 1971, a strong and growing program had been established.

In addition to his many research interests, McMillen was deeply interested in encouraging young researchers and improving teaching techniques. While at the Ordnance Lab he was also an adjunct professor at the University of Maryland, and while at NSF he served as secretary of the physics section of AAAS. As new program staff joined NSF, McMillen provided guidance and counsel in the principles and practices of directing NSF programs. He contributed much to a broad range of basic and applied research; he contributed much as well to those around him and to the standards and traditions of the Federal support of science.

RAYMOND J. SEEGER

National Science Foundation, retired

JOEL A. SNOW

Department of Energy

Sam Legvold

Sam Legvold, emeritus professor of physics at Iowa State University, died in Ames, Iowa, on 17 February 1985. He was born in Huxley, Iowa, on 8 January 1914, and was awarded a BS from Luther College in 1936, after which he was a teaching assistant in mathematics at Iowa State College for one year. He went to Columbia University as a Lydia Roberts Fellow, and after one year returned to Luther College as an assistant professor of physics. Legvold resumed his graduate work at Iowa State two years later and became a research assistant in 1941. After spending 1943-44 as a contract employee with the US Navy Bureau of Ordnance, for which he was granted the Meritorious Civilian Service Award, he returned to Iowa State, where he received his PhD in 1946. Legvold joined the faculty of the physics department at that time as associate professor; he retired in 1979 as professor of physics, Distinguished Professor of Sciences and Humanities (awarded in 1976), and senior physicist in the Ames Laboratory of the US Department of Energy.

Legvold established the low-temperature laboratory at Iowa State, and low-temperature work was an important part of his research activity. In collaboration with Frank H. Spedding, he initiated studies in the Ames Laboratory of the low-temperature thermal and transport properties of high-purity rare-earth metals. Legvold and Spedding, who coauthored 27 papers, discovered the multimagnetic transitions in the heavy lanthanide metals in the late 1950s. Legvold's group was the first to prepare single crystals for several of these metals and to investigate their rather remarkable anisotropic magnetic and transport properties. He was the primary adviser for 35 PhD and 19 MS students, most of whom worked on the lanthanide metals, although a number also took part in a smaller ultrasonic research program to study relaxation

LEGVOLD



processes in complex molecular gases. Legvold's students figured prominently in the 110 scientific papers that he published during his career. He was active in research just prior to his death.

CLAYTON A. SWENSON
DOUGLAS K. FINNEMORE
KARL A. GSCHNEIDNER JR
Iowa State University

John F. Noxon

John F. Noxon, leader of the Optical Aeronomy Program of the Aeronomy Laboratory of NOAA in Boulder, died on 19 January 1985.

Noxon was born in Pittsfield, Massachusetts, on 7 July 1928, and received his PhD in physics from Harvard University. He joined the Aeronomy Laboratory as a senior scientist in 1972, coming from Harvard's Blue Hill Observatory, where he was associate director.

Noxon pioneered studies of airglow and its relationship to atmospheric waves, spectroscopic measurements of atmospheric ozone on the Earth, Mars and Venus, spectroscopic studies of stratospheric trace gases (including the first observation of NO_3), and measurements of the global distribution of stratospheric NO_2 . Noxon was an adventurer and explorer throughout his scientific career, obtaining observations from aircraft flights over the North Pole, ship cruises in the Southern Hemisphere, and from sites that included Alaska, Peru, Hawaii and Greenland. His sense of discovery was not restricted to science. He had a lifelong interest in mountaineering and made two climbing trips in the Nepal Himalayas and an ascent of Mt. McKinley in his student days.

ELDON E. FERGUSON
Aeronomy Laboratory-NOAA
Boulder, Colorado

Omer Kaymakçalan

Omer Kaymakçalan of Syracuse University died on 22 February 1985 at the age of 30. A native of Ankara, Turkey, Kaymakçalan earned his PhD from the University of California at Berkeley, working for Stanley Mandelstam, and went to Syracuse University in November of 1981 as a research associate in high-energy particle theory. He worked on several problems of current interest: proton decay, the implications of the axial anomaly for vector mesons and an effective Lagrangian for supersymmetric quantum chromodynamics. More recently he worked on finding the absolute minima of $\text{SO}(10)$ -invariant Higgs potentials. □



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