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induced fluorescence for detection of impurity atoms in neutral beams and on a novel technique for producing high-intensity hydrogen and deuterium beams with a high degree of nuclear polarization.

Burrell participated in a wide range of projects in our group, and made significant contributions to such diverse activities as the development of a high-current source of negative helium ions and a model that derives the properties of positive ion sources from basic atomic physics. He also actively participated in outdoor activities—he particularly enjoyed sailing, bicycling, hiking and cross-country skiing.

WILLIAM S. COOPER

ROBERT V. PYLE

WULF B. KUNKEL

ALFRED S. SCHLACHTER

Lawrence Berkeley Laboratory

Forrest F. Cleveland

Forrest Fenton Cleveland, professor emeritus of the Illinois Institute of Technology in Chicago, died 5 February 1985, at the age of 79. He was born on 10 January 1906 and received his MS and PhD from the University of Kentucky, where he also began his career as an instructor in physics. After serving as professor and head of the physics department at Lynchburg College for four years, he joined the faculty of IIT in 1939 as an associate professor, becoming a full professor in 1943 and remaining there until his retirement in 1971.

Molecular spectroscopy was a central theme in Cleveland's career as a physicist: Throughout his life he contributed actively in every possible and significant way to the field. He founded the spectroscopy laboratory at IIT and, as director, guided research in molecular spectroscopy, in Raman and infrared spectroscopy of polyatomic molecules, and in the theory of vibrational spectra. Most notable among his achievements is a series of articles he wrote with Arnold Meister in 1943 and 1946 on the normal-coordinate analyses of molecular vibrations using Bright Wilson's FG-matrix method.

In addition to his research interests, Cleveland was a strong advocate of the use of a common language among all scientists; he used the language "interlingua" in his publication *Spectroscopia Molecular*. He was a conscientious and dedicated teacher.

S. SUNDARAM

University of South Florida

James N. McGruer

James N. McGruer of the University of Pittsburgh died on 4 December 1984.