

obituaries

ions were to be recognized by the Samuel W. Stratton Award, the highest scientific honor conferred by the National Bureau of Standards (see page 83 of this issue).

Milligan was born in 1928 in Brigh-ton, Alabama. In 1949 he received his BS degree in chemistry from More-house College, Atlanta, Georgia, and in 1951 he received an MS degree in both organic chemistry and mathematics from Atlanta University. In 1958 he completed his PhD in physical chemis-try at the University of California, Berkeley.

At Berkeley Milligan used the ma-trix isolation technique to permit spec-troscopic characterization of small free radicals and reaction intermediates, which play essential roles in most chemical processes but which ordinari-



MILLIGAN

ly react so rapidly as to preclude their direct observation.

Following completion of his degree requirements at Berkeley, Milligan continued his matrix isolation studies at Mellon Institute (now Carnegie-Mellon University) in Pittsburgh. This work led to the infrared spectro-scopic observation of NCl, the first diatomic triplet molecule to be stabi-lized in a rare-gas matrix.

In April 1963 Milligan joined the Physical Chemistry Division of the Na-tional Bureau of Standards, where the continued opportunity to pursue re-search in the spectroscopy of matrix-isolated free radicals bore much fruit, including his detailed vibrational as-signment of the hydrocarbon flame bands and the identification of C_2^- , the first negatively charged molecule to yield a gas-phase molecular spectrum. Subsequently, some twenty small mo-lecular ions, including such species as NO_2^- , O_3^- , O_4^- , and CO_3^- , impor-

tant intermediates in the chemistry of the earth's ionosphere, have been stabi-lized in rare-gas matrices and stud-ied in Milligan's laboratory.

Milligan was an adjunct research professor of chemistry at Howard Uni-versity, and he served as a member of the Executive Committee of the Na-tional Organization for the Professional Advancement of Black Chemists and Chemical Engineers. He is survived by his family and by many friends and golfing companions, who will remem-ber him for his lively sense of humor, for his keen perceptiveness and for his deep concern, which transcended the barriers of race and rank.

A scholarship fund has been estab-lished in his memory at Morehouse College. Contributions can be made in the form of checks made payable to Morehouse College, c/o The D. Milli-gan Scholarship Fund and mailed to The Dolphus Milligan Scholarship Fund, Morehouse College, Atlanta, Georgia 30314.

MILTON D. SCHEER

Physical Chemistry Division
National Bureau of Standards

Walter J. Miller

The Rev Walter J. Miller, astronomer in residence at Fordham University and a former assistant papal astrono-mer at the Vatican Astronomical Ob-servatory, died on 30 November. He was 69 years old.

Miller specialized in the study of faint variables and was widely known for his observations of Cygnus. While at the Vatican observatory Miller dis-covered about 500 new variables in the Milky Way and published the first twenty of a series of studies known as the *Vatican Variables*.

In 1955, after serving at the Vatican observatory for ten years, he became the director of the astronomy labora-tory at Fordham. Miller received his PhD from Harvard University in 1943. He was ordained by the Society of Jesus in 1939.

Donald Jensen Fox

Donald Jensen Fox, a physicist at the National Accelerator Laboratory, died on 30 September 1973, as a result of a road accident.

A member of the group of collabora-tors in the deep inelastic muon scatter-ing experiment in the NAL Muon Area, Fox had worked at the Labora-tory since 1971, when he completed his doctorate in high-energy physics at the Massachusetts Institute of Technology. He was a member of the Michigan State University staff in residence at NAL. □



see
force

By providing a visual linear display of the spectral content of your incoming light, Tropel Spectrum Analyzers help you see and understand your spectrum.

The Tropel Analyzer force meets all requirements for laser line profile analysis. For example, you can use the:

- Tropel 216V for high resolution (1 MHz) in laser jitter studies.
- Tropel 240 to determine single frequency operation of lasers.
- Tropel 2440 as a compact laser monitor.
- Tropel CL-100 to determine dye laser line widths.

With the most complete line of spectrum analyzers available, Tropel can supply you with the right model for your requirements.

Put the Tropel "see force" to work for you. Tropel, Inc., 52 West Avenue, Fairport, New York 14450, (716) 377-3200.

Tropel . . . when you want your problems solved.

 **TROPEL**
A Subsidiary of Coherent Radiation

Circle No. 67 on Reader Service Card