SERIES

better understanding of the interaction of radiation with atoms, especially for his contributions to the development of the method of quantum beat spectroscopy."

Series obtained his PhD from Oxford University in physics, remaining there until 1970, when he became a professor of physics at the University of Reading. His early research involved the optical confirmation and measurement of the Lamb shift in atomic hydrogen and singly ionized helium. His lifelong interest in hydrogenic spectra lead him to determine the Rydberg constant through careful analyses of the Stark effect and to employ optical pumping, level crossing, and quantum beats, to make accurate determinations of fine- and hyperfine-structure lifetimes and other basic atomic properties.

BURRUS

Steacie Prize given to Gordon Drake

Gordon W. F. Drake, professor of physics at the University of Windsor, has been chosen to receive the Steacie Prize in natural sciences. The prize is given annually to recognize achievements by a person under 40 working in Canada in the natural sciences, and includes a cash award of $5000.

The trustees of the E. W. R. Steacie Memorial Fund cited his "significant contributions to the theory and determination of relativistic effects in radiative transitions, to the understanding of the Lamb shift and quantum beats in hydrogen, and to the development of variational methods for the relativistic Dirac equation."

Gordon graduated from McGill University with an honors chemistry degree in 1964, and obtained a Master's in physics from the University of Western Ontario in 1965 and a PhD in physics from York University in Toronto in 1967. He held the National Academy of Sciences Fellowship at Harvard College Observatory and Smithsonian Astrophysical Observatory from 1967 to 1969. He joined the faculty of the Department of Physics at the University of Windsor in 1969.

Drake's principal interests are in the field of atomic physics, where the topics he has worked on concern aspects of interactions within or between atoms or interactions between free atoms and the radiation field.

obituaries

Gaylord P. Harnwell

Gaylord P. Harnwell, president emeritus of the University of Pennsylvania and former chairman of its physics department, died on 17 April 1982. Harnwell was born in Evanston, Illinois, on 19 September 1903 and graduated from Haverford College in 1924. After spending a year working with Ernest Rutherford at the Cavendish Laboratory in Cambridge, he returned to begin graduate work at Princeton University, where he received his PhD in 1927 and later became an instructor. While at Princeton, his research in gaseous electronics led to the development of a series of instruments that ultimately resulted in his becoming editor of the *Review of Scientific Instruments*.

In 1938 Harnwell became chairman of the physics department at the University of Pennsylvania, where he quickly demonstrated unusual ability as an administrator. He developed the physical resources of the department and brought together the support for the construction of a new physics laboratory, the present David Rittenhouse Laboratory. More important, he recruited a long line of distinguished physicists who provided the nucleus from which the present department evolved.

During the Second World War Harnwell was director of the University of California Division of War Research at the United States Navy Radio and Sound Laboratory in San Diego. After the war, Harnwell returned to the University of Pennsylvania to continue as chairman of the physics department until 1953.

Harnwell's effective work as an administrator did not hamper his career as a scientist and teacher. His published texts include *Principles of Electricity and Magnetism*, *Experimental Atomic Physics* (with J. G. Livingood), *Atomic Physics* (with W. E. Stephens), and *Matter, Energy, and the Universe* (with G. T. E. Legge), all of which were widely used. He became consulting editor of the International Series in Physics of the McGraw-Hill Book Co. He was editorial director of PHYSICS TODAY from 1951–53 and chairman of its editorial board until 1955.

Harnwell became president of the University of Pennsylvania in 1953. He was good at delegating responsibility, yet never delegated the power of ultimate decision. When things were

HARNWELL

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ready and he saw his way clear, he made decisions with alacrity and moved on to the next problem. He left the University after seventeen years as president with its every major area strengthened.

Even while serving as president, Harnwell continued to teach a general course in physics regularly. At the same time, his activities went far beyond the university. At the request of the Shah of Iran he helped set up a university along US lines in Iran, which later became Pahlavi University in Shiraz. He also served as president of the American Association for the Advancement of Science.

ALFRED K. MANN
CHARLES W. UFFORD
WALTER D. WALES
University of Pennsylvania

John Henry Dillon

John H. Dillon, president emeritus of Textile Research Institute, died in Clemson, South Carolina, on 28 June 1982.

Dillon graduated from Ripon College and carried out graduate studies in physics at the University of Wisconsin, receiving a PhD in 1931. He joined the physics research division of the Firestone Tire and Rubber Company, became head of that division in 1937 and assistant director of research in 1945. During his years at Firestone, Dillon and his associates were involved in research for the Manhattan project. He was also a key member of the polymer group of the U Government synthetic rubber program.

In 1946, Dillon became the first full-time director of the Textile Research Institute; and in 1959 its president. Under his guidance, TRI grew to become a major national center for scientific research in the field of textile fibers. His research embraced many fields, including crystal growth, photoelectricity, rheology of rubbers, mechanical properties of fibers and fabrics, and triboelectricity. He was the author of over 70 publications and numerous US and foreign patents.

LUDWIG REBENFELD
Textile Research Institute
Princeton, New Jersey

G. Howard Carragan

G. Howard Carragan, professor emeritus at Rensselaer Polytechnic Institute, died, at 86, on 26 July.

Carragan received a BS in mechanical engineering from RPI in 1918. After serving a brief time as an engineer, he enrolled in a graduate program at the University of Chicago. A student of Albert Michelson, he received a PhD in 1925 for the first complete Zeeman spectrum of flourine. He was a member of the faculty, at RPI, from then until his retirement in 1961.

During his tenure at Rensselaer he served as acting chairman and chairman of the physics department for over 20 years. Particularly interested in optics and astronomy, Carragan organized the Rensselaer Astronomical Society and instigated the design and construction of the Rensselaer Observatory in 1938. A collector of scientific treatises and instruments of the sixteenth to nineteenth centuries, he recently donated his collection to Rensselaer.

GERHARD L. SALINGER
Rensselaer Polytechnic Institute

Morris Perlman

Morris Perlman, a senior chemist at Brookhaven National Laboratory died on 21 June at the age of 65.

Perlman had been a member of the Brookhaven chemistry department since 1949. During the earlier years at Brookhaven he contributed importantly to several areas of research in nuclear chemistry, including the effects of radioactive decay processes on the extranuclear electrons in the decaying atom; the effect of the chemical environment on half lives and on internal conversion probabilities; the relative probabilities of electron capture and positron emission; and the fission of heavy nuclei by protons in the GeV range.

Since the late 1960s his interest in the effect of chemical environment on electron binding energies led him to

PERLMAN