

obituaries

Scott Ellsworth Forbush

Scott E. Forbush, a world-renowned pioneer in the study of cosmic-ray intensity variations, died on 4 April 1984, on the eve of his eightieth birthday. He had been a staff member of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington for 43 years prior to his retirement in 1969.

Originally engaged in geomagnetic research, he worked in the field at stations such as Huancayo, Peru, and the non-magnetic ship "Carnegie." In 1932, at the request of Arthur H. Compton and Robert A. Millikan, the Carnegie Institution undertook to establish a worldwide network of ionization chambers for continuously recording cosmic rays, using the existing geomagnetic observatories for the jointly designed Compton-Bennett meters. Forbush was chosen to head the project. By mid-1935, Compton and his colleagues at the University of Chicago had built and tested seven meters. By the end of 1938, five of these had been permanently installed and continuous registration had begun: at Cheltenham Magnetic Observatory, Maryland; Huancayo Magnetic Observatory Peru; National Astronomical Observatory in Teolayucan, Mexico; Christchurch Magnetic Observatory, New Zealand; and Godhavn Magnetic Observatory, Greenland. The two remaining meters were used mainly for special investigations, such as latitude surveys in the Atlantic and Pacific. They were later installed at the University of Puerto Rico and at Climax, Colorado.

Forbush's keen analytical insights, and his proclivity for devising and using statistical techniques that were appropriate for testing the reliability of results deduced from geophysical measurements, enabled him both to discover new phenomena arising from cosmic-ray modulations and anisotropies and to provide, where needed, a sound statistical basis for the controversial results of others. The cosmic-ray time variations he studied ranged from minutes to decades; his most recent finding, upon which he worked assiduously after his retirement, was a variation in the diurnal anisotropy with a period of one solar magnetic cycle (approximately 22 years). Forbush discovered or legitimized every known time variation of cosmic rays that the data from his first-generation instruments were capable of resolving. In 1937, he first detected the worldwide decrease in the cosmic-ray flux that occurs after major solar flares; the Forbush Decrease is still the subject of intensive study.



FORBUSH

Forbush had exceedingly high standards and eschewed sloppiness, especially with respect to the statistical treatment of data. In his last publication, reporting upon work carried out with his long-time collaborators at the Bartol Research Foundation, he finally solved the long-standing problem of how to test rigorously the statistical significance of results obtained by Chree analysis.

Forbush was a graduate of the Case Institute. During World War II, he headed a mathematical analysis section of the Naval Ordnance Laboratory. He also served as chairman of the Cosmic Ray Panel of the US Committee for the International Geophysical Year. He was elected to the National Academy of Sciences in 1962, and was a fellow of APS, AAAS and AGU.

Scott Forbush was a unique individual whose place in the annals of cosmic-ray research will endure. He was held in tremendous respect by his colleagues, and was dearly loved by his friends, all of whom were indeed fortunate to have enjoyed the privilege of being associated with a person of his caliber.

MARTIN A. POMERANTZ
Bartol Research Foundation of
The Franklin Institute

Giuseppe Colombo

Giuseppe Colombo, a scientist at the Harvard-Smithsonian Center for Astrophysics and an internationally known expert in space sciences and mechanics, died of cancer in Padua, Italy, 20 February 1984. He was 63 years old.

Colombo was professor of spacecraft and space structures at the University

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