Reaching the end of the FUSE The Far Ultraviolet Spectroscopic Explorer (FUSE) space telescope will be turned off on 18 October, after its pointing system failed. The NASA mission, which has been managed by a team of researchers with the Johns Hopkins University, in Maryland, produced spectrographs at short ultraviolet light wavelengths below the range in which the Hubble Space Telescope operates.

By analyzing FUSE data, astronomers were able to measure temperatures, densities, and chemical compositions of many objects. The 8-year mission, extended from its original 3 years, resulted in numerous discoveries, including a glimpse into molecular hydrogen in Mars's atmosphere and a first-ever observation of molecular nitrogen outside our solar system. While FUSE's scientific data will remain available to astronomers for years, the science team will close out the mission in less than a year. After 30 years or so, FUSE's orbit is expected to decay and the satellite will burn up in the atmosphere.

—Randy Showstack, Staff Writer

GEOPHYSICISTS

William Strozier Goree (1935–2007)

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William S. Goree, who died on 22 July 2007, will long be remembered for his invention and development of practical Superconducting Quantum Interference Device (SQUID) rock magnetometers.

These instruments allowed researchers in paleomagnetism to measure the weak magnetism of rocks at higher sensitivity and faster than had been possible before, which permitted the determination of the record of the geomagnetic field in materials not usable previously. These instruments, which also opened up the possibilities of new types of measurements, such as the measurements of long cores, revolutionized the field of paleomagnetism, and they remain the workhorses of the subject decades after their introduction in the 1960s.

In addition, Bill's skill in cryogenics produced a steady progression of magnetometer models, from models that had a liquid helium hold time of a few days to years. These hold times—the time between fills of liquid helium necessary to maintain the SQUIDs at their operating temperature—are the key to the maintenance of the instruments, from the point of view of cost and convenience. In just the last year, he had introduced a Kelvin pulse tube cryocooler, which eliminates the need for liquid helium.

Bill not only dominated the experimental techniques in the field of paleomagnetism, but also his personality made him a treasured friend of the whole community.

Born on 21 June 1935 in Birmingham, Ala., Bill enlisted in the U.S. Army after graduating from high school, and he served in the Explosive Ordinance Disposal Unit with his twin brother, James. On completion of his army service, Bill entered the University of Florida, where his studies culminated in his Ph.D. in solid state physics. In 1964, he moved to California to head the Low Temperature Physics group at the Stanford Research Institute, where he began his work that led to the invention of the rock magnetometers.

The development of a practical SQUID rock magnetometer took place within the same decade as the publication of a paper describing the Josephson junction, which is the heart of a SQUID magnetometer. These junctions are incredibly sensitive to magnetic fields, responding to changes of one flux quantum.

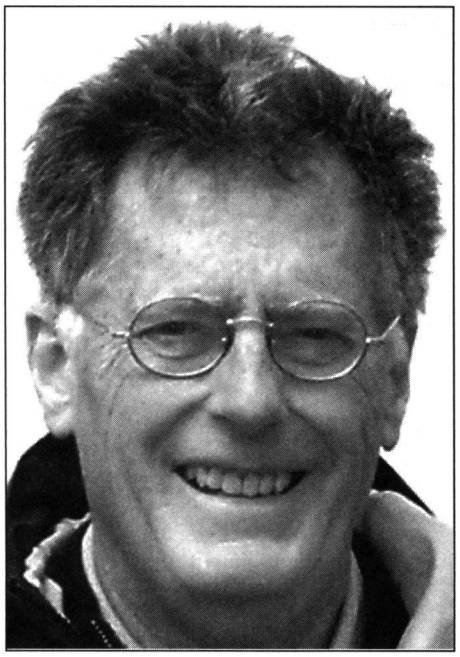
Bill saw the possibility of a sensitive magnetometer and contacted Allan Cox at Stanford and Richard Doell and Brent Dalrymple at the U.S. Geological Survey, all of whom were carrying out important work in paleomagnetism. They also recognized the possibilities of the sensitivity and response time of such a magnetometer, and they encouraged Bill to contact others in the community who might be interested in helping to develop such an instrument.

Before the decade of the 1960s was out, practical rock magnetometers designed by Bill were operating in paleomagnetic laboratories. Some 200 of these instruments have been used around the world. One has been on board the Joint Oceanographic Institutions Deep Earth Sampler (JOIDES) *Resolution* drilling vessel, and another is operating in the *Chikyu*, Japan's new deep-sea drilling ship. These instruments have made possible the careers of a whole generation of paleomagnetists and rock magnetists.

To help introduce the SQUID magnetometers to the paleomagnetism community—a considerable learning experience for paleomagnetists—Bill continually traveled to laboratories around the world to help with installations and tutoring. He probably answered the same questions thousands of times with characteristic good humor. He also listened to requests and suggestions for improvements. His remarkable achievement was to produce a magnetometer that can be operated at such high sensitivity, virtually maintenance free, but as with most instruments, things do not always work out as planned. When problems arose, Bill or one of his colleagues would soon be available to help.

In addition to Bill's technical service to the community, the annual reception he held for paleomagnetists at the AGU Fall Meeting has become a recognized meeting place providing an ideal relaxed environment for discussions. I suspect these receptions have initiated many important cooperative efforts.

Ironically, on the day Bill's death was announced, he was nominated to receive the William Gilbert Award of the AGU Geomagnetism and Paleomagnetism section. His ideas and achievements will be carried on for many years through the work of the group he led at 2G Enterprises, the company he and William Goodman founded.



William S. Goree

In addition to being a distinguished low-temperature physicist, Bill was a strong family man who managed to fit into his busy life the caring roles of a husband, father, and grandfather. He is survived by Lynn, his wife of 32 years; brother James; son Charles Hornisher; daughters Lauren Keaton and Dana McLain; and grandchildren John Pichotto and Zachary and Scarlet Keaton.

Condolences have come to his family and his coworkers at 2G from his friends in paleomagnetic laboratories around the world, and these have been posted on the 2G Web site: http://www.wsgi.us/in_memory_bill_goree.html. We have lost a dear friend and colleague, whose efforts made modern paleomagnetism possible.

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