Renowned UC San Diego Astrophysicist and Astronomer Dies at 84

January 28, 2010

Kim McDonald

Geoffrey Burbidge, a renowned British astrophysicist and astronomer at the University of California, San Diego who made contributions to our understanding of how elements are formed in stars as well as modern cosmology and radio galaxies, died on January 26 at the Scripps Memorial Hospital in La Jolla after a long illness. He was 84.

Burbidge's towering stature in the field was reflected by his position as editor-in-chief of the *Annual Review of Astronomy and Astrophysics* for 30 years, his directorship of the Kitt Peak National Observatory in Tucson and his numerous prizes from astronomical societies around the world. In 2005, he and his wife Margaret, both of whom were founding members of UC San Diego's Department of Physics, were awarded the British Royal Astronomical Society Gold Medal, the society's highest honor, for their contributions to astronomy during more than half a century.

The two astronomers, who both worked actively until recent years at the university's Center for Astrophysics and Space Sciences, coming to campus each day and publishing papers, are best known for their work in the mid-1950s describing how stars synthesize nearly all the chemical elements in the universe, from carbon and iron to lead and uranium. That work was summarized in a seminal paper on stellar nucleosynthesis published in 1957 with two other legendary scientists-British astronomer Sir Fred Hoyle and American physicist William Fowler. Two years later, the two Burbidges received the American Astronomical Society's highest honor for young astronomers, the Warner Prize.

"This was without question one of the most important papers of all time in astrophysics," said Mark Thiemens, dean of the Division of Physical Sciences at UCSD. "I've read it many times. Geoff was one of the most noteworthy astrophysicists of the past 50 years."

"This paper laid the foundation for an entirely new kind of synthesis of astronomical observations with frontier nuclear and particle science, paving the way for much of modern astrophysics and cosmology," said George Fuller, a nuclear astrophysicist and the director of the Center for Astrophysics and Space Sciences, or CASS.

Burbidge pioneered the development of several sub-disciplines in astrophysics.

"He is famous for his work on radio galaxies in which he was the first to determine the enormous energies involved," said Art Wolfe, an astrophysicist at UCSD and former director of CASS. "This work ultimately led astrophysicists to consider gravitation as the energy source for these objects as well as for quasars. Much of the Burbidges' work revolved around the nature of quasars and active galactic nuclei. During the 1960s the Burbidges were virtually alone in their efforts to measure the masses of galaxies from their rotation speeds."

"Geoff Burbidge also was the first to show that the helium in the universe could not have come from stellar nucleosynthesis alone," said Fuller.

According to close colleagues, all of his work had a profound influence on the development of modern astrophysics and cosmology. On the Big Bang theory, he was a contrarian. He, with Fred Hoyle and others, argued controversially for a quasi-steady state cosmology in which quasars are new matter ejected from energetic galaxies in a cyclic universe. In this view, bright quasars are nearby objects in spite of their high redshifts. He maintained this position right up to his last paper, published shortly before his death, in which he presented statistical evidence that bright quasars are strongly overabundant nearby active spiral galaxies.

Burbidge was born on September 24, 1925 in Chipping Norton, England and received his bachelor's degree from the University of Bristol and his doctorate in theoretical physics from University College in London. From 1950 until his arrival at UC San Diego in 1962, he held research and teaching positions at the University of London, Harvard, Cambridge, Chicago, Caltech and the Mt. Wilson and Palomar Observatories. He served as a professor of physics at UC San Diego from 1963 until 2002, except for the period from 1978 to 1984, during which he served as director of the Kitt Peak National Observatory.

In addition to the Warner Prize and the Royal Astronomical Society's Gold Medal, Burbidge received the Catherine Wolfe Bruce Gold Medal in 1999 from the Astronomical Society of the Pacific and was its president from 1974 to 1976. He also won the Jansky Prize of the National Radio Astronomy Observatory in 1985, the National Academy of Sciences Award for Scientific Reviewing in 2007 and served for many years as the scientific editor of *The Astrophysical Journal.* He was an elected fellow of the Royal Society, American Academy of Arts and Sciences, American Physical Society and University College, London.

Geoffrey Burbidge is survived by his wife, Margaret of La Jolla; his daughter Sarah of San Francisco; and his grandson, Connor Loeven.

In lieu of flowers, the family wishes that donations be made to the San Diego Humane Society, 5500 Gaines Street, San Diego, CA 92110

Media Contact: Kim McDonald, 858-534-7572 or kmcdonald@ucsd.edu