

At a Meeting of the Faculty of Arts and Sciences on October 1, 2013, the following Minute was placed upon the records.

JAMES NEWTON BUTLER

Born: March 27, 1934

Died: October 22, 2012

With the death on October 22, 2012, of James Newton Butler, Harvard and science witnessed the passing of an environmental pioneer. Jim is remembered in Cambridge for his humor, curiosity, and kindness as well as for his scientific achievements. Yet his Harvard colleagues were hardly aware that for decades he brought the same gifts to important biological research in Bermuda.

A graduate of Ohio's Lakewood High School in 1951 and the Rensselaer Polytechnic Institute in 1955, Jim earned his Ph.D. in chemical physics from Harvard University in 1959. He was on the chemistry faculty at the University of British Columbia in Vancouver from 1959 to 1963, and then served in the physical chemistry department of Tyco Laboratories in Massachusetts until 1971, when he was appointed to Harvard as Gordon McKay Professor of Applied Chemistry.

Jim taught at Harvard for 30 years. He was an erudite colleague in what is now the School of Engineering and Applied Sciences, and he taught graduate and undergraduate courses on aquatic chemistry. Many of the students in his freshman seminars on environmental quality became lifelong friends. Jim was awarded numerous honors over the years and was a valued expert consultant. He authored and co-authored 13 books and more than 80 peer-reviewed scientific papers. He was best known for his book, *Ionic Equilibrium*, and for his work on pelagic tar in the North Atlantic Ocean and Sargasso Sea.

In his 1964 book, *Ionic Equilibrium*, Jim presented simple graphical methods of performing acid-base, solubility, and complex formation equilibrium calculations. The book became a text for many courses for students of environmental chemistry, engineering, and health; analytical chemistry; oceanography; geochemistry; biochemistry; physical chemistry; and clinical chemistry. It is also became a valuable working resource for professionals in those fields as well as industrial chemists involved with solution chemistry. After Jim's death, one fellow scientist said that he still had this book next to his desk and consulted it often.

In 1971 Jim visited the island of Bermuda for a week's holiday with his family, and it was the beginning of a lifelong scientific devotion. At the time there was a very significant "beach tar" problem in Bermuda—tar balls were everywhere in the water at the beaches. This "pelagic tar" resulted from the routine washing of oil tankers on the high seas. For the rest of his life Jim was involved with research and research administration at the Bermuda Biological Station (later the Bermuda Institute of Ocean Sciences [BIOS]).

With a colleague at BIOS, Jim initiated a study of the impact of pelagic tar on the Sargassum, brown floating algae that thrives in the Sargasso Sea without ever becoming attached to land. Over 100 species of invertebrate fauna evolved with and live in the Sargassum. Jim's 1973 book, *Pelagic Tar from Bermuda and the Sargasso Sea*, along with work by Russian and Japanese scientists, prompted

discussions in the United Nations, and eventually led to changes in industry standards to limit the escape of oil into the oceans. Today oil pipeline seaports have waste oil recovery/recycling plants and oil tankers have double hulls.

In 1976 under Jim's direction gas chromatography was used to produce a fingerprint of an oil spill in Bermuda and traced it back to a visiting cruise ship. This was the first time an oil spill fingerprint was used in any court of law.

Deep-sea observations expanded during Jim's years at the Bermuda Institute, which procured a year-round research vessel and recruited more resident scientists to extend the station's capabilities. We can only imagine the pleasure and excitement Jim experienced while conducting his scientific research, year after year and at any time of the year, anchored in the Sargasso Sea in the middle of the Atlantic Ocean. By the mid-1970s the Institute had acquired international stature as a center for oceanic research worldwide. In particular it became one of the major international marine laboratories specializing in the impacts of ocean oil spills on coral reefs and analysis of the chemical and biological fate of oil dispersants. This research was utilized later by one of Jim's former students, who became Director of Environmental Protection of Bermuda's Ministry of Environment, to clean up the island's beaches.

Jim served as trustee and scientific investigator at the Bermuda Institute of Ocean Sciences for 35 years, including a period as president from 1986 to 1989 and a term as president of the Scientific Advisory Committee. He was honored as a life trustee in 1997 in recognition of his service and commitment.

Jim became a lifelong adventure traveler following an invitation in 1977 to lecture aboard the National Geographic expedition vessel the Lindblad Explorer on a trip to Antarctica. He documented his travels, whether for pleasure or for science, by taking large numbers of photographs from land, sea, and air. Some of his beautiful photographs of colorful algal blooms were widely distributed. Jim was widely curious and diversely talented; he transcribed his dreams, memorized scores of folk songs, played the guitar, and sang.

Jim was married to his wife, Rosamond "Roz" (Hatch), for 46 years. Colleagues who knew Jim and Roz more as social than as scientific colleagues remember their personal kindness in times of distress and the matching warm twinkles that seemed to radiate from their eyes. Roz was influential in organizing many of the Biological Station's activities and was appointed a Life Trustee of the Board of Trustees, on which she continues to serve.

Jim passed away at age 78 in Queensbury, New York, where he had moved to be closer to his children after retiring from Harvard in the year 2000. He is survived by Roz and their three children and four grandchildren. Both Harvard and Bermuda grieve the loss of a dear friend and a promoter of the environmental sciences.

Respectfully submitted,

Harry Lewis
Michael McElroy

Ralph Mitchell
Peter Rogers, Chair