In memory of Professor John R. Cameron

Azam Niroomand-Rad

Prof. John R. Cameron

(1922–2005)

It is with great personal and professional sadness that we inform of the passing of Professor John R. Cameron on 16 March 2005 in Gainesville, Florida, USA, from diabetic complications. He was 82 years old and is survived by his wife Lavonda and two daughters, Anne Marie Skye and Carol Cameron. With the death of Prof. Cameron, our organisation has lost a beloved founder, a great innovator, and an internationally acclaimed scientist in the medical applications of physics.

Prof. Cameron attained many honours throughout his distinguished scientific career, including the William D. Coolidge Award of the American Association of Physicists in Medicine (1980), the *first* Roentgen Centennial Commemorative Medal ever given to a medical physicist by the Radiological Society of North America (1995), and the *first* Marie Sklodowska-Curie Award by our organisation (2000). During his career, Prof. Cameron served as an advisor or consultant to numerous organisations including the International Atomic Energy Agency, the International Center for Theoretical Physics, the Bureau of Radiological Health (now CDRH), the Atomic Energy Commission (now NRC), the State of Wisconsin Radiation Safety Office, and the University of Wisconsin Radiation Safety Committee. He was a Charter member of the American Association of Physicists in Medicine (AAPM), serving as its President (1968), President of the North Central Chapter of the Health Physics Society (1968), President of the Central Chapter of the Nuclear Medicine Society (1968), and a member or honorary member of medical physics societies in England, Ireland, France, Italy, India, and Brazil. Prof. Cameron also served as Secretary-General of our organisation (1968-1974).

Of Scottish heritage, Prof. Cameron was born in a farm in northern Wisconsin on 21 April 1922. He received his B.S. (1947) in mathematics from the University of Chicago (1947), his M.S. (1949) in physics, and his PhD (1952) in nuclear physics from the University of Wisconsin (UW) in Madison. He then taught at the Universidad de Sao Paulo, Brazil, and the University of Pittsburgh before returning to the UW in 1958. At UW, he agreed to work as *a* physicist in the Department of Radiology, where he applied

physics principles to the diagnosis and treatment of disease. He subsequently founded the 'medical physics' programme at UW and helped it to grow from *one* physicist to the *first* medical physics department in a medical school in the US by 1981. Prof. Cameron's accidental life in physics and medical physics is best reflected in one of his informal talks to his physics colleagues that can be found at www.medphysics.wisc.edu.

Besides founding and heading a leading research and training medical physics programme in US, in 1960, Prof. Cameron invented a bone densitometry instrument, which is a device for detecting and evaluating osteoporosis. Bone densitometry was the first application of digital radiography. It used a scanning mono energetic photon beam, which was detected and counted with a pulse height analyser. There are now about 45,000 such instruments in use in the world. He also developed thermoluminescent dosimetry (TLD) in mid 1960s. TLD is now the basic method for measuring radiation dosage to radiation workers and to patients. (Prof. Farrington Daniels of UW had invented TLD in1954 but had not developed it for commercial use.)

Prof. Cameron first advocated the reduction of radiation to patients from medical X-rays in 1960. By 1970 he realised that the main cause of excess radiation exposure to the patient from medical X-rays was the poor quality of many X-ray images. He and colleagues at UW pioneered instruments that allowed better quality control of medical X-ray images. They developed simple but effective tools to evaluate X-ray equipment. Prof. Cameron and his wife founded Radiation Measurements Inc. (RMI) in Middleton, WI, in 1974 as a non-profit company to manufacture and sell these devices. Breast cancer X-ray facilities all over the country are currently being certified with use of these devices. After his retirement in 1985, when RMI was sold to Dr Charles Lescrenier in 1987, the money was used to establish Medical Physics Publishing Company. Prof. Cameron was also instrumental in founding the UW Biomagnetism Laboratory, which detects weak magnetic fields produced by physiologic activity and uses these signals for diagnosis of disease and modelling of the human brain, including imagination and creativity. He is the author of countless journal articles and several books dealing with medical uses of radiation and how the body works. His three famous books are: *Medical Physics*, *Physics of the Body*, and *Thermoluminescent Dosimetry*.

Prof. Cameron dedicated his entire life to improving the medical physics profession in the US and many developing countries. He is well known for his original, forward-thinking, and thought-provoking presentations of controversial scientific subjects. His most recent efforts were to counter 'radiation phobia' by informing the professionals and the general public of the potential benefits of radiation at low doses. Prof. Cameron strongly disagreed with linear no threshold (LNT) model indicating that small amount of radiation may cause cancer. He pointed out that the public is misinformed about the hazards of low-level radiation, and he suggested a practical radiation unit for the public – BERT (background equivalent radiation time) describing the diagnostic exposures in terms of human exposure times to background radiation. He felt that the profession itself is partly responsible for the public's fears and misconceptions about ionising radiation. He believed that low-level radiation is good and made it his crusade to inform the public of unjustified radiation phobia. (See his last paper in the January 2005 issue of *BJR*).

In addition to being an incredibly scientifically gifted individual, Prof. Cameron was a great educator with a sense of humour. He had the ability to present scientific concepts in a lucid and humorous manner so that even a layperson could understand and enjoy them. He was a very generous, openhearted, spirited, and optimistic individual, who took joy in educating people. Prof. Cameron was very supportive of medical physics activities

in developing countries as evident by his teaching (fluent in Portuguese and Spanish) and by donation of quality control tools, books and journals to developing countries. We will all miss his selfless energy, dedication to education, and his wonderful sense of humour. Fortunately our memory of him is preserved in his website www.medphysics.wisc.edu/-jrc/ and in the many videotaped interviews that he conducted of his colleagues for the AAPM History Committee.