

Emeléus, Karl George

by Cathy Hayes

Emeléus, Karl George (1901–89), physicist, was born 4 August 1901 in London, the eldest of the two sons and three daughters of Karl Henry Emeléus, a pharmacist of Finnish extraction, and Ellen Emeléus (née Biggs). After graduating in pharmacy his father left Finland and travelled to the USA before settling in England, where he set up a pharmacy with financial support from his father. Soon after young Karl was born the family moved to Battle, Sussex. He was educated at Hastings grammar school and later entered St John's College, Cambridge, to read physics, graduating BA in 1922. That year Ernest Rutherford, the famous New Zealand scientist and discoverer of atomic nuclei, accepted him as a research student in the Cavendish Laboratory at Cambridge, then at the forefront of discoveries in experimental physics. Emeléus joined many subsequently famous scientists as a member of the Kapitsa Club (1924–5), a physics society that encouraged uninhibited discussion. Under the supervision of James Chadwick he built a Wilson cloud chamber, taking some of the first ever pictures of charged particles. He also helped to develop the Geiger counter, a device still in its infancy (based on work started by Rutherford), which became indispensable in the detection of ionising radiation. Later he studied for a Ph.D., and his doctoral thesis was entitled 'Methods for detecting single ionizing particles'. Though he started the research at Cambridge, he completed it at King's College, London, following his supervisor, Edward Appleton (later Sir Edward Appleton of 'Appleton layer' fame), who had moved there in 1925.

After a short stay at King's College, Emeléus was appointed lecturer in experimental physics at QUB (1927). Though he described his first view of Belfast as he arrived to take up his new appointment as 'damp, dark and forbidding' (Coulter), he remained there for the rest of his life, and was eventually made professor of experimental physics and head of department in 1933. He held the chair of physics for thirty-three years, retiring in 1966. During that time he became a world authority on the conduction of electricity through fields of ionised gases (plasmas) at low pressure, and other related subjects, and was widely admired as an outstanding lecturer. He published extensively and had more than 250 refereed publications to his name on topics in radioactivity, discharge of electricity through gases, and spectroscopy, in journals such as *Proceedings of the Royal Irish Academy*, *Physical Review*, *Philosophical Magazine*, and *Proceedings of the Cambridge Philosophical Society*. Shortly after his arrival in Belfast he wrote the then definitive monograph *The conduction of electricity through gases* (1929, revised 1936 and 1951), which still contains useful information today. During the war Emeléus did some work for the British admiralty on noise sources. His later research combined several interests to produce spectrographic means of detecting and measuring the energy of plasma electron oscillations. Examining high-frequency electron and ion plasma waves,

he made several important observations with his students of the phenomenon of moving striations.

Emeléus continued to publish after he retired, at the rate of two to three papers a year, and to mentor students. In 1970 he edited a collection of papers entitled *Discharges in electronegative gases*. He enjoyed travelling, and gave many invited lectures abroad as well as acting as external examiner. Among his many honours were CBE (1965, in recognition of work he carried out for the British government), fellow of the Institute of Physics, MRIA (1934), dean of the faculty of Applied Science and Technology at QUB, fellow of the American Physical Society, Hon. Sc.D. (Dublin), Hon. D.Sc. (NUI), Hon. D.Sc. (QUB, 1983), and Hon. D.Sc. (UU, 1986). He acted as science adviser to various government agencies and served on a wide range of non-academic bodies; he was a member of the board of Purdysburn Fever Hospital, a governor of the Armagh observatory, and the first chairman of the Northern Ireland Examinations Council.

Admired by colleagues and students alike, Emeléus was known affectionately as 'KG'. During the second world war he took his turn on nightly fire-watch in QUB, inadvertently watching over the college's dig-for-victory plots which were being pilfered. He was universally admired as a gifted teacher, lecturing clearly without using his notes, and presenting difficult topics in an interesting and attractive way. He had a lean willowy build, and was an accomplished pianist until ill health prevented him from playing. He also loved poetry and literature and retained the ability to quote passages from his favourite writers – Kipling, Shaw, and Shakespeare – until the end of his life. An excellent cricketer when he was young, he continued to follow the sport on television when his playing days were finished. He was a keen philatelist and an authority in various areas of the subject, especially early British stamps used abroad, where the frank marks recorded the passage of the mail.

Emeléus married in 1928 Florence Mary Chambers, and they had four children – three sons and one daughter. He died 18 June 1989, at the age of eighty-seven, after a brief illness. In his honour a lecture theatre was named after him and his portrait was hung on the west wall of the restored great hall in QUB. The Karl George Emeléus physics prize was established in 1984 by former students and friends for physics students at QUB.

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Moody & Beckett (1954), 617; *Annual Record of the Queen's University Association*, (1967); J. R. M. Coulter, obituary, *Independent*, 27 June 1989; *Physics Today*, xliii (1990), 160; *WWW, 1981–1990* (1991), 231; *Biographical Memoirs of the Royal Society*, xlii (1996), 125–6

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