

Introduction

Harry Julius Emeléus was born in 1903. His family roots were in Finland, but he was brought up in Sussex, in a home with strong scientific traditions (his brother, K.G. Emeléus, was Professor of Physics at Queen's University, Belfast, until 1966). He went from Hastings Grammar school to Imperial College, and immediately after graduation he began research in H.B. Baker's laboratory. His early papers, of which the first was published in 1924, were concerned with the luminescent oxidation of phosphorus, and this work led to a series of papers on the phosphorescent flames of non-metallic elements and compounds.

At that period the great schools of synthetic inorganic chemistry were to be found in Germany. Emeléus' early work had been largely concerned with physical chemistry, but when he was awarded an 1851 Exhibition Senior Studentship he took the opportunity to go and work with Alfred Stock in Karlsruhe. Stock had devised vacuum-systems for handling hydrides of boron and silicon, compounds which were volatile and spontaneously flammable in air. Though no publications stemmed directly from Emeléus' time in Karlsruhe his great contributions to modern developments in inorganic chemistry, his special interest in non-metal hydrides and his use of vacuum-systems for synthetic inorganic chemistry can be traced back to his time there; so can his respect and admiration for the German tradition of synthetic inorganic chemistry.

In 1929 he was awarded a Commonwealth Fund Fellowship, and went to Princeton U.S.A., where he worked with H.S. Taylor on photochemical reactions of ammonia and amines. This was a particularly important visit for him, as while he was in Princeton he met and became engaged to Catherine Horton. Because the rules of the Fellowship prohibited a Fellow from marrying while holding his Fellowship, they had to postpone their wedding until just before he left for Britain.

Emeléus returned in 1931 to a staff position at Imperial College. His published work between 1931 and 1940 includes many kinetic studies, but his interests were moving steadily towards what is now regarded as inorganic chemistry. He became involved in studying methods of separating isotopes, and published an important paper with (among others) J.S. Anderson on exchange between D_2O and NH protons in amines and in ammine complexes of cobalt(III). The collaboration with Anderson led to another and most influential and important publication: the book of essays called "Modern Aspects of Inorganic Chemistry". When this book appeared, there was little else from which the student of inorganic chemistry could learn except the standard text-books, which tended to be dry, very factual and based on the Periodic Table as the only unifying theme. "Modern Aspects" represented a new type of inorganic text, one in which selected topics of growing interest and

importance were discussed in a readable style and with the background of the principles of physical chemistry. The last edition of "Modern Aspects" appeared in 1973; the book is still in print and still used; it has had a longer life than almost any other current inorganic text, and it has exerted a vital influence on the development of the subject.

In the early part of the war, Emeléus' work became more clearly inorganic in nature, with studies of the silyl halides and amines, and some important work on non-metal fluorides, to which his Tilden lecture in 1942 bore witness. In 1944 his expertise in handling volatile and reactive inorganic fluorides, coupled with his interest in isotopic separation, was recognised in an unusual way: he was asked to leave Britain at the minimum of notice for an unnamed destination, and after a long flight in a flying-boat with darkened windows he eventually found himself working at Oak Ridge on the separation of uranium isotopes using UF_6 . He returned to Britain in 1945, and became first Reader and then Professor of Inorganic Chemistry at Cambridge. There he became the centre of an outstanding school of inorganic chemistry. His own work led to the study of many novel systems. From the intensely reactive halogen fluorides, he obtained the highest fluorides of transition elements. He devised a synthesis of CF_3I , and from it developed a huge range of fluorocarbon compounds and their derivatives of metallic and non-metallic elements. He retained an active interest in the chemistry of silicon hydrides. He was elected a Fellow of the Royal Society in 1946; his Liversidge Lecture to the British Chemical Society in 1954 was on aspects of fluorine chemistry, and he gave the George Fisher Baker lectures at Cornell in 1956. In 1958 he was President of the Chemical Society, and in 1963/65 of the Royal Institute of Chemistry. He retired from the Chair at Cambridge in 1970.

The original work with which he is associated is wide-ranging and of great importance to our knowledge and understanding of the chemistry of main-group elements. The explicitly organometallic part is not large, but in fluorocarbon chemistry the dividing-line is blurred. Moreover, much of his most important contribution to inorganic and organometallic chemistry has been as a teacher and inspirer of undergraduates, research students and more senior colleagues. While he was Professor at Cambridge the calls on his time were legion, but he made time to help his students in the laboratory, and to give them a chance of admiring his practical skills. His kindness, patience and enthusiasm were inspiring for his younger collaborators, and his undergraduate lectures convinced many sceptical students that inorganic chemistry was exciting, intellectually demanding and a fit field for further study. His eminence as an inorganic chemist has been recognised by the Lavoisier Medal of the French Chemical Society, the Stock Medal of the German Chemical Society, the Davy Medal of the Royal Society, and honorary membership of many distinguished scientific societies outwith Great Britain. These tokens of academic recognition are a fitting tribute to his scientific achievements, but they cannot exceed the affection and respect in which he is held by those who have been lucky enough to work with him.

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