

Physical Society (1949) and of the Institute of Radio Engineers (1950), a member of the National Academy of Sciences (1968) and the National Academy of Engineering (1966) in America. He received an honorary Doctor of Engineering degree from the University of Vienna (1965) and an honorary Doctor of Science degree from the University of Oxford (1969). He received the Duddell Medal of the Physical Society (1955), the Sarnoff Medal of the Institute of Electrical and Electronic Engineers (1960), and the Ballantine Medal of the Franklin Institute (1960). In 1973 he was made a Fellow of All Souls and in 1976 he was awarded the U.S. President's Award for Achievement in Science.

He was a most likeable person with a strong sense of humour ("I might remark that there is no harm in getting 'expert' advice. But don't take it"). He had a heart attack ten years ago on a mountain top in Vermont and used those ten years to the maximum advantage, accomplishing much more than most people would dream of doing in a lifetime.

He leaves a wife and two children, and was very pleased to have recently had a grandchild.

C. J. R. Sheppard

H. von Klüber

THE death of Dr Harald von Klüber on 14 February 1978 deprives solar physics of one of its finest observers. Von Klüber was born at Potsdam on 6 September 1901, into a family which for generations had held high office in the civil, military and diplomatic services. Educated at the Universität und Technische Hochschule, Berlin, he took his doctorate there and became Professor of Astrophysics at Potsdam in 1941. Soon after the end of the war he and his wife fled to Switzerland taking with them only a few necessities in a suitcase. At that time Professor Redman was seeking new staff at the Cambridge Observatories, and von Klüber was welcomed there in 1949 as the new Observer in Solar Magnetism; he and his wife occupied a cottage in the grounds of the Observatories and immediately became much liked members of the community. This was the beginning of the second phase of a fruitful career.

Von Klüber's earliest work was concerned with stellar physics, but he soon became interested in solar studies, inspired by ten Bruggencate and Freundlich, and by the advanced equipment available at Potsdam which was then one of the great centres of solar physics. At that time there was a resurgence of interest in the theory of formation of absorption lines in solar and stellar spectra, following the work

of Schwarzschild, Milne and Eddington, and others. The observer's contribution to this lay in the accurate measurement of solar line profiles, and von Klüber took his full part in this, working in part with Houtgast.

Another contemporary problem was the measurement of the gravitational deflection of light by taking photographs of a star field near the solar limb at a time of total solar eclipse. This is an astrometric problem of tremendous difficulty which had first been tackled, with some success, by Eddington and his collaborators at the 1919 eclipse, but confirmation of the 1919 results was desirable. This problem started von Klüber's interest in solar eclipse expeditions, beginning with the 1929 eclipse in Sumatra, and continuing after the war with Redman's encouragement, when he took part in, or was the leader of, no less than five expeditions. His interest later shifted to observation of the solar corona, and especially its optical polarisation, the interpretation of which was then causing some difficulty.

On coming to Cambridge he resumed his studies, started in Potsdam, of the local and general magnetic fields of the Sun. In collaboration with D. W. Beggs he built a fine solar magnetograph which they later successfully transferred to a good site in Malta. The station was closed down when von Klüber retired in 1971, and the von Klübers returned to the family home in Baden Baden.

Von Klüber was a meticulous worker who was devoted to his subject. A master of the methods of classical optics, he was equally keen on new instrumental developments, which he utilised fully. He had an especial interest in photography, which he applied so successfully to his private archaeological studies. All that he did, he did well. He and Mrs von Klüber (who survives him) were greatly liked and admired by all who knew him.

*D. E. Blackwell
D. W. Dewhirst*

C. W. Davies

PROFESSOR Cecil Whitfield Davies, D.Sc., F.R.I.C., one of the most distinguished and influential electrochemists of his time, died on 1 March 1978, at the age of 82.

He was educated at St. Dunstan's College, Catford, and at the University College of Wales, Aberystwyth. After serving with the Army between 1915 and 1919, in France and India, he returned to Aberystwyth in 1920 as Assistant Lecturer. He first did research in organic chemistry and obtained his M.Sc. in 1923, but during this period he realised that his interests lay in physical chemistry. In 1923 he

began working with L. J. Hudleston on the electrochemistry of pure HF solutions, and obtained accurate values for the transport numbers of the various species present. This work led Davies to predict the concentration dependence of ionic mobilities, a prediction which preceded the first paper by Debye and Hückel on this subject.

In 1928 he left for Battersea Polytechnic, and soon built up a flourishing research school which became well known for the very precise measurement of the conductivities of electrolytes in aqueous solutions, and of the solubilities of sparingly soluble salts. Central to these studies was the establishment, on a quantitative basis, of the concept of ion association in 'strong' electrolytes; this was of major importance in all his subsequent work. During this period Davies first formulated his semi-empirical activity coefficient equation, which has since been of great value to electrochemists everywhere.

In 1944 he returned to Aberystwyth to take up the Chair of Chemistry, and once again found himself having to create a research school almost from scratch. During the years up to his retirement in 1960 he established in the department one of the leading schools of electrochemistry in the country. Important contributions were made by Davies and his collaborators in a number of fields, including conductivity, the kinetics of crystal growth, ion-exchange resins, and the significance of ion association in reaction kinetics.

In 1960 he returned once more to Battersea as a Senior Research Fellow, in which post he remained until the college, which had become the University of Surrey, moved to its campus in Guildford in 1969.

Davies held many honorary appointments during his career, including membership of the Royal Society Committee on Chemical Symbols, and he became the honorary secretary of the Chemical Society in 1936. As well as many research papers, he published three books. Two of these, *The Conductivity of Solutions* (1930, 1933), and *Ion Association* (1962), have had considerable influence in the development of modern electrochemistry, while the third, *Electrochemistry* (1967), is a very thorough, up-to-date yet concise, account of the principles of electrochemistry, written in the clear and readable style which was characteristic of all Davies's work.

He was a man of great kindness, intelligence, and integrity; he will long be remembered with affection throughout the scientific community, and sadly missed by a wide circle of friends.

D. Irwin Stock