OBITUARY NOTICES.

JOHN CHARLES JAMES.

1920—1952.

A CAREER of great promise was cut short by the death of J. C. James in a climbing accident in the Norwegian Jotunheim, on July 9th. James was born in London and educated at Harrow County School and at Queen Mary College; he graduated in 1940. After working for several years in the laboratory of the London Passenger Transport Board he became a research student at Battersea Polytechnic under C. W. Davies, and was awarded his Ph.D. in 1947. He was appointed to the staff of Battersea Polytechnic in 1945, and became lecturer in chemistry at Glasgow University in 1948.

James's early research, stimulated by contact with C. W. Davies, was directed to the study of the ion-association equilibria of multivalent electrolytes (with C. W. Davies, *Proc. Roy. Soc.*, 1948, *A*, **195**, 116; *Trans. Faraday Soc.*, 1949, **45**, 855; 1951, **47**, 392; with Monk, *ibid.*, 1950, **46**, 1041; with Peacock, *J.*, 1951, 2233). Experimentally, this work was characterised by accurate measurements of electrical conductivity and very careful extrapolation of the limiting ion mobilities, and this made it possible to evaluate ΔG, $d\Delta G/dT$, and $d(\Delta G/T)/d(1/T)$ for the association equilibrium. The main conclusions of this series of papers were : (*a*) that ion-pairs are present in any aqueous solution containing a multivalent ion, association being almost quantitative between two multivalent ions of opposite charge; (*b*) that the hydration shell of the cation is preserved in the ion-pair; and (*c*) that the temperature variation of ΔG is determined by the temperature-dependence of the dielectric constant of the solvent, as expressed by Bjerrum's equation. The relation between ΔG and dielectric constant was also examined isothermally by measuring the dissociation constant in various mixed solvents with dielectric constants higher and lower than that of water (*J. Amer. Chem. Soc.*, 1949, **71**, 3243; *J.*, 1950, 1094; 1951, 153; with Dunsmore, *J.*, 1951, 2925), and this provided additional confirmation of Bjerrum's equation, although agreement was not fully quantitative in media of low dielectric constant. Evidence was obtained simultaneously that in aqueous mixed solvents solvation takes place essentially with the water molecules alone.

Another group of papers (*Trans. Faraday Soc.*, 1951, **47**, 1240; with Bergman, *ibid.*, in the press; with Speakman, *ibid.*, 1952, **48**, 474) reported measurements on the polarographic reduction of nitro-compounds in acetic and sulphuric acid media, and of tropolone in aqueous buffers. In the former case, the influence of a large number of substituents on the half-wave potential was used to elucidate the rate-controlling step in the mechanism of electrolytic reduction. In the work in progress at the time of his death, James broke new ground in other respects. He became interested in conductivity measurements at very high frequencies (30—300 Mc.) and obtained evidence of relaxation of ion-pair dipoles in aqueous solutions of 2 : 2-electrolytes. He found that the Debye–Falkenhagen dispersion of conductivity, known to conform to theory at high dilution, was inappreciable in moderately concentrated solutions, and this was understood to mean that the Debye–Onsager factors were altogether subordinate under these conditions. In this field his interest in non-aqueous media was represented by measurements of the dielectric dispersion of anhydrous sulphuric acid (*J. Chem. Physics*, 1952, **20**, 530) which showed that this solvent, from a dielectric aspect, was not much more extreme than water. James had also embarked on a long-term investigation of double-layer capacities, and by ingeniously adapting electronic methods he had made significant improvements in the technique of measuring the capacity changes at a dropping-mercury electrode. Nearly all this later work is still unpublished. James's experimental and intellectual grasp of a broad field of scientific interest was a source of admiration to his colleagues and co-workers, and will long be remembered.

J. C. D. BRAND.

THOMAS TURNER.

1861—1951.

THOMAS TURNER, M.Sc., A.R.S.M., F.R.I.C., Emeritus Professor of Metallurgy in the University of Birmingham was born in 1861 in Ladywood, Birmingham. He married Christian Smith of Edinburgh in 1887 and had two sons and two daughters. After a general education in Edgbaston, Birmingham, he studied metallurgy at the Royal School of Mines in London, where he was De la Bache medallist. His first appointment was as demonstrator in chemistry in the newly-formed Mason's Science College, to which post he was appointed in 1883. Four years later he became Lecturer in Metallurgy and thus started the teaching of a new science that was to develop greatly under his guidance during the next forty years. For a time, from 1894 to 1902, he was Director of Technical Instruction to the Staffordshire County Council, but in 1902 he returned to teaching as the first Professor of Metallurgy in the newly established University of Birmingham. This post he held with distinction until his retirement in 1926. Throughout his teaching career he maintained a keen interest in research, and covered a wide field of interests. Perhaps his most notable work was his study of the influence of silicon and other elements in iron and steel; in particular, his work on the influence of silicon in cast iron laid the foundations for a scientific understanding of this material and gained for him a substantial reputation.

Turner's interests extended widely beyond his native city, and he was prominent in technical societies, research committees, and the like. He was a founder member of the Institute of Metals, and later became its President, and he was a member of the Advisory Committee of the Imperial Institute. He took an active part in the work of the Iron and Steel Institute, of which he became a Vice-President. He was particularly interested in the work of the British Non-Ferrous Metals Research Association and the British Cast Iron Research Association, and worked on their Councils for many years. For his researches he was awarded the Bessemer Gold Medal of the Iron and Steel Institute, the Seaman Gold Medal of the American Foundrymen's Association, and the Fox Gold Medal of the Institute of British Foundrymen. Turner maintained his professional interests in such bodies as the metallurgical institutes and research associations almost to the end of his long life. He played an active part in the early scientific study of metals, and saw it develop over a period of about seventy years into the firmly established technical science of today.

D. HANSON.