

control; but the majority made valuable contributions to knowledge of the structure, life-history and bionomics of blood-sucking insects, as, for example, his many papers on the Tabanidæ and Cæstridæ of Canada and Britain, and his recent collaborative work on Scottish midges.

Cameron was an M.A. and D.Sc. of Aberdeen, and M.Sc., Manchester, and in 1935 he was awarded the Makdougall-Brisbane Medal and Prize of the Royal Society of Edinburgh. Besides his teaching work in the University and Royal (Dick) Veterinary College, he acted as entomological adviser to the Edinburgh and East of Scotland College of Agriculture and consultant to the Royal Highland and Agricultural Society.

In all his teaching and research, Dr. Cameron showed great activity, alertness of mind, and meticulous regard for thoroughness. Struck down by a severe illness more than two years ago, he resigned from his readership in 1951, and died on February 27, 1952. He is survived by his wife and a family of five sons and three daughters.

JAMES RITCHIE

#### Mr. W. G. Campbell

WILLIAM GEORGE CAMPBELL, who died suddenly at Princes Risborough on November 24, 1951, was born at Perth, Scotland, on March 5, 1900. He was educated at Perth Academy and the University of St. Andrews, where he had a distinguished career, obtaining first-class honours in both chemistry (1923) and botany (1924). After a year's research in carbohydrate chemistry under Sir James Irvine, he was awarded a Commonwealth Fund fellowship and commenced work in 1925 at the U.S. Forest Products Laboratory at Madison, Wisconsin. Here he began those studies of wood chemistry and technology which were to constitute his life-work.

While in the United States, Campbell was awarded the M.S. degree of the University of Wisconsin, and at the conclusion of his fellowship he returned to Britain and was appointed to the Forest Products Laboratory of the Department of Scientific and Industrial Research, then occupying temporary quarters in Oxford. It fell to Campbell to draw up the initial programme of research in wood chemistry, to train staff for the work and to design the lay-out of the Chemical Laboratory in the new building at Princes Risborough. From 1930 onwards he was officer-in-charge of the Chemistry Section, with promotion to senior scientific officer in 1936, principal scientific officer in 1945 and senior principal scientific officer on personal merit in 1949. By this time he had made for himself a unique position in the field of wood chemistry and technology, and his advice was eagerly sought by scientific men and industrialists in all parts of the world. In 1944, at the special request of the American authorities, he was included as a member of the Wood Aircraft Research Mission which visited the United States and Canada. He was much in request at international conferences, and only a few weeks before his death he attended as an official British representative the twelfth Congress of the International Union of Pure and Applied Chemistry at New York, and a conference on cellulose chemistry at Appleton, Wisconsin. From the early days of the Commonwealth Fund fellowship, Campbell had acquired a growing appreciation and understanding of the American outlook, and

these close ties were further strengthened by his marriage in 1928 to Frances Pendleton, of Winchester, Kentucky, who, with their son, survives him.

Campbell's success was achieved in the face of long-continued ill-health, which caused him over a period of many years much painful suffering, patiently and stoically borne. Under a quiet and modest exterior he possessed an acute mind, not prone to hasty decision but possessing in full measure insight and soundness of judgment. He was a staunch friend and a loyal and unselfish collaborator whose desire always was that the work he had at heart should prosper irrespective of personal aggrandisement. Those who had the privilege of visiting him at the Forest Products Laboratory will not readily forget the warm welcome, the quiet opening of the discussion to the accompaniment of a freshly filled pipe of tobacco, the advice offered so modestly and so unreservedly. Very quickly came the realization that here was someone whose knowledge of everything pertaining to wood was encyclopædic. Furthermore, much of this was the result of work carried out under his advice and direction. His publications comprise more than seventy papers, and cover a wide range of subjects of which only the barest outline can be given in this notice. Prominent among his interests were problems concerning the isolation and characterization of the lesser-known components of wood. These involved many fundamental investigations of analytical methods. Of special interest in this field were his isolation and characterization in 1935 of starches and other related polysaccharides from oak and walnut woods, followed later by the isolation of several wood starches in their original granular state. He made many contributions also to the study of the hemicelluloses and lignin components of woody materials.

Among Campbell's major achievements were his studies of fungal decay of wood. He showed that the brown- and white-rots of timber could be differentiated clearly by chemical methods, and he was the first to classify the white-rots on the basis of the order and mode of their attack on the major components of wood. He was the first also to demonstrate the chemical nature of the decay produced by the *Lyctus* and death-watch beetles, showing that the food of the former is inside the wood cells, whereas the latter can digest all the major components of the wood. In the course of these investigations he made important contributions to our knowledge of the nitrogen metabolism of the death-watch beetle. Much of this work had immediate practical applications, but his main contributions in this respect came during the War. Included among these were his elucidation of the influence of wood on the corrosion of metals and his fundamental work on the urea-formaldehyde resin glues used in the manufacture of laminated wood structures. Campbell became an international authority in this field, and was the first to put forward a workable explanation of the mechanism of the setting reaction for these glues, and of the mechanical behaviour of glued joints under a wide variety of service conditions.

E. L. HIRST

#### Mr. H. Smith

HARRY SMITH, or 'Smithy', as he was affectionately called by most of his colleagues, who died on February 29, occupied officially the position of laboratory steward in the Davy Faraday Laboratory of the

Royal Institution from October 1, 1925, until his retirement on August 31, 1951. He was, however, much more than this.

He was born in Burnley on July 23, 1885, the youngest of a large family. His father died when he was one year old, and although he received a sound preliminary education at Burnley Grammar School he was not able to go to a university, and his further education was through night-schools. Before going to the Davy Faraday Laboratory, he had an appointment in the analytical department of the British Dyestuffs Corporation. Once in the Davy Faraday Laboratory, he made himself invaluable. He constructed apparatus that could not be bought; he kept the stores of chemicals and the files of reprints; he taught new research workers the rudiments of vacuum technique and of X-ray methods; he helped to develop the  $\alpha$ -ray integrating photometer and the 5- and 50-kW. X-ray equipments, each of the latter being for a time under his sole charge; he assisted with researches on the magnetic properties of crystals, on the compressibility of crystals and on crystal dynamics. Successive workers in the Laboratory came to rely on his judgment, his fund of useful suggestions regarding experimental details, his manual dexterity, his ability to locate 'leaks' and his invari-

able good humour. When his services were not in demand by someone or other, he carried out useful research work on his own account.

The debt that his colleagues have owed to him has been partly acknowledged in many published papers, and his own research work has been recorded in a series of joint papers in *Nature*, the *Proceedings of the Royal Society*, the *Proceedings of the Physical Society*, the *Journal of Scientific Instruments*, the *Philosophical Magazine* and the *Physical Review*. It is interesting to record that he read one of these papers at the meeting of crystallographers in Cambridge in 1942 which led to the formation of the X-ray Analysis Group of the Institute of Physics.

The sympathy of his many friends will be with his widow and his only son. KATHLEEN LONSDALE

WE regret to announce the following deaths:

Dr. G. W. M. Findlay, president of the Royal Microscopical Society, on March 14, aged fifty-nine.

Mr. P. C. Pope, secretary during 1927-46 of the Institute of Fuel, on March 1, aged eighty.

Dr. Thomas Wayland Vaughan, director during 1924-36 of the Scripps Institution of Oceanography, La Jolla, California, on January 16, aged eighty-one.

## NEW FELLOWS OF THE ROYAL SOCIETY

AT the meeting of the Royal Society on March 20, the following were elected to fellowship:

SIR WALLACE AKERS, C.B.E., director, Imperial Chemical Industries, Ltd., distinguished for his technical direction of the atomic energy project during the War and for the building of large research departments and plants in Imperial Chemical Industries.

PROF. C. E. H. BAWN, Grant-Brunner professor of inorganic and physical chemistry, University of Liverpool, distinguished for his researches on chemical kinetics, especially on the mechanism of polymerization, oxidation and hydrocarbon free radical reactions.

PROF. N. J. BERRILL, Strathcona professor of zoology, McGill University, Montreal, distinguished for his analytical studies of development, morphogenesis and regeneration particularly in the Tunicata, on which his monograph, published by the Ray Society, is now the standard British work.

DR. J. H. CRAIGIE, associate director, Science Service, Dominion Department of Agriculture, Ottawa, distinguished for his elucidation of the mechanism of sexual reproduction of the rust fungi and for his studies of the genetics and epidemiology of the cereal rusts; he has made notable contributions to scientific agriculture in Canada.

DR. F. J. DYSON, associate professor of theoretical physics at the Floyd Neuman Laboratory of Nuclear Studies, Cornell University, Ithaca, N.Y., distinguished for his discoveries in the geometry of numbers and for his contributions to quantum electrodynamics.

DR. HONOR B. FELL, Foulerton Research Fellow of the Royal Society, director of the Strangeways Research Laboratory, Cambridge, distinguished for her researches on the development and differentiation of tissues and rudiments of organs *in vitro*; she has made fundamental contributions to knowledge of the mechanisms governing cartilage and bone formation.

DR. D. LL. HAMMICK, Aldrichian praelector in chemistry, University of Oxford, distinguished for his work in physical chemistry, especially in the application of physical methods in the study of organic chemical reactions.

PROF. L. HAWKES, professor of geology, Bedford College, University of London, distinguished for his researches in igneous geology and petrology, especially of Iceland.

DR. W. O. JAMES, reader in botany (plant physiology), University of Oxford, distinguished for his studies in plant physiology, in particular for his contributions to our present understanding of the catalytic mechanisms of respiration in higher plants, and of the relation of respiration to plant syntheses.

PROF. HARRY JONES, professor of mathematics, Imperial College of Science and Technology, University of London, distinguished for his contributions to the theory of the solid state and the detonation processes of solid explosives.

PROF. B. KATZ, professor of biophysics, University College, London, distinguished for his contributions to neurophysiology, particularly in respect of nervous impulses and muscle end-plate potentials.

DR. R. LEMBERG, director, Biochemical Department of the Institute of Medical Research, Royal North Shore Hospital, Sydney, distinguished for his contribution to the study of the metabolism of pigments derived from haemoglobin; he has initiated new botanical researches through his discovery of pigments of the bile type in plants.

PROF. W. H. MCCREA, professor of mathematics in the University of London (Royal Holloway College), distinguished for his contributions to theoretical astrophysics and cosmology.

PROF. J. S. MITCHELL, professor of radiotherapeutics, University of Cambridge, and director of the