

OBITUARIES

Sir Norman Haworth, F.R.S.

By the sudden and unexpected death of Sir Norman Haworth on March 18 at the age of sixty-six, the world has lost one of its most distinguished organic chemists. Walter Norman Haworth was born at White Coppice, near Chorley, in 1883. His early schooling was at Chorley and Preston, and after a period in business he proceeded to Owens College, Manchester, for which University he maintained throughout his life a deep respect and affection. A brilliant member of a brilliant group of students, he then went to Göttingen, where he obtained his doctorate.

Haworth's first teaching post was at the Imperial College, South Kensington, where he undertook investigations in the terpene group. In 1912 he moved to the University of St. Andrews, which was leading the world in the development of modern carbohydrate chemistry, and there he became interested in the problems which were to become his life-work. After interruption during the First World War, when he took a prominent part in the war-time activities of the St. Andrews laboratories, academic studies were resumed, and in 1920 he was offered the chair of chemistry at Armstrong College, Newcastle upon Tyne, in the University of Durham. It was during this period (1922) that he married Violet Chilton, second daughter of the late Sir James Dobbie, and he is survived by her and by two sons.

In 1925 Haworth became Mason professor of chemistry and director of the Chemistry Department in the University of Birmingham, holding these offices until his retirement in 1948. During this long period a constant and rapid flow of papers on the chemistry of the sugars emanated from his laboratories. Throughout, the work was directed, with the sure touch of a master, to the solution of highly important but often extremely difficult problems. These included the determination of the ring structures of the stable and unstable forms of mono-saccharide derivatives, the names 'pyranose' and 'furanose' by which they are now universally known being assigned to them by Haworth. This work paved the way for the determination of the structures of the di- and tri-saccharides, notably cellobiose, lactose, maltose and sucrose, by the application of ingenious, but rigidly controlled, experimental methods.

As this fundamental knowledge grew in volume it became possible to explore for the first time, by chemical methods, the structure of the complex polysaccharides, and an ever-increasing proportion of the publications of Haworth and his collaborators became devoted to this group. Among many outstanding achievements may be mentioned the work on the chain structure of cellulose and the end-group method for the determination of the size of repeating units; the work on amylose and amylopectin and on the action of the *P*- and *Q*-enzyme systems in the synthesis of starch from glucose 1-phosphate. From his laboratory there came also much pioneer work on the nature of the biologically important bacterial polysaccharides. Besides all this, the Birmingham school was responsible for the structural determination and synthesis of vitamin C; it provided the first unequivocal proof of the structure of glucosamine and published many papers on sugar carbonates, acetone compounds, anhydro sugars and on other subjects too numerous to detail.

In addition to research, Haworth was active in teaching and administration. He excelled as a lecturer both to graduate and undergraduate audiences, and in the administration of his department his methods were efficient and businesslike. He rendered valuable service to the University of Birmingham as dean of the Faculty of Science during three critical and difficult war years, and as vice-principal (1947-48). He served with distinction on many boards and committees, both in peace-time and during the War, when he was prominently associated with the chemical side of research into atomic energy.

Many honours came to Haworth in recognition of his contributions to science. In 1928 he was elected to the fellowship of the Royal Society, of which he was vice-president in 1948. In 1937 he was awarded the Nobel Prize for Chemistry, being the first British organic chemist to receive it. He was president of the Chemical Society (1944-46). He received his knighthood in 1947, and among many other distinctions may be mentioned the Longstaff Medal of the Chemical Society (1933), the Davy (1934) and the Royal (1942) Medals of the Royal Society, many honorary degrees (D.Sc., Belfast, Zurich and Oslo; Sc.D., Cambridge; LL.D., Manchester) and honorary membership of many foreign academies (Haarlem, Brussels, Munich, Vienna, Finland, Dublin, and the Swiss Chemical Society).

His interests were wide and he had friends in all parts of the world. By them and by his students and colleagues he will be remembered with pride, respect and affection. Haworth's outstanding characteristic, a gift given to very few men, was a capacity for inspired leadership which invoked in his colleagues and research workers a passionate enthusiasm for the tasks, no matter how difficult, that lay before them. All who knew him valued his wise counsel and understanding, the uncompromising straightforwardness of his dealings, his unvarying kindness, and his thoughtfulness for others.

E. L. HIRST

Dr. Robert Gurney

ALTHOUGH he was best known to zoologists for his important work on certain groups of Crustacea, Robert Gurney, who died at Oxford on March 5, was, in fact, a field naturalist of the good old school who combined a love for the wild things of the countryside with a scholarly appreciation of many different aspects of biology.

Gurney was born in 1880, the fourth son of John Gurney, of Sprowston Hall, Norfolk. He was educated at Eton and was a scholar of New College, Oxford, where he graduated with first-class honours in zoology in 1902 and was awarded the D.Sc. in 1927. Most of his scientific work was done at home, at first in Norfolk and afterwards in Oxford, and his modest and retiring nature perhaps delayed recognition of its importance. As a Norfolk man, it was natural that his attention was early turned to the problems of fresh- and brackish-water biology as presented in the Broads, and, with his elder brother Eustace, he established at Sutton Broad, some fifty years ago, the first freshwater station in Great Britain. Many years later he took an active part in founding the Freshwater Biological Association with its laboratory at Lake Windermere.

The bulk of Gurney's scientific work had to do with two groups of Crustacea, the freshwater Copepoda and the marine Decapoda, with special reference to