

as Rowden-White Research Fellow in the Department of Microbiology of the University of Melbourne, and will continue to work actively on the pathology and genetics of auto-immunity in mice. He hopes to write at least two major text-books—a major thesis on modern immunological theory, and a more popular work. We can thus look forward to a continued flow of enlightened speculation and inspiration from Burnet's richly productive pen.

Prof. G. J. V. Nossal

PROF. G. J. V. NOSSAL, formerly deputy-director of the Walter and Eliza Hall Institute, has been appointed to succeed Sir Macfarlane Burnet as director. Prof. Nossal was educated at St. Aloysius College, Sydney, and the University of Sydney, where he graduated B.Sc. (Med.) 1952 in bacteriology, and M.B., B.S., 1954, with first-class honours and a University Medal. In 1957 he joined the staff of the Walter and Eliza Hall Institute, graduating Ph.D. in experimental medicine in 1959. In 1960–61 he was assistant professor in the Department of Genetics, Stanford University School of Medicine, and visiting professor of immunology, University of Michigan, in 1961. He then returned to the Walter and Eliza Hall Institute.

Since then, he has been a visiting scientist to various institutes, notably the Children's Cancer Research Foundation, Boston, in 1962, and Irvington House Institute, New York University, in 1964. Dr. Nossal went to the Walter and Eliza Hall Institute when the emphasis was switching from virus work to immunology. Under the stimulus of Burnet and also Prof. Joshua Lederberg, then a visiting professor, Nossal was the first to demonstrate that isolated lymphoid cells (plasma cells) could liberate antibody. In doubly immunized animals the great majority of cells produced one type of antibody only. He also made important contributions to the understanding of immunological tolerance, and while at Stanford University investigated in detail the kinetics of cellular proliferation in lymph nodes stimulated by antigen injection. He has since made significant contributions to the study of antigen distribution in lymph nodes, thus opening up an important field in the relationship of antigen to the induction of antibody formation. His reviews on immunological topics have played a major part in the development of important aspects of the genetic aspects of immunity. On succeeding Sir Macfarlane Burnet he was appointed professor of medical biology in the University of Melbourne.

OBITUARIES

Prof. T. P. Hilditch, C.B.E., F.R.S.

PROF. T. P. HILDITCH, professor of industrial chemistry in the University of Liverpool during 1926–51, who was mainly responsible during those years for the great advance in our knowledge of the chemical constitution of natural oils and fats, died at his home in Oxton, Birkenhead, on August 9.

Thomas Percy Hilditch was born in London in 1886 and educated at Owen's School, Islington. He proceeded to University College, London, in 1904, where he graduated B.Sc. with first-class honours in chemistry. In 1908 he was awarded an 1851 Research Exhibition, which enabled him to work for two years at Jena under Prof. L. Knorr and for one year at Geneva under Prof. Ph. Guye. He returned to University College to continue research with Prof. S. Smiles. His major interests in these years were the aromatic sulphones, sulphinic acids, and the relationship between optical activity and unsaturation. In 1911 he was awarded the D.Sc. of the University of London. By the time he was twenty-five years old he had published some forty papers and his reputation as a brilliant organic chemist was well established.

In 1911 Hilditch joined Joseph Crosfield and Sons, Ltd., Warrington, as research chemist. Crosfield's had recently put into operation the first successful plant for the hydrogenation of oils and fats. The hydrogenation process and catalysts for it were the subjects of major investigations carried out by Hilditch during his fourteen years at Warrington. The results of these were published, in conjunction with E. F. Armstrong, in a series of papers in the *Proceedings of the Royal Society*. This was not by any means the only field of investigation in which Hilditch worked successfully at Crosfield's. During the First World War, for example, he was intimately connected with a Government project at Warrington for the industrial production of acetaldehyde and acetic acid from ethyl alcohol.

In 1925 Hilditch was appointed to the newly created Campbell Brown chair of industrial chemistry in the University of Liverpool, a post he held until his retirement in 1951. It is by the results of his work during that period that he will always be remembered.

Only a year before Hilditch went to Liverpool, E. F. Armstrong had entitled his presidential address to the Society of Chemical Industry "A Neglected Chapter of

Chemistry: Fats". Hilditch's and his students' work at Liverpool between 1925 and 1951 completely removed any justification for the title of Armstrong's address to be used again.

Hilditch always considered that oils and fats were a branch of organic chemistry, and it was with this attitude that he commenced and carried out his work so successfully. Little quantitative information was available in 1925 on the component fatty acids of natural oils and fats, and not any on the component glycerides. Furthermore, the techniques for obtaining these were, for the first, inadequate and, for the second, non-existent. By 1951 not only had Hilditch and his students experimentally obtained this information for many oils and fats, but their work had stimulated others all over the world to work in this field. His classic book, *The Chemical Constitution of Natural Fats*, in the fourth (1964) edition shows that we now know quantitatively the component fatty acids of some 1,450 fats and the component glycerides of about 100.

He always believed that there was a relationship between the component fatty acids and glycerides, and the order of the evolutionary development of the parent organisms from which the fats were derived. This relationship was the basis on which he wrote his classic book. However, even in 1964 he felt that gaps in our knowledge remained, particularly in the component glyceride field, but he anticipated that with the aid of recent techniques such as gas-liquid chromatography, controlled enzyme hydrolysis and thin-layer chromatography, these would be quickly filled.

The success of Hilditch's research school at Liverpool became known throughout the world, so that by his retirement he had had students from very many countries. Not only did he successfully conduct his own Department, but he was also a colleague valued by many others on the University staff, and his services to the general administration were greatly appreciated.

During his retirement Hilditch continued his activities and interest in his subject and wrote two further editions of *The Chemical Constitution of Natural Fats*, as well as for some years acting as consultant to two industrial firms. He wrote five other books during his lifetime, three of which had two or more editions. These were text-books on physical and organic chemistry, and

A Concise History of Chemistry, written in his early years, while the later ones were *Industrial Catalysis* and *Industrial Fats and Waxes*.

Hilditch was elected a Fellow of the Royal Society in 1952. He was also a Fellow of the Chemical Society and the Royal Institute of Chemistry, and a member of the Society of Chemical Industry: he served the last two Societies as a council member and as vice-president. Up to the end of his life he continued to give great service to their Liverpool sections, by whom he will be greatly missed.

Hilditch was frequently consulted by Government bodies, and for his services to the Colonial Products Research Council he was awarded the C.B.E. in 1952.

During his retirement he received many other honours. In 1962 the Lampitt Medal from the Society of Chemical Industry, in 1964 the Chevreul Medal from the Groupe-ment Technique Des Corps Gras, France, and this year the American Oil Chemists' Society held in his honour a special symposium on "Glycerides", and their North Central Group gave him the Alton E. Bailey Award. Unfortunately, Prof. Hilditch was unable to receive these last two personally.

At a first meeting with Hilditch, even in his younger days, one had the immediate impression of a highly disciplined man with authority and of a somewhat austere mien, but on longer acquaintance something would occur to produce that kindly smile by which all his old friends affectionately remember him. The affection in which he was held was evinced by the many visitors to his home, particularly old students, and the honour which they felt when in turn he visited them, as he frequently did.

Hilditch always put his energies first into the duties of his position at the time, whether as student, industrial research chemist, or professor, but he was not without outside interests. He delighted in working in his garden or watching a cricket match and for many years served All Saints Church, Oxton, as churchwarden. It was at this church that the final tribute was paid to him in the presence of a large number of his former colleagues, students and friends.

His widow, who greatly helped him in his work, survives him, and also three married daughters of a previous marriage.

P. N. WILLIAMS

Prof. C. B. Purves

PROF. CLIFFORD B. PURVES, chairman of the Department of Chemistry, McGill University, Montreal, died on September 30. As E. B. Eddy professor of industrial and cellulose chemistry he was also head of the Wood Chemistry Division of the Pulp and Paper Research Institute of Canada.

He leaves a widow, three sons, and three daughters.

Although honours embarrassed him, Dr. Purves's distinction as an educator and scientist was recognized through the award of two honorary degrees, one from Lawrence College, Appleton, Wisconsin (1944), and the other from Windsor University, Windsor, Ontario (1964). In 1960 the Chemical Institute of Canada, of which he had been president in 1956-57, presented him with its medal for distinguished service to the sciences of chemistry and chemical engineering in Canada. The American Chemical Society, in 1963, honoured him with the Anselme Payen Award for his contributions to the field of wood chemistry.

Dr. Purves was a man of modesty, warmth, generosity, fairness and inflexible honesty. Though he never failed to remember important things, true to the character of a professor he was absent-minded about trivia and often made his absent-mindedness the butt of his own wit. His sense of humour was strong; he had a large fund of anecdotes, always apt to the occasion, and, unlike many professors, he never ruined their point in the telling.

His strongest personal characteristic was concern. He was always concerned about each of his colleagues and students as individuals and, however busy he may have been, he never turned away a caller who might be troubled by a problem, personal or scientific. He always helped to the utmost of his power and probably felt his deepest frustrations on those occasions when his help was to no avail.

His concern extended far beyond his immediate colleagues to the profession of chemistry in general. His active participation in the Corporation of Professional Chemists of Quebec (he was its president in 1964) arose from his feeling of the need to strengthen the position of chemists as professionals.

Outside the realm of chemistry, Dr. Purves had other concerns. In his Convocation Address at the University of Windsor he spoke fervently of the need for educators, in their anxiety to cater for the demands of college-oriented youngsters of *IQ* 110 and higher, who constitute only 20-30 per cent of the general population, not to overlook the plight of the 20 per cent of *IQ* less than 80. He felt that in an increasingly technological society the lives of these latter people were becoming more and more aimless, and devoid of satisfactions.

In his Anselme Payen Award Lecture in 1963, Dr. Purves had also spoken of education. He felt that the greatest single deficiency of modern primary education in North America was its failure to teach elementary arithmetic, and he held up the Scottish education system as a model to be followed.

Born and educated in Scotland, Dr. Purves went to Canada in 1943 to succeed Prof. Harold Hibbert on the latter's retirement from the chair of industrial and cellulose chemistry. He arrived well prepared, having obtained his doctorate in 1929 in the field of carbohydrate chemistry under Sir James Irvine. During 1926-29 he had also worked as a Commonwealth Fund Fellow attached to the Polarimetric Division of the U.S. Bureau of Standards, in Washington, D.C., where C. S. Hudson had been his chief.

After two more years in Scotland, Dr. Purves moved to the United States in 1931, and became a research associate at the Chemical Foundation of New York (now the U.S. National Institutes of Health). During 1936-43 he was an associate professor of organic chemistry in the Massachusetts Institute of Technology.

At McGill, he built a strong research group, and continued his investigations of the chemistry of carbohydrates. A large part of his work was directed at the location of substituents in such cellulose derivatives as the acetates, xanthates and nitrates (see *Chemistry in Canada*, 25-29; December 1960). During this period he also began to interest himself in the lignin component of wood, and in 1947 published a method for the isolation of lignin by the mild oxidation of carbohydrates with potassium periodate (Ritchie and Purves, *Pulp and Paper Mag. Canada*, 48, No. 12, 74; 1947; Wald, Ritchie and Purves, *J. Amer. Chem. Soc.*, 69, 1371; 1947). This isolated lignin formed the basis of much subsequent work on the mechanisms of reactions related to the processes of the pulp and paper industry.

At McGill alone, more than a hundred students received their doctorate degrees under the tutelage of Dr. Purves. Many of them have now themselves achieved prominence in universities, government and industry.

Dr. Purves assumed the chairmanship of the Department of Chemistry in 1961, and under his administration the Department grew in the number and quality of its staff. But his chief task during the past four years was to supervise the planning and construction of the new Chemistry Building, named in memory of his long-time colleague, Prof. Otto Maass. That building now stands as a memorial to both of them.

HENRY I. BOLKER