

OBITUARY NOTICES.

JOHN EDWIN MACKENZIE.

1868—1955.

JOHN EDWIN MACKENZIE, O.B.E., D.Sc., D.Phil.Nat., F.R.S.E., F.H.W.C., Reader (Emeritus) in Chemistry in the University of Edinburgh, died in Edinburgh on February 5th, 1955. He was born on August 31st, 1868, at Helensburgh and received his early education there, under his father, who was headmaster (and owner) of Larchfield Academy. Sir James George Frazer, author of "The Golden Bough," and Alexander Ure, Lord Strathclyde of the Scottish Court of Justice, were former scholars of this Academy. Mackenzie's schooling was completed by a year at the Royal High School, Edinburgh. It would seem that at first he contemplated a career connected with agriculture, for he records that he studied this subject (under Professor Robert Wallace), as well as chemistry and botany. However in 1886 he became a teacher-in-training in London, where his interest in chemistry prompted him to attend the lectures of T. E. Thorpe and F. R. Japp at the Royal College of Science. Returning to Edinburgh next year, he continued his studies at the University and the Heriot-Watt College, and in 1889 graduated as B.Sc. There followed a period of research with W. H. Perkin, junior, and F. S. Kipping, both then on the staff of the Heriot-Watt College, and it was through their influence that chemistry became Mackenzie's main interest. Accordingly, after a spell of teaching at Inverness and Edinburgh, he worked in Fittig's laboratory at Strassburg, obtaining the doctorate (*magna cum laude*) in 1894. He gained the degree of D.Sc. (Edinburgh) in 1901.

During the period 1894—1897 Mackenzie held the post of Assistant Professor of Chemistry at the Heriot-Watt College. In 1897 he was made Head of the Chemistry Department of Birkbeck College. As at this time day classes were added to the usual evening work of the College, Mackenzie had a heavy programme of routine duties, but he contrived to do a considerable amount of research. After eight years at Birkbeck, he accepted the offer of the Principalship of the Victoria Jubilee Technical Institute, Bombay. He resigned this post in 1907 and came back to Edinburgh to hold a Research Fellowship in the Chemistry Department of the University. He was appointed Lecturer in 1908 and held the position of Reader from 1925 until his retirement in 1938.

Mackenzie's researches were mainly in the organic field, but he was also interested in some aspects of inorganic and physical chemistry. Over a period of forty years he published papers, alone or in collaboration, on a variety of topics, including the action of nitric acid on anthracene, the compounds of hydroxides of the alkaline earths with sugars, and the optical rotation of sugars in formamide. Much of his work appeared in the *Transactions* and the *Journal* of the Society; he was a Fellow from 1897 until his death. He was author of a book on the sugars, and joint-author, with Leonard Dobbin, of a textbook of inorganic analysis.

For many years Mackenzie took a keen interest in military training. He served in the Highland Volunteer Artillery at Inverness and in the Bombay Light Horse, and from 1908 to 1922 he was an enthusiastic officer of the Edinburgh Contingent of the O.T.C. As Major in command of the University Battery he was responsible for the training of many young officers during the First World War. His experience of India led to his appointment in 1927 as General Adviser of Indian Students at Edinburgh, and the value of his thirteen years of work in this capacity received fitting recognition when he was made an Officer of the British Empire. Mackenzie was for long a Fellow of the Royal Society of Edinburgh and held office as Member of Council, Curator of the Library, and Secretary to Ordinary Meetings. As representative of the Royal Society of Edinburgh, he served on the Board of Governors of the Heriot-Watt College from 1939 to 1951. Over a long period he was an examiner in chemistry and physics for the Royal College of Veterinary Surgeons.

Mackenzie was an enthusiastic teacher and he was always ready to draw on his long experience for the benefit of colleagues and students. After his retirement he continued to take a lively interest in academic and scientific matters, and during the war he returned to the University to give valuable help in the teaching of first-year students. Owing, no doubt, to his love of games, he retained his physical vigour to a remarkable degree, keeping up his golf until almost the end. His friendliness and sense of humour, his zest in all he did, and his manly character made a lasting impression on all with whom he was associated.

He is survived by his widow and one of his two sons; the other son was killed while on active service during the last war.

T. R. BOLAM.

WILLIAM PUGH.

1897—1955.

WILLIAM PUGH was born at Llannon on January 8th, 1897, the son of a Carmarthenshire farmer, Eleazar Pugh, and his wife Margaret.

Pugh attended the Llanelly County Intermediate School from 1911 to 1915 and then joined the R.A.M.C. as a private, serving in France and Flanders. He was demobilised at the end of 1918, and in January 1919 he entered King's College, London, graduating with First Class Honours in Chemistry in 1921. He came to South Africa in 1922 as lecturer in inorganic chemistry at the University of Cape Town, and in 1938 was appointed Professor and Head of the Department of Chemistry in succession to Professor J. Smeath Thomas. In this capacity he played his full part in University affairs, serving on numerous committees and finally as Dean of the Faculty of Science from 1951 to 1954. He also represented the University on other bodies and in particular on the Board of the Fishing Industry Research Institute.

Before Pugh had had time to settle in to his duties as Head of the Department, the Second World War broke out, and the country's need of technically trained personnel brought a large increase in student numbers, particularly in the elementary classes for students of medicine and engineering. At the same time, graduates left as soon as they obtained their degrees, very few remaining as research students, so that reliable demonstrators were hardly to be found, while only the most vitally urgent additions to the established staff could be considered. All this imposed a heavy load of teaching and administration on the Professor and all his colleagues; nevertheless, Pugh found time to take an active part in the military training of students, being commissioned as lieutenant and then as Acting Captain in the University contingent of the South African Corps of Engineers (Active Citizen Force unit).

The teaching and administrative load continued to be heavy during the post-war years, when the University was called on to undertake the training of a large number of ex-servicemen. Consequently, the formulation of a settled policy of staffing and organization for the Department became possible only after Pugh's return from a period of leave in 1948, and the next year or two were fully occupied in carrying out the initial stages of that policy.

These wartime and post-war difficulties caused a division of Pugh's researches into two main groups, separated by an interval of nearly ten barren years. Shortly before his arrival in Cape Town, the mineral germanite had been discovered at Tsumeb in South West Africa, and soon afterwards Professor Smeath Thomas obtained (through Professor Andrew Young of the Geology Department) a large sample of this material. Pugh's first work was a careful analytical study of this mineral and the devising of methods of extracting germanium and gallium from it, followed by a series of investigations on germanium compounds. The results were published in eleven papers, of which ten appeared in the *Journal*. Later, when one of his research students (Dr. F. Sebba, now a Senior Lecturer at Cape Town) devised an improved method of extracting gallium, Pugh turned his attention to the compounds of that metal, resulting in a further seven papers, six being published in the *Journal*.

Pugh's second fruitful period began towards the end of 1951, soon after he received a copy of Audrieth and Ogg's monograph on "Hydrazine." I went to his room one morning to get his signature to some Departmental papers, and was greeted with "Look at this! I don't believe it!"—he had just read Druce's formula for hydrazinium chlorostannate. Within a very short time he had satisfied himself that Druce was wrong, and from then onwards he and his collaborators have produced a stream of new complex salts of hydrazine and the azines, leading in the end to an excursion into pure organic chemistry (the condensation of carbonyl compounds with salts of secondary amines). Eleven papers have already been published in the *Journal*, and work which he initiated in these fields is still in progress.

Throughout his professional life, however, there was one love to which he constantly returned—analysis. He published seven papers describing new procedures or improvements in existing methods; two of these appeared in the *Journal*, one in the *Analyst*, one in the *J. Appl. Chem.*, and three in the *Trans. Roy. Soc. S. Africa*. At the present time, it is probably his analytical procedures which have brought him widest recognition, though his hydrazine work may well prove to be as important when sufficient time has elapsed for its proper assessment. But it is as a teacher of analysis that he will be most widely remembered in South Africa. It is undoubtedly due to his general attitude to that branch of chemical practice, and to the standards of accuracy which he demanded of his students, that they are to be found in industrial

employment all over Southern Africa. There is thus hardly an industry, from the Cape to the Copper Belt of Northern Rhodesia, where his indirect influence has not been felt in some degree.

The researches of his earlier years gained him the degrees of Ph.D. of Cape Town in 1924, and D.Sc. of London in 1939. He was elected as an Associate of the Royal Institute of Chemistry in 1921, and became a Fellow in 1931, serving as Secretary, as Chairman, and as a member of the committee of the Cape Section. He became a Fellow of the Royal Society of South Africa in 1934 and served on its council. He also served as the first Local Representative of the Chemical Society in South Africa, and in that capacity he attended the Society's Centenary Celebrations in 1947.

In 1924, Pugh married Bessie, daughter of Robert Armour, a Scotsman settled in Cape Town, and had two sons and two daughters. After Mrs. Pugh died in 1938, shortly after the birth of their second daughter, he received much assistance in caring for his children from their aunt, Margaret Armour, whom he subsequently married in 1945.

In July, 1954, Pugh went on leave for the second time, and after a continental tour went to Cambridge for a period of research unhampered by teaching or administrative duties. Soon after he reached Cambridge, he complained of pain, and a medical examination revealed a damaged heart. After a short rest, he seemed to recover, and resumed work in the laboratory, again tackling an analytical problem—the use of ion-exchange columns in the determination of fluoride. Early in March, he wrote that he had found means of overcoming the complications caused by the presence of Group III metals, especially gallium and indium, and immediately afterwards he left for a short holiday in Ireland before writing up his results. He had a severe heart attack on March 11th and died in Dublin on March 12th, 1955. His body was cremated at Pontypridd, near his birthplace, on March 18th, and his ashes were buried at Cape Town, beside the grave of his first wife, on May 13th. He is survived by his widow and children, to one of whom, his elder son, J. R. Pugh, B.Sc., M.B., Ch.B., I am indebted for some of the personal details recorded.

A. H. SPONG.

HENRY WREN.

1881—1955.

HENRY WREN was born on September 11th, 1881, in London and received his early education at the Wyggeston Grammar School, Leicester. In 1898 he was awarded a major scholarship which he held at Christchurch, Oxford, where he graduated with First Class Honours in chemistry in 1902. Having developed a keen interest in organic chemistry he proceeded to Tübingen University for training in research methods under W. Wislicenus. A joint paper, "Synthesis of Arylnitromethanes and of Stilbene Derivatives" (*Ber.*, 1905, **38**, 502), resulted and Wren was awarded the degree of Ph. D. in 1904.

On his return to England he joined the staff of Birkbeck College, the chemistry department of which shortly afterwards came under the stimulating direction of Alexander McKenzie. Wren entered into McKenzie's programme of stereochemical research with enthusiasm and their joint papers contain experiments now well known to all students of chemistry. They described the asymmetric synthesis of lactic acid by reduction of (–)-bornyl pyruvate (*J.*, 1906, **89**, 688) and the asymmetric synthesis of tartaric acid by oxidation of (–)-bornyl fumarate (*J.*, 1907, **91**, 1215); they prepared many optically active compounds by use of Grignard reagents (*J.*, 1908, **93**, 309) and initiated studies of racemisation phenomena (*J.*, 1909, **95**, 1583) and of the Walden inversion (*J.*, 1910, **97**, 1355).

In 1910 Dr. Wren was appointed Head of the Chemistry Department of the Belfast Technical Institute and there he continued to develop the lines of investigation commenced at Birkbeck College. Over the period 1913—1937 he published in the *Journal* sixteen papers dealing with the stereochemistry and reactions of the diphenylsuccinic acids, the use of borneol and menthol as resolving agents, racemisation phenomena, and Grignard reagents, on which, also, he wrote a short book.

Under his guidance the status of the department continued to rise and the number of students to grow. When Queen's University, Belfast, ceased to be dependent on Dublin it became a matter of urgency to co-ordinate higher education in Northern Ireland. The engineering and chemistry departments of the Technical Institute, by then called the Belfast College of Technology, were recognised as the Faculty of Applied Science and Technology of the new University

and Dr. Wren became the first Professor of Chemistry in this Faculty. Furthermore, his Department became the centre for all advanced instruction in pharmacy in the whole of Northern Ireland. This very considerable expansion in the work of the Chemistry Department occurred without any corresponding increase in the size of the staff and Professor Wren became increasingly occupied with teaching and administrative duties. He still, however, retained a keen interest in the literature of chemistry and with his facility at languages and his flair for picking out immediately all the essentials of a paper he most fortunately became connected with the Bureau of Chemical Abstracts. His name must be very familiar to all who have consulted the Organic Section of British Abstracts and he continued this work until his death.

Professor Wren was a valued member of the local chemical societies in Belfast. Many of the officers and keenest members were his old students and, indeed, his great contribution to chemical education in Northern Ireland and his influence will be felt for many years.

About two years ago Professor Wren left Belfast for the drier climate of Worthing and he died there on February 28th, 1955.

Professor Wren married in 1912 and is survived by his wife, a married daughter and a son, who is a chemist in the Dyestuffs Division of Imperial Chemical Industries Limited.

F. BELL.
