

## OBITUARY NOTICES.

SIR WILLIAM WATERS BUTLER, BART.

1866—1939.

SIR WILLIAM WATERS BUTLER, Bart., who died suddenly on April 5th of this year, had been a Fellow of this Society since 1890. Well known as Chairman and Managing Director of Messrs. Mitchells and Butlers, Ltd., one of the largest provincial brewing concerns, he was a man of wide knowledge and vast experience in all departments of the industry with which he was connected.

The foundation on which his career was based was an early training in chemistry and such allied subjects as would subsequently enable him to replace empirical methods by scientific control in his father's brewery. His interest in this aspect was maintained throughout his life, and one of the honours most recently bestowed upon him—the Horace Brown Medal of the Institute of Brewing—was awarded in 1937 in recognition of his many services, direct and indirect, in the development of the technical side of the industry. Further associations with the realm of pure and applied science include a long membership of the Society of Chemical Industry, the Royal Metallurgical Society and the American Chemical Society.

Butler was born in 1866 and educated at King Edward's Grammar School, Birmingham. He entered the family business in 1882. For the next eight years he practised the art of brewing by day, and by night studied the scientific principles involved in the process. As a young man he was a highly successful student of the Birmingham and Midland Institute and gained numerous academic distinctions. The activities of the Laboratory Club at Burton in the "eighties" and of its leader, Cornelius O'Sullivan, quickly captured his imagination and stimulated his conviction that brewing in the future would be a science as well as an art. Largely as the result of his energy and application, the business of Butler's Crown Brewery, Ltd., grew by leaps and bounds, and in 1897 it was amalgamated with that of Henry Mitchell and Co., Ltd. In 1907 he became Deputy-Chairman of Messrs. Mitchells and Butlers, Ltd., and in 1914 Chairman of the Company, which position he held at the time of his death.

Meanwhile the Laboratory Club had become defunct, but the Institute of Brewing had taken its place and in the recorded proceedings of the Midland Section of that Society the name of W. W. Butler occurs with considerable frequency. He occupied the Chair in the period 1899—1903. After the federation of the various country brewing societies into one body on a national basis, it was natural that he should be a prominent member of the new organisation. One year after its formation, in 1905, he became President of the Institute of Brewing at the early age of 39. On many of the Committees of the Institute he served continuously for many years, devoting much time to the development of trade research. In 1907—08 he was Chairman of the Brewers' Society. From that date he took a leading part in all matters of national importance in which the brewing industry was concerned. Soon after the outbreak of the Great War, the Government of the day sought his assistance and he was appointed a member of the State Management Control Board. He was responsible in no small degree for the policy of that body as exemplified by its operations in the Carlisle area. In every way he strove to improve conditions in the licensed trade. He regarded it as a duty of brewers to offer to customers a sound beverage and at the same time provide opportunities for its consumption in surroundings that were themselves refreshing and edifying.

Outside his business associations, he will perhaps be best remembered by his services to education. He never forgot the debt he owed to the Birmingham and Midland Institute, nor underestimated the value of the training he received there. His gratitude was shown in munificent manner. In 1938, when the Institute was labouring under the burden of a large accumulated deficit, he sent a cheque for the whole amount. Quite early in his career, his enthusiasm, backed by a substantial contribution from his own purse, helped to establish a School of Malting and Brewing at Birmingham University in the opening year of this

century. In 1907 he became a member of the Council of the University, of which he was also a Life Governor. Later he was largely instrumental in the creation of the Adrian Brown Chair of Brewing to perpetuate the memory of the first Professor in that subject. When a new Biological Department was added in 1927, Sir William was mainly responsible for the cost of its erection. More recently, in 1937, he gave to the School of Brewing a Model Brewery to be used for experimental work. Yet again, he assisted, financially and otherwise, in the establishment of Scholarships for brewing students.

His beneficence in fostering education was not limited by his industrial interests. In 1936 he endowed the Joseph Chamberlain Memorial Scholarships, tenable at the same University and open to residents in Smethwick and Birmingham. In this way he marked his admiration of Birmingham's great citizen at the time of the centenary celebrations.

Many Midland hospitals, including the new Hospital Centre in Birmingham, benefited by his generosity from time to time. His many services, political, social and philanthropic, received well-deserved recognition in 1926, when he was honoured with a baronetcy.

As one on whom leadership devolved, Sir William Butler was always mindful of his responsibilities and extremely conscientious in carrying out any undertaking. As a man, he gained the esteem and friendship of everyone with whom he came into contact. He admired candour and at all times endeavoured to be scrupulously fair. He never failed to appreciate the efforts of his employees and encouraged them to present their various points of view on any matter under discussion. Endowed with a mind of amazing retentivity and rare capacity, he appeared to find no difficulty in working consistently long hours. New and complicated problems seemed to afford him delight. His methods of tackling them were rarely tentative and usually achieved the desired results in a direct fashion.

Sport, particularly cricket and football, interested him, but his hobby was the culture of orchids. In the glasshouses at his home in Edgbaston there flourished one of the finest collections in the country. His many friends will long remember his charming habit of bringing a box of choice blossoms to functions, both public and private, for the adornment of fellow guests.

The closing years of his life were saddened by the loss of his only son in 1935. He continued, however, to work as he always had done, greatly to the advantage of common humanity, to the day of his death. He is survived by Lady Butler and two daughters.

A. E. CASE.

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### WILLIAM ALFRED DAVIS.

1875—1939.

W. A. DAVIS, born on December 5th, 1875, was at school at St. Dunstan's College, Catford. He was one of the earliest of a series of brilliant boys whose energies were directed to Science by Charles M. Stuart, perhaps the most successful science headmaster of his time. For a period of years a St. Dunstan's boy regularly gained an entrance scholarship at the Central Technical College. Davis entered the Electrical Engineering Department, but after a year he transferred to the Chemical Department; he was both Institute and John Samuel scholar and took his B.Sc. at London University.

In 1896 Messrs. Courtaulds, then makers of crape, had some problems to solve and required a young chemist. Davis went to them and solved some of these connected with irregularity in the material, but had leanings for the academic life and returned after a year to the Central College, to remain there for the next ten years. He was at first Demonstrator to Professor Armstrong's famous heuristic course for first-year Engineering students.

Davis was always a Londoner with a pronounced accent: his long red beard made him the complete alchemist and he was regarded as a "character" by the students, who did not always realise his goodness of heart. Later he became lecturer. During these years he published work on the half hydrate of calcium sulphate, of which he was personally rather proud.

In 1908 he became chemist and Works Manager to J. B. Lawes and Co., Manufacturers of Chemical Manures. He was never happy, however, in Industry and welcomed the opportunity to go to Rothamsted in 1911, where he remained for the next five years. Scientifically this was his most active period, his work on the formation of sugars in the leaf, which he published in conjunction with Daish and Sawyer, being of considerable importance, though the conclusions have subsequently been the subject of controversy. Davis at this stage cultivated the meticulous accuracy which characterised his work in later years.

In 1916 came the move to India, largely at the instigation of Professor Armstrong. Natural indigo was fighting a losing battle against the synthetic product, but it was hoped that a thorough scientific examination of every stage of its manufacture on the spot would lead to a more regular and improved product at a competitive cost. The problem proved a hopeless one economically, as the cost of manufacture of the synthetic product rapidly fell; technically Davis accomplished a great deal, though on the personal side he was not well suited to deal with the Anglo-Indian planter, whose failure and unwillingness to accept the advantage of scientific procedure were largely responsible for the defeat of the indigo industry.

Davis returned to England in 1922 and worked for a year on the problem of discontinuity in chemical reactions, particularly the hydration process, at the Linen Research Institute, Belfast, then under the leadership of Dr. J. V. Eyre. Both Eyre and Davis returned to this problem of discontinuity in connection with enzyme hydrolysis at a later date in a paper which has never had the attention it deserved.

Subsequently he spent three years with Lever Brothers at Port Sunlight as chief analyst. In 1927 he returned to London, becoming chief analyst at the now well-known research station at Great Burgh, Epsom, of the Distillers Company Limited, brought into being by Dr. J. V. Eyre, where he remained until his death on March 14th, 1939, at the age of 63.

During this period he made an exhaustive compilation of the voluminous and contradictory literature relating to starch, which is probably the largest for any substance.

Davis never really recovered his vigour after India and had more than his share of personal worries. His temperament did not fit him for the rough and tumble of life; his wide reading and keen interest in music seemed to suffice; he belonged in spirit to the large army of followers on whom the leaders depend for support. As a man he had a lovable personality, any request for assistance brought a reply by return, and he had the affection and friendship of his associates. He edited the Fourth Edition of Allen's "Commercial Organic Analysis."

E. F. ARMSTRONG.

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DAVID LLOYD HOWARD.

1866—1939.

DAVID LLOYD HOWARD, who was the eldest son of the late David Howard, J.P., D.L., was born at Stamford Hill on January 28th, 1866. He received his general education at Haileybury and then proceeded to University College, London, where he was a student under Professors Williamson and Graham from 1883 to 1886. On leaving College, he joined the firm of Messrs. Howards & Sons, being made a Partner in January, 1888, and Managing Director in 1903, when the business was converted into a Limited Company. He was Vice-Chairman from 1916, completing 51 years service in all with this firm.

David Lloyd Howard's interests were wide and varied. He was a Director of Borax Consolidated, Ltd., a member of many Societies, holding the offices of Treasurer and Vice-President of the Society of Chemical Industry; served on the Council of the Society of Public Analysts and on the Council of the Association of British Chemical Manufacturers, and as a Member of the Grand Council of the Federation of British Industries. He was an Honorary Member of the Pharmaceutical Society, and Chairman of the Pharmaceutical Conferences held at Leicester and Brighton in 1926 and 1927. He was also Chairman of the Drug and Fine Chemical Manufacturers Association and acted as Chairman of the Conference between the Association and the Trade Union representatives.

David Lloyd Howard was a keen sportsman, playing Rugby football in his youth, and later became a keen fly fisherman. An ardent Churchman, he was for many years a member of the Council for the London over-the-border Church Fund. The possessor of a very fine voice, he was for a long time in the St. Paul's Special Service Choir and for many years acted as Choirmaster at Chingford Church. He was a Justice of the Peace for the County of Essex from 1902 until the time of his death, which took place on February 8th, 1939.

He was elected a Fellow of the Chemical Society on April 21st, 1887.

H. LL. H.

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HENRY F. E. HULTON.

1874—1939.

HENRY F. E. HULTON died on April 16th at a London nursing-home following an operation.

He was born on August 13th, 1874, at Brompton, the eldest son of Everard Hulton, a well-known musician and artist of his day. The home environment manifested itself in the son, who was a man of refined artistic and musical feeling.

He was educated at the City of London School and at Finsbury Technical College from 1893—1896. After working for a time with the late Prof. A. R. Ling and the writer at the Beet Root Sugar Association, he became an assistant to the late Drs. E. R. Moritz and G. H. Morris. Later he assisted Dr. Morris in research work at Chancery Lane and the Lister Institute. During that time he was in close association with Horace Brown and J. H. Millar, and naturally took the opportunity of following the work which resulted in the classical publications on the products of the enzymic hydrolysis of starch made by those chemists from 1897—1899.

In 1901 Hulton became chemist to the malting firm of H. A. & D. Taylor of Sawbridge-worth, and four years later the writer had the good fortune to secure him as a colleague in the laboratory of Watney Combe Reid & Co., at the Stag Brewery, and 34 years of happy and congenial co-operation followed. During that time papers were published jointly in the *Journal* of the Chemical Society on the action of malt amylase on starch granules and starch paste, the nature of the amylases of the cereal grains and the furfuroid hydrolysing enzyme in barley. Various communications were also made in other English technical journals on matters associated with the fermentation industries.

His report on "the Relation of the Nitrogenous Matter in Barley to Brewing Value" made at the request of the Research Fund Committee of the Institute of Brewing was a most useful and critical compilation and his Streatfeild Memorial Lecture on "Beer" delivered at the Institute of Chemistry in 1934 was very informative.

He was elected a Fellow of the Society on May 2nd, 1918.

Hulton was an enthusiast at research work. His energy was untiring, and at the same time he was highly critical of the results obtained in the course of an investigation. He wrote in a clear and concise style, and in appropriate circumstances with a considerable degree of elegance.

A keen appreciation of Nature was an outstanding feature in Hulton's character, and his knowledge of field botany and geology made him a delightful companion in a country walk. He talked well and sympathetically, and considering his environment and the exacting character of his professional work he was an unusually well- and widely-read man.

The writer mourns a true friend and loyal colleague, and the sundering of so long an association is very distressing. Throughout the long years no shadow was ever cast over an enduring friendship.

Hulton leaves a widow and many friends to mourn his loss.

JULIAN L. BAKER.

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## LÉON ANTONIN JALOUSTRE.

1882—1938.

LÉON ANTONIN JALOUSTRE, who died at Florence on April 27th, 1938, was born at Clermont-Ferrand in 1882 of a working-class family. That he was possessed of exceptional intellectual powers was apparent from the time when he became a pupil at the primary school of the Halle au Blé. Subsequently he was for three years at the École Normale d'Instituteurs of Clermont, whence in 1905 he won a scholarship to the École Normale Supérieure d'Enseignement primaire of St. Cloud; after three years he was again successful in the entrance scholarship for the École Normale de la rue d'Ulm, Paris, on leaving which he became a student at the Pasteur Institute in the laboratory of Gabriel Bertrand. His interests consequently turned towards biological chemistry, and he took his University degree in Physics and Chemistry. He held teaching appointments at the Lycées at Nice, Digne and Toulouse in succession, and then the war broke out. He was appointed to the manufacturing and armaments section of the French Air Force, and later became one of the most active members of the Government Department of Liquid Fuel for the supply of petrol to the fighting forces. For his services he was awarded the Croix de Guerre and became a Chevalier of the Légion d'Honneur.

He returned to his University and was put in charge of lectures at the Sorbonne and at the Institute of Chemistry of the Faculty of Science. He lectured on the rare metals and on radio-active phenomena and their therapeutic applications and he communicated the results of his researches in numerous papers to the Académie des Sciences and to various learned societies. In 1933 he was made an Officer of the Légion d'Honneur. But the greater part of his time was devoted to the study and improvement of industrial processes. He travelled widely, visiting factories in various countries, and his advice was in great demand. His wide knowledge, his scientific mind and his professional conscientiousness won for him the confidence of industrialists. He died of broncho-pneumonia while still actively engaged in work.

Léon Jaloustre was elected a Fellow of the Chemical Society on December 3rd, 1931. He was also a member of numerous other scientific societies and received various foreign decorations.

EDWARD GARDNER.

## ALBERT THEODORE KING.\*

1885—1939.

ALBERT THEODORE KING, who died on March 21st, 1939, was born at Woking in 1885. He was educated at the Royal Grammar School, Guildford, and University College, London, graduating B.Sc. Hons., Chemistry, in 1906, when he was appointed an honorary demonstrator. He became an Associate of the Institute of Chemistry in 1906 and a Fellow in 1910.

In 1907, King was appointed demonstrator in Chemistry in the University of Leeds, being attached to the inorganic laboratory, and worked on the preparation of silicon hydride in a pure state. During his period in Leeds he took an active part in junior staff activities, and his versatility is still remembered by his contemporaries.

King became demonstrator at the Royal College of Science in 1911, and he remained there until 1921, having been appointed lecturer in 1920. During this period he supervised the practical work of the first year students, and later gave the lectures in inorganic chemistry to third year honours students. Although attached to the inorganic side in his academic career, King's research work throughout this period was concerned with organic chemistry, much of it being of a technical character, and not the subject of publication in scientific journals. Among published work may be mentioned the investigation of the structure of camphenic acid (with Haworth) and the working out of a general method for the preparation of acetals (with Mason). Work of a more technical character included a successful

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commercial synthesis of vanillin, and the economic production of a number of organic compounds by hydrogenation.

During the Great War, King was actively concerned with the production of synthetic drugs, especially local anaesthetics, which had not previously been manufactured commercially in this country, the successful production of vinyl diacetoneamine oxalate (King, Mason, and Schryver) being an important intermediate in the preparation of  $\beta$ -eucaine.

In 1921, King was appointed Chief Chemist to the newly formed Wool Industries Research Association, and here found opportunities to investigate both the fundamental and the technical chemistry of wool. His ability to put forward explanations which were readily understood and to demonstrate the chemical factors involved in the processing of wool was of great value to an industry which, owing to its age and method of development, did not readily respond to the application of scientific method and control. In this respect his work may be looked upon as that of a pioneer.

One of the most interesting of such demonstrations was the use of wool dyed with indicators whereby the changes and lack of uniformity which occurred in processing could be readily seen and appreciated by those responsible for such operations.

King's work on the treatment of suint liquors from wool scouring incorporated in a paper read to the Institute of Chemical Engineers was recognised in 1930 by the award of the Moulton Gold Medal. Other outstanding features of this period were an examination of the sulphur content and its state of combination in wool, the development of a new method for the bleaching of wool with solutions of sodium bisulphite under controlled  $p_H$  conditions, and the initiation of a process for rendering wool unshrinkable based upon the recognition of the principle that uniform penetration of a mass of wool may be achieved by chlorine gas at low pressure.

Many difficulties for which no rational explanation had hitherto been available were made clear, perhaps the most interesting being the fading of certain dyed materials when wrapped in papers or exposed to town air. King, by preparing the bisulphite compounds of azo-dyes, both in substance and when dyed on wool, showed that these were lighter in colour than the original dye, and in further work determined the conditions which favoured their production. In addition to matters relating more directly to chemical problems in the wool industry, King collaborated with biologists and physicists in investigating the histology of the wool fibre.

In June, 1933, King was appointed Professor of Textile Industries in the University of Leeds. In the short period during which he occupied the chair, he had become recognised as a Professor who displayed great interest in student activities and one who took pains to become acquainted with the individual needs of his many students.

During this period his attention was directed towards the development of a new type of milling machine (with Speakman), the principle of which was based upon the more recent interpretation of milling shrinkage considered in the light of the molecular structure of the wool fibre.

At the time of King's death, work in conjunction with the Indian Jute Mills Research Association was being carried out on the structure and properties of jute. Methods for the utilisation of flax in admixture with wool had led to interesting results.

King was a member of the Textile Institute (serving on its Diplomas Committee), the Society of Chemical Industry, the Biochemical Society, and a Fellow of the Chemical Society, and served on numerous committees connected with the textile industry.

In his younger days, King was an all-round athlete and played an excellent game of tennis and cricket. He found time amidst his various activities to enjoy the society of his fellows, and in both work and play displayed a cheerful, genial disposition. His death, at a comparatively early age, is mourned by a wide circle of friends, and their sympathy will be extended to his widow, daughter, and son.

J. BARRITT.

## THOMAS EDWARD LESCHER.

1877—1938.

THOMAS EDWARD LESCHER was born in 1877. He was educated at Stonyhurst, and subsequently passed the Minor examination of the Pharmaceutical Society. In 1895 he joined the firm of Evans Sons Lescher & Webb and later became a director of the company. Having been appointed managing director, in 1922, he migrated to Liverpool, the headquarters of the company, where he remained until his death.

The son of Frank Harwood Lescher and grandson of Joseph Sidney Lescher, Edward Lescher was a member of a family well known in pharmaceutical history. It was his grandfather who, with John Evans, established the firm of Evans & Lescher in London in 1828, and his father, later, was a partner in the firm.

During the war Edward Lescher was honorary secretary of the Drug Club, and in that capacity was closely associated with the supply and allocation of drugs, under the National Health Insurance Commission which was delegated by the Cabinet to be the body responsible for maintaining supplies of drugs for the civil population. Lescher worked assiduously in this capacity, and for his services was awarded the O.B.E. He was elected President of the Drug Club in 1920 and held the office for three years. He served as an honorary auditor of the Pharmaceutical Society, being elected to succeed his father in that office. He was chairman of the British Pharmaceutical Conference in 1937.

Lescher's business interests were numerous and varied, and he was well known and popular in pharmaceutical circles. In Liverpool he took an active part in the affairs of the city. He became chairman of the Liverpool Chamber of Commerce, holding this position from 1935 to 1937. He was also an honorary vice-president of the Association of British Chambers of Commerce. From 1913 to 1919 he was chairman of the Westminster Catholic Federation.

His chief recreation was skating. A gold medallist of the National Skating Association, he went every year to Switzerland to take part in championship meetings. It was while skating that he met with the accident which cost him his life. He died on April 23rd, 1938. A Solemn Requiem Mass was celebrated at St. Nicholas Pro-Cathedral, and was attended by a large congregation.

Lescher married in 1903 Ellen Mary, daughter of Mr. and Mrs. Casella, who survives him with three sons and seven daughters.

He was elected a Fellow of the Chemical Society on February 21st, 1925.

C. A. HILL.

## ALEXANDER MACGILLIVRAY NEILSON.

1872—1939.

A. M. NEILSON was one of those ardent spirits who, after laying a good foundation both theoretical and practical at home, take the fruits of their knowledge to the outposts of empire.

Neilson was born in Greenock, Scotland, and received his early education at the Academy there, afterwards attending science classes in one of the seats of learning that were later joined to form the Glasgow Technical College. After a practical training in chemistry with McCowan and Biggart, public analysts, Greenock, he obtained a post in the laboratory of Alexander Cross and Sons, Chemical Manufacturers, Glasgow. From there he went to Coimbatore, Madras Presidency, India, to take charge of the manufacturing side of a chemical works. In the early years of this century he secured an appointment in Durban, South Africa, where he entered upon what was to become his life's work—managing director of the South African Fertilisers Co. In India he learned the Tamil language so that he could the better understand the men who worked under him, and in Africa he equipped himself in a similar way. Although his training was on the scientific side, he made himself also master of the commercial side, and all with whom he had business rela-

tions recognised in him a first-class man. If his Company—Safco, Limited, as it is called—has been successful, this is chiefly the result of his intelligent and unremitting attention to every detail in building up the business and maintaining it in the front rank among manufacturing concerns in the Dominion. Though he was fully furnished with the requisite technical qualifications, his chief assets were sound sense and sterling character.

Busy as he always was Neilson found time for certain communal interests; for example, as President of the Chamber of Commerce—an honour carrying more responsibility than a similar office in this country—he travelled to all the principal cities, taking part in conferences, entertaining distinguished visitors, and promoting trading interests generally throughout the Dominion. At the inception of the Natal Technical College some thirty years ago he, for five years, lectured in Chemistry there, and he has taken an interest in the institution ever since. Among other activities in which he took part were: Rhodes Scholarship Selection Committee for Natal, Durban Harbour Advisory Board, Addington Hospital Board, Natal Provincial Education Enquiry, Income Tax Special Appeal Court.

His chief recreation was bowling, and many a happy afternoon he spent with his friends in the pursuit of that pastime. As a churchman he was very active and rendered invaluable service during all the years of his residence in Durban, until overtaken two years ago by the illness which, despite the best medical attention in his adopted country and in Europe, gradually sapped his strength.

He married the daughter of the late Mr. James Henderson, who represented the Berea Division in the Parliament at Capetown, and he is survived by his wife, a son and two daughters. British visitors to Natal have on numerous occasions enjoyed the hospitality of their beautiful home.

Neilson was elected a Fellow of the Society on June 16th, 1898.

M. NEILSON.

### GEORGE ARTHUR PINGSTONE.

1868—1939.

GEORGE ARTHUR PINGSTONE, who was born in Manchester in 1868, received his general education at the Manchester Grammar School, and proceeded from there to the Victoria University. After leaving the University, he trained as an analytical chemist and assayer with the City Analyst of Manchester, and thereafter spent four years with the Rio Tinto Company in Spain. In 1895 he went to Rhodesia and was for three years with the Gold-fields of Matabeleland, Ltd.; he then set up in business for himself in Bulawayo, and remained there until his retirement in 1936. He acted as geologist to the Bulawayo Museum for many years, and until 1927 was responsible for all the Government's toxicological and forensic work.

Pingstone served during the Matabele Rebellion. In 1900 he visited England, where he was married. He returned shortly afterwards to Bulawayo, and during the Great War was attached to the Southern Rhodesia Volunteers, acting as machine-gun instructor. Apart from his professional work, Pingstone took an active part in public affairs. He was elected a Town Councillor for Bulawayo in 1932 and again in 1936, resigning his seat two years later. He was an enthusiastic photographer and contributed several papers to various photographic journals. He was a foundation member of the Bulawayo Club and also of the Bulawayo Musical and Dramatic Society, where his services as an artist of considerable repute were always in great demand.

Pingstone was elected a Fellow of the Chemical Society on February 21st, 1889. His death, which took place in Bulawayo on January 9th, 1939, was mourned by a son and daughter who survive him, and also by many friends to whom he had endeared himself by his genial personality and kindness.



## ELOI RICARD.

ELOI RICARD was educated at the Ecole d'Ingénieurs des Arts et Métiers, Chalons, 1885—1889. After serving as a volunteer in the 12th Artillery at Vincennes and a period of apprenticeship in the research laboratories of Le Chemin de Fer de l'Est at Epernay, he joined the staff of Messrs. Charbonneaux et Lelarge in 1891, where he was in charge of the distillery at Celles S/Belle and assisted in the technical direction of the main works at Melle, of which he became Works Manager in 1900.

In 1908, after the works were destroyed by fire, he reconstructed them to operate the "Amylo" process and was appointed a Director of the Company. It became evident that Ricard was not only a man of practical business ability but also a dogged investigator, setting himself at that time the problem of studying and isolating the many substances found as by-products in alcohol rectification. In 1912 he put up a plant for the discontinuous production of esters and for the production of absolute alcohol by the lime process. From 1914 to 1916, when the demand for alcohol for munitions became pressing, he extended the production of the different works to a maximum and later, when the demand for alcohol slackened, he adapted the existing plant to the Fernbach process for the production of acetone, so badly required by the allied armies. The only other similar fermentation acetone plant was in the United States, where the Weizmann process had been developed.

It is difficult to appreciate to-day at its real value Ricard's daring in 1917, in the midst of the Great War, when it was almost impossible to get financial support for new investigational work. In that year he founded the well-known laboratories of Melle and installed the first plant for the manufacture of esters by the azeotropic method. His action at this time brings out a great contrast in Ricard's personality; for although as a general rule fastidious over minute details, when it came to technical possibilities he was undoubtedly far-sighted. Certainly his dogged and at times dour determination found reward in many directions. During the following ten years the efforts of Ricard and his well-chosen staff of research collaborators led to the successful industrialisation of the pioneer work of Professor Arthur Young. The industrial application of azeotropic distillation was demonstrated at Melle and adopted in almost all countries throughout the civilised world.

In all this development Ricard was the moving spirit. The soundness of his judgment, his optimism, his remarkable gift of persuasion, created for his collaborators the stimulating atmosphere so necessary for research. He himself never took any rest, his sole preoccupation being the future of the developments into which he had put the best of his efforts.

He died in harness at Melle, January 29th, 1939, and his loss will be felt by his collaborators, his staff and the people of Melle, who had learnt to know his kindly character, hidden beneath a somewhat reserved exterior. Ricard will be best remembered by his English associates as the man who above all others saw and successfully exploited the great practical value of Young's work on azeotropism and put his entire energy into the technical realisation of the earlier laboratory work.

To-day a lasting monument to his single-mindedness remains in the widespread use of absolute alcohol as a motor fuel. From being a laboratory curiosity, it has now become one of the cheapest forms of alcohol and in 1937 its production reached about three quarters of a million tons per annum. The azeotropic process was also applied by him and his collaborators to processes such as the production of glacial acetic acid from dilute solutions, and the bulk of the solvent esters on the market to-day are prepared by an azeotropic process.

HERBERT LANGWELL.

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 LATIMER ALEXANDER RUMBLE.

1873—1938.

L. A. RUMBLE, whose death took place on May 25th, 1938, at the Greenlands Nursing Home, Reading, was born at Plumstead on April 29th, 1873.

He received his general education at the Woolwich and Plumstead High School. On leaving school, he spent fourteen years as draughtsman with Messrs. C. and W. Walker,

Ltd., Gas Engineers, at Donington, Salop, and later joined the staff of the Reading Gas Company as draughtsman and chemist in 1905. In 1913 he rejoined the staff of Messrs. C. and W. Walker, Ltd., returning the following year to his former position on the staff of the Reading Gas Company, to which he was appointed Assistant Engineer and Manager in August, 1916. He remained here until the time of his death. He played a prominent part in post-war developments and extensions of the plant at the Reading Gas Works.

Rumble was a prominent chess player, being for many years a member of the Berkshire County team; he was also a keen golfer.

He was elected a Fellow of the Chemical Society on May 6th, 1920.

W. BELL.

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ALEXANDER SCOTT RUSSELL.

1894—1939.

By the tragic death of A. S. Russell on Saturday, April 8th, 1939, the result of a mountaineering accident on Ben Nevis, the Chemical Society has lost one of its most active and promising Fellows whose experience in industrial and scientific research has been very varied.

Born at Selkirk in 1894, Alexander Scott Russell was the elder son of Mr. James Russell, F.R.S.E., who was awarded in 1913 the Keith Prize of the Royal Society of Edinburgh for his researches in magnetism, and nephew of Dr. Alexander Scott, F.R.S., a former President of this Society.

Originally intending to pursue a medical career, Russell began his studies at the University of Edinburgh. These were, however, abruptly stopped, as on the outbreak of war in August, 1914, he at once volunteered for active service. After a period of training he saw service in Egypt and France, where he was twice wounded, the second time severely. After some weeks in hospital he returned to France, and later served in Italy in the Garrison Artillery, being mentioned in despatches.

After demobilisation he studied for a short time at the Royal College of Science under Professor J. C. Philip, F.R.S., and then proceeded to Cambridge, entering Peterhouse in 1919. He took his B.A. degree in the Natural Sciences Tripos in 1921 and his M.A. in 1926. He was regarded by his teachers as exceptionally brilliant both in theoretical and in practical work in chemistry.

His inventiveness and manipulative skill led him towards a career in research work on industrial processes rather than on academic lines. He therefore at once accepted the post of research chemist to the United Glass Bottle Manufacturers' works at Charlton, carrying out researches on the application of hydrofluoric acid to produce brilliant surfaces on glass-ware and on the changes necessary to the furnaces when owing to coal strikes it was decided to heat the furnaces by means of oil instead of coal.

On the establishment of the Stone Preservation Committee of the Department of Scientific and Industrial Research Russell was invited to take charge of the chemical and physical investigations, working directly and in close association with the members of the Committee. His duties were naturally of a very varied nature, involving the inspection of stonework in various stages of decay, the collecting of samples from different quarries, and the preparation of the specimens for microscopic and other examination. This work was latterly carried on at the University of Sheffield and among the many improvements invented by him were the methods of impregnating porous materials with "Bakelite" by which it became possible to obtain very thin transparent sections in which the various constituents could be examined without distortion.

His work at Sheffield was recognised by the University conferring on him in 1928 the degree of Doctor of Philosophy (Ph.D.), for which he submitted a Thesis entitled "The Weathering of Building Stones," giving an account of his investigations on the decay and the preservation of limestones in particular.

When the Stone Preservation Committee was dissolved Russell was appointed in 1929

research chemist to the Imperial Tobacco Company in Bristol, with whom he remained until the end.

On the formation of the Air Defence Cadet Corps at Bristol he was appointed Commanding Officer with the rank of Squadron Leader. Russell was not only an expert aviator but excelled in all forms of manly sports.

ALEXANDER SCOTT.

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ARTHUR SMITHELLS.

1860—1939.

THE death of Arthur Smithells on February 8th of this year, at the age of seventy-eight, removed from the community of chemists one who combined in rare degree distinction in person, manner, and achievement, and who was a faithful and enthusiastic servant of the causes which claimed his adherence. These were the establishing and stabilisation of the University of Leeds, in which most of his working life was spent, the advancement of chemistry by teaching and research, and particularly the penetration of the barrier which existed so long between formal science in the university and empiricism outside—both of them too self-satisfied and in need of vivifying contact.

Smithells was born in Lancashire, at Bury, in 1860, but went early to Scotland, where his father was a railway manager, and began his training in science at the University of Glasgow under Lord Kelvin (then Sir William Thomson) and Professor Ferguson, but Sir Henry Roscoe and Owens College at Manchester were the effective influences in making him a chemist and introducing him to research. He worked on the fluorine compounds of uranium and was awarded the Dalton Scholarship. Then followed a short but eminently useful period abroad with von Baeyer at Munich and Bunsen at Heidelberg, where he breathed with appreciation the invigorating mental atmosphere and enjoyed the varied cultural influences and free existence which these German university towns provided in the old days—memories which remained with him throughout life.

He returned to an assistant lectureship at Owens, but was soon called upon, at the early age of twenty-five, to face greater responsibilities by his appointment to the Chair of chemistry at the Yorkshire College, Leeds. That determined in a great measure his life's work. The Yorkshire College at Leeds, like sister colleges at Manchester and Liverpool, was blazing the trail of higher education in the industrial North. In chemistry the opportunity was great and was heightened by the comparative indifference with which the subject was treated in the older universities at that time. The young professor of chemistry soon made his influence felt with both lay and academic elements at Leeds and he was well to the fore in the effort which resulted in the establishment of the University of Leeds, by way of the federal Victoria University. The double object was attained of broadening the cultural basis of the Yorkshire College to that of a University, adopting the best of university traditions, while maintaining and developing its special character as a school of applied chemistry which had already won an international reputation. Smithells soon secured the collaboration of his friend, Julius Cohen, and later of his pupil, Dawson, for organic and physical chemistry respectively. It was his conviction that branches of applied chemistry could rightly become degree subjects in the University if they were properly treated by the right men, and, by working hard to secure the appointment of such heads of the technological departments as Proctor, Green, Perkin and Bone, he took the first necessary step to the demonstration of that now established thesis. His own lecturing was admirably adapted to stimulate interest not only in those who were training for "pure" chemistry but in the students of other sciences—applied chemistry, agriculture, and medicine. Such things could only be done by one whose judgment was highly valued by his university colleagues and outside supporters and required the unstinted expenditure of time and energy, which he gave as a trusted member of Council and Senate, as pro-vice-chancellor and in other ways.

What Smithells might have done as an investigator, if he had felt himself free to follow that path, cannot be known. He was a gifted experimenter and what he did in the time

at his disposal was interesting and original. His subject was flame and the Smithells "flame separator," the use of which facilitated particularly the study of the inter-conal gases, was his experimental starting-point. The notion of the "preferential combustion" of hydrogen or carbon in the burning of hydrocarbons was then still to the fore, and the demonstration by himself and Ingle of the presence of hydrogen in the inter-conal gases decided one important point in that controversy, leaving the way clear for other views (*Trans. Chem. Soc.*, 1892).

This work developed in the direction of a study of the difficult question of the luminosity of gases (*Phil. Mag.*, 1894), where such subjects as "The Luminosity of Flames free from Solid Particles" and "The Flame-Spectra of Salts of Copper and Gold" were treated in a series of papers describing striking experiments, which incidentally lent themselves wonderfully well to lecture demonstrations. He became a Fellow of the Royal Society in 1901 (serving later on the Council) and President of Section B of the British Association in 1907, interesting himself also as a member of the Committee on Gaseous Explosions of Section G, which issued valuable reports on that subject.

It was only in accordance with his character and tendencies that he carried his special knowledge of flame and combustion into a field where it could be applied to advantage, that of the gas industry. Its leaders were won over to his point of view and this was a great service to the industry and to his University. In 1910, the Livesey Professorship of Coal Gas and Fuel Industries was founded in the University of Leeds as a memorial to Sir George Livesey, with W. A. Bone as the first holder. In addition, a Joint Research Committee of the University and the Institution of Gas Engineers was formed, unique in character and constitution, which soon made its mark by a quantitative study of the radiation from gas-fires and similar appliances. Smithells was the Chairman of that Committee for a long term of years in its expanding work and was made its first honorary member a few weeks before his death. The industry was appreciative of his efforts. He was made President of the Society of British Gas Industries in 1911 (having become an Honorary Member of the Institution of Gas Engineers in 1907) and the industry made a valuable contribution to the endowment of an Arthur Smithells Scholarship in the University of Leeds in 1926.

His activities were, however, many-sided. He was the first President of the Society of Chemists and Colourists and his work for the improvement of science teaching was recognised in 1923 by his election to the presidency of the Science Masters' Association. In 1913, he went as special lecturer to the Punjab University, more than willing to make an attempt to divert the mind of the Indian student from examinations and theory to a real interest in chemistry and its practice. He was a firm believer in the possibility of giving a useful scientific training to women who might apply it in "home affairs," and although Leeds did not respond at all adequately to that interest, he found his opportunity elsewhere and became Education Adviser on Home Science and Household Economics in King's College, London, where the subject is now of degree status.

The War in 1914 came to him as a great shock, with his grateful memories of student days in Germany and friendships which he had made then or later. He was soon at work, however, as visiting lecturer to the camps of the Northern Command, coming to London later as Chief Chemical Adviser for Anti-Gas training of the Home Forces. In that position he attained the rank of lieutenant-colonel and was awarded the C.M.G. in 1918.

Some years later, in 1923, Smithells made a decision which took him away from his renewed activities at Leeds to a post in London, the duties of which appealed to him and for which his qualifications were unique. This was the Directorship of the Salters' Institute of Industrial Chemistry, and the administration of its funds for giving chosen young men of promise that kind of post-graduate training at home or abroad which should seem best fitted to increase their future usefulness in chemical industry. With his wide knowledge of the personnel of the scientific and industrial worlds, and his faculty for judging men and winning their confidence, he was the ideal holder of such a post. Its duties and his own inclinations brought him many contacts such as led to the Presidency of the Institute of Chemistry from 1927—30 and the Harrison Lectureship in 1935. Meanwhile the universities of his studentship and professorship, Manchester and Leeds, had both conferred upon

him their honorary doctorate of science. The reviving of old friendships (and the making of new ones), which was one of the features of his later life in London, was highly valued by him and combined with a happy home life to bring him great contentment.

A life so full of so many activities was not one that left time for extensive literary effort, but, apart from his scientific papers, Smithells did publish a collection of his addresses made from time to time, and these show the same gifts of lucidity, cogency and vivid presentment as his speech, although they cannot reproduce the effect of their spoken delivery—the impact of personality. In this volume, brought out by the Oxford University Press, entitled “From a Modern University,” such titles as “The Modern University Movement,” “Professors and Practical Men,” and “The University and Women’s Work” will indicate subjects which were in the forefront of his thought and action.

The parents of Arthur Smithells were James Smithells and Martha, the daughter of James Livesey. He was twice married, first to Constance Mawe, who died in 1907, and later to Katharine Booth. Of the first marriage there were two sons, who both served in the War, and one daughter; of the second, one son, now on the staff of University College, Exeter.

I write this with a gratitude to my teacher, colleague, adviser and friend which will be widely felt.

JOHN W. COBB.

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SIDNEY WILLIAMSON.

1867—1939.

It is with deep regret that we record the death of Sidney Williamson, at Shenstone Court, Berkhamsted, on April 27th, 1939.

The younger son of the sculptor, J. F. Williamson, he was born at Esher on August 20th, 1867. After private general education, he received his early scientific training at the Finsbury Technical College and the Central Technical College, South Kensington.

The academic work of Sidney Williamson was published in the period 1886—1896. It represents the three preliminary stages of his career, beginning with training in research methods by Professor H. E. Armstrong, with whom he studied at South Kensington some  $\alpha$ -substituted naphthalene-sulphonic acids (*P.*, 1886, 233; 1878, 43, 145). At Munich, under guidance by Professor Eugen Bamberger, he investigated the products of hydrogenating diethyl- $\beta$ -naphthylamine (*Ber.*, 1889, 22, 1760) and submitted several derivatives of decahydroquinoline to a comprehensive study (*Ber.*, 1894, 27, 1458): these two subjects represent his thesis for the doctorate of philosophy at the German university.

The second stage was passed in Birmingham, first as personal assistant to Professor W. A. (later Sir William) Tilden, with whom he worked on the hydrocarbons derivable from dipentene dihydrochloride (*J.*, 1893, 63, 292), proceeding to the demonstratorship of chemistry at Mason College late in 1892.

Leaving Birmingham in July, 1894, he joined Professor Thomas Purdie of St. Andrews, and there collaborated in two substantial papers describing the preparation and properties of esters from optically active malic, lactic, methoxysuccinic and ethoxysuccinic acids (*J.*, 1895, 67, 957; 1896, 69, 818).

He later held a Salters’ Company Research Fellowship at the Central Technical College, South Kensington, where he worked with Professor H. E. Armstrong on problems in agricultural chemistry associated with the experimental crop trials in progress at Rothamsted.

About this time he became engaged as a consultant chemist with the firm of William Cooper and Nephews, the well-known manufacturers of sheep and cattle dips, and entered their service in a full-time capacity in 1903. In the course of the next few years he visited South Africa and Russia in order to study the control of animal parasites by dipping, and, in South Africa particularly, he took an active part in the pioneer work on cattle dipping in that country, inaugurated by Lounsbury, Baynes, Watkins-Pitchford and others. Later, he travelled in many other parts of the world, notably the U.S.A., the West Indies and Algeria, studying sheep and cattle dipping problems.

In 1911, he became technical adviser to the Chilean Nitrate Committee, but in 1918, after the Great War, he resumed his connexion with the technical service of Messrs. William Cooper and Nephews, first as director of the then newly-created Cooper Technical Bureau, and later as consultant. In 1931 he again became director of the Cooper Technical Bureau, which appointment he held until his retirement in 1933. For several years he controlled a farm of his own in England, where he conducted investigations into soil and pasture improvement with great success.

He was a Fellow of the Society of more than 50 years standing, having been elected on March 4th, 1886.

Williamson was a man of wide culture and charming personality. In his younger days he displayed exceptional ability as an amateur actor and throughout his life was a discerning humanist. His extensive travels and his wide and varied experience furnished material, which, with his natural endowments of acute perception and sense of humour, he was able to use to great advantage in social conversation.

His passing leaves with his many friends a cherished memory.

RICHARD A. COOPER.

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