OBITUARY NOTICES.

JOHN GIBSON.

1871—1936.

JOHN GIBSON, who was born at Hexham on July 12th, 1871, was the son of John P. Gibson. He was educated at the Queen Elizabeth Grammar School, Hexham, and at the North-Eastern County School, Barnard Castle. On leaving school, he entered his father's business "The Old Pharmacy," at Hexham, a business founded by his grandfather in the reign of King William IV, of which he subsequently became sole proprietor. He passed the Minor examination of the Pharmaceutical Society and was registered as a Chemist and Druggist in 1895. He was elected a Fellow of the British Optical Association, and was granted the Freedom of the City of London on being elected a Fellow of the Worshipful Company of Spectaclemakers.

A man of charming personality and of a lovable and generous disposition, Gibson was popular among a wide circle of friends. Though closely engaged in business, he was catholic in his interests, following his father in specialising in photography and archæology. He was elected a Fellow of the Society of Antiquaries of London and of Scotland, and was the author of books dealing with the history of the Priory Church of St. Andrew. His services as a lecturer on subjects of antiquarian interest were eagerly sought after; he broadcast on several occasions on the Priory Churches of the North of England and South of Scotland, and was a member of the Northumberland County History Committee.

Gibson evinced a keen interest in local affairs, becoming a Trustee of the Savings Bank, and Chairman of Managers of the Hexham Council School, in addition to holding other offices.

He died after a short illness on April 21st, 1936, leaving a widow, two sons, and a daughter and a large circle of friends to mourn his loss.

John Gibson was elected a Fellow of The Chemical Society on December 6th, 1900.

G. F. MERSON.

WILHELM GLUUD.

1887—1936.

WILHELM GLUUD was born in Bremen on April 12th, 1887, his father being a Bank Director in that town; his family was of Danish origin. Gluud was educated from 1896—1905 at the Oberrealschule at Bremen, and proceeded from there to the Universities of Munich, Freiburg, and finally Berlin, where he graduated. From 1910—14 he worked at the Davy–Faraday Laboratory, and from 1915—18 he was Assistant and Scientific Research worker at the Kaiser Wilhelm Institute for Coal Research at Mülheim/Rhur. In 1916 he joined the University of Münster, and became Ausserordentlich Professor in April, 1928.

During his life Gluud published a large number of publications in book form, as well as many technical papers relating to his special subject of coal research. For example, in 1919—20 he issued a book on the "High Temperature Coking of Coal," and in 1927—28 he published his book on "Coking," which has been translated into English and into Russian. In spite of his many activities, illustrated by his numerous publications in the technical press, he also published by himself, and with collaborators, some ten scientific papers in the *Berichte* of the German Chemical Society.

By the death of Gluud the German coal industry has lost a distinguished technologist, and one under whose guidance and help many new methods were introduced.

J. F. THORPE.

ARTHUR ROBERT LING.

1861—1937.

LING received his early education privately. For a time he assisted his father in a pharmaceutical chemist's business at Esher, but he soon realised his interests were scientific rather than commercial. Whilst an assistant chemist at the Beetroot Sugar Association he became in 1883 one of the first evening class students at the Finsbury Technical College. With Professor H. E. Armstrong as his mentor Ling made rapid progress and soon became imbued with the spirit of research. His early contributions to the *Journal* comprised a series of papers on the halogenated nitrophenols and halogen derivatives of quinone and quinhydrone.

In 1891 the writer joined Ling, and an intensive period of research work on halogenated quinones and the amyloclastic products of starch hydrolysis followed. Ling was a prodigious worker and his enthusiasm for chemistry was infectious. His literary ability was of a high order, due in no small measure to the then editor of the *Journal*, Charles Groves. Groves was a stylist, to whom his abstractors, Ling being one of them, owed much.

In 1895 Ling was appointed editor of the *Journal* of the Federated Institutes of Brewing, and for 25 years he devoted a great amount of time and care to his editorial duties. For many years he wrote all the abstracts himself and only those who have been engaged on such work can appreciate what that meant. The *Journal*, under Ling's able editorship, soon became the leading publication of the technical and scientific aspects of the fermentation industries, and the Institute fittingly recognised his editorial and other services to brewing by electing him an honorary member in 1934.

In 1898 Ling became a partner with Newlands Brothers, a firm of consulting chemists, and some five years later he started a practice of his own. From then on to 1920 his output of work was remarkable. He re-wrote Sykes' " Hand-Book of Brewing," was technical adviser and a contributor to the *Brewers' Journal*, and communicated many original papers to our own and other Journals. For many years he was lecturer on the Fermentation Industries at the Sir John Cass Institute.

The technical side of the sugar industry, particularly sugar derived from beet, greatly interested Ling, and a report prepared by him as Chairman of the Empire Sugar Supply Committee (*J. Soc. Chem. Ind.*, 1919, 285—306) was a document which played a part in the sugar policy of this country.

In March, 1920, he was appointed to the Adrian Brown chair of Malting and Brewing at Birmingham University, and thus attained, though somewhat late in life, a position to which he was by nature suited. He carried out his academic duties with characteristic energy. Although not a brilliant lecturer, he was a sound and painstaking teacher; the responsive student became imbued with an enthusiasm for his subject, and there is no doubt that Ling exercised a considerable influence on the younger generation of brewers in this country. When he retired from the Chair in 1931 the Senate of Birmingham University conferred on him the title of Emeritus Professor.

A steady flow of research work emanated from his laboratories. Previously he had contributed many useful papers on the analysis of sugars and brewing materials, and had enunciated ideas and suggestions relative to malting and brewing practice. His abiding interest, however, lay in the chemical constitution of the starch molecule. It is with the amyloclastic degradation of starch that his name, like those of O'Sullivan, Lintner, Brown, Morris, Millar and others, will be associated.

In 1895 Ling and Baker showed that Lintner's *iso*maltose obtained from starch was not homogeneous, but a mixture of maltose and a simple dextrin. Two years later maltodextrin-α and maltodextrin-β were separated from starch conversions. Ling in conjunction with Davis continued his work on the action of malt amylase on starch and showed how it was possible by the prolonged action of that enzyme to produce maltose only. The observation was new to the starch problem, for hitherto the idea that there was a resting stage in the hydrolysis of starch (the well-known " No. 8 equation " of Brown and Morris) had been unassailed.

In 1923 Ling and Nanji held the view that the starch granule consisted of two or more substances differing in chemical constitution. Like Maquenne and Roux, they distinguished between amylose, of which most of the internal matter of the starch granule is composed, and amylopectin, which forms the envelope of the granule, the former being more easily attacked by malt amylase than the latter. They found that the product obtained by J. L. Baker in 1902, resulting from the action of barley amylase on starch and termed by him α-amylodextrin, was derived from the amylopectin constituent of the starch. Ling and Nanji regarded this α-amylodextrin, which they re-named α-hexa-amylose, as the basal unit from which amylopectin is built up. When submitted to the action of malt amylase, it was stated to yield a trisaccharide $C_{18}H_{32}O_{16}$, which broke down into dextrose and maltose when acted on by emulsin, and when hydrolysed by yeast maltase or malt amylase, yielded dextrose and *iso*maltose. Thus *iso*maltose, which was stated to be the β form of maltose, came into the picture again. However, in a paper published only a few weeks ago in *Chemistry and Industry*, Ling withdrew this statement, as it was incompatible with the work of Haworth and Long, who had shown that the β form of maltose was cellobiose. He was unable to repeat his former experiments on the conversion of *iso*maltose by emulsin into glucose. His amended conception of *iso*maltose was that it consisted of a mixture of 80% maltose and 20% α-dihexosan. It may well be that the emulsin used in the early experiments contained amylase. Having regard to the composite nature of some of these enzyme preparations, of which we are more aware to-day than in 1922, it is possible that Ling and Nanji's results might be reproduced if similar enzyme preparations were used, but the explanation in the light of this knowledge might be different.

After the publication of his paper in 1923 which, at that time, apparently formulated a reasonable idea for the constitution of starch, Ling extended his investigations to the closely related glycogen. In association with Nanji and Paton a process was described for obtaining pure glycogen from yeast. A method was put forward whereby glycogen and mannan—another polysaccharide which accompanies it in yeast—could be estimated with accuracy, and by it they followed the changes in glycogen and mannan in yeast during the fermentation process. The same authors also made a study of pectinogen and showed how a product could be obtained from apples containing 95% of the theoretical quantity of calcium pectate. It was submitted that the relation of pectinogen to pectic acid is one of esterification, pectinogens being methyl esters of pectic acid.

In addition to his purely scientific work Ling made many analytical and technical contributions to the malting and brewing industries. He investigated the changes which take place during the malting process, the production of diastase during flooring, and, in contra-distinction to Brown and Morris, showed that the cell walls surrounding the starch aggregates in the endosperm of the barley corn were not dissolved during malting, but were practically continuous throughout the whole of the endosperm. In 1914 Ling and Wooldridge devised an improved process of brewing, the novelty of which depended on the boiling and cooling of wort in a closed vessel under a continually diminishing pressure. In the patent literature his name appears in connection with processes for fermenting starch mashes, improvements in yields of alcohol based on the combined action of the enzymes of malt and of certain moulds and yeasts, and the preparation of maltose and other substances from starch.

No major industry has guarded its mysteries in the manner that brewing has. Whilst the mechanism of fermentation is understood, our knowledge of the products of enzymic degradation of starch as they occur in the mash tun have advanced but little during the last four decades. To this little Ling has added his quota.

He was an enthusiast and possessed an extraordinary knowledge of the literature of the various subjects he worked at. By nature he was kindly and courteous, and although inclined to be dogmatic and critical in his opinions of men and affairs, he was never malicious or carping in his spoken or written word.

JULIAN L. BAKER.

MARIUS MAXWELL.

1887—1936.

THE news of Marius Maxwell's death through an aeroplane accident in the south of France last November came as a great shock to his many friends and admirers. Marius was born in 1887, the second son of the late William Maxwell, the well-known engineer and sugar machinery expert of Glasgow and Djokjakarta. Together with his elder brother, Francis, he studied mechanical engineering at the Polytechnikum in Zürich (now known as the Eidgenössische Technische Hochschule), which was enjoying an unparalleled " Blütezeit " under the influence of men like Weiss, Weber, Willstätter, Berl, Lunge, Bredig, Stodola, Treadwell, Werner, Schröter, Einstein, Heim and Rölli.

A friendship soon sprang up between the Maxwells and the late Richard Vernon and the writer, both freshmen in the chemistry department—a friendship soon to be firmly cemented by difficulties faced in unity. One of Maxwell's most endearing qualities was his readiness to champion the weak. It was his blunt disapproval of the arrogant and repressive tactics indulged in by certain organised student groups which led to the first of several encounters needed to clear the air. The authorities, relieved to see an end approaching to what had long been a real difficulty, displayed the necessary tact, and under Maxwell's generalship there was gradually born that era of safe and peaceful dullness in mundane student life which, to judge from a recent visit, endures to this day.

After graduating, Marius left Zürich to enter upon an industrial career and, like his elder brother, quickly won international recognition as an expert in the manufacture of cane sugar; he was later responsible for the design and erection of several important sugar mills in India. Though a keen sportsman, Maxwell soon tired of big game shooting to become a pioneer of the photography of wild life. In this difficult and dangerous pursuit, Maxwell's cool courage and drive, his extraordinary presence of mind and powers of concentration brought him unparalleled success. His close-ups of buffaloes and elephants, for example, are unsurpassed. In his now classic book, " Stalking Big Game in Equatorial Africa " (Heinemann), Maxwell has also recorded many new observations and has welded these into a coherent and enthralling story of the habits and lives of wild animals.

It was probably more his love of wild life, rather than the temporary decline of the sugar industry, which led Maxwell to take up coffee planting in Kenya, where his energy and scientific planning again brought success.

With all his courage and intrepidity, his energy and restless activity, Maxwell was by nature modest and retiring and could seldom be persuaded to speak of his exploits; but when felt called upon to defend a cause he was fearless and outspoken. The traducer met with short shrift at his hands. He was straightforward in all his dealings and absolutely honest and generous in everything he did; his friends were also his admirers and were deeply attached to him.

In 1929 Marius Maxwell married Miss Winifred Ramsay, who accompanied him on his recent journeys and who was with him in Nice at the time of his death.

G. I. FINCH.

FREDERICK VALENTINE RAMSDEN.

1884—1937.

RAMSDEN was born in Australia in 1884 and was educated at the Melbourne Grammar School. He took up chemistry as a career, and as a young man joined the staff of the Victoria Geological Survey. In 1907 he received an appointment in the Assay Office of the Royal Mint, Melbourne, and remained there until 1921. In that year the Rand Refinery, Limited, commenced operations in Germiston (South Africa) and Ramsden was appointed Chief Assayer, a position he held until the time of his death, which took place in London on April 22nd, 1937.

Ramsden was elected a Fellow of the Chemical Society on December 1st, 1910; he was also a member of the Australian Chemical Institute, of the Institute of Metals and of other scientific bodies.

FRANK LITHERLAND TEED.

1858—1937.

FRANK LITHERLAND TEED died at his home at Tonbridge on April 22nd last in his 79th year. He was born on May 16th, 1858, and received his education and scientific training in Germany and at University School and College, London, and in Edinburgh. He obtained the degree of D.Sc. (Lond.), afterwards becoming a Barrister at Law at Middle Temple. He was elected to the Fellowship of the Institute of Chemistry in 1888 and was a Member of the Institute of Mining and Metallurgy.

In 1883 Teed married the daughter of the late W. L. Windus, the pre-Raphaelite artist. They had three children : one died in infancy, another, an officer in the Royal Navy, was unfortunately drowned whilst serving in a destroyer, and one, a son, survives him. His wife predeceased him in 1935.

Teed was for many years Public Analyst for the City of London and the Metropolitan Boroughs of Islington and Camberwell; he retired from these offices in 1923. It was in carrying out his official duties that he made notable contributions to the proper definition of brandy and whisky, which subsequently resulted in the appointment of a Royal Commission to report on the subject. Among his various contributions to science was a paper, read before the Society in 1885, on the " Decomposition of Potassium Chlorate by Heat " and another, " Note on the Decomposition of Ammonium Chloride Solution by Calcium Carbonate," to the Society of Chemical Industry. He also introduced a test for lead, and in conjunction with Sulman he invented the bromo-cyanide process for the extraction of gold from its ores, which still finds application in the treatment of telluride ores. After his retirement he published two monographs, " Volume Alterations on and in Solution " in 1926, and " Torricelli contra Mundum " in 1931.

All his life Teed was a great sailor, preferably in small boats. He took no special interest in the racing side of sailing, but many of his friends were glad to accept his invitation to spend pleasurable week-ends cruising with him at Southampton. Amongst his notable achievements may be mentioned his sail in an open boat from Southampton to Rochester, when he was well over 60, accompanied only by a friend of about the same age.

Teed was very happy in his retirement and never ceased to take an active interest in general affairs. Until shortly before his death he came to Town to his club and the theatre and visited his friends in quiet contentment, notwithstanding the fact that during the last three years, owing to the state of his heart, his hold on life was distinctly precarious. He was a man of great kindness of heart and always did his best to help those who went to him for guidance. In addition to his kindly nature he had a quiet charm of manner which inspired in those who knew him intimately a feeling of affectionate regard.

J. KEAR COLWELL.

LUDWIG WOLF.

1891—1937.

LUDWIG WOLF was born on July 5th, 1891, at Rozsaszentmarton, Hungary. In 1909 he entered the Technische Hochschule, Berlin, where he passed the Diploma examination in 1913 and graduated as Dr. Ing. in 1915. He became assistant to Professor K. A. Hofmann in the Inorganic Chemical Institute of Berlin University in 1914, but returned to Austria in 1915 to take up military service in the Imperial Air Force. Demobilised in 1919, he became (in the same year) assistant to Professor Schlenk in the second Chemical Institute of the University of Vienna, where he graduated as Dr. Phil. in 1921. When Professor Schlenk was called to Berlin University in 1921, Dr. Wolf accompanied him as assistant in the Chemical Institute. He became Privatdozent in 1925, and in 1931 extra-ordinary Professor. On October 1st, 1933, he was compulsorily retired in accordance with Article 3 of the new Law for the Reconstitution of the Professional Services. After a short period of research work in the Chemical Laboratory of University College, London, he went to India in 1934 as Professor of Chemistry at Andhra University, Waltair. After a relatively

short time in India he was forced by bad health to return to Europe for special medical treatment, but unfortunately his health became progressively worse. He died in Budapest on May, 31st, 1937.

Professor Wolf's scientific work was concerned with (a) the allotropy of phosphorus and the chemistry of the oxides and acids of that element; (b) the determination of hydrogen-ion concentration in weakly buffered systems; (c) the chemistry of clay, the rôle of clay in cultivated soils and its influence on plant growth; (d) various problems in agricultural chemistry, including the influence of small quantities of certain rarer elements on the growth of plants. He wrote a textbook of Inorganic Chemistry in 1924 (2nd edition, 1931).

During his life he worked in close contact with industry. He was an excellent University teacher and organiser of students' work. Had he been able to continue his career in Berlin University, it is understood that he would soon have succeeded to the Directorship of the Inorganic Analytical Section of the Berlin Chemical Institute.

F. G. DONNAN.

LEROY WILEY McCAY.

1857—1937.

WE record with sorrow the death on April 13th, 1937, of Leroy Wiley McCay, Professor of Chemistry, Emeritus, at Princeton University, U.S.A.

McCay was born at Rome, Georgia, on August 9th, 1857, and spent his early years on one of his family's plantations in Alabama; after the Civil War, he was sent to school in the North. From 1873 to 1875 he continued his schooling in Dresden, Germany, and there became so fond of music that he returned to Baltimore filled with the idea of becoming a professional musician. This idea was frowned upon by his father, a disciplinarian of strong Scottish heredity, and the boy was sent to Princeton College in 1875. Here he pursued a classical course, which he praised to the end of his days, and graduated A.B. in 1878 with distinction, delivering the modern language oration of that year.

The next four years he spent again in Germany, first at Freiberg in Saxony, where he came under the influence of Winkler, and later at Heidelberg under Bunsen. Here he acquired his training in and love for analysis.

He graduated A.M. Princeton in 1881 and Sc.D. in 1883, was appointed to his first teaching position there in the same year, and became Professor of Inorganic Chemistry in 1892. His active service to Princeton as a teacher and investigator thus extended over 45 years, 1883 to 1928, when he retired; while his association with Princeton, first as a student and last as a professor emeritus, covered a period of nearly sixty years.

Until the last few years, when his health failed, McCay was indefatigably active in investigative work, chiefly in inorganic and in analytical chemistry; in these he was universally recognised as an outstanding worker, both at home and abroad: the chemistry of the elements arsenic, antimony, tin, tungsten, molybdenum, and platinum is but one of the fields that he enriched by his contributions. Each of his more than fifty articles, published in American, English, and German scientific journals, demanded hundreds of hours of careful work in the laboratory. From this exacting work he found relaxation in literature, both classical and modern, and in music. As a student he had founded and conducted a student orchestra, and, as a faculty member, a faculty orchestra. He was appreciative of art as well as of science. While his analytical work made him an exact man, his extensive reading made him what Bacon called a full man, and his extraordinary facility in conversation made him a ready man.

From 1914 to 1922 McCay served as Chairman of the Department of Chemistry at Princeton University. In this capacity he kept the affection of students and colleagues alike by his constant accessibility. During this period his brilliant oratory was often requisitioned in placing before the alumni and others the crying need for a new chemical laboratory, a project which has since been realised and in whose planning he took an impor-

tant part. Most appropriately, he became the first incumbent of the new chair of chemistry endowed in memory of his old friend Russell Wellman Moore.

Among his assets as a teacher were a resonant voice, a faculty for visualisation and dramatisation, boundless enthusiasm, a philosophy of optimism, and a strong sense of humour. He endeared himself to those who knew him because, as a man, he was modest, loyal, and full of friendliness.

ALAN W. C. MENZIES.