OBITUARY NOTICES.

SIR BRYCE CHUDLEIGH BURT, KT.

1881—1943.

BRYCE CHUDLEIGH BURT was born at Newark-on-Trent on April 29th, 1881, and was the son of Isaac Burt, of Churcham, Gloucestershire.

He received his early education at the Merchant Venturers' College, Bristol. Later, with a Gloucestershire County Council Scholarship, he proceeded to University College, London, where he graduated B.Sc. in 1901, with first class honours in Chemistry. He was awarded the Clothworker's exhibition in Chemistry in 1900.

Burt commenced his post-graduate career by collaborating with Professor Donnan in an investigation into " The solubilities and transition points of lithium nitrate and its hydrates " (Donnan and Burt, J., 1903, **83**, 335). In 1902, on the recommendation of Sir William Ramsay, who, in the meantime, had described his work as " displaying patience and skill, and a marked capacity for grappling with new problems," he was appointed Assistant Lecturer in Chemistry at Liverpool University. In this post, which he held for two years, he gave satisfaction to colleagues and students alike. His spare time was occupied in research, which, on the advice of Professor Campbell Brown, took the form of an investigation into " The vapour pressures of sulphuric acid solutions, and the molecular condition of sulphuric acid in concentrated solution " (J., 1904, **85**, 1339). It was during this period that he gave the first indications of his capacity for dealing with men, and for inspiring their collaboration.

In 1904, he was appointed Assistant Government Chemist in Trinidad, B.W.I., and he held the post, the administrative and routine duties of which left little time for research, until 1907. He acted for his Chief during the absence of the latter on leave; but his health broke down, and he was fortunate in recovering from an attack of yellow fever.

It was about this time that Burt reluctantly decided against devoting his life to pure chemistry. In 1908, he entered the Indian Agricultural Service, and was posted to the United Provinces as Deputy Director of Agriculture, under the Directorship of the late W. H. Moreland, I.C.S. He threw himself into his new work with energy and success. As they became available, improved pedigree varieties of wheat, new and better sugarcanes, and new pedigree varieties of cotton were distributed on a wide scale to cultivators. In association with the Agricultural Engineer, the irrigation of sugarcane was facilitated over large areas by the sinking of numbers of tube wells. He also collaborated with the writer in introducing jute cultivation into the low-lying tracts of the Eastern U.P. In 1911, he organised the Agricultural section of the great exhibition at Allahabad, when the marked success of his work earned him his first decoration.

In 1921, the capacity he had already shown led to Burt's appointment as the first Secretary of the Indian Central Cotton Committee, a representative body recommended by the McKenna Committee, and just set up by the Government of India, with the object of improving the production and marketing of cotton. To-day, the Indian Central Cotton Committee wields a beneficent influence throughout the industry in India. It owes its success almost entirely to Burt's enthusiasm, tact and ability, and it remains a living memorial of his personality. Incidentally, he would have been the first to acknowledge the efficiency with which A. J. Turner established and controlled the technical research laboratories belonging to the Committee.

Burt's connection with the Cotton Committee continued for seven years, until 1928, when he was transferred to Bihar as Director of Agriculture. This appointment, however, only lasted for a year; for, when in 1929 the Imperial Council of Agricultural Research, recommended by the Royal Commission on Indian Agriculture, under Lord Linlithgow, was set up by the Government of India, he was deservedly selected as Agricultural Adviser to the Council. His appointment was fully justified by his share in the success which the Council achieved, for instance, in enlisting the aid of the universities for agricultural research; in the establishment of two Central Committees, on the lines of the Central Cotton Committee, for the jute and lac industries; in the founding of a Sugar Research Institute, and in the wise exercise of the Council's powers of financial subsidy for the carrying out of desirable research, and the application of its results.

His success on the Imperial Council led to Burt's accompanying the Indian delegation to the Ottawa Conference in 1932, and again to similar trade negotiations in London in 1937. His work for both these delegations has been described as invaluable. In 1935, when the Vice-Chairmanship of the Imperial Council of Agricultural Research became vacant, his appointment to the highest post open to the Indian Agricultural Service was inevitable, and he remained Vice-Chairman until his retirement from India in 1939. During this period, he was a Foundation Fellow and member of Council of the National Institute of Sciences of India; also Chairman of the Editorial Board of the Indian Journal of Agricultural Science.

On more than one occasion in recent years, Burt's health had given cause for anxiety. This was due not to physical weakness of any kind, but to ceaseless work for long periods with very few intervals for leave. On his departure from India the long-desired leisure did not materialise, for the war came, and, almost immediately after his return to this country, he was placed in charge of the Animal Feeding Stuffs division of the Ministry of Food. Thus the endless work began again; but this time punctuated by crises, such as the introduction of the standard loaf involved to those dealing with the problem of food for cattle. Supported, as he was, by loyal colleagues, in the Ministry and in commerce throughout the country, he bore the strain until November, 1942, when illness supervened, from which he died on January 2nd, 1943.

In the words of highly placed colleagues ". . . the State has lost a very able and faithful servant," and ". . . he is as much a victim of the war as if he had fallen in the front line."

During his career, Burt received the following honours: Kaisar-i-Hind (India), 1912; M.B.E., 1919; C.I.E., 1930; Knight Bachelor, 1936. In 1935 he was awarded the Silver Medal of the Royal Society of Arts for his paper on "The Indian Sugar Industry." He became a Fellow of the Chemical Society in 1905.

In 1906, he married Beatrice Maud, daughter of Alfred Geary, of Bristol, who was a constant, devoted support and inspiration to him; and who, with a married daughter and two grandchildren, survives him.

R. S. FINLOW.

FRANCIS WILLIAM CLIFFORD.

1880—1942.

F. W. CLIFFORD was born in Bayswater on March 16th, 1880, the eldest son of Thomas Andrews Clifford, a pharmacist in business on his own account. In his early schooldays Clifford was the victim of a serious accident, of which the immediate results necessitated his spending a considerable part of his boyhood in a spinal carriage and the after effects restricted to some extent his activities for the rest of his life. His education could not be continued in the normal fashion and his future must have been a source of anxiety to his parents, but he seems to have possessed even in youth the cheerful courage that distinguished him in later life and he settled his own future by insisting, as soon as his age and physical condition permitted him to start work, in applying in 1894 for a post as a junior assistant in the Willesden Green Free Library. Three years later he moved to the Hampstead Central Library, where he remained until 1898, when he secured his first appointment to a special library, that of University College. He had by this time largely recovered from the worst effects of his accident, had educated himself by assiduous private study and had become familiar with all the routine work of running a library. He seems to have thoroughly enjoyed his job at University College. He was given opportunities to attend lectures and in later years often referred to the many kindnesses he received from the professorial staff, notably Sir William Ramsay and Sir Flinders Petrie. He gained valuable experience there of the work of a large academic library and, in his turn, contributed not a little to improvements in procedure. It was no doubt the excellence of Clifford's work at the University College Library which led to his appointment in 1903 to the post which he was to fill with such success for the remaining 39 years of his life.

Up to 1919 the Library of the Chemical Society catered only for the Fellows and persons introduced by them, but in that year the Council of the Society offered usage of the Library to members of other Societies concerned with the progress of chemistry, in return for voluntary subscriptions towards the cost of maintenance. This offer was accepted by the Institute of Chemistry, the Society of Chemical Industry and other Societies, all of which were given representation on the Library Committee. This co-operation increased largely the number of potential readers and borrowers and, as the contributing societies were mainly concerned with applied chemistry, it was necessary to make the Library fully representative of all branches of the science and the purchasing policy of the Library Committee was modified accordingly. When, in due course, the Chemical Council was formed by agreement between the Chemical Society, the Institute of Chemistry and the Society of Chemical Industry, the present scheme of co-operation came into being. The Library remains the property of the Chemical Society, but its management is delegated to a Joint Library Committee on which the three organisations referred to above, and the contributing societies, have representation. This Committee is responsible to the Council of the Chemical Society for the purchase of books and to the Chemical Council for the cost of maintenance, that is, the cost of keeping the Library in working order. The Librarian has from the beginning acted as Secretary of the Committee. Clifford was a strong advocate of this co-operation and he and his staff spared no pains to make it a success in practice. One result has been a great increase in the library stock, which was about 15,000 volumes when Clifford became librarian in 1903 and is now about 45,000 volumes with, in normal times, an annual addition of nearly 1,000 volumes. The library premises proper still consist of two comparatively small rooms in which only a small fraction of the stock can be accommodated and which have also to serve as reading-room, office, packing-room, etc. The bulk of the library stock has to be stored in the basement and chemists owe much to Clifford's ingenuity in finding means of storing this huge accumulation of literature in the very limited space available and in keeping it more or less accessible. In spite of these difficulties, Clifford ran the Library with remarkable efficiency. He was, however, not only a good routine librarian. He knew the Library thoroughly and his knowledge of the literature of chemistry was probably unique. This knowledge he placed freely at the disposal of enquirers and his patience in searching for answers to knotty questions was phenomenal.

His competence as a librarian brought many requests for his services on committees and in other ways. For the British Cotton Industry Research Association in its early days he compiled a bibliography on cotton. He was a member of the Committee appointed by the British Science Guild to prepare the second and third editions of the Catalogue of British Scientific and Technical Books and he also served on the Advisory Committee responsible for the preparation of the World List of Scientific Periodicals. His knowledge of literature was not confined to the chemical variety, for he acted for some time as honorary librarian to the Arts Club and prepared a catalogue of the Club Library.

On the administrative side of library work he provided information for a report on public libraries in England and Wales issued by the Board of Education in 1927 and several of his suggestions were adopted in the report.

He always retained interest in municipal libraries and served on the Ealing Public Library Committee for many years and as Chairman from 1923 to 1927. His knowledge of bookbinding and of the materials of this craft led to his membership of the Bookbinding Leather Committee of the Printing Industry Research Association in 1932—1933.

He was a Fellow of the Library Association and for several years served on the Council of the Association of Special Libraries and Information Bureaux.

Clifford wrote comparatively little, but he did occasionally review books on bibliographical subjects and he published three papers for which references may be given, since they deal with the Library of this Society and are likely to be of special interest to readers of this journal (*Library World*, February, 1916, **18**, 228; *Library Association Record*, 1919, **21**, 234; *J. Soc. Chem. Ind.*, 1921, **40**, 424R).

It is probably not too much to say that Clifford's main object in life was the successful management of the Chemical Society's Library, but there was one other pursuit over which he was enthusiastic and to which he was probably led by his early experience of physical disability. At the age of 18 he obtained a First Aid Certificate. When war broke out in 1914 he was appointed Section Leader and later Quartermaster of the Middlesex Voluntary Aid Detachment and eventually was given a commission in the Royal Army Medical Corps (Vol.). After the war he recruited from his comrades the Ealing Division of the St. John Ambulance Brigade, of which he was made Superintendent in 1919 and promoted to District Officer in 1924. For his work in this sphere he was created a Serving Brother of the Order of St. John of Jerusalem in 1926 and an Officer of the Order in 1936. In 1942 he was given the rank of Commander in recognition of services rendered, especially in connection with the Library and Choir of the Order. He had a good singing voice and was a member of several choirs.

Clifford could not be described as a robust individual, but in his later years he had reasonably good health until the winter of 1939—40 when he had a serious illness. Early in 1942 he was again away from duty for several weeks, but he recovered and seemed to be as well as ever up to a few days before his unexpected death on Sept. 21st, 1942. He leaves a widow and one son.

Fellows of the Society, and indeed all who were accustomed to use the Society's Library, will long miss his genial presence and his unobtrusive and devoted service to the science we all profess. T. A. Henry.

FRANK WILLIAM HARBORD.

1860—1942.

Frank William Harbord, who died on December 27th last in his 83rd year, was throughout his long life a prominent figure in the metallurgical world, and had been associated with important developments in the steel industry. He was born near Norwich in 1860 and educated at St. Olave's Grammar School, from which he entered the Royal School of Mines, gaining its Associateship in 1882. As metallurgical chemist in the works of Sir Alfred Hickman and of the Staffordshire Steel and Ingot Iron Co., and later as manager of the sheet works of Hatton, Sons and Co. at Bilston, he gained an intimate knowledge of the industry and especially of the basic Bessemer process, then in its early days. In 1892 he became metallurgical chemist to the Government of India, and until 1905 he was at the Royal Indian Engineering College at Cooper's Hill. In that year he took up private practice as a metallurgical analyst and consultant, and the firm of Riley and Harbord (later Riley, Harbord, and Law) has long held a prominent position in the metallurgical industries. Although his eyesight failed in later years, he retained his position as senior partner until his death. Much of his consulting work was concerned with railway engineering materials.

Although his published researches were few and confined to his earlier years, when he was much interested in the chemistry of the Bessemer and open-hearth steel-making processes, he contributed frequently to the discussions of the Iron and Steel Institute, and the question of the efficiency of steel works also engaged his attention. At the request of the Canadian Government he reported in 1904 on the position of electric smelting processes in Europe. During the war of 1914—18 he acted as honorary adviser in metallurgy to the Ministry of Munitions and was awarded the C.B.E. He was also an Officer of the Legion of Honour. His text book on the Metallurgy of Steel, of which he contributed the volume on metallurgy and Mr. John Hall that on the engineering aspects, passed through many editions and was for long the standard work in the English language. He took a keen interest in the work of the Iron and Steel Institute, of which he was President in 1927—28, and he was awarded the Bessemer Medal in 1916. He was a regular attendant at both the public and the Council meetings of the Institute, where his kindly character and his paternal interest in the younger metallurgists were well known. C. H. Desch.

IVAN DOUGLAS LAMB.

1900—1942.

Ivan Douglas Lamb died on November 25th, 1942, after a short illness. He had been working in the laboratories until three weeks before his death and the news of his decease came as a shock to his colleagues and friends, who mourn the loss of a man of sterling character and high ability.

Lamb was born at Leicester on September 9th, 1900, and was educated at the Claremont School and at the Secondary School, Blackburn. After matriculation in the Northern Universities he went to the Manchester

Municipal College of Technology, where he graduated B.Sc. (Tech.) with Honours in 1922. Research work carried out under Prof. F. L. Pyman, F.R.S., on the chemistry of the glyoxalines led to the M.Sc. Tech. and to the publication of a paper in the *Journal*. After receiving his master's degree he was appointed, in 1923, to the scientific staff of the Wellcome Chemical Works, Messrs. Burroughs Wellcome and Co., Dartford. During the next two decades Lamb covered a wide field : he worked with equal facility on a diversity of subjects, but was particularly associated with technical work on the therapeutic compounds of arsenic and antimony, on glucosides, alkaloids and hormones. He will be specially remembered for his valuable work on the crystallisation of insulin on a technical scale. Towards the end of his career opportunities occurred for some essays in pure research and he carried out at the request of the British Pharmacopœia Commission a characteristically thorough study of the glucosides of *Strophanthus Emini*, part of which appeared in the *Journal*. Lamb also followed up the work of King, Laurie, and York by preparing a series of trypanocidal amidines and amidoximes, an account of which was published in the *Journal*. These activities were terminated by the war emergency and he again became immersed in technical problems.

Lamb was a keen angler and made long journeys in pursuit of his favourite sport. He was also fond of foreign travel and spent many of his holidays abroad. He was one of the earliest members of the Bexley A.R.P. Organisation, from which he transferred to the Home Guard, of which he became an enthusiastic and popular member.

S. SMITH.

FRANK STURDY SINNATT.

1880—1943.

BORN in Jersey in 1880, the son of Francis Sinnatt, Frank Sturdy Sinnatt moved to Manchester early in life. It was on this account that he was often heard to declare whimsically that he could never make up his mind whether he was a Jerseyman or a Mancunian. As his friends and associates well knew, however, this was, to him, a matter of no real importance, since his first allegiance, transcending all else, was to fuel technology.

He graduated in chemistry at the Manchester College of Technology. It was here, as Assistant Lecturer in chemistry, working under Sir William J. Pope on metallo-organic compounds, that he was drawn to the subject to which he devoted boundless energy to the end of his life. For many years he gave all his time to the study of coal in all its aspects—its winning from the earth, its preparation for the market, its use and treatment in industry, and its chemical and physical properties. All his vacations were spent at various works investigating the application of his subject to industry. Soon he was organising lectures on fuel and inspiring his students with enthusiasm for this new branch of technology, and it was not long before he was appointed Head of the Fuel Section in the College and Lecturer in Fuels in the University (1915). In this capacity he carried out and directed a variety of researches on coal and coal products which resulted in the publication of numerous scientific papers. During this period he still found the time and energy to join the Territorial Army in 1908. He went to France as a member of the Special Brigade, R.E., in the Great War, but to his great regret was forced to return to this country on medical grounds. Later he assumed command of the O.T.C. in the University.

Sinnatt was amongst the pioneers who realised the importance of carrying out a thoroughgoing survey of the nation's coal resources. In 1918 he participated in the formation of the Lancashire and Cheshire Coal Research Association, and became its first Director of Research. Within this Association were developed many of the methods of research which were to form the basis of the organisation of the Fuel Research Coal Survey. Sinnatt's part in this work will always be remembered as one of his major achievements.

In 1924 he was appointed Assistant Director of Fuel Research and Superintendent of the Coal Survey. In 1931 he became Director. His infectious enthusiasm and zest for his subject acted as a stimulus to every member of his staff, and the whole subject of fuel research received a powerful impetus. The Organisation was expanded; new avenues of research were opened up and pursued with vigour and success; the Coal Survey was firmly established and accepted as an essential adjunct to the mining industry; association with industry was fostered, and wherever possible results of research received practical application.

During all this time Sinnatt's devotion to his duties in the Fuel Research Organisation did not deter him from playing a lively part in other scientific activities. This is witnessed by his service on the councils of the Institution of Mining Engineers, the Institute of Fuel, the British Iron and Steel Federation, the British Colliery Owners Research Association, The British Coal Utilisation Research Association and on the British National Committee and Executive Committee of the World Power Conference. In addition he was a member of the Coke Oven Managers' Association, the Institution of Gas Engineers and the Royal Swedish Institute for Engineering Research and he was an original member of the Coal Research Club.

His work in the field of fuel technology did not pass without recognition. Manchester University conferred the degree of D.Sc. upon him, and in 1938 he received the highest honour the scientific world can bestow by his election to the Fellowship of the Royal Society. He was awarded the M.B.E. (Mil.) for his services during the Great War, and later he received the C.B. (1935).

Since the outbreak of war he gave himself unstintingly to many branches of scientific research and technical developments for the furtherance of the war effort. His death has robbed the nation of one of its foremost technologists.

He was elected a Fellow in February, 1902.

J. G. KING.