

largely contributed. He early prosecuted, with vigour and success, the investigation of processes of steel manufacture, introducing into this country a new method of making steel castings and tires, inventing the double rolling-mill for the latter, and making numerous important experiments and improvements in the open-hearth process. In 1907 he was awarded the Howard Quinquennial Prize of The Institution "in recognition of the part taken during his career in developing and improving the production of steel for important engineering purposes." He resigned the chairmanship of Vickers in 1909, but continued to take a keen interest in the business until his death.

Colonel Vickers was a member of the Cutler's Company and served as Master Cutler in 1872-3, was a Justice of the Peace, and rendered valuable service on several technical committees. He was also a member of the Institution of Mechanical Engineers and the Iron and Steel Institute. He was among the first to join actively in the Volunteer movement, becoming a Captain, and eventually honorary Colonel of the Hallamshire Rifles. In 1898 he was made a C.B. in recognition of his public services. He married, in 1860, Frances Mary, daughter of the late Mr. John Douglas, and had issue two sons and four daughters.

Colonel Vickers was elected a Member of The Institution on the 5th February, 1889.

WILLIAM HENRY WHEELER, born at Hammersmith in 1832, died at Bromley, Kent, on the 20th October, 1915, aged 83. He was educated at King's College, London, and was trained under Messrs. Chambers and Parden, Engineers, of London. In 1861 he was appointed Surveyor to the Boston (Lincs.) Corporation, and 2 years later added to these duties the office of Harbour Engineer. He retained both these offices until 1905, a period of 44 years, when he retired owing to ill-health. He also carried on a consulting practice, and was for a number of years Surveyor to the County Justices for main roads and to the Donington Turnpike Trust. Mr. Wheeler became a recognized authority on the reclamation and drainage of fens and lowlands, improvement of tidal rivers and harbours, littoral action and cognate subjects, and was the author of various treatises and papers. He designed Boston Dock, improved the Witham outfall, and carried out numerous works of sewerage, drainage, embanking and road construction. His services were frequently retained in Parliamentary work and on arbitrations, and he was widely consulted upon engineering schemes within the field which he had made his own. He was the inventor of an eroder-dredger, for which he received a bronze medal at the St. Louis Exhibition. He was also awarded a Telford medal and premium for Papers contributed to The Institution. Mr. Wheeler was elected a Member on the 3rd December, 1867.

JOHN ANDERSON, born in Forfarshire in April, 1843, died on the 3rd June, 1916, at Montrose, where he had filled the office of

Burgh Surveyor since 1873. In 1891 he was also appointed County Sanitary Inspector, and held the further office of Inspector under the Montrose Bridge Joint Committee. Previously he had been Assistant Burgh Surveyor of Leith, and assistant to Mr. James Lamond, with whom he was associated in a variety of water-supply and sanitary works. At Montrose he carried out water-supply works and many other improvements. He was elected an Associate Member on the 5th April, 1881.

GEORGE STAFFORD BOGLE, born in New Zealand on the 11th July, 1889, died on the 15th October, 1915, of wounds received in action in Gallipoli. He entered the New Zealand Public Works Department as an engineering cadet in 1908, and was employed on railway and survey work until 1913, when he was granted leave of absence to obtain further experience, having become an Assistant Engineer in 1912. He then went to Canada, and was engaged on the Coquitlam dam, bridge design and other work until the outbreak of war, when he joined the Canadian Engineers, afterwards transferring to the Royal Engineers as Lieutenant. He was elected an Associate Member on the 13th April, 1915.

VICTOR CHARLES DOUGLAS BOYD CARPENTER, youngest son of Bishop Boyd Carpenter, was killed in action in France on the 29th August, 1916. Born on the 17th September, 1887, he obtained varied practical experience with the Sheepshear Foundry, Leeds, Messrs. Sir W. Arrol and Company, Glasgow, and Messrs. Crompton and Company, Chelmsford. At the outbreak of war he was employed on the staff of the Southern Railway of the United States, and offering his services immediately, he received a commission in the Royal Engineers. He was elected an Associate Member on the 4th February, 1913.

JOHN CHAPMAN, B.Sc. (*Lond.*), born on the 17th July, 1887, was killed in action in France on the 14th July, 1916. After graduating at London University, he gained his practical training under Mr. John H. Darby, M. Inst. C.E., and at the outbreak of war was Assistant Engineer at the Partington Steel and Iron-works, Irlam, Manchester. At the time of his death he was a Captain in the 21st Manchester Regiment. He was elected an Associate Member on the 1st December, 1914.

PERCY COATES, born on the 11th January, 1885, was killed in action in France in 1916. From 1906 to 1911 he was assistant to the Resident Engineer on the Sheffield sewage-disposal works. In 1912 he obtained an appointment under the Admiralty at Rosyth, resigning in 1913 to join the staff of Mr. G. A. Hart, M. Inst. C.E., Sewerage-Engineer to the city of Leeds. Shortly after the outbreak of war he joined the Honourable Artillery Company, subsequently receiving a commission in the Royal Engineers. Mr. Coates was elected an Associate Member on the 2nd April, 1912.