

RICHARD CARRUTHERS IVY, son of Mr. John Robson Ivy, of London, was born on the 23rd February, 1861. After serving articles to the late Mr. William Crabtree, Borough Engineer of Southport, he remained with that gentleman as an Assistant for seven years. During that period he assisted Mr. Crabtree in carrying out sewage works, a marine extension and other municipal works. In September, 1889, he was appointed Surveyor and Waterworks Engineer at Ormskirk, Lancashire, which post he held until his death. In that capacity he designed and carried out an Infectious Diseases Hospital, public pleasure grounds, public offices, sewage disposal works, and street and county main roads improvements. Mr. Ivy died at Ormskirk on the 27th February, 1901, at the comparatively early age of 40.

He was elected an Associate Member of the Institution on the 2nd March, 1897.

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WILLIAM MACLEOD MACKINNON, second son of the late Rev. Dr. Mackinnon, of Strath, Skye, was born on the 30th November, 1859, and was educated at Abbey Park, St. Andrews, and at Haileybury College, Herts. He served a pupilage of four years with Messrs. Law and Chatterton, of Westminster, from 1878 till 1882, during which time he gained considerable engineering experience in the office, in the field, and on the following works:—surveys and detailed examination of the metropolitan bridges, previous to their being taken over by the Board of Works; marine surveys on the Thames, including current, metrical and tidal observations; the preparation of the contract-drawings and taking out quantities, etc., for the Devonport and Stonehouse Main Drainage. Subsequently he was engaged, under Messrs. Law and Chatterton, in making tidal and current observations and in effecting surveys of the river, in connection with the Tay Bridge disaster Inquiry, and with the Bill for the new bridge, then in course of construction. During the latter part of his pupilage he acted as Resident Engineer on the Luton Hoo Waterworks. On completing his pupilage Mr. Mackinnon spent eight months, from September, 1882, till May, 1883, at the Eglinton Engine Works, Glasgow, partly in the drawing office and partly in the fitting shop, where he gained much knowledge of cane-crushing and sugar-refining plant and of general engine work. The following three months he spent on the London, Brighton and South Coast Railway, where he had an opportunity of gaining experience on the large railway and harbour works then being carried out at Newhaven.

In 1883 Mr. Mackinnon proceeded to Queensland and in the following year was appointed a District Engineer in the Water Supply Department of that Colony, under Mr. J. B. Henderson. He was engaged in that service for five years, during which period his work consisted chiefly in making surveys and in preparing plans and estimates for the supply of water to towns in different parts of the Colony, in the construction of tanks and dams along the main stock roads, and in superintending the operations of deep boring for artesian water. These duties were performed to the entire satisfaction of Mr. Henderson.

Mr. Mackinnon left the Water Supply Department in 1889, and was attached for a year to the Queensland Lands Department and employed in examining and reporting on sources of water supply for large irrigation schemes. In 1891 he resigned the Government service and, after a visit to this country, proceeded to British Columbia, where he was engaged in Vancouver until 1900 in private practice as an hydraulic and mining engineer. In the latter year he was appointed Mining Surveyor to the Lake View Consols, Western Australia, and held that post until his death, which took place at Kalgoorlie on the 11th January, 1901.

He was elected an Associate Member of the Institution on the 19th May, 1885.

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ARTHUR MARSHALL, born on the 19th March, 1848, was educated at Marlborough and at St. Peter's College, Cambridge, where he graduated B.A. in 1872. After spending some time at the Crystal Palace School of Practical Engineering, he was articled to Mr. James Mansergh, President, under whom he was engaged on drainage works at Southport and Grantham. He superintended, as Resident for Mr. Mansergh, the construction of the sewage farm at Burton-on-Trent, and subsequently started in private practice in that town. Among the works carried out by him as engineer may be mentioned the drainage of Chesham, Amersham, Ampthill, Swadlincote and Sonning, and the water-supply of Sonning, Wargrave and Twyford. He died at Sonning on the 13th April, 1901, at the age of 52.

Mr. Marshall was elected an Associate Member of the Institution on the 1st February, 1876.

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