

ALFRED MOORE, born in 1826, obtained his engineering training under the late Mr. J. F. La Trobe Bateman, Past-President, and on completing his pupilage, continued in that gentleman's service as an Assistant on the Manchester, Warrington, and other waterworks. Between 1856 and 1870 he acted as Resident Engineer on the Loch Katrine Works for the water-supply of Glasgow and on the Belfast Water-works, and in the latter year he went to Buenos Ayres to represent Mr. Bateman in connection with the important works for the water-supply and drainage of that city. While there he also constructed the Catalinas Mole. These works occupied him in South America for several years, and on his return to England he carried out extensions of the water-supply of Warrington. Subsequently he was engaged in the preparation of designs in connection with the Thirlmere scheme for the supply of water to Manchester, under Mr. G. H. Hill, and other works of a similar character. With Mr. Moore originated the device known as Bateman and Moore's firecock, which has been adopted in many large cities and towns. Mr. Moore's career was thus wholly devoted to the hydraulic branch of the profession. Possessed of undoubted abilities, to which his retiring disposition did less than justice, he was an indefatigable worker, and continued to display a keen interest in everything appertaining to hydraulic science up to the close of his career. He died suddenly at his residence, Holmleigh, Alderly Edge, on the 17th July, 1904, in his seventy-eighth year.

Mr. Moore was elected a Member of the Institution on the 15th May, 1866.

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JOHN ARTHUR THORNTON was born on the 24th November, 1865, and after completing his studies at the Owens College, Manchester, served a pupilage under the late Mr. William Hunt, then Chief Engineer of the Lancashire and Yorkshire Railway, at the expiration of which he was employed on the new stations at Halifax and Bradford, under Mr. W. C. Hall, and in connection with various widening and other works on the same system. In 1892 he obtained an appointment as chief assistant for new works to Mr. H. Copperthwaite, on the southern division of the North Eastern Railway, acting as Resident Engineer on the works carried out at Hull, Bridlington, Leeds and other places on the

line. When, in 1897, the Great Northern Railway Company undertook the construction of their new railway and goods depôt at Manchester, Mr. Thornton accepted the post of chief assistant to Mr. W. T. Foxlee, the Resident Engineer, and on that gentleman's retirement in 1899, Mr. Thornton was appointed Resident and District Engineer, and completed these important works, which included the construction of high- and low-level station yards, warehouses and quay-walls, the widening of an underground canal and the building of viaduct approaches. He was also responsible for the maintenance of the railway and works.

In 1902 he returned to the North Eastern Railway as leading engineering assistant to Mr. W. J. Cudworth, the Chief Engineer at York, where he exercised control over a large staff of engineering assistants and draughtsmen, and, under the direction of his chief, he supervised the design and construction of work carried out in connection with about 900 miles of railway, comprising such important centres as Leeds, York, Middlesbrough and other large towns. His death on the 26th September, 1904, as the result of a railway accident, brought an active and useful career to a premature close.

Mr. Thornton was elected an Associate Member of the Institution on the 1st December, 1891, and was transferred to the class of Members on the 23rd February, 1904.

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PHILIP WILLIAM WALL died on the 29th August, 1904, in his eighty-first year. After completing his studies at King's College, London, he served a pupilage under Mr. E. Slaughter, and was subsequently engaged for several years on the Manchester and Sheffield, Huddersfield and Manchester, and other railway works. In 1856 he proceeded to India at the request of the Madras Government to report on a coal-formation on the Upper Godavari River, and four years later he went again to that country as Resident Engineer on the Calcutta and South Eastern Railway. Subsequently he was appointed Chief Engineer of the line, which was completed and opened under his direction. After his return to England, on the completion of those works, he acted for a time as the engineering representative in this country of the Municipality of Calcutta. Between 1873 and 1876 he was occupied on railway construc-