

MR. FREDERICK WILLIAM KITSON was born at Leeds on the 29th of June, 1829. He was the eldest son of Mr. James Kitson, J.P., of Elmete Hall, Leeds, the founder of the firm of Kitson and Company, of the Airedale Foundry, where the subject of this memoir first qualified himself as an engineer, and where he became the head of the drawing office and principal designer of locomotive engines. In the year 1854 he joined his father and brother, Mr. James Kitson, junior, in the establishment of the Monk Bridge Iron and Steel Works, which concern in busy times employs upwards of seven hundred hands. These works, which are devoted chiefly to the manufacture of railway material, such as boiler-plates, tires, and axles, are fitted up with all the most approved modern appliances, and in their construction the particular talent of Mr. F. W. Kitson found ample room for its exercise. He was a patentee of several inventions which have had successful practical application. The solid weldless iron tires, a hydraulic friction clutch for rolling mills, and an improvement in the manufacture of tires for railway wheels, are amongst these.

Mr. F. W. Kitson was elected a Member of the Institution of Civil Engineers on the 12th of January, 1869. He was a Vice-President of the Iron and Steel Institute, an association in the promotion of which he took an active part, and always manifested a warm interest in its subsequent success. When the Institute visited Leeds in 1876, he was chairman of the reception committee. He was also a Member of the Council of the Institution of Mechanical Engineers.

The infirm state of his health latterly prevented his taking any active part in public affairs, but in business circles he was esteemed for eminent ability as a practical engineer, while, in social life, he was most genial, open-hearted, and generous. He died on the 25th of November, 1877.

MR. BRYCE McMASTER, the son of Brigadier-General McMaster, was born in the year 1832. He became a pupil of Mr. T. H. Bertram in 1848, and was employed on railway works for the late Mr. I. K. Brunel, V.-P. Inst. C.E., in 1852 and 1853. In August of the latter year he entered the service of the Madras Railway Company as an Assistant Engineer, and carried out with great credit, and very cheaply, some extensive cuttings and earthworks, as well as two large stone bridges, on the third district of the

first extension, a length of 20 miles. In August 1856, he was promoted to the grade of Resident Engineer, and was placed in charge of the permanent way of the first division of the line which had been opened in July. In that position he remained till January 1862, when he left the service of the Company. He then became a member of the staff of Messrs. Brassey and Wythes, and was engaged immediately under Mr. J. A. Longridge, M. Inst. C.E., on the Mauritius railways for about four years. On his return to England, he submitted competing designs in the spring of 1866 for the new Waverley Station in Edinburgh, for which he was awarded a premium, as successfully dealing with a difficult problem. He afterwards assisted in connection with the ordering of materials for the Delhi railway, on behalf of the contractors; and from February 1872 to October 1873 was employed by the Public Works Construction Company as Sub-Agent, and subsequently as Agent, on the East Argentine railway. At the latter date he was obliged to return to England on account of ill-health. Finally, in March 1877, Mr. McMaster again entered the service of the Madras Railway Company as an Assistant Engineer, but he had not been long in India before he died, on the 7th of October, 1877, at the age of forty-four years.

Mr. McMaster was elected as Associate of the Institution of Civil Engineers on the 7th of April 1857, and was transferred to the class of Members on the 18th of February 1862. In 1859 a Paper of his, descriptive of the "Permanent Way of the Madras Railway,"¹ led to an interesting discussion on the comparative merits of wood and iron sleepers for Indian railways. Four years later he presented a further Paper, "On the Woods used for Sleepers on the Madras Railway."² Both these communications may be taken as evidence that his mind was actively occupied with the details of his charge, while in carrying out the works entrusted to him he proved himself to be intelligent, careful, and persevering.

MR. WILLIAM PRICE STRUVÉ, the second son of the late Mr. George Struvé, M.D., of Jersey, was born in that island in the year 1809. He was educated at the private school of Mr. Le Gros, where he soon gave promise of superior mathematical talents.

¹ *Vide Minutes of Proceedings Inst. C.E.*, vol. xviii., p. 417.

² *Ibid.*, vol. xxii., p. 241.