

JOHN RAMSBOTTOM was born on the 11th September, 1814, at Todmorden (on the Lancashire side of the border), where his father, a small cotton-spinner, owned the first steam-driven mill in the valley. Beyond a little schooling in his native town, and the opportunities which the neighbourhood afforded of noting and to some extent practising the various handicrafts as then carried on, he was an entirely self-educated man, and it was due solely to energy and perseverance that he rose to the front rank of the profession as an eminent locomotive engineer. The first twenty-five years of his life were spent in Todmorden, where he took a very active interest in all kinds of mechanical and scientific pursuits. He had a small workshop in one of the rooms of his father's house, where he experimented in many directions, and produced a number of interesting working models, amongst them being a model of a condensing beam-engine and a quaint model locomotive. He also carried out such works as the rebuilding of his father's mill-engine, and a complete installation of the then new illuminant, gas, in the mill. At that time he schemed, made, and successfully worked an automatic nail-cutting machine; but, probably, the most noteworthy result of this period was his invention of the now universal weft-fork or weft-stopper, so well known throughout the textile manufactures as an indispensable adjunct to the power-loom.

Mr. Ramsbottom went to Manchester about the year 1839 and entered the service of Messrs. Sharp, Roberts & Co. (afterwards Messrs. Sharp Stewart & Co.), where he at once obtained journeyman's employment and pay, without any preliminary apprenticeship, and first gained practical knowledge of the design and construction of locomotives. He rapidly became a most efficient workman, and his ability and energy attracted the attention of Mr. Charles Frederick Beyer,¹ who was then in charge of the locomotive department of the firm.

After three years in the service of Messrs. Sharp, Roberts & Co., Mr. Ramsbottom, on the recommendation of Mr. Beyer, was appointed, in 1842, locomotive superintendent of the Manchester and Birmingham Railway, which in 1846 was amalgamated with the London and North Western. He remained for fifteen years in charge of the works at Longsight, and on the retirement of Mr. Francis Trevithick in 1857, was transferred to Crewe as Locomotive Engineer for the Northern Division, with which was

¹ Minutes of Proceedings Inst. C.E., vol. xlvii. p. 290.

amalgamated the North-eastern, his old division. In the following year he turned out several new goods engines, which, with larger boilers, are still at work. In 1859 he designed and constructed his first express engine, the "Problem," No. 184, which was the first of the well-known "Lady of the Lake" type. So efficient was the work he turned out that, after thirty years, locomotives of the "Lady of the Lake" class were used for light loads at high speed, between Euston and Crewe, in the race to Scotland of 1888.

In 1862 the Directors of the North Western decided to centralize the locomotive work at Crewe and to utilize the Wolverton shops for carriage building. In the re-organization of the Crewe works Mr. Ramsbottom had full scope for his mechanical ability. He paid the greatest attention to facilities for the economical manufacture and maintenance of engines. He recognised to the full the advantages of reducing the number of types to a minimum and to as great a degree of uniformity as possible, not merely in respect of a thorough interchangeability of parts in engines of the same class, but to a great extent throughout the different classes, and he carried out the system of working to standard gauges to an extent which was then quite new in railway practice. Not only were new parts made accurately to standard dimensions, but a series of graduated sizes was adopted for the renewal of worn details. Special tools also were freely introduced at Crewe, and particular attention was paid to the convenient handling of work and to its transport from one department to another. Among the improvements he effected was the extensive introduction of cranes driven by high-speed cotton-ropes¹—particularly of the Ramsbottom single-rail crane—and the development of the 18-inch gauge railway system which performs such useful work at Crewe.² At an early period of his career at Crewe he recommended the Company to adopt the manufacture of Bessemer steel; and the steelworks at Crewe, which were erected under his auspices, were among the first to be established in the country away from Sheffield.

Some idea of the manner in which Mr. Ramsbottom turned his experience and ingenuity to practical account may be gathered from reference to the numerous Papers he contributed to the Institution of Mechanical Engineers, of which he was one of the originators and President in 1870 and 1871. So far back as 1849

¹ Proceedings Institution of Mechanical Engineers, 1864, p. 44.

² *Engineering*, vol. lxiii. p. 751.

appeared a description of an improved locomotive boiler,¹ in which he sought to obtain a larger area of flue-room and large heating-surface with less weight. Six years later he published an account of an improved coking crane for supplying locomotives,² and this was followed by particulars of the piston-ring,³ with which his name is associated, and of the construction of packing-rings for pistons.⁴ Then came descriptions of an improved safety-valve⁵ and a safety escape-pipe for steam-boilers.⁶ Perhaps the invention which caused him to be most widely known was the trough laid in the track to supply water to locomotives while running.⁷ This apparatus, which was first adopted on the North Western system, is of great value in enabling traffic to be worked without delay for taking in water, and without it the long runs now made by express trains would be impossible. In addition to the high-speed cranes already referred to, he introduced at Crewe an improved reversing rolling-mill⁸ and a new system of manufacturing steel tires,⁹ the latter suggested to him by Mr. F. W. Webb. When in 1871 the endless-rope traction through the Edgemoor passenger tunnel at Liverpool was done away with, and the tunnel was worked by locomotives in the ordinary way, he devised and successfully carried out a system of ventilation by mechanical means.¹⁰

In 1871 Mr. Ramsbottom was compelled by failing health to retire from active work. Subsequently, however, in 1883, he became connected with the Lancashire and Yorkshire Railway Company, acting as their consulting engineer in the design and construction of the works at Horwich. He was elected a director of the Company in 1885, on the death of Lord Houghton, and only recently resigned. He was also a director of Messrs. Beyer, Peacock & Co. Mr. Ramsbottom, during the period of his connection with Crewe, took an active interest in the Mechanics' Institution, of which he was President. In 1873 he founded the Ramsbottom Scholarship for mechanical engineering at Owens College, Manchester. The Scholarship is available for two years, the income being £40 per annum, and may be competed for by young men employed in the Locomotive Department of the North Western Railway Company. Some years ago the honorary degree

¹ Proceedings Institution of Mechanical Engineers, 1849, p. 3.

² *Ibid.*, 1853, p. 122.

³ *Ibid.*, 1854, p. 70.

⁴ *Ibid.*, 1855, p. 206.

⁵ *Ibid.*, 1856, p. 37.

⁶ *Ibid.*, 1857, p. 179.

⁷ *Ibid.*, 1861, p. 43.

⁸ *Ibid.*, 1866, p. 115.

⁹ *Ibid.*, 1866, p. 186.

¹⁰ *Ibid.*, 1871, pp. 22 and 66.

of Master of Engineering was conferred upon him by the University of Dublin.

Mr. Ramsbottom died at his residence, Fernhill, Alderley Edge, Cheshire, on the 20th May, 1897, in his eighty-third year. He was elected a Member on the 10th April, 1866.

Sir JAMES RAMSDEN,¹ whose name is identified with the rise and progress of Barrow-in-Furness, died at his residence, Abbots Wood, overlooking Furness Abbey, on the 19th October, 1896.

James Ramsden, born in Liverpool on the 25th February, 1822, was a son of Mr. W. Ramsden, civil engineer, of that city. He was apprenticed early in life to Mr. E. Bury, of the firm of Bury, Curtis and Kennedy, of Liverpool, and subsequently obtained experience of locomotive engineering at the Wolverton works of the London and North-Western Railway. His first introduction to the district of Furness was in March, 1846, when he found the railway from Barrow to Dalton and Kirkby in course of construction. The line was opened for traffic in that year. The quantity of ore raised and sent away prior to the opening of the railway was about 3,000 tons; the quantity shipped at Barrow during the year 1846 was 120,000 tons. The rolling stock in the first instance was of a very limited character—two four-wheeled engines and several mineral wagons. The line was opened for passenger traffic in the year 1847, and Mr. Ramsden was appointed Secretary and General Manager in 1850. Passengers were allowed to travel in a sheep-van on Sundays only. One engine only being needed for the traffic, only one driver and fireman were employed. Mr. Ramsden observed one Sunday that the engine was running too fast, and, making signals for the train to stop, he found that the driver was intoxicated. He afterwards wrote to the locomotive superintendent of the Liverpool and Manchester Railway and begged a man; and, in the meantime, worked the traffic himself. Prior to the railway, Furness could only be reached by coaches crossing the sands to Ulverston, or by steamer to Bardsea from Fleetwood. Ore was brought down in carts from the mines at Lindal and was tipped into the yard on the shore above high-water mark. It was then run down in small bogies worked by hand,

¹ This Obituary has been compiled mainly from notes written from Sir James Ramsden's dictation early in 1890.