

OBITUARY.

THOMAS RUSSELL CRAMPTON¹ died on the 19th of April, 1888. He had been in failing health for some years, and at last passed quietly away in his seventy-second year.

Mr. Crampton was one of the best-known English engineers of the middle period of this century, his reputation being chiefly based upon the popular type of locomotive-engine to which he gave his name. He was, however, an all-round engineer, his active and powerful mind attacking difficult professional problems with the boldness, ingenuity and fertility of resource characteristic of a true mechanic. He was born at Broadstairs, Kent, on the 6th of August, 1816, and, after being educated at a private school, was articled, on the 21st of May, 1831, to Mr. John Hague, M. Inst. C.E., of Cable Street, Wellclose Square, where his fellow-pupil was Mr. (now Sir Frederick) Bramwell. After serving his time he was assistant to the elder Brunel, and subsequently to Mr. (now Sir Daniel) Gooch, under whose directions he prepared the drawings for the first locomotive for the Great Western Railway. He was then for four years engaged in a responsible position under Messrs. John and George Rennie, for whom he carried out several important works. In 1848 he commenced practice on his own account as a civil engineer. He took an active part in the classical Battle of the Gauges, being on the winning side in that stirring controversy. During the interval between 1842 and 1847 Mr. Crampton had made several improvements in the details of the locomotive-engine, and in the latter year he embodied his various ideas in a design which was, and has ever since remained, entirely distinctive. The essential principles of the Crampton engine are—a long boiler, outside cylinders set amidships, and low centre of gravity, obtained by placing the driving-wheels at the rear of the engine, behind the firebox. His *apologia* for this departure from received practice took the form of a Paper presented to the Institution in 1849,² “On the Construction of Locomotive Engines, especially with respect to those modifications which enable additional power to be gained, without materially increasing the

¹ A large part of this notice is taken from ‘Iron,’ April 27, 1888. .

² Minutes of Proceedings Inst. C.E., vol. viii. p. 233.

weight, or unduly elevating the centre of gravity." An animated discussion, lasting over three evenings, followed the reading of this Paper, the opinions of English engineers of that day being distinctly against Mr. Crampton's innovations. One engine only, the "Liverpool," was built in England on this system. It worked on the London and North Western line till 1852, when it was withdrawn, as being too heavy for the track then in use. But though he was not received as a prophet in his own country, his ingenious ideas obtained considerable favour on the Continent, especially in France, where for nearly forty years the light express trains of the Northern and of the Eastern Companies have been, and still are, in the case of sections having easy gradients, worked by Crampton engines, but little, if at all, differing from the prototype. At the Inventions Exhibition of 1885, Mr. Crampton exhibited a model, made in 1855, of his type of locomotive, accompanied by a statement giving some remarkable statistics as to its efficiency and economy. These results induced Mr. Crampton in 1885 to develop a new type of engine to maintain any speed required, and to meet the ever-varying demands upon it, with fewer repairs, and with a minimum of danger.

But perhaps Mr. Crampton's most distinguished work, although one less known to the general public, was the laying, in 1851, of the first practical submarine telegraph cable between Dover and Calais. The credit of proposing this scheme has been generally assigned to Professor Wheatstone, who in 1840 prepared a scheme, but no action was taken at the time. In 1850 Mr. John Watkins Brett took the great work seriously in hand, and on the 28th of August of that year he laid a line from Dover to Cape Grisnez, which, however, ultimately broke down. A second cable was prepared in the following year, but the laying of it was surrounded by serious difficulties, pecuniary and otherwise. At this stage, when the prospect of success was most gloomy, Mr. Crampton stepped into the breach, and by a marvellous exercise of ability, industry, and indomitable courage he devised the means of carrying out the enterprise, himself contributing a great part of the capital required. He undertook the whole engineering responsibility of laying the cable, directed the operations, and had the satisfaction, on the 25th of September, 1851, of announcing to the men of science assembled round the Queen at the ceremony of the closing of the Great Exhibition, that he had achieved a task which engineers and capitalists had combined to treat as impossible. The vast importance of the work then accomplished can hardly be over-estimated. It was the first step in submarine telegraphy,

and from it have sprung the prodigious developments of that system which now connects all parts of the civilized globe in a network of electrical wires. Mr. Crompton may, therefore, fairly be considered as the father of submarine telegraphy.

Among the various works carried out by Mr. Crompton as a contractor, either alone or in conjunction with others, may be mentioned the Berlin Waterworks, which he constructed jointly with the late Sir Charles Fox; the Ottoman Railway from Smyrna to Aidin; the Varna and Rustchuk Railway; the East Kent Railway, from Strood to Dover; the Herne Bay and Faversham Railway, and the line from Sevenoaks to Swanley. These latter lines eventually became merged into what is now known as the London, Chatham and Dover system, in the construction of other portions of which Mr. Crompton was also subsequently interested.

Of his practical inventive genius much might be said. He invented a furnace for burning powdered fuel, which was run for some time in Woolwich Arsenal; also a revolving furnace for the manufacture of iron and steel, brickmaking machinery, a system of cast-iron forts, and a tunnel-boring machine. From an early age Mr. Crompton evinced an anxiety to promote the interests of his native town. In 1851 he started the Broadstairs Gasworks scheme, subscribing a large portion of the capital, and eventually constructing the works. He also originated and built the waterworks there, to which undertaking he likewise subscribed capital, and presented the church with its clock.

Mr. Crompton was elected an Associate of the Institution of Civil Engineers on the 3rd of March, 1846. He was transferred to the class of Member on the 7th of March, 1854. His nomination paper as an Associate bears the following distinguished signatures:—I. K. Brunel, George P. Bidder, Joseph Locke, Charles May, J. R. McClean, J. E. Errington, W. Cubitt, J. M. Rendel, Joseph Cubitt, John Hawkshaw, T. Hawksley, and J. Walker. He served on the Council as an Associate in 1853. Mr. Crompton was a Member of Council, and a Vice-President of the Institution of Mechanical Engineers, a Member of Council and Vice-President of the Society of Arts, a Member of Council of the Society of Telegraph Engineers and Electricians, a Member of the Société des Ingénieurs Civils of Paris, a Member of the Iron and Steel Institute of Great Britain, of the Cleveland Institution of Engineers, of the North Staffordshire Institute of Mining and Mechanical Engineers, and of the Smeatonian Society. He was an officer of the Legion of Honour, and had the Prussian Order of the Red Eagle. Personally Mr. Crompton was of commanding presence,

and his handsome face, invariably lit up by a pleasant smile, was familiar to most frequenters of the Institution, the meetings of which he attended with great regularity. He further manifested his interest in the Society by bequeathing to it in trust a sum of £500, free of legacy duty, for the purpose of founding a "Crampton Prize," to be awarded annually to the Author of the best Paper on "The Construction, Ventilation and Working of Tunnels of Great Length," or, failing the reception of such a Paper, then to the Author of the best Paper on any subject the Council may select.

Mr. Crampton's death is regretted by a very wide circle of professional friends, to whom his frank and genial nature made him ever welcome, and by whom his practical genius, energy, and indomitable perseverance will ever be remembered with admiration.

BARNARD WILLIAM FAREY was born on the 12th of August, 1827. His scientific abilities were partly inherited, his uncle, the late Mr. John Farey, M. Inst. C.E., being the author of a well-known work on the Steam-Engine; while another uncle, Mr. Colomb Gengembre, was an eminent engineer at Nantes, in France. To the latter young Farey, when only nine years old, was sent on the death of his father, and there he remained seven years. It was under the tuition of this uncle that the young man commenced his engineering education, serving a regular pupilage and being employed for some months at the Marine Engine- and Ship-building Works of the French Government at Indret, which were under the superintendence of Mr. Gengembre. At the age of sixteen, however, Farey resigned his post, and returned to England to complete his technical education. He was first employed by Mr. William Bridges Adams, at the Fairfield Works at Bow. After remaining there for two years and a-half, he obtained the post of assistant at the engineering establishment of Messrs. Swayne and Bovill, where he worked under Mr. (now Sir Frederick) Bramwell.

In 1847 he went to Messrs. Bryan Donkin and Co.'s Engineering Works, at Bermondsey, and a few years later became a partner in the firm. He had now an opportunity to display his scientific gifts and attainments. The first gas-valve with internal rack and pinion was made by Messrs. Donkin and Co. in 1847, for the Gas-Light and Coke Company, and was designed by Mr. Farey. So great has been the demand for these valves, that from that date to 1887 more than fifty thousand have been constructed by the firm. Two years later, in 1849, he invented a double-cylinder rag-boiler for paper-makers.