

MEMOIRS OF DECEASED MEMBERS.

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MR. WILLIAM WELHAM CLARKE was educated at the College for Civil Engineers at Putney, and obtained the College diploma. Between the years 1848 and 1855 he was in the employment of the Messrs. Lucas, contractors, as agent for conducting works, and was engaged on the City of Norwich Waterworks, the Great Yarmouth Waterworks, the Lowestoft Waterworks, the filters at Royal Mills, Esher, the Lowestoft drainage, and numerous building works, chiefly in the Eastern counties. In the year 1855 he entered the service of the Hon. East India Company as a special Engineer, and in the following year was graded in the Public Works Department as Executive Engineer, 4th class, attaining the 1st class in 1865. In India he had charge of the construction of barracks and public buildings at Agra, of the rebuilding a church at Muttra, of the construction of suspension bridges in Kumaon and Gurhwal in the Himalayas, of the Rohileund State Railway Survey, of the Kumaon Ironworks, of the Bundelcund Irrigation Works, of the Rohileund Imperial road, and of the Gwalior roads. He was in England during part of 1867 and 1868, and after returning to India had charge of the Benares division of roads till 1872, when he was transferred to Rajpootana for the purpose of designing irrigation works in Mhairwara. Subsequently, in December of that year, he was posted to the Western Rajpootana railway survey, of which during three months in 1875 he officiated as Engineer in Chief. Early in January 1876 he obtained twelve months' leave of absence on medical certificate, and on the 27th of July, 1877, died of abscess in the bronchial tubes. He twice received the commendation of the Government of India for his services.

Mr. Clarke was elected a Member of the Institution on the 7th of April, 1868.

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MR. WILLIAM THOMAS DOYNE, the second son of the Rev. J. Doyne, Perpetual Curate of Old Leighlin, in the county of Carlow, Ireland, was born in April, 1823. He commenced his education as an engineer at Durham University in the year 1839, but only remained there about eight months. In the summer of

1840 he was articled to the late Mr. Edward Dixon, M. Inst. C.E., who at that time was an assistant engineer under the late Mr. Joseph Locke, M.P., Past-President Inst. C.E., in the construction of the London and South-Western railway, with the branch line from Bishopstoke to Gosport. Before his pupilage was completed, Mr. Dixon, having formed a high opinion of his abilities, recommended him as an assistant engineer on a line then being made from Hamburg to Burgedorf, a town about ten miles from Hamburg. He remained there till the opening of the line in 1843, and was next employed on the Great Southern and Western railway of Ireland, where the present main lines were only then being commenced, first under Sir John Macneill, M. Inst. C.E., and afterwards under Mr. Hemans, M. Inst. C.E. His next employment was under his old master, Mr. Dixon, who was joint engineer with Mr. Robert Dockray, in laying out many lines for the London and North-Western Railway Company; and in 1847 he was appointed by them resident engineer of the Rugby and Leamington railway, of which he had almost the sole management till it was opened at the commencement of 1850. A description of a wrought-iron lattice bridge, constructed over this line, was communicated by him to the Institution,<sup>1</sup> for which he was awarded a council premium of books in 1850; and in the following year, in conjunction with Mr. W. B. Blood, he submitted a Paper on "An Investigation of the Strains upon the Diagonals of Lattice Beams, with the resulting Formulæ,"<sup>2</sup> which met with a similar acknowledgment. About this time he devoted a good deal of attention to the study of mineralogy, and in 1851 made the acquaintance of Mr. Richard Fothergill, of the Aberdare Iron Works, and of Mr. Thomas Brown, of the Ebbw Vale Iron Company. He was employed by these gentlemen, first to investigate the value of reported iron mines in various parts of England and Wales, and to negotiate with the owners for the sale of the ore; and then, as Engineer of the Aberdare Iron Works, where he rearranged a large portion of the works, altering furnaces, putting up new iron roofs, &c. In this capacity he showed so much talent as an organiser, an engineer, and a geologist, that his services were retained by the Ebbw Vale Company, and he settled in Newport. There now seemed every promise of his rising to fortune and professional eminence. Unfortunately, disputes arose with his employers, involving law-suits, in which, however, he was suc-

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<sup>1</sup> *Vide* Minutes of Proceedings Inst. C.E., vol. ix., p. 353.

<sup>2</sup> *Ibid.*, vol. xi., p. 1.

cessful; but they led to the connection being terminated, and he returned to London to seek employment. After a time, when the Crimean War broke out, he was sent out to Balaclava in charge of the Army Works Corps, consisting of about two thousand four hundred navvies and artificers, to assist the military authorities in making roads. With this staff, aided by four civil engineers under him, he carried out various works, the principal one being a road from Balaclava to the port near Sebastopol, about nine miles in length. On returning to England, at the termination of the war in 1856, he entered into partnership with the late Mr. Robert Garrett, M. Inst. C.E., who had been second in command of the Army Works Corps. Amongst other undertakings engaged in by them was the survey of a proposed railway between Cawnpore and Lucknow. This work Mr. Garrett had just completed when the Indian Mutiny broke out, and he perished in assisting to defend Cawnpore. In October 1857 Mr. Doyne was selected to fill the position of Chief Resident Engineer in Ceylon, in connection with the survey and construction of the Ceylon railway, proposed to be made from Colombo to Kandy. Under Mr. Doyne's personal supervision surveys were completed of this line, notwithstanding serious difficulties of country and climate; but in 1859, differences having arisen with the Consulting Engineer, Mr. Doyne was recalled, and eventually the Company was dissolved, and the construction of the railway was undertaken and completed by the Colonial Government. Mr. Doyne's health having become much impaired from overwork, anxiety, and climatic influences while in Ceylon, he, with a view to re-establish his constitution, engaged with the Dun Mountain Copper Mining Company, whose works were situated near the city of Nelson, in New Zealand, to select the best line of route for, and superintend the survey of, a line of railway from the port of Nelson to the Company's works at the Dun Mountain. Assisted by Mr. A. FitzGibbon, M. Inst. C.E., who had acted as second to Mr. Doyne on the Ceylon railway, the survey for the Dun Mountain railway, the first in New Zealand, was completed. Mr. Doyne left that colony in 1861 to superintend the surveys for, and eventually the construction of, the Launceston and Deloraine railway in Tasmania, in which he was associated with Mr. E. Digges La Touche. At the same time he was employed by the New Zealand Government in the repairs of harbours, and in altering the course of rivers, and made two reports in June 1864, and November 1865, on the plains and rivers of Canterbury. Meanwhile he had paid a short visit to England, about the end of the year 1862, when he was utterly prostrated by

illness. In 1866 he established himself in general practice in Melbourne, Victoria, and in that year was consulted by the Queensland Government in connection with railways for the colony. He was also engaged as chief engineer for the Launceston and Western railway, in Tasmania, in partnership with Messrs. Major and Willett, and directed the preliminary survey of the main line of railway in the same colony, besides constructing a bridge of 190 feet span over the South Esk river, near Launceston. In 1869 he was appointed Consulting Engineer to the Government of Western Australia, which colony he visited for a short time to report on public works. In fact, during his sojourn in Melbourne, he enjoyed as much practice as his shattered health admitted of his undertaking; being occasionally consulted by the Governments of Queensland, of South Australia, and of Western Australia, besides doing other work. He died at Melbourne on the 29th of September 1877. Mr. Doyne was a clever and painstaking engineer, a good mathematician, geologist, and analytical chemist, and was unusually well read and informed on most subjects. He was of a sanguine temperament, brilliant, cheerful, and of great conversational powers. Understanding thoroughly the duties of his profession, and having capacity to undertake them, he never shrank from responsibility, more than his due share of which he was always ready to take. This, combined with his social qualities, caused him to be much endeared by his subordinates. In those undertakings in which he was associated with others, he insisted on responsibility being so apportioned that in the event of any failure in the conduct of affairs "the saddle might at once be put on the right horse," as he used to say.

Mr. Doyne was elected an Associate of the Institution of Civil Engineers on the 6th of March 1849, and was transferred to the class of Members on the 9th of November, 1852.

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MR. ROBERT JEFFREY (Bey) was born on the 9th of February, 1813, at Shilbottle, near Alnwick, Northumberland. He was never actually apprenticed, but in the year 1834, when about twenty-one years of age, he entered the service of Messrs. Robert Stephenson and Co., and at their Engine Works, South Street, Newcastle-on-Tyne, then under the able direction of the late Mr. Hutchinson, he soon became an expert workman.

In December 1839, he was selected by the late Mr. Robert Stephenson, M.P., Past-President Inst. C.E., to act as foreman [1877-78. N.S.]