

aggregating about 70 miles of open line, fully equipped and in complete working order.

Mr. Boyle then retired from professional pursuits. Much of his leisure in later years was spent in travelling in many lands, generally wintering abroad. In 1853 he married Eléonore Anne, daughter of Mr. W. Hack, of Dieppe, and his wife was his constant companion on all his journeys. Mr. Boyle was a Member of the Institution of Electrical Engineers.

He was elected an Associate of The Institution on the 10th January, 1854, and was transferred to the class of Members on the 14th February, 1860, his membership of The Institution thus extending over 50 years. In 1882 he contributed a Paper¹ on the Rokugo River Bridge, Japan, to the Proceedings.

JOSEPH BRADY, one of the pioneers of engineering in Australia, was born on the 18th August, 1828, near Enniskillen, County Fermanagh, Ireland. He served his pupilage as a land surveyor under his father, on the Tithe Comutation Survey, in the south of England, and acquired a thorough knowledge of field surveying and draughtsmanship during the 3 years ending in 1844. From October, 1844, to March, 1850, he was employed as an assistant engineer on the staff of the late Mr. Charles B. Vignoles, Past-President, on railway surveys in Kent and Lincolnshire and on the construction of the Skipton, Sedbergh and Lancaster line, called "The Little North Western," of which Mr. John Watson of Lancaster was Chief Engineer for the company.

Shortly after the opening of this railway in 1850, Mr. Brady sailed for Sydney, New South Wales, being furnished with introductions to prominent engineers in that colony. The late Mr. F. W. Wentworth-Sheilds, a pupil of Mr. Vignoles, was at that time Engineer of the newly organized Sydney Railway Company, and he engaged Mr. Brady as an assistant on the work of survey and construction then in progress. Mr. Brady retained this appointment until 1857, except for an interval in 1851, when he made the surveys and plans for the Yan Yean Water Supply of the City of Melbourne, under the direction of Mr. James Blackburn, the City Engineer. On completing the plans of the water-supply, Mr. Brady was selected to survey and locate an extension of the Sydney line to the

¹ Minutes of Proceedings Inst. C.E., vol. lxviii, p. 216.

iron mines of Mittagong, near Goulburn, on what is now the "Great Southern" line of New South Wales, and was subsequently placed in charge of the works of construction as Acting Engineer. While the appointment of Engineer-in-Chief was for a time vacant, Mr. Brady carried on the combined duties of Resident Engineer, Locomotive Superintendent and Traffic Manager to the Sydney Railway Company.

In 1858 he was appointed Engineer of the Bendigo Water Works in Victoria and designed and carried out the works. On their completion in 1863 he accepted an appointment as Engineer to the contractors for the construction of the Melbourne and Sandhurst Railway and had charge of that portion of the work lying between Woodend and Castlemaine, which included some of the heaviest works on the line. During this engagement he won a prize of £500, offered by the Victorian Government for the best scheme for the supply of water to Mount Alexander and Bendigo Gold Fields, and was appointed by the Government to carry out the survey and design the works, now known as the Coliban River water supply. On the completion of this scheme he visited Queensland and obtained a contract for improvements to the navigation of the Brisbane and Bremer rivers, between Brisbane and the head of the navigation at Ipswich, including a considerable amount of special work in submarine blasting. During the progress of this contract he was engaged as Engineer by the Brisbane Water-Supply Board, and designed and supervised the construction of a reservoir and gravitation supply works, together with the reticulation of the city. The Queensland Government then appointed him Engineer to the newly created department of Harbours and Rivers, an office which he held until the works were stopped for want of funds, during a period of severe financial depression. The works carried out included timber jetties at several of the ports and extensive dredging operations in the Brisbane and Fitzroy rivers. During this period also, he furnished to the Government plans and reports on water-supply for the coastal towns. In August, 1867, he was appointed to superintend the construction of the railway between Toowoomba and Dalby, a length of 50 miles on the Darling Downs. This was begun by a contractor who failed in carrying it out, and its completion by Mr. Brady as a Government work cost less than the contract price, a service for which he was substantially rewarded by the Government.

In 1869 he returned to Victoria and shortly afterwards carried out for the contractors the construction of the first portion,

between Melbourne and Seymour, of the North Eastern Railway, including some heavy bridgework on the crossing of the Goulburn River. In 1871 he became Engineer for the water-works of Sandhurst, since re-named Bendigo, and carried out works comprising an additional storage reservoir with large settling ponds and an extension of the town reticulation, these works after completion being transferred to the Victorian Water Supply Department.

Mr. Brady then entered the Government service, received a new appointment as Engineer for the Bendigo District of the Coliban Water Supply under Mr. George Gordon, Chief Engineer for the Department, and retained this post until 1877. In that year he was selected for the position of Engineer to the Melbourne Harbour Trust, then newly created for the purpose of opening up a navigable channel for large vessels from the piers in Hobson's Bay to the riverside wharves of Melbourne. One of his first duties was to make a detailed survey of the area within which the intended works were to be carried out. Sir John Coode was called upon by the Board in August, 1878, to investigate and decide on the best scheme. The general design of the work being furnished by him, his recommendations were adopted and carried into effect under the direction of Mr. Brady, who introduced certain modifications from time to time, chiefly the substitution of timber work for masonry in the dock works, whereby a very large saving of time and money was effected. Mr. Brady continued in charge until the works were practically completed in 1891, when he resigned his appointment. The expenditure of the Trust on these works amounted to upwards of £3,500,000, including the plant employed in their construction and maintenance.

On retiring from the service of the Harbour Trust, Mr. Brady engaged in private practice as a consulting engineer and arbitrator until 1894, when he retired from professional pursuits. He died at Elsternwick, near Melbourne, on the 8th July, 1908, in his eightieth year.

Mr. Brady was elected an Associate of The Institution on the 7th December, 1875, and was transferred to the class of Members on the 3rd December, 1878. In 1904 he contributed to the Proceedings a Paper on "Early Railway Construction in New South Wales."¹

¹ Minutes of Proceedings Inst. C.E., vol. clix, p. 249.