

London, Metropolitan, and other Bridges," for Cooke's "London Bridges," and was the Author of several articles on dredging, mechanics, waterwheels, &c., in Weale's "Rudimentary Treatises," and in Weale's new edition of Tredgold. He also brought out a new edition in 1841, of "Buchanan's Millwork and Machinery," with all the latest improvements, to which an extensive supplement was added. He was likewise the Author of many miscellaneous Reports on Civil Engineering subjects.

In the year 1865, on his way home from the works in Holland Street, Mr. Rennie met with an accident from which he never recovered. He died on the 30th of March (Good Friday), 1866, in the seventy-fifth year of his age; and was buried, on the 5th of April, in the churchyard of the quiet country church of Holmwood Common, near Dorking, Surrey. He was married, in 1828, to Margaret Anne, daughter of the late Sir John Jackson, Bart., M.P., who survived him, and by whom he left issue two sons and one daughter.

Mr. Rennie was elected a Member of The Institution of Civil Engineers on the 4th of May, 1841, and served on the Council in the following year, and up to the period of his accident was a constant attendant at the meetings, taking part in the discussions and evincing great interest in the progress of the Society. He was also a Fellow of the Royal Irish Academy, as well as of the Academies of Turin and Rotterdam.

Essentially a man of science, both theoretical and practical, he would probably have attained the highest eminence had his attention been devoted exclusively to purely scientific pursuits. Combining great personal worth, simplicity of manner, and scientific attainments, it was no wonder that he possessed the regard and the esteem of all who knew him, and that, while professional intercourse alone was certain to produce lasting friendships, the advantage of a closer intimacy invariably secured unfeigned pleasure.

MR. THOMAS RHODES, H. Mem. R. I. A., was born on the 7th March, 1789, at Apperley Bridge, near Bradford, Yorkshire, and received his education at Calverley school. His father, Mr. James Rhodes, was engaged in superintending the construction of the locks, gates, bridges, and other works on the Leeds and Liverpool Canal, when he met with a serious accident which disabled him for life. The eldest son William, was brought up to his father's business, that of a millwright and carpenter, when employed on the works of the Rochdale Canal. Mr. Thomas Rhodes, the subject of this notice, was apprenticed to his brother William, when under 14 years of age. He had thus an

opportunity of acquiring a practical knowledge of, and of taking an active part in, the construction of a variety of works, when the division of labour was not carried to so great an extent as at present. Having naturally a taste for mechanical drawing, he devoted himself in his leisure hours to making and copying drawings, which materially aided him in after-life. He remained with his brother for about eight years, and in 1810 was engaged for a short period on the Glasgow and Paisley Canal. In September, 1811, he proceeded to Corpach, at the western extremity of the Caledonian Canal, to take charge of and superintend the erection of the sea lock-gates, bridges, and machinery, the timber and ironwork of which had just arrived from England; and in the course of the following year the gates were hung in their places, to the satisfaction of Messrs. Jessop and Telford, the chief Engineers. As the timber for the other gates had not arrived, Mr. Rhodes was instructed to proceed to the eastern end of the canal, near Inverness, to erect the gates for the sea lock and the second lock. There being a difficulty in procuring timber suitable for any more wooden gates, plans were made for the use of cast iron; and after various experiments by Mr. Rhodes, the other gates throughout the canal were, with the full approval of Mr. Telford, constructed after the same pattern. The swivel bridges, dredging-vessels, hopper and other barges, were built agreeably to the plans prepared by Mr. Rhodes. During an interval of eight months, by order of Mr. Telford, he went to the Bonar bridge, then in course of erection over the Dornach Frith, and superintended the putting in of the coffer-dams, or caissons, and the erection of the scaffolding and centering for the stone arches and the cast-iron arch of 150 feet span. Having completed these works to the satisfaction of Mr. Telford, Mr. Rhodes left the Highlands and the Caledonian Canal in December, 1822. In the following year he was sent by Mr. Telford to take charge of the erection of the iron and woodwork of the Menai and Conway Suspension Bridges in Wales. In 1826, these bridges being finished, Mr. Rhodes was appointed by Mr. Telford Resident Engineer of the St. Katharine's Docks, London. During the execution of these works, Mr. Rhodes was engaged on the works of the Herne Bay Pier, reported on the Graving Dock near the Commercial Dock, London, made plans, specifications, and estimates for Belfast Harbour, a suspension bridge at Clifton, the Llanelly Railway and Docks, the London and Dover Road, and a new bridge across the Lagan at Belfast.

In 1831 he surveyed the River Shannon and its tributaries, for the Commissioners of Public Works, Ireland. In 1833, he made plans, specifications, and estimates for the improvement of the River Ouze, which comprised locks at Naburn and Linton, self-acting

wasteboard, jetties, slips for repairing vessels, and dredging vessels for deepening the channel of the river, and was likewise Engineer for the York Waterworks. The designs and estimates for the ship canal and floating dock, the New Bridge and waterworks at Belfast were also made at this time.

In 1834 he was engaged by the Exchequer Loan Commissioners to report on the Hartlepool Dock and Railway. He prepared a report and estimate for the completion of the Clarence Railway, of which he was afterwards the Resident Engineer, and he reported on the Ulster Canal. In 1835 he was appointed Commissioner for the improvement of the River Shannon; was engaged upon the harbour of Berwick-upon-Tweed; surveyed the River Derwent, and also a branch canal from the Staffordshire and Worcestershire Canal; he was Engineer for the Commissioners for the Limerick bridge and docks; prepared plans, specifications, and estimates for the Byer's Green Branch Railway, in Durham, and for the Stockton and Hartlepool Union Railway and Docks; and surveyed the River Severn, from Stourport to Gloucester, and made plans, specifications, and estimates for its improvement.

In 1839 Mr. Rhodes was engaged as principal Engineer to the Shannon Commissioners, to carry out the improvement of that navigation, involving works of considerable magnitude, comprising the large weir, &c., at Killaloe, Portumna Bridge,¹ the weir, lock, and gates at Mellick, Banagher Bridge, the Canal, Shannon Bridge, dredging and deepening the shallows, lock and weir at Roosky, Athlone, Lanesborough and Jamestown Bridges, with many other works of importance. At this period surveys were made of Loughs Neagh, Erne, and Corrib, also of the rivers Upper and Lower Bann, the Blackwater and Barrow, the coast of Kerry, for sites for piers and harbours, and various other works for the Commissioners of Public Works, Ireland.

In 1849 Mr. Rhodes was offered, by Messrs. Walker and Burges, the appointment of Resident Engineer of the St. Catherine Harbour Works, Jersey, and of the Harbour of Refuge, Alderney; and thinking that change of air would benefit his health, he accepted the appointment, and was stationed in Alderney, where he remained until 1860, when he finally retired from active life.

Mr. Rhodes was a very old member of The Institution of Civil Engineers, having been elected an Associate on the 27th of February, 1817, and he was transferred to the class of Members in the following year. His provincial engagements prevented his taking a very active personal interest in the Society, but whenever he was in London he always attended the meetings. It has been said by some of his contemporaries, that had it not been for his

¹ *Vide* Minutes of Proceedings Inst. C.E., vol. iii., p. 99.

unobtrusive and retiring disposition, he might have taken a more prominent position in the profession, for which he possessed the highest qualifications.

Mr. Rhodes had been ailing for some months, when he suddenly expired on the 6th of June, 1868, in his eightieth year, at Paington, South Devon, deeply regretted by a large circle of relatives and friends, by whom he was deservedly beloved, for his urbanity of manner and kindness of heart, which had endeared him to every one with whom he was associated.

Mr. HERBERT GOULBURN ANDERSON, the youngest son of the late Rev. Robert Anderson, of Brighton, was educated at the Charter House, and began his professional career, in 1861, as a pupil of Sir Daniel Gooch, Bart., M.P., at the Locomotive Engine Works of the Great Western railway company at Swindon, where he underwent a practical training for two years, and where his proficiency gained the highest testimonials from those under whose instruction he was placed. He then went to Mr. Joseph Mitchell (M. Inst. C.E.), by whom he was sent on the Highland railway, and he assisted in the construction of most of the principal works upon the Ross-shire Extension of that line, and upon the Aberfeldy Branch, where he was engaged for two years, from 1863 to 1865. He was afterwards employed as an assistant engineer in the office of Mr. Fowler (Past-President Inst. C.E.); and then on surveys in Moldavia, and in Cumberland, for Mr. J. R. McClean, M.P. (Past-President Inst. C.E.). In the autumn of 1867, he was appointed one of the Inspecting Engineers on the "Railways (Ireland) Commission," in charge of the North East District, where he was occupied until January, 1868, and where he won the esteem of all with whom he came in contact.

He was elected an Associate of The Institution of Civil Engineers early in the year 1868, and frequently attended the Meetings. His cheerful submission to his leaders, his unselfish good fellowship with his companions, and his genial manner to all, rendered him a universal favourite; and no doubt his ultimate career would have been as prosperous and useful as the commencement was promising; but he died at the early age of twenty-six years, after a very short illness, in June, 1868. Few have lived more beloved,—none have died more regretted.

Mr. WILLIAM ROBSON COULTHARD commenced his professional career in the establishment of Messrs. Musgrave and Sons, Engineers, of Bolton, Lancashire, to which firm he was apprenticed. After the expiration of his articles he was engaged on various public works in England for about two years. He then