

Fowler, Past-President Inst. C.E., with whom he remained until the year 1870.

Mr. Johnson early exhibited great ability and untiring energy, with considerable skill in design, and the closest attention to those details so important to success in engineering matters. He was, therefore, soon intrusted by Mr. Fowler with important works, including the Mid-Kent railway, the Farnborough Extension of the West End and Crystal Palace railway, the River Nene drainage and navigation, and the Norfolk estuary, river, and reclamation works. Between the years 1860 and 1869, he was, in conjunction with Mr. B. Baker, Assoc. Inst. C.E., exclusively occupied in carrying out, under Mr. Fowler's instructions, the works of the Metropolitan railway system, with the exception of a few months passed in the United States; and it was during these years that he developed fully the qualities which especially distinguished him in the professional circle in which he moved. These undertakings involved some of the heaviest and most complicated engineering works of the day.

In February 1870, Mr. Johnson left Mr. Fowler and joined the firm of Messrs. G. Smith and Co., builders and contractors. During the partnership, which continued up to the time of his death, this firm executed several large works, amongst others, the new Town Hall at Manchester, and Eaton Hall, Chester, the residence of the Duke of Westminster. He also, in conjunction with Mr. William Mills, M. Inst. C.E., superintended the design and execution of the new Holborn Viaduct Station for the London, Chatham, and Dover Railway Company.

Mr. Johnson was elected an Associate of the Institution of Civil Engineers on the 6th of April, 1852, and was transferred to the rank of Member on the 7th of February, 1863. He was also corresponding member of the American Society of Civil Engineers. He died on the 20th of July, 1874, at the age of forty-eight.

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MR. THOMAS LOGIN, F.R.S.E., was born at Stromness, in Orkney, in 1823. He was the youngest member of the family, and lost his father when a child, and his mother when only in his teens. Having a natural talent for Engineering, he was sent to Dundee, where he passed through a course of instruction, and obtained a practical knowledge by working at a factory. He went to India in 1844; his two elder brothers, who had been brought up to the medical profession, having preceded him. His eldest

brother, the late Sir John Login, who afterwards became guardian to H.H. the Maharajah Dhuleep Singh, was Residency Surgeon at Lucknow.

Having obtained an appointment in the Public Works Department, Mr. Login served for three years under the present Major-General Sir W. Baker. He was next engaged under the late Sir Proby T. Cautley in the construction of the Ganges canal, and took a leading part in establishing the works at Roorkee. Referring to this period, Sir Proby Cautley wrote:—

“Mr. Thomas Login, C.E., was under my orders in the Department of Public Works, North-Western Provinces of India, from the end of 1847 to April 1854, the date of my leaving India.

“Mr Login was employed during the whole of this time on most important works connected with mountain torrents situated between Roorkee and Hurdwar. Under his management the works at Dhunowri in connection with the Rutmoo torrent, and those for the passage of the Puttri torrent over the canal channel, were begun and completed—the latter, as connected with springs in which the flowings of the canal channel had to be laid 17 feet below their surface, was a work of extraordinary difficulty and engineering skill—the whole of the details having been carried out by Mr. Login with great success. To Mr. Login’s advice and assistance, in fact, I consider that my design for the structure of this work was mainly indebted.”

Mr. Login was engaged in Burmah till 1856, when he was invalided and came to England, where he remained till the autumn of 1857. On returning to India, he was appointed successively Executive Engineer of the Ganges and Darjeeling road, and of the Roorkee and Dehra roads. After this, he had charge of the Northern Division of the Ganges canal, and in that capacity his “fruitfulness in resources” was employed in arresting the progress of injury to the works of the canal, which at one time threatened to involve the necessity for laying out a large sum of money in repairs, or of entirely closing it. Although this course was recommended, it appears that, either from the measures taken by Mr. Login or from some other cause, the canal has continued to do its work and yield an important revenue up to the present time. After again being engaged on road works, and in charge of salt-works, he was removed to Sealkote in 1864, and made the surveys for a projected canal in the Rechna Doab. In 1865, he was transferred to Umballa, as Executive Engineer of the 7th division of Grand Trunk road. In 1868, he came to England, and gave much attention to the abrading and transporting powers of water,

having read papers on the subject at the meetings of the British Association both at Norwich and at Exeter. He also submitted to the Institution a Paper "On the Benefits of Irrigation in India, and on the Proper Construction of Irrigating Canals,"<sup>1</sup> for which he received a Telford Premium. If his life had been spared, he would have been permitted to carry out experiments on a large scale, with a view to obtain more certain data upon this important question.

The Suez Canal having been opened about the time of his return to India, he was ordered to visit it on his way out, and report upon it on his arrival. In passing through Egypt, he was much impressed with the mode of cotton cultivation practised there, which he considered had many advantages over that customary in India, and on his arrival at Umballa, he carried out some experiments on the ridge and furrow system, which apparently produced a much larger yield than the native broad-cast system.

Having been appointed Officiating Superintending Engineer at Umballa, he acted in that capacity for two years, and his appointment to that grade was confirmed in October 1873. His labours as Superintending Engineer of a large district were varied and onerous, and his health was failing; but he proceeded early in the following year to survey and report on the roads north of Simla. He had completed this survey, and was returning to his station, when an attack, in the valley of the Sutlej, of fever and paralysis ended in death, on the 5th of June, and his remains were interred at Simla on the following day. In Mr. Login the Public Works Department lost a talented officer of great experience, and upright and consistent in his conduct.

Mr. Login was a Fellow of the Royal Society of Edinburgh. He was elected a Member of the Institution of Civil Engineers on the 19th of May, 1868, and by the presentation to the library of copies of various reports showed the interest he took in its prosperity.

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Mr. WILLIAM RICHARD MORRIS, only son of Mr. Joshua Morris of Greenwich, was born on the 24th of October, 1808. He was articled to Mr. Charles Alexander Weir, Civil Engineer and Surveyor, and Manager of the Kent Waterworks, under whom he was engaged in making roads in the Grand Duchy of Mecklenburg Schwerin, in the erection of the Hammersmith Suspension Bridge,

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<sup>1</sup> *Vide* Minutes of Proceedings Inst. C.E., vol. xxvii., p. 471.