

Grammar School, and served a pupilage of 3 years to Messrs. Graham and Company at the Milton Ironworks, Barnsley. Subsequently he was engaged on the erection of buildings and machinery at Nottingham for Messrs. Manlove and Alliott, and in 1854 he joined the late Mr. Alfred Penny, whom he ultimately succeeded as Consulting Engineer and Adviser to Messrs. James Oakes and Company, of the Alfreton Ironworks, Derbyshire, having charge of all their contracts and engineering work, a position which he retained in addition to his private practice up to the date of his death. During this period he designed and erected gasworks and machinery at Staines and Egham, Leighton Buzzard, Dartford and other places, and also carried out waterworks at St. Albans. He was the inventor of a gas exhauster and a patent siphon for gas-mains.

Mr. Horsley was a Justice of the Peace for the County of Middlesex. He also represented East Islington on the first London County Council, and for many years acted as Chairman of the local Conservative Association. In later years he served on the Boards of several gas- and water-companies. In 1881 Mr. Horsley was elected to the office of President of the Society of Engineers.

He was elected an Associate Member of the Institution on the 28th May, 1878, and was transferred to the class of full Members on the 30th January, 1883.

FRANK McCLEAN,¹ M.A. (Cantab.), LL.D. (Glasgow), F.R.S., only son of the late Mr. J. R. McClean, Past-President, died at Brussels on the 8th November, 1904, in his sixty-seventh year. Born in 1837, he was educated at Westminster School, proceeding subsequently to Glasgow University and to Trinity College, Cambridge, where he graduated in 1859. Adopting his father's profession, he was apprenticed in the same year to Sir John Hawkshaw, Past-President, during which period and subsequently he was engaged on the works of the Penarth Docks and the Middle Level Drainage. On completing his pupilage, he acted as Resident Engineer to Messrs. McClean and Stileman by whom he was employed on the doubling of the Furness Railway between Ulverston and Carnforth, which included some heavy works, and on the construction of the Furness and Midland joint railway. He also carried out surveys for railways in Moldavia, and in 1863 he was made partner in the firm. Between this date

¹ An account of Mr. McClean's services to astronomy will be found in the obituary notice published in *Nature*, 17 November, 1904.—SEC. INST. C.E.

and 1871, when he gave up his professional pursuits, Mr. McClean represented his firm on many works carried out by them, including the Barrow Docks, and the Furness and Midland Railway, surveys and borings at Piel Bar, and the extension of Piel pier and railway.

After his retirement, Mr. McClean devoted the remainder of his life to astronomical science. The results of his labours were embodied in various important Papers communicated by him to the Royal Society and the Royal Astronomical Society, and in 1899, he was awarded the gold medal of the latter society for his researches in solar and stellar spectroscopy. In 1890 he founded the Isaac Newton studentships at Cambridge, and in 1895 he presented the Victoria photographic telescope to the Cape Observatory. The honorary degree of LL.D. was conferred upon him by Glasgow University in 1894, and in the following year he was elected a Fellow of the Royal Society. Mr. McClean married in 1865 Ellen, daughter of Mr. John Greg, of Escowbeck, Lancaster.

He was elected an Associate Member of the Institution on the 5th April, 1864, and was transferred to the class of full Members on the 10th December, 1867.

ALEXANDER McDONNELL, M.A. (Dublin), third son of John McDonnell, M.D., of Dublin, was born on the 18th December, 1829, and studied at Trinity College, graduating in Arts with mathematical honours in 1851. He then became a pupil of Mr. Charles Liddell, of Westminster, for 3 years, remaining in the same service after completing his articles until 1858. With the exception of an interval spent in study at the *École des Ponts et Chaussées*, Paris, he was engaged during this period in a variety of railway work, chiefly on the construction of the Newport and Hereford Railway, to which, on its completion, he was appointed Resident Engineer and Locomotive Superintendent, continuing in this office after the line was amalgamated with the West Midland system. At the end of 1861, he relinquished this appointment and proceeded to Turkey to organize the Locomotive Department of the Danube and Black Sea Railway, returning to England in 1863. In the following year Mr. McDonnell accepted the appointment of Locomotive Superintendent to the Great Southern and Western Railway of Ireland, which position he held for 18 years. In 1877 the carriage and wagon departments were also placed under his charge, and in this year he contributed a Paper to the Institution entitled "Repairs and Renewals of