time of his retirement he had risen through the various grades to the rank of Superintending Engineer.

On leaving India Mr. Anderson ceased to practise as an engineer and spent the remainder of his life in retirement in England. His death, which was very sudden, occurred on the 14th of August, 1893. On the morning of that day he started, apparently in good health, to bathe at Woolacombe Sands, near Ilfracombe. On entering the water he fell forward helpless; his fellow-bathers hastened to his assistance, but before he could be brought to dry ground life was extinct. His medical adviser certified that death was due to heart disease.

Mr. Anderson was shrewd, hard-working and energetic, a skilled accountant and a good man of business. He was elected an Associate of the Institution on the 6th of December, 1870, and was transferred to the class of Member on the 4th of November, 1879.

SIR GEORGE BERKLEY, K.C.M.G., was born on the 26th of April, 1821, and was educated at a private school at Hampstead. At the early age of fourteen he was removed from school and apprenticed to Messrs. Samuda Brothers, the well-known marine engineers. After going through the shops he assisted in preparing designs for railways worked on the atmospheric system, to which that firm was then giving considerable attention.[1] About the year 1840 he had the good fortune to be received—through his brother James,[2] who was then acting as secretary and assistant to that gentleman—into the office of Robert Stephenson[3] at No. 24 Great George Street, Westminster.

Shortly before this appointment George Berkley, who had been in somewhat delicate health, was advised to try country air. For a time he lived at Bishop Stortford, and while there took advantage of the immediate neighbourhood of some repairing shops on the Eastern Counties system to make a number of connected experiments and observations on the working of locomotives under varied conditions. To this work he was prompted by an irresistible impulse to be always doing or learning something which never left him through life. Although under no pressing need to work, and sent into the country for relaxation, he devoted himself

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[1] Minutes of Proceedings Inst. C.E., vol. lxxxi. p. 334.
[2] *Ibid*, vol. xxii. p. 618. [3] *Ibid*, vol. xix. p. 176.

steadily to an investigation in a branch of mechanics in which he had received no special instruction, and laboriously gathered information, for a remunerative application of which no opportunity was then visible. With characteristic modesty he made no mention of this work to Mr. Stephenson and was the more pleased, therefore, when in 1844 he received instructions from that gentleman to proceed to Dublin for the purpose of making a series of independent experiments on the working of the atmospheric system of traction, then in operation on the short line of the Kingstown and Dalkey Railway. The results of these experiments, made in conjunction with Mr. W. P. Marshall, formed an appendix to a Report on this subject by Robert Stephenson to the Directors of the Chester and Holyhead Railway Company and were embodied in a Paper entitled "The peculiar features of the Atmospheric Railway System,"[1] presented to the Institution by Mr. Berkley in the following year. He also made some further investigations on the London and Croydon Railway, which was then being worked atmospherically under the direction of Messrs. Samuda Brothers.

Another matter in which Mr. Berkley rendered considerable assistance was the Battle of the Gauges in 1846.[2] Three years previously he had carried out for Robert Stephenson an alteration of gauge in the Cambridge line of the Eastern Counties Railway from 5 feet 0½ inch to the ordinary width of 4 feet 8½ inches. Later, in 1873, when the gauge question was again before the Institution, Mr. Berkley communicated much valuable information, the outcome of thirty years' special experience.[3] In conjunction with the late Mr. George Henry Phipps,[4] he made for Robert Stephenson in 1850 a series of experiments and examinations of the deep wells of Liverpool with reference to the water-supply of that city. He was always on terms of intimate friendship with Mr. Stephenson, who placed the greatest confidence in his ability and at death left him a bequest as a mark of regard and esteem.

In the year 1849 Mr. Berkley commenced to practise on his own account. He designed and constructed Fenchurch Street Station and widened the line of the Blackwall Railway, for which Company he acted as engineer to the date of his death. He also constructed the Hampstead Junction Railway, the Hammersmith branch of the

[1] Minutes of Proceedings Inst. C.E., vol. iv. p. 251.
[2] *Vide* Report of Royal Commission in Library Inst. C.E.
[3] Minutes of Proceedings Inst. C.E., vol. xxxv. p. 385.
[4] *Ibid*, vol. xcvi. p. 330.

South Western, the Stratford and Loughton of the Great Eastern, the Wimbledon and Croydon, the East Suffolk system of the Great Eastern, the Wells and Fakenham and other lines. From the beginning of 1851 he acted as the representative of Robert Stephenson as consulting engineer to the Great Indian Peninsula Railway Company, to which post he was appointed on that gentleman's death in 1859. In 1867 and 1886 he visited India and, besides reporting on railways, was engaged in other engineering work in various parts of that empire.

In 1874 Mr. Berkley became one of the consulting engineers to the Colonies, for railways in Natal and viaducts in Cape Colony. In 1885 he was appointed consulting engineer to the Indian Midland Railway Company, and in 1887, in conjunction with his son, to a similar post on the Argentine North Eastern Railway. He was for many years one of the Board of Managers of the Royal Institution and a member of the Athenæum Club. In May 1893, he was created a Knight Commander of the Order of St. Michael and St. George. Unfortunately his health, which had not been good for some time, now began to show signs of serious failure. He had always an idea that his heart was not strong, and in this he was probably not far wrong, for he passed away suddenly during a fit of asthmatic coughing on the 20th of December, 1893.

An able engineer, Sir George Berkley owed much of his success to a capacity for taking advantage to the utmost of the many opportunities of advancement which fell in his way, and to the virtues of dogged perseverance and tenacity of purpose. Another marked feature of his character was incorruptible honesty in act and speech and a disinclination to acquiesce in anything of the nature of false suggestion or suppression of truth, even when such a course might have been followed by pecuniary benefit. His own estimate of his scientific and professional acquirements was always singularly modest, and even the importance of the position to which he ultimately attained did not serve to entirely remove this habit of self-depreciation.

Sir George Berkley's connection with the Institution began on the 1st of April, 1845, when he was elected an Associate. On the 17th of January, 1854, he was transferred to the class of Member; on the 17th of December, 1872, he was elected to a seat on the Council; and he served the office of President during the session 1891–92. In addition to the Paper on the Atmospheric Railway System, of which mention has already been made, he contributed to the Proceedings in 1870 a treatise entitled "On the Strength of Iron and Steel and on the Design of parts of Structures which con-

sist of those materials."[1] In his Presidential Address,[2] delivered on the 10th of November, 1891, he endeavoured to trace briefly the advance of engineering work in relation to social progress.

WILLIAM DEMPSEY was born in London on the 3rd of May, 1817, and was educated privately. He and his elder brother, George,[3] were early members of the Mechanics Institute founded by Dr. Birkbeck, and eagerly took advantage of the opportunity of self-education thus afforded. In 1840 he obtained an appointment as a draughtsman in the firm of Messrs. Fox, Henderson & Co. of Birmingham, with whom he remained until 1845.

In the latter year—at a time when railway enterprises were springing up all over the kingdom—William Dempsey joined his brother in London, where they worked night and day for some time in preparing plans for several projected lines. Unfortunately, however, the projects upon which they were occupied fell through, and William was glad to obtain an engagement in the works of Messrs. Bramah, Cochrane and Deeley at Tipton. In 1849 he was employed under Robert Stephenson[4] on the works of the Britannia Bridge. He then returned to Messrs. Fox, Henderson & Co., for whom he was engaged in the construction of the great Exhibition buildings of 1851, and subsequently in their reconstruction at Sydenham as the Crystal Palace.

Some two years later Mr. Dempsey started business on his own account and in 1857 was appointed Consulting Engineer in England to the Railway Department of the Government of South Australia. In that capacity he designed and superintended the manufacture of several iron bridges and roofs, among which may be mentioned the Murray River bridge, the Hamley bridge over the River Light, the Port Adelaide swing-bridge and an iron roof for the goods-shed at Adelaide. He also prepared the requisite drawings and specifications, supervised the manufacture of and tested many thousand tons of permanent-way materials of all kinds. In 1863 he was also appointed Consulting Engineer to the Scottish Australian Mining Company in all matters connected with the providing in England of the machinery and plant required for its extensive coal mines in the Colony. In addition to these offices

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[1] Minutes of Proceedings Inst. C.E., vol. xxx. p. 215.
[2] *Ibid*, vol. cvii. p. 1.
[3] *Ibid*, vol. i. (1838) p. 38.
[4] *Ibid*, vol. xix. p. 176.