assistant to Mr. Condy, of steam-hammer fame, who was engineering manager of Messrs. Dixon's ironworks at Govan and Calder, where he remained for about two years. For the next three years he was draughtsman with Messrs. Neilson & Co., locomotive builders, whose works were then situated in Hydepark Street. From 1852 to 1854 he was manager of the engine works of Messrs. Smith and Rogers, of Govan, now the London and Glasgow Engineering and Shipbuilding Company. In 1854 Mr. Rowan, at the age of thirty-two, was appointed manager of the engineering works of Messrs. Caird & Co. at Greenock, where he remained for about six years, during which time he was responsible for some of the largest and most powerful steamers of the Royal Mail Company, and the Hamburg and Bremen Steamship Companies. He returned to Glasgow in 1860 as a partner in the firm of Messrs. James Aitkin & Co., Cranstonhill, in which capacity he was engaged on pumping engines for St. Petersburg and on marine and general engineering work.

In 1866 Mr. Rowan commenced business on his own account in Elliot Street, Glasgow, as a manufacturer of marine engines. The firm, which is now known as Messrs. David Rowan and Son, has long carried on an extensive business, and has furnished engines for many Clyde-built vessels and for high-class steam yachts.

Mr. Rowan was an original member of the Institution of Engineers and Shipbuilders in Scotland, on the Council of which he served for many years, being in 1870 elected President for the two following sessions. In 1874 he was appointed convener of the committee nominated by that Institution to report on safety-valves, in which work he took a very active part. Mr. Rowan devoted much energy to the welfare of the citizens of Glasgow, and took part in the management of a number of the educational and benevolent institutions of the city. He was President of the Mechanics Institution for many years, and for thirteen years he was a member of the Clyde Trust. During that time the Queen's Dock was constructed, and its progress and development were watched by him, from beginning to end, with great care.

Mr. Rowan died at his residence, 22 Woodside Place, Glasgow, on the 30th July, 1898, after a prolonged illness. He was elected a Member on the 7th May, 1872.

THOMAS SOPWITH was born at Newcastle-upon-Tyne on the 2nd July, 1838, and was educated at Bruce Castle School and

afterwards at Croft House, Brampton. In 1854 he was articled for five years to Mr. William G. Armstrong, now Lord Armstrong.

On the completion of his apprenticeship at the Elswick Works in 1859, he commenced to undertake duties at the extensive lead mines belonging to Mr. W. B. Beaumont, then under the management of his father, the late Mr. Thomas Sopwith, F.R.S. The late Mr. T. J. Bewick, was at that time acting as Engineer and Chief Assistant, and Mr. Sopwith was placed in his department, most of his time being spent in underground work and in the mining office.

The mines at Allenheads, well known as the W. B. Lead Mines, were at that time producing about 10,000 tons of lead per annum, a rate of output which was steadily maintained over a period of 30 years, though in 1845 it was a generally received opinion in mining circles that the mines were nearly exhausted. This result was due to the establishment of the most approved hydraulic machinery, general equipment, and to methodical and minute attention to details, combined with vigorous exploration. The nature of such work was most congenial to Mr. Sopwith, and devoting himself to his duties, he acquired an intimate knowledge of practical mining, while his previous training and natural mechanical ability enabled him to take an active and interested part in all appertaining to the details of construction of machinery and washing plant connected with the mines and dressing floors.

In 1862 he was commissioned by Mr. Beaumont to visit the principal lead mining centres in Europe and report upon the position of the industry; a period of about two years was thus occupied, and although laid up for a considerable time by a dangerous attack of rheumatic fever at Aix-la-Chapelle, he visited all the most important mines on the Continent. He was much impressed by the skilful way in which mining and surface equipment were carried out, and in a letter to his father, written during the tour, and relating more especially to the works at Moresuet, said, "Everything about the mines there is really a long way ahead of England, and it is a great pity it should be so, but the next generation will find it out if we do not."

The last mining district visited was that of Linares in Spain, and in reporting thereon Mr. Sopwith pointed out that some mining ground adjacent to the town was, in his opinion, of great promise, although it had been neglected for a very long period. The outcome of persistence in his opinion was the formation of a company which was known as the Spanish Lead Company. This Company was reorganized in 1880, and Mr. Sopwith became

Managing Director of the new firm under the name of T. Sopwith and Company, Limited. The result of continued perseverance and energy was the establishment of one of the largest and most important mining and smelting works in Spain. New and improved methods in use elsewhere (of which Mr. Sopwith was always well informed), and their suitable application to the objects in view, secured for the Tortilla Mine the reputation of being a model one. He was the first to introduce into the district in 1868 machinery from Germany for the crushing and dressing of lead ores, and thus effected great economy; he also was the first to introduce dynamite into the district, and in many ways assisted in the more economical working necessary to carry the mines through the long period of low prices which have ruled for lead. From the commencement of the works, better and more substantial buildings than had hitherto been customary were erected, and at the smelting works, after using the old Spanish reverberatory furnaces for a time, he put up Scotch ore hearths—a change which gave satisfactory results. The smelting and desilverizing works were on a large scale, capable of turning out 2,000 tons of soft lead monthly, and there were in addition works for the manufacture of shot, sheet lead, lead pipes, &c.

It is interesting to note that Mr. Sopwith's father took in hand the Allenheads Mines, and raised them to European celebrity, after they were considered exhausted. The son, early in life, established one of the most prosperous lead mines on the Continent, selecting ground which was lying "derelict" and neglected by the numerous companies, English, German and Spanish, existing in the district. The details of the work carried out in opening out the mines and their complete equipment with manufacturing adjuncts are not of public interest, but the highly successful issue of the undertaking is alone a standing record of Mr. Sopwith's preseverance, energy and tact. The management of the mines, involving in the first place several years' residence on the spot and subsequently frequent and long visits, occupied most of his attention, but he issued valuable reports on various mines in America, as well as Europe and at home, and his opinion on engineering matters was highly valued.

He read Papers on the Mont Cenis Tunnel[1] before the Institution, and these, for which the Author was awarded a Watt medal and a Telford premium, were regarded as an able description of perhaps the most interesting and important work in Civil

[1] Minutes of Proceedings Inst. C.E., vol. xxiii. p. 258; vol. xxxvi. p. 1.

Engineering of that day, 1863, undertaken with the object of piercing the great barrier of the Alps so as to put France and Italy in direct communication. He also contributed a Paper on the Dressing of Lead Ores,[1] for which he was awarded a Telford medal and a Telford premium.

Another Paper, on the "Breakdown of the Umbria,"[2] was a useful account of an accident to the propeller-shaft of an ocean liner and of the manner in which the repairs were effected. He was a passenger in the "Umbria" during its eventful voyage and kept a most interesting and entertaining diary of the life on board, during a trying and anxious time. He was frequently in the shaft-chamber, and was able in some details to assist the engineer. He drafted accounts of the accident for the American technical and other journals ready for arrival in New York.

Mr. Sopwith was popular in the fullest sense of the word, and made friends wherever he went and in all classes of society. He was keenly interested in arriving at a correct view on questions of scientific or of popular interest, and he had a happy way of engaging in conversation and imparting as well as acquiring knowledge. Added to this he had a keen sense of humour and a cheerful and kindly disposition which endeared him to his many friends. In Madrid he was well known and esteemed, but in the Linares district more particularly "Don Tomas" will long be held in affectionate memory. To him more than any other Englishman belongs the merit of establishing more friendly feelings and relations between the Spaniards and English residents, and this he brought about by his example on every occasion, while his knowledge of the language and Spanish customs, together with his popularity and the esteem in which he was held, enabled him to exert a widespread influence.

Mr. Sopwith was a keen sportsman, an excellent shot and a skilful fisherman, good at golf and most out-door amusements, and it was characteristic of him that he could easily arrive at more than average proficiency in most things he undertook. During the last fifteen years he leased from the Duke of Argyll the property of Kilcheran on the Island of Lismore near Oban, and there he spent three or four months every year. In Oban his handsome, stalwart figure was well known, and he was extremely popular in the town and district. Hospitable, generous and kindly-disposed to a degree, his untimely death (resulting from

[1] Minutes of Proceedings Inst. C.E., vol. xxx. p. 106.
[2] *Ibid*, vol. cxiii. p. 82.

the accidental discharge of a gun) on the 30th July, 1898, is deplored amongst an unusually wide circle of friends.

He was elected an Associate Member of the Institution on the 1st March, 1864, and was transferred to Membership on the 7th December, 1869.

WILLIAM GEORGE STRYPE, born on the 12th January, 1847, served an apprenticeship from 1863 to 1868 to Messrs. Thomas Grendon & Co., engineers and contractors of Drogheda, for whom he had charge of the erection of a diving bell float for the Port and Docks Board of Dublin, and also of machinery for lowering 350-ton blocks. In 1867, while still serving his apprenticeship, he passed the Indian Public Works Department examination, and was posted to the civil engineering staff for the Harbour Works at Bombay. In the following year, however, he accepted the appointment of Chief Engineer and Manager to Messrs. Thomas Grendon & Co., for whom during the next five years he had charge of a large staff of workmen, and carried out piers and an iron-girder bridge over the River Boyne; plant for raising and setting 100-ton concrete blocks for Grenore Quay; a screw pile-pier and iron-girder bridges for Dundalk and Grenore Railway; and other works. In 1873 Mr. Strype designed and superintended the construction of the equatorial mounting for a 3-foot telescope for the Earl of Rosse. In the same year he was appointed engineer to Messrs. A. Guinness, Son & Company, the brewers, of Dublin, for whom he designed and carried out various works.

In 1878 Mr. Strype commenced to practise on his own account. In the following year he was appointed engineer to the Wicklow Harbour Commissioners, for whom he designed and carried out a new concrete breakwater, the dredging of the port, and sundry works at an outlay of about £40,000. In 1884 he was instructed by the Board of Public Works to hold inquiries and to report on two light railways in the West of Ireland.

Mr. Strype was subsequently appointed Engineer to the Arklow Harbour Commissioners, in which capacity he designed and carried out a north breakwater, constructed of concrete blocks. In conjunction with Mr. P. F. Comber, he designed and carried out the construction of the Harbour at Bray, at a cost of about £40,000. With Mr. Comber he also acted as Engineer for new water-supply works for the towns of Tipperary, Athlone and Carrickmacross, on the last of which he was engaged at the time of