

Electric-light Company at Rome, and was in their service at the time of his death, which occurred suddenly on the 10th of September 1884. He was elected an Associate of the Institution on the 6th of February, 1877.

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WILLIAM FREDERICK MAYES, eldest son of William Millbanke Mayes, an experienced engineering surveyor, was born at Saddleworth in the year 1848. He was trained under his father, who was at the time engineer for the Compostelano Railway from Santiago to Carril—"Ferro-Carriles del Norvesta"—from Branuelas to Ponferrada, and from Ponferrada to Corunna. From January 1869 to August 1881 he was employed, generally as assistant to his father, on the Honduras Interoceanic Railway, for Messrs. Waring Brothers and McCandlish, at first to survey and locate the section from Puerto Caballos on the Atlantic to Potrerillos, a village in the interior some 50 miles distant, and subsequently in the exploration of the central portion of the line; also in making the working surveys under Mr. E. A. Drew, M. Inst. C.E., and Mr. J. Robinson, M. Inst. C.E. At this time it was said of him that "he used to select his camps with good judgment, and had the art of making himself and men comfortable under a variety of circumstances, and in obtaining whatever supplies the country naturally afforded. He was successful when surveying in running lines through thickly wooded and rough districts. His men worked for him cheerfully, and they became very expert in felling trees. Although not of a robust constitution, he got through a considerable amount of work. He spoke the Spanish language fluently." He returned to England on the abandonment of the project, and then for one year had charge to completion of a district of 15 miles of the Compostelano Railway, including heavy and important work for the concessionary, Mr. J. S. Mould, and for some months afterwards was engaged on surveys for extensions of the same line, and in assisting his father at Bilbao in similar work for the Somorostro Iron Ore Company. Visiting England for a holiday he was prevented from going back to Spain by the Carlist War. He was then for a short time in the office of Mr. G. B. Bruce, Vice-President Inst. C.E., assisting in the preparation of working drawings for New Zealand and Spanish railways. In April 1875 he was nominated by Sir Charles Hutton Gregory, K.C.M.G., Past-President Inst. C.E., to the Ceylon Government Railway extension survey-staff, which service he resigned in 1877,

to undertake private surveying in the Colony, in conjunction with Mr. Walter F. Garland, Assoc. M. Inst. C.E. (now Commissioner of Public Works in Johore). During this period, namely, on the 5th of December, 1876, he was elected an Associate Member of the Institution. In 1878 Mr. Mayes proceeded to Johore to work for the Maharajah. In 1882 he obtained an appointment on the New South Wales Government railway extensions, and had charge of works as Resident Engineer at Tenterfield for rather more than two years. He died at Sydney on the 27th of October, 1884, from phthisis, originating in a chill taken when he was very weak. He had been suffering from chronic diarrhoea for more than a year, the climate of the district where he was stationed being very unfavourable for such a complaint. He was always ready to make the best of things under the difficulties inseparable from the nature of his work in uncivilized countries, was a steady, accurate and reliable assistant-engineer, and a beautiful draughtsman.

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ARTHUR SULIVAN, the second son of Colonel Sullivan (late 5th Royal Irish Lancers), was born at Bath on the 28th of April, 1852. He was educated first at Shrewsbury, and then entered the Royal Indian Engineering College at Cooper's Hill, where, after being first in the two previous years' examinations, he came out first also in the final examination in 1876, and in consequence of his attainments was made a Fellow. He joined the Public Works Department of India in October 1876, and was placed in charge of exceptionally heavy works for a junior assistant on the Holkar and Neemuch (State) Railway. The Sewbridge of eleven spans of 100 feet, the Simli of nine spans of 40 feet, a large number of minor works, the platelaying, train-management, and quarries, were all directly under him, and his services were several times the subject of special recommendation to the Government of India.

In October 1881 Mr. Sullivan resigned his appointment, and took a contract for the erection of the ironwork on the Neemuch-Nuseerabad (State) Railway. In spite of several delays, he completed in five months thirty-one spans of 100 feet bridge-girders, and six spans of 60 feet. On his return to India in October 1882, he undertook the metalling and consolidating of 36 miles of the Ujjain and Agar Road, in Central India, which occupied ten months. Having perfected a clever design for iron staging for rapid girder-erection, he completed in six and a half months thirty-five spans of 150-foot girders, twenty spans of 100-foot