

and the Senior Moderatorship in experimental science and mathematics. From the engineering school of Trinity College, Dublin, he obtained not only the regular diploma granted by the University, but special certificates in mineralogy, chemistry, geology and mining. In May, 1881, he was articled to Mr. Shelford, who subsequently entrusted him with the superintendence, under the Resident Engineer, of the construction of part of the Hull and Barnsley Railway.

Mr. Hayes was then employed for two years by the Lancashire and Yorkshire Railway Company in preparing contract plans for the Hindley and Pendleton line, and in making drawings for iron and masonry bridges, roofs and station buildings. In 1886 and 1887 he was engaged in Co. Galway in charge of a number of small harbour and bridge works, all of which were executed to the satisfaction of the Board of Public Works. He then entered the office of Messrs. James Livesey and Son, whom he left, however, for the purpose of constructing a railway in Mexico, and afterwards undertook a contract for the erection of station buildings in the same country. For some time he had been busy in the introduction of a preparation of pine wood into London, which is expected to be useful for many purposes, but in the midst of health and activity he was struck down by diphtheria. Mr. Hayes died in London on the 18th of December, 1895. He was elected an Associate Member on the 27th May, 1884.

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EDWARD WILTHEW JACKSON, born in London in September, 1838, was the eldest son of the late Mr. Thomas Jackson, who, in his day, was known as an enterprising contractor. Edward early in life entered his father's office, and from 1856 until January, 1863, was engaged under him on the construction of the Smyrna-Aidin Railway in Asiatic Turkey. He then acted for eighteen months as superintendent of the works for the extension of the Keyham Dockyard, which were carried out under the charge of the late Mr. Richard Townshend.<sup>1</sup>

In the autumn of 1864 Mr. Jackson proceeded to Mexico, in which country he spent the remainder of his life. He was first employed for nine years as Assistant Agent to the late Mr. George B. Crawley, the contractor, on the construction and equipment of the Mexican Railway, a line 263 miles in length from the city of

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<sup>1</sup> Minutes of Proceedings Inst. C.E., vol. xciii. p. 494.

Mexico to the sea-port of Vera Cruz, with a branch from the latter to Jalapa, a distance of 70 miles. In December, 1873, he became Assistant Manager, and in September, 1875, was promoted to the post of Manager, to the Mexican Railway Company. Mr. Jackson performed the duties of that office for ten years, when he resigned in order to accept the appointment of General Manager to the Mexican Central Railway, in September, 1885. This was an important post, for he was responsible for the administration and working of nearly 1,900 miles of railway, of which 1,224 miles were main line.

In December, 1894, Mr. Jackson transferred his services to the Interoceanic Railway of Mexico (Acapulco to Vera Cruz) as General Manager. This was apparently a less onerous position, as there were only some 530 miles in operation, but disaster seemed to follow this step. Although he surrounded himself with tried subordinates, unforeseen difficulties arose and unpreventable accidents on the line added to his distress. The sudden death of his wife was a shock from which he could not recover, although he threw himself into work with closer attention than ever. For some years he had suffered from liver complaint, but his death, which took place suddenly on the 2nd of September, 1895, was attributed to heart disease. Mr. Jackson's services were greatly appreciated in Mexico, where his strong personality evoked admiration and esteem. He was elected an Associate Member on the 7th of December, 1880.

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EDWARD WORRELL JARVIS was born at Charlottetown, Prince Edward's Island, Canada, on the 26th January, 1846. On the death of his father, who was Chief Justice of the Island, he came to England to be educated. After serving a pupilage of three years to Mr. W. M. Brydone, he returned to Canada in 1868, when he was employed on the Intercolonial Railway in Nova Scotia and New Brunswick. From 1871 to 1873 he carried out surveys, some across the Rocky Mountains, for the Canadian Pacific Railway. In the autumn of 1874 he was selected to make a preliminary exploration of the Smoky River Pass of the Rocky Mountains. A full account of this exploration, which was of a dangerous character, will be found in the official Report on Surveys, Canadian Pacific Railway, 1877.<sup>1</sup>

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<sup>1</sup> This Report is in the Library of the Institution.