

ment. The Benevolent Fund of The Institution of Civil Engineers benefited to a similar extent by his generosity.

Before his long illness commenced, Mr. Webb frequently attended the meetings and took part in the proceedings of this Institution, to which, at various times, he presented the following Papers, published in the Minutes of Proceedings:—"A Standard Engine-Shed,"<sup>1</sup> "Steel Permanent Way,"<sup>2</sup> "Locomotive Fire-box Stays,"<sup>3</sup> and "Copper Locomotive-Boiler Tubes."<sup>4</sup>

Mr. Webb was elected an Associate of The Institution on the 23rd May, 1865, and was transferred to the class of Members on the 3rd December, 1872. He was elected a member of the Council in May, 1889, and in November, 1900, he became one of the four Vice-Presidents, of which he was the senior at the time of his retirement from the Council in 1905.

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RICHARD FLINT WELBY, second son of the late Mr. Adlard Welby, Solicitor, of Uttoxeter, was born in that town on the 17th December, 1839, and served his apprenticeship to Messrs. Thorniwell and Warren, mechanical engineers, Burton-on-Trent. In 1862 he was engaged by the late Sir James Brunlees to prepare plans for working the inclines of the São Paulo Railway in Brazil, and in the same year he left England for Brazil to take charge of the works. These included the erection of engine-houses and machinery and the laying of the pulleys and other mechanical details, the most noteworthy of the latter being probably the incline brakes designed by Mr. Welby, the working of which proved so satisfactory that they have been employed ever since practically as they were at first designed. On the completion of his work, Mr. Welby spent a year in England, returning to Brazil in 1866 to take up the duties of Locomotive Superintendent of the São Paulo Railway. In this capacity he had charge of all the rolling stock of the line for 7 years, exchanging the post in 1873 for that of General Manager and Engineer of the Ituana Railway, the first narrow-gauge line in Brazil, connecting Itu with the terminus of

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<sup>1</sup> Minutes of Proceedings Inst. C.E., vol. lxxx, p. 253

<sup>2</sup> *Ibid.*, vol. lxxxi, p. 299.

<sup>3</sup> *Ibid.*, vol. cl, p. 87.

<sup>4</sup> *Ibid.*, vol. clv, p. 401.

the São Paulo Railway. Subsequently he acted as Engineer for the construction of Macahé and Campos Railway, and in 1877 he engaged in consulting practice in Rio de Janeiro, and was connected with the execution of many important public works in Brazil, including the Bahia and Minas Railway and a large steel bridge over the Parahyba at Commercio. In 1889 he returned to England on account of failing health, and resided in this country until his death on the 25th May, 1906, in his sixty-seventh year.

Mr. Welby was elected a Member of The Institution on the 1st February, 1881.

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**HENRY HARTLEY WEST**, born at Salford on the 17th September, 1837, was a son of the Rev. F. A. West, President of the Wesleyan Conference in 1857, and a distinguished minister of that body. The subject of this notice commenced his engineering career as an apprentice to the late Mr. John Jones, Engineer, of Liverpool. In 1860 he was appointed Resident Engineer on the Gunpowder Works of Messrs. John Hall and Son, of London and Faversham, and two years later he became Manager to Messrs. Pearson, Dannatt and Krüger, Engineers and Shipbuilders, of Hull, occupying this position until the closing of their works consequent upon the extension of Hull docks in 1863. In December, 1863, he received an appointment as a surveyor on the administrative and technical staff of the Underwriters' Registry for Iron Vessels, in the Liverpool district, where he remained until 1867, when he was promoted to be Chief Surveyor in Scotland, with headquarters at Glasgow. He discharged the duties of this office with ability and success until March, 1875, when he was transferred from Glasgow to Liverpool as Chief Surveyor for the West and South of England, including London, being further promoted in the following year to be Chief Surveyor for the United Kingdom, an office specially created at this time. He retained this responsible position until the amalgamation of the Underwriters' Registry for Iron Vessels with Lloyd's Register of British and Foreign Shipping in 1885. Mr. West then decided to engage in independent practice as a consulting engineer and naval architect in Liverpool, where his long and well-established reputation as a professional adviser and expert in engineering and shipbuilding questions, as well as his intimate acquaintance with shipowners, brought him an extensive professional connection.