

## OBITUARY.

SIR ROBERT RICHARD GALES was born at Littlehampton, Sussex, on the 31st October, 1864, and died in London on the 25th July, 1948. He was educated privately and at the Royal Indian Engineering College, Coopers Hill, and received practical training on the Forth Bridge. In 1886 he was appointed to the Indian Public Works Department, and in 1895 he became Assistant Manager of the North Western Railway, and subsequently Assistant Manager of the East Coast Railway, and Deputy Manager of the Eastern Bengal Railway. In 1903 he was appointed Engineer-in-Chief on the construction of the Curzon Bridge, Allahabad, and in 1906 Engineer-in-Chief of the Coonoor-Ootacamund Railway. In 1908, as Engineer-in-Chief, he superintended the building of the Hardinge bridge over the lower Ganges at Sara, and in 1915, in which year he was created a knight, he became Chief Engineer with the Railway Board of the Government of India. For 2 years prior to his retirement from the Indian Railway service, he acted as agent for the North Western Railway, and in 1919 he became a partner in the firm of Rendel, Palmer, and Tritton, Consulting Engineers, Westminster, with whom he remained until 1937. During his association with the firm he was concerned in the construction of the Uganda railway extension, the Falluja road bridge over the Euphrates, the Lower Zambesi bridge, and other important works.

Sir Robert was elected an Associate Member of The Institution on the 3rd March, 1891, and was transferred to the class of Member on the 13th December, 1904. He served on the Council from November 1917 until November 1919. In 1908 he presented a Paper on "The Curzon Bridge at Allahabad,"<sup>1</sup> for which he was awarded a Telford Premium, and in 1917 a Paper on "The Hardinge Bridge over the Lower Ganges at Sara,"<sup>2</sup> for which he received an Indian Premium and a Telford Gold Medal. For his Paper on "The Principles of River Training for Railway Bridges, and their Application to the Case of the Hardinge Bridge over the Lower Ganges at Sara"<sup>3</sup> presented in 1938, he was awarded an Indian Premium. He was also a Life Member of the American Society of Civil Engineers.

He was unmarried.

SIR CLIFFORD COPLAND PATERSON, F.R.S., was born at Stamford Hill, London, on the 17th October, 1879, and died at Watford on the 26th July, 1948. He was educated at Mill Hill School, the Finsbury Technical College, and Faraday House. In 1901 he entered the National

<sup>1</sup> Min. Proc. Instn Civ. Engrs, vol. clxxiv (1907-08, part iv), p. 1.

<sup>2</sup> *Ibid.*, vol. ccv (1917-18, part I), p. 18.

<sup>3</sup> J. Instn Civ. Engrs, vol. 10 (1938-39), p. 133 (Dec. 1938).

Physical Laboratory as principal assistant, responsible for the Electro-technical and Photometric Departments. During the first world war he was concerned in the development of the Paterson-Walsh electrical height-finder for the automatic recording of the height of aircraft. In 1919 he joined the General Electric Company Limited, to establish and direct the Company's Research Laboratories which, under his guidance, developed into the largest of their kind in the country. He was appointed to the Board of the Company in 1941. He acted as Chairman of the Illumination Committee of the Department of Scientific and Industrial Research; the Department Committee on Navigation Lights, and the General Council of the British Standards Institute. He also served as a member of the Home Office Committee on Factory Lighting; the Departmental Committee, Ministry of Transport, on Street Lighting; and the Ministry of Production Engineering Advisory Committee. During the war of 1939-45 he co-ordinated the activities of a number of teams working on developments in the use of high radio frequencies with practical applications to new weapons of attack and defence. He received the award of O.B.E. in 1919, became a Fellow of the Royal Society in 1942, and was created a knight in 1946.

Sir Clifford was elected an Associate Member of The Institution on the 10th January, 1905, and was transferred to the class of Member on the 28th January, 1919. He was awarded the James Alfred Ewing Medal in 1946 for his work in engineering research. He was a Past-President of The Institution of Electrical Engineers; the International Illumination Committee; the Institute of Physics; the Electrical Research Association; the Junior Institution of Engineers; and the Illuminating Engineering Society of America. He also served as Vice-President of the Royal Institution, and of the Society of Arts. He was a prolific contributor to scientific societies. In 1933 he was Faraday Lecturer of The Institution of Electrical Engineers which also awarded him the Faraday Medal in 1945. He was Guthrie Lecturer of the Physical Society in 1937, and Huxley Lecturer at Birmingham University. The last of his many honours, the Gold Medal of the Illuminating Engineering Society of America, was awarded to him one week before his death.

In 1905 he married Eleanor Daisy Ogden and had two sons and one daughter.

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