

pursuits and to active participation in local affairs. He was keenly interested in astronomy and was also an enthusiastic and able meteorologist and a Fellow of the Royal Meteorological Society. His daily records of rainfall and other meteorological conditions at Beckford, extending over a period of 22 years, were compiled with painstaking care and accuracy; and he was well versed in many branches of natural knowledge, to the pursuit of which he brought a trained observation and a keen enjoyment of outdoor life. He died at Beckford, near Tewkesbury, on the 1st December, 1905, in his eighty-second year. In private life his wide culture and attractive personal qualities rendered their possessor a welcome acquisition in social gatherings and endeared him to a large circle of friends.

Mr. Slade was elected an Associate of the Institution on the 5th December, 1876, and was subsequently placed in the class of Associate Members.

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THOMPSON WHITWORTH, born at Batley, Yorkshire, on the 19th May, 1857, served his apprenticeship to Messrs. W. and J. Cardwell, Engineers, of Dewsbury, and, after gaining experience as a draughtsman with Messrs. Greenwood and Batley, of Leeds, he obtained an appointment as Engineer and Assistant Manager to Messrs. Darley and Butler, at Tuticorin, Southern India. He served three years in this capacity, from 1881 to 1884, when, as the climate did not agree with him, he returned home, and for a short period acted as Chief Assistant Engineer to Messrs. Barford and Perkins, of Peterborough. During 1887 he obtained experience of American engineering methods as Assistant Engineer on the staff of the New Jersey Steel and Iron Company, being employed on the design of bridges and other work. Returning to England in the following year, Mr. Whitworth was employed by various firms in the design, erection, and inspection of mining and other machinery, in connection with which he undertook a voyage to Western Australia, and also on two occasions served on the staff of Messrs. S. Pearson and Son, Contractors, first as Mechanical Engineer and Sub-Agent on the Thames Tunnel Works at Blackwall, and afterwards as their managing Mechanical Engineer for the reconstruction of the Wouldham Cement Works, which the firm had acquired for the purpose of manufacturing the cement required for their various contracts. For these works, Mr. Whitworth designed improved appliances for handling and storing cement, which proved

successful and economical in operation. He died on the 30th May, 1905, aged 48.

Mr. Whitworth was elected an Associate Member of the Institution on the 7th March, 1893.

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REAR-ADMIRAL SIR WILLIAM JAMES LLOYD WHARTON, K.C.B., late Hydrographer to the Admiralty, died of enteric fever and pneumonia at Cape Town on the 29th September, 1905, aged 62. Born on the 2nd March, 1843, the subject of this notice was educated at Gosport and entered the Royal Navy as a cadet in August, 1857. In March, 1865, he was confirmed in the rank of lieutenant and appointed to the "Gannet," in which he acquired his first experience of the surveying service and received the commendation of the Admiralty for the zeal displayed by him in the work performed in the Bay of Fundy. He was promoted to commander in March, 1872, and placed in command of the surveying vessel "Shearwater," first on the Mediterranean station and afterwards on the east coast of Africa. In the course of his work in the Mediterranean, he made a valuable contribution to science in the form of an investigation of the surface and undercurrents in the Bosphorus. During his subsequent commission of the "Fawn," he did excellent work in training his staff for the surveying service and succeeded in winning their personal regard and esteem as well as in imbuing them with something of his own untiring energy and devotion to duty. In 1880 he was promoted to the rank of captain, and during an interval of leisure which followed he published his "Hydrographical Surveying," which soon became recognized as the standard work on the subject. He next undertook and successfully completed some very arduous and difficult surveying work in the River Plate and Straits of Magellan, returning to England in 1884, when he received the appointment, in succession to Captain Sir Frederick Evans, of Hydrographer to the Admiralty. Captain Wharton directed the work of the hydrographic department with conspicuous ability for 20 years, a period of great and continuous expansion both in the *personnel* and *matériel* of the fleet, and of corresponding development in the hydrographic service. In accordance with the regulation respecting non-service at sea he was placed on the retired list in 1891. In 1895 he was promoted to Rear-Admiral and made a C.B., and on the occasion of the Diamond Jubilee, in 1897, he was created K.C.B. He retired from the office of Hydrographer in July, 1904.