

## Calendar of Industrial Pioneers.

**September 17, 1823.** Abraham Louis Breguet died.—The foremost horologist of his day, Breguet was born in Switzerland in 1747, but at an early age removed to Paris, where he became a member of the Bureau des Longitudes and of the National Institute. He is remembered for his improvements in the escapement of watches and his invention of the sympathetic pendulum and of a sensitive metallic thermometer.

**September 17, 1869.** John Elder died.—One of the greatest marine engineers, Elder was trained under his father, David Elder, at Napier's. In 1852, at the age of twenty-eight, he joined the engineering firm of Randolph Elliott and Co. and became the virtual founder of the great firm at Govan known since 1886 as the Fairfield Shipbuilding and Engineering Co. He was one of the first engineers to grasp the importance of the new science of thermodynamics, and he successfully introduced the use of the compound engine at sea, thereby effecting a saving of 30 to 40 per cent. of the coal burnt. The Elder chairs of naval architecture at Glasgow and at Liverpool were founded respectively by his widow and his brother Alexander, who died in 1915.

**September 17, 1895.** Johann Sigismund Schuckert died.—After working as a mechanic in various towns of Germany, Schuckert spent some years in America, where he became acquainted with Edison, and on his return home, in 1873, set up a workshop at Nürnberg. He then began the manufacture of dynamos and other electrical machinery, and became one of the best-known electrical engineers in Germany.

**September 18, 1860.** Joseph Locke died.—Born near Sheffield in 1805, Locke gained his first experience of railway engineering under George Stephenson on the Manchester and Liverpool Railway. Afterwards by himself, or with his partner Errington, he built many of the early railways, including those between Manchester and Sheffield, and London and Southampton, and the line from Paris to Rouen and Havre. His railways were notable for the absence of great and expensive works. From 1857 till his death he was President of the Institution of Civil Engineers.

**September 19, 1899.** Léon Bourdelles died.—An engineer of the Corps des Ponts et Chaussées, Bourdelles rose to be head of the Lighthouse Department, in which situation, by the display of uncommon energy and resource, he revolutionised the lighting of the French coast, increasing the aggregate candle-power from 4,000,000 to nearly 100,000,000 without increasing the annual cost.

**September 20, 1885.** Walter Weldon died.—The son of a Loughborough manufacturer, Weldon became a journalist in London. Turning his attention to practical chemistry, he sought means of recovering the manganese peroxide used in the manufacture of chlorine, and about 1868 patented the lime-manganese process, which reduced the cost of bleaching powder by 6*l.* a ton and added something like 750,000*l.* per annum to the national wealth.

**September 22, 1852.** William Tierney Clark died.—A well-known civil engineer, Clark for forty years was engineer to the Middlesex Water Works. His masterpiece was the great bridge erected across the Danube at Budapest in 1839-49 at a cost of 622,000*l.*

**September 23, 1878.** John Penn died.—For many years Penn was the leading marine engine builder on the Thames. He invented the lignum vitæ stern bush bearing for screw ships, and during the Crimean War he organised the manufacture of the engines for gunboats, completing 90 sets of engines of 60 n.h.p. each in ninety days, the first example of mass production of machinery for warships. E. C. S.

## Societies and Academies.

PARIS.

**Academy of Sciences, August 16.**—M. Emile Roux in the chair.—M. de Sparre: Remarks on the depressions resulting from a breakage in a water main under pressure.—Kyrille Popoff: The integration of the equations of ballistics under general conditions of resistance.—Pierre Auger and Francis Perrin: The shocks between  $\alpha$ -particles and atomic nuclei. An application of a modification of C. T. R. Wilson's method of studying the paths of  $\alpha$ -rays. Photographs of the paths were taken with two cameras at right angles to each other, and details of results in argon and in hydrogen are given. For argon the value of the atomic number calculated from the results of the observations is 19 (instead of 18).—I. Newton Kugelmass: A new apparatus, the nephelometer. The change in the transparency of a colloidal solution is measured by the deflection of a millivoltmeter connected with a thermocouple. The light from an electric lamp, after passing through a cell containing distilled water, is allowed to fall on the thermocouple for a fixed time, and the deflection of the millivoltmeter measured (*I*). The water is then replaced by the colloidal solution and the deflection (*I'*) measured under the same conditions. The ratio  $I'/I$  gives the transparency index.—A. Marcelin: Measurement of the pressure of "superficial fluids." Detailed study of oleic acid.—F. Granel: The morphological signification of the pseudobranch of the teleosts.

## Official Publications Received.

Union of South Africa. Department of Mines and Industries: Geological Survey. The Geology of the Country around Heidelberg. By Dr. A. W. Rogers. Pp. 84. The Geological Map of the Country around Heidelberg. (Pretoria: Government Printing and Stationery Office.) Price, including Map, 8*s.* 6*d.*

Air Ministry: Meteorological Office. British Meteorological and Magnetic Year Book, 1918. Part IV.: Hourly Values. From Autographic Records, 1918. Pp. 73. (London: H.M. Stationery Office.) 1*7s.* 6*d.* net.

Sultanic Agricultural Society: Technical Section. Bulletin No. 1: A Survey of the more Important Economic Insects and Mites of Egypt. By F. C. Willcocks. Pp. viii+483. (Cairo: Sultanic Agricultural Society.)

Guide to the Australian Ethnological Collection exhibited in the National Museum of Victoria. By Sir Baldwin Spencer. Third edition. Pp. 142+33 plates. (Melbourne.)

Edinburgh and East of Scotland College of Agriculture. Calendar for 1922-1923. Pp. 77. (Edinburgh.)

The North of Scotland College of Agriculture. Calendar, Session 1922-23. Pp. viii+145. (Aberdeen.)

The North of Scotland College of Agriculture: County Extension Department. Report on County Extension Work, 1921-22. Pp. iv+52. (Aberdeen.)

Ministerio da Agricultura, Industria e Commercio: Directoria de Meteorologia. Boletín Meteorológico: Anno de 1914. Pp. vi+121. (Rio de Janeiro.)

Imperial Department of Agriculture for the West Indies. Report of the Agricultural Department, Antigua, 1920-21. Pp. iv+19. (Barbados.) 6*d.*

Memoirs of the Indian Meteorological Department. Vol. 23, Part 4: The Effects of Oscillations and of "Lag" on the Readings of the Kew Pattern Barometer. By Dr. E. P. Harrison. Pp. 137-144+2 plates. (Calcutta: Government Printing Office.) 1-8 rupees; 2*s.*

Report on the Operations of the Department of Agriculture, Madras Presidency, for the Official Year 1920-21. Pp. ii+28+4. (Madras: Government Press.) 4 annas.

Report of the Government Chemist upon the Work of the Government Laboratory for the Year ending 31st March 1922: With Appendices. Pp. 33. (London: H.M. Stationery Office, 1922.) 1*s.* 6*d.* net.

Museums of the Brooklynn Institute of Arts and Sciences. Report upon the Condition and Progress of the Museums for the Year ending December 31, 1921. By Wm. Henry Fox. Pp. 56. (Brooklynn, N.Y.)

Rendiconti delle Sessioni della R. Accademia delle Scienze dell' Instituto di Bologna. Classe di Scienze Fisiche. Nuova serie, Vol. 24, 1919-20. Pp. 152+xxviii. Nuova serie, Vol. 25, 1920-21. Pp. 155+xxxvi.

Prospectus of University Courses in the Municipal College of Technology, Manchester. Session 1922-23. Pp. 219. (Manchester.)

Air Ministry: Meteorological Office. International Meteorological Committee. Report of the Eleventh Ordinary Meeting, London, 1921: And of Meetings of the Commissions for Weather Telegraphy, Maritime Meteorology, Aerial Navigation, Réseau Mondial, and Polar Meteorology. (M.O. 248.) Pp. 128. (London: H.M. Stationery Office, 1922.) 4*s.* 6*d.* net.