

Calendar of Industrial Pioneers.

February 2, 1876. Evan Leigh died.—The author of many improvements in cotton machinery and the writer of "The Science of Modern Cotton Spinning" (1871), Leigh was also known as one of the earliest advocates of twin-screw propellers for steamships.

February 2, 1906. Samuel Cunliffe Lister, first Baron Masham, died.—A worsted spinner and manufacturer, Lister took out more than 150 patents, among them being his wool-combing machines and his method of utilising silk waste. The wool-combing machine of the 'fifties cheapened cloth, advanced Bradford's prosperity, and created the Australian wool trade, while by his second great invention he converted what was regarded as useless into a valuable and beautiful material. He was raised to the peerage in 1891.

February 2, 1913. Carl Gustav Patrik de Laval died.—Born at Blosenberg, Sweden, in 1845, de Laval graduated at Upsala University, engaged in practical work, and in 1875 became engineer to the Kloster-verken Iron Works. A year or two later he brought out his cream separator, an apparatus now in use throughout the world. Turning his attention to the invention of a steam turbine, he first applied the use of diverging nozzles, discs rotating at a great velocity, and high-speed tooth-gearing. In 1897 he exhibited a turbine supplied with steam at 1500 lb. pressure.

February 3, 1893. James Edward Henry Gordon died.—An original investigator, Gordon worked in Maxwell's laboratory at Cambridge, and in 1880 published "A Physical Treatise on Electricity and Magnetism." He afterwards became connected with some of the pioneer electrical installations in London.

February 4, 1882. Sir William Palliser died.—While an undergraduate at Cambridge Palliser began his study of rifled ordnance and projectiles, and afterwards, when in the Army, became known for his invention of a method of converting smooth bores into rifled guns and his introduction of chilled cast-iron shot.

February 4, 1884. George Auguste Leschot died.—An eminent Swiss horologist, Leschot was one of the first to introduce machinery for making the parts of watches and to make such parts interchangeable. He was also the first to propose the use of the black diamonds of Brazil for the boring of rocks, and with another Geneva mechanic made the first diamond-pointed drill.

February 6, 1877. George Parry died.—Though commencing life as a grocer's assistant, Parry studied the chemistry of iron manufacture, and in 1848 became chemist to the Ebbw Vale Works, where he worked at the utilisation of waste gases, tried Nasmyth's idea of puddling with steam, and made many early experiments in connection with the Bessemer process.

February 7, 1866. David Elder died.—One of the earliest builders of marine steam engines, Elder in 1821 became manager to Robert Napier at Camlachie. He introduced many improvements in his engines, and was one of the first to use steam expansively.

February 7, 1879. Bennet Woodcroft died.—The son of a Lancashire merchant and a pupil of Dalton, Woodcroft became a silk and muslin manufacturer and made valuable improvements in looms and patented various forms of screw propellers. From 1847 to 1851 he was professor of machinery in University College, London, and on the passing of the important Patents Act of 1852 became superintendent of patent specifications. In 1864 he became Clerk to the Commissioners of Patents. He was mainly responsible for starting the Patent Office Library and the Patent Office Museum. E. C. S.

Societies and Academies.

LONDON.

Royal Society, January 26.—Sir Charles Sherrington, president, in the chair.—W. A. Bone, A. R. Pearson, E. Sinkinson, and W. E. Stockings: Researches on the chemistry of coal. Pt. 2: The resinic constituents and coking propensities of coals. Prolonged extraction of eight selected coals by typical resin-solvents in a Soxhlet apparatus has no appreciable effect upon their coking propensities, which therefore cannot be ascribed to the presence of free resins. A resin isolated by a new method from two typical bituminous coals has a molecular weight of about 450, agreeing with the empirical formula $C_{31}H_{32}O_3$; its properties correspond with those of a resene in Tschirch's classification of resins. The usual pyridine-chloroform method of extracting coals does not effect a complete separation between the resinous constituents and the degradation products of the cellulose of which coal is conglomerated. It yields an admixture of resins with a predominance of non-resinous substances of cellulosic origin, provisionally designated "humic" bodies. These substances may amount to 4 per cent. of the coal substance. The strong coking propensities of some coals are principally due to the presence, or formation in them by heat, of such non-resinous "humic" substances of cellulosic origin the fusion temperatures of which are below those at which they undergo rapid decomposition; the more complex substances of cellulosic origin, which form the main portion of the coal substance and decompose without fusion, have little or no influence upon the coking properties.—J. A. Crowther and B. J. Schonland: The scattering of β -rays. The scattering of a homogeneous beam of β -rays has been measured for various elements, and at various angles with the beam. The results obtained are compared with the nuclear theory of scattering of Sir Ernest Rutherford, a correction being applied to allow for the variation of the mass of the β -particle with velocity. Scattering is due to single encounters between the β -particle and the deflecting particles as postulated by the theory until the thickness of the scattering material reduces the radiation to half value. The scattering by gold is in numerical agreement with the theory when measured at very small angles with the primary beam. It increases rapidly as the angle is increased, and finally attains a value approximately four times that given by the theory. This high value is given by the lighter elements at all the angles investigated. Present theories of scattering require modification when the collisions between the β -particle and the deflecting nucleus are closer than a certain critical distance which is of the order of 10^{-10} cm. in the case of gold.—Ann C. Davies: The minimum electron energies associated with the excitation of the spectra of helium. The lines of the orthohelium and parhelium series are simultaneously excited when ionisation of the helium atom has occurred. The limiting voltages for excitation are 20.4 and 25.2, according to whether ionisation by multiple impacts can occur or not. The corresponding voltages in the case of the enhanced line $\lambda 4686$ are 54.2 and 80.0 respectively. This line can also be excited from the helium positive ion without further ionisation of the atom at 50.8 volts, the value deduced from Bohr's theory. The minimum voltage for the appearance of the helium band spectrum is 20.4, and the conditions indicate that it is emitted by He_2 molecules. Orthohelium and parhelium lines and the band spectrum are maintained as the voltage is backed down to 13 volts at high pressures.—C. N. Hinshelwood, H. Hartley, and