

Calendar of Industrial Pioneers.

September 24, 1852. John Barnes died.—From 1822 to 1835 Barnes was a partner with Joseph Miller, the marine engineer, and as such assisted in introducing steam navigation on the Rhône and Saône. He afterwards designed engines for vessels built by Normand of Havre, among these being the *Napoléon*, the first screw ship in the French Navy. At the time of his death he was manager of works at La Ciotat near Marseilles.

September 24, 1908. Sir Samuel Canning died.—Born in Wiltshire in 1823, Canning, after some years of railway engineering, joined the firm of Küper and Co., cable makers, of Greenwich, in 1852, and from that time onwards was intimately associated with the development of submarine telegraphy. He took part in the attempt to lay the Atlantic Cable in 1857 and 1858, and as chief engineer of the Telegraph Construction and Maintenance Company he had charge of the making and laying of the second and third Atlantic cables of 1865 and 1866. He was responsible for fitting out the *Great Eastern* and originated much of the cable machinery.

September 25, 1910. Edward Pritchard Martin died.—President of the Iron and Steel Institute and of the Institution of Mechanical Engineers, Martin was a metallurgist who, while manager of the Blaenavon Iron Works, was the first to give facilities for trying on a commercial scale the Thomas-Gilchrist process of dephosphorisation in steel-making. Martin was the son of a mining engineer of the Dowlais Iron Works, and was himself manager of those works from 1882 to 1902.

September 29, 1913. Rudolph Diesel died.—Diesel was born in Paris of German parents on March 15, 1858. He attended school in Augsburg, and at an early age became an assistant to Linde and directed works in Paris where Linde's refrigerators were constructed. Attacking the problem of making a prime mover of higher efficiency than hitherto existed, in 1893 he published "The Theory and Construction of a Rational Heat Motor," and the same year built his first experimental engine. After further trials the manufacture of Diesel engines was taken up by various firms, and to-day they are found in every part of the world. Their superior economy has led to their being fitted in ships; the s.s. *Toiler*, driven by two Diesel engines, crossed the Atlantic in 1911, while to-day more than 1600 vessels of a total tonnage of 1,500,000 tons are driven by internal combustion engines mainly of the Diesel type.

September 30, 1719. Bernard Renau d'Elicagaray died.—The author of a treatise "Théorie de la manœuvre des vaisseaux," published in 1689, Renau d'Elicagaray, as a naval officer, saw service afloat and ashore, and at Brest introduced new methods of shipbuilding. He took a leading part in the development of the French Navy under Louis XIV.

September 30, 1772. James Brindley died.—A native of Derbyshire, where he was born in 1716, Brindley served an apprenticeship to a millwright, and afterwards in business in Staffordshire for himself gained a reputation for his ingenuity and skill. For the Duke of Bridgewater he constructed the first British canal, that from Worsley to Manchester. This was completed in 1761, but before Brindley died he had built 365 miles of canal, including the Grand Trunk Canal from the Trent to the Mersey, thus laying the foundation of the British system of inland navigation.

E. C. S.

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Societies and Academies.

PARIS

Academy of Sciences, August 21.—M. Emile Roux in the chair.—Paul Vuillemin: Disjunction and combination of the characters of the parents in a hybrid. Study of a hybrid of *Aquilegia cœrulea* and *A. chrysantha*.—N. Lusin and W. Sierpinski: The decomposition of the continued fraction.—H. Mineur: A class of uniform transcendentals.—H. A. Perkins: The resistance of thin electrified conducting layers. Experimental study of the effect of an electrostatic charge on the resistance of thin gold film. The film formed one plate of a condenser, and no change in the resistance could be measured with or without an electrostatic charge of 2.7 C.G.S. electrostatic units (800 volts).—F. W. Klingstedt: The ultra-violet absorption spectra of the diphenols. A quantitative study of the normal absorption spectra of the dihydroxybenzenes, made with the Fabry and Buisson microphotometer on photographs taken by V. Henri's method. The meta- and ortho-derivatives have spectra very like that of phenol, but the para-compound has eight nearly equidistant bands instead of the three of phenol. The spectra are modified by certain solvents: with alcohol as a solvent it is impossible to recognise the characteristic differences between the para-compound and ortho- and meta-derivatives. Hexane is the best solvent.—H. Gaut and R. Guillemet: The chlorination of normal butyl alcohol. The chief product was found to be the dibutyl acetal of dichlorobutyraldehyde, $C_4H_9Cl_2(O \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_3)$. This acetal is not hydrolysed by aqueous potash, and only slightly hydrolysed by hydrochloric acid or dilute sulphuric acid at 150° under pressure.—G. Vavon and A. L. Berton: The borneol obtained starting with the magnesium compound of pinene chlorhydrate.—G. Murgoci: The properties of the blue amphiboles.—Marcel Mirande: The morphological origin of the internal liber of the Nolanaceæ and the systematic position of this family. The Nolanaceæ have been placed as allied with the Convolvulaceæ or the Solanaceæ: it is shown that this family is well differentiated from the Convolvulaceæ, but may be classified with the Solanaceæ.—A. Guilliermond: Cytological observation on a Leptomitium and in particular on the mode of formation and germination of the zoospores.—Georges Bouvrain: The vascular evolution in *Mercurialis*.—W. J. Vernadsky: Nickel and cobalt in the biosphere. The constant presence of nickel and cobalt in living organisms has not been proved; but they have been found in all cases when specially sought. They have been found in all the mosses studied in the neighbourhood of Kieff, and in nine species of plants from the same district. Cobalt has also been found in *Echium vulgare* from the Crimea, and in the ashes of a domestic mouse.—Louis Boutan: A fine culture pearl without nucleus.

Official Publications Received.

Education Committee for the County Borough of Brighton. Municipal Technical College, Richmond Terrace, Brighton. Day Courses, Session 1922-23. Pp. 61. (Brighton.)

The Journal of the Royal Anthropological Institute of Great Britain and Ireland. Vol. 52, January to June, 1922. Pp. 149+13 plates. (London: Royal Anthropological Institute.) 15s. net.

Durham University Calendar for the Year 1922-23. Pp. 756. (Newcastle-upon-Tyne.) 3s. 6d. net.

Fortschritte der technischen Physik. Vorträge von der zweiten Jahrestagung der Deutschen Gesellschaft für technische Physik in Jena vom 19. bis 25. September 1921. Pp. iv.+111. (Leipzig: J. A. Barth.) 48 marks.