

Calendar of Industrial Pioneers.

April 27, 1885. Joseph d'Aguilar Samuda died.—Entering into partnership with his brother Jacob, Samuda built marine engines, laid down railways worked on the atmospheric principle, and became an eminent builder of iron steamships and armoured men of war. In his works in the Isle of Dogs he introduced labour-saving machinery, and with Reed, Woolley, Scott Russell, and others he helped to found the Institution of Naval Architects.

April 27, 1891. Loftus Perkins died.—Known for his bold experiment of fitting the yacht *Anthraxite* with an engine supplied with steam at 500 lbs. pressure, and for his invention of the "arktos" cold chamber refrigerating apparatus, Perkins was the son of the inventor Angier March Perkins, and the grandson of Jacob Perkins, who came to England from America in 1827 and in 1828 constructed what was probably the first triple compound steam engine.

April 28, 1865.—Sir Samuel Cunard died.—The founder in 1839 of the famous British and North American Royal Mail Steam Packet Company, Cunard was a native of Nova Scotia. His first transatlantic liners were built on the Clyde, while the first passage was made in 1840 by the *Britannia*, a wooden vessel of 1154 tons and 740 horse power, which took 14 days 8 hours to cross. Iron steamers were introduced in 1855, and the paddle wheel abandoned for the screw in the early 'sixties.

April 28, 1914. Robert Kaye Gray died.—After passing through University College, London, Gray became an assistant to Charles Bright, subsequently superintended the laying of many important submarine cables for foreign governments, and became the head of the Telegraph Works Company at Silvertown. He assisted in founding the National Physical Laboratory and served as President of the Institution of Electrical Engineers.

May 1, 1895. John Newton died.—Graduating from the United States Military Academy in 1842, Newton was employed on engineering duties and saw active service during the Civil War. He was afterwards responsible for the improvement of New York harbour, and during the removal of the notoriously dangerous rocks at Hell Gate solved many new problems.

May 2, 1857. Frederick Scott Archer died.—The discoverer of the collodion process in photography, Scott started life as a silversmith and then became a sculptor. It was while trying to obtain pictures of his work that he made his noteworthy discovery.

May 3, 1888. Sir Charles Tilston Bright died.—A most eminent telegraph engineer, Bright in 1847 at the age of fifteen, through Cooke, entered the Electric Telegraph Company, and in 1856 with Brett and Cyrus Field initiated the movement for an Atlantic Submarine Cable. Appointed engineer to the Atlantic Cable Company he was on board the U.S.S. *Niagara*, which jointly with H.M.S. *Agamemnon* laid the first cable from Valentia to Newfoundland, and in 1858 he was knighted. Bright afterwards carried out important cable work in the Mediterranean, in the Persian Gulf, and in the West Indies. One of the original members of the Institution of Electrical Engineers, he served as president of the society in 1886-87.

May 3, 1909. Thomas Aldridge Weston died.—The inventor of many things, Weston was known all the world over for his differential pulley block and lifting tackle, a simple contrivance of great usefulness. Born in Birmingham in 1832 he was for a time associated with the firm of Tangye, but his later years were spent with the Brown Hoisting Machinery Company of Cleveland, Ohio. He died in New York.

E. C. S.

Societies and Academies.

LONDON.

Optical Society, April 6.—Sir Frank Dyson, president, in the chair.—H. H. Emsley and E. F. Fincham: Diffraction haloes in normal and glaucomatous eyes. Every normal eye, under appropriate conditions, sees diffraction rings or haloes encircling bright sources of light. Similar haloes are seen by eyes in certain abnormal pathological conditions, particularly in the case of eyes suffering from glaucoma. Tests are specified by means of which the different phenomena in the two cases may be identified.—E. W. Taylor: The effect of changes of surface curvature at the focus of an astronomical object glass. The balancing of the components of a large object glass is difficult, and the effect at the focus of a similar alteration of curvature at each of the four surfaces is different. If the effect of an alteration at each surface is known, the one most suitable may be chosen, having regard to the nature of the aberration to be overcome.

PARIS.

Academy of Sciences, March 27.—M. Emile Bertin in the chair.—The president announced the death of M. Louis Ranvier, member of the section of Anatomy and Zoology.—E. Goursat: A classical theory of Cauchy. Comments on two recent communications by M. Mittag-Leffler.—H. le Chatelier: The manufacture of soda with ammonia. A discussion by a graphical method of the bearing of some experiments of M. Toporescu (see below) on the ammonia soda process.—C. Richet, Eudoxie Bachrach, and H. Cardot: Studies on the lactic fermentation. Memory in micro-organisms. Culture of the lactic bacillus is made for one day in a medium containing traces of three poisons (arsenate, cadmium, copper) and then seven successive daily inoculations are cultivated on normal media. The strain of organism thus produced is sensitive to the action of each poison. The authors conclude that when two cultures of micro-organisms of the same species have lived, even for a short time, in slightly different media, they are different from each other.—C. Lallemand: The parabolic wage. The system of wage payment described, which has been tested in practice over a period of 34 years, is based on a formula $S = S_0 + kT^2$, where S_0 is the minimum wage, T the work done, S the actual wage paid, and k a constant. It is in effect a compromise between payment by time and by results. It has been applied in the "Service du Nivellement général de la France" since 1888, with the result that while the wage increased in four years from 6.30 francs to 12.25 francs, the cost per kilometre decreased from 40 to 33 francs.—P. Montel: A theorem of algebra.—G. Giraud: Non-linear partial differential equations of the second order of elliptic type.—P. Lévy: The rôle of the law of Gauss in the theory of errors.—E. Cartan: Generalised conformal space and the optical universe.—A. Planiol: Study of the friction losses in internal combustion motors. Experiments were carried out on a specially constructed 30 H.P. gas engine by three methods differing in principle. The results showed that the resisting couple of the motor due to friction was a linear function of the mean pressure shown by the indicator diagram. The constants obtained were shown to apply to another (35 H.P.) gas engine, and hence it is found possible to calculate the field of an internal combustion engine without taking indicator diagrams.—H. Roussilhe: The applications

of aerial photography and the photo-restitution apparatus.—H. Chaumat: A new wattmeter.—O. Liévin: The kinetic study of alkaline solutions of iodine. In alkaline solutions, iodine is transformed into iodate by different reactions depending on the degree of alkalinity.—E. Toporescu: The preparation of sodium bicarbonate. An experimental study of the reaction $\text{NaCl} + \text{NH}_4\text{HCO}_3 = \text{NaHCO}_3 + \text{NH}_4\text{Cl}$. The solubilities of the salts at 15° C. were taken first singly, then in pairs, and finally omitting one constituent only. The results are plotted on the square diagram due to M. H. le Chatelier (see above).—A. Mailhe: The catalytic decomposition of oleic acid. The vapour of oleic acid passed over copper-aluminium pellets contained in a copper tube maintained at 600°-650° C. gives a gas rich in olefines (10 per cent.) and an acid liquid. The hydrocarbons, freed from acids, commenced to distil at 40° C. (amylene) and contained about 50 per cent. of olefines. These were removed by hydrogenation over nickel at 180°-200° C., and hexane, heptane, benzene, toluene, metaxylene, and nonane were identified in the resulting hydrocarbon mixture.—A. Schoep: Stasite, a new mineral, dimorphous with dewindite. This was obtained from a chalcophile from Kasolo (Katanga, Belgian Congo), and analyses led to the formula $4\text{PbO} \cdot 8\text{UO}_3 \cdot 3\text{P}_2\text{O}_5 \cdot 12\text{H}_2\text{O}$, which is identical with the composition of dewindite, from which, however, the new mineral differs in its density, colour, and the form of its crystals. Its radioactivity is a little less than that of dewindite.—L. Blaringhem: Abnormal heredity of the colour of the embryos of a variety of pea, *Pisum sativum*. Certain strains of pea, like hordeum and flax, present striking irregularities in the transmission of discontinuous characters.—H. Ricome: The elongation of roots.—M. Molliard: A new acid fermentation produced by *Sterigmatocystis nigra*. The products can be made to vary by changing the constituents of the culture fluid. If the nitrogen is deficient *d*-glucosic acid is the main acid produced; if the phosphates are reduced, then citric and oxalic acids preponderate.—J. Pellegrin: A new blind fish from the fresh waters of western Africa. This belongs to a new genus named *Typhlosynbranchus* by the author. The character of the branchial apparatus places it in the family of *Synbranchus*.—A. Lécaillon: The characters of a male hybrid arising from the union of a male duck (*Dafila acuta*) and female wild duck (*Anas boschas*).—P. Cristol: Zinc and cancer. The proportions of zinc in various forms of cancerous tumours have been estimated. The preliminary results show that the high proportion of zinc found in cancerous tumours is a function of the proliferation and the cellular and nuclear activity.—J. Mawas: The lymphoid tissue of the middle intestine of the Myxinoidea and its morphological signification.—C. Bourguignon: The treatment of contraction by electrical stimulation of the non-contracted muscles in the lesions of the pyramidal bundle and in the secondary contraction of peripheral facial paralysis. Evolution of the chronaxy in the course of the treatment.—C. Levaditi and A. N. Martin: The preventive and curative action in syphilis of the acetyl derivative of oxyaminophenylarsinic acid (sodium salt). This salt has been shown to be stable, very soluble, rich in arsenic and relatively slightly toxic, and has been used with effect in the cure by injection of experimental syphilis of the rabbit. The present experiments deal with administration by the mouth and not by injection, and it was proved that this salt would cure experimental syphilis rapidly in the rabbit and the ape. Two cases in man were successfully cured in the same way, and its preventive action was also shown on the human subject.

Official Publications Received.

- The Journal of the Royal Anthropological Institute of Great Britain and Ireland. Vol. 51. July to December 1921. Pp. xii+289-462 +13+27. (London: Royal Anthropological Institute.) 15s. net.
- Transactions of the Geological Society of South Africa. Vol. 24: Containing the Papers read during 1921. Pp. iv+252+13 plates. (Johannesburg: Geological Society of South Africa.) 42s.
- Madras Fisheries Department. Administration Report for the Year 1920-21. (Report No. 1 of 1922. Madras Fisheries Bulletin, Vol. 15.) Pp. 44. (Madras: Government Press.) 4 annas.
- Proceedings of the Indian Association for the Cultivation of Science. Vol. 7, Parts 1 and 2. Pp. 59. (Calcutta.) 4 rupees; 6s. 6d.
- The South African Journal of Science. Vol. 18, Nos. 1 and 2: Comprising the Report of the South African Association for the Advancement of Science, 1921, Durban. Pp. xxxviii+200. (Johannesburg.) 15s.
- Canada. Department of Mines: Mines Branch. Summary Report of Investigations made by the Mines Branch during the Calendar Year ending December 31, 1920. Pp. 87. (Ottawa: F. A. Acland.)
- Reports of the Department of Conservation and Development, State of New Jersey. Annual Report for the Year ending June 30, 1921: Department of Conservation and Development, Administering Geology, Soils, Water Resources, Forestry, Forest Fire Service, State Museum, Testing Laboratory, State Parks, Land Registry. Pp. 105. (Trenton, N.J.)
- Sudan Government. Wellcome Tropical Research Laboratories, Khartoum. Report of the Government Chemist for the Year 1921. (Chemical Section: Publication No. 22.) Pp. 38. (Khartoum.)
- Jahrbuch der Geologischen Staatsanstalt. Jahrgang 1921, 71 Band. 1 und 2 Heft. Pp. 100. 3 und 4 Heft. Pp. vii+101-224. (Wien: Geologischen Staatsanstalt.)
- Verhandlungen der Geologischen Staatsanstalt. Jahrgang 1921. Nr. 1 bis 12 (Schluss). (Wien: Geologischen Staatsanstalt.)

Diary of Societies.

FRIDAY, APRIL 28.

- ZOOLOGICAL SOCIETY OF LONDON, at 4.—Anniversary Meeting.
- ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—F. G. Royal-Dawson: The Need of an All-India Gauge Policy.
- PHYSICAL SOCIETY OF LONDON (at Imperial College of Science and Technology), at 5.—T. Smith: The Position of Best Focus in the Presence of Spherical Aberration.—F. Twyman and J. Perry: The Determination of the Absolute Stress-variation of Refractive Index.—C. J. Smith: An Experimental Comparison of the Viscous Properties of (a) Carbon Dioxide and Nitrogen Oxide, and (b) Nitrogen and Carbon Monoxide.—F. Twyman: Demonstration of the Optical Sonometer.
- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Sir Arthur Keith: Demonstration of Museum Specimens illustrating the Forms of Inguinal Hernia.
- ROYAL SOCIETY OF MEDICINE (Study of Disease in Children Section), at 5.—Sir Robert Jones: Presidential Address.
- INSTITUTION OF AERONAUTICAL ENGINEERS (at Engineers' Club, Coventry Street, W.1), at 6.—Capt. Sayers: Some Unsettled Problems of Aeroplane Design.
- INSTITUTE OF MARINE ENGINEERS, at 6.—Annual Meeting.
- INSTITUTION OF MECHANICAL ENGINEERS, at 6.—Prof. E. G. Coker and Dr. K. C. Chakko: An Account of some Experiments on the Action of Cutting Tools.
- JUNIOR INSTITUTION OF ENGINEERS, at 8.—Capt. H. Whittaker: Some Notes on the Utilisation of Water Power.
- ROYAL SOCIETY OF MEDICINE (Epidemiology Section), at 8.—Dr. F. Dittmar: Outbreaks of Enteric Fever associated with Carrier Cases.
- ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Dr. A. Harden: Vitamin Problems.

MONDAY, MAY 1.

- ROYAL INSTITUTION OF GREAT BRITAIN, at 5.—Annual Meeting.
- INSTITUTE OF ACTUARIES, at 5.—E. H. Brown: The Valuation of Endowment Assurances by Select Tables.
- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Prof. Shattock: Demonstration of Museum Specimens illustrating Sarcoma.
- SOCIETY OF ENGINEERS (at Geological Society), at 5.30.—Dr. C. V. Drysdale: The Testing of Small Electrical Plant.
- ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.—Annual General Meeting.
- ARISTOTELIAN SOCIETY (at University of London Club, 21 Gower Street, W.C.1), at 8.—Miss M. MacFarlane: Prof. Alexander's Theory of Values.
- ROYAL SOCIETY OF ARTS, at 8.—F. F. Renwick: Modern Aspects of Photography (1) (Cobb Lectures).
- SOCIETY OF CHEMICAL INDUSTRY (at Chemical Society), at 8.
- ROYAL SOCIETY OF MEDICINE (Tropical Diseases and Parasitology Section), at 8.30.—Annual General Meeting.

TUESDAY, MAY 2.

- ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Sir Arthur Keith: Anthropological Problems of the British Empire. Series II: Racial Problems of Africa (2).
- ROYAL COLLEGE OF PHYSICIANS OF LONDON, at 5.—Prof. E. Mellanby: Some Common Defects of Diet and their Pathological Significance (Oliver Sharpey Lectures) (1).
- INSTITUTION OF CIVIL ENGINEERS (Extra Meeting), at 6.—Sir John A. F. Aspinall: Some Post-War Problems of Transport (James Forrest Lecture).
- ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.
- RÖNTGEN SOCIETY (at Institution of Electrical Engineers), at 8.15.