

Calendar of Patent Records.

April 22, 1823.—The first patent for a roller skate was the English one granted to Robert John Tyers, fruiterer of Piccadilly, on April 22, 1823. The skate had a single line of wheels or rollers, which either were of graduated diameter or were so fitted that their lower edges lay on the line of a circle.

April 23, 1784.—The well-known cabinet lock of Joseph Bramah—the first of the revolving barrel type—was patented on April 23, 1784, and remains unaltered to the present day. It was one of the first to give real security against being opened by a false key, but that it, like most locks, could be picked by an expert was proved when the American A. C. Hobbs took up Messrs. Bramah's challenge in 1851 and succeeded in opening the lock, though only after 53 hours' work.

April 23, 1793.—Sir Samuel Bentham—a brother of Jeremy—is one of the most noted of English inventors. His many inventions, not all of which were patented, cover a wide field, but most of his important work was done in connexion with the naval dockyards, where he introduced reforms not only in the methods of shipbuilding but also in office and workshop administration and practice. His most famous patent is No. 1951, dated April 23, 1793, the specification of which is a valuable treatise on the application of machinery to the working of wood and metal.

April 23, 1884.—April 23, 1884, is the date of Sir Charles Parsons' patents for the steam turbine. The engine was first used for driving dynamos in electricity works, where within a few years its use decreased the coal consumption by one-half. The first application to steamships was in the *Turbinia*, which was built in 1894 and attained a speed of more than 32 knots. The engine of the *Turbinia* is now in the Science Museum.

April 25, 1793.—On April 25, 1793, there was granted to Captain Joseph Huddart a patent for his new method of making rope cable, in which all the yarns are disposed in concentric cylindrical layers about a centre yarn, an arrangement designed to give a more equable distribution of strain upon the yarn.

April 25, 1863.—Linoleum—both the material and the word—was the invention of Frederick Walton, who made his first application for a patent for the new floor-cloth on April 25, 1863. There has been little change in the process of manufacture since its first commercial production at Staines.

April 26, 1814.—The sewing-machine did not become commercially successful until Elias Howe's United States patent of 1846, but there were several prior inventors who can claim consideration. One of these is Josef Madersperger, of Vienna, who applied to the Emperor Francis I. for an Austrian patent for a sewing-machine on April 26, 1814. A patent for six years was granted to him early in the following year, but the machine was never put into practical use. Madersperger's original model was shown at a meeting of the Nied. Oesterreichischer Gewerbe-Verein in 1840 and secured for the inventor the society's medal, but in spite of this recognition Madersperger died in extreme poverty. The model is now in the Technical Museum at Vienna.

April 27, 1879.—Electricity was first used for lighting railway carriages by the London, Brighton, and South Coast Railway, which in 1881 fitted up a Pullman car with an accumulator installation. A system employing a belt-driven dynamo on one of the carriages for supplying current to Geissler tubes throughout the train had, however, been patented in Germany by E. Hinkfuss and Gustav Wesel, engineers of Breslau, on April 27, 1879.

Societies and Academies.

LONDON.

Geological Society, Mar. 20.—Sir Douglas Mawson: Some South Australian algal limestones in process of formation. A record of three different types of limestone, now actually in process of formation under the influence of plant-growth, occurring in the south-eastern region of South Australia. In each of the localities examined, whether inundated in winter only or permanently inundated, the formation of limestone is being determined by blue-green algae.—Arthur W. Groves: The unroofing of the Dartmoor granite, and an outline of the distribution of its detritus in the sediments of southern England. A systematic outline mineralogical survey has been made of the sediments of southern England, from the base of the Permian in Devon (Watcombe Clay) up to the Lenham Beds of the North Downs. The minor intrusions above the granite were being rapidly eroded in Permo-Triassic times, but there is no evidence of the actual granite being exposed at that period. No proof has been obtained of direct derivation of detritus from the Dartmoor granite in the Jurassic rocks. The earliest evidence of the exposure of the granite is in late Wealden times. Throughout Upper Cretaceous times—particularly during the Selbornian epoch—the Dartmoor granite contributed enormous quantities of detritus to the sediments of southern England, reaching as far afield as Kent and Oxfordshire, and perhaps farther. The Cornish Pliocene was largely derived from the Cornish granites. The St. Keverne outlier is mainly derived from the Falmouth and Bodmin masses, and yields no evidence of Dartmoor detritus. A number of new occurrences of dumortierite are recorded.

Society of Public Analysts, April 3.—L. H. Lampitt, E. B. Hughes, and H. S. Rooke: Furfural and diastase in heated honey. Modifications of Fiehe's test and the aniline acetate test for furfural have been devised. If honey gives pronounced reactions with both of these tests it is probably adulterated, unless there is evidence that it has been strongly heated. Such honey has usually been found to be caramelised and unfit for use. Honey contains two diastatic enzymes, for it reacts with starch, yielding both dextrans and reducing sugars. If it is heated above 85° C. its diastatic activity is very rapidly destroyed.—J. W. Haigh Johnson: Further notes on methods of sewage and water analysis; anti-oxidation and stabilisation of pollution. Comparative results on river waters have shown that the Graph Standard method is much to be preferred to the Royal Commission's test. Three main types of biological oxidation curves are recognisable for polluted liquids: (1) Unstable type, characterised by very rapid, fairly uniform absorption of not more than five days' duration, followed by: (2) semi-stable type, having greatly diminished but very uniform oxidation rate, of indefinite duration, until: (3) nitrification supervenes. From one-third to two-thirds of the chemically determined organic matter is recovered from sewage during purification without any appreciable absorption of oxygen. The effect of oxygen is apparently to oxidise unstable substances, whilst semi-stable substances are stabilised and precipitated as a relatively non-oxygen absorbing mud of increasing stability.—B. J. F. Dorrington and A. M. Ward: Potassium cyanate as a reagent for the detection of cobalt. Potassium cyanate reacts with cobalt to form a blue complex. The test, which is most sensitive when the reagent is used in alcoholic solution, will detect cobalt in a one-hundredth molar solution of cobalt nitrate.

EDINBURGH.

Royal Society, Mar. 4.—Hans Przibram: Quanta in biology. The movements of cold-blooded animals follow van 't Hoff's law; so also do many other processes of the living organism. It is suggested that the dissociation of ultimate particles to which the characteristics of life are attached is responsible for the exhibition of this phenomenon. A statistical conception which accounts for the decrease of the temperature coefficient with the raising of the temperature is developed. Przibram's work on the discontinuous growth of the Mantidæ and the conclusions of Koltzoff and Heidenham lead to an attempt to introduce a more systematic notion of fundamental quanta in biology.

PARIS.

Academy of Sciences, Mar. 11.—R. Bourgeois: Concerning the programme of the expedition organised by the Bureau des Longitudes for the observation of the total eclipse of the sun of May 9, 1929. The station chosen for the observatory is the island of Bai-Kan: an outline of the scheme of observations proposed is detailed.—Jules Richard was elected *correspondant* for the Section of Geography and Navigation in the place of the late Roald Amundsen.—Jacob: Addition to the note "The application of the generalised integrals of Fourier to the calculus of probabilities."—A. Th. Masloff: An application of the theorem of Eisenhart.—Bertrand Gambier: Imaginary deformations of real surfaces: cyclic systems.—Marcel Vasseur: The relations between the two focal sheets of a rectilinear congruence.—C. Popovici: Functional equations and their parallelism with differential equations.—Georges Giraud: The solubility of the generalised problem of Dirichlet.—Georges Calugaréano: The calculation of the M exceptional values of integral functions of finite order.—Victor Válcovici: Generalisation of the theorem of Koenig.—Benjamin Jekhovskiy: Calculation concerning the positions of the minor planets.—L. d'Azambuja: The structure of the solar chromosphere.—L. Driencourt: The choice of the projection to be adopted for aerial navigation maps.—Vasilescu Karpen: Demonstration of the relations of Maxwell-Clausius and of Clapyron.—S. Piña de Rubies: The arc spectrum of samarium. Measurements made at the normal pressure between 3100 Å. and 2750 Å.—Jean Savard: The ultra-violet absorption spectra of the ortho-, meta-, and para-cresols.—G. Jausseran: The evolution of the latent image. The relations between the density of the image and the time elapsed between the exposure and the development are shown graphically. The effects of the evolution of the latent image are considerable and must be taken into account in the photographic comparison of two non-simultaneous luminous intensities.—G. Athanasiu: The inversion of the photo-voltaic effect by the OH and H ions.—Eugène Cornec and Henri Krombach: The ternary system: water, sodium nitrate, potassium nitrate. This system has been studied through a wide range of temperatures: a general outline of the results is given.—Horacio Damianovitch: The action of helium upon platinum. The product obtained by the action of helium upon platinum under the influence of a moderate electric discharge at low pressures presents properties clearly distinct from those of the metal itself, and it retains helium in a fairly stable form.—Ed. Bayle and L. Amy: The estimation of the hydrofluosilicic anion and that of fluorine in general.—Marcel Godchot and Mlle. Cauquil: The methylation of cycloheptanone. This ketone, treated with sodium amide and methyl iodide, gives rise to α , α -dimethyl-cycloheptanone and an α -methylcycloheptanone, the first being formed in

relatively small quantity.—M. Battegay, H. Buser, and E. Schlager: A crystallised acetin and diglycide. R. Cornubert and Ch. Borrel: Contribution to the study of the ketonic function.—Mlle. E. Jérémie and P. Fallot: The presence of a variety of jumillite in the neighbourhood of Calasparra (Province of Murcia). Alberto Betim: The theory of Wegener in the light of some geological observations concerning Brazil.—G. Baeckeroot: The extension of the *Pierre de Stonne* in the Grand Duchy of Luxemburg.—Albert Michel Lévy: The existence of a level characterised by touchstones with Radiolaria at the base of the marine Carboniferous, in le Morvan.—M. Couvreur: The general structure of the shells of gastropods.—C. E. Brazier: Actinometric data for the region of Paris from measurements made at the Observatory of Parc Saint-Maur. The average quantity of heat received in one year by one square centimetre of the earth's surface in the climate of Paris is 93 large calories.—Marcel Mascré: New remarks on the fixation of the chondriome of the plant cell.—Guilliermond: New observations on the vital coloration by neutral red in plant cells.—Georges Montandon: An ape of anthropoid appearance in South America.—Ph. Joyet-Lavergne: The relations between metabolism and cytoplasmic sexualisation.—Raymond-Hamet: Tropine and atropine.—René Hazard and Michel Polonovski: The rôle of the tertiary amine function in the dipiperidine nucleus.—Raymond Poisson: *Paracoreomyces Thaxteri*, a parasite of *Stenocorixa protrusa*.—F. Diénert and P. Etrillard: The sterilisation of water by chlorine. The experiments described are opposed to the view that the sterilisation of contaminated water is due to an abiotic radiation, but are in agreement with the older hypothesis of direct action of the chlorine on the micro-organism.

GENEVA.

Society of Physics and Natural History, Feb. 7.—Ed. Parejas: Geological observations in Corsica. (1) The Razzo Bianco near Venaco. The alpine dynamic metamorphism has determined in the limestone elements of the base of the nummulitic conglomerates of Venaco a fibrous texture of the calcite, and this is again met with in the limestones of Razzo Bianco. The latter must therefore have been marbled during the Tertiary Alpine paroxysm. A later and weaker thrust has carried the Razzo Bianco limestones on to the granite.—R. Wavre: A new method in geodesy. The author shows that, starting with a method that he has given in his earlier communications, some important classical results of higher geodesy can be co-ordinated and new results obtained. This method consists essentially in employing a development in a convergent series where Laplace and Poincaré made use of a divergent development. Hence the method conforms to the desideratum formulated by Tisserand. The exact formula for the flattening is also given by M. Wavre.—W. Schopfer: Theoretical remarks on the question of the metabolism of the sexes. The author examines the old theory of the metabolism of the sexes (\varnothing anabolism and σ catabolism); he shows that if, when expressed too rigidly, it appears inexact, nevertheless modern researches give it some experimental support. The sexual metabolic differences occur even in the *Mucorinæ*, where the morphological differentiation of the sexes is scarcely noticeable.

VIENNA.

Academy of Sciences, Jan. 17.—A. Zinke and N. Schniderschitsch: Researches on perylene and its derivatives (22).—A. Pischinger and D. Boerner-

Patzelt: The sarcosome problem. When the surviving thorax muscle of insects was observed fresh, there was no trace of granulations until Ringer's solution was run under the cover-glass. But all sections of fixed insect thorax muscles showed sarcosomes.—H. Hahn: The integral concept.—K. Menger (1): The new definition of arc length.—(2) A further generalisation of the concept of length.

Jan. 24.—A. Tornquist: The perimagnetic lead-copper-silver-zinc ore deposits from Offberg in the Remschnigg.—L. Kober: The Salzberg of Hallstatt.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, Vol. 15, No. 1, Jan. 15).—Arthur G. Scroggie and George L. Clark: The crystal structure of anhydrous silicotungstic acid and related compounds, and their probable molecular formulæ. Acids with 7, 8, and 10 tungsten atoms have been isolated. Those with 8, 10, and 12 tungsten atoms crystallise as body centred cubes, there being a central stabilising SiO_4 group.—Wilder D. Bancroft and H. L. Davis: Binary solutions of consolute liquids.—Herbert J. Brennen: A new equation of state. A mathematical development of van der Waals' equation.—Duncan A. MacInnes and Irving A. Cowperthwaite: The effect of diffusion at a moving boundary between two solutions of electrolytes. In measuring the transfer number of an electrolyte by timing the moving boundaries, interrupting the current for periods up to 30 min. has no effect on the results. The boundary fades away, but gradually reappears on switching on the current. Diffusion occurs, but the potential gradient set up quickly restores the sharp boundary.—Carl Barus: Adiabatic expansion in case of vanishing increments.—Paul S. Bauer: The condition of self-oscillation of a general triode system. A mathematical discussion.—Benedict Cassen: On the symmetry of protonic wave functions.—W. Uytendhoeven: Positive ion currents in the positive column of the glow-discharge in the noble gases.—E. L. Kinsey: Note on the D line excitation by the green sodium band and the dissociation potential of sodium vapour (see *NATURE*, June 9, 1928, p. 904).—Einar Hille and J. D. Tamarkin: On the summability of Fourier series (Second note).—H. S. Vandiver: Summary of results and proof concerning Fermat's last theorem (Third paper).—Dietrich C. Smith: The direct effect of temperature changes upon the melanophores of the lizard *Anolis equestris*. Between 8° and 43° C. their behaviour in isolated pieces of skin is controlled by illumination. Outside these limits, cold generally produces 'expansion,' and further heat 'contraction,' independently of illumination.—Henry B. Ward: Further studies on the influence of a power dam in modifying conditions affecting the migration of the salmon. Sockeye salmon migrating up the Baker River seem to avoid the fish ladder provided at the dam, possibly owing to some bad quality of the water. The down-stream movement of young sockeyes seems to be decreasing; they may be forming a physiologically landlocked race in the artificial lake caused by the power dam.—David I. Macht: Pharmacological synergism of stereoisomers. When the effect of a combination of two or more drugs is different from the added effects of the separate drugs, this is termed synergism. Many drugs show the effect. The different optical forms of nicotine, epinephrin, camphor, hyoscyamin, hyoscin, quinin, and cinchonin were tested. Generally the combination of an optical pair gives a much greater effect than either separately. If animal or plant cells have receptor groups of a lævo and dextro type, mixtures of optical pairs have two points of attack, thus accounting for the effect.

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Official Publications Received.

BRITISH.

- Report of the Department of Industries, Madras, for the Year ending 31st March 1928. Pp. vii+103. (Madras: Government Press.) 12 annas.
- Journal of the Indian Institute of Science. Vol. 11A, Part 19: i. Contributions to the Study of Spike-Disease of Sandal (*Santalum album*, Linn.), Part 4: Chemical Composition of Healthy and Spiked Sandal Stems, by D. A. Rama Rao and M. Sreenivasaya; ii. Contributions to the Study of Spike-Disease of Sandal (*Santalum album*, Linn.), Part 5: Transmission of Spike by Budding, by M. Sreenivasaya and G. Gopalaswami Naidu. Pp. 241-247+8 plates. (Bangalore.) 1 rupee.
- Legislative Assembly (Second Session), New South Wales. Report of the Director-General of Public Health, New South Wales, for the Year 1927. Pp. vi+208. (Sydney, N.S.W.: Alfred James Kent.) 10s.
- The Scientific Proceedings of the Royal Dublin Society. Vol. 19, N.S., Nos. 14-18. 14: On the Structure of *Palaeocis*, by Dr. Louis B. Smyth; 15: William Higgins, a Pioneer of the Atomic Theory, by Dr. J. Reilly and D. T. MacSweeney; 16: The Integration of Light by Photo-electrolysis, by Dr. W. R. G. Atkins and Dr. H. H. Poole; 17: A Note on Gas Analysis, by James T. Donnelly, C. Hamilton Foott and Dr. J. Reilly; 18: The Photo-electric Measurement of the Illumination in Buildings, by Dr. W. R. G. Atkins and Dr. H. H. Poole. Pp. 125-188+plates 6-8. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 5s.
- The Realist: a Journal of Scientific Humanism. Published for the Realist Publishing Co., Ltd. Vol. 1, No. 1, April. Pp. 192. (London: Macmillan and Co., Ltd.) 2s. net.
- Far Eastern Association of Tropical Medicine. Transactions of the Seventh Congress held in British India, December 1927. Edited by Lieut.-Col. J. Cunningham. Vol. 1. Pp. xi+865+61 plates. (Calcutta: Thacker's Press and Directories, Ltd.)
- Transactions of the Optical Society. Vol. 30, No. 2, 1928-29. Pp. iv+49-100. (London.)
- The Institute of Physics. List of Members, January 1, 1929. Pp. 24. (London.)
- Transactions of the Rochdale Literary and Scientific Society, with a Record of the Proceedings of the Jubilee Celebrations. Vol. 16, 1926-1928. Pp. 128+xlvi. (Rochdale.)
- Journal of the Chemical Society: containing Papers communicated to the Society. March. Pp. iv+357-589+x. (London.)
- Report of the Marlborough College Natural History Society for the Year ending Christmas, 1928. (No. 77.) Pp. 84+3 plates. (Marlborough.) 5s.; to Members, 3s.
- Transactions of the Royal Society of Edinburgh. Vol. 16, Part 1, No. 8: The Oogenesis of *Carcinus menas* Penn., with special reference to Yolk Formation. By L. A. Harvey. Pp. 157-174+2 plates. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 3s.
- Commonwealth of Australia: Council for Scientific and Industrial Research. Pamphlet No. 10: The Health and Nutrition of Animals. Reports by Sir Arnold Theiler and Dr. J. B. Orr. Pp. 76. Bulletin No. 40: Observations on the Hydatid Parasite (*Echinococcus granulosus*) and the Control of Hydatid Disease in Australia. By I. Clunies Ross. Pp. 63. (Melbourne: H. J. Green.)
- The Indian Forest Records. Entomology Series, Vol. 13, Part 6: On some New Indian Coleoptera, Hemiptera and Thysanoptera. Part i: Neue Indische Lycidae, nebst faunistischen Bemerkungen (Lycidae, Col.), von R. Kleine; Part ii: A new *Agrius* from India (Buprestidae, Col.), by A. Thery; Part iii: New Species of Cicadidae and Fulgoroidea from India and Burma (Hemip.), by O. C. Ollenbach; Part iv: A new Subgenus and Species of Tingis from Burma (Tingitidae, Hemip.), by Carl J. Drake; Part v: New Thysanoptera from India, by Dudley Moulton. Pp. iii+48+5 tafeln+2+12+1 plate+2+8. (Calcutta: Government of India Central Publication Branch.) 1.6 rupees; 2s. 3d.
- Department of the Interior, Canada: Topographical Survey. Bulletin No. 60: A Study of the Dominion Standard Yard and other Standards of Length. By R. H. Field. Pp. 40. (Ottawa: F. A. Acland.)
- Rhodesia Museum, Bulawayo. Twenty-seventh Annual Report, 1928. Pp. 14. (Bulawayo.)

FOREIGN.

- The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Fourth Series (Biology), Vol. 4, No. 1, Fasc. 1. Pp. 182+11 plates. (Tokyo and Sendai: Maruzen Co., Ltd.)
- Journal of the Faculty of Science, Imperial University of Kyoto. Section 4, Zoology, Vol. 1, Part 5: Studies on the Calcareous Sponges of Japan. By Prof. Sanji Hôzawa. Pp. 277-389+plates 12-23. (Tokyo: Maruzen Co., Ltd.) 8.00 yen.
- Scientific Papers of the Institute of Physical and Chemical Research. No. 179: Experimental Studies on Form and Structure of Sparks, Part 5. By Torahiko Terada, Ukutiro Nakaya and Ryûzô Yamamoto. Pp. 43-68+18 plates. 70 sen. No. 178: Katalizace malkombinôgo de karbono unoksidna. 1: Fero kiel katalizanto. De Hiroshi Utiyui. Pp. 69-82+plate 19. 30 sen. No. 179: Untersuchung der Dekahydroindolinderivate. 5. Mitteilung: Synthese des trans-o-Dimethylamido-n-propyl-cyclohexans und die Wasserspaltung des o-n-Propyl-cyclohexanols. Von Shin-ichiro Fujise. Pp. 83-89. 20 sen. No. 180: Physico-chemical Studies on Bioluminescence. 7: The Solubility of Cypridina Luciferin in Organic Solvents. By Sakyo Kanda. Pp. 91-98. 15 sen. No. 181: Stark Effect of Helium 2P-6D line by Quantum Mechanics. By Yoshio Fujioka. Pp. 99-106+plate 20. 25 sen. (Tokyo: Iwanami Shoten.)
- Department of Commerce: Bureau of Fisheries. Bureau of Fisheries Document, No. 1045: The Public Aquarium; its Construction, Equipment and Management. By Charles Haskins Townsend. (Appendix 7 to the Report of the U.S. Commissioner of Fisheries for 1928.) Pp. 249-337. (Washington, D.C.: Government Printing Office.) 25 cents.
- United States Department of Agriculture. Technical Bulletin No. 77: The Host Plants of the European Corn Borer in New England. By Benjamin E. Hodgson. Pp. 64. (Washington, D.C.: Government Printing Office.) 30 cents.
- Observations and Investigations made at the Blue Hill Meteorological Observatory in the Year 1928 under the direction of Prof. Alexander McAdie. Pp. 29+36 plates. (Cambridge, Mass.)