

## Calendar of Patent Records.

October 12, 1849.—The ordinary wire safety-pin was patented by Charles Rowley, button manufacturer, of Birmingham, on Oct. 12, 1849. Though pins of this kind were apparently not known at that time in the pin-making industry, there was little novelty in the invention, for similar pins were in common use in Roman and earlier times. The earliest known is one in the British Museum belonging to the Mycenaean period, c. 1000 B.C., which is of almost identical construction.

October 14, 1568.—What appears to be the first Irish industrial monopoly patent was granted for twenty-one years to Peter Backe, a native of Flanders, on Oct. 14, 1568. The grant was to enable the patentee to collect madder in all parts of Ireland and to dye skins of animals.

October 14, 1801.—The specification of the patent granted to William Symington on Oct. 14, 1801, describes the engine and machinery of the *Charlotte Dundas*, which was one of the first practicable steam-boats. The boat was constructed for Thomas, Lord Dundas, who was interested in the introduction of steam for canal navigation, and in March 1803 towed two loaded barges on the Forth and Clyde Canal for a distance of 19½ miles. On another occasion the vessel carried Robert Fulton, who a few years later, in America, initiated the first commercial steamboat service.

October 14, 1831.—The first complete bread-making machine was patented by John Cowderoy, of Hoxton, on Oct. 14, 1831. The apparatus, which was manually operated, consisted of the combination of a dough-mixing machine, a moulding machine, and mechanism by which the moulded loaves were run into the oven, without being touched by hand.

October 15, 1907.—Bakelite, an insoluble and infusible condensation-product of aldehyde and phenol, was invented by L. H. Baekeland and was the subject of a United States patent applied for by him on Oct. 15, 1907. Bakelite is not so flexible as celluloid, but it is more durable, stands heat, does not smell, does not catch fire, and is a bad conductor of heat and electricity.

October 17, 1691.—On Oct. 17, 1691, Edmund Halley, the astronomer, was granted a patent with other persons "to exercise and practice their new invention or engine whereby by conveying aire into a diving vessell they can maintaine severall persons at the same time to live and worke safely under water at any depth for many houres for the retrieveing and regaining of gold, silver, bullion, money, and all manner of goods wreckt and lost at sea." The diving-bell was constructed of wood covered with lead, and the air was to be renewed through flexible connexions from weighted barrels lowered by the side of the bell.

October 17, 1850.—The Scottish shale-oil industry was started under the patent granted on Oct. 17, 1850, to James Young for his invention for "treating bituminous coals in such a manner as to obtain therefrom an oil containing paraffine (which I call paraffine oil) and from which oil I obtain paraffine." Samples of the oil were shown at the Great Exhibition of 1851 and aroused great interest, and in the same year works were opened at Bathgate by Young in conjunction with Edward Meldrum and E. W. Binney. The process was completely successful, paraffin oil being produced at 5s. a gallon, a great boon in the days when oil lamps were still the main source of illumination. The patent was many times attacked, but remained secure and ran its full course.

October 17, 1855.—Oct. 17, 1855, is the date of the first of the many patents granted to Sir Henry Bessemer in connexion with his famous process for the manufacture of steel from cast iron. (Cf. Calendar of Patent Records, Sept. 22.)

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## Societies and Academies.

## LONDON.

Society of Public Analysts, Oct. 2.—H. E. Cox: Chemical tests in relation to fur dermatitis. Paraphenylenediamine is the most frequently used of the intermediates employed for dyeing furs and is also the most toxic. The so-called Bandrowski's base is not a fast final product; it is easily reduced, and then re-forms *p*-phenylenediamine, and so may be an indirect cause of irritation. It also appears to be associated with some partly oxidised *p*-phenylenediamine, which can be detected chemically.—J. H. Coste: A nomogram for use in gas analysis. By the use of this nomogram the necessary corrections of temperature can be made over a reasonable range of temperature, with sufficient accuracy for many purposes.—P. S. Arup: The composition of Irish winter butter. Analyses are given of 580 undoubtedly genuine samples of butter obtained from creameries and agricultural schools in the Irish Free State during the winters of 1927–28 and 1928–29. In the former period 50 samples showed Reichert-Meissl values below 24; in the latter period 88 samples. In places where calving was not confined to one season of the year (as is generally the case in Ireland), and also where the conditions of feeding and shelter were superior, Reichert-Meissl figures below 26 were not obtained.—W. R. Schoeller and H. W. Webb: Investigations into the analytical chemistry of tantalum, niobium, and their mineral associates. (16) Observations on tartaric hydrolysis. (17) The quantitative precipitation of the earth acids and certain other oxides from tartrate solutions. Precipitation of tantalic, niobic, and tungstic acids from tartrate solution by hydrochloric or nitric acid, though specific, is never quite quantitative. Only titanium and zirconium interfere to a certain extent with the normal course of the reaction. The earth acids and their mineral associates are classed into analytical groups according to their precipitability from tartrate solution.

## GENEVA.

Society of Physics and Natural History, July 4.—A. Naville: (1) The action of the mitogenetic rays through a quartz screen (preliminary note). The author shows that onion roots, placed behind a quartz filter, are capable of producing kineses in the cornea of a frog. An exposed cornea showed from 36.4 per cent to 44.9 per cent more kineses than a cornea not exposed (exposure from one to two hours). (2) Sexualisation of the gametes and gonometry in the Myxosporidæ (preliminary note). Three different sex types exist in the Myxosporidæ, which can be attributed to the more or less great precocity of sexualisation of the germinative strain. The delay in sexualisation admits of isogamy as an extreme case, which, in fact, is met with in the Microsporidæ. The acceleration of the sexualisation leads to dicæcia. In the Actinomyxidæ a very precocious sexualisation is found. The author confirms by another method his earlier results on the gonometry of the zygote.—R. Wavre: New researches on the planetary figures to the second approximation. The gravitation on the polar axis is expressed by the following formula ( $\omega$  = angular velocity):

$$g_0 = iMt^{-2} + \omega^2 g_{0,1} + \omega^4 g_{0,2}.$$

The difference between the moment of inertia with respect to the polar axis and the moment of inertia with respect to an equatorial axis is

$$i(C - A) = \omega^2 K_1 + 2\omega^4 K_2.$$

The terms in  $\omega^4$  represent the difference between the second and the first approximation.

## WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, vol. 15, No. 7, July 15).—J. H. Van Vleck and Amelia Frank: The mean square angular momentum and diamagnetism of the normal hydrogen molecule. A mathematical discussion.—Alvin B. Cardwell: Effects of a crystallographic transformation on the photoelectric and thermionic emission from cobalt. The specimen was slowly and thoroughly 'outgassed'. Marked changes in both photoelectric and thermionic emission occur at about 850° C., when there is a change from hexagonal close packing to the face-centred cubic form. There seems to be an intermediate structure which is much more sensitive than the stable forms; the effect is more marked with descending than ascending temperatures.—Paul R. Gleason: The reflecting power of some substances in the extreme ultra-violet. The region 585 Å.-1850 Å. was investigated. Of the substances tested, platinum is the best reflector (18.6 per cent), and nickel, crystalline quartz, and gold were the only others giving more than 10 per cent at the shortest wave-length. Chromium and silicon are both superior for the longer wave-lengths.—C. Y. Chao: The problem of the ionised hydrogen molecule. A theoretical investigation using the polynomial method of wave mechanics.—Harlow Shapley: Note on the velocities and magnitudes of external galaxies.—Curt P. Richter and Miriam E. Brailey: Water-intake and its relation to the surface area of the body. Water-intake for rats increases with age and is greater for males than females. It is closely related to body surface and hence apparently to heat regulation.—W. W. Alpatov: The influence of thyroid gland feeding on the acceleration of the growth of larvæ of *Drosophila melanogaster*. Larvæ given hog thyroid were definitely larger than controls. It is suggested that invertebrates with short development period can be used as test animals for thyroid.—G. Pincus and W. J. Crozier: On the geotropic response in young rats. A mathematical relationship can be shown between the upward orientation on an inclined surface and the slope for genetically stabilised lines of young rats, and it can be traced in crosses. Thus the constant involved in describing homologous behaviour has a 'real' significance.—William T. Richards and Alfred L. Loomis: Dielectric loss in electrolyte solutions in high frequency fields. An expression connecting power loss, conductivity, dielectric constant and frequency is tested for wave-lengths from 14 m. to 1000 m. The effect of high frequency currents on organisms is correlated with the physico-chemical constitution of their body fluids.—Oscar Knefer Rice: The temperature co-efficient of radioactive disintegration. A consideration, based on the new quantum mechanics, of the sizes of atomic nuclei, indicates that the temperature co-efficient is very small; hence the impossibility of influencing the half-life period in the temperature range available.—Nicholas A. Milas: Some studies on homogeneous catalysis. An expression connecting maximum oxygen absorption rate, concentration of catalyst and time to reach maximum absorption rate has been derived and tested, using anthraquinone and benzoquinone as catalysts for the oxidation of anethol. Maximum oxygen absorption rate appears to be one of the most characteristic properties of auto-oxidation phenomena.—Louis S. Kassel: Unimolecular reactions. A discussion based mainly on the new quantum mechanics and criticising particularly Bourgin's suggestions.—Henry S. Washington: The rock suites of the Pacific and the Atlantic basins. On the whole, the rocks of the Atlantic basin are more alkaline and especially more sodic than those of the Pacific. There are other petrographic provinces, and it is considered

possible that such areal differentiation could exist when the earth was in a fluid or semi-fluid condition.—Simon Flexner and Cornelius P. Rhoads: A method for the determination of the activity of antipoliomyelitic serum. The blood of human beings and monkeys recovering from poliomyelitis contains neutralising substances effective against the incitant of the disease. By injecting both virus and serum into monkeys by way of the cisterna magna (between the skull and vertebral column) no injury to nervous structures is caused, and the course of the experimental poliomyelitis parallels the disease in man. The results will be applied to treatment and prevention of human poliomyelitis.—Ruth H. Lindsay: The chromosomes of some dioecious angiosperms. No morphological difference is recognisable between the two chromosomes of any pair in the pollen mother cells examined.—R. L. Wilder: Characterisations of continuous curves that are perfectly continuous.

## Official Publications Received.

## BRITISH.

- Proceedings of the Royal Irish Academy. Vol. 38, Section B, No. 15: Semperviva of the Canary Islands Area. By Dr. R. Lloyd Praeger. Pp. 454-499 + plates 9-16. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 1s. 6d.
- Lawes Agricultural Trust: Rothamsted Experimental Station, Harpenden. Report 1927-28 with the Supplement to the "Guide to the Experimental Plots" containing the Yield per Acre, etc. Pp. 176. (Harpenden.) 2s. 6d.
- Ministry of Agriculture and Fisheries. Marketing Leaflet No. 12: Grading and Marking of English Wheat Flour. Pp. 8. Marketing Leaflet No. 13: The Grading and Marking of Home-killed Beef. Pp. 8. (London: Ministry of Agriculture and Fisheries.)
- Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1238 (Ae. 393): The Effect of Body Interference on the Efficiency of an Airscrew. By C. N. H. Lock. (T. 2702.) Pp. 8+2 plates. 6d. net. No. 1239 (Ae. 394): The Application of the Theoretical Velocity Field round a Spheroid to calculate the Performance of an Airscrew near the Nose of a Streamline Body. By C. N. H. Lock. (T. 2708.) Pp. 4+2 plates. 4d. net. No. 1241 (Ae. 396): Experiments on a Series of Symmetrical Joukowski Sections. By A. Fage, V. M. Faulkner and W. S. Walker. (T. 2765.) Pp. 19+10 plates. 1s. net. No. 1242 (Ae. 397): The Force and Moment on an Oscillating Aerofoil. By H. Glauert. (T. 2763.) Pp. 17+4 plates. 9d. net. No. 1243 (Ae. 398): Wind Tunnel Tests on a Symmetrical Aerofoil (Göttingen 429 Section). By W. G. A. Perring. (T. 2762.) Pp. 4+4 plates. 4d. net. (London: H.M. Stationery Office.)

## FOREIGN.

- U.S. Department of Commerce: Bureau of Standards. Bureau of Standards Journal of Research. Vol. 3, No. 1, July. Pp. ii+190+14 plates. Vol. 3, No. 2, August. Pp. ii+191-341+23 plates. (Washington, D.C.: Government Printing Office.)
- U.S. Department of Agriculture. Circular No. 71: Heat and Time of Exposure necessary to kill Larvæ of the European Corn Borer in Ear Corn. By George W. Barber. Pp. 14. (Washington, D.C.: Government Printing Office.) 5 cents.
- Conseil Permanent International pour l'Exploration de la Mer. Bulletin hydrographique pour l'année 1928. Pp. 115. (Copenhagen: Andr. Fred. Høst et fils.) 6.00 kr.
- Collection des travaux chimiques de Tchécoslovaquie. Rédigée et publiée par E. Votoček et J. Heyrovský. Année 1, No. 9, Septembre. Pp. 467-520. (Prague: Regia Societas Scientiarum Bohemica.)

## Diary of Societies.

## FRIDAY, OCTOBER 11.

- ROYAL SANITARY INSTITUTE (at the Castle, Shrewsbury), at 4.30.—A. W. Ward and W. H. Butler: Some Notes on Recent Bridges over the River Severn.
- ROYAL SOCIETY OF MEDICINE (Clinical Section), at 5.30.
- INSTITUTION OF ENGINEERING INSPECTION (at Royal Society of Arts), at 5.30.—E. F. Law: The Chemical Laboratory in Inspection.
- MALACOLOGICAL SOCIETY OF LONDON (in Zoological Department, University College), at 6.—Dr. F. A. Schilder: The Eocene *Amphiperusidae* and *Cypræidae* of England.—G. C. Spence: The Epiphragm in *Streptaxis*.—G. C. Robson: Notes on the Dispersal of *Crepidula fornicata* (L.) in English Waters.—H. H. Bloomer: The Sex of *Anodonta cygnea*.
- OIL AND COLOUR CHEMISTS' ASSOCIATION (Manchester Section) (at Milton Hall, Manchester), at 7.—Dr. Cutter: Polymerisation of Drying Oils.
- MANCHESTER ASSOCIATION OF ENGINEERS (at Engineers' Club, Manchester), at 7.15.—J. A. Robertson: Developments in Power Production (Presidential Address).
- JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—R. H. Allen: Coal and Coal Cleaning.
- LEICESTER TEXTILE SOCIETY (at Leicester), at 7.30.—J. W. Allinson: Colour and Design in Textile Printing.
- INSTITUTE OF METALS (Sheffield Local Section) (at Sheffield University), at 7.30.—F. C. Robinson: Some Notes on the Selection of Suitable Metals to Resist Corrosion (Chairman's Address).