

## Calendar of Discovery and Invention.

July 3, 1769.—Arkwright's famous patent for spinning by rollers was taken out on July 3, 1769, a few months after Watt's still more famous patent on the separate condenser for steam engines. A barber by trade, Arkwright became interested in the cotton-spinning problem in 1766 when thirty-five years of age, and his first machine was exhibited in the old Grammar School at Preston two years later. His machine of 1769 is preserved in the Science Museum, South Kensington. There are four rollers in pairs, the top rollers being covered with leather, while the lower rollers are fluted, the several pairs being weighted to ensure contact. His roller drawing principle exists to-day.

July 4, 1840.—The first steam vessel to carry the mails between England and America, and the first vessel of the famous Cunard Steamship Company, the s.s. *Britannia*, sailed from Liverpool on her maiden voyage on July 4, 1840, and reached Boston in 14 days 8 hours. She was built of wood and driven by paddles, and could accommodate 115 passengers.

July 5, 1639.—The incident related of Galileo watching the lamps swinging in Pisa Cathedral dates back to 1582. Many years afterwards, on July 5, 1639, in a letter he suggested the use of a swinging pendulum for astronomical purposes, and about the same time an arrangement was devised and set out on a drawing, for driving a pendulum by weights.

July 6, 1787.—On July 14, 1787, John Wilkinson, the famous Shropshire ironmaster, wrote: "Yesterday week my iron boat was launched. It answers all my expectations and it has convinced the unbelievers who were 999 in 1000. It will be a nine days' wonder, and then be like Columbus's egg." This iron canal barge, the first of all iron boats, was followed by several others, but iron as a constructive material did not come into general use for half a century.

July 7, 1879.—Among the most important observatories of the Far East are those of Zikawei, near Shanghai, and Manila, founded by the Society of Jesus, which alone among the great religious orders has been famous for its scientific work. The Manila observatory was first situated at Ateneo, and then at Ermita, and was founded in 1865 by Father Faura, S.J., who after some years of meteorological work, on July 7, 1879, predicted that a typhoon would pass over North Luzon. The event justified his warning. This was the first time that the existence, duration, and course of a typhoon had been predicted in the Far East. Father Faura's subsequent work proved so valuable that the merchants subscribed for its continuance, and with the connexion of Manila and Hong Kong by submarine cable came the beginning of the system of weather forecasts which has proved such an immense boon to shipping in the China Seas.

July 8, 1814.—One of the visitors to Paris soon after the fall of Napoleon was Edward Stanley, Bishop of Norwich, who, writing to his wife on July 8, 1814, gave an interesting account of his visit to the Jardin des Plantes, where "everything is arranged in such order that it is almost impossible to see it without feeling a love of science; here the mineralogist, geologist, naturalist, and entomologist may each pursue his favourite studies unmolested. Here, as everywhere else, the utmost liberality is shown to all, but to Englishmen particularly, your country is your passport."

July 9, 1908.—Following up the methods of Sir James Dewar, Kamerlingh Onnes, of the University of Leyden, liquefied helium, the only remaining gas that had not been coerced into that state, on July 9, 1908.

E. C. S.

## Societies and Academies.

LONDON.

Royal Society, June 23.—J. C. McLennan and J. H. McLeod: On the wave-length of the green auroral line in the oxygen spectrum. In 1925, McLennan and Shrum found a line in the spectrum of highly purified oxygen of wave-length  $\lambda$   $5577.35 \pm 0.15$ , and provisionally identified it with the green auroral line. Reinvestigation with a Fabry-Perot interferometer now determines the wave-length of this line as  $5577.341 \pm 0.004$ . Babcock's value for the wave-length of the auroral line being  $5577.350 \pm 0.005$ , there would thus seem to be no doubt as to the identity of the lines. Apparently oxygen as well as nitrogen is present in those regions of the upper atmosphere whence the auroral light is transmitted.

A. Caress and E. K. Rideal: The combination of nitrogen and hydrogen activated by electrons. A study of the combination of nitrogen and hydrogen to form ammonia in a triode valve has been made. Hydrogen atoms formed by thermal dissociation at a hot tungsten emitter combine with nitrogen at platinum and nickel surfaces to form ammonia. Hydrogen atoms excited by collision with ca. 13-volt electrons react with molecular nitrogen in the gas phase to form ammonia. In the absence of hydrogen atoms (by using a mixed barium calcium oxide emitter) no ammonia is observed until a voltage of 17 volts is attained, and a further rise in rate of formation occurs at 23 volts. These two rises are attributed to the chemical reactivity of  $N_2^+$  and  $N^+$ . Ammonia seems to be produced by interaction of  $N_2^+$  and  $N^+$  with hydrogen to form primarily excited hydrogen atoms. The electron-efficiency of ammonia-formation from nitrogen ions is at least one ammonia molecule produced for the passage of four electrons; in the case of excited hydrogen atoms the efficiency appears to be even higher.

J. F. Lehmann and J. H. Osgood: The total ionisation due to the absorption in air of slow cathode rays. Electrons ejected from a hot tungsten filament were accelerated to an anode, by a potential difference of 200 up to 1000 volts and a portion passed through a carbon capillary into an ionisation chamber. The electron current entering the chamber, and the positive ion current due to the absorption of these electrons, were measured alternately. Ratio of ionisation current to electron current gave average ionisation per electron. Using an electron beam of given initial energy, ionisation per electron is approximately proportional to pressure of absorbing air, provided this pressure was less than a certain 'critical pressure.' For greater pressures, ionisation per electron was constant. The magnitude of the critical pressure was determined by the initial energy of the electron beam. Ratio of ionisation current to electron current, at pressures greater than critical pressure, represents average total ionisation due to complete absorption of an electron. This is directly proportional to initial energy of electron, and the ratio, initial energy of electrons/average total ionisation per electron, gave average energy expenditure associated with the formation of a pair of ions. This average per ion pair was 45 electron-volts, whereas the ionisation potential of air is 17 volts.

J. F. Lehmann: The absorption of slow cathode rays in various gases. A homogeneous beam of electrons of definite initial energy was introduced into an ionisation chamber. For complete absorption of the electron beam the average ionisation per electron was directly proportional to the energy of the electrons, the constant of proportionality varying markedly

from gas to gas. The ratio, initial energy of electron/average ionisation per electron for complete absorption, determined the average energy expenditure associated with the formation of a pair of ions. This ranged from 31 electron-volts per ion pair in helium to 45 electron-volts per ion pair in air, nitrogen, and carbon dioxide. The efficiency of ionisation as defined by the ratio, ionisation potential/average energy expended per ion pair, was, in helium 0.78, argon 0.46, hydrogen 0.43, nitrogen 0.38, and carbon dioxide 0.32. Thus much of the initial energy of the electron was expended by processes other than separating the molecule into positive and negative ion.

W. T. Astbury: A simple radioactive method for the photographic measurements of the integrated intensity of X-ray spectra. A simple photometric arrangement is described in which the negative is replaced by a carbon print and the measurements are carried out by means of  $\alpha$ -rays and an  $\alpha$ -ray electro-scope. This radioactivity photometer has been applied to the investigation of the intensity distribution in X-ray crystal photographs. As a preliminary test the apparatus was used to find the intensity ratio,  $Cu K_{\alpha}/K_{\beta}$ . In X-ray photographs of the (muscovite) mica cleavage plane it was found that, 1st order: 2nd order: 3rd order = 66:31:100, and that the intensity ratio is 6.2. The apparatus can give a curve showing a relation between X-ray intensity and  $\alpha$ -ray intensity which is very approximately linear through the origin.

O. W. Richardson and F. S. Robertson: The emission of soft X-rays by different elements. The photoelectric activity of soft X-rays generated by electron impact on 14 different elements is measured. The soft X-ray yield under given conditions of electron excitation is a periodic function of the atomic number of the anticathode element.

E. V. Appleton and J. Ratcliffe: On the nature of wireless signal variations (1). Two methods of measuring the angle of incidence of downcoming wireless waves, both involving photographic registration, are described. The first utilises the ordinary night-time signal variations and can be employed in connexion with any steady transmitting station. It only yields useful results if the natural signal variations are small. The second requires a controlled wave-length change at the transmitter, but may be used even when the natural signal variations are large. The mean values of the angle of incidence for the periods immediately following sunset and preceding sunrise show a close agreement, and lead to an effective height of 90-100 km. for the atmospheric deflecting layer. There is a diurnal variation in the height of the ionised layer: it is higher in the middle of the night than during the sunset and sunrise periods. Comparatively rapid fluctuations have been observed in the angle of incidence of downcoming waves. Such fluctuations are considered as being due to 'reflection' at different points on a layer the mean height of which is sensibly constant.

E. V. Appleton and J. Ratcliffe: On the nature of wireless signal variations (2). Experiments were carried out on the nature of the variations of downcoming wireless waves responsible for nocturnal signal variations. A receiving assembly which is a combination of a loop and vertical aerial eliminates the effects of the ground waves at the receiving station. Large variations in intensity of downcoming waves are found. For wave-lengths of about 400 m. and distances of about 80 miles, fading is chiefly due to changes in the intensity of the downcoming waves. Variations in the phase relation between ground and sky waves are a secondary cause of fading. Changes in the angle of incidence or polarisation of the down-

coming wave are not responsible in any very marked degree for signal variations. The downcoming ray has electric vectors both in, and at right angles to, the plane of propagation; similar intensity variations are found in both these vectors.

L. H. Martin: The efficiency of K-series emission by K-ionised atoms. The K-series fluorescent radiations have been excited in plates of iron, nickel, copper, and zinc by beams of exciting X-rays ( $\lambda=0.6$  A.U.  $\rightarrow$  K limits), and the efficiency of K emission determined by an ionisation method. The efficiency of K emission is also deduced for selenium, bromine, and iodine, from some early measurements by Barkla and Beatty. The following values have been found for the K-series quantum transformation coefficient, i.e. the number of quanta of K-series radiation emitted per K-ionised atom: Fe (26) 0.29, Ni (28) 0.34, Cu (29) 0.40, Zn (30) 0.46, Se (34) 0.68, Br (35) 0.68, I (53) 0.88. The low values for this coefficient are explained in the hypothesis that in some conditions as yet undetermined, the excited K radiation does not escape from the atom, but is 'internally absorbed' in the outer electron shells, giving rise to high-speed photo-electrons. It is found experimentally that the probability of K-series emission as opposed to its internal absorption is independent of the frequency of the exciting radiation. The K-quantum transformation coefficient is a function of atomic number, and such that it seems probable that similar laws, relating probability of absorption to atomic number and wave-length, hold in cases of 'normal' and 'internal' absorption.

Geological Society, May 25.—F. S. Wallis: The Old Red Sandstone of the Bristol district. Although the total thickness of these deposits is now estimated at 8000 feet, the faunal contents give evidence of the presence of beds of Upper Old Red Sandstone age only, and no apparent unconformity in the strata or mineralogical break has been detected. Every gradation of deposit between the following types can be found: Coarse- and fine-grained sandstones, conglomeratic sandstones, siltstones, quartzites, conglomerates, pure limestones, and conglomerates. True marls and shales are absent. The material was derived from a pre-Cambrian massif consisting of gneisses, mica- and quartz-schists with abundant quartz augen and volcanic or intrusive rocks, together with a sedimentary series of arenaceous and calcareous (largely silicified) types. This source was situated north-west of Bristol, and its rocks were similar to those of the Mona Complex, and especially to the Gwna Beds of that formation. It is not, however, necessary to postulate that the material came from the Anglesey of the present day. The sediments were transported by a great river, which, flowing through a country affected by heavy seasonal or spasmodic rainfalls, finally reached the sea by a broad delta in the neighbourhood of the Bristol district. Lagoons also formed important physiographical features near the coast.

## SHEFFIELD.

Society of Glass Technology, May 18.—G. W. Mofey and N. L. Bowen: The decomposition of glass by water at high temperatures and pressures. The glasses were heated with water in steel bombs for about 20 hours. The bomb was then cooled and the product examined. For optical glasses the amount of attack was greatest with a light barium crown, and least with the very dense barium crowns, which were remarkably resistant. Of commercial glasses, Jena combustion tubing withstood the action of water best, whilst the failure of Pyrex glass was outstanding.

At lower temperatures Pyrex glass was exceedingly good, but at the higher temperatures of the experiments the boric oxide was completely extracted. The crystals obtained with Pyrex glass at 325° C. were unknown.—G. Gehlhoff and M. Thomas : The brittleness of opal glass. A dense opal glass containing much fluorine was used, the opacity being increased by the addition of zinc oxide. At a temperature of about 1040° C. discontinuous changes take place. At high temperatures the glass is clear; in cooling down, crystals of a uniform and small size of grain are precipitated. The glass kept below the devitrification temperature already contains (owing to its having stood longer) bigger crystals. On further cooling down, in conformity with the law of the yet undefined constitution diagram, small crystals are precipitated, whereas the existing big ones still grew. Thus opal glasses must necessarily be worked above the temperature where precipitation of crystals causes opacity : brittleness results if they are worked below that temperature.—Francis Redfern, jun. : The new British 15-arm automatic suction bottle machine. There are approximately 40 tons of moving parts mounted on the stationary element and the whole machine weighs about 60 tons. It will revolve up to speeds of between 6 and 7 revolutions a minute, and is electrically controlled. A week's production of merchantable reputed quart bottles is estimated at 2800 gross. The machine can be produced in three sizes, 6 units, 10 units, and 15 units.

## PARIS.

Academy of Sciences, May 22. —A. Lacroix : The meteoric iron of the basin of Tameitit in the Tociat. This meteorite has been removed to Paris. Its date of fall was about 1400, and it is of interest as being the oldest meteoric iron known. It is poor in nickel and belongs structurally to the ataxite group.—L. Lecornu : The equipartition of energy.—C. Sauvageau : The gametophyte of *Nereia filiformis*.—Charles Nicolle and Charles Anderson : The comparative study of some recurrent virus, pathogenic to man.—Gaston Julia : A class of polynomials.—G. Cerf : A property of invariance of the group of contact transformations and the transformations of certain partial differential equations of the second order with  $n$  independent variables.—Corps : A new explanation of the negative result of the Michelson-Morley experiment.—W. Arkadiew : Sounds due to the magnetisation of iron.—C. Gutton and Mme. J. Mihul : The permeability of iron at high frequencies. The experiments described lead to conclusions in agreement with those of Laville. For wave-lengths varying between 8 and 25 metres, no variations in the permeability of iron could be proved analogous to the variations of the dielectric constant in the neighbourhood of absorption bands.—P. Bovis : Absorption spectra and pleochroism of iodine and of herepathite. Solid iodine possesses a large absorption band with maximum density at wave-length 0.255  $\mu$ .—E. Darmois : The rotatory power of the tartaric ion. A study of the effects of the presence of neutral salts in the tartrate solutions on the rotatory power. In these solutions sodium tartrate undergoes varied modifications in rotatory power : both the magnitude and sign of  $[\alpha]$  are changed. If it is assumed that these modifications are of a physical nature, it would appear to be very improbable that a single explanation can cover all the cases.—R. de Malleman : The calculation of the rotatory power of a system of molecules or anisotropic atoms. Application to quartz.—Mlle. C. Chamie : The grouping of atoms of radioactive elements in mercury. In mercury the radioactive sub-

stances examined (radium, thorium, actinium, polonium) do not appear to dissociate into individual atoms, but are distributed into small groups of atoms, which show by their photographic effect the  $\alpha$ -particles they emit.—P. Maurice Vèzes : The calculation of ionic equilibria.—Mlle. Germaine Cauquil : Viscosity and geometrical isomerism. Derivatives of cyclopentanol and cyclohexanol have been examined from the point of view of the viscosity of the *cis* and *trans* isomers and the latter have been found to possess higher viscosities than the former. Similar differences would appear to exist in the *cis* and *trans* dichlorethyl-ones but the increase is not so marked.—J. Cournot and E. Perot : Some special cementations of aluminium and of duralmin after a double electrolytic deposit. Researches made from the point of view of the protection of aluminium and light alloys from the corrosive action of sea water.—Mme. Ramart-Lucas and M. Fasal : Contribution to the study of the pyrrolidones. The 5-methyl-3,3-dialkylpyrrolidones, treated with sodium amide and alkyl halide, react in the lactam form and give *N*-alkyl derivatives.—J. Bougault : An example of ether-oxide of a ketone hydrate. Benzalphenylethylsuccinic and benzylphenylethylmaleic acids.—R. Cornubert : Study of the action of sodium amide on cyclohexanone.—F. Blondel : The geological nature of the south-east of Indo-China.—E. Bruet : The discovery of the upper Pliocene in the valley of Aujon.—Jean Piveteau : Some fossil fishes from the north of Madagascar. One of the specimens collected by Waterlot in the Ambibole region belongs to the genus *Acentrophorus*, previously only found in the upper Permian in England. A discussion of the Madagascar form shows it to approach the species *A. varians* and *A. glaphyrus*.—Em. Perrot and Raymond-Hamet : The Yage, a plant used as a stimulant by the Indians of the Amazon region of the equator and of Colombia. The plant appears to be *Banisteria Caapi*, and the active principle is an alkaloid, telepathine. The poisonous dose for animals (pigeon, guinea-pig, dog) is 200 mgm. per kilogram, and its local anaesthetic action resembles that of cocaine.—Louis Léger : The nature and evolution of the 'spherules' described in Ichthyophonus, a parasite of the trout.—Huguenard and A. Magnan : An accelerograph permitting the direct measurement of the accelerations of a bird in flight.—M. and Mme. A. Chauchard : Quantitative researches on the excitability of the apparatus of taste in man.—Jean Roche and Mme. Eugénie Siegler-Soru : The respiration *in vitro* of the blood of various homeotherm animals.—Mlle. M. L. Verrier : The transitory cephalic organs of the fry of *Acara tetramerus*.—Jules Barrois : The medusoid stage of Velleles.—Stelys : The physiological origin of cancer. The geophysics of a pathogenic medium. Outline of a universal causality.

Society of Physics and Natural History, April 21.—L. Dupanc : The tectonic of the Tonkin coal basin. The strata of this basin, hitherto generally attributed to the Devonian, are Permo-Triassic. From this follow important modifications of the tectonic interpretations of this basin, the coal of which, sometimes in very thick seams, is of Triassic age.—W. H. Schopfer : The refractive index of the cysticercic fluid and its variations. This index is 1.3358 for the internal fluid and 1.3430 for the external fluid. This index gives interesting indications on the approximate content of the fluid in proteins.—G. Tiercy : The effective temperatures of the giant stars. Applying the formula of Saha corrected for the constant, the

author obtains for the stars of the spectral type  $M_0$ ,  $K_5$ ,  $G_5$ ,  $F_5$ ,  $A_5$ ,  $B_5$  :

Giant stars:  $M_0$  2200°,  $K_5$  2900°,  $G_5$  3800°,  $F_5$  5600°,  $A_5$  9200°.

Dwarf stars:  $M$  4000°,  $K_5$  4300°,  $G_5$  6500°,  $F_5$  8500°,  $A_5$  11,500°,  $B_5$  14,500°.

## Official Publications Received.

### BRITISH.

Department of Zoology, University College of Wales, Aberystwyth. Report on Marine and Fresh Water Investigations. (New Series 2, Years ending 30th June 1924, and 30th June 1925.) Pp. 76. (Aberystwyth, 5s.)

Southern Rhodesia. Report of the Director, Geological Survey, for the Year 1926. Pp. 11. (Salisbury: Government Printer.)  
Proceedings of the Society for Psychical Research. Part 102, Vol. 36, June. Pp. 437-518. (London: Francis Edwards.) 4s. 6d. net.

Hull Museum Publications. No. 124: Wilberforce House, its History and Collections. By T. Sheppard. New edition. Pp. 88+30 plates. 1s. No. 148: Record of Additions. Edited by T. Sheppard. Pp. 18+5 plates. No. 149: Yorkshire Silver Tokens, etc., in the Hull Museum. By T. Sheppard. Pp. 32. (Hull.)

The Journal of the Central Bureau for Animal Husbandry and Dairying in India. Vol. 1, Part 1, April. Pp. vi+59+5 plates. (Calcutta: Government of India Central Publication Branch.) 10 annas.

Aeronautical Research Committee: Reports and Memoranda. No. 1065 (Ae. 247): Preliminary Experiments on Two-Dimensional Flow round Bodies moving through a Stationary Fluid. By Prof. B. McVill Jones, W. S. Farren and Flight-Lieut. C. E. W. Lockyer. (A.I.B. Photographic Work, etc. 11.—T. 2850.) Pp. 12+15 plates. (London: H.M. Stationery Office.) 1s. 8d. net.

Gypsy Lore Society Monographs. No. 4: The Position of Romani in Indo-Aryan. By Prof. R. L. Turner. Pp. 47. (London: Bernard Quaritch, Ltd.)

Transactions of the Royal Society of Edinburgh. Vol. 55, Part 2, No. 14: The Igneous and Metamorphic History of Cromar, Deeside, Aberdeenshire. By Dr. H. H. Read. Pp. 317-353. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 4s. 6d.

British Museum (Natural History). Picture Postcards. Set C20: British Game Birds, Series No. 2. 5 cards in colour. 1s. (London: British Museum (Natural History).)

Proceedings of the Geologists' Association. Edited by A. K. Wells. Vol. 38, Part 2, June 21st. Pp. 145-263. (London: Edward Stanford, Ltd.) 5s.

Diamond Jubilee of the Confederation of Canada: Sixty Years of Canadian Progress, 1867-1927. Pp. viii+168 (London: High Commissioner for Canada.) 10 cents.

### FOREIGN.

Geofysiske Publikasjoner utgitt av det Norske Videnskaps-Akademi Oslo. Vol. 5, No. 2: Photogrammetrische Bestimmung der Höhe von irisierenden Wolken (Perlmutterwolken) am 30. Dezember 1926. Von Carl Störmer. Pp. 8+2 Tafeln. (Oslo: A. W. Brøgers Boktrykkeri A/S.) 1.50 kr.

Treasury Department: United States Coast Guard. Bulletin No. 15: International Ice Observation and Ice Patrol Service in the North Atlantic Ocean, Season of 1926. Pp. v+127. (Washington, D.C.: Government Printing Office.)

Report on Norwegian Fishery and Marine Investigations. Vol. 3, No. 8: The Production of Plankton in the Coastal Waters off Bergen, March-April 1922. By H. H. Gran. Pp. 74. (Bergen: A. S. John Griegs Boktrykkeri.)

Department of the Interior: Bureau of Education. Bulletin, 1927, No. 10: Educational Boards and Foundations, 1924-26. By Henry R. Evans. Pp. 12. (Washington, D.C.: Government Printing Office.) 5 cents.

Smithsonian Miscellaneous Collections. Vol. 78, No. 8: The Flora of Barro Colorado Island, Panama. By Paul G. Standley. (Publication 2914.) Pp. 32. (Washington, D.C.: Smithsonian Institution.)

Publikationer fra det Danske Meteorologiske Institut. Meddelelser, No. 7: Meteorological Problems. ii: The Energy of the Winds. By V. H. Ryd. Pp. v+96. (Kjøbenhavn: G. E. C. Gad.)

Stanford University Publications. University Series, Biological Sciences, Vol. 5, No. 1: Introduction to the Limnology of the Searsville Lake. By Dr. Flora Murray Scott. Pp. 38. (Stanford University, Calif.: Stanford University Press.) 1.50 dollars.

Contributions from the Dudley Herbarium of Stanford University. Vol. 1, No. 1: A Distributional Catalogue of the Lupines of Oregon. By Charles Piper Smith. Pp. 55. (Stanford University, Calif.: Stanford University Press.)

Bulletin of the Terrestrial Electric Observatory of Fernando Sanford, Palo Alto, California. Vol. 3: Summary of Observations on Earth Potential, Air-Potential Gradients, and Earth-Currents for the Year 1925. Pp. 24. (Palo Alto, Calif.)

Field Museum of Natural History. Anthropological Series, Vol. 17, No. 1: A Correlation of the Mayan and European Calendars. By J. Eric Thompson. (Publication 241.) Pp. 22. Zoological Series, Vol. 13: Catalogue of Birds of the Americas and the adjacent Islands in Field Museum of Natural History. Initiated by Charles B. Cory, continued by Charles E. Hellmayr. Part 5: Tyrannidae. (Publication 242.) Pp. vi+517. Anthropology, Memoirs, Vol. 2, No. 1: Archaeological Explorations in Peru. Part I: Ancient Pottery from Trujillo. By Prof. A. L. Kroeber. (First Captain Marshall Field Archaeological Expedition to Peru.) Pp. 48+13 plates. (Chicago, Ill.)

Iowa Geological Survey. Vol. 31. Annual Reports, 1923 and 1924, with accompanying Papers. Pp. 400. (Des Moines, Iowa.)

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United States Department of Agriculture. Department Bulletin No. 1487: A Study in Hyperparasitism, with particular reference to the Parasites of *Apanteles melanoscelus* (Ratzeburg). By C. F. W. Muesebeck and S. M. Dohanian. Pp. 36. (Washington, D.C.: Government Printing Office.) 10 cents.

### CATALOGUES.

Constable Books, 1927. (Summer edition.) Pp. 24. (London: Constable and Co., Ltd.)

Important Works on Natural History and Science, published prior to 1800. (Catalogue 150.) Pp. 44. (London: Dulau and Co., Ltd.)

Fine and Applied Arts, First editions, Modern Presses. (No. 437.) Pp. 20. (Cambridge: Bowes and Bowes.)

## Diary of Societies.

### SATURDAY, JULY 2.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS (North-Western District Meeting) (at Town Hall, St. Anne's on Sea), at 10.30 A.M.

PHYSIOLOGICAL SOCIETY (in Physiological Laboratory, Oxford), at 4.—F. Buchanan: A Method for recording the Action-Current of a Single Spot of Skeletal Muscle without injuring any other Spot.—F. R. Fraser, J. B. S. Haldane, R. Hilton, and G. C. Linder: A Study of the Arterial Blood in Ammonium Chloride Acidosis.—Dr. E. D. Adrian and Rachel Matthews: The Interaction of Retinal Neurons.—Prof. J. Mellanby: The Digestion and Absorption of Fat.—Demonstrations:—Apparatus for investigating Radiant Heating and its Effects, by Prof. H. M. Vernon and M. D. Vernon.—Some Changes in the Tissues during Attempted Acclimatisation to Alterations in  $O_2$ -Pressure in the Air, by J. A. Campbell.—Method of studying Ciliated Epithelium of Trachea, by Dr. Leonard Hill.

ROYAL SOCIETY OF MEDICINE (Disease in Children Section) (Provincial Meeting at Royal Alexandra Hospital for Sick Children, Dyke Road, Brighton).

### MONDAY, JULY 4.

ROYAL SOCIETY OF EDINBURGH, at 4.30.—Sir Joseph Larmor: The Grasp of Mind on Nature. The James Scott Prize will be presented to Sir Joseph Larmor.

ROYAL INSTITUTION, at 5.—General Meeting.  
SOCIETY OF CHEMICAL INDUSTRY (Annual General Meeting) (in Edinburgh).

### TUESDAY, JULY 5.

ROYAL SOCIETY OF MEDICINE, at 5.—Annual General Meeting.  
SOCIETY OF CHEMICAL INDUSTRY (Annual General Meeting) (in Edinburgh).

### WEDNESDAY, JULY 6.

SOCIETY OF CHEMICAL INDUSTRY (Annual General Meeting) (in Edinburgh).

### THURSDAY, JULY 7.

SOCIETY OF CHEMICAL INDUSTRY (Annual General Meeting) (in Edinburgh).

### FRIDAY, JULY 8.

SOCIETY OF CHEMICAL INDUSTRY (Annual General Meeting) (in Edinburgh).

### SATURDAY, JULY 9.

BRITISH MYCOLOGICAL SOCIETY (Phytopathological Meeting) (at the Research Station, East Malling, Kent), at 11.30.—R. G. Hatton: General Account of the Station and its Activities.—At 12.—Demonstration of Reversion in Black Currants, by Mr. Hatton and Mr. Amos.—At 1.30.—Dr. H. Wormald: Brief Outline of the Pathological Problems under Investigation at East Malling.—1.45 to 3.45.—Tour of Egham Field and Great East Field, and Examination of Specimens, Cultures, etc., in the Laboratory. Features of pathological interest include examples of 'Die-back' in Plum Trees, various Raspberry Diseases, Walnut Bacteriosis, Spraying Experiments against Raspberry Anthracnose, and Apple Spraying Experiments, etc.—At 4.30.—General Discussion.

### CONFERENCE.

JUNE 30 TO JULY 2.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS (at British Medical Association House, Tavistock Square, W.C.1.)

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