

Societies and Academies.

LONDON.

Association of Economic Biologists, May 13.—Lieut.-Col. A. T. Gage: Alkaloids are yielded chiefly by the following plants, *Aconitum Napellus* L. (aconite); *Berberis aristata* DC. (berberin); *Papaver somniferum* L. (morphine and other alkaloids); *Camellia Thea* Link. (caffeine); *Theobroma Cacao* L. (theobromine); *Erythroxylum Coca* Lamk. (cocaine); *Pilocarpus pennatifolius* Lem. (pilocarpine); *Physostigma venenosum* Balf. (physostigmine or eserine); *Conium maculatum* L. (conine); *Cinchona*, various species (quinine and allied alkaloids); *Coffea arabica* L. (caffeine); *Psychotria Ipecacuanha* Stokes (emetine); *Strychnos Nux vomica* L. (strychnine); *Nicotiana Tabacum* L. (nicotine); *Datura Stramonium* L. (atropine); *Atropa Belladonna* L. (atropine); *Hyoscyamus niger* L. (hyoscamine); *Claviceps purpurea* Tul. (ergotone).—T. A. Henry: During the century that has elapsed since the discovery of the first alkaloid, morphine, great progress has been made in our knowledge of these indispensable drugs. Such well-known alkaloids as cocaine and atropine have been made in the laboratory, the synthesis of quinine and the related cinchona alkaloids may be expected at any time and, except in minute details, experts are now agreed as to the structure of even such a difficult alkaloid as morphine. Though supplies of alkaloids are still drawn wholly from natural sources, there has been no intensive study of the bio-chemistry of alkaloids, and virtually nothing is yet known regarding either the methods by which alkaloids originate in plants or the part they play in plant physiology.

Royal Microscopical Society, May 18.—R. R. Gates and J. Latter: Observations on the pollen development of two species of *Lathraea*. The two species of *Lathraea*, *L. clandestina* and *L. squamaria*, are similar in all stages of pollen development, the haploid chromosome number in each being twenty-one. Crystal-like bodies are present in the nucleoli of the resting pollen mother-cells. The threadwork remains a reticulum after synizesis, and chromosome formation apparently takes place by the chromatin flowing into definite aggregations irregularly distributed along the branched threads. In diakinesis the filaments connecting the chromatic aggregations are absorbed and the bivalents become independent of one another. During the entire process of chromosome formation the reticulum is connected to the nucleolus, dark-staining nucleolar bodies marking the points of attachment. The portions of thread nearest the nucleolus are sometimes much thickened as though by an exudation of nucleolar material. The method of chromosome pairing is intermediate between parasynapsis and telosynapsis. The heterotypic and homotypic divisions occur normally, except for an extremely late appearance of the homotypic split. Cytomyxis is observed in prophase and interkinesis. The tapetum on the outer wall of the loculus is differentiated from that on the inner, the former being constantly uninucleate, the latter binucleate throughout all the stages of pollen development.—James Lomax: The preparation and examination of coal sections. Sections sufficiently large to enable the whole thickness of a coal seam to be examined in detail have been prepared. All coals are composed of the remains of vegetable matter which can be divided into four components, clarain, vitrain, durain, and fusain. Clarain, which forms the bulk of most British coal seams, has a bright lustrous appearance and is composed of a mixture of leaves, wood, resinous

bodies, etc., in a matrix of structureless material. Vitrain also has a bright lustrous appearance, but usually breaks with a conchoidal fracture. It is derived from wood in which all trace of structure has been destroyed, and usually occurs in thin bands and lenticles in the other components. Durain is a dull variety of coal composed mainly of the exines of megaspores and microspores; it often contains a high percentage of ash, but if pure it forms some of the best British coals. Fusain, commonly known as 'mother of coal' or 'mineral charcoal,' is very soft and has a dull black appearance. It occurs as thin bands and lenticles and is present in all coal seams. It is derived from wood from which all the volatile matter is driven off, but the cellular structure is often well preserved.

Physical Society, May 27.—Edgar A. Griffiths and Ezer Griffiths: A duplex reversal key with mercury contacts. The key employs mercury contacts and is enclosed in a glass casing. The two upper fixed contacts consist of downwardly projecting copper rods, the two lower fixed contacts of cups containing mercury, and the two movable contacts of downwardly projecting copper rods (which enter the fixed cups in one position of the switch) surmounted by cups of mercury (which receive the fixed rods in the other position of the switch). The connexions are those of a reversing switch, and the middle contacts can be raised or lowered by turning a vertical shaft which is retained in either position by a jockey spring.—L. Hartshorn: The measurement of the inductances of four terminal resistance standards. The method of measurement is an application of the Kelvin double bridge, used with alternating current, the phase angle adjustment being obtained by condensers shunting the ratio arms. The bridge is free from stray fields, practically independent of frequency, capable of use with almost any desired current strength, and is very easy to work.—C. Chree: Magnetic disturbance and aurora as observed by the Australasian Antarctic Expedition at Cape Denison in 1912 and 1913.

SHEFFIELD.

Society of Glass Technology, April 27.—W. E. S. Turner: A brief review of furnace development. (a) A saving in fuel has been obtained by the newer types of recuperative or regenerative furnaces; (b) heavy expense was incurred by the practice of founding only once a week; (c) the fuel consumption was greatly increased when the eye of the furnace had worn big. The efficiency of modern British pot furnaces compares favourably with those of Germany. Among the improvements effected during the last few years in furnace design have been (1) greater compactness, (2) better utilisation of waste heat, (3) the introduction of tangential burners, and (4) sillimanite sieges. Tank furnace practice generally on the Continent has not reached the British attainment, which is now equal to anything yet achieved in America. Among the problems which still require more thorough examination are: (a) Design of ports; end ports in some cases appear to give longer life to tank blocks; (b) bridges, the form of the basin and whether there should be one or two dog-houses; (c) depth of the refining end of the tank, whether it should be less than that at the melting end; (d) increased insulation in various parts of the furnace crown, side-walls, etc., and (e) utilisation of waste heat.

PARIS.

Academy of Sciences, May 9.—Jean Perrin: Fluorescence and molecular induction by resonance.

Charles Richet : The conditions of death in electric tetanus in fishes. In fishes, death by electric shock occurs more quickly in small than in large fish of the same species. Fish of different species differ greatly in their resistance to electric shock, and death by electrification is more rapid the higher the temperature of the fish.—A. Bigot : The conditions of deposit of the lower Bathonian in the Bessin and in the region of Caen.—Gaston Julia : The conformal representation of simply connected areas.—Maurice Gevrey : Green's functions : the image point, frontiers with singular points.—Mlle. N. Bary : The finite representation of continued functions.—Haroutine Anjour : New types of the case of movement of the solid body.—G. Reboul : The mechanism of the emission of a radiation by cells of great electrical resistance.—V. Dolejšek : Remarks on the principle of combination.—Privault : The action of the antioxygens on fluorescence. The introduction of a considerable quantity of hydroquinone into a fluorescent solution causes a diminution in the fluorescent power, which almost completely disappears in a concentrated solution of hydroquinone. It is probable that all antioxygens will prove to act similarly.—Francis Perrin : Induced de-activation of the molecules and the theory of antioxygens.—Mlle. Suzanne Veil : The evolution of the hydrate of cobalt sesquioxide in the presence of water. The changes undergone by the hydroxide are followed by the changes produced in the magnetisation coefficient.—Jean Bayol, Paul Marcelin, and Lucien Mayet : A cave with drawings on the walls of the reindeer age in the valley of Gardon : the 'Baoumo-d'en-aut' at Collias (Gard). This cave contains, besides human bones, remains of reindeer, horse, and other animals. It is remarkable for the drawings on the walls—painted, and not engraved.—A. Maige : Remarks concerning the origin of the amylase in plant cells.—Maurice Lenoir : The formation of antipodal nuclei in the embryonic sac of *Fritillaria imperialis*.—George F. Jaubert : The origin of the coloration of beeswax and the composition of propolis. The colouring matter has been identified as 1,3-dioxyflavone. This is derived from the propolis and is not present in the beeswax before melting out.—Auguste Lumière and Mme. Montoloy : The mode of action of autohæmotherapy.—S. Schmidt : The velocity of flocculation and velocity of neutralisation of the antitetanus serum towards the tetanus toxin. The value of a tetanus antitoxin does not depend solely on the amount of antitoxin in the serum ; the velocity of flocculation is also an important factor.

BRUSSELS.

Royal Academy of Belgium, Oct. 9.—M. Dehau : A law of gravitation analogous with that of Einstein.—J. E. Verschaffelt : The trend of the curves of fusion and of sublimation of a pure body.—Paul Stroobant : Discovery and observations of minor planets at the Royal Observatory of Uccle.—Th. de Donder : (1) Contribution to the relativistic quantification. (2) Electrostriction deduced from the Einsteinian gravific. —Fréd. Swarts : (1) Trifluoroacetylacetic acid and ester. The great stability of trifluoroacetic acid suggested that the condensation of ethyl trifluoroacetate with ethyl acetate to form trifluoroacetylacetic acid might be possible, and this reaction has been found to take place. The acid is very stable ; it can be crystallised and even distilled. (2) Trifluoroacetylacetic ester. (ii.) Details of the preparation study of the enol \rightleftharpoons ketone equilibrium. (3) Trifluoroacetylacetic acid.—Lucien Godeaux : Researches on algebraic surfaces of genus zero and bigenus unity.—P. Swings : The Riemannian potentials and the Einstein quadratic forms in the problem of two bodies.—

A. Macq : Contribution to the study of the unsaturated nitriles of the fatty series.—F. Petit : Contribution to the study of the reaction between the organo-magnesium compounds and the nitriles. The γ -aminonitriles. γ -piperidobutyronitrile behaves as a pseudo acid towards magnesium compounds of the fatty series and there is no synthetic reaction. With the phenyl and benzyl magnesium compounds, on the contrary, the reaction is normal.—M. Theunis : Contribution to the study of the reaction of the organo-magnesium compounds on the nitriles. The α -chloronitriles.—Marc de Hemptinne : The thermal expansion of metallic combinations. The coefficient of expansion of a series of silver-antimony alloys has been measured by means of a simple instrument, a description and diagram of which is given. The abrupt change in the coefficient of expansion for the alloy containing 73 per cent. silver, gives clear indication of the existence of the compound Ag_3Sb .—Théodore Van Hove : (1) Contribution to the study of the nitration of the mixed dihalogen derivatives of benzene. Experiments on the nitration of *p*-bromfluorbenzene. (2) Second communication. Study of the nitration of *p*-iodofluorbenzene and *p*-iodochlorobenzene.—G. Balasse and O. Goche : Study of the luminescence of caesium vapour in the electrodeless discharge.—Maurice Nuyens : The electron with internal pressure.

Nov. 6.—Th. de Donder : The electronic gas.—Constant Lurquin : The law of probability of Cauchy.—Georges Homès : The electrodeless discharge and active nitrogen. Details of the phenomena produced in nitrogen by the electrodeless discharge and discussion of the interpretation of the results obtained.

Dec. 4.—J. Capart : The excavations at Spiennes. The committee appointed to investigate the discoveries of M. Rutot had not been able to confirm them.—Lucien Godeaux : Researches on the algebraic surfaces of genus zero and bigenus unity.—H. Buttenbach : Description of a mineral from Katanga. This mineral was found in the Prince Leopold mine at Kipushi and has been tentatively named kipurite. It is a basic phosphate of copper and zinc $(Cu,Zn)_3(PO_4)_2 + 3(Cu,Zn)(OH)_2 + 3H_2O$. A complete crystallographic study is given. The same mineral has been discovered in the Rhodesian Broken Hill mine.—A. Juliard : The formation of ozone by the silent electric discharge in the presence of foreign gases. In the presence of hydrogen, silicon tetrafluoride, nitrogen and nitric oxide, the yield of ozone is lowered, other conditions remaining constant. This result is in contradiction with some of the earlier work on the same subject.—G. Gilta : The crystalline form of sodium β -glycerophosphate.—Théodore Van Hove : Some researches on the direct introduction of substituting groups in the aromatic mercaptans. Studies in the bromination, nitration, and sulphonation of thiophenol.

Dec. 15.—A. Rutot : Remarks on the discoveries at Spiennes.—Victor Van Straelen : The first remains of medusæ found in the carboniferous limestone of Belgium.—Jeanne Terby : Study of the chromocentres of the cells of the root nodosities of the Leguminosæ.

ROME.

Royal National Academy of the Lincei, April 3.—V. Volterra : The periodicity of biological fluctuations. The author has already extended to the hereditary case the three laws of biological fluctuations, the modifications which they undergo being indicated. It is now shown that in the same case small periodic fluctuations round the stationary state are incapable of existence.—F. Severi : (1) Reflections on the area of a curved surface ; (2) Further with regard to the

area of a curved surface.—G. Albanese: The fundamental theorem of the base for the whole of the curves of an algebraic surface.—G. Dubourdieu: Groups of holonomy of Riemann spaces of four dimensions. Case of a definite and positive ds^2 .—G. Andreoli: Curvature and parallelism on a surface.—L. Fantappiè: The analytic functionals of functions of two complex variables.—U. Crudeli: The motions of a viscous (homogeneous) liquid symmetrical with respect to an axis.—M. L. Pagliarulo: Natural refractive and rotatory dispersion of aqueous solutions of monoethyl aspartate. This ester exhibits anomalous natural rotatory dispersion, the curve showing at the wave-length region 5300-6300 Å.U., a bend similar to that of the curve of refractive dispersion when absorption bands occur. The refractive dispersion curve runs perfectly parallel to that of water, but the curve representing the increments for 100 Å.U. shows a flattened portion, the middle of which coincides with the bend of the rotatory dispersion curve. Thus, monoethyl aspartate exhibits a vibration with characteristic frequency corresponding with wave-length 5780 Å.U.—G. Malquori: The system, $AlCl_3-KCl-H_2O$ at 25°. No double salts are observed in this system, the two solid salts existing in contact with the solutions being $AlCl_3, 6H_2O$, and KCl . Thus, although anhydrous aluminium chloride readily forms double compounds, no tendency in this direction is shown by the hydrated salt.—P. Aloisi: Approximate determination of 2V in thin mineral sections.—R. Savelli: The genetic value of the products of *Nicotiana rustica* × *Nicotiana tabacum*.

VIENNA.

Academy of Sciences, Mar. 24.—E. Röggl: The theory of errors on a geometrical foundation.—A. Tauber: On the integration of linear differential equations.—H. Benndorf: Contributions to our knowledge of atmospheric electricity (No. 68). Outlines of a theory of the electrical field of the earth. It is assumed that the conductivity of the atmosphere increases with height, so that at some 20 kilometres height the conductivity may be a hundredfold that at the ground level, and hence the field only one hundredth of that at the ground level, 99 per cent. of the charge being compressed within the lower 20 kilometres of the atmosphere.—L. Schmid and A. Waschkau: The phyto-sterins of beet oil.—K. Brunner, R. Grüner, and Z. Benes: Preparation of di-propionamide and di-iso-butyr- amide.—K. Brunner, M. Matzler, and V. Mössner: Formation of amides.—K. Brunner and F. Haslwanter: Formation of nitro-phenyl-ethane-amides.—M. Holly: Mormyridæ, Characinidæ and Cyprinidæ from Kamerun.—P. Weiss: Tests of potency on the regeneration blastema of the lizard. In continuation of former experiments on Triton, portions of lizard's tails were transplanted to the foreleg of the same animal.—M. Kohn and J. Sussmann: Some halogen phenols derived from o-chloro-phenol.—M. Kohn and J. Sussmann: The di-phenyl-ether of 2, 5-di-oxy-quinone and allied compounds.—M. Kohn and J. Pfeiffer: Removal of halogen from bromo-phenols.—M. Kohn and J. Pfeiffer: Halogenation of chloro-phenols.

Official Publications Received.

BRITISH.

Stonyhurst College Observatory. Results of Geophysical and Solar Observations, 1926; with Reports and Notes of the Director, Rev. E. D. O'Connor. Pp. xiii+48. (Blackburn.)

Methods of Growing Large Metal Crystals. Being the Fourth Sorby Lecture delivered by Prof. H. C. H. Carpenter on Friday, October 22nd, 1926. Pp. 32+7 plates. (Sheffield: Department of Applied Science, The University.) 1s.

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Manchester Municipal College of Technology. Prospectus of Short Courses of Lectures and Laboratory Work to be given during the Summer, 1927. Pp. 27. (Manchester.)

Transactions of the Royal Society of Edinburgh. Vol. 55, Part 1, No. 11: The Fish-Fauna of the Cementstones of Foulden, Berwickshire. By Errol Ivor White. Pp. 235-237. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 4s.

Sudan Government: Wellcome Tropical Research Laboratories, Khartoum. Report of the Government Chemist for the Year 1926. (Chemical Section, Publication No. 43.) Pp. iii+34. (Khartoum.)

The Journal of the Royal Agricultural Society of England. Vol. 87. Pp. 356+clxvi+x+20. (London: John Murray.) 15s.

Memoirs of the Department of Zoology, Panjab University. Vol. 1: Fauna of Karachi. i: A Study of the Genus *Eurythoe* (Family Amphimnoidæ). By S. S. Bindra. Pp. 18+2 plates. (Lahore: Panjab University.) 3 rupees.

Imperial Department of Agriculture for the West Indies. Report on the Agricultural Department, Dominica, 1925-26. Pp. iv+36. 6d. Report on the Agricultural Department, St. Kitts-Nevis, 1925-26. Pp. iv+30. 6d. (Trinidad, B.W.I.)

Journal of the Marine Biological Association of the United Kingdom. New Series, Vol. 14, No. 4, May. Pp. 837-1101. (Plymouth.) 10s. net.

Transactions of the Yorkshire Numismatic Society. Edited by T. Sheppard. Vol. 3, Part I. Pp. iv+56+2 plates. (Hull: A. Brown and Sons, Ltd.) 5s.

Journal of the Chemical Society: containing Papers communicated to the Society. May. Pp. viii+iv+961-1221. (London: Gurney and Jackson.)

Aeronautical Research Committee: Reports and Memoranda. No. 1070 (Ae. 252): Wind Tunnel Test of Aerofoil M.2. By H. Davies and F. B. Bradfield. (A.3.a. Aerofoils-General, 170.—T. 2363.) Pp. 5. (London: H.M. Stationery Office.) 4d. net.

A Report on Work done by the League of Nations Union to help in making known the League of Nations in the Schools and Colleges of Great Britain. Pp. 20. (London: League of Nations Union.)

The Schools of Britain and the Peace of the World. Pp. 35. (London: League of Nations Union.)

Report of the Astronomer Royal to the Board of Visitors of the Royal Observatory, Greenwich; read at the Annual Visitation of the Royal Observatory, 1927 June 3. Pp. 22. (Greenwich.)

Pasteur Institute of India, Kasauli. The Twenty-fifth Annual Report of the Central Committee of the Association and the Audited Accounts up to June 30th, 1926; also the Report of the Director of the Institute for the Year ending 31st December 1925. Pp. 80. (Kasauli.)

Kodaikanal Observatory. Bulletin No. 80: Summary of Prominence Observations for the first half of the Year 1926. Pp. 119-133. Kodaikanal.)

Records of the Geological Survey of India. Vol. 59, Part 4, 1926. Pp. viii+371-422+xxvii. (Calcutta: Government of India Central Publication Branch.) 2.12 rupees; 5s.

Memoirs of the Geological Survey of India. Palæontologia Indica, New Series. Vol. 10, Memoir No. 2: The Mollusca of the Ranikot Series (together with some Species from the Cardita Beaumonti Beds). By M. Cosman and G. Pissarro; revised by the late E. Vredenburg, with an Introduction and editorial Notes by Dr. G. de P. Cotter. Pp. v+31+4 plates. (Calcutta: Government of India Central Publication Branch.) 2.6 rupees; 4s. 3d.

Proceedings of the Edinburgh Mathematical Society. Edited by Dr. T. M. MacRobert and Prof. H. W. Turnbull. Series 2, Vol. 1, Part 1, May. Pp. 70. (London: G. Bell and Sons, Ltd.)

University College of Wales, Aberystwyth: Welsh Plant Breeding Station. Seeds Mixture Problems. (Series H, No. 6, Seasons 1923-1926.) Pp. 70+2 plates. (Aberystwyth.) 3s. 6d.

Proceedings of the South London Entomological and Natural History Society, 1926-27. Pp. xix+155+11 plates. (London.) 15s.

Proceedings of the Royal Society of Edinburgh, Session 1926-1927. Vol. 47, Part 2, No. 8: The Role of Inbreeding in the Development of the Clydesdale Breed of Horses. By A. Calder. Pp. 118-140. 2s.

Vol. 47, Part 2, No. 9: Models Illustrative of the Atomic Process in Ferromagnetism. By Sir J. Alfred Ewing. P. 141. 6d. Vol. 47, Part 2, No. 10: The Salmon of the R. Grand Caspédia, Canada. By W. L. Calderwood. Pp. 142-147+2 plates. 1s. 6d. Vol. 47, Part 2, No. 11: The Effects of Implantation upon Ovarian Grafts in the Male Mouse. By Y. Tamura. Pp. 148-164+2 plates. 2s. 3d. Vol. 47, Part 2, No. 12: Magnetisation and Temperature in Crystals. By Prof. W. Peddie. Pp. 165-176. 1s. Vol. 47, Part 2, No. 13: After Images of Coloured Sources. By Miss W. J. Smith. Pp. 177-189. 1s. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

FOREIGN.

Statens Meteorologisk-Hydrografiska Anstalt. Årsbok, 8, 1926. i: Månadsöversikt över väderlek och vattentillgång jämte anstaltens årsberättelse. Pp. 99. (Stockholm.) 2.50 kr.

Société des Nations: League of Nations. Bulletins de l'Institut International de Coopération Intellectuelle. Bulletin des relations scientifiques. 2me année, No. 2, Mai. Pp. 229-308. (Paris: Les Presses universitaires de France.) 8 francs.

Smithsonian Institution: United States National Museum. Contributions from the United States National Herbarium. Vol. 26, Part 1: The Lecythidaceae of Central America. By H. Pittier. Pp. v+14+12 plates. Bulletin 100, Vol. 2, Part 5: Contributions to the Biology of the Philippine Archipelago and adjacent Regions. The Shipworms of the Philippine Islands. By Paul Bartsch. Pp. 531-562+plates 53-60. 15 cents. Bulletin 100, Vol. 6, Part 3: Contributions to the Biology of the Philippine Archipelago and adjacent Regions. Report on the Hydroidea collected by the United States Fisheries Steamer *Albatross* in the Philippine Region, 1907-1910. By Charles C. Nutting. Pp. 193-242+plates 40-47. 15 cents. (Washington, D.C.: Government Printing Office.)

Proceedings of the Imperial Academy. Vol. 3, No. 3, March. Pp. v-vi+115-193. (Tokyo.)