

Societies and Academies.

LONDON.

Royal Society, Nov. 8.—S. B. Schryver and E. J. Candlin: Investigations on the cell-wall substances of plants, with special reference to lignification. Substances accompanying cellulose in plant cell-walls may be divided into three classes: (i) lignins, (ii) hemicelluloses, (iii) pectins. Products belonging to the two latter classes are formed by conjugation of sugar acids (glycuronic and galacturonic acids) with sugars. These acids are designated 'uronic acids,' and hemicelluloses and pectins appear, therefore, to belong to a distinct chemical group, for which the name 'polyuronides' is suggested. Pectins undergo decarboxylation on treatment with weak alkaline solutions, even at room temperature, yielding among other products, hemicelluloses, still containing uronic groups, but resisting decarboxylation on treatment with alkalis, and resembling in all respects hemicelluloses isolated directly from timbers. The results indicate that decarboxylation takes place when plant tissues lignify.

R. R. Gates and F. M. L. Sheffield: Chromosome linkage in certain *Oenothera* hybrids. An account is given of five generations of hybrids from *O. (biennis* × *rubricalyx*) × *ammophila* and *O. ammophila* × (*biennis* × *rubricalyx*) and their cytological peculiarities. The chromosome linkages appear to be a means of explaining some of the genetic behaviour observed in these and similar hybrids. Reciprocal F_1 hybrids are very different. They are patroclinous. It may be that the *Oenothera* linkage arose between non-homologous chromosomes. It appears probable that a relation exists between the chromosome linkage and the genetic linkage which is a characteristic feature of the genus.

S. Dickinson: Experiments on the physiology and genetics of the smut fungi. After isolating a chlamydo-spore of the covered smut of oats (*Ustilago levis*) and allowing it to germinate, the first sporidium formed by each of the four segments of its promycelium was isolated, transferred to test-tube slopes, and allowed to develop. Four cultures of strains were obtained from one chlamydo-spore, and all four differed. The segregation of these cultural characters was on a 2:2, 3:1, and 4:0 basis. This may take place in either the first or the second of the reduction divisions. No conclusive evidence of somatic segregation has yet been obtained. The cytoplasm has no determining influence on cultural characters so far described.

R. J. Ludford and W. Cramer: The mechanism of secretion in the thyroid gland. The cells of the thyroid discharge into the lumen of a vesicle and so into the blood stream. There is no alteration of direction of discharge during prolonged increased functional activity. There is no evidence that the cells secrete normally direct into the capillaries. In exophthalmic goitre, in mouse and man, there is enlargement of mitochondria and of Golgi apparatus—a condition characteristic of intense secretory activity. The polarity of the Golgi apparatus is frequently reversed. The secretion droplets, formed in association with the reversed apparatus in the case of the mouse, are discharged direct into the capillaries.

Ruth Deanesly: A study of the adrenal cortex in the mouse and its relation to the gonads. Well-marked normal changes are described in the cortex of the female gland which show no correlation with oestrous cycle in the unmated animal. Pregnancy accelerates these normal changes, but has no specific effect on the

structure of the gland. In the castrated male an adrenal of female type develops. Ovariectomy has no effect on the adrenal. Double adrenalectomy was performed on a number of male and female mice; these bred normally after operation.

W. J. Dakin: (1) Anatomy and phylogeny of *Spondylus*, with a particular reference to the lamellibranch nervous system. An investigation of the bivalve mollusc, *Spondylus*, was undertaken in order to determine the relationship of this genus to *Pecten*, for although *Spondylus* possesses eyes of a type almost or exactly the same as those of *Pecten*, the habits of the two genera are very different. *Spondylus* lives fixed by its shell to submerged rocks, etc.; *Pecten* moves about actively and is able to swim. Anatomically *Spondylus* is a close relative of *Pecten*, and its structure can be best interpreted by assuming it derived from a form not unlike *Pecten maximus*. The nervous system differs remarkably from the type so familiar in all other lamellibranchs. The pedal ganglia are connected by long nerves to the visceral ganglion and cerebro-pedal connectives are not present as distinct nerves.

W. J. Dakin: (2) The eyes of *Pecten*, *Spondylus*, *Amusium*, and allied lamellibranchs, with a short discussion on their evolution. The eyes of *Pecten*, *Spondylus*, *Amusium*, *Chlamys*, and, in all probability, *Pedum* may be considered identical in structure. No lamellibranchs outside the suborder Pectinacea have eyes of the same type, and within the group the eye structure is remarkably constant, notwithstanding diversity of habits. The development of the eye throws little or no light upon its evolution. The eyes in the Pectinacea are functionally not so highly developed as their complex structure might lead one to suppose. Internal factors may have played a greater part in their evolution than natural selection.

C. E. Walker: Artefacts as a guide to the chemistry of the cell. When mixtures containing albumen, peptone, gelatine, and lipins, with minute globules of methyl myristate or laurate suspended in them to act as artificial nuclei, are suitably fixed and treated with osmic acid, lipins separate out and are deposited, largely near to the globules, and are blackened. If, however, yellow phosphorus be dissolved in the myristate or laurate, the greater part of the lipins is deposited upon the actual surface of the globules. This suggests that nuclear content may determine the position in which lipins are fixed. If these mixtures with myristate or laurate containing phosphorus are kept at a temperature of 30° C., lipins appear to become gradually saturated or oxidised, and appearances on fixation resemble the changes described as occurring in 'Golgi apparatus' in cells of animals suffering from 'phosphorus' poisoning.

PARIS.

Academy of Sciences.—Sept. 24.—G. Bigourdan: The instruments and observations of Delambre at the rue de Paradis.—V. Grignard, L. Lapayre, and Tchéou Faki: The monomagnesium compound of acetylene. A study of Oddo's process, the reaction between C_6H_5MgBr and acetylene. Large increases in the yield can be obtained by working under certain conditions detailed.—E. Bataillon: Analytical studies on the maturation of the eggs of Batrachians. All the experiments described agree with the hypothesis of an osmotic hyperpressure in immature eggs.—Georges Bouligand: Order of measurement and dimension of closed ensembles.—O. D. Kellogg: The unicity of harmonic functions.—Luis Roden: A new method for measuring the solar parallax. This method is based

on measurements of radial velocities of rotation of the solar equator and observations giving the period of complete rotation. The solar diameter obtained by this method (1,390,857 km.) gives a figure for the sun's mean distance very close to those given by other methods.—G. Bruhat: The geometrical properties of diagrams relating to saturated vapours.—Erik A. Holm: The state called the 'Tama-Zustand.' From the hypothesis of Von Dallwitz-Wegner, it follows that in a vessel at a uniform temperature and containing a gas sufficiently rarefied, there should exist a pressure of a new order named the gravimolecular pressure. Experiments are described which appear to prove the existence of such a pressure.—T. Peczkalski and J. Cichocki: The electrical conductivity of the vapours of potassium chloride. A detailed account of experiments leading to the conclusion that potassium chloride vapour can be electrolysed.—R. de Malle-mann: Calculation of the internal field of polarisation.—Paul Bary: Structure of the filaments obtained by drying up ferric solutions. A study of the structure of the solid material obtained by the slow evaporation of aqueous solutions of colloidal ferric hydroxide.—Jean Savard: The ultra-violet absorption curves of the terpene alcohols in relation with their constitution.—Albert Baldit: Magnetic measurements in the south-west of France.—Et. Burnet: The pathogenic power of *M. melitensis* and of *B. abortus* for the ape and for man.

GENEVA.

Society of Physics and Natural History, July 5.—Robert Bach: A verification apparatus for optical pyrometers. The author has constructed a very simple apparatus, which is based on the realisation of an approximately black body and allows the standardisation of any optical pyrometer by the observation of a certain number of melting points, for arbitrary experimental conditions.—Léon W. Collet and Augustin Lombard: The presence of a plane of overlapping of the Morcles stratum in the circle of the *Fer à cheval* (Sixt Alps, Haute-Savoie). The sedimentary layer of the crystalline mass of the Aiguilles Rouges is represented to the south of the *Fer à cheval* hut by Trias and crushed Malm. On these rests the Morcles stratum which starts with thin schists of the lower Lias, supporting the limestone zones of the middle Lias.—Léon W. Collet and Edouard Paréjas: The crystalline wedge of Fontanabran, the massif of the Aiguilles Rouges. The gneiss which forms the summit of Fontanabran overlaps a lower crystalline element through the intermediary of the Triassic layer of the latter (quartzites and argillites). Further, the extremity of the wedge, broken by an Alpine direction fault (N. 45° E.), sinks about fifteen metres.

PRAGUE.

Bohemian Academy of Sciences and Arts, Class II. (Science and medicine), Oct. 19.—V. Sotorník: Minerals of alpine paragenesis from Kutná Hora.—V. Posejpal: Second contribution to the study of light-ether: Ultra-penetrating radiation, heat of the earth and sun, the source of Swanne's electrons keeping up the earth's negative charge, are accounted for by the hypothetical neutron constitution of the ether.—O. Borůvka: A certain type of minimal surfaces in four-dimensional space of constant curvature.—J. Korouš: The series of Laguerre polynomials.—J. Hronec: Linear differential systems of second order solvable by hypergeometric series.—V. Dolejšek and M. Valouch: The precision of X-ray spectra and Moseley's law. The causes of irregular deviations from Moseley's law are due to variations of intensity,

tension, and chemical binding; periodic regular deviations occur from the formula

$$\sqrt{\frac{r}{R}} = a + bn + cn^2 + dn^3 \quad (n = \text{atomic number}).$$

—M. Mikan: Isologic complex of Cremona space quadratic transformations. On the quadratic correspondence of 12 pairs in space, and the reproduction of 6 points.

Official Publications Received.

BRITISH.

First Cape Catalogue of Stars for the Equinox 1925-0. Catalogue of 4569 Stars from Observations with the Reversible Transit Circle made at the Royal Observatory, Cape of Good Hope, during the Years 1918-1925, under the direction of Dr. H. Spencer Jones. Pp. xliii+128. (London: H.M. Stationery Office.) 27s. 6d. net.

Observations made at the Royal Observatory, Greenwich, in the Year 1926: Astronomy, Magnetism and Meteorology, under the direction of Sir Frank Dyson. Pp. 10+Axxiii+A56+iv+B20+C40+Dix+D123+6+Exvi+E86+Fxi+F34+22. (London: H.M. Stationery Office.) 40s. net.

Declinations of Stars derived from Observations of Transits in the Prime Vertical with the Altazimuth in the Years 1923-26, under the direction of Sir Frank Dyson. Pp. v+64. (London: H.M. Stationery Office.) 7s. net.

Annals of the Cape Observatory. Vol. 10: Spectroscopic Researches. Part 8: Radial Velocity Determinations, including a Spectroscopic Determination of the Constant of Aberration, the Orbits of 13 Spectroscopic Binary Stars, and the Radial Velocities of 434 Stars. By Dr. H. Spencer Jones. Pp. 246. (London: H.M. Stationery Office.) 20s. net.

Magnitudes of Stars contained in the Cape Zone Catalogue of 20,843 Stars for Equinox 1900, Zones -40° to -52°. Reduced and prepared for Press under the direction of Dr. H. Spencer Jones. Pp. lxxxiv+140. (London: H.M. Stationery Office.) 28s. net.

Leeds University: Department of Pathology and Bacteriology. Annual Report, by Prof. Matthew J. Stewart and Prof. J. W. McLeod; with Abstract Report on Experimental Pathology and Cancer Research, by Prof. H. D. Passy. Pp. 16. (Leeds.)

Report of the Council of the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne, intended to be presented at the Annual Meeting of the Society, 31st October 1928. Pp. 42. (Newcastle-upon-Tyne.)

Board of Education. Educational Pamphlets, No. 64: Education for Industry and Commerce; a Survey of the existing Arrangements for Co-operation between Industry, Commerce and the Professions and the Technical School System of England and Wales. (Industry Series, No. 1.) Pp. 103. (London: H.M. Stationery Office.) Paper, 6d. net; cloth, 1s. 6d. net.

Empire Cotton Growing Corporation. Report of the Executive Committee, to be submitted to the Meeting of the Administrative Council on October 16th, 1928. Pp. 10. (London.)

Proceedings of the Society for Psychical Research. Vol. 38, Part 108, September. Pp. 103-207. (London: Francis Edwards, Ltd.) 3s.

Journal and Proceedings of the Asiatic Society of Bengal, New Series, Vol. 23, 1927, No. 2. Pp. clxxxiv. (Calcutta.) 4.8 rupees.

Rubber Research Institute of Malaya. Planting Manual No. 1: Guide to the Preparation of Plantation Rubber. By B. J. Eaton. Pp. iii+54+vii. (Kuala Lumpur.) 2 dollars.

Indian Journal of Physics, Vol. 3, Part 1; and Proceedings of the Indian Association for the Cultivation of Science. Conducted by Prof. C. V. Raman. Pp. 149+5 plates. (Calcutta.) 3 rupees; 4s.

King's College, London. 1829-1929 Centenary Commemoration. Pp. 32+6 plates. (London.)

Survey of India. The Tides. Revised by Major C. M. Thompson. Pp. vi+140+80+50. 2 rupees; 3s. 6d. Professional Paper No. 20: Reconnaissance Survey from Aircraft. By Lieut.-Col. G. A. Beazeley. Pp. ii+34+4 plates. 1.8 rupees; 2s. 6d. Professional Paper No. 21: Irrigation and Settlement Surveys, 1926. By Major J. D. Campbell. Pp. v+36+16 plates. 1.8 rupees; 2s. 6d. (Dehra Dun.)

Indian Central Cotton Committee: Technological Laboratory. Bulletin No. 12, Technological Series No. 7: The Foundations of Yarn-Strength and Yarn Extension. Part i, The General Problem; Part ii, The Relation of Yarn-Strength to Fibre-Strength. By Alfred James Turner. Pp. ii+29. (Bombay.) 1 rupee.

The Hadow Report and After: being a Statement by the Executive of the National Union of Teachers upon certain Recommendations of the Consultative Committee of the Board of Education, and upon the Reorganisation of the Educational System now contemplated by the Board. Pp. 71. (London: National Union of Teachers.) Free.

British Cast Iron Research Association. Seventh Annual Report for the Year ending June 30th, 1928. Pp. 24. (Birmingham.)

A Theoretical Study of the Articulation and Intelligibility of a Telephone Circuit: a Theoretical Study of the Quantities that can be used as a Measure of the Transmission Quality of a Telephone Circuit, and Formulæ for determining the Relation between the different Quantities. By John Collard. Pp. 36. (London: International Standard Electric Corporation.)

Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1164 (Ac. 328): Note on the Forces experienced by Ellipsoidal Bodies placed unsymmetrically in a Converging or Diverging Stream. By Dr. H. Lamb. (T. 2617.) Pp. 4+1 plate. (London: H.M. Stationery Office.) 4d. net.

Catalogue of Manuscripts in the Library of the Royal College of Surgeons of England. By Victor G. Plarr. Pp. ii+76. (London.)

Navy (Health). Statistical Report of the Health of the Navy for the Year 1926. Pp. v+149. (London: H.M. Stationery Office.) 4s. 6d. net.

Ministry of Health. Regional Water Committees. Pp. 8. (London: H.M. Stationery Office.) 4d. net.