

Societies and Academies.

LONDON.

Physical Society, Nov. 9.—J. B. Seth, Chetan Anand, and Gian Chand: The effect of moist air on the resistance of pencil lines. The resistance of a pencil line increases when it is kept in a moist atmosphere. This change may, in certain circumstances, be utilised to measure humidity.—L. F. Richardson, V. Stanyon, and other students of Westminster Training College. An absolute current-balance having a simple approximate theory. A simple form of current-balance has been constructed which measures currents with a probable error of about 1 part in 1000. The coils are single layers, so that they can in the future be made as precise helices. The authors had to aim at cheapness rather than at perfection, and so irregularities of shape leave the current uncertain by 5 parts in 1000. A second approximation, depending on a simple deduction from Laplace's equation, corrects the elementary theory by 1.4 parts in 1000 of current.—E. V. Appleton: Notes on wireless methods of investigating the electrical structure of the upper atmosphere (I.). Various direct wireless methods of measuring the 'effective' height of the atmospheric ionised layer are discussed and compared. For a layer of horizontal stratification, and under conditions for which the influence of the earth's magnetic field may be neglected, the effective height is greater than the maximum height reached by the atmospheric ray.

Geological Society, Nov. 21.—Frederick William Shotton: The geology of the country around Kenilworth (Warwickshire). This paper completes the mapping of the so-called 'Permian' rocks at the southern termination of the Warwickshire coalfield. The strata are conformable with the carboniferous deposits on the north, and must therefore be regarded as belonging to that system. The total thickness of post-Keele carboniferous beds is estimated at about 3500 feet, with the top of the sequence overlapped unconformably by Keuper sandstone. Various subdivisions are made, the most important being a well-developed conglomerate (Gibbet Hill Conglomerate) above the Tile Hill Marl Group, and two breccia-bands at Kenilworth. The superficial deposits of the area have been mapped for the first time. They are divisible into an eastern and a western type.—Stanley Smith and Sidney Hugh Reynolds: The carboniferous section at Cattybrook, near Bristol. About 5 miles north of Bristol the carboniferous limestone rim of the Bristol coalfield is traversed by the South Wales branch of the Great Western Railway, by means of the Patchway Tunnel. In the railway-cuttings west of that tunnel, and in the adjacent brickworks, the rocks represented are the uppermost part of the carboniferous limestone (D_2 and probably D_1) and the coal measures. Red, coarsely oolitic, and current-bedded limestones, which often pass rapidly into grits, are the most characteristic rocks. The limestones contain much iron. At the western end of the main cutting the D_1 beds and coal measures are brought into contact by the Cattybrook Fault, and on both sides of this for some 200 yards the rocks show an astonishing amount of disturbance. East of the fault the D_1 beds are traversed by a powerful line of thrust. West of the fault the ironstone-bands in the coal measures may be crumpled up, or torn apart so as to resemble a series of isolated nodules.

Society of Public Analysts, Dec. 5.—A. Scott Dodd: The occurrence and determination of boron compounds in vegetable products. The amount of boron compounds (expressed as boric acid) found in dried raisins

and currants ranged from 110 to 260 parts per million, and in miscellaneous dried fruits from 40 parts per million in prunes to 300 parts per million in apricots and peaches. In fresh fruits the quantities varied from 31 to 62 parts per million, corresponding to 280 to 550 parts per million on the dry substance.—John Evans and A. O. Jones: Chemical tests for drunkenness: the determination of small quantities of alcohol in urine. The urine is evaporated in a current of air, and the mixture of air and alcohol vapour led into a strongly acid standard solution of potassium dichromate. The alcohol is oxidised to acetic acid, and the unreduced dichromate is determined by adding potassium iodide and titrating the liberated iodine with standard thiosulphate solution.—C. A. Adams and J. R. Nicholls: The analysis of mixtures containing acetone, ethyl alcohol, and isopropyl alcohol. Tables have been made of the specific gravities and refractometer readings of aqueous mixtures of acetone and the lower alcohols; these tables can be used for calculating the proportion of three of these ingredients, provided that one of the three can be determined by an independent method.

Linnean Society, Dec. 13.—S. L. Hora: Evolution, divergent and convergent. Variations in organisms are the result of divergence. Convergence implies resemblances which result from independent functional adaptation to similar ends. Animals living under different conditions sometimes exhibit similar modifications; but these are responses to similar factors in the environments. Attention is also directed to the communal convergence, with special reference to the body-form, of insects inhabiting torrents. Organisms living in the same environment and in response to the same element in the habitat are sometimes differently modified. Environment is the supreme master of most of the changes in animal organisation, and organic evolution is an index of the varied conditions under which life exists.

DUBLIN.

Royal Irish Academy, Nov. 30.—J. Algar and P. J. Hanlon: Dichalkones derived from diacetoresorcinol. The dichalkones described are obtained by the condensation of furfuraldehyde and of *p*-dimethylaminobenzaldehyde with diacetoresorcinol. Furfuraldehyde in the presence of boiling alcoholic sodium hydroxide yields golden-yellow plates of difurfurylidenediacetoresorcinol (M.P. 226°-227° C.). Diacetoresorcinol condenses with *p*-dimethylaminobenzaldehyde in absolute alcoholic solution, in the presence of a small amount of piperidine, to form α -di-*p*-dimethylaminobenzylidenediacetoresorcinol—bright-red prisms, M.P. 240°-241° C. When 80 per cent alcohol is employed as solvent, an isomeric β -compound is obtained—orange-red plates, M.P. 262°-263° C. Attempts to convert the dichalkones into diflavone or dicoumaranone derivatives were unsuccessful.—J. Algar and Nora M. MacDonnell: The condensation of aldehydes with nitro-diacetoresorcinol. Nitrodiaacetoresorcinol (M.P. 235.5° C.) is formed when diacetoresorcinol is treated at a low temperature with a slight excess of nitric acid in the presence of sulphuric acid. The nitro compound, when reduced by ferrous hydroxide, gives a small yield of aminodiaacetoresorcinol (pale-yellow prisms, M.P. 185° C.). It condenses in the normal way with benzaldehyde and furfuraldehyde to form dichalkones; with piperonal the condensation proceeds in a somewhat unusual way, with the production of orange-red prisms (M.P. 262° C.). This substance does not give any of the usual reactions of dichalkones and would appear to be nitro-di-3'-4'-methylenedioxy-diflavanone.

EDINBURGH.

Royal Society, Dec. 3.—T. A. Stephenson: A contribution to Actinian morphology: the genera *Phellia* and *Sagartia*. In 1858, P. H. Gosse collected from a "rock called Proudfoot, at the entrance to Wick Bay in Caithness" (Gosse, 1860) the original specimens of *Phellia gausapata* Gosse. The author visited this rock in 1926 and collected thirteen examples of the species. The type-species of the genus *Phellia* was *P. mueroincta*, but this has proved to be a form of *Sagartia troglodytes*, so *P. gausapata* now becomes the type-species. The genus *Phellia* is defined.—Miss S. M. Manton: On some points in the anatomy and habits of the Lophogastrid Crustacea. The Lophogastridæ are the most primitive living Malacostraca. They show a simpler filter feeding mechanism than that of any other known form in that in *Gnathophausia* a maxillary filtering mechanism exists alone. Further primitive characters are seen in the form of the mandible and in the segmentation of the abdomen. The mandibles show a simpler condition than yet recognised in any Peracaridan. A seventh abdominal segment is present in the abdomen as in the embryo of *Hemimysis*, but here it is incompletely fused to the sixth segment even in the adult. With the exception of *Nebalia* these are the only living forms with the seventh segment incompletely fused to the sixth. *Lophogaster typicus*, unlike *Gnathophausia*, is a specialised form which feeds on large food on the bottom. It has lost its filtering mechanism, and the structural changes involved resemble those of the members of the more specialised groups of the higher Peracarida which have given up filter feeding.—H. G. Cannon and Miss S. M. Manton: On the feeding mechanism of the Syncarid Crustacea. The Syncarid Crustacea, *Paranaspides* and *Anaspides*, both possess two distinct feeding mechanisms, one filtratory, by which minute suspended food particles are filtered from a food current, and the other raptatory, by which large food masses are seized by the mouth parts. In this respect they resemble *Hemimysis*, and it is suggested that the modern Malacostraca evolved from a form possessing these two mechanisms. The mouth parts of *Koonunga* show no evidence of a filtratory mechanism. The filter plate of the maxilla is represented by a group of stout spines. *Koonunga* is entirely a raptatory feeder.—B. P. Weisner and F. A. E. Crew: The preparation of p factors: their physiological action upon the immature, mature, and senile gonad. There are two phases of ovarian activity—the first (during which ovulation occurs and œstrin is produced) is caused by a factor, p_1 ; the second (during which œstrin and also betahormone is produced, so that pregnancy or pseudo-pregnancy occurs) is induced by another factor, p_2 . p_2 is also produced in the (human) placenta. Extracts of p_2 from placenta prolong the second phase, induce the formation of active corpora lutea, etc. When administered to animals, the ovaries of which do not contain active lutein cells or corpora lutea which still can be activated, the extracts cause œstrus until sufficient lutein tissue has been formed. They have a very intensive reactivating influence upon the senile male gonad. There has also been observed a favourable influence upon the general state of the animals. These extracts are protein-free and non-toxic and can be given to human beings. (See NATURE, Mar. 31, p. 498.)

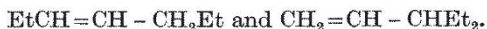
PARIS.

Academy of Sciences, Nov. 12.—A. Lacroix: The constitution of the lavas of the island of Mehetia (Society Archipelago). Complete chemical analyses of six specimens, ranging in composition from an

ankaratic limburgite to a Labrador basalt.—J. Costantin: Appearance of argonanes on the field eryngo (*Eryngium maritimum*) in the laboratory.—Charles Richet, Mlle. Eudoxie Bachrach, and H. Cardot: The adaptation of marine animals to living out of water. The experiments were carried out with crustaceans and with fish (*Gobius*), each being taken out of the water for gradually increasing periods. The crustaceans acquired the power of remaining out of water a certain time without injury. The three species of *Gobius* also acquired an increased resistance to exposure to air.—A. Bigot: The existence of medusæ in the Bajocian of Bessin.—Blas Cabrera y Felipe was elected *Correspondant* for the Section of Physics in succession to the late S. Arrhenius.—C. Lurquin: A fundamental inequality of probability.—F. Eggenberger and G. Pólya: The interpretation of certain curves of frequency.—Bertrand Gambier: The intrinsic equation of a surface.—Jacques Chokhate: The best approximation of measurable and limited functions with the aid of polynomials or limited trigonometrical series.—K. Kunagui: An infinite number of dimensions lower than that of the space of Hilbert.—Eugène Slutsky: Continued contingent functions, integrable and capable of differentiation in the stochastic sense.—Raphaël Salem: A general property of Fourier coefficients of functions capable of summation.—Alex. Froda: The zeros of integral functions.—Armand de Gramont and Georges Mabboux: The soundness of spherical levels with bubble.—F. Bourion and Mlle. O. Hun: The magnetism of hydrated zirconia. The magnetic susceptibility was proved to be a linear function of the proportion of water present. Hence, from the magnetic point of view, hydrated zirconia behaves as a mixture of water with a feebly paramagnetic hypothetical zirconium oxide, ZrO_2 .—R. de Malleman: The expression of the refractive power.—A. Travers and Malaprade: The existence of a new kind of fluoborates. Additional evidence is given of the existence of a new form of fluoboric acid, characterised by the fact that its potassium salt is soluble.—Dumanois and Mondain-Monval: Remarks on the oxidation of hydrocarbons. An account of the study of the oxidation by air, under pressure, of pentane at temperatures between $0^\circ C.$ and $300^\circ C.$, both with and without lead tetra-ethyl.—Frérejacque: The configuration of the trivalent nitrogen atom. The physical properties of a series of substituted amides derived from a new camphor sulphonic acid are given: the conclusion is drawn that there is no experimental reason to suppose that the three valencies of nitrogen are not in the same plane.—J. Cuvillier: The Nummulites in the Eocene in the neighbourhood of Cairo.—J. Thoulet: The cycle of the oceanic limestone.—Pierre Dangeard: Iodine volatilisation and its characters in the northern algæ. The evolution of iodine, first proved for French algæ, has also been proved for plants growing in the Arctic regions, and hence is not a phenomenon closely subordinated to the conditions of the medium of growth, as might have been expected.—Pierre Lesage: The comparative growth at Rothamsted of plants cultivated at Rennes, which have originated from seeds ripened at very different latitudes. A single generation of life at the Midi, Algiers, or at Marseilles is not sufficient to determine precocity in the north, at Rennes or at Rothamsted.—V. Hasenfratz: A principle extracted from *Sphacelè parviflora*. From the micro-analysis and characters of the small quantity of material isolated (0.7 gram) it is concluded that the substance is identical with ledol, or Ledum camphor, extracted by Grassmann in 1831 from *Ledum palustre*.—Lucien Daniel: The influence of grafting

on the reproductive correlations.—P. Lasareff: The action of alcohol on the adaptation of the eye in the course of peripheral vision.—A. V. Léontowitch: The microstructure of the nervous system (of its neurones) as a basis for the theories of conductivity and stimulation in the nervous system.—Ludovic and Pierre Blaizot: *Treponema podovis*, the pathogenic agent in the foot disease (*piétin*) of sheep. A new spirochæte has been isolated which is regarded as the true cause of the disease. Treatment of infected animals with atoxyl and with novoarsenobenzol proved that the best results were obtained with the latter substance, although in grave cases a relapse occurred after 10–15 days. It is probable that a prolonged arsenical treatment will be necessary for a complete cure.

Nov. 19.—Jean Perrin: The determination of the rôle of light in thermal chemical reactions.—Charles Moureu, Charles Dufraisse, and Marius Badoche: Autoxidation and antioxygen action. The catalytic action of arsenic and its compounds. A summary of the results obtained with twenty-two substances containing arsenic. In general, organic compounds of arsenic containing oxygen are much less active as catalysts than inorganic arsenic compounds.—A. Blondel: Remarks on the theory of oscillographs and recording apparatus.—André Rousel: The primitive of the second species.—J. Priwaloff: A general property of analytical functions.—Josef Miculáš Mohr: The determination of the apex by means of *G*-type stars.—N. Stoyko: The approximate calculation of the influence of the short period terms in the determination of time by the meridian telescope.—René Planiol: A very slightly damped pendulum. Some results obtained with a torsion pendulum (quartz fibre suspension) placed in a high vacuum.—Marcel Chopin: Control of a new method of measurement of the temperature of gases.—N. Bogoliouboff and N. Kryloff: The mathematical theory of oscillographs.—Pierre Daure: The secondary radiations observed in the molecular diffusion of light (Raman effect). A study of the effect produced with the halogen derivatives of phosphorus, arsenic, antimony, bismuth, carbon, silicon, and tin. The Raman spectra of all these elements consist of four chief lines, the characteristic frequencies of which decrease regularly with the atomic weight, but no simple law has been found to express this.—Ponte and Y. Rocard: The possible rôle of diffusion by electrons in the propagation of short waves.—Jacques Risler and Foveau de Courmelles: The action of light rays on potassium chloride. The action of potassium chloride on a photographic plate is increased if the salt has been previously exposed to light. The effect is most marked when the activation has been caused by exposure to ultra-violet light.—Charles Prévost: The action of β -ethylallyl bromide on ethylmagnesium bromide. Two isomeric hydrocarbons are produced in this reaction,



—Stanislas Landa: The slow combustion of triacontane. Normal triacontane, $\text{C}_{30}\text{H}_{62}$, slowly oxidised with air, gave fatty acids, including butyric and valeric, and a mixture of aldehydes. Neither ketones nor alcohols could be detected among the oxidation products.—Raymond Delaby and Pierre Dubois: The formation of allyl alcohol. The pyrolysis of the formins of glycerol.—Raymond Furon: The fossil delta of the Sahelian Niger.—E. Guyénot and A. Naville: The chromatic reduction in *Drosophila melanogaster* and the theory of crossing over.—D. Bach: The conditions of action of asparaginase from *Aspergillus niger*.—Albert Leulier, Léon Velluz, and Henri Griffon: The

distribution of potassium in the animal organism. There are distinct differences in the amounts of potassium present in the different forms of muscular tissue.—A. Boquet: The adsorption of cobra poison and of the diphtheria toxin by carbon. Finely divided carbon (morit) renders cobra poison innocuous; diphtheria toxin is also rapidly adsorbed by carbon and its toxic power removed.

Official Publications Received.

BRITISH.

The Scientific Proceedings of the Royal Dublin Society. Vol. 19, N.S., Nos. 9-13. 9: A Synthesis of 5:7:2':4'-Tetrahydroxyflavone and of 7:2':4':6'-Tetrahydroxyflavone, by Dr. Nicholas Michael Cullinane, Dr. Joseph Algar and Dr. Hugh Ryan; 10: The Estimation of Diphenylamine and Diphenylnitrosamine in the Presence of their Derivatives, by Dr. H. Ryan, Dr. J. Keane and J. Dunne; 11: The Action of Aromatic Amines on Nitric Esters, by Dr. Hugh Ryan and Michael T. Casey; 12: The Commercial Utilisation of Java Citronella Oil, by Dr. Brendan O'Donoghue, James Drum and Dr. Hugh Ryan; 13: The Action of Alcoholic Hydrochloric Acid on Methylidiphenyltetrahydropyrone, by Dr. Hugh Ryan and Dr. J. J. Lennon. Pp. 77-124. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 4s.

Proceedings of the Royal Society of Edinburgh. Vol. 48, Part 3, No. 15: The Invariant Theory of the Quaternary Quadratic Complex. 2: The Complete System. By Prof. H. W. Turnbull and Dr. J. Williamson. Pp. 180-190. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 1s.

Transactions and Proceedings of the New Zealand Institute. Vol. 59, Part 2, June. Pp. iv+213-428+plates 34-67. (Wellington, N.Z.) 10s.

Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1154 (Ac. 319): Wind Tunnel Experiments on a Model Autogyro at small Angles of Incidence. By C. N. H. Lock and H. C. H. Townend. Pp. 61+29 plates. (London: H.M. Stationery Office.) 2s. 6d. net. The Royal Technical College, Glasgow. Annual Report on the One Hundred and Thirty-second Session adopted at the Annual Meeting of Governors held on the 16th October 1928. Pp. 71. (Glasgow.)

Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 1927-28. Vol. 72. Pp. 219+ii. (Manchester.) 12s.

FOREIGN.

Japanese Journal of Botany: Transactions and Abstracts. Vol. 4, No. 2. Pp. iv+113-217+31-54+plates 16-22. (Tokyo: National Research Council of Japan.)

Records of Oceanographic Work in Japan. Compiled by the Committee on Pacific Oceanography of the National Research Council of Japan. Vol. 1, No. 2, October. Pp. ii+57-94+plates 16-23. (Tokyo: National Research Council of Japan.)

Verhandlungen der ozeanographischen Konferenz veranstaltet von der Gesellschaft für Erdkunde zu Berlin anlässlich ihrer Hundertjahrfeier 24-26 Mai 1928. Mit Unterstützung der Notgemeinschaft und im auftrage des Vorstandes. Herausgegeben von A. Defant. (Ergänzungsh. ft 3 zur Zeitschrift der Gesellschaft für Erdkunde zu Berlin.) Pp. xiv+157. (Berlin: Gesellschaft für Erdkunde.)

Smithsonian Institution: United States National Museum. Contributions from the United States National Herbarium. Vol. 26, Part 3: Costa Rican Mosses collected by Paul C. Standley in 1924-26. By Edwin B. Bartram. Pp. vi+51-114+vii-x. (Washington, D.C.: Government Printing Office.) 20 cents.

Proceedings of the United States National Museum. Vol. 74, Art. 2: Three new Species of Two-winged Flies of the Family Bombyliidae from India. By J. M. Aldrich. (No. 2747.) Pp. 3. Vol. 74, Art. 17: New Fresh-water and Marine Bivalve Shells from Brazil and Uruguay. By William B. Marshall. (No. 2762.) Pp. 7+4 plates. (Washington, D.C.: Government Printing Office.)

University of Illinois Engineering Experiment Station. Bulletin No. 183: Tests of the Fatigue Strength of Steam Turbine Blade Shapes. A Report of an Investigation conducted by the Engineering Experiment Station in co-operation with the Allis-Chalmers Manufacturing Co. By Prof. Herbert F. Moore, Stuart W. Lyon and Norville J. Alleman. Pp. 38+2 plates. 25 cents. Bulletin No. 184: The Measurement of Air Quantities and Energy Losses in Mine Entries, Part 3. By Alfred C. Callen and Cloyd M. Smith. Pp. 61. 35 cents. (Urbana, Ill.)

Diary of Societies.

FRIDAY, DECEMBER 21.

EMPIRE SOCIETY (at Hotel Victoria), at 3.—P. Edmonds: Burma and the Burmese.

JUNIOR INSTITUTION OF ENGINEERS (Informal Meeting), at 7.—C. H. Hudson: Oils for Cutting and Quenching Purposes.

BRITISH ELECTRICAL DEVELOPMENT ASSOCIATION (at Royal Society of Arts), at 7.30.—J. E. Tapper: Hire and Hire Purchase in Electrical Development Schemes.

THURSDAY, DECEMBER 27.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—A. Wood: Sound Waves and their Uses (I): Waves.

SATURDAY, DECEMBER 29.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—A. Wood: Sound Waves and their Uses (II): Signalling in Air and Water.