

Societies and Academies.

DUBLIN.

Royal Dublin Society, Nov. 20.—L. B. Smyth: On the structure of *Palaeacis*. Study of the coral *Palaeacis axinoides* sp. nov. (previously recorded as *P. obtusa* Meek and Worthen) from the lower carboniferous rocks of Hook Head, Co. Wexford, revealed the presence of several features not hitherto observed. The young coral attached itself to a shell fragment, or other foreign body. A tissue of unique structure covers the outside of the colony. This tissue, as it increased in thickness by addition to its outer surface, gradually extended over the supporting object, finally enveloping it completely. A complex canal system is present.—H. M. Fitzpatrick: Coniferæ: keys to the genera and species, with economic notes. A detailed study has been made of the foliage characters of Conifers, and an identification key based on the external features and arrangement of the leaves, buds, and branchlets constructed.—J. Reilly and D. McSweeney: William Higgins: A pioneer of the atomic theory. An account was given of the life of the Irish chemist, William Higgins, F.R.S. (1766–1825), with particular reference to his work on atomic chemistry. Throughout a book published in 1789 he uses an atomic notation and anticipates many of the principles and details of Dalton's theory. He was the first chemist to recognise the law of multiple proportions and recognised in some cases the volume law of Gay-Lussac.

LEEDS.

Philosophical and Literary Society, Dec. 4.—S. Brodetsky: Equiangular and equilateral polygons in space. Given that an equilateral polygon in space is also equiangular, and given the angle between successive edges, to discover the possible forms for polygons of five and six edges respectively, and whether these forms are rigid or are capable of continuous variations. The problem is considered from the point of view of spherical trigonometry. The results agree with those obtained by Wightman constructionally.—J. R. Wilby: Gravitational fields in orthogonal co-ordinates. The problem is to find the natural geometry of a region of space-time, containing a distribution of matter, in the special case in which the space-time is a quadratic form of orthogonal type, and the potentials are functions of two of the independent variables. The problem is considered both for the originals and for the modified forms of the equations of the gravitational field.—J. Ewles: On the relation between luminosity and concentration in luminescent solid solutions. The Bruninghaus formula $I = ACe^{-nC}$ is a special case of the formula

$$I = \frac{AC}{(1+C)^{n_1}} + \frac{BC}{(1+C)^{n_2}} + \text{etc.},$$

deduced from simple assumptions in accord with modern views of the luminescent centre. Here C is the atomic concentration of the active atom in the transparent lattice, and $n_1, n_2, \text{etc.}$, the number of positive atoms in a luminescent centre. The formula has been tested experimentally with the solid solution phosphor $\text{CaO}(\text{Bi})$, and found to be in excellent agreement with the results.—E. C. Stoner: Cosmic rays and a cyclic universe. The only source of energy compatible with the observed radiation and Jeans's estimated ages of stars is the annihilation of matter. The interpretation of Millikan's cosmic ray results depends on the absorption formula used. With that of Klein and Nishina the smallest absorption coefficient corresponds closely with the annihilation wave-length.

Even if it is assumed that there is an upbuilding of atoms, and the purely speculative possibility of crystallisation of radiation into electrons and protons is admitted, a complete cycle for the universe would involve other improbable processes.—Mrs. K. Lonsdale: The symmetry of naphthalene. Carbon atoms having two A and two B valencies can be built up into a naphthalene molecule which has a centre of symmetry only, in agreement with X-ray investigations on naphthalene. The molecule so found also accounts satisfactorily for the differences in the absorption spectra of the ten dichloronaphthalenes.—J. Grainger: An infectious chlorosis of the dock. Fernow, in America, has described a 'virus disease' on *Rumex obtusifolius*. Experiments have been made on docks with the chlorosis found in England.—A. Eccles: The formation of methyl sodiochloromalonate and its reaction with iodine, with remarks on the stability of halogenoethanes. Methyl sodiochloromalonate reacts with iodine solution to yield methyl ethylenetetracarboxylate, no methyl-1:2-dichloroethanetetra-carboxylate being formed. The instability of compounds of the latter type, and of poly-halogeno-ethanes in general, is explained by an application of the supposition (due to Ingold and Ingold) that the reactivity of the halogen atoms is determined primarily by the relative displaceability of the shared electrons in the carbon-halogen bond.—Miss R. M. Tupper-Carey: The development of the hypocotyl of *Helianthus Annuus* considered in connexion with its geotropic curvatures. To account for the two opposite geotropic reactions of the hypocotyl of this plant, a correlation is suggested between the first positive geotropic curvature, induced by nutation, with a stage of active division in the vacuolating cells behind the apical meristem; and between the negative geotropic reaction, which follows slightly later in the same organ, with a region where cell extension only is in progress.

PARIS.

Academy of Sciences, Nov. 26.—E. Bataillon and Tchou-Su: The anastral mitoses of activation.—Auguste Lumière was elected a *Correspondant* for the Section of Medicine and Surgery.—G. Cerf: The elimination of the constants and the singular solutions of a class of Monge's equations.—H. Roussilhe: The complete solution of the problem of the map in space.—R. Audubert and Mlle. M. Quintin: The study of imperfect contacts in continuous currents. The contact silicon-carbon, as well as detectors of the silver sulphide and lead sulphide type, present characteristics composed of two parabolic branches. By its stability and reversibility, it has been proved to be especially simple for the study of the phenomenon of rectification.—Pierre Lacroute: The spark spectrum of sulphur, S II, in the Schumann region.—Paul Soleillet: The polarisation of the light emitted during fluorescence.—R. Dubrisay and Astier: Kaolin suspensions. Experiments on the relations between the velocity of sedimentation of kaolin suspensions and the pH of the liquid.—A. Smits: The allotropic modifications of phosphorus. Remarks on a recent communication by Nicolaïeff on the same subject. The author does not admit that the curves given by Nicolaïeff prove a fourth allotropic modification of phosphorus.—A. Travers and Malaprade: Attempts at the isolation of new fluoroborates. Boric acid and potassium hydrogen fluoride react in cold, concentrated aqueous solutions, giving crystals which on analysis prove to have the ratio $B/K=1$ and $F/K=3$.—Georges Brus and G. Peyresblauques: The ozonide of nopinene. The ozonide $\text{C}_{10}\text{H}_{16}\text{O}_3$ was isolated as a colourless viscous oil, and this, on prolonged boiling with 5 per cent potash solution, gave hydrogen peroxide,

formaldehyde, and nopinone, $C_9H_{14}O$. The yield of nopinone is good, more than 50 per cent.—**Raymond Ciry**: The structure of the southern edge of the primary massif of the Asturias.—**P. Fallot** and **R. Bataller**: Geological observations on the region of Velez-Rubio (Prov. of Almeria).—**Léon Moret**: The post-Hercynian stratigraphy of the southern slope of the High-Atlas in Glaoua (Morocco).—**J. Thoulet**: Deep submarine volcanoes and the double oceanic circulation. There exists in the ocean a double circulation between the upper and lower zones, one of solar origin and the other of internal volcanic origin, and the chemical and physical homogeneity of the sea water is caused by this double circulation.—**R. Combes**: The influence of traumatism on the migration of substances in plants. In a recent communication the Sachs' method has been proved to be untrustworthy, due to the removal of portions of the leaf, and the effects of this traumatism on the exchanges of material between the organs.—**P. Gavaudan**: The presence of a parasitic fungus in the antheridia of *Marchantia polymorpha* and its action upon gametogenesis.—**Aug. Chevalier**: The origin of the Brazilian campos and the rôle of Imperata in the substitution of prairies for tropical forests.—**R. Leriche** and **R. Fontaine**: The existence in Vieussens ring of fibres sensitive to pressure effects. The importance of this for the surgical treatment of angina pectoris.—**Jean Saidman** and **Roger Cohen**: The properties of rays of wave-length 4–8 Å. Clinical experiments show a marked difference between the action of rays of 6–8 Å. and filtered rays of about 4 Å. The effects of the latter resemble those produced by ordinary X-rays.—**L. Mercier**: The polymorphism of the male (pseudandry) in *Cynomyia mortuorum*. Its signification.—**P. Bunau-Varilla**: Verdumisation in the contest against yellow fever. The application of the same prophylactic measures in the Gulf of Mexico and in western Africa have given different results: in the former there is an almost complete disappearance of the infection, whilst in the latter recurrence is frequent. The author gives reasons for supposing that the superiority of the American results is due to the chlorine treatment of the drinking water.—**Mme. Phisalix**: Vaccination against viper poison and experimental rabies by virus-venom mixtures with the virus in excess.

PRAGUE.

Czech (Bohemian) Academy of Arts and Sciences (2nd class, Natural Sciences and Medicine), Nov. 23.—**Zd. Frankenberger**: A study on spermatogenesis of reptiles (Part 2).—**E. Votoček** and **F. Valentin**: Rhamnoconvolvulic acid. Separated from 'resina jalapæ e radice ponderosa' by the action of baryta, the new well-defined, crystalline glycosidic acid, $C_{52}H_{92}O_{32}$ yields on hydrolysis, with 10 per cent sulphuric acid, 1 mol of a di-hydroxy-palmitic acid, 4 mols of *d*-glucose and 2 mols of *l*-rhamnose.—**R. Lukeš**: Some derivatives of lævulic acid. A new method of preparation of fatty acids.—**R. Lukeš** and **V. Prelog**: Aryl-substituted amines of lævulic acid. The synthesis of some hydropyrrolic derivatives from *p*-dibromobenzene treated with Grignard's reagent. A contribution to the refracto-chemistry of lactones.—**V. Posejpal**: Resonance spectra and the Raman effect. The 'resonance' spectra of iodine and sodium vapour verify the author's assumption that in fluorescence and phosphorescence an effect analogous to Raman's is exhibited by an infra-red absorption band of iodine at 45·86–55·90 μ and one of sodium at 64·9–75·0 μ .—**K. Zavadský**: The statocysts of Amphipoda.—**Fr. Němejc**: Some interesting discoveries of fossil plants from carboniferous basins of middle Bohemia.—**K. Cejp**: Contributions to the anatomy

and morphology of respiratory organs of some Marchantiaceæ.—**J. Mirovský**: Results of statistical methods on the variability of two species of *Closterium*.

ROME.

Royal National Academy of the Lincei, June 17.—**G. Armellini**: Variations in the diameter of the sun from 1901 to 1911, according to observations at the Royal Campidoglio Observatory. The horizontal radius of the sun has shown a regular increase from a minimum of 960·70" in 1897 to a maximum of 961·88" in 1908, after which it diminished, regularly except for the year 1910, to 961·67" in 1911.—**L. Lombardi**: Measurement of the local dissipations of energy in a circumscribed part of the magnetic circuit.—**A. Angeli** and **R. Poggi**: The mobility of certain halogen atoms. The fact that aromatic compounds of the form $CH_3O \cdot C_6H_4 \cdot CH_2Cl$ and the analogous aliphatic compounds $CH_3O \cdot CH_2Cl$ readily lose the halogen as hydrogen chloride when treated with water or alcohol, is attributed to the linking of the halogen to the alkoxy residue to give an oxonium derivative. The spontaneous loss of methyl chloride by chlorotrianiisylmethane, with production of an amorphous substance, finds a parallel in the behaviour of the compound $CH_3O \cdot C_6H_4 \cdot CH_2Cl$, which similarly yields a complex substance having the characters of synthetic resins. The formula of hydrated formaldehyde, $OH \cdot CH_2 \cdot OH$, which exhibits a marked tendency to polymerisation, is analogous to that of salicyl alcohol, which readily forms resinous compounds.—**N. Parravano** and **G. Malquori**: Thermal decomposition of Bayer alumina. The thermal decomposition of Bayer alumina, $Al_2O_3 \cdot 3H_2O$, results in the formation of lower hydrates, possibly $Al_2O_3 \cdot 2H_2O$ and certainly $Al_2O_3 \cdot H_2O$, before the anhydrous oxide is reached.—**P. Vinassa**: Symmetrical electronyls and polyatomic molecules. Application of the considerations previously advanced in regard to monatomic molecules to the case of nitrogen, the halogens, and oxygen, which cannot have monatomic molecules, indicates that allotropy is confined to substances with other than monatomic molecules. Allotropy must, indeed, be regarded as due to varying peripheral electronic grouping in the polyatomic molecule.—**Vladimiro Bernstein**: Additions to the note on interpolation by means of holomorphic functions in a semi-plane.—**E. Gugino**: The profile of rotating bodies the deformation of which is not disturbed when the bodies are cut into sections by planes normal to the axis.—**H. Geppert**: Progressive waves of permanent type in circular vessels.—**N. Mouskhelichvili**: The fundamental problem of two-dimensional hydrodynamics.—**L. Masciotti**: Investigation of the thread of the micrometer screw of the Ertel meridian of the Royal Campidoglio Observatory.—**A. Rostagni**: Application to geophysical investigations of T. Levi-Civita's theory relating to the influence of a conducting screen on the electromagnetic field of an alternating current parallel to the screen.—**F. Rasetti**: Wave mechanics of an alkaline atom in the electric field (2). The theory, previously developed, of the perturbation due to an external electric field on an atom of an alkali metal, is applied to the case of lithium. Lack of experimental data prevents checking of the results attained, but the known order of magnitude of the dielectric constants of vapours of alkali metals coincides with that deduced.—**A. Carrelli**: Width of certain lines of the mercury spectrum. The breadths of eleven mercury lines, especially of the anomalous *mP* series, are considered in relation to the internal and azimuthal quantum numbers.—**P. Misciatelli**: Separation of thorium from uranium by means of ether. If anhydrous ether and anhydrous salts (dried at 120°) are used,

complete separation of uranium nitrate from thorium nitrate may be effected, provided that the procedure is such that the ethereal solution becomes saturated with the uranium salt at that temperature. The increase in solubility of the thorium as the temperature falls may be due to the formation of complex compounds.—G. Natta and M. Strada: Spinels of tervalent cobalt: cobaltous cobaltite and zinc cobaltite. Zinc cobaltite, $ZnCo_2O_4$, may be prepared by calcining a mixture of zinc and cobalt nitrates. Comparison of the X-ray photograms of this compound and of cobaltous cobaltite, Co_3O_4 , shows that the two are isomorphous, both crystallising in the cubic systems with a lattice of the spinel type. The unit cells have identical dimensions, the side being 8.06 ± 0.005 A., and the respective calculated densities are 6.11 and 6.27.—P. Agostini: Heats of formation of double chlorides of copper and potassium. The mean value obtained for the heat of solution of $CuCl_2$, $2KCl$ is -1.63 Cal. and the heat of formation from the constituent chlorides, $+4.09$ Cal. For $CuCl_2$, KCl , the corresponding values are $+2.181$ Cal. and $+4.59$ Cal.—F. De Carli: Heats of formation and hydration of cobalt potassium carbonate and copper sodium carbonate. The following results have been obtained: $K_2CO_3 + CoCO_3 = K_2CoCO_3$, $CoCO_3 + 5.76$ Cal.; K_2CO_3 , $CoCO_3 + 4H_2O = K_2CoCO_3$, $CoCO_3$, $4H_2O + 11.37$ Cal.; $Na_2CO_3 + CuCO_3 = Na_2CuCO_3$, $CuCO_3 + 10.33$ Cal.; Na_2CO_3 , $CuCO_3 + 3H_2O = Na_2CuCO_3$, $CuCO_3$, $3H_2O + 9.296$ Cal.—S. Berlingozzi: Derivatives of *dl*-asparagine.—A. Ferrari and A. Baroni: Importance of crystalline form in the formation of solid solutions. (2) Thermal analysis of the anhydrous system $LiCl - CdCl_2$. Thermal analysis of this system reveals the existence of the compound $3CdCl_2$, $4LiCl$, melting at 522° and confirms that of $3CdCl_2$, $2LiCl$, melting at 516° . Complete miscibility in the solid state exists between these compounds and the pure chlorides.—N. A. Barbieri: Physiological culture.—A. Quilico and E. Fleischner: Sulphonic derivatives of unsaturated compounds. The use of aminosulphonic acid as a sulphonating agent has been applied to the preparation of sulphonic derivatives of styrene, anethole, isosafrole, and isoapiole.—L. Scremin: Variations in the ionic equilibrium as factors in pharmacological action. Widely varying proportions of calcium chloride are necessary to inhibit the action of different convulsant drugs, pyramidone being highly sensitive to this salt.—O. M. Olivo and E. Slavich: Frequency of mitosis in the embryonal heart of the chicken in various stages of development and in cultures *in vitro* of the same material.

SYDNEY.

Linnean Society of New South Wales, Sept. 26.—W. D. Francis: Features of the vegetative anatomy of the Australian white beech (*Gmelina Leichhardtii*). The anatomy of the tree is outlined. Hesperidin or a hesperidin-like substance, which was found in the branchlets and leaves, may be a secondary product of photosynthesis and it may be used in the construction of wood. Gmelinol may be a partial decomposition product of the wood.—A. Théry: A new buprestid from Australia. Description of a new species of *Mastogenius* from Victoria. The genus, now first recorded from Australia, is known from Chile, Brazil, United States, Grenada, and Transvaal.—G. H. Hardy: Third contribution towards a new classification of Australian Asilidae. An account of the prothorax in the Dasypogoninae. Two new tribes are proposed, one left unnamed pending further information, but under it the genus *Cryptopogon* White is redefined, a second species, *C. obscurus*, being incorporated as new. Laphriini, a tribe previously

formed and regarded as complex, is now divided, a new tribe following a group previously proposed by Hermann.—A. B. Walkom: Fossil plants from the Esk District, Q. Twenty-two species are dealt with, of which eight are described as new, and three others are recorded for the first time from the Esk Series. The new species confirm previous determinations of the age of the series as Upper Triassic (possibly Rhætic).

VIENNA.

Academy of Sciences, Oct. 18.—W. J. Müller and K. Konopicki: The theory of passivity phenomena. (3) The current-density time curve in the case of covering passivity.—R. Weiss and W. Knapp: The action of *o*-phthalyl-chloride on *p*-eresol-methyl-ether and *p*-thio-cresol-methyl-ether.—A. Müller and P. Bleier: Reduction of cyclo-hexa-nonisoxim (*α*-keto-hexa-methylene-imin).—A. Kailan and E. Leisek: The decomposition of persulphates in aqueous solution. Coefficients were found for the decomposition of sodium persulphate in the presence and in the absence of sodium hydrogen sulphate, of sulphate, of nitrate, of hydroxide, of phosphates. Potassium persulphate decomposes more slowly than sodium persulphate.—R. Weiss and S. Kratz: The action of *o*-tolyl-magnesium-bromide on the dilacton of benzenophen-*o*-dicarboxylic acid.—C. A. Bobies: Geological studies in the Tertiary of Triesting- and Piesting-bay.—O. Koller: The geographical distribution of fresh-water fishes in southern Europe.—H. Priesner: Australian Thysanoptera.—W. Frenzel: Nutrition and colour formation in *Chlorosplenium acruginosum*. This fungus, which causes the green rot of wood, may be grown in pure culture, starting from the ascospores, from infected wood, or from fragments of the fruit body. Growth is slow; it attacks pith and rays, it penetrates vessels, it is aerobic, and has a wide range on the acid side of neutrality. Colour formation increases up to about 26° C. The colouring matter is dissolved by phenol and slowly precipitated by alcohol; it is easily reduced to red or yellow products, easily reoxidised to green; it is an indicator for alkalies.—M. Gleispach: The influence of vapours and gases on the fall of leaves and removal of other organs.—A. Paltauf: The staining of living cell nuclei. Erythrosin, eosin, and dahlia-violet gave clear positive results. The nuclear staining was favoured by addition of nitrates, also by alcohol and by ether. Cells with coloured nuclei can still be plasmolysed or deplasmolysed. Rise of temperature promotes staining.—G. Koller and H. Ruppberg: An unusual mode of preparing 2-aminopyridine. By heating 2-chloro-pyridine with pure pyridine.—F. Wessely and J. Mayer: Carbonyl-bisamino acids and their transformation products. Stereometric considerations are involved.—R. Dworzak and A. Enekel: The bromination of valeraldehyde.—R. Dworzak and W. Prodinger: Studies on bromo- and oxy-aldehydes. (3) Preparation of crystallised lactic acid aldehyde and its behaviour towards dilute aqueous alkalies.—H. Mache: Rutherford's alternating field method for determining the velocity of gaseous ions.—A. Skrabal and M. Rückert: The velocity of saponification of mono- and di-chloro-acetic ester.—F. Hölzl: The alkylation of octo-cyano-tungstic acid.—O. Dischendorfer and O. Polak: Researches in the field of phyto-chemistry. (5) Allobetulin.—S. Meyer: Communication of the Radium Institute (No. 226). Comment on the relations between the atomic weights of uranium, radium, radium-G, and helium. Oct. 25.—T. Schmid: The coincidence problem in the descriptive geometry of four-dimensioned space.