

Societies and Academies.

PARIS.

Academy of Sciences, June 28.—**A. Lacroix**: The fused veins of meteorites and their analogy with the 'pseudotachylites' of distorted terrestrial regions.—**Charles Moureu**, **Charles Dufraisse**, and **Paul Marshall Dean**: A dissociable organic peroxide: rubrene peroxide. The hydrocarbon rubrene described in an earlier communication, when exposed to sunlight in benzene solution, rapidly absorbs oxygen, thereby losing both colour and fluorescence. From the solution a white crystallised product containing solvent of constitution is obtained, which dissociates on heating into solvent, rubrene and oxygen. It is pointed out that the existence and dissociation of this peroxide is of great theoretical interest.—**Léon Guillet**: The cementation of steels by silicon. The object of these researches was to obtain a film of high silicon steel on a mass of mild steel retaining the mechanical properties of the mild steel with a chemically resistant skin. In all of the experiments cited the cemented skin was too fragile.—**Neymann**: The laws of probability which tend towards the law of Gauss, remaining infinite in the neighbourhood of a point.—**Jules Drach**: The integration of the equations $r + f(s, t) = 0$.—**Silvio Minetti**: The radius of convergence and the singularities of a class of analytical functions defined by Taylor's development.—**R. Gosse**: A special class of equations of the form $s = f(x, y, z, p, q)$.—**G. Alexitch**: Conjugated trigonometrical series.—**André Charrueau**: Some geometrical properties of surfaces of equilibrium relative to a liquid mass of revolution, in uniform rotation round its axis of revolution.—**J. Villey**: A simple model of electrometer of low capacity.—**H. Pelabon**: Detection (of electromagnetic waves) by metallic contacts. A symmetrical detector. A stable detector can be made from two steel balls of the same diameter (3 cm.) suspended from an insulating support by copper wires 15 cm. long. The effect appears to be independent of the nature of the interposed dielectric.—**Volmar**: The photolysis of the alcohols. The photochemical decomposition of the alcohols under the influence of the radiation of the quartz mercury vapour lamp takes place in two stages, the dehydrogenation of the alcohol giving aldehyde and ketone and the photolysis of the latter.—**Henri Belliot**: Experiments on photographic inversion.—**Victor Henri** and **Sv. A. Schou**: The ultra-violet absorption spectrum of the vapour of formaldehyde. New type of spectrum of Y-shaped molecules. The movements of rotation of an asymmetric molecule possessing three unequal moments of inertia cannot be resolved mathematically, but when two of the moments are equal an expression for the energy of the molecule can be found (Sommerfeld, Born, Reiche). The vapour of formaldehyde is composed of such molecules, and a study of the absorption spectrum shows that its structure corresponds very exactly with the formulæ for symmetric molecules having two different moments of inertia. Other substances which may be expected to show similar spectra are phosgene, thiophosgene, acetone.—**Consigny**: The influence of metallic screens on the form of the ionisation curves of the α -rays.—**R. Mellet** and **M. A. Bischoff**: Chemical reactions and volumetric titrations in Wood's light. The fluorescence of the solution is used as the indicator; possible uses of the method are given.—**M. Bourgeaud**: The electrometric study of the allotropic forms of mercuric sulphide.—**P. Job**: Some applications of the spectrographic method to the study of complexes in solution. The substances examined were a solution of iodine and potassium

iodide in alcohol, potassium mercurichloride in aqueous solution, and the double bromide of cadmium and potassium. In the first of these the iodide of potassium behaved as though present in triple molecules, giving the complex $(KI)_3$.—**J. Errera**: The polarisation of a medium and its molecular structure. The electrical moments of the dihalogen derivatives of benzene.—**Edmond Vellinger**: The rotatory power of organic bodies as a function of the pH : glucosamine. A curve is given showing the rotatory power of glucosamine as a function of the pH . It resembles the curve obtained by Mlle. Liquier for asparagine. A formula is developed from theoretical considerations which corresponds closely with the experimental results.—**A. Travers** and **Houot**: The tempering of type-metal alloys. The dilatometric study of monotype and stereotype alloys shows clearly, after three months, the influence on these alloys of time elapsed after tempering. The contraction appears to be mainly due to the proportion of tin.—**G. Flusin** and **H. Giran**: The estimation of calcium carbide in calcium cyanamide. The acetylene produced by the action of water on the calcium carbide present is passed into ammoniacal silver nitrate solution, the mixed precipitate of silver acetylide and sulphide treated with hydrochloric acid, the chloride dissolved in ammonia, and the solution titrated with standard potassium cyanide.—**A. Kirrmann**: Magnesium reactions starting with 1:3 dibrompropylene. The reaction of this dibrompropylene with methyl magnesium bromide is very complex, and the following products have been isolated: ethane, erythrene, bromobutene, octadiene, and a hydrocarbon which is probably $C_{10}H_{18}$.—**Paul Baud**: The pulp of the agave as a source of industrial alcohol.—**P. Idrac**: Records of the electrical field of the atmosphere up to a height of 20,000 metres. Results of experiments made at the Trappes Aerodynamical Observatory with captive balloons. There are some irregularities, but on the average the electrical field decreases up to 9000 metres. The mean result gives a field of 10.4 volts per metre at 4000 metres, 5.6 volts at 6000 metres, and 2.3 volts at 8000 metres. At higher altitudes the values are much higher, being 30 or 40 volts per metre in the neighbourhood of the isothermal layer (10,000 to 12,000 metres).—**Georges Corroy**: The Spiroferideæ of the European Lias.—**H. Colin** and **A. de Cugnac**: The various types of the grass family according to the nature of their reserves of hydrocarbons.—**S. Metalnikow** and **V. Chorine**: Conditional reflexes in immunity.—**A. Alivisatos** and **Fernand Mercier**: The action of crystallised violet on the cardio-vascular apparatus of the dog. Crystallised violet (hexamethylparosaniline chloride) appears to act on the heart in a manner resembling the digitalis alkaloids. It exerts a stimulating action on the pneumogastric nerve, to which is added a specific action on the myocardium, producing an augmentation of the tonus and energy of the heart.—**J. J. Thomasset**: The presence of cells in the dentine of some elasmobranchs.—**Paul Chabanaud**: The frequency, symmetry and specific constancy of external hyperostoses in various fishes of the family of Scianoides.—**P. Portier**: The genesis of the secondary nucleus of natural pearls.—**Mme. Anna Drzewina** and **Georges Bohn**: The action of metallic silver on the sperm and larvæ of the sea urchin. A discussion of the sterilising action of silver vessels.—**H. Barthélémy**: Biometrical and experimental researches on the hibernation, maturation, and supermaturation of *Rana fusca*.—**A. Vandel**: The relations between sexual reproduction and parthenogenesis in the terrestrial Isopod *Trichoniscus (Spiloniscus) provisorius*.

CAPE TOWN.

Royal Society of South Africa, May 19.—E. L. Gill: An early embryo of the blue whale. The embryo was taken from a blue whale (*Balænoptera sibbaldi*) at Saldanha Bay and is at the stage reached by the human embryo at about the twenty-eighth day. Though still in the main a generalised vertebrate embryo, it shows hints of cetacean characters in the small eye, large jaw elements, short neck and reduced branchial arches, large genital papilla, and close segmentation. The fore-limb bud is large, but there is no visible trace of a hind limb. In size (about 6.5 mm.) it agrees closely with other embryos of the higher vertebrates (e.g. chick, rabbit, man) at the same stage of development.—C. von Bonde and D. B. Swart: The structure of the plathander (*Zenopus lævis*) (Pt. i.). The animal presents many primitive features, being related ecologically with the Dipnoi and morphologically with the Anuran and Urodelan amphibia. Notable points with regard to the external features are (a) the abundance and properties of the secretion of the slime glands; (b) the presence of definite groups of dermal sense organs; (c) the presence of an eye tentacle in the adult; (d) the cloacal lips in the female.—L. Mirvish and L. P. Bosman: Note on the calcium content of blood. The effect of the injection of extracts of various body tissues, including ovarian and luteal extracts, upon the calcium content of blood has been examined.

SYDNEY.

Linnean Society of New South Wales, April 28.—J. McLuckie and A. H. K. Petrie: An ecological study of the flora of Mount Wilson. (Part iii.) The vegetation of the valleys. The plant communities represented are the Ceratopetalum-Doryphora association, the *Eucalyptus goniocalyx*-*E. Blaxlandi* association, the *Eucalyptus piperita* consociation, and the *E. hæmastoma* var. *micrantha* consociation.—C. Barnard: Preliminary note on branch fall in the Coniferales. The development of foliar shoots and the associated shedding of branches can be correlated with the phylogeny of the tribes of the conifers. The presence of distinct dimorphism in the branches of conifers seems to be a primitive feature, gradually lost in higher types.—H. J. Carter: Revision of the Australasian species of Anilara (Buprestidæ) and Helmis (Dryopidæ), with notes, and descriptions of other Australian Coleoptera.

VIENNA.

Academy of Sciences, June 10.—R. Weiss, A. Spitzer and J. Melzer: On tri-phenyl-methanes, the benzol nuclei of which are bound to each other (ii.). Trimethylene - triphenylmethane - triketondicarbonic acids.—O. Wettstein: A new race of mice in Austria, *Eutamias glareolus rutinevi*.—O. Koller: Two new forms of fish from the Island of Hainau, a species of Cyprinid and a subspecies.—J. Schorn: History and results of seismology in Northern Tyrol.—A. Defant: Primary and secondary, free and forced, pressure waves in the atmosphere.—A. Schedler: Air pressure waves and correlations over the North Atlantic Ocean.—A. Roschkott: Studies on oscillations of air pressure in the region of the Azores highlands.—F. M. Exner: Relations of air-pressure anomalies on the earth to each other.—R. Rotter: On condensations of unsaturated compounds with diazo-methane.—F. Knoll: The differential geometry of the spacial vector field.

WASHINGTON, D.C.

National Academy of Sciences (Proc. vol. 12, No. 6, June).—William Hovgaard: Bending of a curved tube

of circular cross section. A formula is developed which when applied to pipe bends gives results in good accord with experiment.—E. O. Salant: The heat capacity of solid aliphatic crystals (ii.).—R. J. Havighurst: (i) The effect of crystal size upon the intensity of X-ray reflection. With a crystal having a linear dimension greater than 10^{-5} cm., intensity is modified by 'extinction,' which may be primary (due to each little block acting as a perfect crystal) and secondary (due to shielding of the inner blocks by those near the surface). Work on powdered sodium chloride, calcium fluoride and calcite indicates that primary extinction is absent in crystals grown from solution and less than 10^{-3} cm. in thickness, so intensity measurements can be used to determine electron distributions. Single crystal measurements of the alkali halides require correction for secondary extinction. (2) The intensity of reflection of X-rays by lithium, sodium and calcium fluorides. Measurements of intensity enable the relative value to be calculated of a factor, the "atomic structure factor," which at small angles of reflection approaches the number of electrons in the atom. This factor is plotted against $\sin \theta$ (where θ is the angle of reflection) and, finally, atomic scattering curves are drawn; those for fluorine from the different salts are nearly alike, suggesting a force field of constant magnitude, while those for sodium from the chloride and fluoride differ considerably. The total number of electrons gives only a rough idea of the order of the atoms as regards scattering power.—J. H. Van Vleck: Note on the postulates of the matrix quantum dynamics. The Hamiltonian equations, the commutability relations, the Bohr frequency condition and the conservation of energy equation can be taken as the fundamental postulates. The Ritz combination principle and the quantum conditions become not merely sufficient but also necessary for the last two postulates.—Joseph Miller Thomas: Conformal invariants. A complete set of integrability conditions which express the laws of transformation of a set of conformal invariants are obtained.—Helen Barton: Generalisation of Kronecker's relation among the minors of a symmetric determinant. Kronecker's relation is a special case of a more general relation.—Oliver D. Kellogg: On the classical Dirichlet problem for general domains.—Ernest W. Brown: The evidence for changes in the rate of rotation of the earth and their geophysical consequences (v. NATURE, July 31, p. 170).—Christine Ladd-Franklin: The reddish blue arcs and the reddish blue glow of the retina: seeing your own nerve currents through bioluminescence. A band of bright red light thrown on a screen in a dark room appears to have slightly reddish-blue arcs projecting from it on both sides. What is seen, as an entopic phenomenon, is certain fibres of the optic nerve on the surface of the retina. These fibres, when stimulated, seem to give off an 'emanation' which causes fluorescence in the retina.—Thorne M. Carpenter: The metabolic effect of enemata of alcohol, dextrose and levulose in humans. Ethyl alcohol is rapidly and nearly completely absorbed; it promotes the elimination of water without removing other constituents of the tissues, increases pulse rate and lowers the respiratory quotient, indicating that alcohol is utilised in the tissues. Dextrose and levulose are not absorbed so rapidly or completely; the respiratory quotient increases with the former, indicating increased utilisation of carbohydrate. Levulose caused the greatest decrease in nitrogen elimination. It is suggested that, administered by rectal injection, these substances are metabolised throughout the body in a manner similar to that in which material is utilised in muscular work.