

Societies and Academies

LONDON

Royal Society, February 20. N. THOMPSON: The electrical resistance of bismuth alloys. The electrical resistance of single crystals of bismuth containing small amounts of lead, tin, germanium, selenium, tellurium and other elements has been measured over a temperature range 14° – 400° abs. The first three elements dissolve in the bismuth lattice and produce an alloy which has a large negative temperature coefficient of resistance parallel to the principal axis of the crystal. Perpendicular to the axis the effect is similar but less marked. Selenium and tellurium both dissolve in bismuth, thereby reducing its specific resistance, both parallel and perpendicular to the axis, except at low temperatures. There is no negative temperature coefficient. A qualitative explanation of these results is suggested on the basis of Jones's theory of bismuth. E. G. WILLIAMS, M. W. PERRIN and R. O. GIBSON: The effect of pressure up to 12,000 kgm./cm.² on reactions in solution. Velocity constants have been measured for various reactions in solution. The constants A and E of the Arrhenius equation have been calculated wherever possible. The reactions fall into three main classes: (a) 'Normal' reactions—where pressure has a small accelerating influence which falls off at high pressures, the increase in velocity being of the order of 5 times at 12,000 kgm./cm.². The acceleration in this class appears to be due mainly to a decrease in the activation energy. (b) 'Slow reactions'—where pressure has a much greater accelerating influence, which increases with increasing pressure, the increase in velocity being of the order of 10 times at 5,000 kgm./cm.², and 45 times at 8,500 kgm./cm.². In this class the constants A and E of the Arrhenius equation both increase with increasing pressure. (c) Unimolecular decompositions—the decomposition of phenyl-benzyl-methyl-allyl ammonium bromide in chloroform solution is retarded 1.5 times at 3,000 kgm./cm.². The results are in good agreement with the predictions given by the transition state method of calculating reaction velocities.

PARIS

Academy of Sciences, January 20 (*C.R.*, 202, 177–256). I. VINOGRADOFF: New results of the analytical theory of numbers. ABRAHAM WALD: The idea of the *collectif* in the calculus of probabilities. GUSTAVE JUVET: Clifford's numbers and the equation of Dirac. GEORGES KUREPA: The hypothesis of ramification. KAROL BORSUK: Spaces possessing the (Δ) property. JACQUES DEVISME: A method of colouring maps showing the dispersion of the rural habitat. N. TCHUDAKOFF: The zeros of the $\zeta(s)$ function. DANIEL DUGUÉ: The maximum of precision of Gaussian estimations at the limit. CATHERINE NERSESSIAN: The multiplicity of trigonometric development. PIERRE BOOS: Certain functions of two variables connected with arcs of a curve. NICOLAS KRYLOFF and NICOLAS BOGOLIOUBOFF: General stationary movements in dynamical systems of non-linear mechanics. ALBERT TOUSSAINT and MIROSLAV NÉNADOVITCH: Contribution to the experimental study of infinite multiplanes in a plane current. ERNEST BAUMGARDT: Variation with temperature of the absorption of ultra-sonic waves by

liquids. The results obtained by a modification of Biquard's method can be expressed by a formula of the type $A\eta/\rho_0 \cdot V_0^3$, where η is viscosity, ρ_0 density and V_0 the velocity of sound. JACQUES SOLOMON: The absorption in matter of protons of great energy. ARKADJUSZ PIEKARA: Research on the magnetic change of the dielectric of liquids in a field of 20.4 kilogauss. No appreciable effect could be proved for hexane, carbon disulphide, benzene or nitrobenzene. MAURICE BAYEN: Measurements of dispersion in the ultra-violet. Results are given for heptane, heptene and heptine. MICHEL KANTZER: The existence of chlorous anhydride, Cl_2O_3 . The author concludes that Cl_2O_3 exists, and that the spectrum obtained by Gernez and subsequent workers represents the superposed spectra of ClO_2 and Cl_2O_3 . JEAN TERRIEN: Some properties of photographic plates, treated with solutions of sodium salicylate, between 2500 Å. and 1600 Å. Tien Kiu has shown that the factor of contrast of plates treated with an aqueous solution of sodium salicylate is independent of the wavelength between 2967 Å. and 2482 Å. This property is shown to hold to 1600 Å. JACQUES YVON: The kinetic theory of liquids and diffusion of light. JEAN HERBERT: The disappearance of a cause of anisotropy of glass by reheating. Glass can be rendered homogeneous by prolonged reheating: this is proved both by examination in polarised light and by etching with hydrofluoric acid. MARCEL CHÂTELET: The system cobalt chloride, ammonium chloride, ammonia, water. The results of a calorimetric study. Mlle. SUZANNE ESTRADÈRE: The thermal study of the oxidation of hydrocarbons. A mixture of hydrocarbon and oxygen is passed through a heated tube under fixed conditions. The temperature at which an exothermic reaction commences is shown to be in direct relation with the Boyd number for the same hydrocarbon. JEAN CHÉDIN: The Raman effect of mixtures of fuming sulphuric acid and nitric acid. There is evidence of an association between N_2O_5 and SO_3 ; this association is quite different from the formation of $\text{H}_2\text{S}_2\text{O}_7$. MARCEL BALLAY: The plastic deformation and the hardness of lead. VICTOR AUGER and Mlle. MARIE GALLISSOT: A carbonate of ferric iron and ammonia. The crystalline compound isolated has the composition $\text{Fe}(\text{OH})_2 \cdot \text{NH}_4\text{CO}_3 \cdot \text{H}_2\text{O}$. HENRI GUÉRN: The barium arsenates. The characterisation of a new arsenate, $3\text{BaO} \cdot 2\text{As}_2\text{O}_5$. CHARLES DUFRASSE and JEAN LE BRAS: Study of the extinguishing mechanism of carbon tetrachloride towards flames. NICOLAS MENCHIKOFF and THÉODORE MONOD: Geological section of the Hank at Taoudeni (western Sahara). FERNAND BLANCHET: The extension of the Bathonian in the intra-alpine zones to the south of the Guisane. MAURICE HOCQUETTE: The chondriome in the excreting cells of *Primula obconica* and its modifications. WILLIAM HENRI SCHOPFER: Study of the auxogene action of extracts of normal and pathogenic tissues of animals on the development of *Phycomyces*. (The late) MARCEL MIRANDE: New researches on the presence of sterinic enclosures in the leaves and flowers of the lily. RENÉ SOUÈGES: The embryogeny of the Saxifragaceae. The development of the embryo in *Saxifraga granulata*. TCHOU SU: Hybridation of Anurians of Canton (China). PIERRE CARRÈRE: The evolutive cycle of a *Maritrema* (Trematoda). RAOUL MICHEL MAY: Hexachlorethane in the fight against the mosquito larvæ. A mixture of talc powder and hexachlorethane, spread on the surface of water containing larvæ or nymphs of the mosquito, is

very effective, and does not prevent the use of the water for domestic purposes or for watering plants. ANDRÉ LWOFF and HISATAKE DUSI: The nutrition of the euglenian, *Astasia Chattoni*. MARCEL PAUTHENIER and HENRI VOLKRINGER: An electrical method for the destruction of micro-organisms in suspension in a gas. The application of the electrical method for removal of dust in suspension in air not only removes, but also kills, any micro-organisms present in the dust. ALFRED BOQUET and ROGER LAPORTE: Experimental osseous and osteo-articular tuberculosis in the rabbit. ANDRÉ PAILLOT: A new type of polyhedral diseases observed in the caterpillars of *Euzoa (Agrotis) segetum*.

BRUSSELS

Royal Academy (*Bull. Classe Sci.*, 21, No. 11, November 9, 1935). L. GODEAUX: Surfaces on which certain matrices of linear forms vanish. E. ASSELBERGHS and W. HENKE: Contribution to the tectonic of Hunsrück and Soonwald. E. LAHAYE: Representation of functions of several variables which are the roots of an algebraic equation. L. LONG: Surfaces (S) and the surfaces (Σ) (2). Degree of generality and general properties of the surfaces (S) and (Σ). M. LINSMAN: Certain singular points of surfaces in finite geometry.

GENEVA

Society of Physics and Natural History, December 19. E. JOUKOWSKY: The presence, in the Genevan glacio-lacustral deposits, of organisms hitherto considered as marine (Coccoliths and *Actiniscus*). A. JAYET: A subterranean shelter with palaeolithic microfauna near Sergy. C. METTETAL: The precocious determination of regenerates in the salamander. C. METTETAL: Regenerates of grafted claws on the tail region in the salamander. E. PAREJAS and A. LILLIE: Some micrographical data on the upper Cretaceous of Vormy. E. PAREJAS and A. LILLIE: Some micrographical data on the upper Cretaceous of Châtelard en Bauges. R. VERNIORY: The tectonic of the Faucigny hills (Hte. Savoie). A. LILLIE and W. SCHROEDER: The Nummulitic of Chantemerle. E. BRINER and E. PERROTET: Raman spectra and the constitution of the ozonides. K. H. MEYER and W. LOTMAR: The structure of the chitin of fungi. A. WEINSTEIN: On the demonstration given by Schäfli of the Schwarz-Christoffel formula.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, 21, 633-684, Dec. 15). EDWIN B. WILSON: Heights and weights of 275 public school girls for consecutive ages 7 to 16 years, inclusive. Correlation of height with weight falls from 0.77 at seven years to 0.42 at sixteen years; weight-weight correlations are generally less than height-height correlations for corresponding years. Variance of height at sixteen years is 66 per cent 'controlled' by knowledge of the height at seven years; the corresponding figure for sixteen and eleven years is 56 per cent. A. J. WATERMAN: Transplantation of foetal tissues between rabbits and rats. Foetal tissue of the rabbit was placed beneath the capsule

of the adult rat kidney, and that of rat in the adult kidney and omental bursa of the rabbit. Few grafts were recovered. Occasionally a little differentiation was observed, particularly of harder tissues in older embryos. R. F. DEIMEL: The torsion of a circular cylinder. Saint-Venant assumed that a transverse section suffers no distortion in its own plane if it is not near the ends of a long cylinder. Consideration of the effect of boundary conditions at the ends does not change the linear relation derived by Saint-Venant and assumed by engineers. G. W. BEADLE and BORIS EPHRUSSI: Transplantation in *Drosophila*. The desired organ was injected into the body cavity of the host by a specially designed micropipette. Larval ovaries, imaginal disks of eyes, antennae, wings and legs have thus been transplanted successfully into flies in the larval stages. Host and transplant of different genetic constitution and even of different species have been used. PHILIP TRUMAN IVES: The temperature-effective period of the scute-1 phenotype. Bristle counts of experimental cultures of *Drosophila* show that exposure to a temperature of 40°-41° C., at any period from the laying of the egg to the early pupal stages, has an effect on development. This result is opposed to that of other workers, who find that the insect is effected only when such exposure occurs during a definite but very limited stage of development. J. T. BUCHHOLZ, L. F. WILLIAMS and A. F. BLAKESLEE: Pollen-tube growth of ten species of *Datura* in interspecific pollinations. A chart is given showing distribution of pollen-tube lengths of all possible crosses between these species. The results show the possibilities of hybridisation and also suggest a new morphological phylogenetic character. REGINALD A. DALY: Densities of rocks calculated from their chemical analyses. In 1920, J. P. Iddings published a method of doing this. Further tests justify the use of the method, which can be of service in calculating densities of vesicular material and partly glassy material where immersion methods are untrustworthy. SAUNDERS MACLANE: The ideal-decomposition of rational primes in terms of absolute values. N. JACOBSON: On pseudo-linear transformations. G. A. MILLER: Formulas giving the number of the groups determined by squares. I. J. SCHOENBERG: On the zeros of the successive derivatives of integral functions. A. A. ABRAMOWITZ: Colour changes in canceroid crabs of Bermuda. Crabs of two species of *Portunus*, which appear white and red respectively, were used. On coloured backgrounds, the responses were very varied but never sufficient to affect the colour of the animal as a whole. In blinded white crabs, the black pigment became concentrated whatever the background colour, contrary to the effect in most crustaceans, but exactly as occurs on removal of the pituitary gland in amphibians. W. G. CLARK: Note on the effect of light on the bio-electric potentials in the *Avena* coleoptile. Seedlings 30-40 mm. in length and devoid of chlorophyll were mounted in a dark chamber so that they passed through four glass loops carrying water meniscuses to provide electrical contact at four points of the growing coleoptile. When the system reached a steady electrical state, the plant was illuminated for 5, 10, 30, etc., minutes. Electrical response occurs after the light is turned off. The tip, which is normally negative to the base, shows decreased negativity, followed by increase to a maximum and finally decrease to original level; the curve is very similar to the light-growth curve. Maximum reaction occurs in the subapical region.