

Societies and Academies

LONDON

Royal Society, Feb. 9. W. S. STILES and B. H. CRAWFORD: The luminous efficiency of rays entering the eye pupil at different points. It is commonly assumed that the apparent brightness of an object is proportional to the pupil area. This assumption is shown to be invalid, and measurements are described which give the relative luminous efficiencies of rays entering the pupil at different points. From these data, the overall luminous efficiencies of eye pupils of different diameters are computed, and checked by direct measurement. The effect may originate in the eye media or in the retina itself. R. J. LUDFORD: Differences in the growth of transplantable tumours in plasma and serum culture media. The malignant cells in tissue cultures of tumours can be distinguished from the non-malignant cells by the addition of trypan blue to the cultures, since the former do not segregate the dye like the latter. The two types of cells are further distinguishable by other characteristics. In plasma cultures, both malignant and non-malignant cells migrate from the explants. In serum cultures only non-malignant cells wander out from the explants. In serum cultures the explants of carcinomata soon become rounded and the explants of sarcomata tend quickly to disintegrate. The outgrowth of non-malignant cells in serum cultures is usually greatest when tumours are explanted at a time when they are not growing at their best *in vivo*. It is suggested that the different behaviour of malignant cells in plasma, and in serum, is the result of an alteration in their plasma membrane such that they are unable to adhere to glass, though able to use the fibrin network of a plasma clot as a support for their movement.

Mineralogical Society, Jan. 26. L. J. SPENCER: Meteoric irons and silica-glass from the meteorite craters of Henbury (Central Australia) and Wabar (Arabia). The meteoric iron from these two localities is of exactly the same type, namely, a medium octahedrite containing 7.3 per cent of nickel. At Wabar a 25 lb. mass and a few small fragments of iron were collected; but at Henbury thousands of masses of iron are scattered around the craters. In the smallest (10 yd.) crater a group of four masses (440 lb.) was excavated at a depth of 7 ft. Many of the smaller pieces scattered around the craters are curiously twisted and bent, suggesting that they were torn in a plastic condition from the main masses by the force of the explosions. Further, they show a partial obliteration of the lamellar structure with granulation of the kamacite, indicating that they reached a temperature of 850° C. The pieces of iron show different types of pitting resulting from sub-aerial and underground weathering, and they are all weathered remnants of larger masses, each consisting of a single crystal. (See also NATURE, 131, 117, Jan. 28; 172, Feb. 4, 1933.) A. BRAMMALL and S. BRACEWELL: Garnet in the Dartmoor granite: its petrogenetic significance. Seventeen occurrences prove to be manganiferous almandines containing 3–22 per cent of MnO. Two or more varieties may occur in a single hand-specimen of the granite. The more manganiferous varieties (7 per cent MnO) are restricted to the tor-horizons; the less manganiferous varieties occur (a) below these horizons, (b) in shale-

contaminated facies of the granite, and (c) in xenolithic hornfelsed shale. Basic igneous inclusions are barren of garnet, and grossularite, *not* almandine, occurs in contact-altered spilites. The mineral is attributed to contamination of the granite by country-rock—probably deep-seated shales. Ten Lake District occurrences show a similar variation (1.3 per cent–7.3 per cent MnO). F. A. BANNISTER: The identity of mottramite and psittacinite with cupriferos descloizite (cuprodescloizite); (with chemical analyses by M. H. Hey). Oscillation, Laue and rotation photographs show that descloizite has an orthorhombic unit-cell with edges $a = 6.05$, $b = 9.39$, $c = 7.56$ Å. and space-group Q_h^{16} . The unit cell contains $4\text{PbZn}(\text{VO}_4)(\text{OH})$. Powder photographs of descloizite, cuprodescloizite, mottramite, and psittacinite from the type localities are identical with each other. New chemical analyses and determinations of the water content at various temperatures together with the X-ray work show that all these minerals may be represented by the general formula $\text{Pb}(\text{Cu}, \text{Zn})(\text{VO}_4)(\text{OH})$. The water of constitution is not evolved until a dull red-heat. Thin incrustations of minute black crystals on sandstone from Harmer Hill, Clive, near Shrewsbury, collected by Mr. Arthur Russell, are identical with mottramite from Mottram St. Andrew, Cheshire (H. E. Roscoe, 1876), that is, cuprodescloizite carrying little or no zinc.

EDINBURGH

Royal Society, Jan. 9. J. G. GRAY: Self-erecting gyrostats. The lecture was illustrated by experiments carried out with a large series of new gyrostatic tops and combinations invented by Prof. Gray and constructed with a view of demonstrating and explaining technique which he has developed for use in the practical applications of gyrostatics, notably in applications to the navigation of marine and aerial craft, and for use in the construction of stabilisers for use in such craft. J. E. MACKENZIE and H. W. MELVILLE: Experimental demonstrations of the measurement of the diffusion coefficients of bromine-hydrogen and bromine-carbon dioxide. This experiment is likened to a horse race in which all the horses have the same speed and colour (say chestnut), but each horse runs in a track differing in difficulty from the track of every other horse. Bromine molecules (chestnut horses) diffuse through tubes filled with hydrogen or carbon dioxide or other gas, and the distances covered by the bromine in each tube are measured visually at intervals of time. (See NATURE, 130, 322, Aug. 27, 1932.) H. S. RUSE: The measurement of spatial distance in a curved space-time. A definition of spatial distance in a general space-time obtained in an earlier communication by a purely mathematical argument is in accordance with the concept of 'distance' fundamental in relativity, namely, that determined by the use of rigid measuring rods.

PARIS

Academy of Sciences, Jan. 3 (196, pp. 1–71). H. DOUVILLÉ, M. SOLIGNAC and E. BERKALOFF: The discovery of the marine Permian at Djebel Tébagá (extreme South Tunisia). ST. GOLAB: The conformal representation of Finsler space on Euclidian space. ÉLIE CARTAN: Remarks on the preceding communication. S. FINIKOFF: Pairs of surfaces the lines of curvature of which correspond, the

corresponding tangents cutting. ARNAUD DENJOY: The polygons of approximation of a rectifiable curve. S. MAZUR and W. ORLICZ: Linear methods of summation. N. BOTEVA: Some partial differential equations. J. DIEUDONNÉ: Radii of *étoilement* and convexity of certain functions. TCHANG TE-LOU: The electrical and thermomechanical phenomena during ignition and combustion in an internal combustion motor. DELFOSSE and SWYNGEDAUF: Certain conditions of working of ball bearings. F. HOLWECK: Study of a sensitive elastic pendulum. Contribution to the establishment of a French gravimetric network. P. LEJAY: The establishment of the gravimetric map of the north of France. S. SOBOLÉFF: The equation of the wave on the logarithmic surface of Riemann. FRANCOIS CANAC: Study of the mode of corrosion and of the susceptibility to corrosion of metals by the diffusion of light. R. DE FLEURY and A. CAILLON: The composition and mode of use of a flux assuring the protection of the metal, its refining and the elimination of chlorides in casting magnesium. E. AUBERT DE LA RUE: Some mineral deposits of the Saint-Pierre and Miquelon Islands. H. ARSANDAUX: The origin of the secondary dome of Mt. Pelée. L. GRIGORAKI: A new medium for preserving dermatophytes (pleomorphism, acquired characters, tissue specificity). F. VLÈS: Researches on the intervention of electrical conditions in the growth of children. CH. SANNIÉ and R. TRUHAUT: The mercury-reducing power of certain aminoacids. JAMES BASSET and M. A. MACHEBEUF: Studies on the biological effects of ultra-pressures. Studies on immunity: the influence of very high pressures on certain antigens and antibodies. The toxin of tetanus loses its activity after exposure to a pressure of 13,500 atmospheres, but then possesses no immunising activity. It is not an anatoxin. At this high pressure antitetanus serum is precipitated as a jelly but the antitoxic power is not wholly destroyed. A. LACASSAGNE: Malignant tumours produced in the rabbit by the irradiation of inflammatory foci.

VIENNA

Academy of Sciences, Oct. 20. JOSEF KISSER and H. SCHEID: Investigations on the permeability of the seed coats of *Pisum* and *Triticum* to water and on the suction forces of the seeds. J. KISSER and J. SCHUBERT: The influence of treatment of seeds with chemical stimulants on the cell growth of the rootlets. When seeds of *Pisum* and *Triticum* are treated with alcohol, manganese sulphate or chloride, magnesium chloride or zinc sulphate in suitable concentrations and for suitable periods, considerable increase in root growth is produced. J. KISSER and R. FURTAUER: The influence of certain chemical agents on the carbon dioxide output of germinating seeds of *Pisum sativum* and *Triticum vulgare* under optimum germination conditions. In certain concentrations, alcohol enhances the production of carbon dioxide by *Pisum* seeds, but it is not certain if this effect is a true stimulative action or if it is due to the use of the alcohol as a nutrient. According to their concentration, magnesium chloride and manganese sulphate and chloride may either increase or diminish the output of carbon dioxide; the effect is influenced also by the presence or absence of the husk and by the phase of the germination when the salt solution is applied. J. KISSER and FR. ZEISEL: Physiological investigations on interrupted nutation. J. KISSER and R. PIEPE: Further investigations on the material foundations of

tropic curvature. J. KISSER and I. BEER: The chemotropic sensitivity of dicotyledonous seedlings. ANTON KAILAN and OTTO STUBER: The velocity of catalysed hydrogenations. The hydrogenation of oleic acid in presence of nickel and other catalysts supported on different carriers has been studied. FERDINAND STEINHAUSER: Temperature relations in Vienna during different seasons and at different times of the day (1931-1932). JOSEF SCHINTLMEISTER: The ionisation of H-rays in different gases. From the results as yet obtained, it must be concluded that this ionisation exhibits no abnormalities. ULRICH KHUNER: Experiments with space-acoustic models, and measurement of acoustic absorption coefficients. K. F. WENCKEBACH: The mechanism of sudden heart-failure in cases of beriberi. Observations made in the Dutch East Indies and Singapore indicate that the marked broadening of the right heart and the danger of speedy heart-failure accompanying beriberi depend on two factors, one cardiac and the other peripheral. These factors act from the beginning of the disease and are produced by the causes of the disease, but appear to differ essentially. EMIL ABEL and HERMANN SCHMID: Flow kinetics: model of photolysis. Certain special cases of flow kinetics, serving as a model of photolysis, are considered, and a kinetic interpretation of Beer's law of absorption is given. FRANZ HOLZL and WALTHER STOCKMAYER: The complex anion of Buff's compound and of Bunsen's salt. These compounds contain a common anion and are represented by the formulæ $(\text{ROH.H})_6 [\text{Fe}(\text{CN})_2\text{Cl}_2]$ and $(\text{NH}_4)_6 [\text{Fe}(\text{CN})_6\text{Cl}_2]$ respectively. MILOŠ MLADENOVIC: Elemic acid from Manilian elemi resin (6): A new oxidation product of α -elemolic acid. KONRAD FUNKE: Perylene and its derivatives (37): Oxidation of dinitro- and diamino-perylene. HANS KOPFER and ALFRED PONGRATZ: The Raman effect (24): The Raman spectrum of organic substances (molecules with cumulated double linking). The vibration spectrum of allene corresponds exactly with that of a symmetrical linear molecule with a C:C double bond. With allene derivatives, cleavage of the principal frequency $\Delta\nu=1074 \text{ cm.}^{-1}$ occurs, and for the isocyanate group the frequency $\Delta\nu=1420 \text{ cm.}^{-1}$ is characteristic. R. KREMANN, FRANZ GRIENGL and HELMUT SCHREINER: The viscosity of partially miscible liquid mixtures (1): The system phenol-water. ROBERT KREMANN, ESTER INGE SCHWARZ, and SIDY LE BEAU: Experiments on the electrolysis of fused iron-aluminium alloys and the degree of solubility of iron in molten aluminium at different temperatures. R. KREMANN and LUDWIG LAMMERMAYER: The electrolysis of aluminium alloys containing iron as a model of the electrolytic purification of molten aluminium from iron. During this electrolysis, the iron migrates towards the cathode, but this effect diminishes as the aluminium content increases and is very slight for nearly pure aluminium. It is, therefore, improbable that aluminium can be freed from iron electrolytically. LUDWIG LAMMERMAYER: Electrolysis of a fused beryllium-copper alloy containing 10 per cent of beryllium. ARTHUR PONGRATZ, FRANZ GRIENGL, and J. CECELSKY: Perylene and its derivatives (38): Heats of combustion. KARL LINSBAUER: Action of calcium and potassium solutions on the protoplasm of *Chara*. LUDWIG LAMMERMAYER: Plants on the basalts of eastern Styria. FRIEDRICH MORTON: Results of a botanical expedition to Abyssinia, Egypt, and the Quarnero district (1931-1932). RUDOLF WAGNER: The existence of Δ -Sichel sypnodia.