

Societies and Academies

LONDON

Mineralogical Society, March 15. ARTHUR RUSSELL: Baryte crystals from the Manvers Main Colliery, Wath-upon-Deerne, near Rotherham, Yorkshire. A cavity containing exceedingly beautiful colourless crystals of baryte was discovered in the roof of the Parkgate Seam of this colliery in 1930, and the occurrence was briefly described by C. P. Finn in the same year. Two distinct habits of crystals occurred, prismatic and tabular. The crystals are attached to cream-coloured rhombohedra of dolomite which form a coating on the grey sandstone, both baryte and dolomite being for the most part more or less thickly sprinkled with small bright twinned crystals of chalcopyrite. The crystal forms present are listed and drawings of the crystals are given. W. Q. KENNEDY: The conditions for the crystallisation of hornblende in igneous rocks. By means of a statistical study of the MgO-CaO-FeO ratios of igneous hornblendes it is shown that the latter occupy an intermediate position between the diopsidic pyroxenes and the magnesia-rich, lime-poor monoclinic and orthorhombic pyroxenes. It is concluded, therefore, that (1) pressure and the concentration of the volatile constituents are not the sole determining factors in the crystallisation of pyroxene and hornblende from a magma, but that the original proportions of the constituent oxides play an equally important part; (2) a magma which will produce hornblende as its ferromagnesian constituent under physical conditions tending towards the retention of the volatile constituents will, under effusive conditions, produce diopsidic pyroxene + hypersthene or enstatite-augite (pigeonite).

ARTHUR RUSSELL: An account of British mineral collectors and dealers in the seventeenth, eighteenth and nineteenth centuries (contd.). John Williams of Scorrier House, Cornwall, mine agent and adventurer, copper and tin smelter and banker, born September 23, 1753, died April 17, 1841. The collection of Cornish minerals which he had formed at Scorrier in conjunction with his son John (born August 3, 1777, died August 11, 1849) was greatly added to by the latter. The collection, which contained about 10,000 specimens, was one of the three finest in Cornwall. In 1893 Mr. John Charles Williams disposed of the collection by presentation between the British Museum, the Royal Institution of Cornwall, Truro Museum and the Robert Hunt Memorial Museum, Redruth. In addition to a memoir of both the Williams, a general account of the collection and its outstanding specimens is given. M. H. HEY: (1) On the advantages of the face-adjustment for two-circle goniometry. The statement often made that an accurate projection cannot be so quickly prepared from two-circle measurements made with the face-adjustment as from measurements made with the zone-adjustment is shown to be incorrect, and a construction for the preparation of a projection is described. The face adjustment has several decided advantages over the zone-adjustment. (2) An improved method of crystallographic computations. A system for the computation of the elements of a crystal from two-circle goniometric measurements is described in which due weight is given to each measured angle in accordance with its estimated probable accuracy. (3) On face- and zone-symbols referred to hexagonal axes: a correction. The system of four-index

hexagonal zone-symbols described by L. Weber is correct, and that formerly described by the author is abandoned. The derivation of Weber's symbols from a gnomonic or linear projection is described, and their relation to the 'three-index' symbols noted.

Physical Society, April 20. LORD RAYLEIGH: Further experiments in illustration of the green flash at sunset. An artificial source of light and a prism, the dispersion of which is equal to the atmospheric dispersion, was used. A straight edge parallel to the base of the prism plays the part of the horizon. The observer was 74 metres from the prism. On moving the eye into the shadow of the straight edge, the bluish-green flash was well seen. By means of substantially the same arrangement with large dispersion and short distances, the simultaneous-contrast effect of a red or orange background was studied, but it was not found possible to obtain a green as opposed to a blue flash in this way. With a liquid containing small particles in suitable concentration in front of the source, the disappearing flash is of a brilliant green colour. It is concluded that when the flash is bright green, atmospheric filtration is acting to remove the blue light. D. H. FOLLETT: An ultra-violet photoelectric spectrophotometer. The transmission of the sample is found by comparison with a rotating sector of cylindrical type. Two photocells are employed and fluctuations in the intensity of the source are compensated for. A. S. RAO and S. GOPALAKRISHNAMURTY: The spectrum of trebly-ionised bromine. Vacuum spark and discharge-tube spectra of bromine have been investigated over a wide range. Many of the triplets and singlets involving the terms due to $4p$, $5s$, $4d$, sp^3 and $5p$ configurations have been identified. From the present work the classifications made by S. C. Deb appear to be incorrect. The deepest term $4p^3P_0 = 404,892 \text{ cm}^{-1}$ yields an ionisation potential of about 50 v. for the trebly-ionised atom of bromine. T. C. SUTTON and H. L. HARDEN: The purity required for surface tension measurements. The extent to which impurities affect the measured value of the surface tension of a liquid depends on the method of measurement employed. This effect is applied to test whether the purity of a sample is adequate for the measurement of the surface tension of the pure liquid. E. E. WRIGHT: Velocity modulation in television. The motion of a spot of light of constant intensity, necessary to produce the effect of a sinusoidal linear distribution of light-intensity on a television viewing screen, is determined and the effect of the finite size of the scanning spot is compared with the analogous effect in the more usual type of television system in which the scanning spot moves with constant speed and is modulated in intensity.

Society of Public Analysts, May 2. A. SHAW: Determination of free silica in coal measure rocks. Whilst the method of rational analyses for the determination of free silica in coal measure rock tends to give results too low by about 2 per cent, it is far more accurate than calculations from the ultimate analysis, micrometric measurements of shale sections, or X-ray analysis. S. A. ASHMORE: A new apparatus for determining the temperature of crystallisation of cocoa butter. The temperature at which separation of solid fat occurs is a constant for each fat, and an

apparatus has been devised whereby this temperature can be determined with rapidity and precision on as little as 2 gm. of fat. The Tyndall effect has been utilised by projecting a beam of light through a small tube containing the melted fat suitably enclosed in a darkened chamber; as soon as any separation of solid particles occurs, a scattering of light takes place, and the tube appears luminous against the darkened background. S. A. COASE: Determination of small quantities of germanium in the presence of arsenic. The electrolytic reduction of germanium dioxide to monogermane has been investigated. A suitable apparatus is described and it is shown that the yield of gas is greatest when (i) the cathode is of nickel, (ii) the alkalinity of the solution is low, (iii) the current density is high. By using the electrolytic March test with a standardised apparatus, 0.027 mgm. of germanium dioxide can be detected. S. UENO and H. IKUTA: Saturated fatty acids of chrysalis oil. Palmitic acid is the main constituent of Japanese chrysalis oil; stearic acid and a saturated fatty acid of the C_{20} or C_{22} series have also been isolated.

PARIS

Academy of Sciences, April 4 (*C.R.*, 198, 1281-1328). EMM. DE MARGERIE: Notice on William Morris Davis, *Correspondant* for the Section of Geography and Navigation. L. LECORNU: The lighting of roads. Mathematical discussion of the most advantageous form for the mirrors of street lamps. EMILE COTTON: Local study of a surface and of certain integrals. RENÉ LAGRANGE: Congruences of circles which have two focal diameters. A. DELGLEIZE: The transformations of surfaces. M. GHERMANESCO: A system of equations with an infinity of unknowns. N. LUSIN: Some difficult problems of the theory of functions. S. P. LIAU: The light curve of the star θ Cygni and the elements of the double system. The curve given is based on 200 observations, and from this, together with the spectroscopic data of J. A. Pearce, the constants for the double star are deduced. PIERRE VERNOTTE: The calculation of the heat losses of the walls of motors, and more generally, on various non-adiabatic phenomena. MICHEL LOËVE: The means of Dirac's theory. P. L. CASSOU and J. CAYREL: Remarks on the true capacity of coils. T. NANTY and M. VALET: The specific inductive power of colloidal solutions. EMILE SEVIN: The reciprocal action of waves and particles in a constant field. L. NÉEL: The interpretation of the paramagnetic properties of alloys. P. JACQUET: A method of measuring the adherence of electrolytic deposits. A. ANDANT, P. LAMBERT and J. LECOMTE: The application of diffusion spectra (Raman effect) and absorption in the infra-red to distinguish between the five isomeric hexanes. By the simultaneous use of both methods, the purity of each hydrocarbon and freedom from other isomers can be ascertained. DANIEL CHALONGE and ETIENNE VASSY: The absorption spectrum of oxygen in the extreme ultra-violet. GÉRAUD PETIAU: The radioactive series and the classification of the light elements. MAMAN: The preparation and some physicochemical properties of hexane and its isomers. Full details of the preparation and properties of normal hexane, isohexane, methyl-diethylmethane, trimethyl-ethylmethane, diisopropyl. JEAN ESCHER-DESRIVIERES, ROBERT FAILLIE and RAYMOND JONNARD: Psychomotive visual reactions resulting from an intense illumination of the eye.

GENEVA

Society of Physics and Natural History, February 1. P. ROSSIER: The relation between the abscissæ of the extremities of spectrograms of F_0 stars. The coefficients of this relation (which is linear) differ notably from those relating to the A_0 stars. This variation is explained, at least qualitatively, by the application of the laws of radiation and those of the spectral sensibility of the plates. P. ROSSIER: The total width of the three lines H_γ , H_δ and $H_\epsilon + H$ in spectrograms of the A_0 and F_0 stars. On normally exposed spectrograms, this width is a sensibly linear function of the length of the spectrogram. Its variation is more rapid for the A_0 stars than for the F_0 stars. The use of over-exposed spectrograms may lead to mistakes. J. WEIGLE and H. SAINI: The thermal expansion of calcite measured with the X-rays. The authors have determined the coefficients of thermal expansion of calcite measured by means of the X-rays. They have found for the mean coefficients between 20°C . and 100°C . the following values: $\alpha_{11} = 21 \times 10^{-6}$, $\alpha_1 = -4 \times 10^{-6}$, values sensibly different from those obtained by Benoit by means of macroscopic measurements, namely, $\alpha_{11} = 25 \times 10^{-6}$, $\alpha_1 = -5 \times 10^{-6}$.

ROME

Royal National Academy of the Lincei, November 5. U. CISOTTI: Differential deductions from the definition of reciprocal vectors: successive derivations (2). G. A. MAGGI: Reflection and refraction of harmonic electromagnetic waves of any form whatever at a plane surface. G. ARMELLINI: Investigations on the form of the nuclei of extra-galactic nebulae, and on cosmic repulsion. Q. MAJORANA: Metallic photo-resistance experiments in a current of water. In order to distinguish the new purely photoelectric effect recently examined from any thermal effect occurring, the influence of a stream of water on the metal sheet struck by the light has been investigated. From the results obtained, the existence, in part at least, of the photoelectric characteristic of the phenomenon of metallic photo-resistance is assumed. G. LEVI and HERTHA MEYER: Mitotic division of nerve cells in cultures *in vitro*. A technique is described which renders it possible to observe such division. B. MANIÀ: Mayer's problem. In some cases, at least, it is possible, from the conditions sufficient for the semi-continuity of the integrals and for the existence of the solution in problems relative to the extreme limits, to deduce conditions sufficient for the semi-continuity and for the existence of the solution in Mayer's problem. MARIA CIBRARIO: Properties of the generalised numbers and polynomials of Bernoulli and of Euler. P. DIENES: A theorem of Fermi. T. WAZEWSKI: The unicity and limitation of the integrals of equations to partial derivatives of the first order. L. CAMPEDELLI: The algebraic surfaces on which curves of genus π and degree n equal to or greater than $2\pi - 2$ exist. B. SEGRE: Geometric-functional determination of groups of covariant points relative to a net of curves on an algebraic surface. A. COLACEVICH: The orbit of the visual double $\delta 31$. A. SIGNORINI: Finite deformations of systems with reversible transformations. G. R. LEVI and D. GHIRON: Boron arsenate and its mixed crystals with boron phosphate. Boron arsenate, which has not previously been prepared, forms tetragonal crystals, $a = 4.46 \text{ \AA}$., $c : a = 1.524$. It

gives mixed crystals in all proportions with boron phosphate, which also forms tetragonal crystals, $a = 4.33 \text{ \AA}$, $c : a = 1.532$. G. AMANTEA: Determination of the beriberi quotient, Q_b ; notes on technique. V. ZAGAMI: Further considerations on the food value of seeds of *Cicer arietinum* L. These seeds contain proteins sufficient to supply the needs of adult rats over a protracted period, but they are deficient in saline matter and also in other factors, probably the fat-soluble vitamins A and D. Vitamins B and E are apparently present in suitable proportions.

VIENNA

Academy of Sciences, February 15. L. PORTHEIM, H. STEIDL and F. KÖCK: Orienting investigations on the influence of ultra-short waves on flowers. Flowers and inflorescences of 47 different plant species were exposed in test-tubes in a condenser field to waves of 3.4 metres. Very high temperatures were quickly developed in the tubes, these reaching $80^\circ\text{--}90^\circ \text{C}$. in 27 per cent of the total number within 30 seconds. Substances contained in the plant cells are evidently capable of transforming the applied energy rapidly into heat. E. TSCHERMAK: Cultivation of a native oil-fruit not sufficiently valued. Crossing of a pumpkin with huskless seeds with a husked edible pumpkin having no tendrils yields a fruit rich in comestible oil. ARNULF KNAFFL: Applicability of similarity considerations to the flow of electricity in gases ionised by X- and gamma-rays.

February 22. ERNST BEUTEL and ARTUR KUTZELNIGG: Coloured bromine sorbates. Bromine vapour is absorbed by a number of substances, including various oxides and salts, marble, and vegetable fibres, with development of more or less intense coloration. In general, substances which readily take up iodine are also good sorbents for bromine, although certain striking exceptions occur.

Forthcoming Events

Monday, June 4

ROYAL GEOGRAPHICAL SOCIETY, at 5.30.—Bosworth Goldman: "Through Afghanistan to India".

Tuesday, June 5

RESEARCH DEFENCE SOCIETY, at 3.—(at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1).—Prof. J. Barcroft: "Experiments on Man" (Stephen Paget Memorial Lecture).

Thursday, June 7

CHEMICAL SOCIETY, at 3.—(at the Chemical Research Laboratory, Department of Scientific and Industrial Research, Teddington).—Discussion on "Chemical Syntheses under Pressure". Speakers: R. Taylor, Dr. D. V. N. Hardy and Dr. D. D. Pratt.

ROYAL SOCIETY, at 4.30.—Prof. G. I. Taylor: "The Mechanism of Plastic Deformation of Crystals".

Prof. G. I. Taylor: "The Strength of Rock Salt".

C. A. Bevers and H. Lipson: "The Crystal Structure of Copper Sulphate Pentahydrate, $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$ ".

ASSOCIATION OF APPLIED BIOLOGISTS, June 8. Annual summer meeting to be held at the Wellcome Physiological Research Laboratories, Langley Court, Beckenham, Kent.

Official Publications Received

GREAT BRITAIN AND IRELAND

Amgueddfa Genedlaethol Cymru: National Museum of Wales. The Life-History of Birds: a Handbook to a Temporary Exhibition, November 1933–February 1934. By Colin Matheson. Pp. 22. (Cardiff: National Museum of Wales.) 3d.

The Liverpool Medical School, 1834–1934: a Brief Record. By Arthur A. Gemmill. Pp. 23+5 plates. (Liverpool: University Press of Liverpool; London: Hodder and Stoughton, Ltd.) 1s.

Department of Scientific and Industrial Research. Second Report of the Steel Structures Research Committee. Pp. xviii+369+25 plates. (London: H.M. Stationery Office.) 7s. 6d. net.

The Institution of Professional Civil Servants. Annual Report of Council for the Year 1933. Pp. xiv+72. (London.)

The West Riding of Yorkshire Rivers Board. Forty-first Annual Report. Pp. 70. (Wakefield.)

Ministry of Health. Report of Conference between Representatives of the Advisory Committee on Nutrition and Representatives of a Committee appointed by the British Medical Association. Pp. 7. (London: H.M. Stationery Office.) 2d. net.

OTHER COUNTRIES

Smithsonian Miscellaneous Collections. Vol. 89, No. 6: The Classification of the Free-living Nematodes and their relation to the Parasitic Nematodes. By I. N. Filipjev. (Publication 3216.) Pp. 63+8 plates. (Washington, D.C.: Smithsonian Institution.)

Report of the Kodaikanal Observatory for the Year 1933. Pp. 3. (Delhi: Manager of Publications.) 1 anna; 1½d.

Report of the Aeronautical Research Institute, Tōkyō Imperial University. No. 105: Motion of Flying Boats during Take-off and Landing Run. By Taitiro Ogawa and Yosiro Murata. Pp. 291–334. (Tōkyō: Koseikai Publishing House.) 35 sen.

Proceedings of the California Academy of Sciences, Fourth Series. Vol. 21, No. 14: Formicidae of the Templeton Crocker Expedition, 1933. By Prof. William Morton Wheeler. Pp. 173–181. (San Francisco: California Academy of Sciences.)

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 86. Zoological Results of the Third De Schauensee Siamese Expedition, Part 1: Fishes. By Henry W. Fowler. Pp. 67–163. (Philadelphia: Academy of Natural Sciences.)

Colony of Mauritius. Annual Report of the Royal Alfred Observatory for the Year 1932. Pp. 9. Miscellaneous Publications of the Royal Alfred Observatory. No. 14: The Cyclone Season, 1931–1932, at Mauritius. By N. B. McCurdy. Pp. 7+41 plates. (Port Louis: Government Printer.)

Journal of the Indian Institute of Science. Vol. 16A, Part 14: The Solubility of Silver Chloride. By P. C. Dave and K. R. Krishnaswami. Pp. 153–165. 1 rupee. Vol. 16A, Part 15: Contributions to the Physiology of Sandal (*Santalum album*, Linn.). Part 1: Nature and Extent of Parasitism; Part 2: Influence of Host on the Nitrogen Metabolism of Sandal. By Y. V. Sreenivasa Rao. Pp. 167–184. 1 rupee. Vol. 16A, Part 16: Indian Coal Tar. By S. K. Ganguly, B. Sanjiva Rao and P. C. Guha. Pp. 185–192. 8 annas. Vol. 17A, Part 3: The Gas from Indian Oil Wells. By G. P. Kane, K. R. Krishnaswami and H. E. Watson. Pp. 33–40. 12 annas. Vol. 17A, Part 4: Reactivity of Dimethyldihydroresorcin, Part 3: Azo-dyes and Diazo-oxy Compounds. By B. H. Iyer and G. C. Chakravarti. Pp. 41–47. 12 annas. (Bangalore.)

Conseil Permanent International pour l'Exploration de la Mer. Temperature and Salinity at the Surface of the North Sea and the English Channel. By J. P. Jacobsen. Pp. 20. (Copenhagen: Andr. Fred. Høst et fils.) 2.00 kr.

Ministry of the Interior, Egypt: Department of Public Health: Research Institute and Endemic Diseases Hospital. Second Annual Report, 1932. Pp. viii+38+2 plates. (Cairo: Government Press.) 12 P.T.

U.S. Department of the Interior: Geological Survey. Water-Supply Paper 737: Surface Water Supply of the United States, 1932. Part 12: North Pacific Slope Basins. A: Pacific Slope Basins in Washington and Upper Columbia River Basin. Pp. vi+184. (Washington, D.C.: Government Printing Office.) 15 cents.

Carnegie Institution of Washington. Supplementary Publications, No. 7: Racing Capacity in the Thoroughbred Horse. Part 1: The Measure of Racing Capacity; Part 2: The Inheritance of Racing Capacity. By Dr. Harry H. Laughlin. Pp. 26. (Washington, D.C.: Carnegie Institution.)

American Psychological Institute. Bulletin 1: History of the A.P.I., an Instrumental Test of the Independence of a "Spirit Control". Pp. iii+95. (New York: American Psychological Institute.) 2 dollars.

CATALOGUES

Australia, New Zealand and the Islands of the Pacific. (Catalogue N.S. No. 12.) Pp. 70. Periodica. (Catalogue No. 13.) Pp. 12. (London: Wm. Dawson and Sons, Ltd.)

Geographie, Ethnographie, Prähistorik, mit einer grossen Anzahl von alten geographischen Werken. (Antiquariats-Katalog 218.) Pp. 42. (Leipzig: Max Weg.)

Livogen (Liver Extract with Vitamin B and Hæmoglobin.) Pp. 4. (London: The British Drug Houses, Ltd.)

B. T. L. Monthly Bulletin. No. 18, May. Pp. 4. (London: Baird and Tatlock (London), Ltd.)

Catalogue of Botanical Books from the Library of the late C. C. Lacaite. (Catalogue No. 222.) Pp. 32. (London: Dulau and Co. Ltd.)

Catalogue of Books on all Technical Subjects and Applied Science. Pp. 110. (London: W. and G. Foyle, Ltd.)

Object Glasses, Mirrors, etc., for Astronomical Instruments (Pamphlet No. 105.) Pp. 8. (Newcastle-upon-Tyne: Sir Howard Grubb, Parsons and Co.)