

the Royal Society". Taking the degree of D.D. in 1806, he became prebendary of Kilgoblin and rector of Derrybrush, in 1808 was made archdeacon of Clogher, and finally in 1826 bishop of Cloyne. His episcopal work from this time occupied much of his energy, and for the last ten years of his life he contributed little to science. He was buried in Trinity College Chapel, and a marble memorial to him was erected in Cloyne Cathedral. His best memorial, said Ball, was his admirable book on the "Elements of Plane Astronomy". He was succeeded in the Andrews chair by William Rowan Hamilton, whose genius he had long recognised.

#### Darwin in the Galapagos Archipelago

CHAP. xvii of Darwin's "Journal of Researches" contains his account of the visit of H.M.S. *Beagle* to the Galapagos Archipelago, the survey of which occupied from September 15 until October 20, 1835. "The archipelago," Darwin wrote, "consists of ten principal islands, of which five exceed the others in size. . . . They are all formed of volcanic rocks; a few fragments of granite curiously glazed and altered by the heat, can hardly be called an exception. Some of the craters surmounting the larger islands, are of immense size, and they rise to a height of between three and four thousand feet". Darwin landed on several of the islands of which, he said, the natural history is eminently curious and well deserving attention. "The archipelago is a little world within itself, or rather a satellite to America, whence it has derived a few stray colonists, and has received the general character of its indigenous productions. Considering the small size of these islands we feel the more astonished at the number of their aboriginal beings, and at their confined range. Seeing every height crowned with its crater, and the boundaries of most of the lava-streams still distinct, we are led to believe that within a period, geologically recent, the unbroken ocean was here spread out. Hence both in space and time we seem to be brought somewhat near to that great fact—that mystery of mysteries—the first appearance of new beings on this earth".

#### Green's Night in a Balloon

CHARLES GREEN (1785–1870), the first aeronaut to make an ascent with carburetted hydrogen gas, spent a night in the air on September 17, 1835. Writing to *The Times* on September 20, 1835, on his late aerial voyage from the Royal Gardens, Vauxhall, he said he ascended with Mr. Butler at quarter to six on Thursday evening, September 17, and at about quarter past six descended at Walthamstow. He then determined to stay in the air all night so, leaving Mr. Butler behind, he reascended, passed over Bishops Stortford, Royston and Huntingdon and at quarter to six on Friday morning landed in the parish of Wimbotsham, near Downham in Norfolk. He partook of an excellent breakfast at the residence of Mr. J. Pike. Then he again ascended and descended at 10.30 a.m. near Lynn, Norfolk. "I received numerous congratulations," he said, "though many persons I believe doubted the statement of my having been in the air during the past night. . . . I remained in the air altogether about 13 hours and from the zigzag direction of my course must have travelled about 130 miles. From the very trifling loss of power the balloon sustained during the whole of this time, I judge I might have remained up at least five days and nights."

## Societies and Academies

### PARIS

Academy of Sciences, July 22 (*C.R.*, 201, 245–308). LOUIS BLARINGHEM: A new case of unilateral heredity observed on hybrids of sages (*Salvia nemorosa* × *S. Sclarea*). STANISLAS GOLAB: The relation between the ideas of measurements of angles and areas in Finsler spaces. ANDRÉ FOUILLADE: Unicity with a nearly constant factor, in an undecomposable ensemble, of a function of the ensemble invariant with respect to the transformation associated with a positive, linear functional transformation maintaining unity. JEAN BRAITZEFF: A particular case of the distribution of the singular points of a function defined by a Dirichlet series. MIÉCISLAS BIERNACKI: Some majorants of the theory of univalent functions. PAUL NOAILLON: Sudden expansion in a gas. MIROSLAV NÉNADOVITCH and MAURICE DENIS: Contribution to the experimental study of the stability of certain biplane cells at large incidences. P. CHEVENARD and X. WACHÉ: The accelerating effect of a sinusoidal mechanical tension on the changes in a hypertempered iron-nickel-chromium-carbon austenite. The accelerating effect of the sinusoidal pressure on the precipitation of the carbides is very marked. This results in a certain increase in the mechanical resistance when hot; but in some cases leads to fragility, giving rise to breakage without sensible deformation. RAYMOND TREMBLOT: A contrast star photometer. A modification of the Fabry and Buisson photometer without diffusing screens allowing a better utilisation of the light available when the measurements are carried out on point sources of light of very small luminosity. An accuracy of 0.01–0.02 magnitude is possible. ANDRÉ LÉAUTÉ: The capillary ascent of tars and bitumens. Application of the method previously described to the study of the causes of the changes in a road surface, originally satisfactory but later slippery. MME. LINA GUASTALLA: The oxido-reduction process at the level of a (kaolin) partition interposed in a copper solution, in the course of electrolysis. The factors determining the velocity of its appearance. MARCEL CAU and FÉLIX ESCLANGON: The coherence of light radiations and the possibility of using interference apparatus as monochromatic light sources. WITOLD BRONIEWSKI and W. LEWANDOWSKI: The influence of sulphur on the properties of copper. Amounts of sulphur varying from 0.0 to 0.7 per cent were added to copper, and measurements made of the changes in electrical conductivity, temperature coefficient of the electrical conductivity, thermo-electric power (against lead), breaking load, elastic limit, elongation before breaking and Brinell hardness. The results are given graphically. ROGER PERROT: The action of nitrosyl chloride on some silver salts. M. TIFFENEAU, P. WEILL, J. GUTMANN and B. TCHOUBAR: Molecular transpositions in the cyclane series. Lengthening and shortening of the rings. CHARLES DUFRASSE and ANDRÉ ÉTIENNE: The dissociable organic oxides. The anthracene structure possesses reversible oxidisability: a dissociable oxide of mesodiphenylanthracene. From the study of the rubenes, the authors have deduced a structure for substances capable of reversible photooxidation, and mesodiphenylanthracene possesses such a structure. This substance has been found to absorb free oxygen, forming a crystallised photo-oxide: it dissociates at



200° C. into pure oxygen and the free hydrocarbon. ALBERT F. DE LAPPARENT: The Trias band of Barjols (Provence). JACQUES FROMAGET: The existence of the lower Trias with ocean facies to the south of Luang-Prabang (Laos) and on the palaeogeography of south-eastern Asia at this period. CHARLES PÉREZ: Stages in the disappearance of the roots of *Peltogaster* after the fall of the visceral sac. PIERRE GRASSÉ and PAUL BONNEVILLE: Non-swarming imagos or achrestogonimes of the Protermitids. MARIUS BACCINO: The thermal adaptation of the nests of mammals during the growth of the young. The temperature of the nest in the case of rabbits falls as the age of the young increases. For each age there is a temperature of maximum growth. ALBERT and PAUL CHAUCHARD and MME. BERTHE CHAUCHARD: The action of nicotine on the preganglion and postganglion sympathetic nerve fibres. FRIEDRICH L. HAHN: The determination of very small quantities of ethyl bromide in biological media. ANDRÉ KLING, EMILE GELIN and JULES DEMESSE: The possible substitution, for the analysis of various natural plant products or their derivatives, of the determination of total carbon for that of the dry extract. The carbon dioxide obtained on oxidation with chromic and sulphuric acids gives a measure of the dry extract with sufficient approximation and offers a considerable saving in time. EDGAR LEDERER: Echinone and pentaxanthine: two new carotinoids found in *Echinus esculentus*. A. BESREDKA, J. MAGAT and P. BESNARD: The vaccination of rabbits against cutaneous epithelioma. EMILE ROUBAUD and MARC TREILLARD: A coccobacillus pathogenic for tsetse flies.

## GENEVA

Society of Physics and Natural History, July 4. E. BRINER, F. CHODAT and H. PAILLARD: The presence of ozone in the air, and its action on the growth of plants. B. SUSZ, E. PERROTTET and E. BRINER: Raman spectra and reactivity: eugenol, isoeugenol, vanillin and methyl derivatives, safrol, isosafrol, heliothropin, anethol and estragol. M. A. PUTNES: Stokes's theorem for heterogeneous ellipsoids in permanent rotation. R. WAVRE: Figures of equilibrium. K. H. MEYER and G. W. PANKOW: The chloride of polyphosphonitrile. P. WENGER, Ch. CIMERMAN and MLE. C. RZYMOWSKA. The volumetric micro-estimation of potassium in blood serum. L. A. DESHUSSES and J. CORBAZ: (1) The fractionation of oily constituents by distillation. (2) The separation of oily constituents by extraction with ether. E. CHERBULIEZ and A. MIRIMANOFF: The differential estimation of the polypeptides and aminoacids of the serum by the use of ninhydrin. HELD and MLE. PONSE: The thyreostimulating activity of the blood of thyroidectomised or normal guinea-pigs. F. WYSS-CHODAT. (1) Notes on transmissible microbial lysis. (2) The reducing power of milk. Reductase and coreductase. A. MIRIMANOFF: (1) The estimation of the aminoacids of the blood serum by tyrosinase. (2) Remarks on the growth factors of the must of grapes. E. BRINER, S. FRIED and B. SUSZ: The Raman spectra of solutions of pyrogallol, gallic acid and tannin. E. PITTARD: Intentionally broken teeth of the ox and horse of the Mousterian period. T. POSTERNAK: (1) The phosphorus of starch. (2) A new tetroxyadipic acid.

## LENINGRAD

Academy of Sciences (*C.R.*, 2, No. 7, 1935). RENÉ CALAPSO: Configuration (*T*) of Finikoff and the projective elements attached to it. N. V. ADAMOV: Some conditions of stability. B. V. NUMEROV: Problem of the determination of systematic errors of star positions. D. N. CHRAMOV: Determination of anomalous values of the vertical gradient of gravity from the anomalies of gravity. E. M. BRUMBERG: A new method of producing monochromatic light. V. FREDERICKS, G. MICHAJLOV and D. BENESZEVIČ: Dielectric losses in anisotropic fluids. B. I. DAVYDOV: Diffusion equation with reference to molecular velocity. A. G. SAMARCEV: Cathodic passivity of silver in solutions of silver nitrate. A. A. GRÜNBERG and L. M. WOLSTEIN: Mechanism of action of glyecol on potassium tetrachloroplatinate. I. N. EFIMOV: Modifications of facial conditions along the strike of the roofing of coal measures in the Donetz basin. A. A. PROKOFJEVA-BELGOVSKAJA: The structure of the chromocentre. S. G. LEVIT: Dominance in man.

## SYDNEY

Royal Society of New South Wales, July 3. ADOLPH BOLLIGER: Volumetric microdetermination of magnesium with methylene blue following its precipitation as magnesium picrolonate. Magnesium, as well as calcium, forms a sparingly soluble picrolonate which, however, in contrast with calcium picrolonate, is not precipitated from dilute solutions at room temperature. However, magnesium salts were found to be precipitated quantitatively as magnesium picrolonate by heating and partially evaporating the solution in which they are contained. The analytical principle applied is as follows: a known excessive amount of lithium picrolonate is added to the aqueous solution containing the magnesium, precipitation is brought on by heating and evaporation, and the excess of picrolonate added is determined by titration with methylene blue. The limitations of the method are discussed. G. F. K. NAYLOR: Note on the geology of the Goulburn district, with special reference to Palaeozoic stratigraphy. The first record of Lower Silurian strata in this State. These rocks were identified by their content of graptolites, a group of organisms the remains of which have also proved invaluable in determining the extent of the Upper Ordovician and Upper Silurian strata in the same district. The author shows that, on palaeontological and structural evidence, the Palaeozoic strata near Goulburn form a broad synclinal structure, the core of which is occupied by the Upper Devonian mass of the Cookbundoon Mountain, and the hill on which the Goulburn War Memorial is situated.

## VIENNA

Academy of Sciences, July 4. ERNST SPÄTH and FRIEDRICH BECKE: Cactus alkaloids (15). Separation of anhalonium bases. GUIDO MACHEK: Action of aromatic sulpho- and oxysulpho-acids on  $\alpha$ - and  $\beta$ -amino acids. ERNST FÖYIN, ELISABETH KARAMICHALOVA and ELISABETH RONA: Artificial transformation of thorium by neutrons (1). GUSTAV ORTNER and RICHARD ZENTNER: Measurement of the natural breadths of X-ray lines. The possibilities of using a single-crystal spectrometer for measuring these breadths photographically were investigated.



**ELVIRA STEPPAN**: Problem of the disintegration of aluminium, treated by the photographic method. **JOSEF SCHINTLMEISTER**: The question of the existence of unknown natural  $\alpha$ -rays. These rays, of range  $R_{15} = 2.2$  cm., occur always in conjunction with samarium and exhibit marked chemical affinity with this element. The carrier of the activity observed is most probably thulium or, at any rate, element No. 61. **HEINRICH MACHE** and **GEORG MARKSTEIN**: Output of emanation to water flowing over radium-containing rocks. The view has been expressed that, owing to the slight capacity of rocks for occluding indifferent gases, the quantity of emanation passing into spring water per unit of time and per unit of rock-surface must be independent of the concentration of the emanation present in the water. Experimental results now obtained agree with this view. **RUDOLF KANITSCHNEIDER**: Terrestrial magnetic observations of the Austrian Polar Expedition to Jan Mayen, 1932-33. The results obtained for 1933.0 are: declination,  $-22^{\circ} 40'$ ; horizontal intensity,  $11,700\gamma$ ; vertical intensity,  $50,400\gamma$ . **H. L. WERNECK**: Phenology of Upper Austria, 1926-30. **OTTO FÜRTH** and **HEINZ HERRMANN**: Colour reactions of tartaric, citric and aconitic acids. When heated with pyridine and acetic anhydride, citric acid gives a carmine, aconitic acid a violet-red, and tartaric acid an emerald-green coloration. **J. P. REIMER**: Nebulae in the region of  $\alpha$ -Persei. **HANS KRUMPHOLZ**: Course of the brightness of Nova (1934) Herculis to the beginning of April 1935. **FRANZ RINAGL**: Flow limits and bending. **ARMIN DADIEU** and **WOLF ENGLER**: Raman spectra of  $C_2H_5SeH$  and  $C_2H_5SeD$ . The frequencies for the  $SeH$  — ( $2303\text{ cm.}^{-1}$ ) and  $SeD$  — ( $1665\text{ cm.}^{-1}$ ) vibrations agree well with those previously found for  $SeH_2$  ( $2313\text{ cm.}^{-1}$ ) and  $SeD_2$  ( $1665\text{ cm.}^{-1}$ ). **ARMIN DADIEU** and **OTTO KERMAUNER**: Structure of half-heavy acetylene. Comparison of the Raman spectra of  $C_2H_2$ ,  $C_2D_2$ , and a product obtained from  $CH$ :  $CNa$  and  $D_2O$  indicates that this product contains about 50 per cent of  $C_2HD$ , with 25 per cent each of  $C_2H_2$  and  $C_2D_2$ . The product of the reaction of  $C_2Na_2$  with a mixture of  $D_2O$  and  $H_2O$  in equal proportions gives a spectrum identically the same. **ALFONS KLEMENC**, **R. WECHSBERG** and **G. WAGNER**: Preparation of carbon suboxide. The separation of carbon suboxide from its mixture with carbon dioxide and keten, obtained from diacetyl-tartaric anhydride, is described. **MORITZ KOHN**: Action of oxalates on blue iron-cyanogen compounds. **OTTO DISCHENDORFER** and **AUGUST VERDINO**: 2:6-Dibenzoylhydroquinone. **K. W. F. KOHLRAUSCH** and **GR. PRINZ YPSILANTI**: Raman effect (45). Raman spectrum of organic substances (polysubstituted benzenes, 7). The substances examined were of the type,  $X.C_6H_4.OCH_3$ , where  $X = NH_2, OH, CH_3, F, Cl, Br, I, \text{ or } CN$ . **A. PONGRATZ** and **R. SEKA**: Raman spectra of benzenepolycarboxylic esters. Methyl and ethyl iso- and tere-phthalates, and trimethyl benzene-1:2:3-tricarboxylate were examined. The C-C ring linkings behave similarly to those in open-chain unsaturated compounds. **K. W. F. KOHLRAUSCH** and **W. STOCKMAIR**: Raman spectra of nucleus-substituted ethyl benzoate. The substituents were  $NH_2, OH, Cl, Br, NO_2$ . **EUGEN GUTH**: Theory of the scattering of charged particles at atomic nuclei (with a special application to the scattering of protons at protons). **KARL SCHWARZ**: Transport number and valency of silver in silver amalgam. **VICTOR F. HESS**: Daily course of cosmic ultra-radiation. Wagner's criticisms are discussed.

## Forthcoming Events

**IRON AND STEEL INSTITUTE**, September 16-18. Autumn meeting to be held in Manchester.

**ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX**, September 20-23.—Annual conference to be held in St. John's College, Cambridge.

Sir Richard Gregory: "Interpretation of Science" (Presidential Address).

## Official Publications Received

### Great Britain and Ireland

Scottish Society for Research in Plant Breeding. Report by the Director of Research to the Annual General Meeting, 25th July, 1935. Pp. 29. (Edinburgh: Scottish Society for Research in Plant Breeding.)

Queen Mary College (University of London). Calendar, Session 1935-1936. Pp. 260. (London: Queen Mary College.) 1s.

Proceedings of the Royal Irish Academy. Vol. 42, Section A, No. 3: A New Method for counting Atmospheric Ions and determining their Mobilities. By J. J. Nolan and P. J. Nolan. Pp. 15-19. Vol. 42, Section A, No. 4: Vortex Polygons. By W. B. Morton. Pp. 21-29. 1s. Vol. 42, Section No. 5: The Faraday Dark Space. By K. G. Emelius. Pp. 31-36. Vol. 42, Section B, Nos. 10, 11, 12: The Physiological Basis of the Sensation of Cold. 1: The Influence of the Initial Skin Temperature on the Excitability of the Cold Eng Organs, by J. M. O'Connor; 2: The Analogy between Human Cold Sensations and Shivering in the Rabbit, by J. M. O'Connor, M. Moriarty and O. Fitzgerald; 3: the Influence of the Body Temperature on the Resting Oxygen Consumption—A Metabolic Analogy to Cold Sensations, by J. M. O'Connor. Pp. 327-357. 1s. Vol. 42, Section B, No. 13: Some 2,4-Derivatives of Thiophene. By R. O. Cinnéide. Pp. 359-363. Vol. 42, Section B, No. 14: Excretion of Glucose by the Rabbit Kidney. By T. W. T. Dillon and R. O'Donnell. Pp. 365-405. 1s. 6d. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.)

London County Council. Lectures and Classes for Teachers: Handbook for the Session 1935-36. Pp. 83. (London: London County Council.)

Sixth Report on the Heterogeneity of Steel Ingots: being a Report by a Joint Committee of the Iron and Steel Institute and the British Iron and Steel Federation to the Iron and Steel Industrial Research Council. (Special Report No. 9.) Pp. vi+236+37 plates. Waste-Heat Boilers in Open-Hearth Practice: Second Report of the Open-Hearth Committee, being a Committee of the Iron and Steel Industrial Research Council. (Special Report No. 10.) Pp. iii+73+2 plates. (London: Iron and Steel Institute.)

### Other Countries

U.S. Department of the Interior: National Park Service. Fauna of the National Parks of the United States: Wildlife Management in the National Parks. By George M. Wright and Ben H. Thompson. (Contribution of Wildlife Division, Fauna Series, No. 2.) Pp. viii+142. (Washington, D.C.: Government Printing Office.) 20 cents.

Ministry of Agriculture, Egypt: Technical and Scientific Service. Bulletin No. 146: Egyptian Plant Diseases, a Summary of Research and Control. By G. Howard Jones. Pp. v+45+8 plates. 5 P.T. Bulletin No. 152: An Analysis of the Factors governing the Response to Manuring of Cotton in Egypt. By David S. Gracie and Dr. Fahmy Khalil, in collaboration with Hussein Enan. Pp. v+71+12 plates. 10 P.T. (Cairo: Government Press.)

Consult Permanent International pour l'Exploration de la Mer. Rapports et procès-verbaux des réunions. Vol. 94, Partie 1: Procès-verbaux (Mai 1935). Pp. 55. 3.00 kr. Vol. 94, Part 3: Appendices (1934-1935). Pp. 77. 3.50 kr. (Copenhagen: Andr. Fred. Høst & søn.)

Commonwealth of Australia: Council for Scientific and Industrial Research. Pamphlet No. 55: The Selection, Preservation, Distribution and Identification of Australian Pole Timbers. By J. E. Cummins and H. E. Dadswell. (Division of Forest Products: Technical Paper No. 17.) Pp. 79+7 plates. Pamphlet No. 57: Tests of the Efficacy of the Oxy-Acetylene Scouring and Charring Process for Sterilising Partly Decayed Poles. By J. E. Cummins. (Division of Forest Products: Technical Paper No. 15.) Pp. 43. (Melbourne: Government Printer.)

Forest Department: Trinidad and Tobago. Leaflet No. 6: Notes on Insect Attack on Mora (*Mora excelsa* Benth.) in Trinidad. By C. Swabey. Pp. 39. (Trinidad: Government Printing Office.) 6d. Ingvarsvidenskabelige Skrifter. A, Nr. 89: A New Device for Direct Stream Field Studies and its Application; with an Appendix on the Pressure Distribution on a Triangular Prism. By Paul Neményi. Pp. 23. (Copenhagen: G. E. C. Gad.) 3.00 kr.

Journal of the Indian Institute of Science. Vol. 18A, Part 11: Hydrogen Ion Concentration of Lead Solutions. By D. N. Mehta and S. K. Kulkarni Jatkar. Pp. 75-83. 14 annas. Vol. 18A, Part 12: Studies in Antimony Electrode. By D. N. Mehta and S. K. Kulkarni Jatkar. Pp. 85-100. 1.4 rupees. Vol. 18A, Part 13: pH Control of Rotary Drilling Fluids. By D. N. Mehta and S. K. Kulkarni Jatkar. Pp. 101-107. 12 annas. (Bangalore: Indian Institute of Science.)

Ministry of Agriculture, Egypt: Technical and Scientific Service. Bulletin No. 152: An Analysis of the Factors governing the Response to Manuring of Cotton in Egypt. By David S. Gracie and Dr. Fahmy Khalil, in collaboration with Hussein Enan. Pp. iii+71+12 plates. (Cairo: Government Press.) 10 P.T.