beautiful stream of pale light one ever beheld—broad at the base, but extending in width as it shot upwards, not unlike a noble plume of feathers; its progress to the zenith was rapid, but as it passed this point it melted away in ether."

Faraday and Northmore

Faraday's care to give credit to others who had made scientific investigations is recalled by a letter written on February 27, 1834, by Octavian Blewitt (1810–1884), the author of a "Panorama of Torquay" to the editor of the *Philosophical Magazine*. The letter corrected a statement made to Blewitt by Thomas Northmore (1766–1851), the Devonshire man of science who had complained that Davy, Faraday and other philosophers had failed to acknowledge his work on the condensation of gases, an account of which was published in *Nicholson's Journal* of 1805–6. When Blewitt brought this to the notice of Faraday, the latter referred to the *Quarterly Journal of Science* of 1823, in which he had said: "The most remarkable and direct experiments I have yet met with in the course of my search after such as were connected with the condensation of gases into liquids are a series made by Mr. Northmore in the years 1805–6." This answer apparently satisfied Northmore, who expressed regret that he had been ignorant of this reference.

Royal Society, February 27, 1834

Capt. de Roos's paper on the operations for raising stores lost in the wreck of H.M.S. *Thetis* off Cape Frio, on the South American coast, was concluded. A paper was read by George Dollond, giving an account of the application of a concave achromatic lens to the micrometer, proposed to be called the *macro-micro* lens. The author stated that by introducing one of the fluid concave lenses recently invented by Prof. Barlow, between the object-glass and the eye-piece of a 5-ft. telescope, it became as powerful as a 10-ft. instrument. The invention had been regarded as one of the greatest improvements made in optical instruments for many years. This application of a concave achromatic lens arose out of the series of trials that were made for the purpose of correcting the aberrations of the eye-glasses applied to the telescope constructed by the author for the Royal Society.

Palestine Association

A general meeting of the Palestine Association, convened by advertisements in the public journals, was held on January 28, 1834, in the rooms of the Royal Geographical Society, Lower Regent Street, and Mr. (afterwards Sir) Bartle Frere occupied the chair. It was reported that no meeting of the Association had been held since April 24, 1805; and that no steps had been taken to continue the researches in Palestine since the year 1809. It appeared that there remained in the hands of Messrs. Coutts a sum of £135 9*s*. 8*d*. belonging to the Association.

Following discussions in February, it was resolved that steps should be taken to transfer this sum to the Royal Geographical Society to form part of its general fund and to be employed as the council of that Society might think fit for the promotion of geographical discovery. Also, that all papers, books, etc., belonging to the Palestine Association be transferred similarly (Minutes, Palestine Association).

Societies and Academies

LONDON

Royal Society, February 15. J. C. STIMSON: The electrical condition of hot surfaces (5). The rates at which the steady equilibrium potentials are built up on gold, nickel, platinum, carbon, and copper surfaces after earthing have been studied under varying experimental conditions. The rate of charging up of a surface is a linear function of its instantaneous potential, and its logarithm is directly proportional to the reciprocal of its absolute temperature. It is extremely probable that the hot surfaces emit positive electricity over the temperature range investigated (up to 850° C.). When heated in a vacuum, the emission probably consists of positively charged metal ions; while in contact with gases, the ions are positively charged atoms or molecules of the gas. With oxygen at low temperatures, however, the ions appear to be negatively charged. G. I. FINCH and B. W. BRADFORD: The electrical condition of hot surfaces (6): A series of experiments with a gold gauze surface was carried out in such a manner that the catalytic and electrical activities of the metal could be simultaneously observed and followed. The reaction selected was the heterogeneous combination of carbon monoxide and oxygen in both moist and dry systems. The electrical condition of the metallic surface was expressed in terms of the magnitude and sign of the equilibrium potential which it acquired in given conditions, and its electrical activity was measured by the specific rate at which that potential was approached on insulation at zero or other standard potential. In general, throughout the experiments, changes in the rate of electrical charging of the metal followed closely the corresponding changes in the catalytic activity, increasing with rising temperature or with the introduction of water, and undergoing similar variations to the rate of reaction when the surface was maintained at constant temperature. G. I. FINCH and A. W. IKIN: The catalytic properties and structure of metal films (2). The surface potentials and rates of charging-up of cathodically sputtered platinum films in contact with electrolytic gas at room temperature have been determined, and the film structure examined by the method of electron diffraction. It is concluded that (1) catalytic action is determined by a prior interaction between the surface and one or both constituents of the combining mixture, whereby the catalyst becomes electrically charged, (2) activity is not determined by either crystal size or orientation, (3) catalytic activity appears to be centred round isolated atoms or molecules of platinum not forming part of any ordered array or structure. S. F. BOYS: Optical rotatory power. (1) A theoretical calculation for a molecule containing only isotropic refractive centres. (2) The calculation of the rotatory power of a molecule containing four refractive radicals at the corners of an irregular tetrahedron. A theoretical formula connecting rotatory power and chemical constitution has been obtained on the basis of the electronic theory of dispersion. The rotatory power of any molecule is expressed in terms of the ordinary refractive properties and the linear dimensions by means of certain determinants. The expression for the rotatory power is applied to the special case of the molecule containing four radicals attached to one atom, when it becomes quite simple, and theoretical predictions of rotations are compared with experi-

mental data. The formula explains the variation of rotatory power with chemical substitution and also the effects of temperature and solvent. The rotatory dispersion is expressed in terms of the refractive dispersions of the radicals in the molecule. The formula also connects the sense of the rotation with the absolute configuration of the compound, and this should be of vital importance in the study of Walden inversion reactions.

EDINBURGH

Royal Society, January 8. MARY G. CALDER: Notes on the Kidston collection of fossil plant slides (3): Some points in the anatomy of *Sigillaria elegans*, Brongniart. Certain important unrecorded features of the anatomy of *Sigillaria elegans* are described, the specimens on which the description is based having been identified from external characters. (4): On the nature of the corona and its relationship to the leaf traces in the Sigillariæ and Lepidodendreæ, with special reference to certain diploxyloid specimens in the Kidston collection. In order to establish the affinities of certain diploxyloid specimens, to which the name of "Sigillaria lepidophloioides Kidston MS." had been given, the information regarding the nature of the corona and its relationship to the leaf traces in the Sigillariæ and Lepidodendreæ is reviewed. The specimens are finally referred to *Lepidodendron cf. Harcourtii*, Witham. DAVID WATERSTON: New light upon Bishop James Kennedy (1400 ?–1465) from an examination of his remains, recently disclosed during alterations to the College Chapel at the University of St. Andrews. The skull is mesocephalic, but Alpine rather than Nordic. An endocranial cast shows a large and highly developed brain. There had been a fracture of the clavicle which had been treated creditably, a cervical rib, extensive spondylitis of the spine and some occupational modifications. R. GRANT: Studies on the physiology of reproduction in the ewe: (3) Gross changes in the ovaries. Œstrus is associated with growth and rupture of one or more follicles and interœstrum with the development of endocrinologically active corpora lutea. Ovulation is spontaneous and occurs 18–24 hours after the beginning of œstrus. Ovulation and formation of corpora lutea occur also during the last month of anœstrum. Active corpora are present in pregnancy until about two weeks before parturition. In lactation and most of anœstrum, the ovaries are quiescent.

PARIS

Academy of Sciences, January 3 (*C.R.*, 198, 1–128)*. MICHEL FLANZY: A new method for the micro-estimation of methyl alcohol in the presence of considerable quantities of homologous alcohols. The method proposed, which is based on the preliminary conversion of the alcohols into their iodides, can determine with accuracy one part of methyl alcohol in the presence of 1,000 parts of a higher alcohol. Contrary to the accepted view, methyl alcohol has been found by this method in all fermented liquids. MME. RAMART-LUCAS: Colour and the structure of the aromatic oximes. HENRI WAHL: The chlorine derivatives of *p*-xylene. RAYMOND QUELET: A method for the synthetical preparation of the chlormethyl derivatives of the phenolic ether oxides. RENÉ PERRIN: Reflections on the formation of the earth. J. DUFAY: The emission spectrum of the night sky in the ultra-violet region. J. COULOMB and J. DE LAGAYE: A series of measurements with the Arago actinometer. A discussion of observations made three times daily at the Côte de Landais from 1912 to 1933. There appears to be no exact relation between the radiation and the temperature. The radiation shows two marked maxima corresponding to the two years of maximum sunspots included in the period considered. JEAN PIVETEAU: A primordial skull in a Triassic fish from Madagascar. ROBERT LAMI: A new species of *Laminaria* from the Iberico-Moroccan region: *Laminaria iberica*. P. LAVIALLE and P. JAEGER: The fertility and sterility of the androœcium. Their relations with staminal polymorphism in *Knautia arvensis*. ROBERT LEMESLE: The various effects produced by *Fusarium anthophilum* on the ovule of *Scabiosa succisa*. G. MONNOT: The action of sero-opotherapy on the production of the fatty matter of the milk in milch cows. The experiments were carried out on various strains of cattle and in different regions with uniformly successful results. The increase in fat claimed is from 25 to 40 per cent, the quantity of milk remaining the same. The animals increase in weight during the treatment and remain in good condition. J. BRANAS and J. DULAC: The mode of action of copper mixtures. Function of the deposits. The value of the treatment appears to depend on the copper dissolved in the mother liquor: the deposits on leaves appear to be incapable of furnishing rain-water with sufficient copper to afford any protection. JACQUES MONOD: The independence of the galvanotropism and the current density in the ciliated Infusoria. E. BRUMPT: Parasitic specificity and determinism of egg-laying of the fly *Lucilia bufonivora*. CH. DHÉRÉ: The fluorescence of synthetic pyocyanine.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, 19, No. 11, 939–990, Nov. 1933). CHARLES A. KRAUS and GILMAN S. HOOPER: The dielectric properties of solutions of electrolytes in a non-polar solvent. The increase of dielectric constant plotted against concentration gives curves concave to the axis of concentration; the effect is of a different order from that due to ordinary polar molecules. It is suggested that the electrolyte is present as ion-pairs which with increasing concentration form more complex aggregates. The symmetry of its ions has a marked effect on dielectric behaviour at higher concentrations. EVALD L. SKAU and WENDELL H. LANGDON: The purification and physical properties of chemical compounds. (4) A development of a theoretical basis for the behaviour of controlled time-temperature curves. W. E. CASTLE: The linkage relations of yellow fat in rabbits. Lack of a reducing enzyme in the liver permits carotene to pass into fat storage tissue, thus colouring the fat. The condition is sporadic and has been shown by Pease to be a simple recessive linked with albinism. Castle has shown that a loose linkage exists between colour and brown hair and skin pigmentation. Yellow fat is now found to be linked with the latter. The three genes are in the same chromosome; double crossing-over occurs with less than the expected frequency, indicating 'interference' for a mammalian chromosome for the first time. TH. DOBZHANSKY: Rôle of the autosomes in the *Drosophila pseudo-obscura* hybrids. There are two races of *D. pseudo-obscura* which when crossed give offspring the males of which have either rudimentary testes, or normal sized testes incapable of producing functional sperm. This characteristic seems to be due to interactions between the *X*-chromosomes of one race with the autosomes

* Continued from p. 267

of the other. CHESTER STOCK: An Eocene primate from California. Five fragments of jaws, apparently closely related to the tarsiid lemurs (*Anaptomorphidæ*) including the Eocene genera *Omomys*, *Hemiacodon* and *Euryacodon*, have been found at Sespe, north of the Simi Valley. Descriptions and photographs of the fragments are given. J. L. WALSH: Note on polynomial interpolation to analytic functions. SELIG HECHT and GEORGE WALD: The influence of intensity on the visual functions of *Drosophila*. For intensity measurement a series of plates bearing translucent bars of different densities were used; for visual acuity, plates with opaque bars of different widths. A single fly in a glass cell is observed when illuminated with varying intensities of light passing through such plates. At low illumination, two lights are discriminated when the ratio of intensities is nearly 100; this decreases with increased intensity (I) to 2·5. Visual acuity varies with log I, increasing in a sigmoid manner with increase of log I. Assuming the reciprocal of $\Delta I/I$ measures visual acuity, the ratios *Drosophila*/bee/man are 1/60/249 for maximum intensity discrimination, and 1/9·4/1110 for maximum visual acuity. The differences are related to the variation in number of elements functional in the retinal mosaic. T. D. A. COCKERELL and LOUISE M. IRELAND: The relationships of *Scrapter*, a genus of African bees. Cytological and morphological details of insects often suggest 'lateral evolution', that is, a type gives rise to new types without itself disappearing. Moreover, various genes appear to remain latent for long periods. As regards *Scrapter*, from Africa, and *Euryglossidia*, from Australia, though superficially closely alike, they seem not to have had a common ancestry with their special generic characters. OSWALD VEBLEN: Spinors in projective relativity. A formal development of the generalised Dirac equations. W. A. ZISMAN: Corrections to earlier papers (see NATURE, 132, 687, Oct. 28, 1933). All values (statistical) of Poisson's ratio are 5·5 per cent too small. The general conclusions are unaffected.

Forthcoming Events

[*Meetings marked with an asterisk are open to the public.*]

Monday, February 26

ROYAL SCHOOL OF MINES, SOUTH KENSINGTON, at 5.30.—Prof. J. A. S. Ritson: "Explosives and their Use in Breaking Gound" (succeeding lectures on February 27 and 28, and March 1).*

EAST LONDON COLLEGE, at 5.30.—Prof. G. I. Finch: "High Voltage Oscillographs" (succeeding lectures on March 6, 12 and 19).*

ROYAL GEOGRAPHICAL SOCIETY, at 5.30.—G. Rayner: "Observations in the Southern Ocean" (Geographical Film).

Tuesday, February 27

ROYAL SOCIETY OF ARTS, at 4.30.—Prof. C. G. Seligman: "Anthropological Research in the Southern Sudan".

UNIVERSITY COLLEGE, LONDON, at 5.30.—Prof. L. Ruzicka: "The Many Membered Carbon Rings" (succeeding lecture on March 1).*

Thursday, March 1

ROYAL SOCIETY, at 4.30.—C. Sykes and H. Evans: "Some Peculiarities in the Physical Properties of Iron-Aluminium Alloys".

A. J. Bradley and J. W. Rodgers: "The Crystal Structure of the Heusler Alloys".

Friday, March 2

BEDSON CLUB, at 6.30.—Prof. J. Kendall: "Elements, Old and New" (Twenty-fifth Bedson Lecture).

ROYAL INSTITUTION, at 9.—Dr. H. J. Gough: "Current Research Problems in Engineering".

GEOLOGISTS' ASSOCIATION.—Annual General Meeting. A. L. Leach: "The Isle of Caldey: its Geology and Archæology" (Presidential Address).

Saturday, March 3

ROYAL INSTITUTION, at 3.—Lord Rutherford: "The Transmutation of Matter" (succeeding lectures on March 10, 17 and 24).

Official Publications Received

GREAT BRITAIN AND IRELAND

The British Electrical and Allied Industries Research Association (Incorporated). Thirteenth Annual Report, October 1, 1932, to September 30, 1933. Pp. 117. (London.)

The Scientific Proceedings of the Royal Dublin Society. Vol. 21 (N.S.), No. 2: Some Difficulties in Current Views of the Thermal History of the Earth. By Dr. J. H. J. Poole. Pp. 9–22. (Dublin: Hodges, Figgis and Co.: London: Williams and Norgate, Ltd.) 1*s*.

The University of Sheffield. Report on Research Work carried out in the Departments of Mining and Fuel Technology during the Session 1932–1933. Pp. 28. (Sheffield.)

Leeds University. Report to the Worshipful Company of Clothworkers of the City of London of the Advisory Committee on the Departments of Textile Industries and Colour Chemistry and Dyeing during the Session 1932–33. Pp. 18. (Leeds.)

The Hundredth Annual Report of the Royal Cornwall Polytechnic Society. New Series, Vol. 7, Centenary Number, Part 3, 1933. Pp. xxv–xxxix+203–288+13. (Camborne: Camborne Printing and Stationery Co., Ltd.) 5*s*.

OTHER COUNTRIES

U.S. Department of Agriculture. Circular No. 301: The Cyclamen Mite and the Broad Mite and their Control. By Floyd F. Smith. Pp. 14. (Washington, D.C.: Government Printing Office.) 5 cents.

The Snellius-Expedition in the Eastern Part of the Netherlands East-Indies, 1929–1930. Vol. 5: Geological Results. Part 2: Geology of Coral Reefs. By Dr. Ph. H. Kuenen. Pp. 126+11 plates. (Utrecht: Kemink et Zonen N.V.)

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 85. Descriptions of New Fishes obtained 1907 to 1910, chiefly in the Philippine Islands and adjacent Seas. By Henry W. Fowler. Pp. 233–367. (Philadelphia.)

Proceedings of the American Society for Psychical Research. Vol. 22: The Margery Mediumship—The "Walter" Hands: a Study of their Dermatoglyphics. By Brackett K. Thorogood. Pp. xix+228+123 plates. (New York: American Society for Psychical Research.)

U.S. Department of the Interior: Geological Survey. Water-Supply Paper 730: Surface Water Supply of the United States, 1932. Part 5: Hudson Bay and Upper Mississippi River Basins. Pp. vi+206. 15 cents. Water-Supply Paper 735: Surface Water Supply of the United States, 1932. Part 10: The Great Basin. Pp. v+107. 10 cents. Water-Supply Paper 736: Surface Water Supply of the United States, 1932. Part 11: Pacific Slope Basins in California. Pp. xi+416. 15 cents. (Washington, D.C.: Government Printing Office.)

Smithsonian Miscellaneous Collections. Vol. 87, No. 19: An Oligocene Eagle from Wyoming. By Alexander Wetmore. (Publication 3227.) Pp. 9. (Washington, D.C.: Smithsonian Institution.)

U.S. Department of Agriculture. Circular No. 303: Soil Profile and Root Penetration as Indicators of Apple Production in the Lake Shore District of Western New York. By A. T. Sweet. Pp. 30. (Washington, D.C.: Government Printing Office.) 5 cents.

The Pasteur Institute of Southern India, Coonoor. The Annual Report of the Director for the Year ending 31st December 1932, together with the Twenty-sixth Annual Report of the Central Committee of the Association for the Year ending 31st March 1933. Pp. 74. (Madras: Madras Publishing House, Ltd.)

The Imperial Council of Agricultural Research. Scientific Monograph No. 7: Influence of Manures on the Wilt Disease of *Cajanus indicus* Spreng., and the Isolation of Types resistant to the Disease. By Dr. W. McRae and Dr. F. J. F. Shaw. Pp. iv+68+16 plates. (Delhi: Manager of Publications.) 2.4 rupees; 4*s*. 3*d*.

Memoirs of the Asiatic Society of Bengal. Vol. 12, No. 1: Three Arabic Treatises on Alchemy by Muḥammad bin Umail (10th Century A.D.) Edition of the Texts by M. Turāb Ālī. Excursus on the Writings and Date of Ibn Umail, with edition of the Latin Rendering of the Mā' al-Waraqī by H. E. Stapleton and Dr. M. Hidāyat Ḥusain. Pp. iv+213+2 plates. (Calcutta: Asiatic Society of Bengal.) 9 rupees.

CATALOGUES

The *Engineer* Directory and Buyers Guide, 1934–35. Pp. 248. (London: The *Engineer*.)

Watson's Microscope Record. No. 31, January. Pp. 24. (London: W. Watson and Sons, Ltd.)

The Protexray Tube. Pp. 56. (London: Cuthbert Andrews.)

Botany and Gardening. (Catalogue No. 218.) Pp. 40. (London: Dulau and Co., Ltd.)