

Societies and Academies.

LONDON.

Faraday Society, April 14.—Sir Robert Robertson, president, in the chair.—T. A. Heppenstall and W. J. Shutt: Conditions of the appearance of anode effect in the electrolysis of fused chlorides. Anode effect is an irreversible condition at the positive electrode which manifests itself during the electrolysis of fused salts by a sudden drop of the current passing through the cell; simultaneously gas evolution at the anode ceases, and the latter has the appearance of being "unwet" by the electrolyte. The effect is reproducible at constant current density at a given temperature. When an alternating current was superimposed upon the direct current used for electrolysis, the effect was produced at a lower direct current density.—R. Ashton Hill: The photochemical decomposition of gaseous sulphur dioxide. The decomposition of sulphur dioxide gas under the action of light radiated from a uviol mercury vapour lamp has been investigated, and the resulting photostationary state, characteristic of a given set of conditions, determined, using a number of different light filters. The wave-length chiefly responsible for such decomposition is 313μ , which lies within the first absorption band of sulphur dioxide (at a pressure of 600 mm.), but does not correspond with the head of the band (296.1μ). The actual wave-length producing maximum decomposition depends on the nature of the source of radiation, *i.e.* upon the intensity distribution of the emission spectrum. Of the radiation emitted from the uviol lamp the longest wave-length capable of decomposing sulphur dioxide is the 313μ line itself. Probably any wave-length within the absorption band of the substance is capable of bringing about decomposition, provided the intensity is sufficiently great. The bearing of the photochemical decomposition of sulphur dioxide upon the critical increment of the thermal union of oxygen and sulphur vapour is discussed. The molecule S_2 , as distinct from the atom seems to be involved in this process.—F. C. Thompson and W. H. Dearden: Note on an experiment in solid diffusion, and its possible bearing on the structure of solid solutions. The experimental work consisted in the determination of the relative rates of diffusion of copper into gold, silver, and an alloy of those metals in equal proportions. These particular materials were chosen since their atomic volumes are almost identical. It was found that diffusion takes place much more readily into a pure metal than into a solid solution. This is more easily understood on the assumption that the added atoms in the solution are accommodated in spaces in the lattice than if they replace atoms in the lattice itself.—J. P. McLare: The repair of worn components by electro-deposition. This method of repair was first adopted on a considerable scale during the War. Success depends primarily on the condition of the cathode surface. Electrolytic methods of cleaning are indispensable.

Zoological Society, April 15.—Dr. A. Smith Woodward, vice-president, in the chair.—R. T. Leiper: Parasitological work at the Zoological Society's Gardens.—G. C. Robson: On the Cephalopoda obtained in South African waters by Dr. J. D. F. Gilchrist in 1920–1921.—Basanta Kumar Das: On the intra-renal course of the so-called "renal-portal" veins in some common Indian birds.

Aristotelian Society, April 28.—Dr. W. R. Matthews in the chair.—F. Aveling: The Thomistic outlook in philosophy. The viewpoint of St. Thomas is that

the object of knowledge is first known merely as a bare and confused entity, and that this intuition is only gradually filled in and completed by a laborious course of investigation as to what that entity does, how it acts. The subject, knowing itself, is object also in the relation of knowing. Only by a "diligent research" can it come to the knowledge of its nature, or essence, or definition. But from the first act that it performs its existence is known, and, inchoately, its essence. This is of the greatest importance for the logical theory of St. Thomas, since for him all demonstration requires that the thinker as an essence, and the knower as a reality, exists.

May 5.—Dr. F. W. Thomas, treasurer, in the chair. A. A. Cock: Prayer, psychologically and metaphysically considered. Prayer is the act of attention directed upon God. It may be of a pantheistic character, directed upon a universe increasingly apprehended as divine, and union therewith of a highly æsthetic nature will develop. Or the progressive differentiation of the presentation-continuum may assume for the subject an increasingly unsatisfying and unsatisfactory character, so that the subject, withdrawing attention from objects presented, concentrates more and more upon a presented transcendent object. Precisely because prayer is attention directed upon God, or upon any object of religious aspiration, belief, worship, awe, it is necessarily petitionary in character though not wholly so nor for ever so.

MANCHESTER.

Literary and Philosophical Society, May 13.—F. Nicholson: The history of the Manchester Literary and Philosophical Society during its first seventy years. The paper, which was based on the minute books of the Society, dealt largely with the domestic history of the Society, including its library, an exclusively scientific one, for the last 100 years. The Society had acquired a world-wide reputation by its publication of the early volumes of its Memoirs and its connexion with Dr. Dalton, and often used its influence both locally and nationally. It encouraged the formation of the short-lived College of Arts and Sciences, 1783, and its members founded, though the Society disclaimed responsibility, the Manchester Academy, 1786, still existing as the Manchester College, Oxford. It invited the British Association on its first visit to Manchester, 1842, and took a leading part in securing the exemption of scientific and literary societies from taxation, 1843. Owing entirely to its representations to the Government, the northern counties were surveyed by the Ordnance Survey on an adequate scale, 1841. It established meteorological recording stations in Manchester, 1843, and in its rooms the founders of medical education in Manchester delivered their lectures prior to the establishment of the Pine Street School of Medicine.—W. H. Lang: On some deviations from the normal morphology of the shoot in *Osmunda regalis*. Some young plants of the Royal fern had been wounded at the apex in order to induce branching, which was related to the leaf-bases, and here and in unwounded plants was sometimes clearly axillary. Others had apparently been ill-nourished, had failed to get the normal winter rest, and had perhaps suffered from the Aphides which lived through the winter. Under these conditions some of the young plants continued to produce leaves of the juvenile type, or even simpler cylindrical growths in place of leaves. In some cases apospory was induced, the tip of the leaf, or the tip of each vein of this, growing out as a prothallus, while still attached to the plant. In other cases a bud was

developed on the adaxial face of the leaf-stalk. Other more completely transformed leaves had the form of a cylindrical stalk that became transformed into a shoot at the tip. In these last cases it was of interest that the first leaf of the new shoot could be regarded in one sense as the subtending leaf of an axillary bud, and in another as the first of a sequence of leaves constituting the bud. These deviations from normal form a connected group or series, and the consideration of the plasticity in the young plant of *O. regalis* leads us a little beyond taking the shoot for granted as a developmental unit. They appear on the whole in favour of regarding the shoot of the fern, and therefore of plants generally, as constructed by the developmental association of phytonic segmental units.

PARIS.

Academy of Sciences, April 28.—M. Guillaume Bigourdan in the chair.—The president announced the death of J. E. B. Warming, correspondant for the section of botany, at the age of eighty-three.—André Blondel and Henri Harlé: The experimental demonstration and exact measurement of the phenomena of resonance peculiar to the crank shafts of combustion motors; rôle of the flywheel; favourable influence of an elastic coupling.—Pierre Weiss and R. Forrer: Magnetocaloric phenomenon. Apparent magnetisation and true magnetisation. The rise of reversible temperature Δt can be expressed as $\Delta t = A(\sigma^2 - \sigma_0^2)$, where σ_0 is the spontaneous magnetisation in the absence of the field, and σ the magnetisation due to the field. Above the Curie point, $357^\circ.6$ C. for nickel, $\Delta t = A\sigma^2$. The results of experiments on nickel are given in three diagrams.—Paul Vuillemin: The bifurcation of leaves by coherence.—Octave Mayer: A remarkable surface of the fourth order.—Boris Delaunay: The representation of numbers by binary forms.—Charles Platrier: The integration of linear differential equations.—Marcel Riesz: Conjugated functions and Fourier's series.—A. Marchaud: Differences and differentials of a function of two variables.—Emile Jouguet and Maurice Roy: The paradox of d'Alembert in the case of compressible fluids.—René Baillaud: An optical self-recording micrometer for the prism astrolabe.—M. Salet: The absorbing power of the atmospheres of the stars. The measurements of Coblenz have shown that the ratio (R) of the intensity of the light radiation to the total energy received from the stars is, on the average, twice as great for stars of the A and B types as for those of the solar type. Theoretically, R should diminish when passing from the solar stars to the hotter stars, and Nordmann has suggested that this discrepancy is due to the absorbing powers of the atmospheres of the stars. This view the author considers untenable, and suggests another possibility, that if the star temperature exceeds $10,000^\circ$ the maximum of the energy spectrum passes into the ultraviolet where the radiations cannot pass our atmosphere.—Louis Dunooyer: Experiments by which the mechanism of light emission may be attained under the simplest conditions. Comments on a recent note of Edmond Bauer, with a description of some further experiments.—A. Dufour: Recording electromagnetic waves of high frequency (Hertzian frequencies).—P. Lejay: A three electrode valve electrometer and its application to the measurement of the electrical gradient of the atmosphere.—N. Perrakis: Volumes in the neighbourhood of the critical state of miscibility. A study of the variations of volume produced in mixtures of benzene with methyl, ethyl, propyl, and butyl alcohols. The results of the experiments are given in four curves, with volume changes as ordinates and

molecular concentrations as abscissæ.—A. Chassy: The physical laws of the formation of ozone by the silent discharge. In an ordinary ozoniser the numerical ratio between the heat disengaged and the quantity of ozone obtained is constant, whatever may be the voltage or the frequency of the current used.—S. Stefanescu: The mechanism of the expulsion of the lower molars of mastodons and elephants.—E. F. Terroine, Mlle. S. Trautmann, R. Bonnet, and R. Jacquot: The culture of moulds on the amino acids and the mechanism of the specific dynamical action. Experiments showing that the loss of energy observed is essentially due to the removal of the amino group from the amino acids.—MM. Aversenq, Delas, Jaloustre, and Maurin: The action of thorium-X on the maturation of eggs, the germination of seeds, and the growth of plants. In all cases small doses of thorium-X exert a favourable influence, large doses having a contrary effect.—Armand Dehorne: Remarks on some figured elements of the blood of the Glycera.

ROME.

Royal Academy of the Lincei, February 3.—V. Volterra, president, in the chair.—B. Grassi and M. Topi: Inconsistency of the two species of vine Phylloxera distinguished by Börner. Neither the morphological differences pointed out by Börner, nor the divergent susceptibility of the various American vineyards, suffice to demonstrate the existence of two distinct species of vine Phylloxera.—E. Bompiani: Notions of projective-differential geometry relative to a surface of ordinary space.—E. Fermi: Reflection and diffusion of resonance. The variation with pressure of the ratio between the intensities of the diffused and reflected light in the phenomenon of optical resonance is considered theoretically. The intensity of the diffused light is shown to be proportional to the number of atoms per unit volume of the gas and that of the reflected light to the square of this number.—L. Castaldi: First results of experiments on the effects of the cortex of suprarenal glands on the somatic growth of young guinea-pigs. The effects produced in the young animals by the addition of this cortex to their diet are (1) increased weight, (2) lengthening of the skeleton, this being more marked in the body than in the limbs, and (3) increased development of the fur, particularly with the females. Administration of the material during pregnancy results in increased weight of the young at birth.—A. Foà: Morphological and biological cycle of *Nosema bombycis* Nägeli.—A. Herrera: Imitation of the structure of protoplasm, and cellular division.—A. Chiarugi: Embryology of the Cistaceæ.

February 17.—V. Scialoja, vice-president, in the chair.—A. Angeli: Reactions of certain aromatic and aliphatic derivatives. Further examples are given of the chemical analogies between a compound formed by the direct union of two groups, A-B, and the compound with the same two groups in ortho- or para-positions of a single aromatic nucleus, A-C₆H₄-B.—L. Lombardi: Potential energy of magnetic circuits including imperfectly polarisable materials.—L. Sabbatani: Pharmacological investigations on iron. V. Colloidal ferrous sulphide prepared in the presence of gelatin. The toxic agent of this colloidal sulphide or of ordinary ferrous sulphate consists of the cation Fe²⁺. The sulphate, although partly oxidised, may in large doses produce a comparatively high concentration of this cation and hence cause rapid death; in small doses, however, the colloidal sulphide is considerably the more active.—F. Sbrana: Potential of a disc with symmetrical distribution.—A. Korn: The second fundamental

problem of elastic statics.—N. Spampinato: Physical bases of relativity.—G. Agamennone: Further researches on the earthquake of March 15, 1923.—C. Di Capua: Hardness of tin-cadmium and tin-bismuth alloys. The hardness curves for both these series of alloys are abnormal but become normal after the alloys have been reheated.—C. Riccomanni: Relationships between chemical constitution and taste. For a compound to exhibit a taste resembling that of pepper, the presence of the piperidine grouping in the molecule is shown to be unnecessary.—E. Grill: Crystalline magnesite of the Valle della Germanasca.

March 2.—V. Volterra, president, in the chair.—M. Cisoetto: Viscous rotations.—S. Franchi: Concealed strata of Mount Ausoni and Mount Lepini and of the pre-Apenne districts of Campania and Latium.—E. Soler: Gravity measurements in the Carso region.—G. Albanese: Arithmetical nature of algebraic varieties of four dimensions.—B. Segre: Linear systems tangential to any system of forms.—M. Maggini: Measurements of the distances of double stars by means of the micrometer and of the interferometer. The results of preliminary tests indicate that the interferometer method may be useful in investigating the systematic errors of measurements made with the micrometer.—E. Fossa-Mancini: So-called shaly clays of the pre-Apenne district near Modena.—C. Porlezza: Arc spectrum of silicon in relation to spectrographic analysis. Descriptions are given of the appearance of the band spectra of silicon in the spectrograms of rocks with different contents of silicon. When silica is present in large proportions in material to be subjected to spectrographic analysis, its preliminary removal is advisable.

Official Publications Received.

Department of Commerce: Bureau of Standards. Scientific Papers of the Bureau of Standards, No. 482: Gravitational Anisotropy in Crystals. By Paul R. Heyl. Pp. 307-324. (Washington: Government Printing Office.) 10 cents.

The Rockefeller Foundation: A Review for 1923. By George E. Vincent. Pp. 48. (New York City.)

Records of the Survey of India. Vol. 17: Memoir on Maps of Chinese Turkistan and Kansu, from the Surveys made during Sir Aurel Stein's Explorations 1900-1, 1906-8, 1913-5. By Aurel Stein; with Appendices by Major K. Mason and J. de Graaff Hunter. Pp. xv+208+30 plates +48 maps+12 charts. (Dehra Dun: Trigonometrical Survey Office.)

Instituts scientifiques de Buitenzorg ("s Lands Plantentuin." Treubia: Recueil de travaux zoologiques, hydrobiologiques et océanographiques. Vol. 5, livraison 1-3, février 1924. Pp. 298. (Buitenzorg.) 2.50 fl.

Tanganyika Territory Exhibition Handbook. Pp. iv+215+xxiii. (Wembley: Issued by the British Empire Exhibition Central Committee of Tanganyika.) 1s.

County Borough of Eastbourne. Annual Report of the Meteorological Observations for the Year 1923. Pp. 40. (Eastbourne: Public Health Department, Town Hall.)

Smithsonian Miscellaneous Collections. Vol. 76, No. 10: Explorations and Field-Work of the Smithsonian Institution in 1923. (Publication 2752.) Pp. iii+128. (Washington: Smithsonian Institution.)

Falmouth Observatory. Report of the Joint Observatory Committee to the Royal Cornwall Polytechnic Society and to the Falmouth Town Council for the Year 1923. Pp. 4. (Falmouth.)

Falmouth Observatory. Meteorological Notes and Tables for the Year 1923. By Joshua Bath Phillips. Pp. 8. (Falmouth.)

Studies from the Research Division, Connaught Antitoxin Laboratories, University of Toronto. Vol. 1: 1917-1922. Pp. 176. (Toronto.)

State of Illinois. Department of Registration and Education: Division of the Natural History Survey. Bulletin, Vol. 14, Article 10: On the Numbers and Local Distribution of Illinois Land Birds of the Open Country in Winter, Spring and Fall. By Stephen A. Forbes and Alfred O. Gross. Pp. 397-453. (Urbana, Ill.)

Department of the Interior: Bureau of Education. Bulletin, 1923, No. 59: Schools and Classes for Feeble-minded and Subnormal Children, 1922. Pp. 22. (Washington: Government Printing Office.) 5 cents.

Classified List of Smithsonian Publications available for Distribution, March 1, 1924. Compiled by Helen Munroe. (Publication 2755.) Pp. v+30. (Washington: Smithsonian Institution.)

Department of the Interior: United States Geological Survey. Bulletin 750-B: Origin of certain rich Silver Ores near Chloride and Kingman, Arizona. By Edson S. Bastin. Pp. 17-39. 5 cents. Water-Supply Paper 439: The Occurrence of Ground Water in the United States; with a Discussion of Principles. By Oscar Edward Meinzer. Pp. xi+321+31 plates. 60 cents. Water-Supply Paper 492: Summary of Hydrometric Data in Washington, 1878-1919. By Glenn L. Parker and Lasley Lee. Pp. viii+363+8 plates. 40 cents. Water-Supply Paper 497: The Salton Sea Region, California; a Geographic, Geologic, and Hydrologic Reconnaissance, with a Guide to Desert Watering Places. By John S. Brown. Pp. xv+292+19 plates. 50 cents. (Washington: Government Printing Office.)

Diary of Societies.

SATURDAY, MAY 24.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Dr. G. W. Alcock: Musical Ornamentation: Its Origin and Development.

MONDAY, MAY 26.

INSTITUTE OF PHYSICS (Annual General Meeting) (at Royal Society), at 4.30.—Hon. Sir Charles Parsons: Presidential Address.

VICTORIA INSTITUTE (at Central Buildings, Westminster), at 4.30.—Col. H. Biddulph: The True Harmony of Man.

ROYAL GEOGRAPHICAL SOCIETY (Anniversary Meeting) (at Æolian Hall), at 5.—Presidential Address—Presentation of Annual Report—Presentation of Gold Medals and other Awards.

ROYAL SOCIETY OF MEDICINE (Otolaryngology Section) (at Royal College of Surgeons), at 5.30.—Annual General Meeting.

BRITISH PSYCHOLOGICAL SOCIETY (Education Section) (at London Day Training College), at 6.—W. H. Winch: Should Poems be learnt by School Children as Wholes or Parts?

TUESDAY, MAY 27.

SOCIETY OF GLASS TECHNOLOGY (Joint Meeting with the British Society of Master Glass Painters) (at University College), at 3.—Miss Ethel Mellor: The Decay of Window Glass from the Point of View of Lichenous Growths.—N. Heaton: The Decay of Medieval Stained Glass.—Prof. W. E. S. Turner: The Weathering and Decay of Glass.

ROYAL SOCIETY OF ARTS (Dominions and Colonies Section), at 4.30.—Dr. C. G. Cullis: The Geology and Mineral Resources of Cyprus.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Major W. S. Tucker: Acoustical Problems (I): Indoor Problems.

ROYAL SOCIETY OF MEDICINE (Medicine Section), at 5.30.—Annual General Meeting.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—F. L. Emanuel: Etching.

WEDNESDAY, MAY 28.

ROYAL SOCIETY OF ARTS, at 4.30.—Mrs. A. McGrath (Rosita Forbes): The Position of the Arabs in Art and Literature.

RADIO SOCIETY OF GREAT BRITAIN (at Institution of Electrical Engineers), at 6.—Major H. P. T. Lefroy: Wireless in British Military Aircraft up to August 1914 (Lecture).

ROYAL MICROSCOPICAL SOCIETY (Industrial Applications of the Microscope Section), at 7.—J. E. Barnard: Lecture Demonstration on Technical Microscopy.—E. S. Leicester: The Use of the Microscope in the Examination of Paper.—K. MacLennan: The Microscopy of Soaps.—R. and J. Beck, Ltd.: Exhibit of a New Analysing Prism for Use over the Object Glass, which does not possess any Astigmatism.—Ogilvy and Co.: Exhibit of Leitz Binocular Tube Attachment for Monocular Stands, and New Leitz Dissecting Microscope.

THURSDAY, MAY 29.

ROYAL SOCIETY, at 4.30.—Prof. D. M. S. Watson: The Origin of the Amphibia (Croonian Lecture).

ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Prof. C. G. Seligman: Divine Kings and Rainmakers of the Sudan.

ROYAL SOCIETY OF MEDICINE (Urology Section), at 8.30.—Annual General Meeting.

FRIDAY, MAY 30.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN (Scientific and Technical Group), at 7.—Prof. The. Svedberg, O. H. Schunk, and H. Andersson: The Relation between Exposure and Number of Developable Centres.—F. F. Renwick: Factors affecting Grain Size in Emulsions.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—L. Bull: Recent Developments in High Speed Cinematography.

SATURDAY, MAY 31.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—C. Nabokoff: Shakespeare in Russia.

PUBLIC LECTURES.

MONDAY, MAY 26.

KING'S COLLEGE, at 5.30.—Prof. A. J. Toynbee: The Saviour King in Greek Tradition.

TUESDAY, MAY 27.

BEDFORD COLLEGE, at 8.—Miss Constance Smith: Women in Dangerous Trades (Chadwick Lecture).

WEDNESDAY, MAY 28.

KING'S COLLEGE, at 5.30.—Prof. A. J. Sargent: The Trade of the Empire.

THURSDAY, MAY 29.

INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL, at 5.—Dr. G. M. Holmes: The Ductless Glands and Personality.

UNIVERSITY COLLEGE, at 5.30.—Prof. A. N. Whitehead: The Nature of Science.

FRIDAY, MAY 30.

BRITISH EMPIRE EXHIBITION (Conference on Science and Labour), at 11 A.M.—Rt. Hon. Sidney Webb, Sir Richard Glazebrook, Major A. G. Church, and others: The Place of Science in Government. Chairman: Sir Richard Gregory.—At 3.—H. Hirst, Sir Oliver Lodge, Sir Daniel Hall, A. P. M. Fleming, and others: Scientific Research in Relation to Industry. Chairman: Rt. Hon. Lord Askwith.—At 8.—Rt. Hon. Lord Ashfield, Sir Hugh Bell, Bk. W. Straker, and others: Co-operation of Science and Labour in Production. Chairman: C. T. Cramp.

UNIVERSITY COLLEGE, at 5.15.—Prof. A. Haas: Objective and Subjective Physics.

SATURDAY, MAY 31.

BRITISH EMPIRE EXHIBITION (Conference on Science and Labour), at 11.—Sir Arthur Newsholme, Dr. C. S. Myers, Dr. Cyril Burt, Miss May Smith, and others: Science and the Human Factor. Chairman: Miss Margaret Bondfield.—At 3.—R. H. Tawney, Sir Thomas Holland, Dr. R. P. Scott, and others: Science in Educational Organisation. Chairman: Rt. Hon. Arthur Greenwood.