Calendar of Scientific Pioneers.

June 2, 1886. James Apjohn died.—A lecturer and professor of chemistry at Dublin for more than fifty years and a vice-president of the Royal Irish Academy, Apjohn wrote on chemistry, mineralogy, and meteorology, and his name is connected with a formula for ascertaining the dew-point.

June 2, 1901. John Viriamu Jones died.—After a distinguished career at Oxford, Jones in 1881, at the age of twenty-five, became principal of Firth College, Sheffield, and two years later was made the first Principal of University College, South Wales. His principal scientific work referred to accurate determinations of electrical and physical standards.

June 2, 1903. Andrew Ainslie Common died.—An engineer by profession, Common devoted himself to the construction of large reflecting telescopes with silver-on-glass mirrors. Harvard and Lick Observatories possess instruments from his Ealing workshops. He received the gold medal of the Royal Astronomical Society for his photographs of the great nebula in Orion, and in 1895–96 was president of the society.

June 3, 1657. William Harvey died.—Born at Folkestone on April 1, 1578, Harvey was educated at Canterbury, Cambridge, and Padua, and, after graduating in medicine, settled in London. Appointed physician to St. Bartholomew's Hospital in 1609, six years later he became Lumleian lecturer at the College of Physicians, where he first publicly taught the doctrine of the circulation of the blood. His celebrated treatise, "Exercitatio Anatomica de Motu Cordis et Sanguinis," was published at Frankfort in 1628. He was physician to James I. and Charles I. His tomb is at Hempstead, near Saffron Walden.

June 3, 1822. René Just Haüy died.—After many early privations, Haüy became a teacher in the College of Navarre in Paris. An accident to a crystal of calcareous spar led him to the discovery of the law of crystallisation. His first memoir on the structure of crystals appeared in 1784. He afterwards held important official positions, among which was the chair of mineralogy at the Jardin des Plantes.

June 5, 1716. Roger Cotes died.—In 1706, at the age of twenty-four, Cotes became the first Plumian professor of astronomy and natural philosophy at Cambridge. He assisted Newton in the revision of the "Principia," with Whiston gave one of the earliest courses of experimental philosophy, and in Trinity College erected an observatory. A man of exceptional genius, Newton, referring to his work on optics, remarked: "If Mr. Cotes had lived we should have known something."

June 7, 1826. Joseph von Fraunhofer died.—A glass-cutter's apprentice, Fraunhofer in 1804 became associated with Reichenbach, the instrument-maker. A skilful maker of telescopes, he invented the stage micrometer, the diffraction grating, and a form of heliometer. He discovered the dark lines in the spectrum previously seen by Wollaston, and laid the foundations of solar and stellar chemistry.

June 8, 1695. Christiaan Huygens van Zuylichem died.—The greatest of Dutch physicists, Huygens is a connecting link between Galileo and Newton. Born at The Hague in 1629, he spent many years of his life in Paris. He improved the telescope, discovered the first of Saturn's satellites, explained the nature of Saturn's ring, adapted the pendulum to clocks, and advocated the undulatory theory of light. His principal works were his "Traité de la lumière" and his "Horologium Oscillatorum." He is buried in St. Peter's, Leyden E. C. S.

Societies and Academies.

LONDON.

Royal Society, May 26.—Prof. C. S. Sherrington, president, in the chair.—Sir Alfred **Ewing**: The atomic process in ferro-magnetic induction. The author's modification of Weber's theory of magnetisation is reconsidered in the light of (1) modern views regarding the structure of the atom and (2) the X-ray analysis of crystal structure. The rotatable Weber magnet seems to be an attribute of the atom, probably an electron system within it. Metallic iron is now known to be an aggregate of crystals, in each of which the space-lattice is the centred cube, with its atoms most closely grouped along the trigonal axes. It is along these axes that the Weber elements will point. Consequently an iron crystal is not magnetically isotropic. The small quasi-elastic or reversible part preceding the much larger changes which involve hysteresis corresponds to a reversible deflection of the Weber magnets through a small angle, generally of an order of 1°. The theory of the equilibrium of a row of magnets is considered. Experiments in which rows of Robison magnets with ball ends have their equilibrium upset by an extraneous field confirm the theory. The field which would break up rows of magnets set in the space-lattice close enough together to bring the reversible deflection within the above limit is calculated; it is larger than the field that suffices to produce strong magnetisation in iron, suggesting that the ordinary laws of force between magnetic elements cease to apply at interatomic distances.—C. D. **Ellis**: The magnetic spectrum of the β-rays excited by the γ-rays. The magnetic spectra of the β-rays ejected from various elements by the γ-rays of radium B have been examined by the focussing method. The positions of three strong lines occurring in the magnetic spectrum of radium B depend on the metal target used. Assuming that each of these three lines is due to a definite γ-radiation, it is shown that the energy of the β-rays forming a line is equal to an energy characteristic of the γ-radiation *minus* the work necessary to remove an electron from the K ring of the atom. By application of the quantum theory the frequency of the γ-rays can be determined from these characteristic energies. The natural β-ray spectrum of radium B can be explained in this way, the stronger lines resulting from the conversion of the γ-rays in the K ring, and the weaker lines from a similar conversion of the same γ-rays in the L ring.—S. **Datta**: The spectra of the alkaline earth fluorides and their relation to each other. A survey of the spectra of these compounds has been made and several new bands observed. These helped in the identification of homologous series of bands in the different spectra, and have suggested an empirical relation amongst them, based on the constants of the series equations and the molecular weight or the molecular number of the respective compounds. Starting with the series equation of the band-heads, an explanation has been given of the appearance of a "tail" in some of the bands. It has been shown that the frequency of the "tail" is a maximum or a minimum, and that the difference in wave-numbers of the heads and tails of the similar series is constant for the same compound, but varies from one another in a definite way.—Dr. W. L. **Balls**: A simple apparatus for approximate harmonic analysis and for periodicity measurements. The error involved in the use of this apparatus need not exceed 3 per cent. Its outstanding advantage is the speed with which determinations may be made. Thus in determinations of periodicity some fifty trial periods can be examined in less time than is required for the

computation of a single trial period under the periodogram arithmetical method.—Dr. G. R. **Goldsbrough**: The influence of satellites upon the form of Saturn's ring. The ring is supposed to be made up of small particles arranged in concentric circles and rotating about the primary. The satellite is assumed to follow an unperturbed circular orbit, and the influence of the rings upon one another is assumed negligible. To a close degree of numerical approximation the satellite Mimas is responsible for the position and width of Cassini's Division and for the clean-cut termination of the whole ring. Satellite Rhea accounts for the clean-cut commencement of the inner ring (or ring B), while a probable explanation is offered of the existence of the crêpe ring. If m be the mass of any particle, and M the mass of Saturn, and n the number of particles in any single ring, it is shown that

$$O<m/M<1\cdot8/n^3.$$

The maximum mass of a particle is thus just below the limit given by Maxwell.—Dr. H. **Jeffreys**: Certain geological effects of the cooling of the earth. Mechanical consequences of the cooling of the earth from its formation to its present state are considered. The former fluidity of the earth is assumed and the information provided by radio-activity is utilised. The thermal contraction available for mountain-building is of the same order as that required to account for existing mountains. The Pacific type of mountain range can be explained as due to greater cooling and consequent greater strength of the rocks below the ocean. Isostatic compensation of surface inequalities is due to variation in the thickness of the light rocks constituting the crust, combined with plastic flow below. The fact that oceans have extensive regions of less depth in the middle is explained and theories of the formation of continents and geosynclines are suggested.—T. **Kikuchi**: The moving striations in a neon tube.

Geological Society, May 4.—Mr. R. D. Oldham, president, in the chair.—H. Hamshaw **Thomas**: An Ottokaria-like plant from South Africa. The discovery in the Vereeniging Sandstones of the Transvaal of a fossil plant which bears considerable resemblance to the genus Ottokaria is recorded. The specimen agrees with known examples in size, and in having an almost circular head seated upon a stalk; an additional feature is a thin flattened structure projecting beyond the head, provisionally called the "wing." Ottokaria was probably a reproductive structure, and its association with Glossopteris suggests a possible connection with this plant. The name of *Ottokaria Lesliei* is assigned to the specimen.—Dr. A. B. **Walkom**: On Nummulospermum, gen. nov., the probable megasporangium of Glossopteris. Seeds associated with some fronds of Glossopteris from Queensland are described under the name *Nummulospermum bowenense*. The vascular system is also partly described. The seeds have not been found in actual connection with Glossopteris fronds. Remarks are added on the scale-leaves of Glossopteris, and on the affinities of Glossopteris, which is classed with the Cycadofilicales. The anatomical features of the seeds suggest relationship with the Trigonocarpales.—Agnes **McDonald** and Dr. A. E. **Trueman**: The evolution of certain Liassic gastropods, with special reference to their use in stratigraphy. The gastropods dealt with are turriculate forms, formerly called Cerithium, now referred to the family Procerithidæ, Cossmann, and Chemnitzia, now referred to the family Loxonematidæ, Koken. Suggestions for the classification of these gastropods, based on ontogenetic and other evidence, are made. The position and characters of the ornamentation have proved of value in classification, when taken in conjunction with the other characters of the shell. In numerous series acceleration or retardation of development is indicated, and examples of homœomorphy of several types have been noted. The Procerithidæ of the Lower Lias are chiefly species of Procerithium, in which the flattish whorls have reticulate ornament based on three spirals. This series probably gave rise to many recent Cerithidæ which have more than four spirals. Other genera of Procerithidæ are recognised. The pupoid forms which have been grouped in the genus Exelissa are regarded as catagenetic descendants of diverse species of Procerithium. The Loxonematidæ of the British Lias are of two types, one with axial ornament (Zygopleura), the other with axials and feeble spirals (Katosira). Each of these genera shows during the Lias an increase in the number and curve of the axials. In development axials always appear before spirals among the Loxonematidæ, while spirals are developed first among the Procerithidæ.

Physical Society, May 13.—Sir William Bragg, president, in the chair.—L. **Hartshorn** and E. S. **Keeping**: Notes on vacuum tubes used as detectors of electrical oscillations. The paper describes the development of a robust form of vacuum tube which was used as a detector of electrical oscillations in the "wireless" circuits carried by aeroplanes. Platinum electrodes are avoided, being replaced by strips of tinfoil, to which contact may be made by the spring clips holding the tube in position. It was found that when a discharge is passed through such a tube the walls are affected in such a way that thenceforth it is much easier to get a discharge to pass. The change produced by the first discharge is annulled by heating the tube above 210° C. Further, if the walls are coated on the inside with a metallic film, this first discharge is unnecessary, and the tube is unaffected by heating, but when the walls are coated with an insulator it is, if anything, more difficult to pass a discharge. A silica tube behaves like one coated with metal. It seems possible that the change in the tube may be due to the formation of a layer of gas molecules on the walls by the first discharge. The explanation of the behaviour of the silica tube is a difficulty.—B. W. **Clack**: The coefficient of diffusion of certain saturated solutions. This paper gives an account of experiments on the diffusivity of saturated solutions of KCl, NaCl, and KNO_3 at constant temperatures near 18° C., when the steady state of diffusion has been attained, employing a method similar to that previously used by the author (Proc. Phys. Soc., vol. xxi., p. 863, 1908; vol. xxiv., p. 40, 1911; vol. xxvii., p. 56, 1914; vol. xxix., p. 49, 1916). The solution under investigation is maintained at complete saturation by the presence of salt crystals in the diffusion vessel; the theory takes into account the change in volume of this salt as it dissolves, and an expression is obtained for the coefficient of diffusion at complete saturation, which depends on the rate of change in weight of the diffusion vessel with time. The experimental results are found to agree very closely with the values obtained by extrapolation from the results previously found for less concentrated solutions. By the present paper the author has thus extended the range of concentration over which he has studied diffusion from very dilute solutions right up to complete saturation.—Dr. G. D. **West**: Experiments on thermal transpiration currents. Theoretical considerations are first introduced to show that if a radial temperature gradient be maintained over a disc so that the centre is the hottest part, thermal transpiration currents sweep radially inwards over the surface of the disc, and discharge themselves more or less radially outwards in the upper regions. To detect

these currents a narrow strip of foil is used which is placed perpendicular to the disc and to one side of the hot region. When at a considerable perpendicular distance from the disc, and when the gas pressure is sufficiently low to eliminate convection currents, the deflections of the strip of foil are always away from the hot region. When, however, the strip is placed very close to the disc its deflections over a certain range of gas pressure are towards the hot region. These facts are explained by the tendency of the thermal transpiration currents to drag the strip with them. The paper emphasises one of the essential differences between thermal transpiration currents and convection currents, namely, that while the latter clearly depend on gravitation, the former do not.

CAMBRIDGE.

Philosophical Society, May 2.—Prof. A. C. Seward, president, in the chair.—E. K. **Rideal**: Active molecules in physical and chemical reactions. The chemical nature of evaporation is established by the calculation of heats of reaction from spectral data with the aid of the quantum theory. Evaporation is regarded as a monomolecular chemical change; equating the rate of evaporation to the rate of condensation when equilibrium is attained, the unknown integration constants of the Clapeyron-Clausius equation, and thus the chemical constants of Nernst, have been determined. The values obtained agree closely with those experimentally derived. The energy of activation is probably an average value representing the mean energy of activation of a gram-molecule of reactant, and a formula from which it can be calculated is given. The hypothesis receives support from the fact that at the critical temperature the radiation intensity is at a maximum for light of the particular frequency with which the active molecules are in equilibrium. Wien's law $\lambda_m T = \text{constant} = 0{\cdot}28986$ is shown to be a simple variant of Trouton's rule $L = KT_c$. The value of K as calculated from the purely radiation-derived data of Wien is found to be 9·866. The latent heats of evaporation calculated from Wien's law are found for non-associating liquids to agree very closely with those derived from vapour-pressure data. The equilibrium of the active molecules with the radiation may be ascribed to resonance. —Dr. **Hartridge**: (1) An experiment which favours the resonance theory of hearing. When the phase of a musical note is suddenly altered by π the note fades momentarily to silence, and returns a moment later to its former intensity. (2) A criticism of Wrightson's theory of hearing. A mathematical analysis is advanced to demonstrate the existence of the coincidences required by the theory between the lengths of the periodically repeated time-intervals in the separate tones and those present when all the tones are sounding together. They are found to be imaginary. (3) A method of projecting interference bands. If a celluloid replica diffraction grating be mounted in optical contact with a polished metal surface, and a beam of approximately monochromatic light be projected into it, the spectra produced are crossed by interference bands. (4) A method of projecting absorption spectra. If a celluloid replica diffraction grating be mounted on the hypotenuse of a right-angled glass prism, with the rulings parallel to the apex, and a beam of approximately parallel light be caused to enter along the normal to the base, a spectrum of wide dispersion and great intensity is produced. (5) The shift of absorption bands with change of temperature. The absorption bands of blood pigment in the visual region of the spectrum have been observed at the temperature of evaporation of liquid air and liquid nitrous oxide by drying films of a solution of the pigment in gelatine on glass slabs and then immersing them in the cold liquids. It is found that such films retain their transparency. The reversion spectroscope shows that both α- and β-bands are sharper at low temperatures, and that they are displaced towards the violet end of the spectrum approximately 41 Å. The change in wave-length cannot be due to change in refractive index of the solvent, because dissolving blood pigment in glycerine instead of in water leaves the band unchanged.—Dr. H. S. **Carslaw**: The cooling of a solid sphere with a concentric core of a different material. The method used is to study the contour integrals over a certain standard path. Estimates of the age of the earth founded upon the present surface temperature gradient are discussed.—C. R. G. **Cosens**: An alignment chart for thermodynamical problems.—Dr. T. J. I'A. **Bromwich**: Symbolical methods in the theory of conduction of heat.—C. V. **Hanumanta Rao**: A property of focal conics and of bicircular quartics.

DUBLIN.

Royal Dublin Society, April 26.—Dr. F. E. Hackett in the chair.—J. **Davidson**: Biological studies of *Aphis rumicis*.—H. G. **Becker**: A new principle in blow-pipe construction. The essential features of a quick-change blow-pipe to operate with air at constant pressure, such as is supplied by a blower driven by power, are discussed and the necessity for air-jets of different bore for the different flames is emphasised. The tubular shape common to all hitherto existing blow-pipes is shown to be unnecessarily cumbersome, and is therefore abandoned. A form of blow-pipe giving a great range of flames (including a flat blow-pipe flame), each provided with an air-jet of suitable size and allowing of instantaneous change from one to the other, was described, and an actual blow-pipe constructed on this principle was shown in operation.

PARIS.

Academy of Sciences, May 9.—M. Georges Lemoine in the chair.—F. **Widal**, P. **Abrami**, and J. **Hutinel**: Comparative researches on the working of the liver following surgical anæsthesia produced by chloroform, ether, nitrous oxide, or novocaine. It has been shown in previous communications that slight functional alterations in the liver can be detected by simple leucocyte counts, after absorption of a glass of milk. The method has been applied to the study of the functional derangements of the liver produced by anæsthetics. Chloroform, ether, and nitrous oxide produced derangements of function, chloroform acting most powerfully. Injections of novocaine were without effect on the liver.—M. Georges Urbain was elected a member of the section of chemistry in succession to the late M. Emile Bourquelot.—F. **Vaney**: The polynomials of Laguerre.—A. **Angelesco**: A representation of polynomials by integrals.—R. **Birkeland**: The convergence of the developments which express the roots of the general algebraic equation by a sum of hypergeometric functions of several variables.—B. **Gambier**: Real non-unicursal algebraic curves with constant torsion.—M. **Idrac**: Experimental studies on hovering flight. In an earlier note the opinion was expressed that wherever birds are hovering in stationary flight they are always in a zone where the wind has a vertical ascending component. Results confirming this view are now given, and records of the variations in temperature and pressure of the air taken on apparatus carried by captive balloons are reproduced.—J. **Vallot**: Study of the diffuse radiation of the sky compared with the direct solar radiation. The total diffuse radiation is considerable, and may amount to one-third of the solar radiation.—A. **Leduc**: A new equation of state for gases based on a know-

ledge of the internal pressures.—H. **Abraham** and R. **Planiol**: The use of the Baudot telegraph in wireless telegraphy. The Baudot quadruple instrument used in the ordinary way records 7200 words per hour. A description of the adaptation of this to wireless transmission is given. The first experiments were made across Paris; later the apparatus was successfully used between Paris and Nogent-le-Rotrou.—M. St. **Procopiu**: Electrical double refraction of mixed liquids and crystalline structure.—A. E. **Lindh**: The absorption spectra of chlorine for the X-rays. All chlorides in which the chlorine is monovalent have similar X-ray spectra, but there is a displacement of the limits of absorption in $KClO_3$ and $KClO_4$, compounds in which the valencies are 5 and 7.—D. **Coster**: The principle of combination and the law of Stokes in the X-ray series.—MM. M. **Menard** and **Pestel**: Concerning the danger of radiological installations. The authors conclude that, provided the usual precautions required for the safety of the operator are taken, there is no real danger to third parties in neighbouring rooms.—A. **Tian**: A theory of the slow hydrolysis of salts.—MM. P. **Jolibois** and **Bouvier**: The reversibility of the reaction $CaCO_3 = CO_2 + CaO$. The self-recording apparatus described in an earlier paper has been applied to the study of the dissociation of calcium carbonate. The heating and cooling curves are not the same, and hence the reaction is not strictly reversible.—G. **Dupont**: Contribution to the study of the acid constituents of the exudation of the maritime pine. The composition of pimaric acid. Pimaric acid purified by Vesterberg's method is a mixture of 37 per cent. of dextropimaric acid and 63 per cent. of the lævo-acid.—L. **Longchambon**: The measurement of the rotatory power in biaxial crystals.—L. **Cayeux**: The petrographic *rôle* of fossil Alcyonaria deduced from the analysis of the Jurassic iron minerals of France.—L. **Joleaud**: A deep boring which demonstrates the existence of transported strata in northern Tunis. A trial boring for oil made at Aïn-Rhelal started in the Middle Miocene, then passed through the Trias (630 metres), and finally met with strata undoubtedly belonging to the Upper Cretaceous.—F. **Ehrmann**: The Trias of the Kabylie des Babors (Algeria).—J. **Beauverie**: The resistance of mitochondria and plasts, and relations with attacks by parasites.—G. **Mangenot**: The structure of the antherozoids of the Fucaceæ.—R. **Lance**: The use of coloured screens for fighting against cryptogamic diseases of plants. The plants are sprayed with solutions containing blue, green, and violet dye. The fluid dries and leaves the parts of the plant covered with a colour screen allowing blue, violet, and ultra-violet light to pass. No results of the treatment are given.—R. **Lance**: An anticryptogamic product. A proposal to use salts of zinc for spraying plants.—M. **Mirande**: Seeds giving hydrogen sulphide by fermentation belonging to the family of the Papilionaceæ. Many leguminous seeds, including beans, peas, and lentils, when moistened with water undergo a spontaneous fermentation, one of the products of which (sulphuretted hydrogen) is poisonous.—C. **Champy**: The experimental change of sex in *Triton alpestris*. A male, subjected to starvation, had its testicle replaced by a fatty band containing neither spermatocytes nor spermatozoids. Two animals after winter starvation were intensively fed. The external colouring changed from male to female in character. One of these was killed, and showed the adipose band; the second, killed two months later, showed a genital gland (section shown in diagram) corresponding to the ovary of a young female.—L. **Roule** and F. **Angel**: Fishes of the family of the Diretmideæ and their place in classification.—A. **Gruvel**: The geographical distribution of some Madagascan lobsters and their commercial exploitation.—J. **Dragoiu** and F. **Vlès**: The cytological consequences of the osmotic arrest of cell division. The increase of the external osmotic pressure first retards, then stops, the division of the cytoplasm. With additional increase of osmotic pressure the internal evolution of the cell is progressively changed in a regular manner. The whole process simulates a kind of regression of nuclear evolution.—M. **Doyon**: The use of chloroform for the preparation of nucleo-proteids and nucleic acids active *in vitro* on the blood. The complexity of the action of the nucleic acids *in vitro*.—M. **Bordier**: The usefulness of diathermal d'Arsonvalisation in atonic wounds.

Books Received.

The Works of Aristotle. Translated into English under the editorship of W. D. Ross. Vol. x.: Politica. By Benjamin Jowett. Oeconomica. By E. S. Forster. Atheniensium Respublica. By Sir Frederic G. Kenyon. Unpaged. (Oxford: Clarendon Press.) 15*s*. net.

Insects and Human Welfare. By Prof. Charles T. Brues. Pp. xii+104. (Cambridge, Mass.: Harvard University Press; London: Oxford University Press.) 10*s*. 6*d*. net.

Fugitive Essays. By Josiah Royce. Pp. 429. (Cambridge, Mass.: Harvard University Press; London: Oxford University Press.) 17*s*. net.

Aeroplane Performance Calculations. By Harris Booth. (The D.-U. Technical Series.) Pp. xv+207. (London: Chapman and Hall, Ltd.) 21*s*. net.

Landscape Gardening. By Andrew J. Downing. Tenth edition, revised by Frank A. Waugh. Pp. xv+439. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 36*s*. net.

The Study of Geological Maps. By Dr. Gertrude L. Elles. (Cambridge Geological Series.) Pp. viii+74+vii plates. (Cambridge: At the University Press.) 12*s*. net.

The Journal of the Royal Anthropological Institute. Vol. l., 1920, July–December. Pp. x+237–465+12+plates. (London: Royal Anthropological Institute.) 15*s*. net.

The Relative Value of the Processes Causing Evolution. By Dr. A. L. Hagedoorn and A. C. Hagedoorn-Vorstheuvel la Brand. Pp. v+294. (The Hague: M. Nijhoff.) 9 gld.s.

The Reign of Relativity. By Viscount Haldane. Pp. xxiii+430. (London: J. Murray.) 21*s*. net.

Memoirs of the Geological Survey: England and Wales. The Water Supply of Buckinghamshire and of Hertfordshire from Underground Sources. By W. Whitaker. Pp. iv+368. (Southampton: Ordnance Survey Office; London: E. Stanford, Ltd.) 16*s*. net.

The Banana: Its Cultivation, Distribution, and Commercial Uses. By William Fawcett. Second and enlarged edition. Pp. xi+299. (London: Duckworth and Co.) 15*s*. net.

Diary of Societies.

THURSDAY, JUNE 2.

INDUSTRIAL WELFARE SOCIETY (at 51 Palace Street, S.W.1), at 10.30.—Dr. R. M. Wilson: Medical Service in Industry.—Prof. E. L. Collis, Dr. T. M. Legge, and Dr. H. Ross: Discussion on Health Problems in Industry.

ROYAL SOCIETY OF MEDICINE (Laryngology Section) (Summer Meeting), 2.30 to 6.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Sir Alexander C. Mackenzie: Beethoven.

INSTITUTE OF PATHOLOGY AND RESEARCH (at St. Mary's Hospital), at 4.30.—Prof. G. Dreyer: A New Departure in the Serum Diagnosis of Syphilis.

ROYAL SOCIETY, at 4.30.—Dr. T. M. Lowry and Dr. C. P. Austin: Optical Rotatory Dispersion (The Bakerian Lecture).

LINNEAN SOCIETY, at 5.—Prof. Garstang and Others: Discussion on Biogenetic Law (Recapitulation).