

Societies and Academies.

LONDON.

Royal Society, January 31.—A. Mallock: Summary of the results obtained from experiments made during the years 1918–1923 of the effects of temperature on the properties of metals. The results relate to the properties of iron and steel in the neighbourhood of the critical temperature. The principal change which occurs at that temperature is an abrupt alteration in specific heat, which, as the metal passes to the high-temperature state, is reduced to about one-third of its previous value. The coefficients of rigidity and thermal expansion undergo no discontinuous change. The rigidity decreases slowly as the temperature rises to a low red heat, but at higher temperatures the change is rapid. At a bright red heat the metal still retains elastic properties, but with greatly increased viscosity, and thus oscillations which depend on rigidity are quickly damped out. The presence of small quantities of silicon, sulphur, phosphorus, and manganese in the samples used prevents any absolute conclusion being formed as to the effect produced by carbon alone, but it is clear that carbon lowers the critical temperature, and prolongs the time occupied in changing from the high to the low temperature state while the metal is cooling.—A. K. Goard and E. K. Rideal: Catalytic and induced reactions. Pt. I.: An electrode of special type has been devised whereby it is possible to effect the comparison of the potentials of certain substances which behave irreversibly towards the platinum electrode. The action of cerous salts in effecting the induced oxidation of potassium arsenite, and the catalytic oxidation of five reducing sugars, have been investigated from the point of view of oxidation potential. In the former case the potentials observe the order: Cerous salt (inductor)—arsenite (acceptor)—equilibrium mixture—perceric salt; in the latter, the order: Reducing sugar—cerous salt—perceric salt. Pt. II.: Schönbein's reaction (the separation of iodine from potassium iodide solution in the presence of hydrogen peroxide and ferrous salts) conforms to the schemes for coupled and catalytic reactions described in Part I. of this paper. Direct evidence has been obtained of the formation of a peroxide of iron by the action of hydrogen peroxide upon ferrous sulphate in neutral solution; it decomposes according to a mono-molecular law. This peroxide has been shown, by the method of electrometric titration under special conditions, to possess the essential formula Fe_2O_5 .—H. B. Dixon and G. Greenwood: On the velocity of sound in gases and vapours, and the ratio of the specific heats. The velocity of sound in certain vapours and condensable gases was determined by timing the passage of a sound-wave between the two ends of a coiled lead pipe filled with the vapour or gas between 20° C. and 100° C., and comparing the rates with the velocity of sound through air in the same pipe. From the velocities found in the pipe the velocities in the "free" gas are calculated, and from these results the specific heats of the gases and vapours are computed.—J. R. Partington and A. B. Howe: The ratio of the specific heats of nitrogen and of oxygen. The adiabatic expansion method of determining accurately the ratio of the specific heats of a gas has been applied to nitrogen and oxygen. The gas was contained under pressure in a spherical copper globe of about 60 litres capacity, immersed in a water-bath maintained at constant temperature by means of an electrical thermostat, and is put into communication with free air so that equalisation of pressures takes place

adiabatically. Pressure was measured on an oil manometer. The bolometer was used in conjunction with an Einthoven string galvanometer and a post-office box. The galvanometer was used as a null instrument, the lowest temperature attained during expansion being reproduced by adding ice to the bath. The temperatures were determined by a standardised mercury thermometer. The following values were obtained:

	c_v	c_p	C_v	C_p	γ
Nitrogen at 20° C.	0.1759	0.2470	4.929	6.922	1.4045 ± 0.0003
Oxygen at 20° C.	0.1581	0.2204	5.056	7.051	1.3946 ± 0.0002

S. Barratt: The absorption spectra of mixed metallic vapours. In an absorption band spectrum, which is developed only in mixtures of the vapours of sodium and potassium, contrary to previous statements, the line $1S-2p_2$ of magnesium has been observed in absorption.—E. P. Metcalfe and B. Venkatesachar: On selective absorption by luminous mercury vapour. The absorption of the components of the 5461 Å group ($1p_1-1s$) by luminous mercury vapour has been examined, with the aid of a Lummer-Gehrcke plate and an absorbing column 100 cm. long. All the satellites are strongly absorbed, under suitable conditions, with the exception of -237 Å, which is also absorbed, but to a much less degree. The ratio of emission to absorption is fairly constant for all the lines, except -237 Å. All the resolved satellites, except -237 Å, have been reversed on a continuous bright background. The absorption and reversal of the lines 5769 Å ($1P-2d'$) and 5791 Å ($1P-2D$), for which the absorption centres are the same, and in the state $1P$, have been observed. Two satellites of 5769 Å ($+0.44$ Å and -0.50 Å) have been reversed. The effectiveness of long columns as radiators of weak lines is brought out by the observation of the feeble satellite -112 Å of 5779 Å in the light radiated from the end of a 100 cm. column carrying a current of 0.06 ampere per sq. cm.

Association of Economic Biologists, December 7.—R. S. Troup: Our tropical forests and their economic significance. The area of tropical forest within the British Empire is probably not less than 750,000 square miles, much of which is at present inaccessible or commercially unprofitable. Forests should be regarded as so much capital producing a steady interest or increment, and exploitation should extend to the utilisation of this increment while the capital is maintained and improved in quality. A definite forest policy having been laid down, the following steps are indicated: (1) reservation of areas to be retained permanently as forest, (2) settlement of rights, (3) demarcation, (4) detailed survey, and (5) preparation of working plans for the regulation of fellings and the conduct of regeneration and other works. So far as the utilisation of timber and other forest products is concerned, much research work remains to be carried out, for which purpose a Forest Products Research Board under the Department of Scientific and Industrial Research has recently been set up. Steps are also being taken to provide for the more efficient training not only of forest officers but also of research officers in specialised branches of forestry.—M. Grabham: *Pseudococcus sacchari* and its associates in Madeira. Sugar cane was introduced into Madeira early in the fifteenth century, but was wiped out in 1877 by a fungus, probably *Aspergillus fulvus*. *Pseudococcus sacchari* is known to have been present before the arrival of the *Aspergillus*, and the attack of the fungus was probably facilitated by the puncture of the coccid. After 1877 no sugar was grown for quite three years; then the Bourbon cane hitherto planted was replaced by the Yuba cane from Natal. The *Pseudococcus* either

survived or was reintroduced, and has latterly enormously increased owing to the fostering care of the introduced Argentine ant. Though no control measures are undertaken, the Yuba cane flourishes and shows no deterioration in the crystallisable sugar yield. The *Pseudococcus* appears to have few parasites, and Coccinellid predators are thoroughly removed by the Argentine ant. A widely diffused red staining of the sheath accompanies the *Pseudococcus* attack. Its nature has not yet been satisfactorily determined.

January 18.—E. B. Poulton: The relations of pure and applied biology (Presidential address).

Mineralogical Society, January 15.—Dr. A. E. H. Tutton in the chair.—A. F. Hallimond: The chemical classification of the mica group. Muscovite and phengite can be represented as mixtures of the molecules $K_2O \cdot 3Al_2O_3 \cdot 6SiO_2 \cdot aq.$ and $K_2O \cdot (Fe, Mg)O \cdot 2Al_2O_3 \cdot 6SiO_2 \cdot aq.$, the amount of water being somewhat variable. The best-known lithia micas are represented as follows: Lepidolite, $K_2O \cdot Li_2O \cdot 2Al_2O_3 \cdot 6SiO_2 \cdot aq.$; cryophyllite, $K_2O \cdot Li_2O \cdot (Fe, Mg)O \cdot Al_2O_3 \cdot 6SiO_2 \cdot aq.$; polyolithionite, $K_2O \cdot 2Li_2O \cdot R_2O_3 \cdot 6SiO_2 \cdot aq.$ In the same way the dark micas can be represented as mixtures of phlogopite, $K_2O \cdot 6(Mg, Fe)O \cdot Al_2O_3 \cdot 6SiO_2 \cdot aq.$, and two biotite types, namely, $K_2O \cdot 4(Fe, Mg)O \cdot 2Al_2O_3 \cdot 6SiO_2 \cdot aq.$ and $K_2O \cdot 6(Fe, Mg)O \cdot 2Al_2O_3 \cdot 6SiO_2 \cdot aq.$ In the most acid biotites (from granite) the Al_2O_3 is somewhat greater, with a corresponding replacement of $(Fe, Mg)O \cdot Al_2O_3$ is, of course, often replaced by Fe_2O_3 , $(OH)_2$ by F_2 , etc. Graphical formulæ of oxidic compounds (salts) can be simplified by writing the connecting group $-O-$ as a single symbol. The above empirical formulæ can be represented as salts of the single-chain hexa-silicic acid with K, Mg, Fe , etc., and with a diacid alumina group $Al_2(OH)_2O$, in which hydroxyl is replaceable by fluorine. The greater acidity of the white micas is accounted for by the presence of three acid groups $-Si : O : Si-$ in the chain; biotite results from the addition of $3(Fe, Mg)O$ to these groups, to form a normal salt; the most basic dark micas contain $Al_2(OH)_2O_2R$ in place of the simple group $Al_2(OH)_2O$, the aluminium becoming "amphoteric" when the solution is very rich in $(Fe, Mg)O$.—A. Brammall and H. F. Harwood: Gold and silver as accessory minerals in the Dartmoor granite. Visible gold occurs as scanty minute specks in a porphyritic oligoclase-quartz-orthoclase rock containing a pale green fibrous amphibole and abundant sphene, together with apatite, zircon, monazite, and, occasionally, tourmaline. The silver has not been observed in hand specimens; assays show that it is usually in excess of the gold. The rock occurs as large loose boulders on Bittleford Down and at a few other localities.—Arthur Russell: Topaz from Cornwall, with an account of the localities, old and new, at which it is found. All the hitherto recorded occurrences of topaz in Cornwall are described, and new ones at Castle-an-Dinas Wolfram Mine, St. Columb Major; Belowda Beacon Mine, Roche; Beam Mine, St. Austell; and Mulberry Mine, Lanivet. At several localities, topaz is present in considerable quantities in the cassiterite-wolfram lodes; at Belowda it is especially abundant with tourmaline.

Royal Meteorological Society, January 16.—Dr. C. Chree, president, in the chair.—C. Chree: Reflections on various subjects, including meteorology and sun-spots. Modern correlation methods applied to the question of the relationship between sun-spot frequency and meteorological, electrical, and magnetic phenomena show the importance of employing a long period of years. The results obtained from single

11-year periods are widely divergent in the case of meteorological data. A difficulty in arriving at conclusions being the length of the sun-spot cycle, it is important to study any plan of arriving at results from shorter periods. So far as magnetic phenomena are concerned, the difference between years of many and few sun-spots is of the same nature as the difference between magnetically disturbed and quiet days. The incidence of quiet and disturbed magnetic conditions is the same all over the earth, but the difference between the two sets of conditions appears to be particularly prominent in high latitudes. There were now issued from de Bilt international lists of quiet and disturbed days, 5 of each class per month. The meteorological data from these two sets of (Greenwich) days from stations representative of different parts of the earth might be contrasted. The new observatory in Shetland, from its high latitude, should be a promising station for the purpose.

Royal Microscopical Society, January 16.—Prof. F. J. Cheshire (Presidential address): The design of the petrological microscope. The design of this instrument has been prejudicially affected by the fact that the original petrological microscope was made by the simple addition of polarising adjuncts to the ordinary microscope. Its design should be considered *de novo*. As regards the necessary polarising elements, the day will soon arrive in which, to economise spar, greater use will have to be made of the reflecting polariser, which is better adapted for low-power work than the ordinary nicol prism. Further, there are serious objections to mounting the analyser immediately above the objective; a new eye-piece should be designed which would permit of the mounting of the analyser between the last lens vertex and Ramsden circle without so much sacrifice of angular field as is necessary with the Huygenian eye-piece. The petrological microscope suffers from the fact that several of the five primary focal planes are inaccessible. This point should be specially considered in the design of the petrological microscope; as many focal planes as possible should be made accessible for the introduction and withdrawal of the auxiliary polarising elements.

CAMBRIDGE.

Philosophical Society, January 21.—Sir Ernest Rutherford in the chair.—Sir Joseph Larmor: An early formulation by Stokes of the theories of the rotatory polarisations of light.—H. F. Baker: Theorems for a cubic curve in space.—E. H. Hankin: On the angle of incidence in soaring flight.—H. W. Turnbull: Canonical forms of the quaternary cubic associated with arbitrary quadrics.—C. G. F. James: Complexes of conics and the Weddle surface.—S. Brodetsky and G. Smeal: On Graeffe's method for complex roots of algebraic equations.—J. Brill: On the problem of four bodies.

DUBLIN.

Royal Irish Academy, January 14.—Prof. Sydney Young, president, in the chair.—J. K. Charlesworth: The glacial geology of the north-west of Ireland. The region investigated covers some 4300 square miles. It was invaded by an ice-sheet from Scotland moving in general in a westerly direction and the western limits of which coincided roughly with the line of Lough Swilly and curved round the eastern end of the Sperrin Mts. on to the shoulders of Slieve Beagh in Co. Monaghan. Later glaciers, centred in the Donegal hills, flowed outwards to the Atlantic on the south-west, west, and north, while on the east they swept over the Sperrin

Mts. and Slieve Gallion down the Valley of the Bann, over the site of Lough Neagh in the direction of Belfast, and on the south-east towards the Central Plain. The sequence in time of the two ice sheets is proved by superposition of boulder clays in Co. Derry. A re-advance of Scottish ice along the north Irish coast to the mouth of Lough Foyle succeeded a partial recession of the Donegal ice. The successive stages in the retreat of the Irish glaciers are marked by abundant moraines and by marginal drainage phenomena.

PARIS.

Academy of Sciences, January 14.—M. Guillaume Bigourdan in the chair.—Ed. and G. Urbain: The simultaneous presence of celtium and yttrium earths in some zirconium minerals. Zircons from four places of origin, malacon from two, and a specimen of Brazilian badeleite were examined from the special point of view of the presence of yttrium earths and of celtium. All these zirconium minerals were proved to contain rare earths and celtium, the proportion of celtium increasing with the proportion of yttrium earths.—P. A. Dangeard: Sexual reproduction in *Marchantia polymorpha* in its relations with cellular structure. At the moment of impregnation the oosphere of *Marchantia* contains, besides the female nucleus, three structures to which the name of vacuome, plastidomé, and cytome are given. These three structures are transmitted to each generation without discontinuity.—Paul Marchal: Contribution to the study of the evolutive cycle of *Eriosoma lanigerum*.—André Blondel and Jean Rey: A new verification of the law of perception of light flashes at the limiting range: the case of very short durations.—A. Rateau: Hovering flight against the wind. A mathematical proof of a formula giving the principal laws of the Katzmayer effect.—M. Félix Lagrange was elected correspondant of the Academy for the section of medicine and surgery, in succession to M. Bordet, elected foreign associate.—Ph. Le Corbeiller: The substitutions of the complex modular group which preserves a quadratic form with complex coefficients.—Paul Mentré: Complexes with quadruple inflectional focus.—E. Cartan: Similar connexion of surfaces.—Ervand Kogbetliantz: The absolute summation of series by arithmetical means.—A. Vakselj: The linear differential equation of the second order with four singular points.—D. Menchoff: The convergence of series of orthogonal functions.—A. Kolmogoroff and G. Seliverstoff: The convergence of Fourier's series.—Constant Lurquin: A fundamental proposition of probability. A discussion of the Bienaymé-Tchebycheff criterion.—R. Risser: Waves of emersion in a canal of given width.—P. Noaillon: Reply to the observations of M. Pascal on superficial circulation.—André Metz: The interpretation of Michelson's experiment. A criticism and correction of a recent communication by M. Brylinski on this subject.—J. Le Roux: The co-ordination of movements and the notion of time.—H. Chipart: The propagation of light in media possessing periodic structure.—N. Perrakis and A. Massol: A method of determination of micro-miscibilities. An account of a method for the study of the miscibility of alcohol, water, and petrol, in which the temperature is kept constant and one of the constituents added until the turbidity point is reached.—Mlle. Germaine Cauquil: The esterification of cyclohexanol and of some of its homologues. In equimolecular proportions at 95° C., the systems cyclohexanol-acetic acid, *o*-methylcyclohexanol-acetic acid, and dimethyl-1.3.4-cyclohexanol-acetic acid give equilibria at 55.6 per cent., 49.8 per cent., and 47.5 per cent. respectively. The

esterification velocity constants were measured for the three alcohols.—A. Damiens: The power of spontaneous transformation of yellow mercuric iodide.—Mlle. Suzanne Veil: The evolution of the cupric hydroxide molecule in the presence of water. Measurements of the changes in the coefficient of magnetisation corresponding with the colour changes of cupric hydroxide in water.—V. Auger: Two attempts to replace the theory of ions by a theory based on the molecular theory of water. A critical discussion of the views put forward by Armstrong (*Comptes rendus*, June 25, 1923, p. 1892) and by Kling and Lassieur (*Comptes rendus*, July 9, 1923, p. 109).—Maurice Piettre: The proteids of lactoserum. Their separation by the acetone method.—J. Thoulet: The circulation of the ocean.—L. M. Bétancès: The primitive cell of the blood.—L. Bounoure: The endodermic dorsal derivatives and first genital outline in the tailless batrachians.—Jacques Benoit: The signification of the right rudimentary genital gland in the hen. This gland, hitherto regarded as the right rudimentary ovary, should be considered as having the value of a rudimentary testicle.—Y. Manouelian and J. Viala: *Encephalitozoon rabiei*, the parasite of hydrophobia.—L. Panisset and J. Verge: Immunity in bird diphtheria and contagious epithelioma in poultry.

CHRISTIANIA.

Scientific Society, October 26.—Prof. Halvdan Koht, president, in the chair.—H. H. Gran: The melting of the snow as the chief of the main causes of the increasing production of organic substance in the sea near the coasts of Northern Europe in the spring-time. The determination of the production of organic substance was made by quantitative determination of the plankton, by determination of the changing concentration of oxygen in the water, and by determination of the fertilising power of the water.

November 17.—Prof. H. Goldschmidt in the chair.—Johs. Lindeman: Colloids and the stability of colloid solutions. The stability of a colloid system (the hydrosol of ferric hydroxide) is greater if it is formed in the presence of nuclei.

WASHINGTON, D.C.

National Academy of Sciences (Proc. Vol. 9, No. 11, November).—A. H. Compton: The quantum integral and diffraction by a crystal. From considerations of energy and momentum principles and the quantum postulate, expressions for diffraction by a crystal grating are obtained. Bragg's expression for the diffraction of X-rays by a crystal is derived from the equations.—W. Hovgaard: The principle of minimum energy and the motion of fluids. In the case of an incompressible fluid filling completely a region between two boundaries subject to prescribed motions, the motion of the fluid is irrotational under the condition of minimum energy. It is shown further that, given that the motion of the liquid is irrotational, the motion is of necessity always one of minimum energy.—P. W. Bridgman: The volume changes of five gases under high pressures. The gases used were hydrogen, helium, ammonia, nitrogen, and argon; the maximum pressure was 15,000 kg./cm.² and the temperature about 60°. Gas under a pressure of 2000 kg./cm.² is introduced into a cylinder filled with kerosene and additional pressure is applied by a piston. The volume decrease is greatest for the monatomic gases though at very high pressures, nitrogen retains great compressibility owing to its complex structure. The densities under 15,000 kg./cm.² pressure are calculated: hydrogen 0.1301,

helium 0.340 and nitrogen 1.102, *i.e.* greater than the densities of the liquid phases at atmospheric pressure (0.070, 0.1456, and 0.85 respectively) or the solid phases.—C. Barus: (1) Achromatic and superchromatic fringes with a calcite rhomb. The effects of plate glass and Iceland spar compensators on the fringes produced by a modified interferometer are described. (2) Vibration of the air filament in quill tubes: single telephonic exciter.—T. W. Richards and W. T. Richards: Preliminary attempt to measure gravimetrically the distance-effect of chemical affinity. A horizontal plate of aluminium 6 cm. square, hanging from one arm of a balance, was exactly counterpoised and allowed to rest very nearly on flat surfaces of various metallic oxides, sulphur, iodine, and bromine. The sulphur and iodine were cast on plate glass and mica was interposed when the halogens were used, separating the surfaces by 0.02 mm. and 0.01 mm. respectively. With the oxides, the plates were probably less than 0.001 mm. apart. In no case was any attractive effect so great as 0.1 mg. observed. The force of chemical affinity must decrease very rapidly with increase of separation of the attracting atoms.—L. W. Yolton: The effects of cutting the giant fibres in the earthworm, *Eisenia foetida* (Sav.). Operated worms showed the normal creeping movements, but a sharp stimulus such as causes a normal worm to contract was not transmitted beyond the wound.—H. Shapley: On the relative velocity of blue and yellow light (*v.* NATURE, p. 206).—F. B. Sumner: Size-factors and size-inheritance. From a statistical treatment of a series of rabbits, Castle has concluded that genetic agencies affecting rabbits are general in action, influencing all parts of the body in the same direction, and that this probably applies to all vertebrates. From studies of the deer-mouse, this view is contested.—H. L. Smith: A generalisation of Volterra's derivative.

Official Publications Received.

- Comité International des Poids et Mesures. Procès-Verbaux des Séances. Deuxième Série, Tome 10, Session de 1923. Pp. vii+122. (Paris: Gauthier-Villars & Cie.)
- Statens Meteorologisk-Hydrografiska Anstalt. Årsbok, 4, 1922. V: Hydrografiska mätningar i Sverige. Pp. 35+5 planscher. (Stockholm.) 7 kr.
- Memoirs of the Geological Survey of India. Vol. 45, Part 2: The Gwalior and Vindhyan Systems in South-Eastern Rajputana. By Dr. A. M. Heron. Pp. vii+129-189+plates 27-42. (Calcutta: Geological Survey of India.) 3 rupees.
- British Research Association for the Woollen and Worsted Industries. Report of the Council, 1923. Pp. 17. (Headingley, Leeds.)
- The Institution of Gas Engineers. Eighth Report of the Research Sub-Committee of the Gas Investigation Committee of the Institution of Gas Engineers ("Fairweather" Recording Calorimeter). Pp. 97-174. Ninth Report (Aeration and Air Injection). Pp. 175-229. Tenth Report (The Manufacture of Blue Water Gas). Pp. 293-375. (London: 28 Grosvenor Gardens.)
- Poradnik dla Samouków, T.4: Krystalografja, Wskazówki Metodyczne dla Studujących. Pp. xiv+228. (Warszawa: Im. Mianowskiego.)

Diary of Societies.

MONDAY, FEBRUARY 11.

- INSTITUTION OF HEATING AND VENTILATING ENGINEERS, INC. (at Holborn Restaurant) (Annual General Meeting), at 2.30.—Sir George Croydon Marks: Industry and Invention.
- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Prof. W. S. Handley: General Peritonitis.
- BRITISH PSYCHOLOGICAL SOCIETY (Education Section) (at London Day Training College), at 6.—T. P. Tomlinson: Intelligence Tests in City and Urban Schools.
- ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 8.30.—L. S. Fortescue: Persian Azerbaijan and the Western Elburz.

TUESDAY, FEBRUARY 12.

- ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Prof. J. Barcroft: The Respiratory Pigments in Animal Life and their Significance (I).
- KING'S COLLEGE ENGINEERING SOCIETY (at Institution of Mechanical Engineers), at 5.30.—Vice-Admiral Sir George Goodwin: Economics as applied to Mechanical Engineering

- ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN (Scientific and Technical Group), at 7.—Dr. F. C. Toy and S. O. Rawling: A New Electric Density Meter, dispensing with the Eye.
- INSTITUTION OF WELDING ENGINEERS (at Institute of Marine Engineers, Inc.), at 7.—J. R. Boorer: Some Chemical Aspects of Welding.
- QUERRETT MICROSCOPICAL CLUB, at 7.30.—D. J. Scamfield: Presidential Address.

WEDNESDAY, FEBRUARY 13.

- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Prof. R. L. Knaggs: Osteogenesis imperfecta.
- INSTITUTION OF CIVIL ENGINEERS (Informal Meeting), at 7.—H. J. F. Gourley and others: Discussion on The Capacity to be provided in Service-Reservoirs.
- ROYAL SOCIETY OF ARTS, at 8.—Prof. H. Maxwell Lefroy: The Preservation of Timber from the Death Watch Beetle.

THURSDAY, FEBRUARY 14.

- ROYAL SOCIETY, at 4.30.—Dr. C. Chree and R. E. Watson: Atmospheric Pollution and Potential Gradient at Kew Observatory, 1921 and 1922.—Prof. E. Wilson and E. F. Herron: The Electrical Conductivity of Magnetite.—C. E. I. Mann: The Determination of Coefficients of Diffusion in Gels by means of Chemical Analysis, and a Comparison of Results obtained from those yielded by the Indicator Method.—C. E. P. Brooks: The Difference-Periodogram. A Method for the Rapid Determination of Short Periodicities.—Prof. J. Proudman and Dr. A. T. Doodson: The Principal Constituent of the Tides of the North Sea.—D. H. Bangham and F. P. Burt: The Behaviour of Gases in Contact with Glass Surfaces.
- LONDON MATHEMATICAL SOCIETY (at Royal Astronomical Society), at 5.—E. A. Milne: The Star and the Atom. (Lecture.)
- ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Sir William Bragg: The Crystalline Structure of Organic Substances (2).
- INSTITUTION OF ELECTRICAL ENGINEERS (Joint Meeting with the Physical Society of London), at 6.—Continuation of Discussion on Loud-Speakers for Wireless and other Purposes.
- SOCIETY OF DYERS AND COLOURISTS (London Section) (at Dyers' Hall, Dowgate Hill), at 7.—Prof. J. F. Thorpe: Staining and Dyeing.
- OPTICAL SOCIETY (Annual General Meeting) (at Imperial College of Science and Technology), at 7.30.—T. Smith: The Addition of Aberrations.—J. W. Gifford: The Choice of Wave-lengths for Achromatism in Telescopes.—E. F. Fincham: A New Form of Corneal Microscope.—D. Baxandall: The Troughton Dividing Engine (1793).
- INSTITUTION OF CHEMICAL ENGINEERS (at Engineers' Club, Coventry Street), at 8.—D. M. Newitt: The Transport, Storage, and Distribution of Hydrochloric Acid, with an Account of a Complete Modern Installation.
- INSTITUTE OF METALS (London Local Section) (at Institute of Marine Engineers, Inc.), at 8.—W. B. Clarke: Metals for Lamp Manufacture.
- BRITISH PSYCHOLOGICAL SOCIETY (at University College), at 8.30.—Extraordinary General Meeting to discuss the formation of branches of the Society.

FRIDAY, FEBRUARY 15.

- INSTITUTION OF PUBLIC LIGHTING ENGINEERS AND SUPERINTENDENTS (at 197 High Holborn), at 2.—Inaugural Meeting.
- GEOLOGICAL SOCIETY OF LONDON, at 3.—Annual General Meeting.
- ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—Sir Richard M. Dane: Salt Manufacture in India.
- ROYAL ASTRONOMICAL SOCIETY, at 5.—Geophysical Discussion.—Dr. C. Chree: Periodicities in Terrestrial Magnetism.
- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—V. E. Negus: The Mechanism of the Larynx.
- ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN (Pictorial Group), at 7.—Annual Meeting.
- JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—Prof. D. S. Capper: Some Suggestions for Road Transport Development.
- ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Dr. J. H. Jeans: The Origin of the Solar System.

SATURDAY, FEBRUARY 16.

- SCHOOL NATURE STUDY UNION (in Botanical Theatre, University College), at 3.—Prof. J. A. Thomson: Some Unsolved Problems of Everyday Natural History.

PUBLIC LECTURES.

SATURDAY, FEBRUARY 9.

- HORNIMAN MUSEUM (Forest Hill), at 3.30.—E. Lovett: The Origin of Children's Toys.

WEDNESDAY, FEBRUARY 13.

- ROYAL INSTITUTE OF PUBLIC HEALTH, at 4.—Dr. P. C. Varrier-Jones: Settlements for Tuberculosis.
- UNIVERSITY COLLEGE, at 6.—Prof. Karl Pearson: The Contributions of Sir Francis Galton to Photography.

THURSDAY, FEBRUARY 14.

- KING'S COLLEGE, at 5.30.—Dr. E. W. Scripture: What the Voice looks like.

FRIDAY, FEBRUARY 15.

- BEDFORD COLLEGE FOR WOMEN, at 5.15.—Sir F. W. Keeble: The Influence of Biological Discovery on Human Progress—A Forecast.
- KING'S COLLEGE, at 5.30.—Dr. H. Lamb: The Internal Constitution of the Earth. (Succeeding Lectures on February 22 and 29.)

SATURDAY, FEBRUARY 16.

- HORNIMAN MUSEUM (Forest Hill), at 3.30.—Dr. C. A. Raisin: Glaciers and Ice-work of the Past.