

DR. RAFFAELE ISSEL, son of the late Prof. Arturo Issel, the geologist, has been appointed professor of zoology in the University of Genoa.

IN the course of the annual dinner of the Honourable Society of Cymmrodorion on January 19, at which the Prince of Wales was the chief guest, Mr. Dan Radcliffe promised, in honour of His Royal Highness, to give 50,000*l.* for the benefit of the University of Wales.

THE Sydney correspondent of the *Chemical Trade Journal* writes that the secretary of the Victorian Chamber of Manufactures has informed the registrar of the University of Melbourne that the sum of 1500*l.* per annum for ten years has been contributed for the University funds "for the purpose of assisting in providing and maintaining professional chairs associated with arts and sciences which have relation to industries and production."

IN connexion with Battersea Polytechnic, Tate scholarships in engineering, science, and domestic science are being offered for competition in June next. The scholarships vary in value from 20*l.* to 30*l.* per annum, with free tuition, and are tenable for two or three years. The latest day for the receipt of applications is April 21. Further particulars are obtainable from the principal.

"THE continued neglect of science as a part of general education in schools" is lamented by the advisory committee on the textile industries and colour chemistry departments of the University of Leeds in a report for the year 1921-22. They are able, nevertheless, to congratulate these departments on being permeated as never before by the spirit of research. An illustrated account of one of their investigations—into the ancestry of the Suffolk Down sheep—appeared early last year in *NATURE* (vol. 109, p. 595). The number of students, though smaller than in the preceding year, was still large: day students 277, evening 131. More than 80 per cent. of students who completed their course in the department of colour chemistry and dyeing last session obtained either positions in factories or research scholarships; there is evidence of an increasing tendency for large manufacturing firms to engage only those students of the department who have obtained in addition to the honours degree some experience of research in pure science.

A USEFUL "Record of Educational Publications" is issued from time to time by the United States Bureau of Education. Those of May and September 1922 (Bulletins 21 and 33, 5 cents each) covering a period of about 8 months, contain some 800 titles of books and articles classified under such headings as: educational history, current educational conditions, educational theory and practice, educational psychology, psychological tests, etc. In many cases a brief synopsis of the contents is given. Eleven books and pamphlets, containing 1300 pages, and 50 magazine articles are devoted to the subject of intelligence tests, interest in which was greatly stimulated in America by their utilisation during the war for recruiting purposes. Under the heading of higher education appear notices of two works by French "exchange" professors, one being "Universities and Scientific Life in the United States" (Oxford University Press), by M. Caullery, who was exchange professor of biology at Harvard, and one, "Six mois à l'université Yale," by A. Feuillerat, which appeared in the *Revue des deux Mondes* for February and March 1922. *School Life* announces that seven American universities have combined to finance an exchange between Prof. Jacques Cavalier of Toulouse and Prof. A. E. Kennedy of Harvard and the Massachusetts Institute of Technology.

## Societies and Academies.

LONDON.

**Royal Society, February 1.**—O. W. Richardson: The magnitude of the gyromagnetic ratio. The gyromagnetic ratio has the value  $m/e$  instead of  $2m/e$ , the value calculated on the turning electron orbit theory of magnetism of the Langevin type; the discrepancy may be due to the rotation of the atomic nucleus. In iron it appears that the effective electron orbits possess altogether two quanta of angular momentum per atom and the nucleus a single quantum of angular momentum on this view.—Sir Richard Paget: The production of artificial vowel sounds. Plasticene resonators were used to imitate resonances heard by the writer in his own voice when breathing various English sounds. The first models, made in rough imitation of the oral cavity, gave two double resonances. The models were tuned by appropriate alterations of form until they gave recognisable breathed vowel sounds when blown through a small orifice at the back. An artificial larynx was made by means of a rubber strip laid edgewise across a flattened tube, and, when blown through this larynx, the models gave recognisable voiced vowels. The oral cavity behaves in every case as two Helmholtz resonators in series, and the remaining vowel sounds were reproduced by forming two separate resonators joined together in series, and made of such capacity and size of orifices as to allow for mutual reaction of resonators on their respective resonant pitch. Vowels may be produced by two resonators in series with a larynx between them, and a single tubular resonator may act as two resonators in series. Two resonators in parallel, blown by means of a single larynx with a bifurcated passage, produced vowel sounds indistinguishable from resonators in series.—F. Simeon: The carbon arc spectrum in the extreme ultra-violet. The arc spectrum of carbon gives lines in the Lyman region at 1194, 945, 858, 687, 651, 640, 599, and 595, which have not been previously observed. They correspond with prominent lines in the "hot-spark" spectrum studied by Millikan. Groups of lines have been found at 1657, 1560, 1335, 1329, 1260, 1194, 1175, 1036, and 651, of which those at 1329, 1260, 1194, 1036, and 651 do not seem to have been observed by any other worker, and that at 1657 has not been completely resolved heretofore.—J. Joly: Pleochroic haloes of various geological ages.—H. A. Wilson: The motion of electrons in gases.—H. Hartridge: The coincidence method for the wave-length measurement of absorption bands. Measurements of the absorption bands of pigments by the ordinary spectroscope are inaccurate because of the breadth of the bands and the indefiniteness of their margins. The adjustment of two similar absorption bands into coincidence can be effected with considerable accuracy. If then a spectroscope is designed in which two spectra are seen side by side on looking down the eyepiece, but reversed in direction with one another, the measurement of the mean wave-length of the absorption bands can be accurately carried out. The quantitative estimation of pigments depends on the movement of the bands which occurs when the concentration of one pigment changes. In measuring the percentage saturation of blood with carbon monoxide from the wave-length of the  $\alpha$ -absorption band, the accuracy of measurement is approximately 0.7 Å.U. The probable error in setting two absorption bands into coincidence is little greater than that of setting two sharp black lines into coincidence, or of making one line bisect the area between two others.—A. Berry and Lorna M. Swain: On the steady motion of a cylinder through infinite viscous fluid. The so-



called "inertia" terms are neglected and a solution is found which satisfies the boundary conditions on the cylinder and makes the velocity only logarithmically infinite in one direction at infinity. The relative velocity increases comparatively slowly with the distance from the cylinder, and the solution should give a fairly good approximation to the motion at small distances from the cylinder. First, the elliptic cylinder is treated as a limiting case of the ellipsoid. The solution, which in the case of the ellipsoid satisfies the boundary conditions and those at infinity, leads to a solution for the elliptic cylinder. The plane laminae, both along and perpendicular to the stream, are considered as limiting cases, and further, the motion due to the circular cylinder is deduced as a special case of the elliptic cylinder. Secondly, the solutions for the elliptic and circular cylinders are obtained directly from the equations of motion. Finally, stream-lines, curves showing variation of velocity along stream-lines and curves of constant velocity are drawn for three limiting cases.—W. JEVONS: The line spectrum of chlorine in the ultra-violet (Region  $\lambda$  3354-2070 Å.). Observations of the spectrum of the chlorine discharge tube, which have not hitherto extended lower than  $\lambda$  3276 Å. (Eder and Valenta), have been continued so far as  $\lambda$  2070 Å. by means of 10-foot grating and quartz-prism spectrographs. Wave-lengths and wave-numbers of nearly 200 newly observed Cl lines are recorded, together with the effects of variations of capacity on the intensities of more than 100. The constant differences ( $\Delta\nu$ ) 40.4, 67.1, 107.5, found by Paulson in pairs and triplets above  $\lambda$  3276 Å. recur in a few pairs below that point. The significance of these separations in relation to the analysis of the spectrum, however, appears doubtful, since there is no apparent regularity in the intensities of the lines involved, and no triplets having these separations have been detected in the region under investigation.—M. H. EVANS and H. J. GEORGE: Note on the adsorption of gases by solids and the thickness of the adsorbed layer. The amount of carbon dioxide adsorbed by unit surface of glass, at a pressure approximating to one-sixth of an atmosphere, suggests that the carbon dioxide is condensed on the surface of the glass in a liquid layer having a thickness equal to between five and six times the diameter of the molecule of the gas. By combining this result with the published figures of Mülfarth (*Ann. d. Physik*, 1900, vol. 3, p. 328) on the relative adsorption by glass of the gases acetylene, nitrous oxide, carbon dioxide, sulphur dioxide, and ammonia, it is found that these gases are adsorbed by the surface to such an extent that if they were present as liquid layers, the thickness of the layers would vary from (in the case of acetylene) three, to (in the case of ammonia) forty molecular diameters. A direct determination of the degree of adsorption of ammonia gives a value of the same order as that calculated from Mülfarth's data. The results are in disagreement with Langmuir's recent generalisation that the forces of attraction exerted by a surface do not extend to a distance greater than the diameter of one molecule.

**Linnean Society**, January 18.—Dr. A. Smith Woodward, president, in the chair.—G. H. Wilkins: (1) A dried vegetable mass made from a variety of wild plants, *Chenopodium* and others. The plants are now important in the food-supply of the Russian peasantry; they are dried, pounded to a fine flour, and mixed with rye to make coarse cakes. (2) The Shackleton-Rowett expedition in the *Quest* to the Antarctic Regions. On St. Paul's Rocks no plants save a few Algæ were found, but at South Georgia, an island about 100 miles long and 20 miles broad,

a considerable collection was made, and reindeer thrive. Lichens and mosses only were observed on Elephant Island; at Tristan da Cunha 16 species were gathered.—E. G. Baker: The flora of Gough Island; 20 flowering plants and 10 ferns are known. The only small trees on the island are *Phyllica* and *Sophora*. There is a new species of *Apium* allied to *A. australe* Thouars, but having broad cuneiform segments to the leaves. The widely-spread fern *Lomaria Boryana* Willd. reaches a height of from 2 to 3 feet.—Miss Helena Bandulska: The cuticular structure of certain dicotyledonous and coniferous leaves from the Middle Eocene flora of Bournemouth. Three new species of dicotyledonous leaves are described from their cuticular structure. The name *Dicotylophyllum* is proposed for such leaves of uncertain affinity. The cuticles of some fossil conifers were compared with known recent and fossil forms. Thus *Araucarites Göpperti* Sternberg, *Taxodium europæum* Sap. and *Sequoia Tournalii* Sap. are considered on the evidence of cuticular structure to be specifically distinct.

**Aristotelian Society**, January 29.—Prof. A. N. Whitehead, president, in the chair.—Rev. Leslie J. Walker: A new theory of matter. The general trend of scientific thought seems to indicate a return to the basic principles of the Aristotelian philosophy, a philosophy in which the concept of energy is no less fundamental than it is in modern scientific theory. On the other hand, the atomic theory, the electron theory, and still more especially the quantum theory, would seem to indicate that we shall sooner or later be forced to give up the notion of an infinitely divisible continuum, and to substitute in its place a continuum composed of definite and indivisible units. There was, prior to Aristotle, a theory which treated the continuum as a structure composed of unit-magnitudes in immediate relation or "contact" one with the other. It is possible to develop this theory on Aristotelian lines, taking as the basic assumption that the characteristic of ether-particles is to be in immediate relation with six and only six other particles, and that the characteristic of mass-centres is that they may be in immediate relation with either more or fewer than six other particles, possibly with four as a minimum and eight as a maximum. The primary type of change would thus be a change in the immediate relation of particles one to another, and the primary law governing such change an ever-increasing approximation towards equal distribution of the ether-particles with respect to the mass-centres. The theory gave rise to several features analogous to those which are of primary importance in the electron theory.

#### EDINBURGH.

**Royal Society**, January 8.—Lord Salvesen in the chair.—J. S. Dunkerly: Encystation and reserve food formation in *Trinema lineare*. The paper showed that the process of conjugation and encystment in the rhizopod, *Trinema lineare*, is followed by nuclear fusion, and the formation of reserve food material in the cyst is apparently due to the activity of the extra-nuclear chromidial mass.—Lancelot Hogben: Photo-micrographs were shown illustrating a new technique for removal of the pituitary gland in frogs and toads; also photo-micrographs of changes in melanophore response incident to partial and total extirpation of the gland.

#### SHEFFIELD.

**Society of Glass Technology**, January 17.—Prof. W. E. S. Turner, president, in the chair.—W. H. Hatfield: Stainless steel, with some consideration of



its application to the glass industry. Stainless steel can now be made direct into castings, into sheet steel which is very malleable—a development of the last two years—and into tubes, so fine that hypodermic needles are now largely made from stainless tubes. Stainless steel contains 12-14 per cent. of chromium. The carbon content varies a little with the different types but is generally about 0.30 per cent. Stainless steels could be made use of in the glass industry on account of their resistance to scaling and strength at high temperatures. Stainless steel has a high tensile strength, a high fatigue range, and can be hardened and tempered. It might be utilised for parison and blow moulds; many parts of feeder devices might be usefully produced in such material, and also blowing irons, rolls, belt conveyors, lehr chain pins, and other things, including knives for cutting viscous glass. The ends of blowpipes might also be made of stainless steel as well as wire brushes. Stainless steel is being used for mirrors for scientific purposes.—S. English: Some measurements of the viscosity of glasses near their annealing points and a critical review of some recent literature on the annealing of glass. Strain in glass cannot always be detected by using polarised light; the most sensitive position is that in which the direction of the strain in the glass is at  $45^\circ$  to the plane of polarisation. The selenite plate is more sensitive than plain crossed nicols only when a very poor source of light is used; it is not possible to distinguish between tension and compression stresses by the use of such a plate. The rate of change of mobility of glasses at their annealing points is approximately constant, most requiring a rise of temperature of  $9^\circ$  to cause a doubling of the mobility. In some cases this temperature interval rises to  $11^\circ$ . At  $100^\circ$ - $150^\circ$  above the annealing points the temperature interval required to double the mobility was generally rather longer than that required at the annealing points. The mobility of glasses is not a logarithmic function of the temperature. The working properties of lead glasses and other soft glasses are probably determined more by the rate of radiation of heat than by rate of change of viscosity with temperature.

## PARIS.

Academy of Sciences, January 15.—M. Albin Haller in the chair.—The president announced the death of M. van de Sande Bakhuyzen, corresponding member for the section of astronomy.—L. Lindet and P. Nottin: The evolution of the starch grains in the tuber of the potato.—W. Kilian and F. Blanchet: The ammonites collected by the *Pourquoi-Pas?* Emmanuel de Margerie was elected corresponding member for the section of mineralogy in the place of the late M. Ehlert.—Martin Alander: Integral functions which have all their zeros on a straight line.—G. Sagnac: The periodic variable spectrum of double stars: the incompatibility of the observed phenomena with the theory of general relativity.—J. Haag: The problem of  $n$ -bodies in the theory of relativity.—Edouard and Rémy Urbain: The separation of liquid mixtures by combined distillation and atmolysis. The preparation of practically pure ethyl alcohol and nitric acid. The alcohol is boiled in a flask fitted with a porous tube as reflux condenser. Round this tube is an outer glass tube in which the pressure is reduced. More water than alcohol vapour diffuses through the porous tube, and the alcohol in the flask can be strengthened to 99.8 per cent.—Ch. Bedel: A polymer of hydrocyanic acid. The crude polymerisation product of hydrocyanic acid is extracted with ether, and the brown crystals deposited by this solution purified by solution in hot water and treatment with animal charcoal. Its composition is

(HCN)<sub>4</sub> and appears to be aminopropanedenitrile hydrocyanide.—Alfred Schoep: Parsonite, a new radioactive mineral. This is found associated with chalcocite from the Belgian Congo; and has the composition  $2\text{PbO} \cdot \text{UO}_3 \cdot \text{P}_2\text{O}_5 \cdot \text{H}_2\text{O}$ . It is radioactive.—Mlle. Germaine Cousin: The prolongation between Belfort and Thann of the tectonic accidents of the secondary border situated to the south of the Vosges *massif*.—Ch. Dufour: Values of the magnetic elements at the station of Val-Joyeux (Seine-et-Oise) on January 1, 1923.—Odon de Buen and José Giral: The hydrographic tables of Knüdsen, normal water and the limits of error in the analysis of sea water.—Louis Besson: The loss of light in Paris and its neighbourhood. Curves are given showing the proportion of light received at nine observing stations as a function of the direction of the prevailing wind.—G. Manganot: The starch of the red Algæ.—A. de Puymaly: New mode of cell division in the Desmidiaceæ.—Emile Haas: New experiments on the phenomenon of Broca and Sulzer (fatigue undulation).—A. Goris and A. Liot: The importance of organic ammoniacal salts in the production of pyocyanine by the pyocyanic bacillus.—J. P. Aversenq, L. Jaloustre, and E. Maurin: Some effects of thorium-X on diastases and micro-organisms. Thorium-X clearly increases the activity of the hydrolysing or oxidising properties of the enzymes studied (pyalin, amylase from pancreatic juice, amylase from germinated barley, emulsion, ammonia ferment, oxydases of the blood and saliva), and also increases the vitality of certain pathogenic organisms.—Georges Bourignon and Henri Laugier: Variations of the neuromuscular excitability under the influence of the suppression and re-establishment of the circulation of a limb in man.

## WASHINGTON.

National Academy of Sciences (Proc. vol. 8. No. 12, December 1922).—O. Veblen.—Projective and affine geometry of paths.—W. F. Hamilton: A direct method of testing colour vision in lower animals. Two Hilger wave-length spectrometers used as monochromatic illuminators were arranged to throw beams of light on the opposite ends of a horizontal glass tubular cell containing *Drosophila* which had been kept in the dark overnight. The intensities of the beams (of different wave-lengths) were regulated so that the flies showed no orientation. One beam was then screened for a time, and on again exposing it, the flies definitely moved towards it showing differential fatigue. The smallest difference of wave-lengths showing a stimulating effect was used, and over the range 385-500  $m\mu$ , hue-perception is a maximum between 410  $m\mu$  and 450  $m\mu$ , possibly indicating two receptor systems, one for the blue-violet and one for the blue-green.—L. L. Nettleton: Characteristics of a short wave oscillator at very low pressures. A three-element tube was left permanently connected with the vacuum pumps, and currents up to 300 milliamps. at 700 volts were used. The oscillations were measured by a crossed wire thermocouple carried on a bridge sliding along the Lecher wires. Oscillations of wave-length 50-200 cm. were obtained. Both negative plate current and oscillations ceased abruptly at very low pressures (0.0005 mm.) in the tube as measured by an ionisation manometer. The curves resulting from plotting the voltage at the plate and the oscillations in the Lecher wires against the ionisation appear to show that some little ionisation is necessary for this type of oscillation, but the kind of gas present does not seem important.—Bergen Davis and H. M. Terrill. The refraction of X-rays in calcite. A water-cooled tube with a molybdenum target was used and measurements were made for the first three orders of the  $K\alpha_1$



line. The results correspond to a shift of the first order line of  $5''$ , so for this wave-length, the effect of refraction is slight. P. W. Bridgman.—The compressibility of metals at high pressures. The pressure range was 12,000 kgm./cm.<sup>2</sup>, and measurements were made at 30° and 75°. The compressibility of every metal decreases with rising pressure and, generally, increases with rising temperature; the order of magnitude of the change is the same for all the metals. Germanium and uranium are possible exceptions. Metals crystallising in a cubic form show the same compressibility in all directions, but the compressibility of, e.g., zinc, measured in three directions perpendicular to each other, varied in the order, roughly, of 1:3:4. Tellurium shows a negative effect in one direction. The results accord with a theory of two interpenetrating lattices as the structural basis of most metals. There appears to be no simple repulsive potential relation between the atoms of metals which will account for the compressibility data.—Raymond Pearl and L. J. Reed: A further note on the mathematical theory of population growth.

### Official Publications Received.

Annual Report of the Meteorological Committee to the Air Council, for the Year ended 31st March 1922. (M.O. 257.) Pp. 59. (London: H.M. Stationery Office.) 2s. net.  
 Ministry of Finance, Egypt: Coastguards and Fisheries Service. Report on the Fisheries of Egypt for the Year 1921. By G. W. Paget. Pp. vi+78. (Cairo: Government Publications Office.) P.T.5.  
 Catalogue of the British Industries Fair, The White City, Shepherds Bush, London, W.12, February 19-March 2, 1923. Pp. xxxii+256+180. (London: Board of Trade.) 1s.  
 Air Ministry: Meteorological Office, London. Southport Auxiliary Observatory (The Fernley Observatory of the Corporation of Southport). Annual Report, and Results of Meteorological Observations, for the Year 1921; with an Appendix containing Monthly Averages, for 10 years, of the Amount and Duration of Rainfall under Different Wind Directions. By Joseph Baxendell. Pp. 36. (Southport: Fernley Observatory; London: Meteorological Office.)

### Diary of Societies.

#### MONDAY, FEBRUARY 12.

ROYAL SOCIETY OF MEDICINE (War Section), at 5.—Surg. Comdr. R. J. M'Keown and Surg. Comdr. A. Gaskell: The co-operation between the Members of the profession and the medical services of the armed forces in peace and during war.—Discussion: Air Commodore D. Munro, Major-General C. E. Pollock, and others.  
 ROYAL SOCIETY OF ARTS, at 8.—Dr. H. P. Stevens: The Vulcanisation of Rubber (Cantor Lectures) (2).  
 SURVEYORS' INSTITUTION, at 8.—C. P. Sanger: The Law of Property Act, 1922.  
 ROYAL GEOGRAPHICAL SOCIETY (at Eolian Hall), at 8.30.—H. St. J. B. Philby: The North Arabian Desert.—Major A. L. Holt: The Future of the Desert.  
 MEDICAL SOCIETY OF LONDON, at 8.30.—Dr. E. F. Buzzard and others: Discussion on Psycho-Therapeutics.

#### TUESDAY, FEBRUARY 13.

ROYAL INSTITUTION OF GREAT BRITAIN, at 8.—Prof. A. C. Pearson: Greek Civilisation and To-day (1): The Beginnings of Science.  
 ROYAL SOCIETY OF MEDICINE (Therapeutics and Pharmacology Section), at 4.30.—Prof. A. J. Clark: The Scientific Basis of Non-Specific Protein Therapy.—Dr. H. Blumgart: The Treatment of Diabetes Insipidus by Intra-Nasal Spraying of Pituitary Extract.  
 INSTITUTION OF PETROLEUM TECHNOLOGISTS (at Royal Society of Arts), at 5.—G. W. E. Gibson: Some Practical Notes on Oil Pumping.  
 BRITISH PSYCHOLOGICAL SOCIETY (Education Section) (at London Day Training College), at 6.—Miss Ella Freeman Sharpe: The Super-sensitive Child at School. A Psycho-Analytic Study.  
 INSTITUTE OF TRANSPORT (at Institution of Electrical Engineers), at 6.—B. Wagenfieder: Railway Rules and Regulations.  
 INSTITUTE OF MARINE ENGINEERS, INC., at 6.30.—T. D. Madsen: Internal Combustion and Economy.  
 ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN (Scientific and Technical Group), at 7.—A. E. Bawtree: Dangers to Eyesight in Domestic Electric Lighting and the Kinema Picture Display.  
 QUEKETT MICROSCOPICAL CLUB, at 7.30.—D. T. Scourfield: Presidential Address.  
 INSTITUTE OF INDUSTRIAL ADMINISTRATION (at London School of Economics), at 8.—F. Mott: Practical Hints on Buying and Selling. (To be followed by a Discussion.)  
 ROYAL SOCIETY OF MEDICINE (Psychiatry Section), at 8.30.—Dr. K. Wilson: Involuntary Laughing and Crying.

#### WEDNESDAY, FEBRUARY 14.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 4.—Sir John Bland-Sutton: Hunterian Oration.  
 ROYAL SOCIETY OF MEDICINE (Surgery: Sub-section of Proctology), at 5.30.—P. Lockhart-Mummery: New Method of treating Ischio-Rectal and other Abscesses.  
 INSTITUTION OF AUTOMOBILE ENGINEERS, at 7.30.—J. L. Chaloner: High-speed Oil Engines.  
 ASSOCIATION OF ENGINEERS-IN-CHARGE (at St. Bride's Institute), at 7.30.—C. H. J. Day: Hydraulic and Electric Lifts.  
 ROYAL SOCIETY OF ARTS, at 8.—W. J. Rees: Progress in the Manufacture of Refractories.

#### THURSDAY, FEBRUARY 15.

ROYAL INSTITUTION OF GREAT BRITAIN, at 8.—Prof. B. Melville Jones: Recent Experiments in Aerial Surveying (1).  
 ROYAL SOCIETY, at 4.30.—E. R. Speyer: Researches upon the Larch Chermes (*Cnaphalodes strobilobius*, Kalt) and their bearing upon the Evolution of the Chermesinae in general.—G. V. Anrep: The Irradiation of conditioned Reflexes.—M. Dixon and H. E. Tunnicliffe: The Oxidation of reduced Glutathione and other Sulphydryl Compounds.—J. C. Bramwell, R. J. S. M'Dowall, and B. A. M'Swiney: The Variation of Arterial Elasticity with Blood Pressure in Man.—L. J. Harris: The Existence of an undiscovered Sulphur Grouping in the Protein Molecule. Part I. The Denaturation of Proteins. Part II. The Estimation of Cystine in certain Proteins.—N. B. Laughton: Reflex Contractions of the Cruralis Muscle in the Decerebrate and Spinal Frog.  
 LINNEAN SOCIETY OF LONDON, at 5.—A. M. Alton: On the Method of Oviposition and the Egg of the Beetle *Lycus brunneus*, Steph.—R. Paulson: Arctic Lichens from Spitsbergen.—F. H. Lancum: Strange Behaviour of a Female Butterfly, *Colias edusa*.—Canon Bullock-Webster: Exhibition of Thirty Varieties of *Chara hispida*.  
 ROYAL SOCIETY OF MEDICINE (Dermatology Section), at 5.  
 ROYAL AERONAUTICAL SOCIETY (at Royal Society of Arts), at 5.30.—Wing-Comdr. T. R. Cave-Brown-Cave: The Practical Aspects of the Seaplane.  
 INSTITUTION OF MINING AND METALLURGY (at Geological Society), at 5.30.  
 CHILD-STUDY SOCIETY (at Royal Sanitary Institute), at 6.—Miss Richardson: M. Coué and his Work.  
 INSTITUTION OF ELECTRICAL ENGINEERS, at 6.—J. Rosen: Some Problems in High-speed Alternators and their Solution.  
 CHEMICAL SOCIETY, at 8.—A. Chaston Chapman: Spinacene, its Oxidation and Decomposition.—R. H. Pickard and H. Hunter: Investigations on the Dependence of Rotatory Power on Chemical Constitution. Part XIX. The Rotatory and Refractive Dispersion of *d*-γ-nonyl nitrite.—H. Hunter: Investigations on the Dependence of Rotatory Power on Chemical Constitution. Part XX. The Rotatory Dispersive Powers of Oxygen Compounds containing the Secondary Octyl Radicle.  
 CAMERA CLUB, at 8.15.—Major F. C. B. Laws: Progress in Aerial Photography.

#### FRIDAY, FEBRUARY 16.

GEOLOGICAL SOCIETY OF LONDON, at 3.—Annual General Meeting.  
 ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—J. T. Marten: The Indian Census, 1921.  
 ROYAL SOCIETY OF MEDICINE (Otology Section), at 5.—G. J. Jenkins: Preliminary communication on Ostitis Deformans and Otosclerosis.  
 INSTITUTION OF MECHANICAL ENGINEERS (Annual General Meeting), at 6.—H. C. Young: Some Mechanical Problems in the Rubber Industry.  
 INSTITUTION OF ENGINEERING INSPECTION (at Royal Society of Arts), at 7.30.—H. T. F. Rhodes: Chemical Inspection as it is and as it should be.  
 JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—T. L. Allison: Notes on some Insulating Materials.  
 EUGENICS EDUCATION SOCIETY (at Prince's Restaurant), at 7.30.—Prof. Pigou: The Economic Importance of Eugenics.  
 ROYAL SOCIETY OF MEDICINE (Electro-Therapeutics Section), at 8.30.—Prof. Philippon: High-frequency Currents applied to the Study of Cellular Physiology.  
 ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Prof. A. V. Hill: Muscular Exercise.

#### SATURDAY, FEBRUARY 17.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Sir Ernest Rutherford: Atomic Projectiles and their Properties (1).

#### PUBLIC LECTURES.

##### SATURDAY, FEBRUARY 10.

HORNIMAN MUSEUM (Forest Hill), at 3.30.—E. Lovett: Household Appliances of a Hundred Years Ago.

##### TUESDAY, FEBRUARY 13.

GRESHAM COLLEGE, at 6.—Sir Frederick Bridge: Music. (Succeeding Lectures on February 14, 15, and 16.)

##### WEDNESDAY, FEBRUARY 14.

UNIVERSITY COLLEGE, at 5.—P. Leon: The Theory of Beauty. (Succeeding Lectures on February 21, 28, March 7, 14, and 21.)  
 KING'S COLLEGE, at 5.30.—Dr. D. H. Scott: The Succession of Floras in the Past.

##### FRIDAY, FEBRUARY 16.

LONDON SCHOOL OF ECONOMICS, at 5.—Prof. Graham Wallas: The Competition of the Sexes for Employment (Stansfeld Lecture).  
 UNIVERSITY COLLEGE, at 5.15.—P. A. Scholes: The Place of Music in the Education of the Future.  
 KING'S COLLEGE, at 5.30.—Dr. E. W. Scripture: Shakespeare's Verse in the Light of Experimental Phonetics.

##### SATURDAY, FEBRUARY 17.

HORNIMAN MUSEUM (Forest Hill), at 3.30.—Dr. F. A. Bather: A Limestone Cliff and the Animals that built it.