

## Societies and Academies.

## PARIS.

**Academy of Sciences**, December 6.—M. Henri Deslandres in the chair.—G. Lemoine: The mutual reaction of oxalic and iodic acids: the influence of heat and dilution. Oxalic acid in aqueous solution is slowly oxidised by iodic acid to carbon dioxide, iodine being set free. The reaction is a slow one and well suited for the study of its velocity. Diagrams of the effects of dilution and temperature are given.—P. Termier and W. Kilian: The overlapping fragment at Mont Jovet (Tarentaise): the glistening schists to the north of Bourg-Saint-Maurice. This fragment is shown to have come neither from the north-west nor from the west; its probable origin is from the east or the south-east, and appears to have been carried from the Briançon layer.—A. de Gramont: Table of lines of high sensibility of the elements, arranged for analytical work. A table of wave-lengths for use in the spectroscopical detection of the elements in analytical work. The most prominent and the most persistent lines are given, both for eye observation and for photography with uviolet and with quartz prisms.—M. Laubent: The application of the Pitot tube to the measurement of the velocity of ships. M. Mesnager has recently commented on a note on this subject by the late M. Yves Delage. A note on the same subject was communicated to the Academy so far back as 1901 by MM. Raverot and Belly, and the apparatus there described has been tested on three French ships. It was found to be impossible to correct on theoretical grounds for the numerous sources of error, and the instrument had to be calibrated by running over measured distances and drawing a curve giving the relations between the readings of the instrument and the actual velocities.—G. Dumas and J. Chuard: The homologues of Poincaré.—P. Humbert: Laplace's equation in hypertoroidal co-ordinates.—A. Égnell: Congruences of right lines the mean surface of which is a given surface.—B. de Fontviolant: Calculation of the strengths of bridges.—J. Guillaume: Observations of the sun made at the Lyons Observatory during the third quarter of 1920. The observations made on eighty-one days during the quarter are classified in three tables, showing the number of spots, the distribution of the spots in latitude, and the distribution of the faculæ in latitude.—A. Danjon: A relation between the light of the eclipsed moon and solar activity. The luminosity of the eclipsed moon is known to vary. Adopting a scale of 5° of brightness, this has been plotted against the date of the eclipse. The resulting curve rises from one solar minimum to the next, with a sudden fall at each minimum. The passage through a maximum of solar activity is marked by no peculiarity.—P. Menard: A reversible mercury manometer with damped oscillations.—A. Pérard: The interference method for the determination of quartz standards of length. A description of the modified Michelson method employed, in which any silvering of the surfaces of the standard is avoided, and a table showing the refractive indices of two standards for wave-lengths between 435.8  $\mu\mu$  and 643.8  $\mu\mu$ .—G. Ribaud: Wide continuous absorption bands of light.—L. de Broglie: The absorption of the Röntgen rays by matter.—F. Brocq: A general method of continuous electrical integration.—A. Damiens: The subiodide of tellurium,  $\text{TeI}_2$ . Contribution to the study of the system iodine-tellurium. A curve of the melting points of mixtures of iodine and tellurium is given. The only definite compound appears to be  $\text{TeI}_4$ ; no substance  $\text{TeI}_2$  exists, the mixture having that composition being a mixture of the tetraiodide and a solid solution of tellurium and tetra-

iodide. Both thermal and metallographic analyses lead to the same conclusion.—M. Barlot: A complex combination of thallium and hydrofluoric acid. The double fluoride  $\text{H}_2\text{TlF}_3$  has been isolated. The thallium can be precipitated by the usual reagents, but the solution gives no precipitate with the usual reagents, such as calcium salts, and does not attack glass, although strongly acid to indicators.—M. Geloso: The reduction of permanganate by arsenious acid.—G. Mignonac: The catalytic hydrogenation of hydrobenzamide. Method for the preparation of benzylamine. From a study of the reduction of hydrobenzamide in alcoholic solution by hydrogen in presence of nickel, it would appear that the addition product described by O. Fischer is not formed; the products are benzylamine, benzalbenzylamine, and ammonia.—P. Robin: The oxidation of arisaldoxim: the peroxide of arisaldoxim.—A. Mailhe and F. de Godon: The preparation of the methyl derivatives of the xylidines and naphthylamines by catalysis.—L. Bertrand: The mode of formation of the Pyrenean strata.—F. Gomez-Llucea: The geology of Cabrera, Conejera, and other neighbouring islands.—P. T. de Chardin: The succession of the mammalian fauna in the lower European Eocene.—H. Joly and N. Laux: The fauna of the lower layers of the Aalenian of the Grand Duchy of Luxembourg.—A. Boutaric: The variation of nocturnal radiation during clear nights. The intensity of the nocturnal radiation during clear nights passes through a maximum shortly after sunset, and then decreases slowly and regularly until dawn.—H. Courtonne: The opposed action of soluble chlorides and sulphates on starchy materials. A saturated solution of magnesium chloride rapidly and completely converts, in the cold, starchy matter into soluble starch. Magnesium sulphate exerts a contrary action and prevents the formation of soluble starch in solutions heated in closed vessels to 115° C.—W. Kopaczewski: The mechanism of the Bordet-Wassermann reaction.—A. Lumière and H. Couturier: The shock produced by the introduction of insoluble substances into the circulation. The injection of barium sulphate suspended in an artificial isotonic serum into the carotid of a dog caused the typical symptoms of anaphylactic shock.—A. Bach and B. Sbarsky: The estimation of the degradation products of proteid materials in blood serum. The reducing ferment of milk may be utilised for the detection and estimation of small quantities of degradation products of proteids.—MM. Desgrez, Guillemard, and Savès: The purification of air contaminated with certain toxic gases. A solution containing sodium sulphide and soap when used in the form of a fine spray has been found to be capable of removing chloropicrin, chlorine, phosgene, methyl chloroformates, acrolein, bromoacetone, cyanogen chloride, and benzyl iodide, bromide, and chloride. Various mixtures were tried, but none proved to be capable of such general application as the above.—M. Köhn-Abrest: General method for the detection and estimation of arsenic.

## SYDNEY.

**Royal Society of New South Wales**, November 3.—Mr. James Nangle, president, in the chair.—J. H. Maiden: A new Angophora. A mallee-like species recorded so far from Northbridge on the north, and from Kogarah on the south, of Port Jackson. It has been passed over as a petiolate- and more lanceolate-leaved form of *A. cordifolia*, DC., but it is smaller in all its parts, less hispid, the inflorescence less corymbose, and with the differences between the juvenile and mature leaves more accentuated.—J. H. Maiden: Three new species



of Eucalyptus. The author has previously expressed the opinion that important results are awaiting those who more thoroughly investigate trees attributed to existing forms instead of giving too much attention to the search for rare and bizarre forms. This paper directly illustrates this point, and the following New South Wales trees are proposed as new. All yield valuable timbers:—(a) The Blue Mountains mahogany, attributed without doubt to *Eucalyptus resinifera*, Benth., for so many years, has pale-coloured, fissile timber very sharply different from that species. (b) The tall grey gum of the counties of Gloucester and Durham, hitherto named *E. punctata*, var. *grandiflora*, and therefore assumed to have a deep red timber, turns out to have pale-coloured, tough timber allied to that of the spotted gum (*E. maculata*, Hook.). (c) Less was known of this tree, the type of which comes from Wyee, north of Gosford. It is a grey gum with a deep red-coloured timber, possessing botanical characters intermediate between *E. longifolia*, Link and Otto (woolly-butt), and *E. punctata*, DC., the best known of our grey gums.—L. A. Cotton and Miss M. Peart: The calculation of the refractive index in random sections of minerals. The method employed is a graphical one, in which use is made of the stereographic projection. Both refractive indices for any given mineral section can be calculated when the form and position of the indicatrix are known. The principle is simple, and has been applied by Miss Peart to the evaluation of the refractive indices of the plagioclase feldspars for cleavage flakes parallel to the (010) and (001) crystallographic forms.

## WASHINGTON, D.C.

National Academy of Sciences (Proceedings, vol. vi., No. 4), April, 1920.—N. L. Bowen: Differentiation by deformation. The deformation of an igneous mass during crystallisation, with consequent separation of liquid from crystals, has frequently been suggested as a cause of variation of igneous rocks, and this suggestion is here discussed in considerable detail under the headings of discontinuous differentiation, monomineralic types as members of composite intrusives, monomineralic types as simple "intrusives," complementary dykes, primary banding, and alkaline rocks.—T. H. Morgan, A. H. Sturtevant, and C. B. Bridges: The evidence for the linear order of the genes.—C. W. Metz: The arrangement of genes in *Drosophila virilis*. Two papers in continuation of the discussion of the linear versus spatial arrangement of the genes.—G. W. Stewart: The functions of intensity and phase in the binaural location of pure tones. With frequencies of 100 to 1200 d.v., phase is the chief factor in localisation with pure tones, the intensity effect being practically nil, or at least very small.—L. T. E. Thompson, C. N. Hickman, and N. Riffolt: The measurement of small time-intervals and some applications, principally ballistic. A description of a new apparatus for indicating very small intervals of time with application to the ballistics of small arms.—H. H. Sheldon: Charcoal activation. The variations due to heat treatment may be explained by assuming that the structure of the charcoal is modified or that the air was the agent causing the variations. Data are given and interpreted on the basis of the latter assumption.—J. K. Whittemore: The starting of a ship. A discussion with simple integral equations of the problem of a particle moving under the action of tangential forces dependent on the velocity alone, with suggested applications to marine engineering and to the study of the laws of liquid resistance.—F. L. Hitchcock: A thermodynamic study of electrolytic solutions. The adoption of Gibbs's principle of chemical potential leads to the extension of the ordinary theories of melting point, heat potential, and

mass law. These extensions are the result of the presence in the expression of the chemical potential of the solvent for the terms in the second and higher powers of the concentrations.—I. W. Bailey: The formation of the cell-plate in the cambium of the higher plants. Continuation of a previous paper indicating that the type of cell-plate formation there described is of frequent occurrence, and promises to be significant in any general discussion concerning the dynamics of cytokinesis and karyokinesis.—I. A. Barnett: Functionals invariant under one-parameter continuous groups of transformations in the space of continuous functions. Examples of one-parameter continuous groups are given, with in each case a functional invariant in terms of which each invariant of the group is expressible.—H. Shapley: Thermokinetics of *Liometopum apiculatum*, Mayr. A curve is obtained relating the speed of these ants to the temperature. The speed is less erratic at higher temperatures, and increases over a 30° C. range from 0.44 cm. to 6.60 cm. per second.—J. Loeb: The influence of ions on the osmotic pressure of solutions. A summary and discussion of an extensive series of experiments. At lower concentrations of the electrolyte the influence of the anion increases more rapidly with increasing concentration of the electrolyte than the depressing effect of the cation, while at higher concentrations the reverse occurs. The turning point lies for a number of electrolytes at a molecular concentration of about  $m/256$ .—D. H. Tennent: Evidence on the nature of nuclear activity. The basophilic bodies are not in the nature of chromidia, but are the result of indirect nuclear activity. The explanation offered for the formation of the basophilic extra-nuclear bodies described is intended to be suggestive rather than conclusive.—A. C. Hardy: A study of the persistence of vision. Measurement of the persistence of vision for several colours within a cone the semi-vertical angle of which is about 40°.—R. Pearl: A contribution of genetics to the practical breeding of dairy cattle. A summary of investigations extending over many years with respect to the value of 224 Jersey Registry of Merit sires in relation to their transmitting qualities in milk-production. This work gives the breeder information of a sort that he has never had before, and that enables him at once to form a real judgment of the worth of various bulls which appear in the pedigree of Jersey cattle.

(Proceedings, vol. vi., No. 5), May, 1920.—H. H. Laughlin: Calculating ancestral influence in man. The problem is that of measuring ancestral influence by tracing chromosomes. By applying principles of combination and chance, the probability that a given complex situation will result from a given set of constituent conditions may be formulated mathematically. The formulæ here given are foundational, and are stated in general terms the validity of which depends upon their presenting correct mathematical pictures of chromosomal processes which work out in the germ-cell cycle.—G. Medes and J. F. McClendon: The effect of anaesthetics on living cells. An attempt to determine the effect of different anaesthetics on several activities or properties of living cells. Not all anaesthetics had the same effect, and the same anaesthetic affected the same activity of a plant differently from an animal, and different activities of the same cell differently. All the anaesthetics tried increased plant-cell respiration and permeability.—R. A. Daly: A general sinking of sea-level in recent times. The facts at hand seem to permit belief in the synchrony of the different strand-markings and emergences here considered, but further investigation is needed.—C. C. Little: A note on the human sex ratio. A brief study



of data collected at the Sloane Maternity Hospital in New York City.—O. **Blackwood**: The existence of homogeneous groups of large ions. It is found that for ionisation from spray and from hot wires the gradation in the size of the ions is continuous, as the mobility curves do not show sharp, separated peaks. The conclusion favours the hypothesis of Sir J. J. Thomson.—E. J. **Cohn**: The relation between the isoelectric point of a globulin and its solubility and acid-combining capacity in salt solution. A detailed discussion of the effect of sodium chloride upon the solubility of tuberin and the effect upon its acid-combining capacity.—H. P. **Armsby**, J. A. **Fries**, and W. W. **Braman**: The carbon dioxide: heat ratio in cattle. Within a range of 5 to 27 grams of feed per kg. live-weight a simple equation may be used for computing the (CO<sub>2</sub>:heat) ratio when the live-weight and the amount of feed consumed are known. Thus the heat production may be computed from the observed CO<sub>2</sub> production.—H. S. **Vandiver**: Kummer's memoir of 1857 concerning Fermat's last theorem. It is shown that the proofs given by Kummer are inaccurate and incomplete in several respects.—D. L. **Webster**: An improved form of high-tension direct-current apparatus. A description of an improvement in apparatus previously described.—R. W. **Glazer**: The effect of the concentration of nitrates on the reducing powers of bacteria. A number of species of micro-organisms were tested in Witte's peptone media containing various molecular concentrations of NaNO<sub>3</sub> and KNO<sub>3</sub>.

### Books Received.

The National Physical Laboratory. Collected Researches. Vol. xiv., 1920. Pp. iv+308+plates. (London: H.M. Stationery Office.) 25s. net.

Annual Report of the Board of Regents of the Smithsonian Institution, Showing the Operations, Expenditure, and Condition of the Institution for the Year ending June 30, 1918. (Publication 2540.) Pp. xii+612+plates. (Washington: Government Printing Office.)

Smithsonian Institution. United States National Museum. Bulletin 109. Contributions to a History of American State Geological and Natural History Surveys. Edited by G. P. Merrill. Pp. xviii+549+37 plates. (Washington: Government Printing Office.)

Smithsonian Miscellaneous Collections. Vol. lxxi., No. 1. Smithsonian Physical Tables. (Publication 2530.) Seventh revised edition prepared by F. E. Fowle. Pp. xlvi+450. (Washington: Smithsonian Institution.)

### Diary of Societies.

#### SATURDAY, JANUARY 1.

ANNUAL CONFERENCE OF EDUCATIONAL ASSOCIATIONS (at University College, Gower Street), at 10.30 a.m.—A Joint Conference on the Use of Psycho-analysis in Education.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. J. Arthur Thomson: The Haunts of Life: The Open Sea (Juvenile Lectures). GILBERT WHITE FELLOWSHIP (at 6 Queen Square, W.C.1), at 3.—Lecture.

#### MONDAY, JANUARY 3.

ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 3.30.—F. Kingdon Ward: The Travels of a Plant-Collector on the Borders of China (Christmas Lecture).

ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.—Discussion: Professional Questions.

ARISTOTELIAN SOCIETY (at University of London Club, 21 Gower Street), at 8.—C. A. Richardson: The New Materialism.

SOCIETY OF CHEMICAL INDUSTRY (at Chemical Society), at 8.—G. H. Thurston: The Smith Continuous System of Carbonisation.—Dr. I. Masson and T. L. McEwan: (1) The Recovery of Solvent Vapours from Air. Part I. The Use of Cresol for Ether-Alcohol; Part II. The Use of Sulphuric Acid for Ether-Alcohol. (2) The Analysis of Liquid and Gaseous Mixtures of Ether, Alcohol, and Water.

#### TUESDAY, JANUARY 4.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. J. Arthur Thomson: The Haunts of Life: The Great Deepes (Juvenile Lectures).

NO. 2670, VOL. 106]

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—N. E. Luboshez: The Results of the Demonstration of Portraiture by Artificial Light of October 5, 1920.

MATHEMATICAL ASSOCIATION (Annual Meeting) (at London Day Training College).—Prof. A. S. Eddington: Relativity.—Dr. S. Brodetsky: Aeroplane Mathematics.—The Rev. S. H. Clarke: The Teaching of Mathematics to Boys whose Chief Interests are Non-Mathematical.—Prof. E. T. Whittaker: Some Unsolved Questions and Topics for Research.—Miss E. M. Read: Results of Visits Paid to Lycées of Paris and other Centres, and the Study of Education there, particularly from the point of view of Mathematics.

THE ASSOCIATION OF SCIENCE TEACHERS (at University College).—Miss M. B. Thomas: Presidential Address.—Dr. J. C. Drummond: Vitamins.

#### WEDNESDAY, JANUARY 5.

ROYAL SOCIETY OF ARTS, at 3.

PHYSICAL SOCIETY AND OPTICAL SOCIETY'S EXHIBITION (at Imperial College of Science), from 3 to 10. At 4.—Sir W. H. Bragg: Sounds in Nature. At 8.—Prof. A. Barr: The Optophone.

GEOLOGICAL SOCIETY OF LONDON, at 5.30.—Prof. S. H. Reynolds: The Lithological Succession of the Carboniferous Limestone (Avonian) in the Avon Section at Clifton.—Miss E. Bolton: The Carboniferous Limestone of the Wickwar-Chipping Sodbury Area (Gloucestershire).

#### THURSDAY, JANUARY 6.

ROYAL SOCIETY OF ARTS, at 3.—Sir Frederick Bridge: The Cries of London which Children heard in Shakespeare's Time (Juvenile Lecture).

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. J. Arthur Thomson: The Haunts of Life: The Freshwaters (Juvenile Lectures).

PHYSICAL SOCIETY AND OPTICAL SOCIETY'S EXHIBITION (at Imperial College of Science), from 3 to 10. At 4.—Prof. A. Barr: The Optophone. At 8.—O. R. Darling: Some Unusual Surface Tension Phenomena.

#### FRIDAY, JANUARY 7.

ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 3.30.—Lt.-Col. C. Smith: Life on the Gilgit Frontier (Christmas Lecture).

#### SATURDAY, JANUARY 8.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. J. Arthur Thomson: The Haunts of Life: The Conquest of the Land (Juvenile Lectures).

### CONTENTS.

	PAGE
The Nile, Egypt, and the Sudan . . . . .	557
Poynting's Scientific Papers. By Sir J. J. Thomson, O.M., F.R.S. . . . .	559
Scottish County Geographies. By Prof. J. W. Gregory, F.R.S. . . . .	561
Conifers . . . . .	563
Physiology for Students and Practitioners . . . . .	563
Our Bookshelf . . . . .	564
Letters to the Editor:—	
The British Association.—Prof. Arthur Smithells, F.R.S. . . . .	565
Science and Fisheries.—Prof. W. C. McIntosh, F.R.S.; Henry G. Maurice, C.B. . . . .	565
Propagation of a Finite Number of Waves.—A. Mallock, F.R.S. . . . .	567
Solar Variation and the Weather.—L. C. W. Bonacina . . . . .	567
Name for the Positive Nucleus.—Dr. E. B. R. Prideaux . . . . .	567
The Physical Meaning of Spherical Aberration.—L. C. Martin . . . . .	567
Man and the Scottish Fauna. (Illustrated.) . . . .	568
Some Problems of Lubrication. By W. B. Hardy, F.R.S. . . . .	569
Obituary:—	
Prof. Italo Giglioli. By Dr. E. J. Russell, F.R.S. . . . .	573
Dr. C. A. Sadler . . . . .	573
Notes . . . . .	574
Our Astronomical Column:—	
Skjellerup's Comet . . . . .	578
The January Meteors . . . . .	578
The Masses of the Stars . . . . .	578
Education at the British Association . . . . .	579
Agriculture at the British Association. By Dr. Alexander Lauder . . . . .	581
Studies of Heredity . . . . .	582
The Pan-Pacific Scientific Conference . . . . .	583
Mathematics in Secondary Education . . . . .	583
University and Educational Intelligence . . . . .	584
Calendar of Scientific Pioneers . . . . .	585
Societies and Academies . . . . .	586
Books Received . . . . .	588
Diary of Societies . . . . .	588