

Societies and Academies.

LONDON.

Royal Society, April 29.—Sir J. J. Thomson, president, in the chair.—Prof. J. W. Gregory: The Irish eskers. Eskers are banks of sand and gravel, typically occurring as ridges on the central plain of Ireland, where they were deposited during the recession of the ice at the close of the Glacial period. They have been generally attributed to deposition along glacial rivers, like Swedish *osar*. Their structure and composition indicate that the most important Irish eskers were formed along the margin of the receding ice-sheets by floods of water, due to the melting of the ice. Irish eskers formed along glacial rivers are relatively small and exceptional. The accumulation of the materials into ridges, and their restriction between about 150 ft. and 300 ft. above sea-level, are attributed to the formation of the eskers where the ice entered into a sheet of water, which was probably the sea, since marine fossils are widely distributed in the adjacent drifts, and there are no embankments to maintain glacial lakes at the required level. It is proposed that the term "esker" should be continued for Irish ridges and mounds of sand and gravel, but that in glacial geology the term "*osar*" should be used for ridges formed along the course of glacial rivers, and "*kame*" for ridges deposited by water along the margin of an ice-sheet.—Miss K. M. Curtis: The life-history and cytology of *Synchytrium endobioticum* (Schilb.), Perc., the cause of wart disease in potato. The life-history and cytology of the organism have been followed through all their stages. In the course of the investigation the following important points have been determined: (1) A sexual process has been discovered and followed in all its details; (2) the nature of the difference between the resting (or winter) sporangia and the sori (or summer sporangia) has been established; (3) the infection of the host-tissue by the zoospores and zygotes has been traced; and (4) the peculiarities in the behaviour of the nucleus of the parasite have been investigated.—B. Sahni: The structure and affinities of *Acropyle pancheri*, Pilger. *Acropyle*, a monotypic New Caledonian Podocarp, is the most specialised member of the Podocarpaceæ, and closely allied to the genus *Podocarpus*, which it resembles in the vegetative anatomy, drupaceous seed, megaspore membrane, young embryo, structure of male cone, microsporophyll, pollen-grain, and probably male gametophyte. It differs from *Podocarpus* in (1) the nearly erect seed; (2) the complete fusion of the epimatium to the integument, even in the region of the micropyle, in the formation of which it takes part; and (3) the much greater development of the vascular system of the seed, which forms a nearly continuous cup-like tracheal investment covering the basal two-thirds of the stone. (a) The Taxineæ are structurally so distinct from the remaining conifers as to justify their being placed in a separate phylum, Taxales, equivalent in rank, and related to, the Ginkgoales and the Coniferales as here defined. The Cordaitalean affinities of the Taxales are emphasised. (b) Concerning the ovuliferous scale of the conifers, the conclusion is in favour of the brachyblast theory, support for this view being derived from the structure of the megastrobilus of *Acropyle*. (c) No definite opinion is expressed on the question whether the conifers arose ultimately from microphyllous or megaphyllous ancestors, for the origin of the Cordaitales themselves is still regarded as *sub judice*.

Zoological Society, April 27.—Dr. A. Smith Woodward, vice-president, in the chair.—F. F. Laidlaw. Contributions to a study of the dragon-fly fauna of

Borneo. Part iv.: A list of the species known to occur in the island.—Dr. R. Broom: Some new Theropcephalian reptiles from the Karroo beds of South Africa.

MANCHESTER.

Literary and Philosophical Society, March 16.—Mr. William Thomson, vice-president, in the chair.—Prof. R. Robinson: Note on the mechanism of the production of kynurenic acid in the dog. The formation of kynurenic acid from tryptophane is susceptible of a very simple representation involving normal reactions. The process appears to be primarily one of oxidation followed by decomposition of a carbamic acid derivative, and a probably spontaneous closing of the quinoline ring.—Prof. A. Lapworth: Latent polarities of atoms and mechanism of reaction, with special reference to carbonyl compounds. A consideration of the properties of carbonyl compounds shows that divalent oxygen and tervalent nitrogen tend to cause a latent polarisation in the molecules of carbon compounds. When this occurs in a molecule, the other atoms in the neighbourhood show induced latent polarities which the writer indicates by attaching - and + signs to the atoms in alternating order, beginning with the "key atoms," arriving at schemes like those adopted by Fry and others. The induced polarity of an atom or group is not interpreted as necessarily signifying an electric charge, but only as an enhanced or diminished tendency to attract or repel other atoms (or electrons) with definite polar character, and that only at the moment of chemical change (or ionisation, when this occurs). A condition which appears necessary for the full extension of the inductive effect is the occurrence of double bonds (conjugation?), though it may survive the intervention of two successive single ones. While divalent oxygen and tervalent nitrogen (and especially the former) seem more effective than any other atoms, it would appear that halogen (-), hydrogen (+), and metals (+) can act as "key atoms" to a smaller extent; carbon appears almost indifferent. This principle includes Markownikoff's rule of addition, the rules of substitution in the benzene series, the rules of reaction of saturated and unsaturated ketones, nitriles, and carboxylic acids, as well as of their halogen derivatives. The influence of hydrogen as a "key atom" is perceptible in the cresols, of which the relative acidities can be foreseen from a consideration of the influence of the hydrogen atom in the methyl groups on the latent polarities of the atoms in hydroxyl groups.—Prof. R. Robinson: The conjugation of partial valencies. The author deals with the mechanism of chemical processes on the basis of a hypothesis of divisible valency, assuming that activation of molecules is due to a partial dissociation or splitting of valencies, and that only molecules so polarised take part in reactions. This accounts for the well-recognised effect of polar atoms on alternate atoms in a chain, and the theory is extended to include cases such as the addition of hydrogen bromide to allyl bromide, where the conjugation of ethylene linkage and bromine atom is relatively weak. Conjugated decompositions and the problem of molecular rearrangement are dealt with.

PARIS.

Academy of Sciences, April 19.—M. Henri Deslandres in the chair.—G. A. Boulenger: The fossil *Gavialis* of Omo.—A. Vayssière: The marine fauna of the western coast of the Gulf of Marseilles.—G. Julia: New properties of certain very general classes of integral or meromorphic functions.—W. Sierpinski: Functions of the first class.—Fr. Lange-Nielsen: A generalisation of Rolle's theorem.—J. Villey: Flight at high alti-

tudes. Reply to some criticisms of M. Râteau on an earlier communication.—E. **Brylinski**: The transport of electrical energy to great distances. A mathematical discussion of the properties of a half-wave line.—S. **Posternak**: The variations of the composition of ammonium phosphomolybdate. An account of the variations in the composition of the precipitate produced by the presence of ammonium nitrate or sulphate in the liquid in which the precipitate is formed.—F. **Bourion**: The analysis of commercial chlorobenzenes by distillation. The substances present in the commercial product are benzene, monochlorobenzene, and higher chlorination products boiling at 80° C., 130° C., and 172° C. or above. A scheme for systematic fractional distillation is given, with results for synthetic mixtures. The method is a lengthy one, a single sample requiring three and a half days for analysis.—G. **Mignonac**: The ketimines. Formation by the catalytic reduction of the oximes. The reaction was carried out with nickel (reduced from its oxide at 300° C.) in absolute alcohol at ordinary atmospheric pressure at a temperature of about 16° C. The oxime of cyclohexanone gave N-cyclohexylketimine, a substance not previously isolated, and the corresponding ketimines were isolated from the reduction products of the oximes of acetophenone, propiophenone, benzophenone, and phenyl- α -naphthyl ketone.—Mlle. S. **Veil**: Alloys of oxides. Mixtures of the oxides of chromium and cerium were compressed and heated, and measurements made of the electrical conductivity and magnetisation coefficient of the products. Diagrams are given showing the results for varying proportions of the two oxides.—C. **Matignon** and J. A. **Lecanu**: The reversible oxidation of arsenious acid. From the thermochemical data it should be possible directly to oxidise arsenic trioxide to the pentoxide, and experiments were carried out at temperatures between 400° C. and 450° C., the pressures of the oxygen being 130, 127, and 138 atmospheres. The production of the pentoxide was proved, but the oxidation of the arsenic trioxide was not complete.—Ch. **Gorceix**: The formation of the first ocean.—R. **Souèges**: The embryogeny of the *Oenotheraceæ*. Development of the embryo in *Oenothera biennis*.—M. **Moilliard**: The influence of a small quantity of potassium on the physiological characters of *Sterigmatocystis nigra*. Potassium has a marked specific action on the development of this mould. Deficiency of potassium causes the glucose in the culture fluid to disappear more rapidly than the lævulose; conidia and black pigment do not appear as usual; a golden-yellow pigment appears in the fluid, and a soluble substance stained blue by iodine is formed.—G. **Bertrand**: The conditions which may modify the activity of chloropicrin towards the higher plants. The effects of chloropicrin are nearly proportional to the concentration of the vapour and the time of action. Moisture and light, except direct sunlight, are without influence.—M. **Baudouin**: An anatomical measurement permitting the diagnosis of sex in the human skull.—L. **Boutan**: Comparative yields of pelagic apparatus.—P. **Wintrebert**: The propagation of the undulating movement of the muscles of the skeleton in advanced embryos of *Scylliorhinus canicula* after section or partial resection of the spinal cord.—P. **Portier**: The rabbit deprived of its cæcal appendix regenerates this organ by differentiation of the extremity of the cæcum. When the rabbit's appendix is removed the terminal portion of the cæcum is modified, becomes infiltrated with lymphocytes, and regenerates a new appendix possessing the essential histological and physiological characters of the normal appendix. This is a proof of the important function of this organ in the rabbit.—Ch. **Porcher**: Lacteal retention.—M. **Doyon**: The anti-

coagulating and hæmolysing action of sodium nucleinate.—P. **Courmont** and A. **Rochain**: The action of the micro-organisms of sewage effluents purified by the activated-sludge method on albuminoid materials, urea, and nitrates.—E. **Aubel**: The sterilising power of acids.

Books Received.

School Dynamics. By W. G. Borchardt. Part i. (with Answers.) Pp. vii+286+xix. (London: Rivingtons.) 3s. 6d.

Space and Time in Contemporary Physics. By Prof. M. Schlick. Rendered into English by H. L. Brose. Pp. xi+89. (Oxford: At the Clarendon Press.) 6s. 6d. net.

Zoology: A Text-book for Colleges and Universities. By Prof. T. D. A. Cockerell. Pp. xi+558. (Yonkers-on-Hudson, New York: World Book Co.) 3 dollars.

An Introduction to Palæontology. By Dr. A. M. Davies. Pp. xi+414. (London: T. Murby and Co.) 12s. 6d. net.

Practical Plant Biochemistry. By M. W. Onslow. Pp. vii+178. (Cambridge: At the University Press.) 15s. net.

Wild Fruits and How to Know Them. By Dr. S. C. Johnson. Pp. xi+132. (London: Holden and Hardingham, Ltd.) 1s. net.

Aluminium: Its Manufacture, Manipulation, and Marketing. By G. Mortimer. (London: Sir Isaac Pitman and Sons, Ltd.) 2s. 6d. net.

Cotton Spinning. By W. Scott Taggart. Vol. iii. Fifth edition. Pp. xxviii+490. (London: Macmillan and Co., Ltd.) 10s. net.

Diary of Societies.

THURSDAY, MAY 13.

- ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—A. P. Graves: Welsh and Irish Folk Song.
- ROYAL SOCIETY, at 4.—Election of Fellows.—4.30.—Dr. A. D. Waller: Demonstration of the Apparent "Growth" of Plants (and of Inanimate Materials) and of their Apparent "Contractility."—W. N. F. Woodland: The "Renal Portal" System (Renal Venous Meshwork) and Kidney Excretion in Vertebrata.
- LONDON MATHEMATICAL SOCIETY, at 5.—H. W. Richmond: (1) Historical Note on some Canonical Forms quoted by Mr. Wakeford. (2) Historical Note on Cayley's Theorems on the Intersections of Algebraic Curves.—T. Stuart: The Lowest Parametric Solutions of a Dimorph Sextan Equation in the Rational, Irrational, and Complex Fields.—A. E. Jolliffe: The Pascal Lines of a Hexagon.
- INSTITUTION OF ELECTRICAL ENGINEERS (at Institution of Civil Engineers) at 6.—S. Evershed: Permanent Magnets in Theory and Practice.
- INSTITUTE OF INVENTORS (at Royal Society of Arts), at 7.30.—D. Lschman and Others: Discussion on The Relations of the Inventor to the State.
- OPTICAL SOCIETY, at 7.30.
- INSTITUTION OF AUTOMOBILE ENGINEERS (Graduates' Section) (at 28 Victoria Street), at 8.—W. E. Benbow: The Chemical and Physical Properties of Iron and Steel.
- ROYAL SOCIETY OF MEDICINE (Neurology Section), at 8.30.—Annual General Meeting.—Dr. S. A. K. Wilson: Decerebrate Rigidity in Man, and the Occurrence of Tonic Fits.

FRIDAY, MAY 14.

- DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH. Conference of Research Organisations (at Institution of Civil Engineers), at 3.—Marquess of Crewe: Introductory Address.—Dr. A. W. Crossley: The Relation of Research Associations to Existing Institutions for Research.—J. W. Williamson: The Staffing of Research Associations: Salaries and Superannuation.
- ROYAL ASTRONOMICAL SOCIETY, at 5.
- PHYSICAL SOCIETY OF LONDON, at 5.—Dr. F. Lloyd Hopwood: Demonstration of Experiments on the Thermionic Properties of Hot Filaments.—G. D. West: A Modified Theory of the Crookes Radiometer.—A. Campbell: The Magnetic Properties of Silicon-Iron (Stalloy) in Alternating Fields of Low Value.—T. Smith: Tracing Rays through an Optical System.