

Calendar of Scientific Pioneers.

December 15, 1890. James Croll died.—Known for his writings on physical geology, such as his "Climate and Time," 1875, Croll was successively a joiner, an insurance agent, an assistant at the Andersonian College, Glasgow, and keeper of maps in the Geological Survey of Scotland.

December 16, 1798. Thomas Pennant died.—The author of "British Zoology" (1766), "British Quadrupeds" (1781), and "Arctic Zoology" (1785), Pennant, who was the friend of Linnæus, Buffon, and Voltaire, was one of the leading British zoologists of his time.

December 16, 1809. Antoine François Comte de Fourcroy died.—A teacher and organiser with a talent for oratory, Fourcroy did much to popularise the doctrines of Lavoisier among his countrymen, and with Lavoisier, Guyton de Morveau, and Berthollet published the "Méthode de Nomenclature Chimique," 1787.

December 17, 1907. Sir William Thomson, Baron Kelvin of Largs, died.—The son of James Thomson, professor of mathematics at Belfast and Glasgow, Kelvin was born in Belfast, June 26, 1824. After studying at Glasgow and Cambridge, and at Paris, where he came under the influence of Liouville and Regnault, in 1846 he was appointed to the chair of natural philosophy at Glasgow, a post he held with great distinction until 1899. Kelvin was pre-eminent in the realm not only of theory, but also of practical application. In pure science he did important work in thermodynamics, magnetism and electricity, hydrodynamics, and the theory of the æther. Besides co-operating with Tait in their famous treatise on natural philosophy, he wrote several hundred papers. As an inventor of delicate scientific instruments he was unrivalled. To him are due electrical measuring instruments of all kinds, the mirror galvanometer, siphon recorder, standard compass, and sounding and tide-predicting machines. He was president of the Royal Society from 1890 to 1894 and in 1892 was raised to the peerage. He is buried beside Newton in Westminster Abbey.

December 18, 1829. Jean Baptiste Pierre Antoine Monet de Lamarck died.—Lamarck is regarded as the founder of invertebrate zoology. His "Philosophie Zoologique" appeared in 1809, his "Histoire des Animaux Sans Vertèbres" in 1815-22. He put forward views on evolution and enunciated the doctrine of the transmission of acquired characters.

December 18, 1892. Sir Richard Owen died.—The first Hunterian professor of comparative anatomy, and later superintendent of the natural history collection of the British Museum, Owen was one of the greatest contemporaries of Darwin and Huxley. His anatomical and palæontological researches refer to every class of animal from protozoa to man.

December 19, 1887. Balfour Stewart died.—A meteorologist and magnetician, Balfour Stewart made important researches on radiant heat and spectrum analysis. He was director of Kew Observatory and then professor of natural philosophy in Owen's College, Manchester.

December 20, 1913. Julius Scheiner died.—An assistant to Schönfeld at Bonn, Scheiner, in 1887, joined Vogel at Potsdam, where he carried out a great variety of investigations in astrophysics.

December 21, 1912. Paul A. Gordan died.—A contributor to the study of the calculus of invariants and co-invariants, Gordan for many years held the chair of mathematics at Erlangen.

E. C. S.

Societies and Academies.

LONDON.

Association of Economic Biologists, November 18.—Sir David Prain, president, in the chair.—E. J. Butler: Meteorological conditions and disease. The meteorological conditions known to influence diseases of plants are chiefly temperature, humidity, and radiation. The influences are most marked in Continental climates, as the amplitude and duration of the variations are greater than in countries like England. They act both on the host-plant and the parasite, but to judge of their full effect it is often necessary to test them on the host-parasite complex, since the influence on either host or parasite alone may not give a true picture of what occurs in the interaction of the two which constitutes disease. Small variations, amounting to not more than 5 per cent. in relative humidity or 10° C. in temperature, if prolonged, may be sufficient to determine whether a parasite will cause nearly 100 per cent. infection or none at all. In India the author has found that several diseases are so sharply restricted in their distribution by these factors that it is possible to demarcate the areas in which they cannot occur, and also those in which they occur only in special conditions arising in exceptional years, from those in which they normally occur every year. The same is true in the United States. Exact evaluation of the factors concerned is possible by rigidly controlled experimental methods, but not by field observation alone.

Faraday Society, November 28.—Prof. A. W. Porter, president, in the chair.—J. N. Greenwood: The effect of cold work on commercial cadmium. Chill-cast commercial cadmium undergoes spontaneous recrystallisation at the ordinary temperature without the application of cold work. Deformation hastens this change. Deformation at 20° C. softens chill-cast cadmium, and during the subsequent annealing further softening occurs. It is concluded that two forms of cadmium are being dealt with, and that the quick cooling has suppressed the transformation. Recrystallisation and hardness experiments indicate the position of the allotropic change to be in the neighbourhood of 60° C. This accords with Cohen's transformation $Cd_{\alpha} \rightarrow Cd_{\beta}$. Spontaneous recrystallisation of cast unworked cadmium takes place suddenly after about twelve days, and the hardness falls continuously during the same period. This would appear to indicate a gradual change from Cd_{β} to Cd_{α} . A third modification has sometimes been obtained, but its range of existence has not been determined.—J. N. Pring and E. O. Ransome: Reaction between cathodic hydrogen and nitrogen at high pressures. The electrode potentials with metals during electrolysis indicate that an accumulation of gas at very high pressures occurs at, or immediately within, the surface of the electrode. When cathodic hydrogen is liberated in contact with nitrogen, particularly at high pressures, the conditions appear to be favourable to the synthesis of ammonia. With nitrogen at atmospheric pressure the mean percentage current yield of ammonia by direct union of the elements amounted to 0.04 per cent. At pressures of from 60 to 104 atmospheres it was 0.09 per cent. Experiments at from 300 to 500 atmospheres showed a loss of acidity, but no ammonia was indicated. The small quantity of ammonia formed at lower pressures is ascribed to a thermal action of the heated conductors. The results indicate that no reaction takes place between nitrogen and hydrogen liberated at the cathode.—F. H

Jeffery: The electrolysis of aqueous solutions of alkaline nitrites with a lead anode and an electrometric determination of the constitution of the complex anion formed. The plumbo-nitrite complex is $(\text{Pb}(\text{NO}_2)_4)^-$ for small concentrations of lead in alkali nitrite solutions. Probably this is the only complex formed. The solid in equilibrium with solutions obtained from analytes of certain concentrations is lead nitrite crystals, $\text{Pb}(\text{NO}_2)_2 \cdot \text{H}_2\text{O}$. The colour of these crystals is approximately the same as that of the solutions from which they are derived, showing that the plumbo-nitrite complex probably maintains its identity in the crystals. A direct way of testing this hypothesis would be by an X-ray analysis of the crystals; the $(\text{Pb}(\text{NO}_2)_4)^-$ group should form a pattern regularly repeated in three dimensions relative to the cationic Pb atoms.—**T. C. Nugent**: An inhibition period in the separation of an emulsion. The system investigated was a fairly concentrated emulsion of benzene in water containing known amounts of stabiliser, *i.e.* gelatin or gum arabic. If caustic soda solution is added immediately, then the separation of the benzene commences immediately; but if the emulsion is left undisturbed for some time before the caustic soda solution is added, the separation of the benzene is retarded. This time lag may be termed the "inhibition period." Probably after an emulsion is produced, the gelatin slowly forms protecting layers about the benzene particles, and therefore the stability of an emulsion increases with its age.—**N. R. Dhar** and **N. N. Mitra**: Induced reactions and negative catalysis. Induced reaction is proved to be of general occurrence. In oxidation reactions, negative catalysis takes place when the catalyst is readily oxidisable. The explanation offered is the hypothesis of the formation of intermediate compounds. Experimental evidence supports the view that one chemical change will either promote or induce another chemical change of the same nature.

Linnean Society, December 1.—**Dr. A. Smith Woodward**, president, in the chair.—**W. Neilson Jones**: Note on the occurrence of *Brachiomonas*. This alga, which appeared last year in rain-water pools at Regent's Park College, had previously been reported only from brackish water at Sheerness, Stockholm, and the Black Sea.—**J. Burt-Davy**: The distribution of *Salix* in South Africa. In South Africa ten species or varieties are known, and in tropical Africa twelve, only one being common to both areas. Usually each species occupies limited areas in one particular drainage-basin, so that cross-pollination is practically impossible. *S. Woodii* may be the connecting-link by way of Pondoland, the Transkei, and Eastern Cape with *S. sabsaf* in Rhodesia. Although the Orange River is isolated from Angola by the wastes of the Kalahari, it is possible that these species, or a common ancestor, came from the north when the *Cunene* discharged into the Orange by way of the Molopo.—**M. Christy**: The problem of the pollination of our British *Primulas*. Some thirty species of insect visit or frequent the flowers of the three British *Primulas* (*P. vulgaris*, *P. veris*, and *P. elatior*). A small proportion have long tongues and are able to effect pollination, but their visits to the flowers are comparatively rare, and inadequate for the perpetuation of these *Primulas*. Most other insect visitors are short-tongued bees, totally unable to effect pollination. Some Coleoptera frequented the flowers, and seem capable of pollinating them, though in an irregular manner. Night-flying moths were suggested as the agents of normal pollination—a surmise advanced by Darwin

PARIS.

Academy of Sciences, November 28.—**M. Georges Lemoine** in the chair.—**P. Termier** and **L. Joleaud**: New observations on the "nappe de Suzette" formed of Triassic strata, issued from the Alps, and having covered at the Aquitanian period a part of the region of the Rhône.—**P. A. Dangeard**: The nature of the spherome in the plant-cell. Reply to a recent communication by M. Guilliermond.—**G. Mittag-Leffler**: Cauchy's theorem on the integral of a function between imaginary limits.—**M. de Sparre**: The yield of reaction turbines working under a variable load. Turbines are usually constructed to work under full load. Calculations are given for determining the efficiency under a reduced load, and also for modifying the design of the turbine, so that while sacrificing a small percentage of efficiency at full load the efficiency varies only slightly under large variations of load.—**C. Sauvageau** and **G. Denigès**: The efflorescence of marine algæ of the genus *Cystoseira*.—**G. Cerf**: The systems of Pfaff and the transformations of partial differential equations.—**J. Wolff**: The series $\sum \frac{A_k}{z - a_k}$.—**E. Borel**: Remarks on the preceding note.—**G. Valiron**: Integral functions and their inverse functions.—**C. Camichel**: Hydraulic states of flow.—**D. Eydoux**: The variation of energy round a point of a rotating hydraulic machine.—**G. Fontené**: The two Lorentz coefficients of inertia for movements at high velocities.—**E. Belot**: The minor planets of the Saturn family.—**Mrs. Isaac Roberts**: A star which may have appeared in the sky since 1892.—**J. Le Roux**: Time in classical mechanics and in the theory of relativity.—**A. Dauvillier**: Analysis of the atomic structure. The author summarises the conclusions derived from his theory of atomic structure in a form of the periodic table of the elements, showing the number of the superficial electrons, the number of electrons, and the quanta.—**E. Rengade**: The resolution of a salt in the course of the isothermal evaporation of a solution. Reply to a criticism of M. Raveau.—**A. Kling** and **A. Lassieur**: The separation and estimation of copper, lead, antimony, and tin. The analysis of white metals. The method is based on the conversion of the tin into a complex stanni-fluoride, from which the sulphide is not precipitated by sulphuretted hydrogen, with later application of rapid electrolytic methods.—**P. Thomas** and **G. Carpentier**: A very sensitive reagent for copper: the Kastle-Meyer reagent. This reagent, an alkaline solution of phenolphthalein, originally proposed as a test for blood, is an extremely sensitive reagent for copper, and will show one part of copper in a hundred millions of water, and as ordinary distilled made with a copper still may contain one part of copper in a million, special precautions are necessary in applying the test. In a solution free from organic compounds the reaction is distinctive, and is given by no other metal.—**P. Robin**: The action of nitrogen iodide and cyanogen iodide on benzamidine.—**C. Mariller**: A method of fractionating liquid mixtures and its application to the preparation of a home-produced fuel.—**P. Gaubert**: The recrystallisation produced by annealing. The theories which have been put forward to explain the recrystallisation of metals have been applied to interpret the results of experiments on organic compounds, vanillin, paraffin wax, beeswax, and cetin. It was found that recrystallisation is, in general, only possible when the crystals are sufficiently malleable for mechanical actions to modify their crystalline network.—**P. Glangeaud**: The architecture of the three principal volcanic centres of the Cantal massif.—**P. Corbin**: The tectonic of the eastern edge of the

Vercors massif.—P. Loisel: The existence of a new radio-active emanation in the springs of Bagnoles-de-l'Orne and its neighbourhood. The experiments described can be best explained on the assumption of the presence of a new simple radio-active element, provisionally named emilium.—L. Dunoyer: The graphical determination of average wind velocities.—L. Besson and H. Dutheil: Relations between the direction of the cirrus clouds at Paris and the barometric situation in Europe. The results of an examination of ten years' statistics.—Miss Ethel Mellor: The lichens which attack glass and their mechanical action on stained glass windows of churches. The immediate cause of the corrosion of stained glass windows is the mechanical action of the lichens; this action follows on the chemical weathering of the glass, itself accelerated by the growth and life of the lichens. The remedy suggested is annual window cleaning.—L. Plantefol: The teratological spikes of *Plantago lanceolata*.—A. Dauphiné: The experimental production of acceleration in the evolution of the conducting apparatus. Experiments on the growth of the root of the lupin, from which certain parts have been removed.—F. Obaton: The comparative structure of leaves of the same age and different dimensions. In small and large leaves from the same branch and of the same age the histological elements are practically the same magnitude for the parenchymatous part, and are also nearly identical in the composition of the structure of the physiologically comparable veins.—P. Freundler and Milles. Y. Menager and Y. Laurent: The composition of the Laminaria. The maximum proportions of iodine, carbohydrates, and brown pigments coincide with the period of maximum insolation.—G. Bertrand and Mme. M. Rosenblatt: The distribution of manganese in the organisms of the higher plants. A detailed study has been made of two plants, *Nicotiana rustica* and *Lilium lancefolium rubrum*, at different stages of growth. The maximum proportion of manganese is usually found in the organs where the chemical transformations are the most active. The seeds also contain a high proportion of manganese.—M. Doyon: The utilisation of the frog for the demonstration of the anti-coagulating action of the nucleic acids.—A. Michel: The fibrillary tissue and nerve tissue of the elytron and dorsal cirrus of the Aphroditian Annelids.—C. Julin and A. Robert: New observations on the formation of the cardio-pericardic organ and of the epicardium in the oozoid of *Distaplia*.—E. Roubaud: Fertility and longevity of the domestic fly. A minimum of 600 eggs is estimated as the average production of a normal fly, and taking the period of evolution from egg to egg-laying as eighteen days, and it may be as low as thirteen days, from May 1 to September 30 a single fly may give rise to 4000 billions (4×10^{10}).—A. Gruvel: Pearl oysters on the coast of Madagascar.—R. Kähler: The services which radiography may render in the study of Clypeaster.—H. Heldt: The co-operation of the dirigible balloon in sea-fishing. The dirigible balloon has proved useful in rapidly sketching out the nature of the sea-floor, knowledge of use to the fisherman. Shoals of fish are also readily seen; the balloon can hover over the spot and send signals to the fishing fleet.—C. Noiszewski: Glaucoma and the relations between intra-ocular and intra-cranial pressure.—G. Bourguignon: The localisation of poisons and infections on the neuro-muscular systems of man according to their chronaxy.

MELBOURNE.

Royal Society of Victoria, September 8.—Prof. A. J. Ewart, president, in the chair.—J. Shephard: The Rotifera of Australia and their distribution. Two

hundred and thirty species have been recorded as the result of the work of seven or eight observers. The wide distribution of rotifers may be regarded as due to man's agencies.—E. T. Quayle: Local rain-producing influences in South Australia. The greatest rain improvement area in South Australia owes its origin to Lake Torrens, while Lake Frome is the source of another area of probably equal improvement. The full plotting of this rainfall departure on a map showed marked rainfall deficiency both to northward and southward of the improved area, but ending abruptly at the lake, showing that it was not due to any specially favoured storm tracks. Several other lakes showed slighter effects of the same kind, proving that evaporation from the lakes was a very effective factor in rain production inland. Lakes Torrens and Frome were considered together. The probable run-off rainfalls and the percentage of rainfall finding its way into the lakes were considered to be increasing. The rainfall is not retained, as formerly, in numberless small reservoirs in the uplands, but is hurried down to the lower levels, and finally into lakes or swamps, which tend to improve rainfall locally. It is considered that the filling of Lakes Torrens and Eyre from the sea would make the whole area south-east of them capable of close settlement, especially when aided by proper use of the waters of the Murray and its great northern tributaries. One cause of Australian aridity is the growth of drought-resistant perennial vegetation which regulates evaporation adversely to storm demands for rain production, and prevents accumulation of water in inland lakes by its own moisture requirements and by its prevention of the formation by erosion of defined stream channels. Human occupation tends to improve climate by reason of forest destruction and the substitution of grass and crops for drought-resistant vegetation, by water storage, and the tapping of underground water supplies.—T. H. Laby: A new type of barometer.—T. H. Laby: A gravity metre.

SYDNEY.

Linnean Society of New South Wales, September 28.—Mr. G. A. Waterhouse, president, in the chair.—T. G. Sloane: Description of a new tiger beetle from the Wyndham district. A new species of *Cicindela* was described.—L. Harrison: Note on the pigmentation of frogs' eggs. Results are recorded of observations on the pigmentation of the eggs in some Australian species of the genera *Limnodynastes*, *Pseudophryne*, and *Hyla*.—E. W. Ferguson: Revision of the *Amycterides*. Part vii.: *Hyborrhynchus* and allied genera. A small group of genera having affinities both with the *Acantholophus-Cubicorrhynchus* and the *Euomid* complexes are dealt with.—C. T. White: Notes on the genus *Flindersia* (fam. Rutaceae). The genus *Flindersia*, founded by Robert Brown in 1814 on *F. australis*, the common "crow's ash" of Queensland or "teak" of New South Wales, consists of eighteen species, fifteen of which are found in eastern Australia. The genus includes some of the most valuable timber trees of Australia.—A. B. Walkom: A specimen of *Noeggerathiopsis* from the Lower Coal Measures of New South Wales. A large specimen of *Noeggerathiopsis* showing radiate arrangement of the leaves was described. All specimens previously described with this arrangement have been obtained from the Upper (Newcastle) Coal Measures.—Marjorie I. Collins: The mangrove and saltmarsh vegetation near Sydney, with special reference to Cabbage Tree Creek, Port Hacking. The mangrove formation—the outermost—is characterised by the two species, *Avicennia officinalis* and *Aegiceras majus*; in the salt-

marsh—the inner—two plant associations, (a) *Salicornietum* and (b) *Juncetum*, are recognised. At Cabbage Tree Creek drift sand has been raising the level of the marsh for some years, and *Juncetum*, the marginal association of the saltmarsh, is invading *Salicornietum*.—A. M. **Lea**: Description of new species of Australian Coleoptera. Part xvii. Thirty-nine species are described as new, belonging to sixteen genera in the families Nitidulidæ, Malacodermidæ, Chrysomelidæ, Erotylidæ, Endomychidæ, and Corylophidæ.

Royal Society of New South Wales, October 5.—Mr. E. C. Andrews, president, in the chair.—A. R. **Penfold**: The essential oil of *Leptospermum flavescens* (Smith). This tea-tree grows extensively in the coastal and mountainous districts around Sydney. The average yield of oil is about 0.8 per cent. from the distillation of $\frac{1}{2}$ ton of material. The principal constituents are α - and β -pinene, aromadendrene, eudesmene, dextro-rotatory eudesmol, leptospermol (new liquid phenol), small amounts of citral, and unidentified alcoholic bodies.—J. K. **Taylor**: A note on chemistry of Kurrajong seeds. A syrupy red oil was extracted from the seeds with a solvent; some could be obtained by subjecting them to pressure. The oil belongs to the semi-drying group of vegetable oils. The oilcake remaining after pressure treatment is comparable with other cakes.—C. W. **Mann**: Preliminary note on the occurrence of porphyritic intrusions at Yass, New South Wales. It was thought that these beds were flows of volcanic material which had issued contemporaneously with the formation of the interbedded sedimentary rocks. New evidence indicates that after the deposition of the sedimentary material the beds of porphyry were intruded into their present positions. The rocks occurring in the upper side of the shelf of porphyry are thin beds of breccia formed by the inclusion of fragments of sedimentary rocks while the molten magma was in process of intrusion towards the surface.

CAPE TOWN.

Royal Society of South Africa, October 19.—Dr. J. D. F. Gilchrist, president, in the chair.—Miss M. R. **Michell**: Some observations on the effect of fire on the vegetation of Signal Hill. Within three weeks of a bush fire in February, 1919, which killed the aerial parts of plants, some had put up vigorous shoots, notably *Asparagus capensis*. They were perpetuated by regeneration from the underground parts or by seed. The fire stimulated erosion. It was favourable to the spread of the *Rhenoster* bush; no evidence of eradication of species by burning was obtained.—Miss A. V. **Duthie**: The morphology of *Selaginella pumila*. The species is an annual occurring in abundance near Stellenbosch. The base of the vegetative leaf contains well-defined aerenchyma communicating with the atmosphere by stomata which are confined to the aligular surface of the leaf and the leaf-margin. The roots are destitute of root-hairs, and contain an endophytic fungus.—A. R. E. **Walker**: Note on a specimen of *Phacops africanus*, Lake. A nodule containing an internal cast and a mould of the external surface of the thorax and tail of the trilobite *Phacops africanus*, Lake, was described. Each segment of the axis of the thorax bore a strong medium spine, and the thorax was composed of eleven segments.—J. W. C. **Gunn**, M. **Goldberg**, and J. H. **Ferguson**: A note on the pharmacological action of *Scilla Cooperi*, Hook. Fil., *S. Rogersii*, Baker, and *S. lanceaefolia*, Baker. Extracts of these South African species of squill have similar effects on frogs and mammals to the extracts made from the digitalis group, such as *S. maritima*, though they are less

poisonous. They all contain glucosides.—C. S. **Grobelaar**: I. Some South African Paramphistomidæ, Fisch. The conditions favouring natural infection of stock, the effects of infection, and the general distribution of the family in South Africa are noted. *Isidora (Physa) tropica*, Krauss, is the intermediate host of *Paramphistomum catiophorum*, Fisch. II. Some trematodes in the South African anura and the relationships and distribution of their hosts.—C. **Pijper** and H. **Zwarenstein**: The "Account Book" of Jan Haszing. Jan Haszing practised as a surgeon at Cape Town; his "Account Book" starts at 1736 and runs on continuously until 1767; it throws light on the life of Cape Town at that epoch.—J. **Moir**: Colour and chemical constitution. Pt. 16: Further miscellaneous observations. The position of the absorption band is given for ten further derivatives of benzhydrol, twelve further derivatives of phenolphthalein, five derivatives of quinolinic acid, eleven further triphenyl-carbinol dyes, and ten other substances connected with colour and fluorescence.

Books Received.

Obras Completas y Correspondencia Científica de Florentino Ameghino. Dirigida por Alfredo J. Torcelli. Volumen 1: Vida y Obras del Sabio. Pp. 309. Volumen 2: Permanos Trabajos Científicos. Pp. 773. (La Plata: Ministère des Travaux Publics.)

A Treatise on Probability. By J. M. Keynes. Pp. xi+466. (London: Macmillan and Co., Ltd.) 18s. net.

Rays of Positive Electricity and their Application to Chemical Analyses. By Sir J. J. Thomson. (Monographs on Physics.) Second edition. Pp. x+237+9 plates. (London: Longmans, Green and Co.) 16s. net.

The Elements of Social Justice. By Prof. L. T. Hobhouse. Pp. 208. (London: G. Allen and Unwin, Ltd.) 10s. 6d. net.

British Astronomical Association: Observer's Handbook for 1922. Pp. 36. (London: Eyre and Spottiswoode, Ltd.) Members, 1s. 6d.; non-members, 2s.

A Handbook of some South Indian Grasses. By Rai Bahadur K. Ranga Acharyar. Pp. vi+318. (Calcutta: Butterworth and Co., Ltd.; London: Constable and Co., Ltd.) 4.8 rupees.

A Critical Revision of the Genus *Eucalyptus*. By J. H. Maiden. Vol. 5, Part 9. (Part 49 of the complete work.) Pp. ii+261+290+plates 200-203. (Sydney: W. A. Gullick.) 3s. 6d.

Physikalische Rundblicke. Gesammelte Reden und Aufsätze. By Max Planck. Pp. iv+168. (Leipzig: S. Hirzel.) 60 marks.

Nutrition de la Plante. By M. Molliard. I.: Echanges d'Eau et de Substances Minérales. Pp. xiv+205. II.: Formation des Substances Tenaires. Pp. vi+438. (Encyclopédie scientifique: Bibliothèque* de Physiologie et de Pathologie Végétales.) (Paris: Gaston Doin.) 2 vols., 14 francs.

Chemical Reactions and their Equations: A Guide and Reference Book for Students of Chemistry. By Prof. I. W. D. Hackh. Pp. viii+138. (Philadelphia: P. Blakiston's Son and Co.)

Philosophy and the New Physics: An Essay on the Relativity Theory and the Theory of Quanta. By Prof. L. Rougier. Authorised translation from the author's corrected text of "La Matérialisation de l'Energie" by Prof. M. Masius. Pp. vi+159. (Philadelphia: P. Blakiston's Son and Co.)

Western Australia. Astrographic Catalogue 1900-0. Perth Section, Dec. -31° to -41°, from Photographs