

work of an advisory nature was carried out. Valuable research has been performed by Mr. E. A. Speyer, who has now accepted a forestry appointment in Ceylon, and by Mr. W. E. Hiley. The finances of the Forestry School are assisted by an annual grant of 250*l.* from the Board of Agriculture and Fisheries.

THE authorities of the Royal Technical College, Glasgow, may well be proud of the part which members, students, and past-students of the college are taking in the King's service in connection with the war. A list, confessedly incomplete, which has been issued, gives the names of 1023 officers, non-commissioned officers, and men, together with their rank, regiment, or ship, and the last year in college, all of whom have been thus connected with the college, and the names of forty-seven other men serving about whom particulars are as yet unknown.

A copy of the calendar for the session 1914-15 of the University College of North Wales has been received. The new calendar follows on the same lines as those of previous issues. We notice that during 1913-14 the extension work in agriculture carried out by the college was placed, as regards organisation, on a new footing. In three of the North Wales counties served by the college, advantage was taken of the offer of Government help through the Farm Institute Fund to increase very greatly the sum annually devoted to agricultural instruction and to place the work in the hands of county organisers, appointed by the college, but working under the directions of the county agricultural committees. Special lecturers in horticulture, poultry-keeping, and dairy work are also provided by the college for county work.

## SOCIETIES AND ACADEMIES.

### LONDON.

**Royal Society**, February 11.—Sir William Crookes, president, in the chair.—Dr. D. H. Scott: *Lepidostrobos kentuckiensis*, nomen nov., formerly *Lepidostrobos Fischeri*, Scott and Jeffrey.—A correction. The name *Lepidostrobos Fischeri* having been anticipated by Renault in 1890, it is necessary to give a new name to the Kentucky cone described by Scott and Jeffrey (*Phil. Trans.*, Ser. B., vol. ccv., 1914, p. 354). The fossil is now named *Lepidostrobos kentuckiensis*.—T. Lewis and M. A. Rothschild: The excitatory process in the dog's heart. Part ii.—The ventricles. (1) The excitation wave appears at the pericardial surface of the dog's heart at times which show no great variation relative to each other; but the distribution of the time values over the surface with such variations as they show is very fairly constant from heart to heart. (2) The time at which the excitation wave appears at the surface is controlled by the length of the Purkinje tract to the endocardium beneath the region tested, and by the thickness of the ventricular muscle in the same region. (3) The excitation wave is not propagated by simple spread from base to apex or apex to base through bands of muscle fibres, as has commonly been held hitherto. (4) The capacity of striated cardiac tissue to conduct appears to be related to the size of the cells composing it and to its load of contained glycogen. (5) The auriculo-ventricular bundle and its branches constitute a system of fibres specially endowed in regard to their arrangement and physiological properties to give quick distribution of the excitation wave throughout all parts of the ventricle.—A. J. Walton: The variation in the growth of mammalian tissue *in vitro* according to the age of the animal. Previous work has

shown that plasma of animals varies considerably in its value as a medium for the cultivation of tissue. The present experiments were carried out with a view of determining whether these differences were due to the age of the animal from which the plasma was obtained. The tissues and plasma of rabbits were alone used, and the majority of animals were of a known age. Tissues of young and old animals were used and were grown in pure plasma from the same animals. In all cases it was found that the young tissues grew better than the old, but the plasma of the young animal was not nearly so satisfactory a medium as that of the old animals. Hence the best results were obtained when young tissues were grown in the plasma of old animals and the worst results when old tissues were grown in young plasma.

**Geological Society**, February 3.—Dr. A. Smith Woodward, president, in the chair.—Prof. T. McKenny Hughes: The gravels of East Anglia. The author discusses the sources from which the subangular gravels that cover such large areas in East Anglia can have been derived. He points out that their great variety of fracture, colour, etc., proves that they cannot have come directly from the Chalk, or from Boulder Clay derived directly from the Chalk, or from the Lower London Tertiaries, none of which contain subangular gravels but only beds of pebbles, and those mostly of small size. The character of the flints in the gravels indicates that they have been derived from surface-soils which have been winnowed and shifted by soil-creep, rain, and streams, until arrested on the terraces and flats of the valleys. The dry land of Miocene age was the first over which the flints of our gravel-beds could have received that sub-aerial treatment which they all seem to have undergone.—E. Anderson and E. G. Radley: The pitchstones of Mull and their genesis. The pitchstones here discussed occur with extraordinary frequency, intruded into the Tertiary plateau-lavas of the eastern portion of the Ross of Mull, as well as in less number in other parts of the island. They fall into two main divisions, distinguished by the absence or by the presence of porphyritic felspars. The petrological characters of these pitchstones, and their more crystalline margins, are such that they seem to warrant the grouping of the rocks under a new type-name, and the name *leidite* has been chosen. The porphyritic pitchstones occur as flat or gently-inclined sheets; they also are associated with a more crystalline phase, and have been grouped under the type-name *inninmorite*.

**Zoological Society**, February 9.—Mr. R. H. Burne, vice-president, in the chair.—E. G. Boulenger: An Aglyphodont Colubrid snake (*Xenodon merremii*), with a vertically movable maxillary bone. The vertical mobility of the maxillary bone in snakes had previously been regarded as essentially characteristic of the Viperidæ. Observations on the snake in question, which was recently received by the society from Mr. W. A. Smithers, showed that the mobility of its maxillary bones was so great that the fangs could be not merely erected, but were capable of being thrust forward and sideways, the mechanism being as perfect as in any of the vipers. Mr. Boulenger pointed out that the discovery of a solid-toothed Colubrid with vertically movable maxillæ went a long way towards settling the so often discussed problem of the derivation of the viperine maxillary bone. The author traced the probable evolution of the bone, expressing the opinion that the Viperidæ were descended from the Opisthoglyph Colubrids, and that the old view, recently revived, that they were of Proteroglyph

ancestry, must be abandoned once and for all.—Dr. W. Nicoll: A new species of liver-fluke from the kestrel.

**Mathematical Society**, February 11.—Prof. A. E. H. Love, vice-president, in the chair.—G. H. Hardy and J. E. Littlewood: (i) The zeros of the Riemann zeta-function. (ii) An assertion of Tchebychef.—G. B. Jeffery: The steady motion of a solid of revolution in a viscous fluid.—S. T. Shovelton: Relations amongst Bernoulli's and Euler's numbers.—W. P. Milne: Apolar generation of the quartic curve.

## CALCUTTA.

**Asiatic Society of Bengal**, January 6.—Maude L. Cleghorn: A note on the floral mechanism of *Typhonium trilobatum*. Describes the trap-mechanism of the spathe, by means of which beetles are ingeniously captured at night to ensure cross-pollination. The trap-mechanism of this plant resembles that of the Cuckoo-pint (*Arum maculatum*) in the entrance and exit of the trap being above and at the same opening, but differs from it in the deliberate opening and closing of the passage leading down into the trap. Its floral mechanism does not seem to be so perfect as that of the common Kachu (*Colocasia antiquorum*), but it appears to be an advance on that of the Cuckoo-pint.—F. H. Gravely: The evolution and distribution of Indian Spiders belonging to the sub-family Aricularinæ. The Ischnocoleæ found in the Indian Peninsula and Ceylon form a very compact group, probably related to those of other parts of the world through their most primitive species only. It is concluded that the Poecilotheriæ have originated from the Ischnocoleæ as a result of their adaptation to a new environment in the Indian Peninsula or Ceylon, to which they are still confined.

## DUBLIN.

**Royal Dublin Society**, January 26.—Prof. H. H. Dixon in the chair.—Prof. W. Brown: The subsidence or damping of torsional oscillations in iron wires is much less than in nickel wires, and is greater in an alternating magnetic field than in a direct field, whilst the reverse is the case with soft nickel wires. With iron wires when the longitudinal load on the wire is sufficiently increased, the damping curves obtained in the direct and alternating magnetic field are identical. Results are also given for iron wires alloyed with silicon, chromium, and nickel, as well as for two non-magnetic wires.—Prof. H. H. Dixon and W. R. G. Atkins: Osmotic pressures in plants. V.—Seasonal variations in the concentration of the cell sap of some deciduous and evergreen trees. A series of cryoscopic and conductivity measurements made on the sap pressed from plant organs after treatment with liquid air showed that the greater part of the osmotic pressure is due to dissolved carbohydrates. The concentration of electrolytes in leaves increases with age. A similar increase was not found in the roots of *Ilex aquifolium*. The concentration of carbohydrates fluctuates greatly, and causes large variations in the osmotic pressure. In the leaves of *Syringa vulgaris* it was found that the osmotic pressure rose from the opening of the buds and reached its maximum in August. The leaves of both *Ilex* and *Hedera* showed higher osmotic pressures in winter than in summer. The osmotic pressure of the tissues of the roots of *Ilex* attained its maximum in September.

## PARIS.

**Academy of Sciences**, February 8.—M. Ed. Perrier in the chair.—A. Lacroix: The existence of grained nepheline rocks in the volcanic archipelago of Kerguelen.—G. Bigourdan: Application of the angular comparator to the determination of astronomical re-

fraction and its constant. Details of the proposed method for using the instrument described in a recent paper to measure atmospheric refraction.—Armand Gautier: The influence of fluorine on plant growth. In certain rare cases the presence of fluorides in the soil inhibits growth, but in general it has a stimulating effect on growth, flowering, and the formation of seeds.—Ed. Delorme: Wounds of the external genital organs.—J. Guillaume: Observations of the sun made at the Observatory of Lyons during the second quarter of 1914. Observations were made on seventy-one days, and the results are given in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—E. Goursat: A class of integral invariants.—Et. Delassus: The theory of unilateral finite linkages.—Léon Bloch: The theory of absorption of light in metals and in insulators.—F. Bodroux: The preparation of esters. Mixtures of alcohol, water, and formic acid give formates on slow distillation, but formic acid has very slight catalytic power in ester formation from other acids. The mixture of sulphuric and hydrobromic acids obtained by decolorising a mixture of bromine and water with sulphur dioxide is recommended as a catalyst, and details are given of its use in the preparation of propyl and isobutyl bromides.—L. Grimbert and O. Bailly: A method for distinguishing the glycerophosphoric mono-esters and on the constitution of crystallised sodium glycerophosphate.—A. Sartory and L. Spillmann: The bacteriology of gaseous gangrene. In agreement with the results of Weinberg, Doyen, and Yamanouchi, the authors find present in all cases *Bacillus perfringens* in the gangrene pus. Other organisms are present, but this bacillus appears to be the most important as regards pus formation.—P. Mazé: The determination of the rare mineral elements necessary to the development of maize. Boron, aluminium, fluorine, and iodine are necessary for the growth of maize.—Em. Bourquelot, M. Bridel, and A. Aubry: The biochemical synthesis of the  $\beta$ -monoglucoside of ordinary propylene glycol with the aid of emulsin.

## BOOKS RECEIVED.

International Association for Tropical Agriculture. Proceedings of the Third International Congress, held at the Imperial Institute, London, S.W., June 23 to 30, 1914. Pp. xi+407. (London: John Bale, Ltd.) 10s. net.

A List of British Birds, compiled by a Committee of the British Ornithologists' Union. Second and revised edition. Pp. xxii+430. (London: W. Wesley and Son.) 7s. 6d.

Canadian Institute. General Index to Publications, 1852-1912. Compiled and edited by J. Patterson. Pp. 518. (Toronto: University Press.) 5 dollars.

Bartholomew's Route Chart of the World, with Inset Maps (Edinburgh: J. Bartholomew and Co.) 1s. net.

Practical Mathematics. By A. E. Young. Second Year. Pp. xi+164. (London: G. Routledge and Sons, Ltd.) 2s. net.

A First Course in Practical Chemistry for Rural Secondary Schools. By W. Aldridge. Pp. xii+122. (London: G. Bell and Sons, Ltd.) 1s. 6d.

Practical Heat, Light and Sound. By T. Picton. Pp. xv+151. (London: G. Bell and Sons, Ltd.) 1s. 6d.

Manuale di Fisica. By Prof. B. Dessau. Vol. ii. Acustica, Termologia, Ottica. Pp. vii+612. (Milano: Società Editrice Libreria.) L.15.

Tables Annuelles de Constantes et Données