

papers." George Duncan Campbell Stokes: *Thesis*, "A Critical Comparison of the Overlapping Section of the Oxford and Potsdam Astrographic Catalogues; An Original Solution of the Problem of Two Bodies; An Analytical Study of Plane Rolling Mechanisms."

Commemoration Day will be observed on June 25. A meeting will be held in the Bute Hall, when Prof. F. O. Bower, F.R.S., will deliver an oration on "Sir Joseph Hooker," and honorary degrees will be conferred. It is expected that a number of the delegates attending the Congress of the Universities of the Empire will be present.

THE resignation is announced of Prof. Arthur Searle, Phillips professor of astronomy at Harvard University. Prof. Searle, who graduated from Harvard in 1856, has taught in the University for forty-two years.

A COURSE of four lectures on "Heredity Considered from the Point of View of Physiology and Pathology" will be delivered by Dr. F. W. Mott, F.R.S., in the Physiological Laboratory, King's College, on Mondays, May 20 and 27, and June 3 and 10, at 4.30 p.m. The lectures are free to members of King's College, London, to internal students of the University, and to medical men.

At the celebration of the 75th anniversary of the foundation of the University of Athens, on April 10, honorary degrees in medicine were conferred on Profs. von Behring (Marburg), Celli (Rome), Ehrlich (Frankfort), Exner (Vienna), Golgi (Pavia), Kronecker (Berne), Laudouzy (Paris), Richet (Paris), Sir Ronald Ross (Liverpool), Roux (Paris), Schulze (Würzburg), Weichselbaum (Vienna), and others. The degree of doctor of philosophy was conferred on Sir Donald MacAlister (Glasgow), Delbrück (Jena), Dörfeld (Athens), Gubernatis (Rome), Harnack (Berlin), Kenyon (London), Mahaffy (Dublin), Wheeler (Berkeley), and others; and the degree of doctor of science on Profs. Depéret (Lyons), Halácsy (Vienna), Lacroix (Paris), Lepsius (Darmstadt), Partsch (Leipzig), and Philipsson (Bonn).

THE programme of the annual conference of the Child-Study Society, to be held in the University of London on May 9-11 inclusive, is now available. The subject arranged for discussion is the health of the child in relation to its mental and physical development. The presidential address will be delivered on May 9 by Sir James Crichton Browne, F.R.S. Among papers to be read at the conference may be mentioned:—The influence of defects of hearing in relation to the mental and physical development of the child, by Dr. J. Kerr Love; the influence of defects of vision in relation to the mental and physical development of the child, by Mr. N. Bishop Harman; the tuberculous child, by Dr. Jane Walker; and mental hygiene in relation to the development of the child, by Dr. T. Hyslop. Fuller particulars of the meeting can be obtained from the secretary of the London Society, 90 Buckingham Palace Road, London, S.W.

THE Department of Agriculture and Technical Instruction for Ireland will conduct summer courses of instruction for teachers on July 2-26 next, and on August 6-31. Among the courses arranged for July we notice for teachers in day secondary schools and in technical schools a course in experimental science; for those in secondary schools only, one in domestic economy; and for domestic economy instructresses one in advanced cookery, housewifery, hygiene, and

sick nursing. In August the courses will be concerned with practical mathematics and mechanics, handrailing, metal work, and rural science. Though most of the courses will be held in Dublin, some have been arranged for other important centres. Teachers desiring to take advantage of these courses must fill up and return the appropriate form of application so as to reach the offices of the department, Upper Merrion Street, Dublin, not later than April 30.

ATTENTION was directed, in our issue of April 4 (vol. lxxxix., p. 129) to the opening to-morrow of the spinning section of the textile department of the University of Leeds by the Master of the Clothworkers' Company. The new extension is intended to afford facilities for instruction in the principles and theory of the manufacture of worsted yarns on the Continental system. To secure the most suitable equipment for this branch of technological teaching, textile institutes, spinning works, and conditioning laboratories in Belgium, France, Germany, and Switzerland were inspected, and a full inquiry was made as to the commercial value and technical nature of this system of worsted yarn construction. The extension has been designed by Mr. Paul Waterhouse, and erected at a cost of 5000l., making a total amount of 75,000l. granted by the Clothworkers' Company for technical education in the textile industries and dyeing departments of the Leeds University.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, April 2.—Dr. A. Smith Woodward, F.R.S., vice-president, in the chair.—R. I. Pocock: A rare stag (*Cervus wallichii*) from Nepal, recently presented to the Zoological Society by his Majesty King George. The author pointed out the distinctive peculiarities of this species, which, on account of its great scarcity, had never been satisfactorily classified since it was described by G. Cuvier in 1825 from a coloured illustration of a specimen living at that time in the Barrackpore Menagerie.—F. E. Beddard: Species of tapeworms of the genus *Inermicapsifer* obtained from the hyrax, with notes on the genera *Zschokkeella* and *Thysanotænia*. An account of the structure and characters of the species was given, together with the description of a new genus and two new species.—Dr. Bashford Dean: Living specimens of the Australian lung-fish (*Ceratodus forsteri*) in the society's collection. This paper contained some further observations made by the author in June, 1911, supplementary to his previous communication published in 1906, and dealt with the coloration, size, and age of the specimens. Details of the rate of growth of this species were also given, with notes on their method of breathing, their food, and an account of the regeneration of a portion of the left ventral fin which had suffered an injury.

Royal Astronomical Society, April 12.—Dr. Dyson, F.R.S., president, in the chair.—E. E. Barnard: Recent observations of Nova Cygni (1876). A series of measures of stars in the neighbourhood showed little evidence of motion; the nova seemed to have become stationary in brightness.—E. E. Barnard: Micrometrical measures and focal peculiarities of Nova Lacertæ (Espin). Photographs were shown, from which it appeared that the nova existed as a 13th mag. star in 1803.—H. F. Newall: Photographs of the spectrum of Nova Geminorum (Enebo) made

at Cambridge Observatory. The remarkable changes that had taken place in the spectrum of the nova were described, and Mr. Stratton further dealt with the Cambridge results, no fewer than 200 features having been measured upon the plates.—W. E. Curtis: The spectrum of the new star in Gemini. Prof. Fowler showed the photographs taken by Mr. Curtis.—**Royal Observatory, Greenwich:** Observations of Nova Geminorum. The President showed a series of photographs of the spectrum of the nova taken at the Royal Observatory, and described the changes that had taken place. Photometric observations were made by the aid of a grating, which was shown to the meeting. The grating was placed in front of the object glass, causing it to give a number of images of the star, and much facilitating the observations. Father Cortie described the observations of the nova made at Stonyhurst, the measurement of the spectra giving velocities similar to those shown by Nova Persei. Mr. Storey described the spectroscopic observations of Nova Geminorum made at the Royal Observatory, Edinburgh, and showed photographs taken. Dr. Duffield urged that the effects of pressure should be taken into consideration in our interpretation of the changes in the spectrum of the nova. The Rev. T. E. R. Phillips had made visual observations, and spoke of the great intensity of the H α line. The star was an intense crimson at the end of March; its brightness had shown fluctuations.—Prof. H. H. Turner: A tentative explanation of the "two star streams" in terms of gravitation. Second paper: The position of the centre of our system. In his previous paper he had propounded a hypothetical constitution of our stellar system round a centre of attraction, on which view the centre should lie in the direction of one of the vertices. A number of entirely independent lines of investigation pointed to a vertex at $90^\circ + 11^\circ$. It appeared that Boss's moving cluster in Taurus occupied a position near the centre of our system; the oscillation period of our sun would be about 400 million years, the sun having passed pericentron about a million years ago.

Royal Meteorological Society, April 17.—H. N. Dickson, president, in the chair.—J. E. Clark and R. H. Hooker: Report on the phenological observations for 1911. The outstanding features of the weather during the year were the severe cold of early April; the summer of abnormal dryness, heat and sunshine; and the continuous rainfall when once the drought thoroughly broke about mid-October. After referring to the flowering of plants, the appearance of insects and the song and migration of birds, the authors dealt with the yield of farm crops, and showed that potatoes and wheat were above the average, but most of the other crops were below the average, especially beans, roots, and hay. Throughout Great Britain harvest began generally a fortnight to three weeks earlier than usual, and the duration was very short, the result being that the termination of the harvest was fully a month earlier than the average.—R. G. K. Lempiert and H. W. Braby: A method of summarising anemograms. The tabulation of the hourly values of wind velocity and of wind direction as recorded by many anemometers in the British Isles forms part of the routine work of the Meteorological Office, but little has been done hitherto to summarise the tabulations. The authors have made a preliminary discussion of a few records, and in this paper they gave the results in the form of wind-roses for four stations, which had been selected as being typical of the extreme north, the extreme south, the east coast, and the west coast of Great Britain, viz., Deerness, Scilly, Yarmouth, and Holyhead.

CAMBRIDGE.

Philosophical Society, March 11.—Sir George Darwin, president, in the chair.—Prof. Pope and C. S. Gibson: The resolution of racemic benzoylalanine. An account was given of the resolution of racemic benzoylalanine by the method of Pope and Peachey.—Prof. Pope and J. Read: The optically active hydroxyhydrindamines. The authors described the resolution of hydroxyhydrindamine into optically active components by means of α -bromocamphor- π -sulphonic acid and the preparation of salts and other derivatives of the racemic and active bases.—C. T. Heycock and F. E. E. Lamplough: The boiling points of zinc, cadmium, mercury, sodium, and potassium, and their alteration with change of pressure. An account was given of the more trustworthy previous determinations of these data, the wide differences being noted. The authors' experiments, in which platinum resistance thermometers were used, were described, and the results of many closely agreeing experiments were given. At 760 mm. pressure the boiling points were found to be as follows:—Zinc, 905.70° ; cadmium, 765.93° ; mercury, 357.70° ; sodium, 882.6° ; potassium, 762.2° .—F. E. E. Lamplough: The metastable condition of undercooling in metals. Investigations have been made to determine whether a metastable condition of undercooling before solidification exists in metals. In no case have positive results been obtained. Tin, which on solidifying exhibits superfusion in a notable degree, does not show a metastable undercooling greater than at most half a degree.—J. Satterly: The quantities of radium and thorium emanations contained in the air of soils. (1) The amounts of radium emanation in the air of different soils have been measured at intervals extending over a year. For depths of from 100 to 150 cms. in gravelly soil the amount of emanation is, on the average, equal to approximately 200×10^{-12} curie per litre or 2000 times as much as there is usually in atmospheric air. (2) Experiments showed that a litre of soil-air was in association with 14,000 gm. of damp soil (12,000 gm. when dry), whence the apparent radium content of the soil is 1.7×10^{-4} gm. per gm. of (dry) soil. As the actual radium content is more likely to be seventy times this it follows that little of the emanation generated in the solid particles of the soil can escape into the air around them. (3) The proportion of radium emanation to thorium emanation in soil-air has been measured for various depths and the ratio has been found to increase from 1600 near the surface to 26,000 at a depth of 400 cm. At a depth of 150 cm. it is 8600, whence, taking the radium content of the soil as 1.1×10^{-12} gm. per gm., the thorium content works out as 1.4×10^{-5} gm. per gm. This is of the right order.—J. A. Crowther: A theory of the dissymmetrical distribution of secondary Röntgen radiation.—A. E. Oxley: The variation of magnetic susceptibility with temperature. A criticism of the conclusions reached by Profs. du Bois and Honda concerning the invalidity of the Curie-Langevin laws.—H. H. Paine: The coagulation of colloidal copper. Rate of coagulation.—R. D. Kleeman: The different internal energies of a substance. The author showed that the internal energy of a substance can be divided into three parts, viz.: (1) the kinetic energy of the molecules due to their motion of translation; (2) their molecular internal energy; (3) the potential energy due to their attraction upon one another. It was proved that the kinetic energy of a molecule is equal to that it possesses in the gaseous state at the same temperature, that is, it is equal to $\frac{TR_3}{2}$, where T is the absolute tempera-

ture and R is the gas constant. The internal energy of a substance is per molecule therefore $(U_1 + u_1 + \frac{3RT}{2})$, where U_1 is the energy due to molecular attraction and u_1 the internal energy. Formulæ for the specific heat at constant volume and constant pressure, the Joule-Thomson effect, &c., were deduced and compared with the facts.

PARIS.

Academy of Sciences, April 15.—**M. Lippmann** in the chair.—**J. Boussinesq**: The geometric theory for a non-rigid body of continuous displacements, as well as the deformations and rotations of its particles.—**Yves Delage**: A self-recording bathythermometer. A description of an instrument for measuring and recording surface currents. It has the advantage of being capable of total immersion, and measures both velocities and directions of the currents.—**M. Le Chatelier**: Remarks on a work by F. W. Taylor dealing with the principles of scientific organisation of works.—**J. Bosler** and **P. Idrac**: The spectrum of the new star in the Twins. Observations made at Meudon showed a complete series of the bright lines of hydrogen. The principal nebular line was also noted.—**Fr. Iniguez**: The new star in the Twins. From March 15 to 19 the lines $H\beta$, $H\gamma$, and K were brilliant. The line K disappeared on March 20.—**Etienne Delassus**: The linkages of any order of material systems.—**B. Mayor**: The deformations of certain elastic systems.—**Emile Borel**: The geometric bases of statistical mechanics.—**J. Bergonié**: The phenomena of lightning. A description of some peculiarities caused by a lightning stroke on March 20 near La Flouquette.—**C. Dautère**: The stability of cellular vortices.—**M. Deslandres**: Remarks on the preceding communication.—**A. Blondel**: An electro-chronograph with synchronised sparks. The vibrator of the secondary coil producing the sparks is controlled by a tuning-fork, not directly, but by the action of a current itself controlled by the tuning-fork. The necessary precautions are given in detail.—**C. Camichel**: The measurement of the differences of phase of two alternating currents.—**B. Szilard**: The radio-activity of the thermal springs of Saint Lucasbad (Hungary).—**Albert Bruno** and **P. Turquand d'Auzay**: The estimation of sulphates in solution by a physico-chemical volumetric method. The changes in electrical conductivity are measured when a solution of baryta is added to the sulphate solution. In the case of wine the method was found to be untrustworthy.—**Georges Dupont**: The oxidation of some ketohydrofuranes.—**André Meyer**: The action of oxyurea upon some β -ketonic esters.—**MM. Amouroux** and **Murat**: Some syntheses starting with butyrene. Butyrene can readily be obtained in quantity by the catalytic action of thoria upon butyric acid. Various derivatives obtained by the Grignard reaction from this ketone are described.—**Paul Gaubert**: The circular polarisation of liquid crystals.—**Lucien Daniel**: The transformation of a chrysanthemum as a result of repeated budding.—**Henri Piéron**: The variation of the sensation lag as a function of the intensity of stimulation.—**Raphaël Dubois**: The physical properties of physiological light. Remarks on a recent note by M. Ozorio on this subject.—**Edmond Hue** and **Marcel Baudouin**: The atavic characters of certain lumbar vertebrae of men of the polished stone period. A study of the lumbar vertebrae of Neolithic men from Vendrest proves three atavic characters, showing that these skeletons must be classed between anthropomorphs and modern man.—**A. Marie** and **Léon Mac-Auliffe**: The physiognomy of assassins. Results of researches on this class of criminals.—**Raoul**

Dupuy: Contribution to the study and treatment of children of arrested development.—**Maurice Letulle** and **L. Nattan-Larrier**: The epithelioma of the embryonic ectoderm. Embryonic ectodermic carcinoma is always secondary to a mixed tumour either of the placenta or of the completely developed organism.—**Louis Gentil**: The tectonic of the Haut Atlas in Morocco, and its relations with the Atlas of the Sahara.—**Henri Perrotin**: An attempt at the representation of terrestrial temperatures as a function of the cloud conditions.

BOOKS RECEIVED.

Cambridge Geographical Text Books—Intermediate. By A. J. Dicks. Pp. xi+362. (Cambridge: University Press.) 3s.

Beyond War: a Chapter in the Natural History of Man. By Prof. V. L. Kellogg. Pp. vii+172. (New York: H. Holt and Co.) 1 dollar net.

Lectures Delivered at the Celebration of the Twentieth Anniversary of the Foundation of Clark University under the Auspices of the Department of Physics. By V. Volterra, E. Rutherford, R. W. Wood, C. Barus. Pp. iv+161. (Worcester, Mass.: Clark University; New York and London: G. E. Stechert and Co.) 10s. net.

Post Mortems and Morbid Anatomy. By Dr. T. Shennan. Pp. xiv+496. (London: Constable and Co., Ltd.) 18s. net.

Individualism and the Land Question. By Sir R. K. Wilson, Bart., J. H. Levy, and others. (London: The Personal Rights Association.) 1s. net.

The Rational Arithmetic for Rural Schools. By G. Ricks. Scholar's Book. Sixth Year's Course. Pp. 71. (London: Macmillan and Co., Ltd.) 3d.

To the West of England by Canal. By R. J. Finch. Pp. 63. (London: J. M. Dent and Sons, Ltd.) 9d.

Catalogue of the Lepidoptera Phalænæ in the British Museum. Vol. xi.—Catalogue of the Noctuidæ in the Collection of the British Museum. By Sir G. F. Hampson, Bart. Pp. xvii+689; plates clxxvi.—cxci. (London: Printed by order of the Trustees. Sold by Longmans and Co., and others.) 20s. and 17s. 6d. respectively.

General Index to a Hand-list of the Genera and Species of Birds, Volumes i. to v. Edited by W. R. Ogilvie-Grant. Pp. v+109. (London: Printed by order of the Trustees. Sold by Longmans and Co., and others.) 10s.

Catalogue of the Chiroptera in the Collection of the British Museum. Second edition. By K. Andersen. Vol. i.—Megachiroptera. Pp. ci+854. (London: Printed by order of the Trustees. Sold by Longmans and Co., and others.) 2l. 10s.

National Antarctic Expedition, 1901-1904. Natural History. Vol. vi., Zoology and Botany. Pp. xvi+9+2 plates+pp. 32+3 plates+pp. 60+3 plates. (London: Printed by order of the Trustees. Sold by Longmans and Co., and others.) 16s.

Leitfaden zum Bestimmen der Vögel Mitteleuropas, ihrer Jugendkleider und ihrer Nester nach leicht und sicher erkennbaren Merkmalen. By Prof. F. Dahl. Pp. viii+162. (Berlin: Gebrüder Borntraeger.) 5.20 marks.

Die Blitzgefährdung der verschiedenen Baumarten. By Prof. E. Stahl. Pp. iii+75. (Jena: G. Fischer.) 1.80 marks.

Fortschritte der naturwissenschaftlichen Forschung. By Prof. E. Abderhalden. Fünfter Band. Pp. iii+320. (Berlin and Wien: Urban and Schwarzenberg.) 15 marks.

Witterung, Erdoberfläche und Leben: ihr Inein-