

Mr. Frank E. Huxley has resigned his lectureship in dental surgery.

Dr. L. G. Parsons has been appointed assistant to the chair of forensic medicine and toxicology.

A full-time lectureship in classics, ancient history, and archæology is being established.

Miss M. Le Bour has been appointed to undertake a special investigation in helminthology in the department of agricultural zoology.

CAMBRIDGE.—Mr. E. R. Burdon has been appointed University lecturer in forestry.

The Anthony Wilkin studentship in ethnology and archæology will be available at the end of the Easter term. Applicants should send their names, qualifications, and a statement of the research which they wish to undertake, to the Vice-Chancellor before June 1.

Mr. H. C. Haslam, of Gonville and Caius College, has been approved by the General Board of Studies for the degree of Doctor of Science.

THE governors of the South Wales and Monmouthshire University College at Cardiff have accepted the generous offer of an anonymous donor to provide funds for the erection of a great school of preventive medicine. The money value of this gift, together with that of Sir William James Thomas to erect a school for other branches of medicine in connection with the college, is estimated at 180,000*l.*

Two lectures entitled "La Catalyse et mes divers Travaux sur la Catalyse," will be given by Prof. Paul Sabatier, of the University of Toulouse, at King's College, W.C., on May 14 and 15, at 5 p.m. Special interest is attached to these lectures as the subject-matter is one with which Prof. Sabatier is particularly associated, and one from which he has obtained important results in the synthetical preparation of organic substances.

It is announced in the issue of *Science* for May 1 that the Catholic University of America, Washington, will receive the greater part of the estate of 200,000*l.* left by the late Mr. Theodore B. Basselin, of Croghan. From the same source we learn that Mr. James Deering, in a letter addressed to the trustees of North-western University and of Wesley Hospital, announces a gift of 200,000*l.* to the hospital. It is provided that Wesley Hospital shall be a teaching hospital under Northwestern University. The gift is made in honour of the donor's father and of his sister.

PROF. SIMS WOODHEAD, in his presidential address to the Royal Microscopical Society (Jour. Roy. Microscop. Soc., 1914, part 2, p. 109), suggests that too little attention is paid in our medical schools to the education of the students in the *technical* use of the microscope. He urges that there should be sound teaching on the optical and mechanical principles on which are based the construction and use of the microscope, and that the best students, at any rate, should have some opportunity of acquiring facility in the use of the various types of substage condenser, dark-ground illumination, monochromatic illumination, methods of measurement, ultra-microscopic work, micro-spectroscopy, polarisation, and the like.

FREE vacation courses in scientific instrument-making and glass-blowing will again be held this year at the University of Leyden. The course in instrument-making will include practice with modern machine tools, such as lathes, milling machines, etc., and will extend from August 20 to August 29; it will involve the cutting of screw threads, turning spheres,

copying divided discs, and grinding various hardened objects. The course on elementary and advanced glass-blowing, from August 20 to September 2, will include the manufacture of vacuum tubes, vacuum flasks, and various other forms of apparatus used in physical and chemical investigation, and the manipulation of high-vacuum pumps. The director of the course is Prof. Kamerlingh Onnes, and the secretary Dr. C. A. Crommelin, to whom all communications should be addressed at the Physical Laboratory, Leyden, Holland.

THE Medical Officers of Schools Association from time to time issues pamphlets on problems connected with conditions of health in schools. The latest of these useful publications deals with "School Lighting," and is a reprint of a paper read before the association by Dr. E. H. T. Nash. The author puts the difficulties of the problem of daylight illumination, and rightly asks that the Government should either subsidise further research or conduct a thorough inquiry through the Board of Education. In the present regulations of the Board we read: "The light so far as possible should be admitted from the left side of the scholars. This rule will be found greatly to influence the planning." So far all authorities agree, but there is great diversity of opinion and practice as regards bilateral and overhead lighting, the shape of class-rooms, the relative areas to be assigned to windows. These matters have an important influence on the health of the children, the class-room efficiency, and the expenditure of public money on school buildings. As regards artificial lighting, the problem is vastly more simple, and Dr. Nash gives an instance of efficient and economic lighting by incandescent gas, the cost for a class-room being rather more than $\frac{3}{4}d.$ an hour. In this case the illumination at the desks ranged from 3.5 foot-candles to 5 foot-candles, as compared with the usually recommended minimum of 2 foot-candles. The pamphlet is illustrated with diagrams, includes an account of the discussion which followed the reading of the paper, and is published by Messrs. Churchill at 1*s.*

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 7.—Sir William Crookes, president, in the chair.—Lord Rayleigh: (1) Some calculations in illustration of Fourier's theorem. (2) The theory of long waves and bores.—Sir Joseph Larmor and J. S. B. Larmor: Protection from lightning and the range of protection afforded by lightning rods. On modern ionic views discharge in the atmosphere should originate at a place of maximum intensity of electric field and spread both ways from it along a line which should be roughly the line of force. The explanation of branching, zigzag, and multiple lightning discharges is to be sought on these lines. The introduction of a narrow linear conductor cannot sensibly disturb a steady field of force, and not at all if it is transverse to the field. Thus it would seem to be the top of the building itself, not of the lightning conductor, that attracts the discharge, and the function of a single rod can only be to lead it more safely away. But a number of rods distributed over the area of the roof, and effectively connected to earth by a conductor, can, by their joint action, lift the intensest part of the field from the top of the building to the region around their summits, and so obviate or much mitigate the danger of discharge from above to the building which they cover. In illustration, diagrams are given of a vertical field of force as disturbed by vertical pillars of semi-ellipsoidal form and of various breadths, or by

an earthed conducting region overhead, such as might be originated by gradual discharge from a pointed rod.—Prof. A. Schuster: Newcomb's method of investigating periodicities and its application to Brückner's weather cycle.—E. N. Da C. Andrade: The flow in metals subjected to large constant stresses. The law connecting the extension with time for wires of various metals subjected to large stresses has been examined at different temperatures. The stress was kept constant throughout the flow by the device of a hyperbolic weight employed in former experiments. The different types of flow observed for different metals at room temperature are only particular cases of one general law governing the flow of all single metals, and can all be found for one metal by choosing an appropriate temperature; thus, soft iron at 450° C. behaves similarly to lead at 15° C.—G. I. Taylor: Eddy motion in the atmosphere. The paper contains a theoretical discussion of the function of eddies in conveying heat and momentum through a fluid. It is shown also that measurements of the temperature of the air over the Great Bank of Newfoundland made by the author last year, lead to the conclusion that eddies extend upwards over the sea to a height of at least 800 metres; and that there is no appreciable diminution in their size or intensity at this height. On the assumption of a uniform amount of eddy motion, the velocity of the wind at various heights above the ground is calculated, and shown to agree with the most recent observations carried out over Salisbury Plain.—Prof. Ernest Wilson: The properties of magnetically-shielded iron as affected by temperature. In a paper recently read before the Royal Society, it is shown that if stalloy in ring form is shielded from the earth's magnetism and subjected to a considerable magnetising force at atmospheric temperature, the permeability can be increased. The present experiments deal with the effect of allowing stalloy to cool down through the temperature at which it regains magnetic quality when in a shield and when under the influence of a magnetising force due to a continuous current. Two specimens have been subjected to this treatment, and in each case the maximum permeability has a value of above 10,000 when the specimen is at atmospheric temperature.

Geological Society, April 29.—Dr. A. Smith Woodward, president; and afterwards, Mr. W. Hill, vice-president, in the chair.—A. S. Woodward: The lower jaw of an anthropoid ape (*Dryopithecus*) from the Upper Miocene of Lérida (Spain). The greater part of a mandibular ramus and symphysis of *Dryopithecus fontani* is described. The specimen is the latest jaw of an anthropoid ape hitherto discovered in Europe. The relatively small size of the first molar is to be regarded as a primitive character, lost in all modern anthropoids except some Gibbons. The shape of the mandibular symphysis is remarkably primitive, with the surface of insertion for the digastric muscle nearly as large as that of the ancestral Macaques. The anterior face of the symphysis slopes directly upwards from the front edge of this insertion, as in the Macaques, some Gibbons, and very young individuals of the chimpanzee, gorilla, and orang. It thus differs from the mandibular symphysis in adult individuals of these existing apes, in which the lower portion of the slope curves backwards into a flange or shelf of bone, while the digastric insertion is reduced in extent. So far as its lower jaw is concerned, *Dryopithecus* is a generalised form from which modern anthropoid apes and man have diverged in two different directions.—Prof. J. W. Gregory: The structure of the Carlisle-Solway Basin, and the sequence of its Permian and Triassic rocks. The Carlisle-Solway basin has been generally represented as a

syncline, with the Solway resting on a great thickness of Triassic rocks. A boring made near Gretna in 1794 shows, on the contrary, that Lower Carboniferous rocks crop out there at the surface. This boring shows that the basin is not a simple syncline. The evidence derived from the boring necessitates reconsideration of the Permo-Triassic sequence in north Cumberland, as to which the Geological Survey maps and memoirs are not in agreement. Arguments are given to show that the evidence for the existence of the St. Bees Sandstone at the bottom of the Abbeytown and Bowness borings is quite inconclusive, and the fact is improbable. The view adopted by the Geological Survey map that the area west and north-west of Carlisle consists of Keuper deposits, is also improbable.

MANCHESTER.

Literary and Philosophical, April 7.—Mr. F. Nicholson, president, followed by Prof. F. E. Weiss, vice-president, in the chair.—W. C. Grummitt and Dr. H. G. A. Hickling: A preliminary note on the structure of coal. It was suggested that the essential constituent of coal is a homogeneous substance, red or orange in colour when thin enough to be transparent. This material under the microscope frequently shows evidence of "flow," and was doubtless a liquid vegetable decomposition product. This, in its purest form, constitutes the "bright" layers of coal; with strongly developed "cleat" or cleavage. Vegetable structures are preserved in coal in two forms: (1) in a "carbonised" condition, as is found pure in "mother-of-coal," and is quite opaque even when less than 1 μ thick; (2) impregnated with the transparent material described above, spores being the most readily distinguishable parts preserved in this manner. The ash from the various coals consists largely of fibrous material which is clearly an incombustible residue of vegetable structure and closely resembles the ash obtained by burning wood. The spores from certain coals can be isolated by maceration with Schultz solution.

April 28.—Mr. F. Nicholson, president, in the chair.—R. F. Gwyther: Specification of stress. Part v., An outline of the theory of hyper-elastic stress. The author dealt with the mathematical conditions of a body from the time of exceeding the elastic limit and when approaching to the conditions of rupture.—H. P. Walsley and Dr. Walter Makower: The photographic action of α rays. Each α particle on striking a grain of silver in a photographic film affects that grain in such a manner as to be capable of photographic development. The path of the ray is thus apparent under the microscope.

PARIS.

Academy of Sciences, May 4.—M. P. Appell in the chair.—The President announced the death of M. van Tieghem, perpetual secretary.—Maurice Hamy: The position to be given to the astronomical observatory on Mont Blanc. Various possible sites have been examined from the points of view of uninterrupted horizon, accessibility and stability, and the advantages and disadvantages of each site discussed. The best position would appear to be the Petit Flambeau (3435 metres).—Emile Picard: Some reflections on certain results of Henri Poincaré concerning analytical mechanics.—Pierre Termier: Eduard Suess, the man and his work.—C. Guichard: Certain special congruences of circles and spheres.—René Baillaud: A photographic astrolabe.—N. E. Nörlund: Series of faculties.—Ernest Esclangon: The quasi-periodic integrals of linear differential equations.—Michel Fekete: A lower limit of the changes of sign of a function in an interval.—N. Lusin: a problem of M. Baire.—Lucien Godeaux: Double algebraic surfaces having a finite

number of points of ramification.—**Louis Roy**: Quasi-waves in three dimensions.—**L. Dunoyer** and **R. W. Wood**: Correction to our note entitled photometry of the superficial resonance of sodium vapour under the stimulation of the D lines. A correction of an error of calculation in the determination of the width of the resonance lines.—**F. Charron**: A hydrodynamical arrangement for the magnification and registration of radio-telegraphic signals. The telephonic receiver is modified so that the vibrations are concentrated on the orifice of a vertical capillary tube. A stream of gas is flowing out of the capillary tube with a velocity just below that of turbulent flow. Sounds in the telephone produce disturbances in the flow of the gas through the jet, and these can be utilised to form a record without using a Morse receiver.—**H. Bourget**, **H. Buisson**, and **Ch. Fabry**: Interferential measurements of the radial velocities and wave-lengths in the nebula of Orion. The mean radial velocity of the nebula is +15.8 kilometres a second with respect to the sun, that is, the distance between the sun and the nebula is increasing at that rate. The wave-lengths of the characteristic double ultra-violet line had been determined and found to be 3726.100 and 3728.838. These lines are not emitted by any known element.—**B. Fessenkoff**: The law of reflection of light by matt surfaces.—**J. Minguin** and **R. Bloc**: The influence of solvents on the optical activity of the camphoric esters. The optical activity of the *allo*-acids is the same in alcoholic, benzene, or toluene solutions: the *ortho*-acids give higher rotations in benzene or toluene than in alcohol.—**Marcel Delépine**: Lithium chloro-iridate and chloro-iridite.—**Jacques Bardet**: The extraction of germanium from Vichy water. Germanium had been previously detected spectroscopically in Vichy water, and an attempt was made to isolate germanium compounds from this source. The starting point was the mixture of insoluble carbonates deposited on heating the water, and 0.06 gram of germanium oxide was prepared from 100 kilograms of deposit, representing about 250,000 litres of mineral water. The method of separation is given in detail.—**M. Vasticar**: The apparatus of support of the internal acoustic region.—**Michel Cohendy** and **Eugène Wollman**: Experiments on life without micro-organisms. Aseptic growth of guinea-pigs. These experiments prove that it is possible to raise guinea-pigs under strictly aseptic conditions, development and utilisation of food being in no way prejudiced by the absence of micro-organisms.—**Louis Cruveilhier**: Treatment of blennorrhagia by the method of sensitised virus vaccines.—**Auguste Lumière** and **Jean Chevrolier**: Some new considerations concerning the culture of gonococci.—**P. Macquaire**: The amylolytic diastase of the pancreas.—**L. Cayeux**: Eastern prolongation of the ferruginous formation of the May (Calvados) synclinal.

CAPE TOWN.

Royal Society of South Africa, April 15.—**Mr. S. S. Hough** in the chair.—**T. Muir**: (1) Note on a theorem of Ph. Gilbert, regarding the differentiation of a special Jacobian. (2) Note on Rosanes's functions, resembling Jacobians.—**R. T. A. Innes**: The triple stellar system ζ Virginis and Σ 1757. These two stars, although a considerable distance apart, constitute a system as they are moving through space with almost identical velocities and directions.—**G. A. H. Bedford**: A curious mosquito.—**A. L. du Toit**: The porosity of the rocks of the Karroo system. Determinations are given of the porosity of more than ninety rocks, the majority being from borehole cores. It was found with the three-fold division of the Beaufort beds the mean porosity of the Sandstone was 2.9 per cent. for the lower, 5.2 per cent. for the middle,

and 5.5 per cent. for the upper division. The figures for the Transvaal phase of the Karroo were much higher. The effects of weathering in increasing the porosity are discussed and analysed.—**J. R. Sutton**: A note on the temperatures of the air observed at Mochudi. The note gives a brief account of some points of interest in the results of temperature observations by Harbor at Mochudi in the Bechuanaland Protectorate. The extremes of temperature are considerable, the greatest range so far observed being from 108° F. to 28° F. The mean maximum temperatures depend upon the sun's meridian altitude in much the same way as they do at Kimberley. The annual cold wave of the middle of July is felt at Mochudi like it is elsewhere further south.

BOOKS RECEIVED.

The Simpler Natural Bases. By Prof. G. Barger. Pp. viii+215. (London: Longmans and Co.) 6s. net.

Department of Marine and Fisheries. Report of the Meteorological Service of Canada, Central Office, Toronto, for the Year ended December 31, 1910. Vol. i. Introduction and Parts i.-iii. Pp. xxiii+341. Vol. ii. Parts iv.-vi. and Appendix. Pp. 342-604. (Ottawa: C. H. Parmelee.)

The Therapeutic Value of the Potato. By H. C. Howard. Pp. 31. (London: Baillière and Co.) 1s. net.

Ernährungsphysiologisches Praktikum der höheren Pflanzen. By Prof. V. Grafe. Pp. x+494. (Berlin: P. Parey.) 17 marks.

American Mathematical Society. Colloquium Lectures. Vol. iv. The Madison Colloquium, 1913. i., On Invariants and the Theory of Numbers. By L. E. Dickson. ii., Topics in the Theory of Functions of Several Complex Variables. By W. F. Osgood. Pp. vi+230. (New York: American Mathematical Society.)

Smithsonian Institution. Bureau of American Ethnology. Bulletin 56. Ethnology of the Tewa Indians. By J. Henderson and J. P. Harrington. Pp. x+76. (Washington: Government Printing Office.)

Lehrbuch der vergleichenden mikroskopischen Anatomie der Wirbeltiere. Edited by Prof. A. Oettel. Achte Teil. Pp. x+168. (Jena: G. Fischer.) 8 marks.

The British Academy. Palissy, Bacon, and the Revival of Natural Science. By Sir T. Clifford Allbutt. Pp. 15. (London: Oxford University Press.) 1s. net.

Bulletin of the Illinois State Laboratory of Natural History, Urbana, Ill., U.S.A. Vol. x., Article 3: Studies on the Enchytraeidae of North America. By Dr. P. S. Welch. Pp. 212+Plates viii-xii. (Urbana, Ill.)

British Museum (Natural History). A Monograph of the Genus Sabicea. By H. F. Wernham. Pp. v+82+xii Plates. (London: British Museum.) 6s.

A Revision of the Ichneumonidae. Based on the Collection in the British Museum (Natural History). Part iii. By C. Morley. Pp. xi+148. (London: British Museum.) 5s. 6d.

British Museum (Natural History). Report on Cetacea stranded on the British Coasts during 1913. By Dr. S. F. Harmer. Pp. 12. (London: British Museum.) 1s. 6d.

Elements of Algebra. By G. St. L. Carson and Prof. D. E. Smith. Part i. Pp. v+346. (London: Ginn and Co.) 3s.

Journal of the British Fire Prevention Committee. No. ix. (Special subject.) Table G. The Fire Resistance of Partitions. Pp. 8+1 Table. (London: The British Fire Prevention Committee.) 10s. 6d.