

late Mrs. Elizabeth Mattox, of Terre Haute, the sum of 9000*l.* will be added to the general endowment of De Pauw University; and that Mrs. W. P. Herrick, widow of the late Mr. W. P. Herrick, has given to the University of Colorado School, to be used as an aid fund for worthy students.

A BILL was read a second time in the House of Commons on February 20 to amend the law in respect of the employment of children and their attendance at school. The principal changes in the law proposed are the grant of optional powers to local education authorities to extend the age of leaving school from fourteen years to fifteen; no exception from school attendance to be allowed for children under thirteen years; the abolition of the existing half-time system; the grant to local education authorities of power to require attendance at continuation classes; and the prohibition of street trading by boys under fifteen and girls under eighteen. The subject of the continuation-school system was referred to by Lord Haldane in replying to the toast of "His Majesty's Ministers," at the dinner of the City of London Solicitor's Company on the same date. He said the old days of apprenticeship which did so much for us have long since gone by. Continental nations, and in a less degree the United States, are substituting for apprenticeship a very formidable thing—training in the trade continuation schools. A British workman finishes his education at thirteen. In many parts of the Continent that training is now going on until sixteen, seventeen, and eighteen; and not a training merely in general education, but in the chief point of the calling which the workman is going to exercise in the future. We shall have to face this in six or seven years from now. The London County Council is awake to the national peril, and that is true of other great cities in the United Kingdom. Lord Haldane is a firm believer in our capacity to keep our lead, but only if we think ahead and act ahead. We cannot afford to be inattentive to these things, and be slack as to the consequences. A national awakening will come, and it is our duty to see that it does not come too late.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 19.—Sir William Crookes, president, in the chair.—Prof. G. Elliot Smith: The brain of primitive man, with special reference to the cranial cast and skull of *Eoanthropus* ("the Piltdown man"). The small brain of *Eoanthropus*, though definitely human in its characters, represents a more primitive and generalised type than that of the genus *Homo*. Nevertheless, it can be regarded as a very close approximation to the kind of brain possessed by the earliest representatives of the real *Homo*, and as the type from which the brains of the different primitive kinds of men—Mousterian, Tasmanian (and Australian), Bushman, negro, &c., no less than those of the other modern human races have been derived, as the result of more or less well-defined specialisations in varying directions. From the features of its brain *Pithecanthropus* must be included in the family Hominidæ, but it and *Eoanthropus* can be looked upon as divergent specialisations of the original genus of the family. *Pithecanthropus* represents the unprogressive branch which survived into Pleistocene times before it became extinct; *Eoanthropus* the progressive phylum from which the genus *Homo* was derived. Special attention is devoted to the study of the temporal region of the brain, which in all of these fossil men (not excluding *Pithecanthropus*) reveals features of great morphological interest. The opinion is ex-

pressed that the increased size of the brain (as a whole) which is distinctive of the Hominidæ, among the Primates, is ultimately related to the acquisition of the power of articulate speech, and that the very earliest representatives of the family must have possessed in some slight degree the definite faculty of intercommunication one with another by means of vocal sounds. The development of asymmetry of the brain was necessarily incidental to the acquisition of human characteristics, and must have been already present in the original Hominidæ.—Prof. A. J. Ewart: Oxidases.—Dr. J. W. W. Stephens: A new malarial parasite of man. The blood-slide in which this parasite occurred came from Pachmari, Central Provinces, India. The peculiarities of the parasite are:—(1) It is extremely amoeboid. Thin processes extend across the cell or occur as long tails to more or less ring-shaped bodies. These processes may be several in number, giving the parasite fantastic shapes. (2) The cytoplasm is always scanty; the amoeboid processes are delicate; the parasite has but little bulk. (3) The nuclear chromatin is out of proportion to the bulk of the parasite. It takes the form of bars, rods, strands, curves, forks, patches, &c. Abundance of and marked irregularity in the distribution of the chromatin masses are characteristic of this parasite. It differs from the hitherto described parasites of malaria. The author proposes to call the parasite *Plasmodium tenue*.—S. B. Schryver: Investigations dealing with the phenomena of "clot" formations. Part ii., The formation of a gel from cholate solutions having many properties analogous to those of cell membranes.—Dorothy J. Lloyd: The influence of the position of the cut upon regeneration in *Gunda ulvae*. In 1889, Hallez published a paper in which he stated that the difference in the regeneration of Triclad and Polyclad lay in the fact that the former could regenerate a head from the oral surface of a cut made at any level, while the latter could only do so if the regenerating fragment contained the cerebral ganglia. Experiments made with *G. ulvae*, a marine Triclad occurring in large numbers at Plymouth, show that this generalisation is not justifiable. *G. ulvae* is found to differ from most Triclad and to correspond to Polyclad in its mode of regeneration.

Geological Society, February 4.—Dr. Aubrey Strahan, president, in the chair.—C. T. Trechmann: The lithology and composition of Durham Magnesian Limestones. The formation maintains a highly dolomitic character, with important exceptions. Those portions which show a calcareous composition may be regarded as the result of one of three main causes:—(1) Original conditions of sedimentation, during which dolomitic deposition was arrested temporarily; (2) escape from secondary dolomitisation; (3) calcareous segregation. Evidence is brought forward in favour of the view of direct sedimentation of dolomite from the waters of the Permian sea. The question of the secondary dolomitisation of the Shell-Limestone reef is discussed. The dedolomitisation of the formation is due to the mechanical washing-away of powdery dolomitic material through the interstices of the rock. No evidence of any leaching-out of magnesium carbonate from the rock was found. The nature and distribution of the true cellular rock is discussed, and modes of origin are suggested. A summary of the general conditions of deposition of the Durham Permian, from the Marl Slate upwards to the Salt Measures, is given.—H. Bolton: The occurrence of a giant dragon-fly in the Radstock Coal Measures. The structure of a wing-fragment found upon the Tying waste-heap at Radstock Colliery (Somerset), is described. The fragment consists of the proximal third of a left fore-wing. It is 64 mm. long and 40 mm. broad, the complete wing

having an estimated length of 190 mm., or 7.5 in.; the whole insect (with wings extended) must have had a span of more than 400 mm., or 16 in. The anterior wing-margin is tuberculated proximally, and more distally bears a closely set series of pointed spines directed outwards towards the wing-apex. The hinder wing-margin is also spinous, the spines possibly serving to interlock the fore and hind wings during flight. The characters of the costa and subcosta on the anterior portion of the wing, and of the cubital and anal veins on the hinder part, show the relationship of the insect to the family Meganeuridæ. The wing is referred to the genus *Meganeura* as a new species.

EDINBURGH.

Royal Society, January 19.—Prof. Geikie, president, in the chair.—Prof. R. J. A. Berry and Dr. A. W. D. Robertson: The place in nature of the Tasmanian aboriginal as deduced from a study of his calvaria. Part ii., His relation to the Australian aboriginal. Among the main conclusions of this prolonged study of more than a hundred skulls may be mentioned the following. The Australians and Tasmanians are the descendants of a common Late Pliocene or Early Quaternary stock, which may be called, with Sergi, *Homo tasmanianus*; the Tasmanian aboriginal was the almost unchanged offspring of this type, but the Australian aboriginal is a cross between the primitive *Homo tasmanianus* and some other unknown race, and is therefore a hybrid; both races have evolved on their own lines, and in their own way; both have attained morphologically to a higher stage in the evolutionary scale than is usually supposed; neither have any direct relationship with *Homo primigenius* as represented by the crania of the Spy-Neanderthal men; the range of variability is, in the Australian, as great as in any other impure race; but in the Tasmanian it is as small as in any other known or supposed pure race.—L. W. G. Buchner: A study of the curvatures of the Tasmanian aboriginal cranium. This detailed craniometrical investigation led to the same conclusion come to by the authors of the previous paper on quite other grounds, namely, that the range of variation is so small as to warrant the belief that the Tasmanian is a pure race.—E. M. Anderson: The path of a ray of light in a rotating homogeneous and isotropic solid. By an interesting geometrical demonstration the paths are shown to be circles for rays traveling in planes at right angles to the axis of rotation.—T. J. Evans: The anatomy of a new species of *Bathydoris* and the affinities of the genus (Scottish National Antarctic Expedition). This species, dredged in 1410 fathoms off Coats Land, differs from the five known species in having only two gills, which are intermediate in condition between a typical Dorid rosette of plumes and a Tectibranch gill.—Prof. Carlgren: The genus *Porponia* and related genera (Scottish National Antarctic Expedition). The detailed examination of the many specimens which were dredged off Coats Land in a depth of 1410 fathoms showed that *Porponia* belongs to an elementary group of Actinians, or even to the Protactiniæ, but is in no way closely related to the Zoanthidæ, as Hertwig suggested in his *Challenger* report. With *Porponia* in the family Endocœlactidæ, Prof. Carlgren associates *Halcurias* and the new genus *Synhalcurias*, created for the species *Ilyanthopsis longifilis*.

PARIS.

Academy of Sciences, February 9.—M. P. Appell in the chair.—P. Appell and J. Kampé de Fériet: The convergence of series proceeding according to Hermite polynomials or more general polynomials.—Fred Wallerant: The crystallographic properties of dichlorobenzene.—Gaston Bonnier and Jean Friedel: Anatomical

remarks on some types of carophores.—O. Lehmann: A sudden change in the form of liquid crystals, caused by a molecular transformation.—Jean Boccardi: The diurnal variations of latitude.—A. Véronnet: The sun and its heat. Its contraction and its duration.—Ch. Gravier: Simplification of the method of obtaining a photographic negative.—Eugène Darmois and Maurice Leblanc, jun.: The working of the alternating arc in mercury vapour. An extension of the results published in an earlier paper. The current consumption is satisfactory, but the power factor is low. The present paper deals with the influence on the power factor of variations in the current dimensions, of free surface of the electrodes, length of arc, pressure of mercury vapour, and shape of the tube.—MM. Hanriot and Lahure: Increasing and decreasing hardening of metals.—R. Marcelin: The influence of temperature on the velocities of transformation of physico-chemical systems.—G. Vavon: The reaction velocity of catalytic hydrogenation in presence of platinum black. The velocity of fixation of hydrogen by limonene in presence of platinum black depends upon the quantity of platinum present and also upon its condition. The latter can be modified by heating the metal to various temperatures.—Léon Guillet: New researches on the transformation points and the structure of nickel-chrome steels. The first series of alloys studied contained about 0.2 per cent. carbon, 2 per cent. nickel, and chromium varying from 0.06 per cent. to 10.2 per cent. The second series contained 4 per cent. nickel, chromium varying from 0 to 13.9 per cent. Details are given of the transformation temperatures, microscopic structure, resilience, and hardness for sixteen alloys.—Paul Pascal and A. Jouniaux: The density of some metals in the liquid state. The densities of fused tin, lead, zinc, antimony, aluminium, and copper were taken at temperatures between their melting points and 1300° C. by means of a loaded fused quartz bulb. Formulæ are given for the expansion of these six metals in the fused state. The curve of specific volumes of tin shows a marked inflection at 620° C.—Alberto Betim Paes Leme: The zeolites of the river Peixe, Brazil.—Jean Daniel: The descendants of beans which have presented a case of xenia (influence of the embryo on the teguments of the seed).—Jakob Eriksson and Carl Hammarlund: Attempts to immunise the hollyhock against the disease of mildew (*Puccinia malvacearum*). The introduction of a fungicide (copper sulphate) into the soil arrests or reduces the vitality of the fungus living in the latent state in the interior of the plant.—P. Choux: The genus *Tanulepis* at Madagascar.—Jules Amar: Fatigue cardiograms.—A. Javal: The variations of the electrical conductivity of the fluids of the organism. The variations in the electrical conductivity of blood serum, pleural liquid, cephalo-rachidian fluid, and other fluids from the body are in close relation with the amount of chlorides present.—Louis Joubin: Two cases of incubation in Antarctic Nemertians.—Jacques Pellegrin: The freshwater Atherinidæ of Madagascar.—Edouard Chatton: Autogenesis of the nematocysts in *Polykrikos*.—MM. Azéma and Jamot: The geology of Ouadaï.—De Montessus de Ballore: The distribution of earthquakes on the globe.

February 16.—M. P. Appell in the chair.—E. Jungfleisch and Ph. Landrieu: Researches on the acid salts of the dibasic acids. The dextrorotatory camphorates. Various metallic *d*-camphorates. From a study of the *d*-camphorates of sodium, lithium, ammonium, barium, strontium, calcium, manganese, cobalt, and piperidine, the conclusions are drawn that the neutral camphorates are very stable in presence of water and do not undergo dissociation; the acid camphorates in presence of water give the free acid and the dimetallic camphorate.—A. Laveran and G.

Franchini : The natural infection of the rat and mouse by *Herpetomonas pattoni* by means of parasitic rat fleas. The experiments carried out under natural conditions of attack by the rat fleas are favourable to the view that the trypanosomes of vertebrates and Leishmania have the flagellæ of invertebrates for their origin.—**André Blondel** : The influence of the mounting of triphase transformers on the transport of energy at high voltages. A discussion of the best way of protection of the system against third harmonics.—**V. Grignard** and **E. Bellet** : The constitution of liquid and gaseous cyanogen chlorides. A study of the reactions of the gaseous and liquid cyanogen chlorides with various organo-magnesium halides suggests that the gaseous chloride probably possesses the carbamine constitution, $C\equiv N.Cl$, the liquid chloride the nitrile constitution $Cl-C\equiv N$.—**Ed. Imbeaux** : A new system of electrical funicular haulage of boats.—**Serge Bernstein** : The best approximation of analytical functions possessing complex singularities.—**Harris Hancock** : The generalised Eulerian function.—**J. Andrade** : Study of new methods of compensation of chronometers and some thermal adjustments. Three distinct methods of adjustment are described.—**P. Dosne** : The registration of radio-telegrams by means of Poulsen's telegraphone. The apparatus comprises an ordinary wireless receiver with a crystal detector and telephone, a microphone, and a Poulsen telegraphone.—**Ch. Leenhardt** and **A. Boutaric** : The heat of fusion of hydrated salts and hydrates in general. As a first approximation the heat of fusion of a hydrate is equal to the heat of fusion of the water it contains.—**G. Reboul** : The selective action of metals in the photoelectric effect. The experiment consisted in measuring the negative emissions produced by the total radiation of a source of ultra-violet light falling on plates of different metals, and also measuring the emissions when the light had passed through a thin film of silver. For eight metals out of ten, the results are in qualitative agreement with the values calculated from Lindemann's formula. Aluminium and zinc are exceptional in their behaviour under these conditions.—**Georges Claude** : The influence of the diameter on the difference of potential at the electrodes of neon tubes. Observation relating to the aurora borealis. For tubes varying from 5.6 to 67 mm. in diameter, the fall of potential in volts per metre of tube is inversely proportional to the diameter. For the 67 mm. tube, the drop in volts is less than corresponds to its diameter, and the author suggests that in very wide tubes the fall of potential becomes very small. This has a bearing on the phenomenon of the aurora, in which the discharges are of enormous sectional area.—**C. Cloarec** : The spontaneous alteration of liquid surfaces.—**M. Swyngedauw** : The resonance of the third harmonics in triphase current alternatives.—**André Kling** and **A. Lassieur** : The physico-chemical estimation of sulphates. The conductivity method proposed by Dutoit for the estimation of sulphates is shown to be inexact.—**E. Tassilly** : The velocity of diazotation of some amines.—**A. Ariès** : The laws of displacement of chemical equilibrium.—**M. Barre** : Some double chromates.—**S. Wolodine** and **B. Penkiewitsch** : The heat of formation of manganese sulphide. The combination of finely divided manganese and sulphur was brought about by an aluminium-potassium chlorate fuse in an atmosphere of nitrogen. The mean result was 723 calories per gram of MnS formed.—**A. Colani** : The preparation of molybdenum metaphosphate, $Mo(PO_3)_3$.—**Jacques Joannis** : The catalytic influence of kaolin on the combination of hydrogen and oxygen. In the presence of kaolin, the combination of hydrogen and oxygen commences at $230^\circ C$.—**E. E. Blaise** : Syntheses by means of the mixed zinc organometallic derivatives. The 1:4-acyclic ketones. Succinyl

chloride reacts with zinc alkyl iodides as though it possessed an unsymmetrical constitution, but starting with mixed cyctoacetals, the reaction gives rise to dicycloacetals; from the latter 1:4-diketones can be obtained. The preparation of dipropionylethane by this method is described in detail.—**Marcel Godchot** : The synthesis of a methylcyclopentenone.—**W. Russell** : The survival of plant tissues after freezing. The death of a plant through frost rarely takes place suddenly, and appears to take place cell by cell.—**V. Lubimenko** : Researches on the pigments of the chromoleucites.—**A. Pèzard** : The experimental development of the spurs and growth of the comb in hens. The extirpation of the ovary causes a growth in the spurs and diminution in the size of the comb.—**Henri Bierry** and **Mlle. Lucie Fandard** : Protein sugar and virtual sugar.—**A. Trillat** and **M. Fouassier** : Removal and separation of micro-organisms in suspension in water under the influence of an air current. Some organisms, such as *B. prodigiosus*, are readily carried away by an air current from a suspension in water; others, such as *B. subtilis*, are not removed. This property has been applied successfully to microbial separations.—**W. J. Penfold** and **H. Violle** : Sensibility of the organism to certain bacterial products caused by hæmolysis.—**R. Goupil** : Researches on the fatty matters formed by *Amylomyces rouxii*.—**Jean Groth** : The goniatic schists of Guadalmez.—**J. Repelin** : The secondary accidents which have affected the *massif* of Lare, near Sainte-Baume.

BOOKS RECEIVED.

Die Vögel. By A. Reichenow. Zwei Bände. Erster Band. Pp. viii+529. (Stuttgart: F. Enke.) 15 marks.

The Wonders of Bird-Life. By W. P. Westell. Pp. 128. (Manchester: Milner and Co.) 1s. net.

Transactions of the Geological Society of South Africa. Vol. xvi. Pp. 166+xxii plates. (Johannesburg.) 42s.

Proceedings of the Geological Society of South Africa. Pp. lxxviii+plates. (Johannesburg.)

Bill's School and Mine: a Collection of Essays on Education. By W. S. Franklin. Pp. vii+98. (South Bethlehem, Penn.: Franklin, Macnutt and Charles.) 50 cents.

Photo-chemistry. By Dr. S. E. Sheppard. Pp. x+461. (London: Longmans and Co.) 12s. 6d.

Library of Congress. Report of the Librarian of Congress and Report of the Superintendent of the Library Building and Grounds for the Fiscal Year ending June 30, 1913. Pp. 269. (Washington: Government Printing Office.)

Carnegie Endowment for International Peace. Division of Intercourse and Education. Some Roads towards Peace. A Report to the Trustees of the Endowment on Observations made in China and Japan in 1912. By C. W. Eliot. Pp. 88. (Washington, D.C.)

Ministerio da Agricultura, Industria e Commercio. Anuario publicado pelo Observatorio Nacional do Rio de Janeiro, 1914. Anno xxx. Pp. vii+360. (Rio de Janeiro.)

Plane and Spherical Trigonometry (with Five-Place Tables). By Prof. R. E. Moritz. Pp. xvi+357+67+96. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 10s. 6d. net.

Fuel: Solid, Liquid, and Gaseous. By J. S. S. Brame. Pp. xv+372. (London: E. Arnold.) 12s. 6d. net.

Elasticità e Resistenza dei Corpi Pietrosi. Mattoni, Pietre, Malte e Calcestruzzi, Murature. By A. Montel. Pp. v+180. (Torino: S. Lattes and C.) 5 lire.

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