University and Educational Intelligence.

CAMBRIDGE.—Last week the large theatre of the School of Anatomy was the scene of an interesting presentation to Dr. W. L. H. Duckworth, fellow of Jesus College and senior demonstrator in anatomy, on the completion of twenty-one years of devoted service to the University as lecturer in physical anthropology. This remarkable tribute to the esteem and affection in which he is held was the spontaneous desire of every demonstrator, assistant, and student to contribute some token of appreciation of Dr. Duckworth's unfailing courtesy and ever-ready help. His sympathy and charm of manner have made him one of the most approachable of teachers, and endeared him to all who have come in contact with him during his period of service. A fine inscribed silver salver was presented to Dr. Duckworth, together with a book containing the signatures of two hundred and twenty subscribers, by Dr. D. Reid on August 13 in the presence of the staff and students of the anatomy department. In addition to his brilliant academic qualities, Dr. Duckworth has shown great capacity for organisation, especially during the past year, when the chair of anatomy has been vacant and the entire control of the anatomy department has devolved upon him.

THE Dr. Jessie Macgregor prize of the Royal College of Physicians, Edinburgh, has been awarded to Miss Lucy Davis Cripps for her work on tetryl.

THE following free illustrated lectures are to be delivered in the Canada Building, Crystal Palace, at 6 p.m., under the auspices of the Institution of Petroleum Technologists:—"Oil Prospecting," G. Howell (September 1); "Petroleum Refining," Dr. A. E. Dunstan (September 8); "Utilisation of Volatile Oils," Dr. W. R. Ormandy (September 15); and "Utilisation of Heavy Oils," Prof. J. S. S. Brame (September 22).

A PROSPECTUS of the faculty of engineering of the University of Bristol, which is provided and maintained by the Society of Merchant Venturers in the Merchant Venturers' Technical College, has just reached us. Courses of study are available at the college for persons intended to engage in civil, mechanical, electrical, or automobile engineering, and particulars of these courses are given in the prospectus. The ordinances and regulations relating to degrees and certificates in engineering subjects are included, and some particulars of the Bristol sandwich system of training engineers are also given. The prospectus can be obtained from the Registrar of the University, Tyndall's Park, Bristol.

THE Bureau of Education, Calcutta, India, has issued its Report on Education in British India for 1918–19, abundantly illustrated with photographs. The terrible epidemic of influenza which broke out at the close of the year 1918 and carried off millions of people throughout India, together with the widespread failure of the crops, caused grave dislocations in the schools and colleges, though it called forth all that was best in the life and spirit of many of these institutions. The number of pupils and students in the public schools and colleges on March 31, 1918, was 7,338,663, and in private institutions 597,914—a total of 7,936,577, or 3·25 per cent. of the total population of upwards of 241,000,000 in British India alone, which percentage is nearly one-third that of Russia, probably the most backward country in Europe. The number of pupils under instruction has risen from 300,000 in 1860 to nearly 8,000,000 in 1920, and the expenditure has advanced from 200,000*l.* to upwards of 9,000,000*l.* within the same period. In 1918–19 140,000*l.* was granted for agricultural education and 60,000*l.* for technical education of a pressing nature pending the Indian Industrial Commission's report. The schools and colleges now number 162,330. One of the principal recommendations of the Calcutta University Commission, viz. the transfer of intermediate classes to the school system, has been carried out at the Patna College. Many developments show that the universities are alive to the necessity of assisting in the commercial and industrial revival. Schools of economics have been established in the Universities of Madras, Bombay, Allahabad, and the Punjab, whilst the Benares Hindu University is opening a college of mechanical and electrical engineering. Proposals for new universities at Rangoon and Nagpur are being completed, and sites have been acquired. A Bill was introduced in 1919 for a unitary university at Dacca. New outlying colleges have been opened or proposed in Bombay, Bengal, and the Punjab. Many of the colleges are said to be overcrowded with youths unfitted for an academic career, which is also borne out in the report of the Calcutta University Commission. There is immense work for education yet to be accomplished in India.

Societies and Academies.

PARIS.

Academy of Sciences, July 26.—M. Henri Deslandres in the chair.—The president announced the death of Dr. Guyon.—G. **Bigourdan**: An economical means of utilising the energy of tides.—Ch. **Depéret**: An attempt at the general chronological co-ordination of Quaternary time.—L. **Maquenne** and E. **Demoussy**: The toxicity of iron (towards plants) and the antitoxic properties of copper in presence of ferrous salts.—F. **Widal**, P. **Abrami**, and N. **Iancovesco**: The proof of digestive hæmoclasia and latent hepatism. A development of the method of detecting liver trouble described in an earlier communication. After the absorption of a glass of milk it is only necessary to determine the fall in the arterial pressure, the lowering of the number of white corpuscles, the inversion of the leucocytic coefficient, and other phenomena easily determined in the laboratory to discover the functional working of the liver. Numerous examples of the application are given, with especial reference to the disturbances caused by the administration of arsenic compounds in syphilitic cases.—A. **Perot**: Comparison of the wave-lengths of a line of the cyanogen band in the light of the sun and that of a terrestrial source. The solar wave-length is greater than the terrestrial wave-length, their difference in relative value being $(2{\cdot}22 \pm 0{\cdot}10).10^{-6}$. This difference is reduced by a correction for the descending movement of the absorbing centres to $(1{\cdot}6 \pm 0{\cdot}3).10^{-6}$. The figure calculated from Einstein's theory of generalised relativity is between the corrected and uncorrected numbers.—A. **Schaumasse**: Discovery and observations of the comet 1920*b* (Schaumasse). This comet was discovered on July 18 at the Nice Observatory. It is about the 11th magnitude, and appears as a diffuse nebulosity of 2·5′ diameter. It may be the second periodic comet of Tempel.—G. **Fayet**: Probable identity of the 1920*b* comet (Schaumasse) with Tempel's second periodic comet.—P. **Chofardet**: Observations of the periodic comet Tempel II. (Schaumasse) 1920*a*, made at the Observatory of Besançon with the bent equatorial. Three positions on July 20–21 are given. The comet was of about the 11th magnitude.—C.

Raveau: The isotherms in the neighbourhood of the critical state. The adiabatic expansion of saturated fluids.—R. **Dongier**: The point-crystal or point-metal auto-detector telephone receiver.—F. **Michaud**: The correspondence of bodies in the solid state.—A. **Pictet** and P. **Castan**: Glucosane. Glucosane was readily obtained in a pure state by heating glucose under a pressure of 15 mm. to a temperature of 150–155° C. A study of its chemical reactions leads to the conclusion that it probably has a composition analogous with ethylene oxide.—A. **Mailhe**: The catalytic hydration of nitriles. If a mixture of steam and benzonitrile vapour is passed over thoria at 420° C., benzoic acid is produced by the hydrolysis of the nitrile. The generality of the reaction has been proved by applying it to seven nitriles.—G. **Dubois**: The discovery of a fossil-bearing layer in the Flanders clay at Watten (Nord). The fauna found in this layer confirms the stratigraphical identity of London clay, Cuise sands, and Flanders clay.—A. **Carpentier**: Some siliceous fossil plants from the neighbourhood of Sainte-Marie-aux-Mines (Alsace).—L. **Blaringhem**: The heredity and nature of peloria in *Digitalis purpurea*.—R. **Souèges**: The embryogeny of the Compositæ. The first stages of the development of the embryo in *Senecio vulgaris*.—F. **Chifflot**: The gum-bearing secreting canals of the roots of the Cycadaceæ, and more particularly those of *Stangeria paradoxa*.—Em. **Perrot**: Biological notes on the Acacias producing gum, known as gum arabic, in the Egyptian Sudan.—H. **Ricome**: The action of gravity on plants.—L. **Emberger**: Cytological study of the Selaginella.—A. **Guilliermond**: New cytological observations on Saprolegnia.—G. **Truffaut** and N. **Bezssonoff**: Comparative study of the microflora and the amount of nitrogen in soils partly sterilised by calcium sulphide.—A. **Lumière**: Are vitamines necessary to the development of plants? It is generally admitted that vitamines are necessary to the growth of plants. The author, whilst admitting the accuracy of the experiments on which this view is based, considers that the experimental results have been misinterpreted. Fresh yeast, rich in vitamines and rapidly curing polyneuritic troubles in pigeons, after heating to 135° C. for one hour, completely loses all its anti-scorbutic properties, but still serves for the preparation of culture fluids, giving good development of fungi. Even after heating to incipient carbonisation to 250° C. these extracts retain their fertilising properties.—A. H. **Roffo** and P. **Girard**: The effects of electrical osmosis on cancerous tumours of rats.—M. **Fauré-Fremiet**, J. **Dragoiu**, and Mlle. Du Vivier **de Streel**: The growth of the fœtal lung in the sheep and the concomitant variations in its composition.—R. **Sazerac**: Culture of the tubercle bacillus on a medium of autolysed yeast. It has been proved that both human and bovine tubercle bacilli will grow normally on this medium, the detailed preparation of which is given. It contains, in addition to autolysed yeast, 5 per cent. of common salt and 4 per cent. of glycerol.—J. **Nageotte**: Osteogenesis in grafts of dead bone.—A. **Trillat**: The influence of the presence of infinitesimal traces of nutritive substances in air-moisture on contagion

PHILADELPHIA.

American Philosophical Society, April 23.—Dr. A. A. Noyes, vice-president, in the chair.—Dr. D. T. **MacDougal**: The components and colloidal behaviour of protoplasm. The living matter of plants is composed chiefly of mucilages and albuminous compounds in varying proportions mixed in the form of an emulsion or as a jelly. The molecules of solid matter are aggregated into groups, which also include a number of molecules of water. Growth consists of the absorption of additional water to these groups, with more solid material being added at the same time, the process being termed "hydration." The resultant increase may be detected by determination of increased dry weight or measured as increase in length, thickness, or volume. More exact studies in growth have become possible by the establishment of the fact that mixtures of 25–50 per cent. mucilage and 50–75 per cent. albumin show the hydration reactions of cell-masses of plants. It is also found that certain amino-compounds, such as histidine, glycocoll, alanine, and phenylalanine, which are known to promote growth, also increase the hydration of the "biocolloids," as the above mixtures are called.—Prof. W. J. V. **Osterhout**: Respiration. A simple method of measuring respiration has been developed whereby determinations can be made at frequent intervals (as often as once every three minutes). The application of this method to the study of anæsthesia shows the incorrectness of the theory of Verworn, according to which anæsthesia is a kind of asphyxia, due to the inhibition of respiration by the anæsthetic.—Prof. B. M. **Davis**: (1) The behaviour of the *sulphurea* character in crosses with *Oenothera biennis* and with *Oenothera franciscana*. (2) *Oenothera funifolia*, a peculiar new mutant from *Oenothera Lamarckiana*.—Prof. G. H. **Shull**: A third duplication of genetic factors in shepherd's-purse. In the third generation of a cross between a wild biotype of the common shepherd's-purse (*Bursa bursa-pastoris*) from Wales and Heeger's shepherd's-purse (*B. Heegeri*) there appeared a small number of plants of unique type, having a more coriaceous texture than in the plants of either of the two original strains involved in the cross. This new type has been designated *coriacea*.—Prof. E. M. **East**: Some effects of double fertilisation in maize.—Dr. T. B. **Osborne**: The chemistry of the cell.—Prof. G. A. **Hulett**: The relation of oxygen to charcoal.—Prof. C. E. **Munroe**: Products of detonation of T.N.T. It is known that among the products are considerable quantities of carbon monoxide, hydrogen, and some hydrocarbons, such as methane, together with free carbon in a soot-like form. Hence T.N.T. is not suitable for use in underground work or close places, because the gas evolved is poisonous and inflammable, and can form explosive mixtures with the atmosphere in these close places.—Prof. J. W. **Harshberger**: A new map of the vegetation of North America.—Prof. A. G. **Webster**: The vibrations of rifle-barrels. (Dr. H. L. Carson, vice-president, in the chair.)—Dr. L. **Witmer**: Symposium on psychology in war and education.—Dr. J. McK. **Cattell**: Methods. The speaker reviewed the development of experimental and quantitative methods in psychology, and especially the transfer of its main concern from introspection to the study of individual differences in behaviour. By co-operation with other sciences it is possible for psychology to change the environment, and behaviour can be controlled more effectively by a change in the environment than by a change in the constitution of the individual.—Dr. R. M. **Yerkes**: Psychological examining and classification in the United States Army. The initial purpose of examining was the discovery and prompt segregation or elimination of men of markedly inferior intelligence. The uses which were actually made of results of psychological examinations were extremely varied, and covered the classification of men to facilitate military training, the selection of men of superior ability for training as officers or for special tasks, the segregation and special assignment of men whose intelligence was inadequate to the demands of regular military training, and, finally, the elimination of the

low-grade mental defective.—Prof. R. **Dodge**: The relation of psychology to special problems of the Army and Navy.—Dr. J. R. **Angell**: Relation of psychology to the National Research Council. The supporting scientific societies elect representatives who compose the several divisions of the Council, and these in turn, comprising, as a rule, about twenty men selected for their eminence in their particular branch of work, come together and determine the special needs and opportunities for the improvement of research in their own fields. Special attention is paid to the possibilities of bringing about effective co-operation among research men and research agencies. Scientific investigation has hitherto been largely individualistic, and the most pressing need at the present moment is not so much the expansion of research agencies, although this is desirable, as the more effective employment of those already in existence.—Dr. B. **Ruml**: Psychological methods in business and industry.—Prof. A. J. **Jones**: The individual in education.—Prof. R. W. **Wood**: Invisible light in war and peace.

HOBART.

Royal Society of Tasmania, June 8.—Mr. L. Rodway, vice-president, in the chair.—G. H. **Hardy**: Australian Stradiomiidæ. The paper included a description of new species.—H. H. **Scott** and C. **Lord**: Studies of Tasmanian mammals, living and extinct. Part ii. The paper was divided into two sections, and dealt mainly with the skeleton of *Nototherium Mitchelli* recently obtained from the north-west coast of Tasmania. The first section gave a *résumé* of the history of the genus, and the second dealt with the osteology of the cervical vertebræ. The authors desire to show that the species was one essentially adapted for aggressive warfare. They point out that whereas the skulls of *N. Mitchelli* and *N. tasmanicum* at least (with the possibility of other species) are equally large and weighty, yet their cervical vertebræ show marked differences: one being an exaggeration of the standard of the modern wombat in about the same ratio of power (*N. tasmanicum*), while the other shows an additional power with interspinal muscles and paddings, suitable to the resisting of great shocks in the long axis of the head and vertebræ.

Books Received.

Symbiosis: A Socio-physiological Study of Evolution. By H. Reinheimer. Pp. xii+295. (London: Headley Bros.) 15*s*. net.

Ministry of Munitions. Department of Explosive Supply. Preliminary Studies for H.M. Factory, Gretna, and Study for an Installation of Phosgene Manufacture. Pp. xvi+145. (London: H.M. Stationery Office.) 15*s*. net.

Prospector's Field-Book and Guide in the Search for and the Easy Determination of Ores and other Useful Minerals. By H. S. Osborn. Ninth edition, thoroughly revised and enlarged, by M. W. von Bernewitz. Pp. xiii+364. (London: Hodder and Stoughton.) 12*s*. 6*d*. net.

The Kalahari, or Thirstland Redemption. By Prof. E. H. L. Schwarz. Pp. vi+163+xiv plates. (Cape Town: T. Maskew Miller; Oxford: B. H. Blackwell.) 8*s*. 6*d*. net.

Department of Statistics, India. Agricultural Statistics of India, 1917–18. Vol. ii. Pp. ix+118. (Calcutta: Government Printing Office.) 1 rupee.

Botanical Survey of South Africa. Memoir No. 1: Phanerogamic Flora of the Divisions of Uitenhage and Port Elizabeth. By S. Schonland. Pp. 118. (Pretoria: Agricultural Department.) 2*s*. 6*d*.

A Manual of Dental Metallurgy. By E. A. Smith. Fourth edition. Pp. xvi+285. (London: J. and A. Churchill.) 12*s*. 6*d*. net.

The Bible: Its Nature and Inspiration. By E. Grubb. Pp. 247. (London: Swarthmore Press, Ltd.) 2*s*. 6*d*. net.

Manual of Psychiatry. Edited by Dr. A. J. Rosanoff. Fifth edition. Pp. xv+684. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 22*s*. net.

Radiant Motherhood: A Book for those who are Creating the Future. By Dr. Marie C. Stopes. Pp. 246. (London: G. P. Putnam's Sons.) 6*s*. net.

Relativity: The Special and the General Theory. By Prof. A. Einstein. Authorised translation by Dr. R. Lawson. Pp. xiii+138. (London: Methuen and Co., Ltd.) 5*s*. net.

Liquid Air and the Liquefaction of Gases. By Dr. T. O'Conor Sloane. Third edition. Pp. 394. (London: Constable and Co., Ltd.) 21*s*.

Airscrews in Theory and Experiment. By A. Fage. Pp. ix+198+7 plates. (London: Constable and Co., Ltd.) 34*s*.

Smithsonian Institution, United States National Museum. Report on the Progress and Condition of the United States National Museum for the Year ending June 30, 1919. Pp. 211+7 plates. (Washington.)

Principles and Practice of Aerial Navigation. By Lieut. J. E. Dumbleton. Pp. vii+172+v plates. (London: Crosby Lockwood and Son.) 12*s*. 6*d*. net.

The Outdoor Botanist: A Simple Manual for the Study of British Plants in the Field. By A. R. Horwood. Pp. 284+20 plates. (London: T. Fisher Unwin, Ltd.) 18*s*. net.

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