

astronomy as a class subject of general education has unfortunately suffered a lamentable eclipse. Globes have been ousted by calorimeters. Hence the ignorance of even otherwise cultured people of the very elements of the science. Lately there have been welcome signs of a recognition of its educational value, both in the elementary and in the secondary schools. In the Middle Ages astronomy was one of the seven subjects in the curriculum of a liberal education. Those who were privileged to listen to the charming discourse of Prof. Nunn to the Association of Mathematical Masters last January were able to understand how much can be done with cardboard, cylinders, cubes, and other simple appliances to illustrate the chief motions of the heavenly bodies, the observations being made and recorded by the pupils themselves.

Very heartily then do we welcome, for both its scientific and its educational capabilities, the excellent model lately constructed by Dr. William Wilson, and exhibited to the Royal and Royal Astronomical Societies, the British Association, and most of the leading educational and astronomical societies. Everyone who has seen the model has given it unstinted praise. The mechanism is very good. Gearing is done away with, its place being ingeniously supplied by cords and pulleys, with tension regulators and adjustable driving-wheels. There is nothing much to get out of order in the machine. If it does, it can easily be repaired.

But the great value of the model is in the orderly sequence of the astronomical phenomena which can be illustrated by its aid. The pupil is made to advance gradually from the simple to the more complex movements of sun, earth, and moon, illustrating such topics as the year, month, seasons, phases of the moon, motions of the earth, and eclipses, until finally he reaches such phenomena as the retrograde motion of the moon's nodes, the forward motion of the line of apsides of the moon's orbit, and the nature, number, and character of the eclipses possible in any year. It would be a mistake to set up the whole model at once. The curiosity of the pupil should be aroused and his interest sustained by adding the parts gradually and in due order, beginning with the simpler parts, and then advancing to the more complex movements.

Dr. Wilson is to be heartily congratulated on having produced such a valuable, workable astronomical model. So many science masters—excellent omen!—have desired to acquire it that he has felt justified in putting it upon the market and getting it made in quantities. The price is 22*l.* net, carriage paid to any part of the United Kingdom. All communications regarding the model should be addressed to Dr. Wilson himself at 43 Fellows Road, London, N.W.3.
A. L. CORTIE.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

GLASGOW.—At a graduation ceremony held on November 18, honorary degrees were conferred on the American Ambassador, Lord Weir, Sir Joseph Maclay, the Duchess of Atholl, Dame Helen Gwynne-Vaughan, and others, in recognition of war service.

LEEDS.—The following honorary degrees have been conferred:—*D.Sc.*: Admiral Sir Henry Jackson, First Sea Lord, 1915-16; Surg.-Gen. Sir Alfred Keogh; Sir Almoth Wright; Prof. W. H. Bragg; and Mr. J. G. Baker.

LONDON.—The Senate has appointed Sir Cooper Perry to the post of principal officer, which has been in abeyance since Sir Henry Miers's resignation in the summer of 1915. Sir Cooper Perry has repre-

sented the faculty of medicine on the Senate from 1900 to 1905, and again from 1915 to the present time, and has been Vice-Chancellor of the University since June, 1917. He will take up his new duties on February 1 next.

The Senate has adopted a resolution expressing appreciation of the generosity of the Worshipful Company of Goldsmiths in presenting to the London Hospital Medical College 15,000*l.* National War Bonds for the endowment of a University chair of bacteriology bearing the name of the company and tenable at that college. The thanks of the Senate have also been accorded to Lord Cowdray for a donation of 10,000*l.* towards the fund for the reconstruction and re-equipment of the engineering buildings at University College, and for a promise of an additional donation of the same amount to be given when the total sum collected in response to the appeal for this purpose reaches 70,000*l.*

A bequest of approximately 3000*l.* is made in the will of the late Mr. T. S. Hughes for the encouragement by scholarships or otherwise of original medical research at the University.

In recognition of the munificent gift of 34,500*l.* by Sir Ralph Forster, Bart., to the fund for the chemistry building and equipment at University College, it has been resolved that the organic department of the chemical laboratories should be known by his name.

The degree of *D.Sc.* (Economics) has been conferred upon Mr. R. C. Rawley, an internal student, of the London School of Economics, for a thesis entitled "Economics of the Silk Industry."

The Graham Legacy Committee has, under the regulations for the administration of the Charles Graham Medical Research Fund, made the first award of the gold medal to Dr. Charles Bolton in recognition of the original work in experimental pathology which he has conducted in the medical school of University College Hospital.

OXFORD.—The twenty-first Boyle lecture was delivered by Prof. A. Keith on November 19. Taking for his subject "Race and Nationality from an Anthropological Point of View," the lecturer pointed out that racial problems properly so called came into view only at the beginning of the nineteenth century. The prehistoric record might be divided into a long period of natural subsistence, marked by little change of condition, and a shorter period of conquest of Nature, which was rapid and fateful. The outfit for the first period, both bodily and mental, being in some respects unsuitable for the second, the racial problem resolved itself in effect into a conflict between inherited instinct and present conditions. Illustrations of both racial and national feeling consequent on the contact of different peoples were given from the negroes of North America, the French-Canadians in their relation to the surrounding white population, the Europeans and Maoris in New Zealand. The mingling of blood in South America appeared to have been socially less successful than the maintenance of racial frontiers in the north. Racial feeling, concluded the lecturer, is implanted by Nature for her own purposes of evolution.

DR. J. PROUDMAN has been appointed professor of applied mathematics in the University of Liverpool.

THE Toronto correspondent of the *Times* announced on November 24 that the buildings of the Laval University at Montreal have been destroyed by fire, and the damage is estimated at 400,000*l.* The chief damage was done in the medical department of the University.

SEVERAL representatives of British universities are now in Belgium as guests of the Belgian Government, in order to examine, among other matters, an arrangement for the exchange of teachers and students between British and Belgian universities.

THE under-mentioned staff appointments have been made at the Bradford Technical College:—*Head of Department of Chemistry*: Prof. R. B. Abell. *Lecturer in Chemistry*: Mr. H. P. Starck. *Head of Department of Biology*: Mr. A. Malins Smith. *Head of Department of Dyeing*: Dr. L. L. Lloyd.

ON November 22 President Poincaré inaugurated the French University of Strasbourg. Every endeavour is to be made to attract to the University English and Scottish students who before the war found their way to Bonn, Heidelberg, and Göttingen. The Paris correspondent of the *Times* says that the Germans have left behind them credits amounting to nearly 30,000,000 francs (1,200,000l.), which are available for the improvement of the scientific equipment of the University.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 13.—Sir J. J. Thomson, president, in the chair.—Lt.-Col. R. McCarrison: The genesis of œdema in beri-beri. Conclusions previously reached by physiological methods of adrenalin estimation are confirmed by chemical methods. Deficiency of certain accessory food factors gives rise to a greatly increased production of adrenalin. Whatever the function of adrenal medulla may be, excessive production of adrenalin, under conditions of "vitaminic" deficiency, is concerned with causation of œdema.—W. Robinson: The microscopical features of mechanical strains in timber and the bearing of these on the structure of the cell-wall in plants. The gross and microscopic characteristics of failure in compression are described for spruce, ash, and pitch pine. It is shown that failure is initiated by the development of microscopic planes of slipping in the cell-walls of the wood. The appearance of the slip planes in the cell-walls is accompanied by profound changes in the behaviour of the latter towards many stains and reagents. These changes are discussed in relation to their possible bearing on the process of lignification of cell-walls. In addition to compression, the failures in longitudinal tension and longitudinal shearing are described.—W. B. Bottomley: The effect of nitrogen-fixing organisms and nucleic acid derivatives on plant-growth. The products of the nitrogen-fixing organism, *Azotobacter chroococcum*, are shown to have a marked effect in increasing the rate of growth of plants of *Lemna minor* in water culture; and the derivatives of nucleic acid, which the author has found can be extracted from raw peat, are also able to act as accessory food substances. The addition of these two separate materials to the culture solution increased the number of plants from 1817 in mineral solutions only to 96,921 and 80,179 respectively in the liquids containing these substances. Not only was the rate of multiplication increased by these organic materials, but the plants supplied with them also maintained their normal size and health. The nitrogen-fixing organism, *Bacillus radicola*, is found to have a similar effect to that of *Azotobacter chroococcum*. A similar series of experiments was carried out with the ash of the crude nucleic acid derivatives and of the *Azotobacter* growth, and neither of these materials had the slightest effect on the rate of multiplication or the health of the *Lemna* plants. It is therefore the

organic material which is so essential for the complete metabolism of these plants, and they cannot maintain their normal growth and vigour for any length of time without the presence of small quantities of organic substances.—Agnes Arber: The vegetative morphology of *Pistia* and the Lemnaceæ. Anatomical examination of the "limb" of the leaf of *Pistia stratiotes*, L., the river lettuce, shows that, in addition to normally orientated vascular bundles, there is a series of inverted bundles towards the upper surface. This fact is regarded as indicating that the leaf is of the nature of a petiolar phyllode. This interpretation is extended to the distal part of the frond of the Lemnaceæ (duckweeds).—W. J. Young, A. Breinl, J. J. Harris, and W. A. Osborne: Effects of exercise and humid heat upon the pulse rate, blood pressure, body temperature, and blood concentration. The results point to the fact that both exercise and humid heat play a part in producing a rise in blood pressure, pulse rate, and rectal temperature. The degree of rise, however, is controlled by atmospheric conditions, which influence the rate of cooling of the body.

Zoological Society, November 4.—Dr. A. Smith Woodward, vice-president, in the chair.—F. Martin Duncan: Photographs showing the actinic quality of the light from a living *Pyrophorus* beetle. In describing the method employed to obtain the records, the author stated that photospectroscopically the greatest intensity of light action appeared to be in the yellow-green region.—E. Heron-Allen: Skiagraphs of the foraminiferan genus *Verneuilina* from examples grown in a hypertonic tank.—Miss Joan B. Proctor: The variation in the number of dorsal scale-rows in our British snakes.—Dr. G. A. Boulenger: Some new fishes from near the west coast of Lake Tanganyika.—Dr. G. Marshall: The species of the *Balaninus* occurring in Borneo (Coleoptera, Curculionidæ).—The Hon. P. Methuen: Description of a new snake from the Transvaal, together with a new diagnosis and key of the genus *Xenocalamus*, and of some *Batrachia* from Madagascar.—Prof. J. P. Hill: The placentation of *Tarsius*.—R. I. Pocock: The external characters of *Tarsius*.

Geological Society, November 5.—Mr. G. W. Lamplugh, president, in the chair.—H. H. Thomas: Some features in the topography and geological history of Palestine. A perfectly new method of illustrating and investigating some branches of physical geology is afforded by aeroplane photography. It seems, first, to illustrate in a very striking and convincing form many geological phenomena, such as the structure of a volcano or the land-forms resulting from erosion, and may be of value in the teaching of the science. In the second place it may, in certain circumstances, become a valuable means of research, especially in connection with river development or denudation in a region which is somewhat inaccessible, or where the surface of the ground is very complicated and the main features are obscured by a mass of less important detail. The lecture dealt principally with the illustration of the physical features of Palestine, and owes its origin to the systematic photo survey made over Central Palestine during the war. The lacustrine deposits of the Jordan Valley and their weathering were shown, and also the form of the drainage channels running down into the main valley. The depression of the Dead Sea with reference to the surrounding country has resulted in cañon formation in many places. Some evidences of faulting at different periods can be distinguished. The Jordan at present forms an interesting study in river development, and many of its main features were demonstrated. The relation of the Jordan to the Orontes