

upper air have proved that all the vital parts of the facile description which was the accepted theory of cyclones and anticyclones are quite illusory. What it took for guidance in forming a picture of the structure was the accidental character of motion near the ground. We now feel that the motion of air in the lowest kilometre had better be disregarded, or, better still, be handed over to students of turbulent motion, while we as meteorologists consider the normal state of the atmosphere as motion under balanced forces. Instead of a natural flow from high pressure to low pressure, we have a natural flow without any change of pressure; the motion of a heavenly body round its sun is taken as the type for the air instead of the motion of a falling stone.

While we are considering illusions, let me add another example depending upon what was at one time, and possibly is still, a commonplace of physical teaching in regard to the relation of barometric changes to weather.

It is this: moist air is lighter, bulk for bulk, than dry air, and consequently pressure is low where the air is moist. That is why a low barometer is indicative of rain; the moist air causes the low pressure. This is not true to fact. Mr. Dines has recently examined the correlation between the humidity of the troposphere and the pressure at the surface. The coefficient is quite insignificant; there is no relation between moist air and low pressure on the map.

(To be continued.)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

It is announced in the issue of *Science* for March 31 that the wills of the late Edith and Walter Scull, niece and nephew of Mr. David Scull, for many years a manager of Haverford College, give 20,000l. to the college.

A MEETING convened by the Committee on the Neglect of Science will be held on Wednesday, May 3, at 3 p.m., in the rooms of the Linnean Society, Burlington House. Lord Rayleigh, O.M., will take the chair. A series of resolutions will be submitted to the meeting. Among those who have written in support of the objects of the meeting (many of whom will speak) are:—The Duke of Bedford, Lord Montagu of Beaulieu, the Lord Chief Justice, the Right Hon. Arthur Acland, Mr. Stanley Leathes (Civil Service Commissioner), the master of University College, Oxford, the rector of Exeter College, the master of Christ's, the headmaster of Westminster, the dean of Christ Church, Sir Harry Johnston, Sir Edward Schäfer, Sir William Crookes, Sir William Osler, Sir Ronald Ross, Sir Ray Lankester, Sir William Tilden, Sir Hugh Bell, Sir Robert Hadfield, Dr. Martin Forster, the headmaster of Sherborne, Mr. H. G. Wells, Sir Owen Seaman, and the Poet Laureate, as well as many other leaders in science, education, and industry. Those desiring invitations to the meeting should apply to the Committee on Neglect of Science, 28 Victoria Street, S.W.

WE learn from the issue of *Science* for March 24 that Mr. J. D. Rockefeller, junior, has been re-elected president, and Mr. J. G. Greene secretary, of the Rockefeller Foundation. The capital fund of the Foundation on January 1, 1915, was 20,009,600l. Grants amounting to 220,000l. not hitherto announced have recently been made by the Foundation. To the Rockefeller Institute for Medical Research 200,000l. is given for additional endowment needed in connection with the Department of Animal Pathology; and among other grants, the China Medical Board receives

25,000l. for the promotion of medical teaching in China. From the same source interesting particulars are forthcoming of the work of the General Education Board founded by Mr. J. D. Rockefeller to promote education within the United States. Since its inauguration and up to June 30 last the Board had made grants amounting to 3,372,400l. The value of the Board's resources is 6,791,800l., and the gross income for 1915 was 446,000l. approximately. Among the grants made up to the date mentioned, we notice: for the endowment of universities and colleges, 2,334,500l.; for the current expenses of colleges and schools, 31,200l.; for salaries of professors of secondary education, 55,100l.; and for farmers' co-operative demonstration work, 157,200l.

THE approaching retirement of Dr. Lyttelton, the headmaster of Eton, has led to the suggestion that the governors of the college should appoint as his successor a representative of modern scientific learning instead of a classical divine. The usual objections have been raised to such a course, and the usual unenlightened opinions have been expressed as to the association of scientific education with German barbarity. It would be just as illogical to suggest that the war and its instruments of destruction were due to Christian doctrine as it is to assert that science is responsible for them. Science is concerned with the discovery of new phenomena, new forces, new relationships; and men may use them for good or ill—to ease pain and suffering, or to maim and destroy. It produces chloroform as well as chlorine, and enables a wireless call to be sent from a sinking ship as well as makes the explosive for the torpedo or mine which destroyed her. The popular conception of a man of science as a being without human compassion may do for the stage or a penny novelette, but it ought not to be too much to expect people who write to the leading newspapers to know better. We are glad to see, therefore, that the *Daily Mail*, in a leading article on April 22, gives strong support to the claims of science in public-school education. It points out that "clever talking has come to be regarded as almost or quite as important as sound and vigorous action. Precisely the same defect appeared in the later Roman Empire when its education degenerated into a mere study of rhetoric and declamation." Whatever defects we possess as a nation—and they have been unmercifully exposed in the present war—are due, not to science, but to its neglect. It is satisfactory to know that this is at last being realised by the public; and we hope it may be taken for a sign that, whether through a new type of headmasters or otherwise, the education of our future politicians, administrators, and manufacturers shall include general scientific knowledge and scientific method as essential constituents.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, April 4.—Dr. A. Smith Woodward, vice-president, in the chair.—G. A. Boulenger: The lizards allied to *Lacerta muralis*, with an account of *Lacerta agilis* and *L. Parva*. This paper is the third and last instalment of a revision of the wall-lizards, of which the first two parts were published in the Transactions in 1905 and 1913. The author has endeavoured to depart from the empirical method usually followed in the arrangement of species, by tracing back the various forms of this difficult group to a hypothetical ancestor of which *Lacerta agilis* appears to be the nearest living representative. The characters of lepidosis and coloration on which his views are based are discussed, and detailed descriptions are given of *L. agilis* and its ally, *L. parva*, the latter being

regarded as the connecting-link between the first and fourth of the six sections into which it is proposed to divide the genus *Lacerta*.—R. Gurney: Fresh-water Entomostraca collected by Mr. G. W. Smith in Ceylon in 1907. The collection contained examples of thirty-five species, and one species of Copepoda and two of Ostracoda were described as new, one of the latter belonging to the typically African genus *Oncocypris*.—Major K. Meinertzhagen: The *Sitatungas* (*Limnotragus*) of the Sesse Islands. The author found that the Bugalla Island antelopes of this genus seem to be of the same race as the mainland form, *Limnotragus spekei*, but that the Nkose Island form, which he proposed as a new subspecies, differed in the shortness of its hoofs and other characters.

Geological Society, April 5.—Dr. A. Harker, president, in the chair.—G. W. Tyrrell: The picrite-teschenite sill of Lugar (Ayrshire) and its differentiation. This sill is exposed in the gorges of the Bellow and Glenmuir Waters, just above the confluence of these streams to form the Lugar Water. It has a thickness estimated at 140 ft., and is intrusive into sandstones of the Millstone Grit. The contacts consist of contorted basaltic rock passing into teschenite. The upper teschenite becomes richer in analcite downwards, and ends abruptly at a sharp junction with fine-grained theralite. The lower teschenite becomes richer in olivine upwards, but passes rapidly into hornblende-peridotite. The central unit of the sill is a graded mass beginning with theralite at the top and passing gradually into picrite, and finally peridotite, by gradual enrichment in olivine and elimination of felspar, nepheline, and analcite. The average rock of the sill is much more basic than the rock now forming the contacts. Hence the main differentiation cannot have occurred *in situ*. The theory is advanced that the differentiation units were produced by the process of liquation, but that their arrangement within the sill took place under the influence of gravity. The sill is compared with other teschenite-picrite sills in Scotland, those of Ardrossan, Saltcoats, Blackburn, Barnton, and Inchcolm.

Linnean Society, April 6.—Prof. E. B. Poulton, president, in the chair.—Prof. G. C. Bourne: A description of five new species of *Edwardsia*, Quatr., from New Guinea, with an account of the order of succession of the micromesenteries and tentacles in the *Edwardsiæ*.—Prof. W. J. Dakin: A new species of *Enteropneusta*, from the Arolhos Islands.

PARIS.

Academy of Sciences, April 10.—M. Camille Jordan in the chair.—G. Bigourdan: Some works of Peiresc. Particulars of some observations recorded in a manuscript dated November, 1610, to June, 1612, including work on the satellites of Jupiter, the moon and planets, and the nebula of Orion.—B. Baillaud and M. Pourteau: The calculation of right ascensions and declinations of stars of the photographic catalogue. The method worked out is illustrated by a numerical example for one star.—Ch. Lallemand: A project for the modification of the legal time. An adverse criticism of the daylight saving scheme proposed in France (see p. 183).—Pierre Duhem: The general problem of electrodynamics for a system of immovable conducting bodies.—C. Guichard: Plane networks which are at once the orthogonal projection of a network O and the orthogonal projection of a network G.—M. Cerf: The transformation of partial differential equations.—Paul Gaubert: A crystalline modification of sulphur showing spherulites arranged helicoidally.—G. Lecoindre: The geology of Djebel Ouitita and the neighbourhood of Dar bel Hamri, western Morocco.—Raoul Blanchard:

The existence of a glacial island at Grenoble. At the junction of the soft rocks of Grésivaudan and the hard rocks of Chartreuse and Vercors such a glacial formation might be expected, and one has been identified by the author near Grenoble.—Henri Devaux: The rapid action of saline solutions on living plants; the reversible displacement of a part of the basic substances contained in the plant. A living plant, *Elodea*, was washed with distilled water and no calcium could be detected in the washings. The plant was then treated with a solution of sodium or potassium chloride (1 in 1000). Calcium was proved in the liquid, which must have been extracted from the plant cells. This decalcifying action is accompanied by fixation by the plant of a portion of the alkaline metal.—G. André: The relations which exist between the presence of magnesium in leaves and the function of assimilation. It is known that crude chlorophyll extracted from leaves by alcohol, or light petroleum, always contains magnesium, the latter being left as phosphate on ignition. It has also been shown that magnesium is the only fixed element forming part of the chlorophyll molecule. Experiments were carried out on the leaves of horse chestnut, lilac, and Spanish chestnut, at different stages of growth (April to July), determinations of the phosphorus and magnesium both in the extracted and residual portions of the leaves being made.—Jules Courtier: Variations of the peripheral temperature of the body during suggestions of heat and cold. Under suggestion of cold there was an average increase in the peripheral temperature of 0.28°; under suggestion of heat, an average fall of 0.2°. These variations were in the opposite sense to those expected from the normal behaviour of the body under the action of heat and cold. The vaso-motor reflexes do not appear to be affected by suggestion.—J. Havet: Relations between neurology and vascular apparatus in the Invertebrates.—F. d'Herelle: Contribution to the study of immunity. In the case of *Bacillus typhi murium* attempts to prepare an immunising serum have failed. It is now shown that the antiseptics used to kill the organisms in the preparation of the serum were too strong, not only killing the bacillus but profoundly modifying the toxins. It has been found that various volatile essences (mustard, cinnamon, thyme) can kill the bacillus without affecting the toxin, and a vaccine has been prepared on these lines capable of partially immunising mice against the infection.—Maurice Beaussenat: Wound of the heart by a shrapnel ball. Cardiomy and extraction of the projectile from the right ventricle. Cure.

BOOKS RECEIVED.

Agricultural Research Institute, Pusa. Bulletin No. 56. Green-Manuring in India. By A. C. Dobbs. Pp. 55. (Calcutta: Superintendent Government Printing, India.)

Report of the Agricultural Research Institute and College, Pusa (including the Report of the Imperial Cotton Specialist), 1914-15. Pp. iv+119. (Calcutta: Superintendent Government Printing, India.)

Papers and Proceedings of the Royal Society of Tasmania for the Year 1915. Pp. 128+plates x. (Hobart: Royal Society of Tasmania.) 6s.

Annual Report of the Board of Scientific Advice for India, for the Year 1914-15. Pp. 191. (Calcutta: Superintendent Government Printing, India.) 1s. 6d.

Report on the Calcareous Sponges collected by Mr. James Hornell at Okhamandal in Kattiawar in 1905-6 (with two plates). By Prof. A. Dendy. (London: Williams and Norgate.)