

JUDGING from a speech by Mr. Beeby, the Minister of Public Instruction at Milthorpe, on November 3, a report of which has reached us, education in all its grades is likely to receive generous treatment from the new Labour Government in New South Wales. Among other developments in education which it is proposed to foster is the inauguration of continuation and trade schools, and a large extension of technical schools, with the view of keeping boys and girls who leave school at an early age to enter "blind-alley" employments under observations and under the influence of active and interested minds much older than their own. New regulations as to the high schools are under consideration also. Their main object is to establish a well-defined course of secondary education in certain selected schools, and in that way to abolish the present unsatisfactory position of superior public schools in which children get a smattering of education without any definite result. These regulations provide for the establishment of high schools, the abolition of tuition fees—the periods and character of instruction in high schools and superior public schools differentiating the two types—the institution of certificates of attainments, and the localisation of scholarships within districts, to secure their distribution throughout the States. The Government believes also that reforms in the constitution of the university are necessary before any serious increase in State subsidies is considered, and this matter is under consideration. As regards the question of compulsory attendance at continuation and trade schools, the Government proposes to face an alteration of industrial laws to provide for the shortening of the working hours of boys and girls up to the age of eighteen, and their attendance at school for a certain number of hours each week. It is satisfactory to find that the new Government of New South Wales believes that the people of this State will support cheerfully any proposal for a large increase in the education vote so long as the money is spent wisely, and will make every effort to carry out the reforms indicated.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, December 13.—Mr. G. A. Boulenger, F.R.S., vice-president, in the chair.—E. S. Goodrich: The segmentation of the occipital region of the head in the batrachia Urodela. This paper was based upon the author's studies of the development of the head region of the Axolotl (*Amblystoma tigrinum*). The head of the Axolotl contained three segments behind the auditory capsule. Three metaotic somites were developed in these segments, of which the first soon disappeared, and the second and third contributed to the formation of the temporal muscle. To the first segment belonged the glossopharyngeal nerve, to the next two the vagus. The occipital condyles were developed between the third and fourth somites. The two hypoglossal roots corresponded to the fourth and fifth metaotic segments, and passed out in front of the first and second vertebrae. In the Amniota all these segments were included in the head. The skull of an amphibian was thus shorter than that of a mammal, yet the condyles were homologous in the two animals. The shifting backwards or forwards of the condyles was brought about, not by the inter- or ex-calcation of segments, but by a transposition from one segment to another. The shifting of the condyles was comparable to the transposition of the limbs on the trunk-segments.—Oldfield Thomas: The mammals of the tenth edition of Linnæus: an attempt to fix the types of the genera and the exact bases and localities of the species. It was shown that by the use of tautonymy the types of nearly all the Linnæan genera could be definitely fixed, the conclusions arrived at by this means agreeing in most cases with common usage. The type of *Simia*, however, would not be *S. satyrus*, but *S. sylvana*, and of *Dasyptes* *D. novemcinctus* instead of *D. sexcinctus*, the consequences of which changes were pointed out. *Pygathrix*, as represented by the two species *nemaus* and *nigripes*, was shown to be generically distinct from *Presbytis*, so that the latter name still remained available for the ordinary Langurs. Changes in specific names, due to a complete examination, were shown to be less numerous than might have been expected, while the

stability of mammalian nomenclature was much increased by avoiding the danger of what such an examination might lead to. Type localities, derived from the original authors quoted by Linnæus, were defined for a considerable number of the species.—Dr. W. E. Hoyle: Report of the International Commission on Zoological Nomenclature. A discussion of the report followed on the portion relating to the formation of an official list of most frequently used zoological names. The feeling of the meeting was very strongly in favour of the International Congress giving its authority to the formation of a list of zoological names, the significance of which should not be altered by application of the rules of the international code. It was unanimously agreed to accept the action of the Congress if it would adopt this course.

Royal Meteorological Society, December 21.—Mr. H. Mellish, president, in the chair.—Captain C. H. Ley: Report on balloon experiments carried out at Blackpool in the early part of the year. The proposal was to employ balanced pilot balloons, which, floating in a current with no upward or downward hydrogen velocity, would represent the motion of a particle travelling in that current. Difficulties, however, arose which prevented the scheme being carried out as originally planned. Ultimately, a hydrogen balloon, or twin-system of hydrogen balloon and heavy satellite, was so valved as to have a large lift at first, but to continuously lose gas under the action of a leak until a certain point is reached, when the valve closes, when in accordance with previous adjustment it is nearly in equilibrium. The vertical motion of a fresh wind blowing over a flat country is very slight as a whole, but subject to marked variation on special occasions. In the lowest stratum in the late afternoon there is frequently a large descending current. The apparent effect of a river is to check the wind velocity and cause a downward movement of air over the whole area of the river valley.—Captain C. H. Ley: The meteorological significance of small wind and pressure variations. In this paper the author compared the "yawings" of the wind at Blackpool with the small variations of atmospheric pressure as recorded by the microbarograph.—Dr. Wilhelm Schmidt: Atmospheric waves of short period.

Institution of Mining and Metallurgy, December 21.—Mr. Edgar Taylor, president, in the chair.—F. Gillman: Malaga magnetites. In a previous paper the author suggested that the magnetites of Malaga, Spain, were originated by segregation from the peridotite magma, and the present paper was written to confirm this suggestion after a detailed examination of one characteristic deposit at Estepona. This deposit is intimately related to the serpentinised peridotite which constitutes the entire mass of the adjacent mountains, and is about half a mile distant from the nearest metamorphic or sedimentary rocks, and the results of work executed on the ore body serve to show that the deposit consists of serpentine, which is sterile above a certain line, and more or less ore-bearing below.—R. W. Hannam: A method of raising bore-casings from a pontoon. This brief note describes a simple method of withdrawing bore-casings from a river bed by means of the surplus buoyancy of native pontoons. A crowd of natives was employed to weigh down the pontoon, and the bore-casing was secured to it when thus depressed. At a given moment the natives sprang overboard, and the buoyancy of the pontoon was sufficient to withdraw the bore-casing.—H. C. Baydon: Notes on Chilean mills in Russia. The author provides a useful and instructive treatise on the slow-running Chilean or "edge-runner" mill invariably used in Russia for crushing gold ores as a preliminary to amalgamation, &c. After a brief historical summary the paper deals with a description of the standard type of Chilean mills now in use, and of the milling methods adopted in Russia, and this is followed by notes on an improved type of Chilean mill and milling plant recently introduced. The descriptions are suitably illustrated, and there are ample statistics relating to mills and their efficiency. The author is of opinion that, if the same amount of thought and attention were devoted to the development of this type of mill as has been given to the heavy stamp-tube mill combination in South Africa, it would prove a serious rival and give a product nearer to the ideal aimed at on that goldfield.

MANCHESTER.

Literary and Philosophical Society, November 15.—Mr. Francis Jones, president, in the chair.—Dr. W. Makower and Dr. S. Russ: Note on scattering during radio-active recoil. During experiments on the recoil of radium B from radium A, not only did a surface directly exposed to the recoil stream become active, but surfaces situated outside the direct stream also received active deposit. It was thought that these effects were due to scattering from the surfaces upon which the recoil atoms fell, and experiments were made to test this. These were carried out in a high vacuum, and a plate was mounted in such a way that it was outside the recoil stream coming from an active wire coated with radium A, but so that recoil atoms scattered from a copper reflector could reach it. When the plate was examined it was found to be active, and by measuring its rate of decay with an α -ray electroscope, more than half of the active matter proved to be radium C, and not radium B. This result can be explained if, when the radium B impinges on the reflector, a small portion of it is scattered on to the plate, but the greater part remains on the reflector and subsequently gives rise to radium C, a small fraction of which is then directly projected on to the plate.—D. M. S. Watson: Upper Liassic Reptilia. Part iii.: Microcleidus and on the genus Colymbosaurus.

November 29.—Mr. Francis Jones, president, in the chair.—Prof. A. Schwartz and Philip Kemp: Some physical properties of rubber. Pure rubber strip which has not previously been extended has a large coefficient of linear expansion when tested under loads just sufficient to keep the strip straight. The behaviour of rubber when heated under tension was found to be more complex than had previously been supposed. The previous history of the rubber as to whether it has been previously extended or not largely affects the result. The modulus of elasticity of the rubber probably changes with load and temperature. Considerable change takes place in pure rubber when rested in air for some time at normal temperatures, the strips, which were originally translucent and flexible, becoming opaque and hard. An opaque, hard, and comparatively inextensible condition can be obtained by slightly warming a pure rubber strip and rapidly extending it as far as possible by hand. On keeping it extended thus for a few seconds and then removing the tension it will be found that the rubber remains extended in an opaque condition, but can be brought back to its original dimensions and condition by the application of slight heat. The mechanical hysteresis of rubber has been studied and applied to the testing of rubber. The hysteresis machine was described. A test-piece of rubber, subjected to a series of complete cycles of extension and retraction, was shown to increase in length, according to a logarithmic law, with respect to the numbers of the cycles. The slow stretch of rubber under a constant load also follows a logarithmic law with respect to time. The work done in extension, in retraction, and in the rubber itself, was shown to be proportional to the cross-sectional areas of the specimens.

DUBLIN.

Royal Irish Academy, December 12.—Dr. F. A. Tarleton president, in the chair.—G. H. Pethybridge and Paul A. Murphy: A bacterial disease of the potato plant in Ireland, and the organism causing it. The authors describe a bacterial disease of the potato plant of frequent occurrence in Ireland, and give an account of the organism which they isolated from diseased plants, and with which successful inoculations were carried out on healthy plants and tubers. It is a multiflagellate peritrichous bacillus, liquefying gelatine and producing decay in the living tissues of a variety of plants in addition to the potato. It resembles in many respects other organisms which have been found causing similar diseases in potatoes both in the Old and New Worlds, but does not appear to be identical with any of them. The name *Bacillus melanogonus* is proposed for it.—A. W. Steffox and Robert Welch: A list of the land and fresh-water Mollusca of Ireland. In the introduction the authors give a short *résumé* of the work which has been done in this branch of natural history in Ireland from the time of Captain Thomas Brown to the present day. This includes a list of species added to the Irish molluscan fauna since the

publication of Dr. Scharff's valuable work in 1892. The paper is divided into three parts; first comes the list proper, which includes only *bona fide* records, i.e. records which are backed up by specimens; secondly, a list of doubtful and erroneous records; and, lastly, a complete list of all species which are known to have been introduced into Ireland in recent years. These are mainly confined to greenhouses and nursery gardens. In the list proper the authors give notes on the principal variation of many of the species, especially that variation which tends to be of interest to those who study the geographical distribution of plants and animals. A full bibliography accompanies the paper.—H. Wallis Kew: A synopsis of the false scorpions of Britain and Ireland. The arachnidan order Pseudoscorpiones is represented in the British Islands by twenty-two species, one of which, unknown in Britain, is confined in Ireland to the extreme south-west.

DIARY OF SOCIETIES.

MONDAY, JANUARY 2.

ARISTOTELIAN SOCIETY, at 8.—The Standpoint of Psychology: Benjamin Dumville.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Determination of Sucrose (Cane Sugar) in Sugar Factory Products by Clerget's Process using Invertase as Hydrolyst: J. P. Ogilvie.—The Testing of Incandescent Mantles: J. H. Coste and W. E. F. Powney.—Radiation Errors in Flow Calorimeters: J. H. Coste and B. R. James.

THURSDAY, JANUARY 5.

RONTGEN SOCIETY, at 8.15.—The Radioactivity of Thorium: Prof. Rutherford.

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