Societies and Academies.

LONDON.

Royal Society, January 14.—Leonard **Hill** and Y. **Azuma**: Effects of ultra-violet radiation upon involuntary muscle and the supposed physiological interference of visible rays. No physiological interference is produced by dark heat or visible rays with the exciting action of ultra-violet on involuntary muscle. The action of ultra-violet rays antagonises that of adrenalin on involuntary muscle, but not that of emetin. The presence of calcium in the nutritive fluid is necessary for the increase of tone produced by ultra-violet rays.—I. de B. **Daly**: A closed-circuit heart-lung preparation; effect of alterations in the peripheral resistance and in the capacity of the circulation. A diminution in capacity of the systemic circulation produces the same effects qualitatively and quantitatively as an increase in the volume of circulating blood, namely, a rise in pressure in both auricles, the aorta and the pulmonary artery, and an increase in the cardiac output. An increase in peripheral resistance has an opposite effect. "Resistance," "capacity" and blood distribution effects are interdependent, their relative effects being determined by the physical constants of the circulation.—C. H. **Best**: On the effect of insulin on the dextrose consumption of perfused skeletal muscle. Insulin greatly accelerates the rate of sugar disappearance from defibrinated blood used to perfuse the isolated limbs of the cat. The action is attributable to its effect on the metabolism of the skeletal muscles.—T. S. P. **Strangeways** and Honor B. **Fell**: Experimental studies on the differentiation of embryonic tissues growing *in vivo* and *in vitro*. (i.) The development of the undifferentiated limb-bud (*a*) when subcutaneously grafted into the post-embryonic chick, and (*b*) when cultivated *in vitro*. —C. N. **Long**: Muscular exercise, lactic acid, and the supply and utilisation of oxygen. Pt. xiv. The relation in man between the oxygen intake during exercise and the lactic acid content of the muscles. In men, as well as in the isolated muscle, the rate of removal of lactic acid, as measured by the oxygen intake, is proportional to the square of the lactic acid concentration in the fluids which are in contact with the muscle fibres. Lactic acid apparently acts as a "governor of oxidation" in the recovery process of muscle.—K. F. **Hetzel** and C. N. **Long**: The metabolism of the diabetic individual during and after muscular exercise. Muscular exercise in the diabetic individual appears to be accompanied by the same metabolic changes as in the normal. Exercise increases the combustion of carbohydrate. For short periods of exercise, with insulin administered during the last 17 hours, the respiratory quotient of the excess metabolism is unity, exactly as in normal men: for exercise of moderate duration its value is intermediate, while for exercise of long duration it tends to fall towards that of the previous resting metabolism. In this respect the diabetic individual with recent insulin, on a diet poor in carbohydrate, behaves in a manner exactly similar to a normal man on a diet consisting mainly of fat, though the phenomena are more exaggerated. In a diabetic individual without insulin, the respiratory quotient of the excess metabolism is always low. It may be supposed that a muscle, for its oxidative processes in recovery from exertion, uses carbohydrate only; that in the presence of insulin there are stores of carbohydrate in a form readily available for use by the muscle, and that a short interval of exercise does not sufficiently deplete these stores to render an immediate restoration necessary from other substances in the body. In the absence of insulin, these ready stores of carbohydrate have run low. Prolonged muscular exertion, a diet poor in carbohydrate, and the absence of insulin, all produce the same effect, namely, a lowering of the respiratory quotient of the excess metabolism due to exercise. All these factors might be expected to deplete the stores of carbohydrate readily available.—W. G. **Millar**: The diffraction method of measuring the diameter of erythrocytes.

SYDNEY.

Royal Society of New South Wales, December 2.—A. R. **Penfold** and R. **Grant**: The germicidal values of some Australian essential oils and their pure constituents, together with those for some essential oils. The published value for terpineol (Rideal-Walker test) is 16. Some other results are: *Atherosperma moschata* (crude oil), 18; formic acid, 5; butaldehyde, 12 (5); butyric acid (normal), 1 (8); butyl butyrate, 13 (17). Figures in brackets are due to either increased or decreased dispersion brought about by solution in alcohol instead of 7·5 per cent. rosin soap solution. —A. R. **Penfold**: The essential oil of *Bæckea Gunniana* var. *latifolia* (F. v. M.). This Myrtaceous shrub is widely distributed throughout the mountains of New South Wales. The yield of oil from the leaves amounted to 0·33 to 0·74 per cent., and its melting-point was 43° to 47° C. It is the only Australian essential oil which has yet been recorded that becomes a solid at ordinary temperatures. It contains more than 60 per cent. eudesmol, eudesmene, b-pinene, small quantities of unidentified phenolic bodies, and valeric acid ester and a stearoptene.—F. A. **Coombs**, W. **McGlynn**, and M. B. **Welch**: The black cypress pine (*Callitris calcarata*, R. Br.) tannins and their distribution in the bark. This tree occurs over a large area of Australia, and possesses a valuable tan-bark containing up to 36 per cent. tannin. Difficulty has been experienced in obtaining a satisfactory commercial extraction, due to regularly recurring bands of cork cells, impervious to water, at close intervals now observed. By grinding the bark to a powder, this difficulty can be overcome. Starch, which is a most important agent in the destruction of tannin when extraction is carried out at high temperatures, was observed in those cells of the inner living bark in which tannin is situated. The bark of this tree is available in large quantities, and is very suitable for the production of a tanning extract. It resembles in many respects the North American hemlock bark, but its tannin content is at least double.—C. A. **Sussmilch**: On the occurrence of waterworn pebbles of coal in the Upper Coal Measures at Red Head, N.S.W. Analysis of one of the pebbles, together with its physical character, indicates a probable derivation from the Greta Coal Seam in the Lower Coal Measures. This indicates that the Lower Coal Measures must have been undergoing denudation during the time that the Upper Coal Measures were being laid down, and therefore, that some crustal movements must have taken place between the deposition of the two coal measures.—Ida A. **Brown**: Some tertiary formations on the south coast of N.S. Wales, with special reference to the age and origin of the so-called "silica" rocks. The flinty quartzites discussed occur on the south coast of New South Wales and in the Ulladulla District, and are quarried as "silica" for use in the manufacture of bricks for lining steel-furnaces. Hitherto they have been regarded as the result of the metamorphism of Upper Marine (Permo-Carboniferous) sandstones by volcanic dykes, but it is considered that they are derived from very pure siliceous sediments of Tertiary age, which have been hardened and

compacted by subsequent flows of olivine basalt. Well-preserved fragments of the stems and roots of a dicotyledonous angiosperm were found in the quartzite.

VIENNA.

Academy of Sciences, November 5.—K. **Chudoba**: The dispersion of plagioclase. The gray-position-method has already been applied to determine the situation of the optical axes for different wave-lengths in orthoclase. With albite the dispersion of the B-axis is about three times as great as that of the A-axis. Measurements were made with monochromatic light of six different wave-lengths, and the situation of the axes controlled by the right angle method.—B. P. **Wiesner**: On the function of the germinal gland before puberty; experiments on rats. (I.) Castration of new-born males. The development of sexual characters at puberty is dependent on the endocrine function of the reproductive system. Castration was performed twelve hours after birth, and the after-growth of castrated, one-side castrated, and entire animals compared at various ages. Development continues for a few days only after complete castration; normal and half-castrated animals develop alike. (II.) Spaying of new-born females. In contrast to the males, the normal and spayed females develop alike up to puberty, and only the onset of the œstrus cycle and its periodic recurrence proves the secretory function of the ovary. There is no œstrus in spayed animals, but the earlier stages of the development of sexual characters are independent of the ovary. Details of these researches will appear in *Pflüger's Archiv f. d. ges. Physiologie*.—P. **Weiss**: The morphological impotence of regeneration tissue. The formation of extremities from tail material from Triton. Transplantation was made from the middle of the tail into the body wall near the fore-limb. Various effects took place—healing over, a small tail, warty lumps or a differentiated limb. The regeneration tissue when young seemed to be undifferentiated, and its subsequent growth was determined by the position into which it was transplanted (morphological impotence). Older material, to a certain degree determined as tail, formed tail after transplanting.—K. **Grobben**: Attempt at an explanation of the alternation of layers in pearls.—H. P. **Cornelius** and M. **Cornelius-Furlani**: Report on geological inquiries on the Insubrisch line in the lower Val Tellina. Two quite different zones occur; in the north, highly crystallised biotite-gneiss with intrusions, and in the south, uniform quartz-phyllite.

November 20.—G. **Weissenberger**, S. **Baumgarten** and R. **Henke**: Absorption by charcoal from viscous media.—J. **Zellner** and others: Contributions to the comparative chemistry of plants, XI. The chemistry of barks. In the barks of Cornus, Tilia and Carpinus, substances have been found such as alnulin, coryliresinol and platanol acid.—J. **Braunhauser**: The chemistry of heterotrophic phanerogams. Mistletoe berries have been analysed.—A. **Huber**: Newton's method of approximation.—**Skrabal** and A. **Zahorka**: The hydrolysis of acetic acid ester by acids.—J. **Pia**: The structure of the Alpine middle-trias deduced from the diplopores.—H. **Handel-Mazzetti**: New Chinese plants (36). Includes species of Aconitum and Corydalis.

November 26.—K. **Umrath**: On the conduction of irritability in Mimosa. In *M. Spegazzinii* as in *M. pudica* there are several stimulus conducting systems. Three velocities of conduction were found in the leaf and two in the stem.—O. **Pesta**: Problems of the hydrobiology in the mountains of the Eastern Alps. Chemical analyses have been made of the waters of mountain lakes.

December 3.—H. **Hahn**: On a theorem of existence in the calculus of variations, and on the method of arithmetical means in the theory of generalised Fourier integrals.—H. **Handel-Mazzetti**: New Chinese plants (37). Three species of Pedicularis are described.

December 10.—F. **Becke** and J. E. **Hibsch**: On nephelines with zonal structure.

Official Publications Received.

Beiträge zur Natur- und Kulturgeschichte Lithauens und angrenzender Gebiete. Herausgegeben von Prof. Dr. E. Stechow. Einleitung, von Prof. Dr. E. Stechow. Vögel, von Dr. H. Sachtleben. (Abhandlungen der math.-phys. Klasse der Bayer. Akademie der Wissenschaften. Suppl.-Band. Einleitung und 1 Abhandlung.) Pp. 232. Steinzeitliche Funde aus Lithauen, von Prof. Dr. F. Birkner. Parasitische Insekten aus Lithauen, von Prof. Dr. Günther Enderlein. Parasitische Trematoden aus Lithauen, von Dr. L. Scheuring. Biologische Beobachtungen, von Prof. Dr. E. Stechow. (Abhandlungen der math.-phys. Klasse der Bayer. Akademie der Wissenschaften. Suppl.-Band. 2-5 Abhandlung.) Pp. 233-256+6 Tafeln. Die Zweiflügler der Urwaldes von Bialowies, von Prof. Dr. P. Sack. Hymenoptera (Aculeata, Ichneumonidae, Chalastogastra), von Dr. H. Bischoff. Trichopteren und Ephemeropteren aus dem Bialowieser Wald, von Dr. G. Ulmer. Über Waldbienenzucht in Lithauen und einigen Nachbargebieten, von Dr. H. Klose. (Abhandlungen der math.-phys. Klasse der Bayer. Akademie der Wissenschaften. Suppl.-Band. 6-9 Abhandlung.) Pp. 257-406+9 Tafeln. (München: Verlag der Bayerischen Akademie der Wissenschaften.)

U.S. Department of Agriculture: Weather Bureau. W.B. No. 866: Instructions to Marine Meteorological Observers. (Circular M, Marine Division, Fourth edition.) Pp. x+99+8 plates. (Washington: Government Printing Office.)

Transactions of the Royal Society of Edinburgh. Vol. 54, Part 2, No. 5: Studies in Irregular Nutrition. No. 1: The Parasitism of Cuscuta reflexa (Roxb.). By John Thomson. Pp. 343-356+8 plates. (Edinburgh: R. Grant and Son; London: Williams and Norgate, Ltd.) 6s. 6d.

The South-Eastern Naturalist: being the Thirtieth Volume of Transactions of the South-Eastern Union of Scientific Societies, including the Proceedings at the Thirtieth Annual Congress, held at Folkestone, 1925. Edited by A. F. Ravenshear. Pp. lxxxii+126. (London.)

Ministry of Public Works, Egypt: Physical Department. The Lake Plateau Basin of the Nile. By Dr. H. E. Hurst. (Physical Department Paper No. 21.) Pp. vi+75+41 plates+12 charts. (Cairo: Government Publications Office.) 10 P.T.

Proceedings and Transactions of the Croydon Natural History and Scientific Society. Vol. 9, No. 4, February 1923 to January 1925. Pp. xxxiii-xlix+38+187-224+50. (Croydon.) 5s. net.

Department of the Interior: Bureau of Education. Bulletin, 1925, No. 20: Statistics of Kindergartens 1923-24. Pp. ii+7. (Washington: Government Printing Office.) 5 cents.

United States Department of Agriculture. Farmers' Bulletin No. 789: Mushroom Pests and How to Control Them. By C. H. Popence. Pp. ii+6. (Washington: Government Printing Office.) 5 cents.

Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 1924–25. Vol. 69. Pp. 102+xlii+viii. (Manchester.) 12s.

Report of the Institute for Science of Labour, July 1921–June 1925. Pp. ii+35+2 plates. (Kurasiki, Japan.)

Aeronautical Research Committee. Reports and Memoranda, No. 980 (Ae. 193): The Rolling and Yawing Moments of an Aerofoil in Straight Flight. By H. Glauert. (A.3.a. Aerofoils—general, 152—T. 2105.) Pp. 5. (London: H.M. Stationery Office.) 3d. net.

The Institution of Civil Engineers. Engineering Abstracts prepared from the Current Periodical Literature of Engineering and Applied Science, published outside the United Kingdom. Supplement to the Minutes of Proceedings of the Institution. Edited by W. F. Spear. New Series, No. 25, October. Pp. 230. (London.)

Proceedings of the Geologists' Association. Edited by A. K. Wells. Vol. 36, Part 4. Pp. 321-462. (London: E. Stanford, Ltd.) 5s.

City and County of Bristol: The Bristol Museum and Art Gallery. Report of the Museum and Art Gallery Committee for the Year ending 30th September 1925. Pp. 24+5 plates. (Bristol.)

Koninklijk Magnetisch en Meteorologisch Observatorium te Batavia. Verhandelingen No. 14: Regenval in Nederlandsch-Indië (Rainfall in the Netherlands Indies). Door (by) Dr. J. Boerema. Deel 2 (Vol. 2): Kaarten van den gemiddelden jaarlijkschen en maandelijkschen regenval op Java en Madoera, met een kaart der regenstations (Maps of the Mean Yearly and Monthly Rainfall on Java and Madoera, with a Map showing the Position of the Rainfall Stations). Pp. ii+14 Maps. (Weltevreden: Landsdrukkerij.)

Department of Agriculture, Ceylon. Bulletin No. 73: Import of Fertilizers into Ceylon. By Alexander Bruce. Pp. 41. (Peradeniya.) 40 cents.

Scientific Reports of the Agricultural Research Institute, Pusa (including the Reports of the Imperial Dairy Expert, Physiological Chemist, Government Sugarcane Expert, and Secretary, Sugar Bureau), 1924-25. Pp. v+163. (Calcutta: Government of India Central Publication Branch.) 2.4 rupees; 4s.

Annuaire de l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, 1925. (91e année.) Pp. 265+8 plates. (Bruxelles: Maurice Lamertin.)

Government of India: Department of Industries and Labour, Public Works Branch. Triennial Review of Irrigation in India, 1921–1924. Pp. ii+71. (Calcutta: Government of India Central Publication Branch.) 1 rupee; 1s. 9d.