

## Societies and Academies.

## LONDON.

**Royal Society**, April 29.—C. H. Best, H. H. Dale, J. P. Hoet, and H. P. Marks: Oxidation and storage of glucose under the action of insulin. Under the same conditions as those of the following investigation, the total quantity of glucose disappearing from the system under insulin is always equal to the sum of the equivalents of the glycogen deposited and of the oxygen absorbed. The conclusion is drawn that all the glucose disappearing under the action of insulin is either oxidised or deposited as glycogen. The fact that, in the normal animal treated with a fatal dose, the end result is often a disappearance of pre-existent glycogen, with concurrent fall of respiratory metabolism, is attributed to the other action of insulin, in depressing the new formation of carbohydrate in the liver. It is accordingly suggested that insulin in excessive doses produces the same effects as in physiological doses, but with abnormal intensity.—C. H. Best, J. P. Hoet, and H. P. Marks: The fate of the sugar disappearing under the action of insulin. When the blood sugar of the eviscerated spinal preparation is kept at a high level for from two to five hours, by the intravenous administration of dextrose, there is no demonstrable change in the glycogen content of the skeletal muscles. When a hyperglycæmia is maintained and insulin is administered, no significant part of the sugar which disappears is stored as a phosphate ester in the skeletal muscles. Under these latter conditions, however, there is an increase of glycogen in the muscles sufficient to account for from 40 to 50 per cent. of all the sugar which disappears. When the rate of sugar infusion is so slow that the blood sugar reaches a very low level under the action of insulin, the muscle glycogen is not depleted to form some unknown substance. When sufficient sugar has been available there is a recognisable increase in glycogen. Similar results are obtained when the spinal preparation has not been eviscerated. Hypoglycæmic convulsions, which are eliminated in the spinal preparation, produce a great depletion of the glycogen content of the skeletal muscles.—J. P. Hoet and H. P. Marks: Observations on the onset of rigor mortis. The precipitate rigor mortis observed in rabbits dying after hypoglycæmic convulsions, or after prolonged thyroid feeding, is not due to the accumulation of the lactic acid, nor to increased acidity of the muscle. The absence of glycogen and the decrease in lactacidogen of the muscle are the determining factors of this rigor. These facts must be taken into account in discussing rigor mortis and also muscular contraction.—J. C. Mottram, G. M. Scott, and S. Russ: On the effects of  $\beta$ -rays from radium upon division and growth of cancer cells. Tumours growing in rats were exposed to measured doses of  $\beta$ -rays from radium. After various intervals, small pieces of the tumours were removed and counts made of the number of cells in a state of division. Immediately after a dose of radiation large enough to prevent growth of the cells *in vivo*, many cells were found in a state of division, but very soon the cells in mitosis disappeared. When irradiated tumours were left in the rats for some days after the irradiation, there was some return of cells in division, even after very large doses. The variation in the results with the interval between irradiation and examination is intimately bound up with the varying susceptibility of the cells at different stages in their growth.

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## DUBLIN.

**Royal Irish Academy**, April 12.—J. J. Nolan: The breaking of water-drops by electric fields. Falling drops were exposed to a transverse electric field. It was found that explosive bursting of the drops occurred at critical values of the field, the relation between the field and the radius of the drop being  $F\sqrt{r} = \text{const}$ . This is in agreement with the observations of C. T. R. Wilson and G. I. Taylor on soap-bubbles. Drops greater than 0.2 cm. radius showed a type of disintegration for lower values of the electric field than those required to produce explosive bursting. Attempts to determine the ballo-electric charge developed by the bursting of the drops were unsuccessful.

## PARIS.

**Academy of Sciences**, April 7.—Georges Claude: The present state of ammonia synthesis utilising coke-oven gas. Reasons are given for the use of the hydrogen from coke-oven gas in the synthetical preparation of ammonia. Photographs are given of the works at Waziers and at Ougree. The preliminary difficulties have been to a great extent overcome, and works using the Claude process in the last quarter of 1925 produced 10,000 tons of sulphate of ammonia or its equivalent.—C. Camichel, L. Escande, and M. Ricaud: Viscosity and turbulence.—Max Morand: The luminous phenomena observed in a lithium positive-ray tube.—J. Cabannes and J. Granier: The depolarisation of light diffused by some organic substances.—G. Bruhat: An apparatus for the precise determination of the orientation of a rectilinear vibration in the ultra-violet.—A. Cotton: Remarks on the preceding communication.—S. Schlivitch: Photovoltaic batteries with unalterable electrodes.—Ch. Courtot and C. Pomonis: Study in the diphenylene sulphide series. Details are given of a method of nitrating diphenylene sulphide and of the reduction of the nitro product to aminodiphenylene sulphide.—J. Roger d'Ansan: Remarks relating to the application of ocular gymnastics to the treatment of myopia and amblyopia.

## CALCUTTA.

**Asiatic Society of Bengal**, April 5.—C. de Beauvoir Stocks: Folk-lore and customs of the Lap-chas of Sikkim. A translated collection of Lap-cha myths and fairy-tales, supplying an analysis of the ancient religion. The customs and superstitions of the different aspects of Lap-cha life and industries show they are connected with the traditions of a pre-Buddhist faith.—S. L. Hora: A short note on the distribution and habits of *Balwantia Soleniformis* (Benson). This bivalve lives in burrows excavated either in hard blue clay or in friable sandstone. The species is common in the Daleswary and the Barak rivers in Cachar. It lives in a burrow firmly anchored by its foot at the anterior end, and is enabled to enlarge it by a movement caused by the expansion and contraction of the foot. The Uriya coolies consider the animals of this species as a great delicacy and have devised an instrument for dislodging them from their burrows.—J. H. Hutton: Diaries of two tours in the unadministered area east of the Naga Hills. Notes of a tour made by Mr. J. P. Mills and the author in 1923 to a part of the Naga Hills which, so far as known, has never been visited by any European except by Lt. (afterwards General) Woodthorpe in 1876.—D. N. Majumdar: Marriage and betrothal amongst the Hos of Kolhan.—W. Ivanow: Rustic

poetry in the dialect of Khorasan. The grammatical peculiarities of the Persian dialect spoken in the province of Khorasan are discussed, together with a large collection of rustic songs from the district of Sabzawar.—Hem Chandra Das-Gupta: A few types of sedentary games prevalent in the Punjab. Description of six games played with pieces on diagrams inscribed on rock-slabs or improvised on other material: (1) Dō-guti (two gutis or pieces); (2) Treguti (three pieces); Naō-guti (nine pieces); (4) Sherbakar (tiger and goats); (5) Ratti-chitti-bakri (red-white goats); (6) Khutkā boīā (dug circles). The first two have, as far as known, nothing similar in other parts of India; the third has parallels in Bengal; the fourth in Bengal and Orissa; the fifth in Sumatra; the sixth in Assam, Orissa and Madras.

## ROME.

**Pontificia Accademia delle Scienze (Nuovi Lincei)**, March 21.—Teofilato: Some questions of ballistics.—Martinelli: The annual (for 1926) of the prediction office of the Ministry of Aeronautics, containing numerous notices referring to tides, terrestrial magnetism, atmospheric pressure, etc.—Scatizzi: The polar and essential singularities of a summable derivative with variable index.—Neviani: The fossil hippopotamus of the Roman Campagna: notes on new discoveries, and bibliography.—Gianfranceschi: Certain considerations on the numerical results obtainable with the author's formula for the distribution of energy in the black body spectrum.—Ludovici Marini: Climatic notes on Corfu.

**Royal Academy of the Lincei**, March 7.—G. A. Crocco: Possibility of super-aviation. The possibility of extra-atmospheric navigation is considered, and it is shown that if the weight supported is constant the power necessary for horizontal flight is proportional to the velocity, but independent of the altitude, of the flight. Further, for a given initial weight and a constant specific consumption, the amount of fuel necessary to cover a definite distance in horizontal flight is independent of both the altitude and the velocity.—R. Nasini: The volatility of orthoboric acid in steam. The recent denial by Anschütz and Riepenkröger that orthoboric acid is volatile in water vapour disagrees with the results of other investigators. This acid may be distilled in steam at reduced pressure if the temperature does not fall below 60°; at higher temperatures it volatilises even at the ordinary pressure. O. M. Corbino: The electronic theory of thermo-magnetic phenomena. The Lorentz and Gans theory, when applied to the case of a disc traversed by a centrifugal radial current of heat or electricity, predicts the formation of a circular thermo-magnetic or galvano-magnetic current of the same sense as the current producing the magnetic field. This result is, however, contrary to the truth for both currents with all metals (including bismuth) with the exception of gold, silver and copper. The theory of Livens would permit of the elimination of the contradiction in some instances, but the law of distribution of velocity on which it is founded is not in accord with the laws of electromagnetism.—S. Franchi: Gradual change to crystalline calc-schist and marble forms of the fossiliferous Nummulitic and Cretaceous in the Val del Gesso and the Val della Stura di Cuneo.—A. Russo: Mixed individuals and gametogens, neutral individuals, and pre-conjugants in the biological cycle of the ciliates, in relation to those of the metazoa.—Vasco Ronchi: Recent theories of flying shadows. This phenomenon is explained in the most natural and exhaustive

manner by the illumination of the non-homogenous atmospheric stratum by the highly brilliant solar crescent.—A. Rosenblatt: Regularisation of the problem of three bodies.—A. Ferrari: Comparison between the diameters of the ions of one and the same element, but with different charges. The diameters of quadrivalent manganese and lead ions are respectively 2.50 and 3.10 Å.U., whereas those of the corresponding bivalent ions are 2.95 Å.U. and 3.80 Å.U.—B. Monterosso: Structure of *Peroderma cylindricum*, Heller.—Alberto Chiarugi: Phenomena of apospory and apogamy in *Artemisia nitida*, Bertol.—Umberto D'Ancona: Contribution to the histophysiology of striated muscle fibre.

## VIENNA.

**Academy of Sciences**, March 18.—W. Dorn: Fourier's integrals considered as limiting cases of Fourier's series.—O. Abel: Morphological investigations on the styloid bones of horses.—M. Belar: Communication from the Radium Institute, No. 186. On the coloration of rock-salt by Becquerel rays.—K. Przibram: On the theory of the coloration of rock-salt by Becquerel rays.—E. Flatt: Regeneration of the long bones after partial removal in the interior of the extremities of the newt (*Triton cristatus*).—M. Kohn and G. Dömötör: The behaviour of the penta-halogen-phenols to aluminium chloride in the presence of benzole (Communication No. 20 on bromo-phenols).

## Official Publications Received.

- Proceedings of the Royal Society of Edinburgh, Session 1925-1926. Vol. 46, Part 2, No. 13: Partial Differential Equations and the Calculus of Variations. By E. T. Copson. Pp. 126-135. Is. Vol. 46, Part 2, No. 14: The Distribution of Electric Force in High Voltage Discharges. By Dr. A. E. M. Geddes. Pp. 136-148. Is. Vol. 46, Part 2, No. 15: A Chapter in the Calculus of Variations: Maxima and Minima, for Weak Variations, of Integrals involving Ordinary Derivatives of the Second Order. By Dr. A. R. Forsyth. Pp. 149-193. 4s. Vol. 46, Part 2, No. 16: On Triple Systems of Surfaces and Non-Orthogonal Curvilinear Coordinates. By Dr. C. E. Weatherburn. Pp. 196-205. Is. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)
- Report of the Aeronautical Research Institute, Tōkyō Imperial University. No. 13: On the Contents of Helium and other Constituents in the Natural Gases of Japan. By Yoshihiko Kano and Bunnosuke Yamaguti. Pp. 347-360+3 plates. (Tōkyō: Maruzen Kabushiki-Kaisha.) 75 sen.
- Nigeria. Fourth Annual Bulletin of the Agricultural Department, 1st August 1925. Pp. 217. (Ibadan: Department of Agriculture.) 5s.
- Ministry of Public Works, Egypt: Physical Department. Meteorological Report for the Year 1920. Pp. xix+148. (Cairo: Government Publications Office.) 30 P.T.
- Report of the National Baby Week Council, 1925. Pp. 31. (London: 117 Piccadilly, W.1.)
- United States Department of Agriculture. Department Bulletin No. 1395: Bats in relation to the Production of Guano and the Destruction of Insects. By Edward W. Nelson. Pp. 12. (Washington, D.C.: Government Printing Office.) 5 cents.
- The Rockefeller Foundation. Annual Report for 1924. Pp. xi+447+34 plates. (New York.)
- Annales de l'Institut de Physique du Globe. Fascicule spécial consacré aux expériences de la courtoine sur la propagation des ondes aériennes. Pp. viii+50. (Paris: Les Presses universitaires de France.)
- Poradnik dla Samouków, Tom. 6. Botanika, 1. Pp. xi+713. (Warszawa: Imienia Mianowskiego.)
- Department of Scientific and Industrial Research. Second Report of the Adhesives Research Committee. Pp. iii+128. (London: H.M. Stationery Office.) 3s. net.
- Transactions and Proceedings of the Royal Society of South Australia (Incorporated). Vol. 49. Edited by Prof. Walter Howchin; assisted by Arthur M. Lea. Pp. iii+324+24 plates. (Adelaide.) 18s.
- Publications of the Washburn Observatory of the University of Wisconsin. Vol. 14, Part 2: Meridian Observations of Comparison Stars. By Albert S. Flint. Pp. 189-225. (Madison, Wis.)
- The University of Chicago: Publications of the Yerkes Observatory. Vol. 4, Part 4: Zone +45° of Kapteyn's Selected Areas; Parallaxes and Proper Motions of 1041 Stars. By Oliver Justin Lee. Pp. v+67. (Chicago, Ill.: University of Chicago Press; London: Cambridge University Press.)
- Carnegie Endowment for International Peace: Division of Intercourse and Education. Annual Report of the Director for the Year 1925. Pp. 39+5 plates. (New York.)