

of survival of air-breathing, lung-possessed creatures in such circumstances. However, in the height of the mating season, when activity is not at its lowest, one has seen beneath the clear water of a pond mated frogs remain for long periods inactive on the bottom, and in face of such experiences as are related above it seems probable that in cold weather the lowering of activity in these cold-blooded animals reduces metabolism to so low a pitch that the oxygen required can be obtained by transpiration through the skin. The problem still to be solved in regard to cold-blooded hibernators, as P. A. GORER has pointed out, lies in the physiological changes which enable the tissues of an adapted animal such as the common frog (*Rana temporaria*) to recover from cooling which is not excessive, while such recovery is impossible in unadapted animals.

Societies and Academies

LONDON

Royal Meteorological Society, Dec. 14. C. S. DURST: "The thermal balance of a water drop or ice particle suspended in the atmosphere." From the examination of the long wave radiation received and given out by a water drop or ice particle, it is shown that such a particle will lose heat if it is above a certain critical temperature and gain heat if it is below, from which it follows that if a particle exists in the stratosphere it will gain heat. It is assumed that the base of the stratosphere is saturated and consideration is given to the conditions under which particles could be formed. If a small air mass were raised in the stratosphere the particles formed in it would be melted in a very short time and the temperature of the air would once more be that of its surroundings, the entropy of the air having been increased in the process.—E. W. BLISS: The tabulation of world weather (5). (Discussion by Sir Gilbert Walker.) (*Mem. Roy. Meteor. Soc.*, 4, No. 36.) In order to form more definite ideas regarding the oscillations named the North Atlantic, the North Pacific, and the Southern, series of figures have been derived to express the variations of each, and from these have been obtained their relations with pressure, temperature, and rainfall over wide regions as well as the relations of the three oscillations with each other and with sunspots. The southern oscillation in the southern winter is extremely persistent, and its departure has a correlation coefficient of 0.84 with that of the following summer.—C. S. DURST: "The breakdown of steep wind gradients in inversions." On certain occasions when inversions have formed, a violent eddying arises, which is shown on an anemometer as an abrupt change in the type of trace. This change over occurs when the wind gradient becomes great. On the ground that the eddies formed in these circumstances are different in character from those formed with an adiabatic temperature gradient, a suggestion is put forward for the mechanism of the diurnal variation of wind.

DUBLIN

Royal Dublin Society, Nov. 22. J. H. J. POOLE: An investigation of the behaviour of neon discharge tubes in a flashing capacity circuit by means of a cathode ray oscillograph. The effects of leakage currents in the oscillograph were eliminated by using the oscillograph

in conjunction with a valve anode resistance amplifier. For small shunting capacities the flashing may be extremely irregular, and quite considerable currents pass through the tube before the flash occurs. The presence of radium lowers the striking potential and, by decreasing the maximum dark current, increases the regularity of flashing. The effect of the shape of the electrodes has also been investigated. For concentric cylindrical electrodes, at the filling pressures used, the difference between the striking and extinction voltages is less when the inner cylinder is negative. H. M. FITZPATRICK: The trees of Ireland, native and introduced. A catalogue of the tree species growing in Ireland giving the dimensions attained by each in different parts of the country with, in the case of exotics, an account of their natural distribution and introduction into cultivation. 150 broad-leaved and 215 coniferous trees are recorded. G. T. PYNE and J. J. RYAN: The colloidal calcium phosphate of milk. Some samples of milk out of a large number tested developed a marked alkalinity to phenolphthalein on addition of oxalate. As the wheys prepared from the same milks did not do so, it appeared that the alkalinity must arise from the interaction of the (potassium) oxalate with the casein calcium phosphate complex of milk, presumably owing to the conversion of insoluble tri-calcium phosphate into the strongly alkaline tri-basic potassium salt. The amounts of tricalcic phosphate required to account for the observed alkalinities approximated to those usually accepted for the entire colloidal phosphate of milk, suggesting that the greater part of this colloid must consist of the tri-basic salt. The bulk of the casein calcium phosphate complex was removed by prolonged high speed centrifuging from two very different types of milk (as regards their reaction with oxalate) and submitted to analysis. The results appeared to show that the bulk of the colloid in each case consisted of tricalcium phosphate, and that the variations in the behaviour of different samples to oxalate was thus connected with the relative quantity of the colloid present rather than with variations in its composition.

PARIS

Academy of Sciences: Nov. 14. CH. MAURAIN and J. DEVAUX: Electrical conductivity and atmospheric condensation nuclei during a voyage to Greenland. There is a general resemblance between the electrical conductivity of the air in the polar regions and that on mountains at high altitude, possibly due to the purity of the atmosphere and the dryness. The measurements were too few to enable any deductions to be drawn as to the effects of the meteorological conditions. MARIN MOLLIARD: Aseptic tuberisation and morphological characters resulting from the action of saccharine food on the onion, *Allium cepa*. E. MATHIAS: Death by the return stroke (lightning). J. CANTACUZENE and A. TCHEKIRIAN: The presence of vanadium in certain tunicates. Vanadium has been found in nine species of tunicates: the proportion is higher in young animals than in adults. POTRON: The Riemann spaces admitting a group of isometric transformations with $n(n+1)/2$ parameters. MARCEL BRELOT: The study of the point singularities of sub-harmonic functions. PIERRE HUMBERT: Bessel-integral functions. D. POMPEU: A theorem, analogous with that of Rouché, relative to the zeros of holomorph functions. NICOLAS APRAXINE: A calculating machine worked electrically. B. GALERKIN:

The general solution of the problem of elastic equilibrium of a hollow circular cylinder and of a part of the cylinder. R. DE FLEURY, H. PORTIER and S. BENMAKROUHA : The comparative and reciprocal influences of individual values, for each alloy and for each state of the alloy, of the modulus of elasticity, the elastic limit and the density on the dimensions of beams and elements of framework under bending. LOUIS DE BROGLIE : The electromagnetic field of the light wave. L. GOLDSTEIN : The quantum theory of the diffusion of electrons. ANDRE MARCELIN and D. G. DERVICHIAN : The direct measurement of superficial pressure of superficial solutions formed by soluble substances. P. ROUARD : The reflecting power of metals in very thin plates. The reflecting power varies with the thickness of the film, passing through a minimum depending on the wave-length of the light. CH. BEDEL : The temperature coefficient of the electrical resistance of silicon and a thermoelectric phenomenon of unipolar substances. A. SANFOURCHE and B. FOCET : The calcium salt of a complex ferrophosphoric acid. F. GALLAIS : Potassium iodomercurate. LEON JACQUE : The alteration of steels by hydrogen. The modification of the micrographic structure of steel submitted to the action of hydrogen under pressure and at temperatures between 400° and 700° C., appears to be the result of two simultaneous phenomena : the elimination of the carbon of the steel by the hydrogen, and a diffusion of the carbon from the unaltered regions towards the decarbonised regions. The process is a reversed cementation. The change depends on the composition of the steel, chrome-nickel steels, for example, being less altered under the same conditions. M. LESBRE : An imperfect silver-guanidine complex. R. LEVAILLANT : The action of acid chlorides on orthoformic esters. The preparation of symmetrical esters of sulphuric acid. The reaction $\text{CCl}_3\text{COCl} + \text{HC}(\text{OC}_2\text{H}_5)_2 = \text{CCl}_2\text{CO}_2\text{C}_2\text{H}_5 + \text{C}_2\text{H}_5\text{Cl} + \text{HCO}_2\text{C}_2\text{H}_5$ gives a 90 per cent yield of the ethyl trichloroacetate. The reaction is a general one, and can be extended to the sulphonchlorides. G. DARZENS : A new method of glycidic synthesis of aldehydes. LESPIEAU and WIEMANN : The synthesis of allodulcitol. Y. MILON : The antiquity of the depression of the gulf of Morbihan. G. DUBAR and H. TERMIER : The facies of the Lias underlying the Toarcian in the Moroccan middle Atlas. J. GAUZIT : An attempt at the estimation of atmospheric ozone by visual photometry. The method detailed, which has the advantage over other methods in use of taking less time, measures the thickness of the ozone layer in the atmosphere with an uncertainty of less than ten per cent. PH. JOYET-LAVERGNE : Oxidising power, chondriome and cytoplasmic sexualisation in the Fungi. J. BEAUVÉRIE and M. LLE. S. MONCHAL : The life of green plants in a confined atmosphere. Plants contained in glass vessels, with moist earth, and sealed with paraffin wax, can live and grow for several years. Examples are given of plants which have remained in good condition for three or four years thus sealed up. MICHEL GRACANIN : Contribution to the study of the relation between transpiration and the resorption of ions. MARC SIMONET : New interspecific hybrids in *Iris* and their cytological study. ARMAND DEHORNE : New observations on the asexual multiplication of an annelid of the genus *Dodecaceria*. ETIENNE RABAUD and L. VERRIER : The evacuation of the gases from the air bladder and the working of the pneumatic canal. PAUL WINTREBERT : The two phases of segmentation and the subdivision theory in amphibians.

Forthcoming Events

Monday, Jan. 9

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—B. Roberts : "The Cambridge Expedition to Vatna-Jökull, 1932".

Tuesday, Jan. 10

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.30.—Dr. N. Gordon Munro : "The Ainu Bear Ceremony" (Film).

Thursday, Jan. 12

KING'S COLLEGE, LONDON, at 5.—Prof. R. J. S. McDowall : "The Integration of the Circulation" (succeeding lectures on Jan. 19, 26 and Feb. 2).

Official Publications Received

GREAT BRITAIN AND IRELAND

The H.E.A. Year Book : the Annual Publication of the Horticultural Education Association. Vol. 1, 1932. Pp. 92+xl. (Wye : South-Eastern Agricultural College.) 3s. 6d.
County Borough of Southport : Meteorological Department : The Fernley Observatory, Southport. Report, and Results of Observations for the Year 1931. By Joseph Baxendell. Pp. 31. (Southport.)
Brompton Hospital Reports : A Collection of Papers recently published from the Hospital. Vol. 1, 1932. Pp. iv+144. (London.) 2s. 6d.
Proceedings of the Royal Irish Academy. Vol. 41, Section B. No. 8 : Recent Views bearing on the Problem of the Irish Flora and Fauna. By Dr. R. Lloyd Praeger. Pp. 125-145. (Dublin : Hodges, Figgis and Co. ; London : Williams and Norgate, Ltd.) 1s.
True Temperance Scientific Committee. Monograph No. 8 : In Chase of Truth of Alcohol. By Prof. Henry E. Armstrong. Pp. 32. (London : Donington House.) 1s.
The Scientific Proceedings of the Royal Dublin Society. Vol. 20 (N.S.), No. 30 : A Suggested Mode of Radiotherapy when Long-continued Feeble Gamma Radiation may be Desirable. By Dr. J. Joly. P. 469. (Dublin : Hodges, Figgis and Co. ; London : Williams and Norgate, Ltd.) 6d.

OTHER COUNTRIES

International Hydrographic Bureau. Report of the Proceedings of the Third International Hydrographic Conference held at Monaco, 12-23 April, 1932. Pp. 435. (Monte Carlo.) 2.50 dollars.
Colony of Mauritius. Annual Report on the Royal Alfred Observatory for the Year 1930. Pp. 4. (Mauritius.)
Miscellaneous Publications of the Royal Alfred Observatory. No. 11 : Pilot Balloon Observations at Mauritius. By R. A. Watson and N. R. McCurdy. Pp. 17+3 plates. No. 12 : The Cyclone Season 1929-1930 at Mauritius. By R. A. Watson and N. R. McCurdy. Pp. 3+43 plates. (Mauritius.)
Indian Central Cotton Committee : Technological Laboratory. Technological Bulletin, Series A, No. 22 : Technological Report on Bauilla Cotton, 1930-32. By Dr. Nazir Ahmad. Pp. ii+17. (Bombay : Times of India Press.) 8 annas.
The Quarterly Journal of the Geological, Mining and Metallurgical Society of India. Vol. 4, No. 1, August. Pp. 27. (Calcutta.) 6 rupees.
Paleontologische Navorsing van die Nasionale Museum. Deel 2, Stuk 5 : Voorlopige Beshryving van Vrystaatste Soogdiere. By Dr. Ir. E. C. N. Van Hoepen. Pp. 63-66. (Bloemfontein.)
Publications of the Observatory of the University of Michigan. Vol. 5, No. 2 : The Orbit of Comet Peltier-Whipple, Second Paper. By Allan D. Maxwell. Pp. 4. (Ann Arbor, Mich.)
U.S. Department of the Interior : Geological Survey. Professional Paper 166 : Physiography and Quaternary Geology of the San Juan Mountains, Colorado. By Wallace W. Atwood and Kirtley F. Mather. Pp. vi+176+34 plates. Professional Paper 167 : Lower Triassic Ammonooids of North America. By James Perrin Smith. Pp. v+199+81 plates. 70 cents. Professional Paper 171 : Geology and Ore Deposits of the Pioche District, Nevada. By Lewis G. Westgate and Adolph Knopf. Pp. viii+79+8 plates. 85 cents. Professional Paper 173 : Geology and Ore Deposits of the Stockton and Fairfield Quadrangles, Utah. By James Gilluly. Pp. vi+171+32 plates. (Washington, D.C. : Government Printing Office.)

CATALOGUES, ETC.

The Protexray Tube. Pp. 32. (London : Cuthbert Andrews.)
F/2 Spectrograph. (Lispec 33.) Pp. 4. Vacuum Thermocouples for Measuring Weak Alternating Currents. (Brug 31.) Pp. 2. (Delft : P. J. Kipp en Zonen.)
Calendar for 1933. (London : The Chemical Trade Journal.)
John G. Stein and Co., Ltd. Diary for 1933. Pp. 64+Diary. (Bonnybridge.)

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