

Societies and Academies.

LONDON.

Royal Society, January 19.—Sir Charles Sherrington, president, in the chair.—L. Hill, H. M. Vernon, and D. H. Ash: The kata-thermometer—a measure of ventilation. The kata-thermometer is used in ventilation inquiries to estimate (1) the cooling, (2) the evaporative power of the air on a surface at body-temperature, and (3) as an anemometer to indicate the velocity of air-currents. Certain discrepancies having arisen, the “kata” formulæ have been re-investigated, using the large wind-channels at the National Physical Laboratory, and for low velocities the method of moving the “kata” through the air in a whirling arm, taking count of the effect of “swirl.”—Lt.-Col. C. B. Heald and Major W. S. Tucker: Recoil curves as shown by the hot-wire microphone. The hot-wire microphone has been employed to measure body recoil as the result of heart action, and the records measure quantities proportional to the kinetic energy imparted to the body by motions of the blood. Thus slow-moving displacements, such as those of breathing, are not recorded. The apparatus can be standardised, giving the same responses from day to day for the same body recoils, and the kinetic energy of the body can be expressed in C.G.S. units. The results are consistent with physiological data.—E. W. A. Walker: Studies in bacterial variability: The occurrence and development of dys-, eu-, and hyper-agglutinable forms of certain bacteria. In the enteric and dysenteric groups of bacteria dys- and hyper-agglutinable forms occur. Both may be obtained from one eu-agglutinable strain of a bacillus. In agglutination tests a highly dys-agglutinable bacillus may fail to agglutinate with a serum that agglutinates the culture from which it was derived up to 1 in 1000. It may also fail to absorb from the serum the agglutinins specific to that culture. Noteworthy differences in behaviour thus exist between different individuals of a single culture. These facts may help to throw light on the problem of seriological strains.—Marjory Stephenson and Margaret Whetham: Studies in the fat metabolism of the timothy grass bacillus. During the growth of the timothy grass bacillus on a medium of inorganic salts, including ammonia as the sole source of nitrogen, glucose, and sodium acetate, the formation of protein, nitrogen, and fat was followed and correlated with the disappearance of glucose and acetate. No intermediate decomposition products of glucose were found. The growth of the organism on possible intermediate products of the breakdown of glucose was then studied. The growth on lactic acid was very similar to that on glucose alone. Growth on acetic acid was negligible. Growth on acetic and lactic acid showed that lactic acid enabled the organism to utilise the acetic acid. The acetic acid utilised in the presence of lactic acid or glucose served to increase the proportion of lipid material formed, and not to increase the general growth of the organism. Growth on propionic and butyric acids was like that on lactic acid.—J. A. Gardner and F. W. Fox: The origin and destiny of cholesterol in the animal organism. Pt. 12: The excretion of sterols in man. Measurements of the intake and output of sterols in twenty-six cases on known diet show that in every case, except one, there was an excess of output over intake. The average daily negative balance was 0.3 gram, but individual balances were very variable. A considerable portion of the cholesterol of the food and of the bile is re-absorbed in the intestine along with the bile salts, but this process appears to be limited by the reduction of cholesterol

to bi-hydrocholesterol in the intestine, a process especially characteristic of the adult human subject. The excess of output of cholesterol over intake leads to the conclusion that there is some organ in the body capable of synthesising cholesterol. The intake of unsaponifiable matter not precipitable by digitonin is much larger than the output.—S. J. Lewis: The ultraviolet absorption spectra and the optical rotation of the proteins of the blood sera. The absorption curve of pseudo-globulin is constant and the same for both the horse and human varieties. The curve for eu-globulin differs considerably from that for pseudo-globulin in extinction coefficients, but not in general form. The absorption curves for the horse and human varieties of albumin are similar, except for a constant ratio in their magnitudes, and this difference may be due to the association of an aggregate possessing little or no selective absorptive power, e.g. an aliphatic amino-acid or a polypeptide, with the principal aggregate. The close similarity in form of all the curves when corrected to a common amplitude, and the fact that the amplitudes are nearly all simple multiples of a common factor, point to similarity of constitution amongst these proteins and to a variable “concentration” of the active group. Processes for the separation and purification of the proteins have been elaborated.

Mineralogical Society, January 10.—Mr. A. Hutchinson, president, in the chair.—C. E. Tilley: Density, refractivity, and composition relations of some natural glasses. The glasses investigated fall into two groups, (a) tektite glasses and (b) volcanic glasses. The characteristics of the former confirm their divergence from volcanic glasses, and support the theory of their meteoritic origin. The specific refractivities of five analysed glasses are compared with the values calculated from the specific refractivities of their component oxides, and a notable correspondence is revealed. The influence of contained water on the specific refractivity is discussed and some figures bearing on the volume-change accompanying the passage from the vitreous to the crystalline state are given.—H. H. Thomas and E. G. Radley: The so-called “avanturine” from India, with an analysis of the contained mica. The stone is a quartz-schist, and owes its colour to plates of green fuchsite arranged parallel to the planes of foliation. The mica contains 1.77 per cent. Cr_2O_3 and a little vanadium; its optical characters are described. The probable source of the stone is discussed and the deterioration of the stone by heat and other causes is explained.—A. Russell and A. Hutchinson: Laurionite and paralaurionite from Cornwall. Laurionite associated with phosgenite and anglesite in a cavity in limonite is described in a specimen obtained from the collection of John Hawkins, of Trewithin, Cornwall. The locality is probably Wheal Rose, Sithney. Paralaurionite occurs with phosgenite in a very similar specimen in the collection of the late H. J. Brooke, said to come from Wheal Confidence, Newquay.—A. Russell: A discovery of pitchblende at Kingswood Mine, Buckfastleigh, North Devon. Pitchblende, occurring in a north and south lode associated with chloanthite, and native bismuth is described. The discovery shows promise of being of some economic importance.—W. A. Richardson: The distribution of oxides in Washington’s collected analyses of igneous rocks. Frequency curves are given for all the oxides, and show considerable differences from those previously published. The silica curve is the most interesting, and shows two maxima, one at 52 per cent. and the other at 72 per cent. SiO_2 . The frequency curve for SiO_2 can be matched by a combination of two normal curves or error with origins

on the 52 and 72 per cent. lines.—W. A. Richardson: A simplification of the Rosiwal method of micro-analysis. A method by which, using a drawing apparatus, the lengths of component minerals of a rock can be projected on to separate strips of paper and directly summed is described.—Dr. A. Schoep: The absence of cobalt in cornetite from Katanga, Belgian Congo. Microchemical tests made on carefully selected crystals from the original locality (Star of the Congo Mine) prove that cobalt is present only in associated black spots of heterogenite. The mineral is thus a hydrated phosphate of copper, agreeing completely with that recently described from Northern Rhodesia.

PARIS.

Academy of Sciences, January 9.—M. Emile Bertin in the chair.—C. Lallemand: The genesis and present state of the science of the abacus.—T. Varopoulos: A class of increasing functions.—P. Humbert: The product of Laplace relative to certain hypercylinders.—G. Dumas: A normal table relating to unilateral surfaces.—A. Denjoy: Functions defined by series of rational fractions.—B. Gambier: Surfaces and varieties of translation of Sophus Lie.—C. Nordmann and M. Le Morvan: Observation of an abnormal star by the heterochrome photometer of the Paris Observatory. The star 13 Cepheus presents some singular anomalies. It belongs to the spectral type A (hydrogen stars), but has a yellow coloration. The colour photometer shows that the light intensity is distributed in the spectrum in such a manner that the more refrangible rays are proportionally less intense than in any of the stars hitherto studied, not only of this type, but also of types F and G. It is possible that the atmosphere surrounding this star possesses exceptional absorbing power.—E. de Martonne: The massif of Poiana Ruska and the correlation of the erosion cycles of the southern Carpathians.—E. Carvallo: The principle of relativity in dielectrics.—P. Chevenard: The expansion of chromium and the chrome-nickel alloys over a wide temperature interval. A differential dilatometer was employed in which the standard bar was a nichrome (with 10 per cent. of chromium), the law of expansion of which had been carefully determined by direct methods. A diagram is given of the results on commercially pure chromium (98.3 per cent.) and five chrome-nickel alloys. The diagram gives the coefficients of expansions as functions of the temperature over the range 0° C. to 900° C.—M. Failliebin: A mixed organo-metallic compound of aluminium. Aluminium and methylene iodide in dry ether in the presence of a little iodine react in two ways, the principal reaction giving CH₂·AlI and AlI₃, the subsidiary reaction AlI₃ and ethylene.—J. Barlot and Mlle. M. T. Brenet: The determination of fatty acids by the formation of complex compounds with uranyl and sodium. Streng's reagent (acid solution of uranyl nitrate) is known to give a precipitate of a double salt with sodium acetate. Similar precipitates are obtained with the sodium salts of higher fatty acids, but only if the acid contains an even number of consecutive carbon atoms. Thus formates, propionates, isobutyrate, and normal valerates give no precipitate, but the reaction is obtained with acetic, normal butyric, fermentative valeric and normal caproic acids.—Y. Milon and L. Dangeard: A Redonian formation (Upper Miocene) forming ravines with the Eocene clays to the south of Rennes (Ille-et-Vilaine) containing iron minerals.—E. Zaepffel: The mechanism of the orientation of leaves. The movements of the leaf are connected with the distribution of water, and this distribution is influenced by the mobile starch.—C. Douin: The gametophyte of the Marchantiæ.—L. Plantefol: The toxicity

of various nitrophenols for *Sterigmatocystis nigra*. Experiments were carried out with three isomeric nitrophenols, dinitrophenol, and trinitrophenol. All these proved more toxic to the mould than phenol itself. The three mononitrophenols differed in toxicity, the para-compounds being the most toxic. The dinitrophenol had the greatest effect in inhibiting the growth of the mould of any of the substances tried; it is nearly 300 times more toxic than phenol.—E. Chatton: Polymorphism and maturation of the spores of *Syndinium*.—R. Sazerac and C. Levaditi: The use of bismuth in the prophylaxy of syphilis. Sodium potassium tartarobismuthate, administered in intramuscular injection, acts preventively against syphilitic infection, and the same salt applied locally in the form of salve acts preventively even after infection. The conclusions were arrived at after experiments on rabbits.

Diary of Societies.

THURSDAY, JANUARY 26.

- ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—S. Gordon: Sea Birds and Seals.
 ROYAL SOCIETY, at 4.30.—W. B. Hardy and Ida Doubleday: Boundary Lubrication: The Paraffin Series.—Prof. W. A. Bone, A. R. Pearson, E. Sinkinson, and W. E. Stockings: Researches on the Chemistry of Coal. Part 2: The Resinic Constituents and Coking Propensities of Coals.—Dr. J. A. Crowther and B. J. Schonland: The Scattering of β -rays.—Ann C. Davies: The Minimum Electron Energies associated with the Excitation of the Spectra of Helium.—C. N. Hinshelwood, H. Hartley, and B. Topley: The Influence of Temperature on Two Alternative Modes of Decomposition of Formic Acid.—Prof. C. V. Raman: The Molecular Scattering of Light in Water and the Colour of the Sea.
 ROYAL AERONAUTICAL SOCIETY (Students' Meeting) (at Royal Society of Arts), at 7.—C. Daniel: Practical Points in Fuselage Construction.
 INSTITUTION OF LOCOMOTIVE ENGINEERS (London) (at Caxton Hall), at 7.15.—C. J. Allen: The Influence of Design on Express Locomotive Performance.
 CONCRETE INSTITUTE, at 7.30.—E. B. Moullin: Capillary Canals in Concrete, and the Percolation of Water through Them.
 ROYAL MICROSCOPICAL SOCIETY (Metallurgical Section), at 7.30.—H. Wrighton: Demonstration of Polishing Metal Specimens.
 ROYAL SOCIETY OF MEDICINE (Urology Section), at 8.30.
 SOCIETY OF ANTIQUARIES, at 8.30.

FRIDAY, JANUARY 27.

- ASSOCIATION OF ECONOMIC BIOLOGISTS (in Botanical Lecture Theatre, Imperial College of Science and Technology), at 2.30.—Prof. E. P. Stebbing and others: Discussion: The Importance of Scientific Research in Forestry and its Position in the Empire.
 ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—A. L. Howard: The Timbers of India and Burma.
 PHYSICAL SOCIETY OF LONDON (at Imperial College of Science and Technology), at 5.—T. H. Littlewood: The Diffusion of Solutions.—H. R. Nettleton: A Special Apparatus for the Measurement at Various Temperatures of the Thomson Effect in Metals.—J. J. Manley: A Defect in the Sprengel Pump: its Cause and the Remedy.
 ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Sir Arthur Keith: Hunterian Lecture: The Facial Characteristics of the Races native to India.
 ROYAL SOCIETY OF MEDICINE (Study of Disease in Children Section), at 5.
 JUNIOR INSTITUTION OF ENGINEERS, at 8.—L. M. Jockel: Fuels and the Boiler-house.
 ROYAL SOCIETY OF MEDICINE (Epidemiology and State Medicine Section), at 8.—Dr. S. M. Copeman, Dr. R. A. O'Brien, Dr. A. J. Eagleton, and A. T. Glenny: Experiences with the Schick Test, and Active Immunisation against Diphtheria.
 ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Viscount Burnham: Journalism

SATURDAY, JANUARY 28.

- ESSEX FIELD CLUB (in Physical Lecture Theatre, West Ham Municipal College), at 3.—C. Nicholson: The Rosy-Marbled Moth (*Erastria venustula*) in Britain (with special reference to Essex).—G. Morris: Some Neolithic Sites in the Valley of the Essex Cam.
 ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Dr. C. Macpherson: The Evolution of Organ Music (2).

MONDAY, JANUARY 30.

- INSTITUTE OF ACTUARIES, at 5.—G. King: A Short Method of Constructing Select Mortality Tables: Further Developments.
 ROYAL SOCIETY OF ARTS, at 8.—C. Ainsworth Mitchell: Inks (Cantor Lectures) (2).
 MEDICAL SOCIETY OF LONDON, at 9.—Sir Leonard Rogers: Amoebic Liver Abscess: Its Pathology, Prevention, and Cure (Lettsomian Lectures) (1).

TUESDAY, JANUARY 31.

- ROYAL HORTICULTURAL SOCIETY, at 1.
 ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. H. H. Turner: Variable Stars (1); Short Period Variables.