

Societies and Academies.

LONDON.

Zoological Society, May 23.—Dr. A. Smith Woodward, vice-president, in the chair.—E. G. Boulenger and F. Martin Duncan: A cinematograph record of the life-history of the Axolotl (*Amblystoma tigrinum*).—H. N. Hutchinson: A model reconstruction of the marine reptile *Peloneustes phylarchus*, a Pliosaur from the Oxford Clay.—Sir Sidney F. Harmer: On Commerson's dolphin and other species of Cephalorhynchus.—C. Forster Cooper: Miocene Proboscidea from Baluchistan.—R. I. Pocock: On the external characters of Scarturus and other jerboas compared with those of Zapus and Pedetes.

CAMBRIDGE.

Philosophical Society, May 15.—Mr. C. T. R. Wilson, vice-president, in the chair.—E. H. Hankin: An experimental investigation of soaring flight. If the loading (*i.e.* the weight lifted per square foot of wing area) of soaring animals is plotted against the span, a regular curve is obtained. The greater the span, the greater the loading. The flying-fish is a striking exception; the loading is more than eight times as much as it would be for a bird of similar size, and as the speed is at least equal to that of birds under similar conditions, the wings of flying-fishes are more than eight times as efficient as those of birds. A model of a fin-ray ($\times 10$) was made of wood and fixed, convex side forward, in front of the radiator of a motor. A manometer measured any pressure that might develop on the rear face of the fin-ray. When the air at the level of the fin-ray was "soarable," as shown by the behaviour of dragon-flies, a pressure of 6-10 mm. of water was obtained at the rear of the fin-ray when the motor was travelling at 30 m.p.h. Generally the pressure was greater at midday than at sunset, it was abolished by rain, and also if the fin-ray was so loosely fixed that it was thrown into vibration by the passage past it of the air. The shape of the ray was found to be of little importance—the only thing necessary being that there should be a sheltered area. Probably the whole wing of a bird might be so disposed as to give a sheltered area. Increase of the sheltered area also resulted in increase of speed. Entering into a descending current causes an increase of sheltered area, and the expected increase of speed has been observed with gulls, which indulge in true soaring flight (*i.e.* steep upward glides with the long axis of the bird inclined upward and pointed in the direction of travel) only when the bird is in a descending current of air. Inland soaring birds and dragon-flies show similar effects.—F. P. White: The projective generation of surfaces in space of four dimensions.—C. G. F. James: The analytical representation of the theory of congruences of conics.—Miss H. G. Telling: (a) The geometrical theory of the apolarity of quadric surfaces. (b) A set of fifteen quartic surfaces in space of four dimensions, and the application to the theory of cubic surfaces in ordinary space.—J. P. Gabbatt: The generalisation of the theory of the circles associated with a triangle by means of the theory of plane cubic curves.—B. M. Wilson: An asymptotic relation between two arithmetic sums.

PARIS.

Academy of Sciences, May 22.—M. Albin Haller in the chair.—The president announced the death of M. Laveran.—P. Urbain and G. Urbain: The extraction and purification of scandium from thor-

veitite of Madagascar. This mineral, which contains 42 per cent of scandium oxide, is fused with soda and the silica removed by washing. The residue, after dissolving in sulphuric acid, is treated with hydrofluoric acid, which precipitates scandium and rare earths as fluorides. The scandium is separated as acid sulphate after treating the fluorides with sulphuric acid, and further purified by conversion into the double sulphate of scandium and potassium.—J. Costantin: The Maltese cross shown by wood that has undergone traumatism. An account of the methods of wounding the stems of chestnut, sycamore, and other plants for producing cross-like markings on sticks to be used as canes or umbrella sticks. A description is given of the changes produced by the wounds in the stem.—J. Andrade: Three classes of non-maintained vibratory movements.—S. Sarantopoulos: Positive increasing functions.—Th. Varopoulos: Some theorems of M. Borel.—R. Nevanlinna: The relations which exist between the order of growth of a monogenous function and the density of its zeros.—E. Pagezy: The best shape to give to propulsive helices.—P. Fatou: The movement of a planet in a resisting medium.—P. Chofardet: Observations of Skjellerup's comet made with the *coudé* equatorial at the Observatory of Besançon. Positions for May 19 and 20 are given. The comet was of about 12.5 magnitude, maximum size 1', condensation uncertain.—A. Schaumasse: Observation of Skjellerup's comet made with the *coudé* equatorial at the Nice Observatory. Position given for May 19. The comet appeared as a diffuse nebulosity about 2' in extent; magnitude 12, feeble condensation.—A. Andant: The variations of critical opalescence with the temperature and the wave-length of the incident light. Measurements were made on five liquids of high critical temperatures—ether and the acetates of methyl, ethyl, butyl, and isobutyl. The phenomena observed in the case of ether are described in detail.—E. Bauer: The electromagnetic field of the stationary projectories of Bohr.—A. Frigon: The experimental study of the energy losses in some commercial dielectrics.—E. Berger: The reduction of oxides by hydrogen. Previous results on the reduction of nickel oxide by the author and Sabatier and Espil have not been in agreement, and further experiments have now been carried out to study the effect on the reduction of the mode of preparation and drying of the nickel oxide. The velocity of reduction and form of the curve vary with the origin of the sample of oxide, hence the deduction of the existence of an intermediate oxide from a kink in the reduction curve is not sound.—A. Damiens: The "dynamic" allotropy of tellurium. Cöhen and Kröner have applied to tellurium a theory of allotropy termed "dynamic," according to which any homogeneous phase of a given body may be composed of several species of molecules in equilibrium. Experiments by the author on carefully purified tellurium, crystallised, fused, and distilled, do not confirm the views of Cöhen and Kröner, and all the phenomena observed can be easily explained without the formulation of a new theory.—A. Dauvillier: The L series of lutecium and of ytterbium and the identification of celtium with the element of atomic number 72.—G. Urbain: The atomic numbers of neo-ytterbium, lutecium, and celtium. From the high-frequency spectra it is now possible to attribute without ambiguity the atomic numbers of neo-ytterbium (70), lutecium (71), and celtium (72). A translation of the paper appears on p. 781.—A. Boutaric and M. Vuillaume: The flocculation of colloidal sulphide of arsenic. The influence of the concentration of the colloid, of agitation, and of temperature. The experimental

results are shown graphically in four curves.—**MM. Clément and Rivière**: Attempts at the synthetic manufacture of mother-of-pearl by the production of chemical systems.—**A. A. Guntz**: Phosphorescent zinc sulphide. The crystalline structure of sulphide of zinc appears to play an important part in the phenomena of phosphorescence, as shown by the different duration of the luminosity of the two varieties and by the known fact that their pulverisation suppresses almost entirely the luminous emission.—**A. Job and R. Reich**: An attempt at the systematic extension of the preparation of organo-metallic compounds. Application to iron ethyl iodide. Organo-zinc compounds possess the advantage over the corresponding magnesium compounds that a large range of solvents can be used. The iron derivative, C_2H_5FeI , is made by the interaction of an ether solution of ferrous iodide with zinc ethyl iodide also in ethereal solution. The new iron compound was not isolated, but its existence in the solution was proved by its reactions with water and alcohol.—**M. Flajolet**: The perturbations of the magnetic declination at Lyons during the year 1920-1921.—**A. Petit**: The harmful action of farm-yard manure.—**A. Policard and Mlle. J. Tritchkovitch**: The direct fixation of fats by the sebaceous glands. The fat absorptions were followed by the addition of Soudan red (Daddi) to the food. The mechanism of the sebaceous glands appears to act in two waves. In the first, the classical theory, the fat is elaborated by the cell, but side by side with this there is a direct fixation of the fat brought by the blood.—**P. Portier and M. Duval**: The variation of the osmotic pressure of the blood of the freshwater teleostean fishes under the influence of the increased salinity of the surrounding water. The fish is incapable of maintaining a constant osmotic pressure like a mammal or a bird, but there is a clear tendency towards regulation in the carp, in which the osmotic pressure of the blood increases with an increase in the proportion of salts in the water in which it is placed.—**H. Cardot and H. Laugier**: The linguo-maxillary reflex.—**G. Bidou**: An orientation compass for the foot.—**C. Vaney and J. Pelosse**: Relations between the blood and the coloration of the cocoon in *Bombyx mori*.—**E. Fauré-Fremiet and Mlle. H. Garrault**: Constitution of the egg of the trout, *Trutta fario*.—**A. Helbronner and W. Rudolfs**: The attack of minerals by bacteria. The oxidation of blende. Certain bacteria are capable of converting blende into zinc sulphate: in minerals containing the sulphides of both zinc and lead, the lead is not attacked and only the zinc is rendered soluble.—**L. Fournier, C. Levaditi, A. Navarro-Martin, and A. Schwartz**: The preventive action in syphilis of the acetyl derivative of oxyaminophenylarsinic acid (sodium salt). Proofs of the prophylactic and preventive action of this salt against syphilis are given. The experiments were made both on animals and on man.

Official Publications Received.

Madras Fisheries Department. The Common Molluscs of South India. By James Hornell. (Report No. 6 of 1921. Madras Fisheries Bulletin, Vol. 14.) Pp. 97-215. (Madras: Government Press.) 1 rupee.

Agricultural Research Institute, Pusa. Bulletin No. 125: The Weevil Fauna of South India, with special reference to Species of Economic Importance. By T. V. Ramakrishna Ayyar. Pp. 21+20 plates. (Calcutta: Government Printing Office.) 1-4 rupees.

Agricultural Research Institute, Pusa. Bulletin No. 126: Cawnpore-American Cotton, II. Further Field Trials (1918-1920), Spinning Trials and Market Organization. By B. C. Burt. Pp. 13. (Calcutta: Government Printing Office.) 4 annas.

Agricultural Research Institute, Pusa. Bulletin No. 127: The Coconut-Bleeding Disease. By S. Sundararaman. Pp. 8+6 plates. (Calcutta: Government Printing Office.) 8 annas.

NO. 2746, VOL. 109]

Department of the Interior: Canada. Publications of the Dominion Astrophysical Observatory, Victoria, B.C. Vol. 2, No. 1: The Radial Velocities of 594 Stars. By J. S. Plaskett and others. Pp. 127. (Ottawa: Government Printing Bureau.)

Department of Agriculture and Natural Resources: Weather Bureau. Annual Report of the Weather Bureau for the Year 1918. Part 3: Meteorological Observations made at the Secondary Stations during the Calendar Year 1918. Pp. 353. (Manila: Bureau of Printing.)

Diary of Societies.

FRIDAY, JUNE 16.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 8.—A. C. Braham: The Final Support in Carbon Printing.

TUESDAY, JUNE 20.

INSTITUTION OF GAS ENGINEERS (Annual General Meeting) (at Institution of Electrical Engineers), at 10 A.M. and 3.—T. Hardie: Presidential Address.—Gas Investigation Committee: Research on Aeration in Atmospheric Burners.—Seventh Report of the Gas Investigation Committee: Carburetted Water Gas Plant with Wastewater Boiler.—Report of Institution Gas Research Fellowship: Dr. A. C. Monkhouse and Prof. J. W. Cobb: The Liberation of Nitrogen and Sulphur from Coal and Coke as Ammonia.—Report of the Life of Gas Meters Committee.—Report of Refractory Materials Research Committee.—A. T. Green: The Thermal Conductivity of Refractories at High Temperatures.—Miss D. A. Jones: The Standardisation of the After Contraction Test.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, at 5.—Dr. Gordon Holmes: The Symptoms of Cerebellar Disease and their Interpretation (Croonian Lectures) (4).

ROYAL STATISTICAL SOCIETY, at 5.15.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—E. Peake: The Norwich School of Painters.

WEDNESDAY, JUNE 21.

INSTITUTION OF GAS ENGINEERS (at Institution of Electrical Engineers), at 10 A.M. and 3.—Dr. C. Carpenter: Some Gas Burners and a Moral.—Dr. G. Weyman: Increasing the Rate of Carbonisation of Coal.—W. B. Leech: Reconstruction Work at Beckton.

ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 5.—W. H. Bidlake: The Continuity of English Architecture.

ROYAL METEOROLOGICAL SOCIETY, at 5.—J. E. Clark, H. B. Adames, and A. D. Margery: Report on the Phenological Observations for 1921.—L. S. Richardson, Dr. A. Wagner, and R. Dietzius: An Observational Test of the Geostrophic Approximation in the Stratosphere.

ROYAL MICROSCOPICAL SOCIETY, at 8.—A. Chaston Chapman: The Use of the Microscope in the Brewing Industry.—A. B. Klugh: The Plunger-Pipette.—E. A. Spaul: The Gametogenesis of *Nepa cinerea* (Water Scorpion).—J. Strachan: The Microscope in Paper Making.

THURSDAY, JUNE 22.

INSTITUTION OF GAS ENGINEERS (at Institution of Electrical Engineers), at 10 A.M.—Prof. C. V. Boys: A Recording and Integrating Gas Calorimeter.

ROYAL SOCIETY, at 4.30.—*Probable Papers*.—G. I. Taylor: The Motion of a Sphere in a Rotating Liquid.—Prof. T. R. Merton and D. N. Harrison: Errors arising in the Measurement of Unsymmetrical Spectrum Lines.—Dr. E. F. Armstrong and Dr. T. P. Hilditch: A Study of Catalytic Actions at Solid Surfaces. Part VIII. The Action of Sodium Carbonate in promoting the Hydrogenation of Phenol. Part IX. The Action of Copper in promoting the Activity of Nickel Catalyst.—E. A. Milne: Radiative Equilibrium: The Relation between the Spectral Energy Curve of a Star and the Law of Darkening of the Disc towards the Limb, with Special Reference to the Effects of Scattering and the Solar Spectrum.—C. W. Hünshelwood: The Structure and Chemical Activity of Copper Films and the Colour Changes accompanying their Oxidation.—R. C. Ray: Heat of Crystallisation of Quartz.

MALTHUSIAN LEAGUE (at Kensington Town Hall), at 8.—Miss Cicely Hamilton, Mrs. Seaton-Tiedeman, B. Dunlop, and Rev. G. Lang: Birth Control the Workers' Charter.

FRIDAY, JUNE 23.

PHYSICAL SOCIETY OF LONDON (at Imperial College of Science and Technology), at 5.—J. W. Fisher: An Experiment on Molecular Gyrostatic Action.—Prof. A. O. Rankine and C. J. Smith: The Viscous Properties and Molecular Dimensions of Silicane.—W. N. Bond: The Pressure-Gradient in Liquids flowing through Cones.—Dr. E. E. Fournier d'Albe: Demonstration of a Mercury-Drop Method of producing Visual Effects by Means of Sound.

PUBLIC LECTURES.

(A number in brackets indicates the number of a lecture in a series.)

TUESDAY, JUNE 20.

KING'S COLLEGE, at 5.30.—Miss Hilda D. Oakeley: The Idea of Value in the History of Philosophy (1).

WEDNESDAY, JUNE 21.

ROYAL SOCIETY OF MEDICINE, at 5.—Prof. A. A. Hijmans van den Bergh: The Pathology of Hæmoglobin. (In English.)