

Societies and Academies.

LONDON.

Physical Society, May 11.—E. G. Richardson: The amplitude of sound waves in resonators. After a consideration of the relations between the 'pipe' and the 'Helmholtz resonator,' graphs of the variation of amplitude, obtained by means of a hot-wire anemometer traversed through various types of resonator, are reproduced. By means of a calibrated manometer of the vibrating membrane type, some direct values of the impedance of orifices are obtained. Traverses across an orifice through which the air is vibrating in simple harmonic form are obtained with the hot wire: these show a tendency for the air to vibrate with greater amplitude in annuli remote from the centre of the orifice.—R. E. Clay: The focus of a gas-filled X-ray tube. Pinhole photographs of the focus obtained with various radii of curvature of the cathode and various distances from the anticathode are discussed; it is concluded that with the tubes of the type considered, a radius of about 2 cm. and a distance of 3 or 4 cm. are the best conditions.

Royal Statistical Society, May 15.—D. Caradog Jones: The cost of living of a sample of middle-class budgets. The budgets were divided into three groups, representing, respectively, families living in London, in large towns with a population exceeding 50,000, and in smaller towns and country places. For families of about the same type, the budgets revealed a higher level of expenditure in the small towns than in the large towns. This seems to be due in part to the higher cost of living experienced rather than to the higher standard of living enjoyed there. On an average, out of a total family expenditure of between £400 and £500 a year, in round numbers 40 per cent is spent on housekeeping and service, 20 per cent on rent, rates, fuel and light, 10 per cent on clothing, 10 per cent also on holidays, clubs, and recreation, 5 per cent on insurance. In general, the proportion of the total income spent on the necessaries of life, such as food and house-room, tends to fall as the income rises. In the normal middle-class family, nearly 40 per cent of the total food bill represented expenditure on meat, fish, bacon, etc. The dairy products, milk, butter, eggs and cheese, came next in order of importance, costing about two-thirds as much as the first group. Bread, including cakes and biscuits, and also fruit and vegetables, each accounted for roughly half as much as the dairy group. There was then a drop to 5 per cent for jam and sugar, and for tea, coffee, cocoa, etc. When this group of middle-class families is compared with the Sumner Committee group of working-class families, it is found that the middle class spend relatively more on meat, milk, and fruit, while the working class spend more on bread, tea, and sugar.

PARIS.

Academy of Sciences, May 7.—G. Bigourdan: The various methods used for the calculation of pendulum corrections. It is usual to employ one master pendulum and several subsidiary pendulums. The most exact method implies a continuous comparison of all the pendulums in order to eliminate any temporary irregularity in any one of them. Other methods in use are adversely criticised.—Pierre Termier and Eugène Maury: New geological observations in eastern Corsica: phenomena of crushing and lamination: mylonites and tectonic breccia.—Georges Claude: Obtaining energy from the sea. In connexion with this project, a 50-watt turbine has been made,

which, working between 15° and 35° C. gives power of 40 kilowatts.—Louis Roy: The intrinsic equations of elastic surfaces with three parameters.—C. Sauvageau: The question of *Tilopteris Mertensii*. Observations tending to prove that this alga multiplies by simple budding. There is no alternation of generations.—Maurice Caullery was elected a member of the Section of Anatomy in succession to the late F. Hennequy.—V. Hlavatý: The second fundamental form II.: generalisation of the theorem of Enneper.—Mićislas Biernacki: The lines of Julia of integral functions.—D. V. Jonesco: Some theorems of existence of the integrals of systems of differential equations.—Vladimir Bernstein: Concerning a formula of F. and R. Nevanlinna relative to the meromorph functions in a sector.—Serge Bernstein: Functions regularly monotone.—R. Gosse: The equations $s = f(x, y, z, p, q)$ which admit an invariant for one single system of characteristics.—W. Gontcharoff: Series of zeros of successive differentials.—J. Herbrand: The theory of the demonstration.—D. Riabouchinsky: Some remarks on functions of current.—D. Gernez: The rapid construction on the map of lines for utilising radiogoniometric bearings taken from a vessel.—Léopold Infeld: Maxwell's equations in the theory common to gravitation and electricity.—R. Darbord: The absolute measurement of coefficients of influence.—E. Pierret: A new method of maintaining oscillations in a triode valve. Description of a method of obtaining stable waves of wave-length between 14 cm. and 18 cm.—M. Fallot: The magnetic susceptibility and second supposed isoelectric point of gelatine. Determinations of the magnetic susceptibility of gelatine as a function of the hydrogen ion concentration showed only one minimum value, at $pH = 4.7$. The refractive index and dispersion of these gelatine solutions were found to be independent of the hydrogen ion concentration.—G. Bruhat and M. Pauthenier: Remarks on the theory of electrostriction and its experimental control.—L. Décombe: Electrified spherical films, the photo-electric effect and the X-ray fluorescence spectrum.—Marcel Cau: Double refraction and dichroism of thin films of iron obtained by distillation. The films were produced on plates of glass placed over an iron wire heated electrically in a vacuum. The films, which were grey by transmitted light and presented a polished appearance, showed double refraction accompanied by dichroism. The effect is produced by the magnetic field of the current used for the distillation.—Marc de Hemptinne: The photolysis of benzaldehyde. A study of the absorption spectrum suggests that benzaldehyde should be decomposed under the influence of rays of wave-length less than 2500 Å., and benzene and carbon monoxide should be the products of decomposition. Experiments are described confirming these predictions.—Aubert, Dumanois, and Pignot: The effects of antidetonants in the vapour phase. Experiments showing that antidetonants acting in the gaseous phase increased the time of combustion.—C. F. Muttelet: Study of the acidity of fruit juice and of jams.—Mme. Ramart-Lucas: The comparative stability of isomers according to their absorption spectra.—A. Wahl and Lobeck: A new reaction of the disulphisatides.—J. A. Le Bel: Stalactites. A description of some peculiarities of some stalactites found in a cave at Les Eyzies (Dordogne).—F. Dienert: The circulation of subterranean waters in alluvium. Examples of the use of dyes for following the circulation of underground water.—J. Viret: The Oligocene fauna of Coderet, near Branssat (Allier).—E. Leblond: The formation of accessory vacuoles in *Closterium lunula*.—R. Dieuzeide: The transformation and disappearance of certain denticles of the skin of *Centrophorus*

granulosus.—A. Lacassagne: The action of the K-rays of aluminium on some micro-organisms. Details of the effects of varying time exposures to the rays on cultures of pyocyanic bacillus, prodigiosus, staphylococcus and entero-coccus.—F. Holmeck: Attempt at the interpretation from the energy point of view of the action of the K-rays of aluminium on micro-organisms.

CAPE TOWN.

Royal Society of South Africa, April 18.—Th. Schrire: On some new species of bacteria isolated from *Xenopus Lævis*. Three new organisms have been isolated from a mould-like growth on a frog (*Xenopus Lævis*). The disease could not be reproduced by inoculation with various methods, but a mixed infection with all three organisms is highly pathogenic to frogs.—J. F. V. Phillips: *Curtisia Faginea* Ait. ('Assegaai'): An ecological study. This tree is important sylviculturally and economically. It is best developed in the Knysna forests, although it ranges from the Cape Peninsula to the forests of Gazaland. It is very rarely a dominant, and still more occurs in pure communities. It is most at home in the medium moist forest at Knysna. In pole and later stages the species is definitely semi-light-demanding. The plant flowers regularly, fruits fairly regularly and heavily. The fruits are of moderate fertility; the greater number aggregate at the base of the parent. The rate of growth in girth is slow.—S. Schonland: Materials for a revision of Crassulaceae (The South African species of the genus *Crassula* L. emend. Schonl.). A wider view than usual is taken of specific limits, but no less than 219 species of *Crassula* are recognised in South Africa.—H. G. Fourcade: A new method of aerial surveying: note on the determination of the verticals of a plate pair.—A. V. Duthie: On a terrestrial Isætes, *I. stellenbosiensis*, A. Duthie, from the Stellenbosch Flats. This is the third species of Isætes to be described from the Union of South Africa. It occurs in shallow depressions, which are damp in the winter but dry during the summer months, and has been found growing beside xerophytic plants.—Margaret R. Levyns: Veld-burning experiments at Ida's Valley, Stellenbosch. The type of vegetation covering the area is that known as 'rhenosterveld,' which is not a stable type of plant community. Burning leads to rapid increase of the rhenoster bush and certain other plants, and also induces vigorous growth among the petaloid monocotyledons and some other plants, this vigour being of a temporary nature. Clearing the ground of bush does not favour the spread of the rhenoster bush. In this case vigorous growth is more apparent among the grasses than among the petaloid monocotyledons.

GENEVA.

Society of Physics and Natural History, April 19.—S. C. Guha: The microcrescometer, normal type and universal type. Study of the growth of the coleoptilum of oats. The author presents two different forms of an instrument designed to measure the growth of plants, multiplying the movements up to 5000 and 20,000 times, by means of a lever which causes an angular displacement of a mirror. He gives the first results of his observations on the daily growth of the coleoptilum of oats, showing a maximum between 10 A.M. and noon.

May 3.—Gr. Gutzeit: A rapid method of qualitative analysis. The author has attempted to generalise the use of spot reactions, carried out on filter paper or on a porcelain plate with depressions, with

the aid of various specific organic reagents. Characteristic reactions for 23 metals and 17 acid groups are given.—P. Rossier and G. Tiercy: The auxiliary chronometer *Nm* of the Observatory of Geneva and the rating of chronometers submitted to examination. This Nardin chronometer has been regulated for mean time and compared with the Riefler sidereal time pendulum. The comparisons have been made by two different methods of measurement; the maximum difference in the two cases has been 0.02 sec.—P. Balavoine: The tannin content of wine is influenced by the climatic conditions at the time of vinification. This fact has been proved by comparing products obtained simultaneously and working on a similar portion in the eastern Pyrenees and at Geneva. All the other characteristics remain similar; the proportions of tannin are respectively 0.17 and 0.02. Other experiments lead to the same conclusion.—B. P. G. Hochreutiner: A new Cyrtandropsis in the Hawaiian islands. The observed facts lead to the conclusion that the Cyrtandropsis are formed from different species of the genus *Cyrtandra*, which have afterwards evolved in a convergent manner.

Official Publications Received.

BRITISH.

Canada North of Fifty-six Degrees: the Land of Long Summer Days. By E. M. Kindle. (*The Canadian Naturalist*, Vol. 42, No. 3, March.) Pp. iv+53-86+20 plates. (Ottawa: The Ottawa Field-Naturalists' Club.) 50 cents.

Air Ministry. Aeronautical Research Committee: Reports and Memoranda. No. 1122 (A.E. 295): Lift and Drag of Three Model Aeroplanes. Comparative Tests in Atmospheric and Variable Density Wind Tunnels at the same Reynolds Number. By H. C. H. Townend. (T. 2462, revd.) Pp. 6+6 plates. 6d. net. No. 1123 (A.E. 296): Wind Tunnel Tests with High Tip Speed Airscrews. The Characteristics of Bi-Convex No. 2 Aerofoil Section at High Speeds. By Dr. G. P. Douglas and W. G. A. Perring. (T. 2533.) Pp. 10+5 plates. 9d. net. (London: H.M. Stationery Office.)

The Welsh Journal of Agriculture: the Journal of the Welsh Agricultural Education Conference. Vol. 4. Pp. 431. (Cardiff: University of Wales Press Board.) 2s. 6d.; cloth, 4s.

Schedule and Programme of the British Aquarists' Association Third Annual Exhibition, July 24th to July 28th (inclusive), 1928, at Trinity Hall, Great Portland Street, London, W.1. Pp. 28. (London.) 3d.

South Western Naturalists' Union. Annual Report and Proceedings, to 31st December 1927. Pp. 44. (Bristol.)

The Journal of the Quekett Microscopical Club. Edited by W. S. Barton. Ser. 2, Vol. 16, No. 94, May, 1928. (London: Williams and Norgate, Ltd.) 3s. 6d. net.

Catalogue of Indian Insects. Part 13: Cicindelidae. By Mercia Heynes-Wood and Cedric Dover. Pp. v+138. (Calcutta: Government of India Central Publication Branch.) 2.8 rupees; 4s. 6d.

Falmouth Observatory. Meteorological Notes and Tables for the Year 1927. By Joshua Bath Phillips. Pp. 8. (Falmouth.)

Transactions of the Royal Society of Edinburgh. Vol. 55, Part 3, No. 32: On the Feeding Mechanism of the Fairy Shrimp, *Chirocephalus diaphanus* Prevost. By Prof. H. Graham Cannon. Pp. 807-822. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 2s.

Industrial Safety Congress organised jointly by the Home Office and the National "Safety First" Association, and held in Caxton Hall, Westminster, and at the Home Office Industrial Museum, Westminster, London, March 20th, 1928. Report of Proceedings. Pp. 59. (London: H.M. Stationery Office.) 9d. net.

Transactions of the Optical Society. Vol. 29, No. 3. Pp. 101-148. (London.) 10s.

Air Ministry. Aeronautical Research Committee: Reports and Memoranda. No. 1124 (A.E. 297): Wind Tunnel Tests with High Tip Speed Airscrews. The Characteristics of a Conventional Airscrew Section, Aerofoil R. and M. 322, No. 3, at High Speeds. By Dr. G. P. Douglas and W. G. A. Perring. (T. 2530.) Pp. 14+6 plates. 9d. net. No. 1125 (A.E. 298): An Analysis of some Causes of Discrepancy between the Calculated Failing Load of the Structure of an Aircraft and the Load at which Failure occurs on Strength Test. By H. B. Howard and K. T. Spencer. (D. 184, revd.) Pp. 9+5 plates. 6d. net. (London: H.M. Stationery Office.)

FOREIGN.

United States Department of Agriculture. Technical Bulletin No. 60: Ineffectiveness of Internal Medication of Poultry for the Control of External Parasites. By D. C. Parman and W. S. Abbott, and J. J. Culver and W. M. Davidson. Pp. 24. (Washington, D.C.: Government Printing Office.) 5 cents.

Department of the Interior: Bureau of Education. Bulletin, 1927, No. 40: Statistics of Universities, Colleges and Professional Schools, 1925-26. Pp. 167. (Washington, D.C.: Government Printing Office.) 25 cents.