

form. P. VAN DE KAMP and A. N. VYSSOTSKY: Analysis of 18,000 proper motions derived at the Leander McCormick Observatory. Some general results obtained from this survey of stars between magnitudes  $7\frac{1}{2}$  and 14 are that the solar apex differs by  $15^\circ$  from that derived with respect to the bright stars, due possibly to a higher percentage of high velocity stars among the apparently faint stars, that the secular parallaxes are somewhat larger in northern than southern galactic latitudes and that parallaxes of groups of fainter stars in the Milky Way are larger than previously supposed, indicating heavy obscuration near the plane of the Milky Way. FRED M. UBER and T. H. GOODSPEED: Micro-incineration studies. (1) Localisation of inorganic elements in plant cell-walls. A special electric furnace for micro-incineration is described. Sections of tissues are held in position by a gelatin smear hardened by formaldehyde vapour. Photomicrographs of sections before and after incineration are given. They show absence of ash in intercellular substance, and limitation of mineral elements to the 'middle lamella' of the cell-wall. H. C. SHERMAN and H. L. CAMPBELL: Relation of food to regularity of nutritional response. Rats reared on a diet better than 'adequate' show more rapid growth, more successful reproduction and extension of the adult life-cycle; these responses occur with less variability than the responses of rats on an 'adequate' diet. M. A. BIOT: Quadratic wave equation: flood waves in a channel with quadratic friction. A mathematical investigation of the type of flood wave caused by the bursting of a dam. An exact solution of the equation of propagation of waves with quadratic damping is found. High amplitude waves are more quickly damped, and the damping effect depends on the volume of the wave and the friction coefficient of the channel. TH. DOBZHANSKY: Maternal effect as a cause of the difference between the reciprocal crosses in *Drosophila pseudo-obscura*. GEORGE D. SNELL: The determination of sex in *Habrobracon*. In this parasitic wasp, as in other Hymenoptera, the males normally arise from unfertilised eggs (a haploid generation). After inbreeding, however, males may arise from fertilised eggs (diploid) and are commonly sterile. The hypothesis is advanced that there are a number of pairs of factors, probably on different chromosomes, which when heterozygous cause diploid zygotes to become females. ALAN L. MITCHELL: The inheritance and linkage relations of kinky coat, a new mutation in the Norway rat. This character is inherited as a simple Mendelian recessive, and since it is not linked with other known characters, its gene appears to lie in a seventh chromosome. CHESTER STOCK: Titanotheres remains from the Sespe of California. The remains were found in the uppermost Eocene horizon at one particular locality alone. HASSLER WHITNEY: (1) Differentiable manifolds in Euclidean space. (2) Sphere-spaces. G. A. MILLER: (1) Groups which are the products of two permutable proper sub-groups. (2) Largest groups determined by the squares of their operators. SAUNDERS MACLANE: Abstract absolute values which give new irreducibility criteria. W. SEIDEL: On a metric property of Fuchsian groups. NORMAN E. STERNROD: On universal homology groups. OSWALD VELEN: A conformal wave equation. A differential equation in generalised four-dimensional conformal geometry, somewhat analogous to the Dirac equation for the electron in classical relativity. A. G. JACQUES: The kinetics of penetration. (10) Guanidine. Plotting the rate of entry of

guanidine into cells of *Valonia* against external concentration of guanidine suggests that entrance is preceded by a reversible action between this base and an acidic constituent of the protoplasm. HENRY BORSOOK: The correlation between excess calories and excess urinary nitrogen in the specific dynamic action of protein in animals. Further data are quoted in support of the view that a steady state is attained between the increase in energy metabolism and urinary nitrogen within four hours after the ingestion of protein. DICKINSON W. RICHARDS, JR., ANDRE COUNRAN and ISRAEL RAPPAPORT: Relation of the regulatory mechanism of respiration to clinical dyspnea. Dyspnea, or distress, referred to the act of breathing, whether due to physical exertion or pathological conditions, is due to disturbance in the mechanical functioning of the organ of breathing. It is associated exclusively with sensory impulses from chest and lungs; and separated from the physical chemistry of respiration. CHARLES A. KOFOID: On two remarkable ciliate Protozoa from the caecum of the Indian elephant. Two new genera of relatively large ciliate Protozoa are described. Both have several spirally curved ciliary zones arranged in a secondary bilateral grouping instead of the single dorsal zone in other members of the family, and show other advanced characters. The evolution of structural complexity in the protozoan parasites of herbivorous animals seems to have proceeded parallel to that of their hosts.

## Forthcoming Events

[Meetings marked with an asterisk are open to the public.]

Sunday, September 22

BRITISH MUSEUM (NATURAL HISTORY), at 3 and 4.30.—  
M. A. Phillips: "Gem Stones".\*

FARADAY SOCIETY, September 26-28.—General Discussion on: "Phenomena of Polymerisation and Condensation", to be held in the Zoology Theatre, University of Cambridge.

## Official Publications Received

### Great Britain and Ireland

Society of Chemical Industry: Chemical Engineering Group. Proceedings, Vol. 16, 1934. Pp. 125. (London: Chemical Engineering Group.) 10s. 6d.

University of Manchester: Faculty of Technology. Prospectus of University Courses in the Municipal College of Technology, Manchester, Session 1935-36. Pp. 403. (Manchester: College of Technology.)

Air Ministry: Aeronautical Research Committee: Reports and Memoranda. No. 1638 (S. 194 a and b): Water Pressure on Hull of Boat Seaplane. By E. T. Jones and W. H. Davies. Pp. 46+31 plates. (London: H.M. Stationery Office.) 3s. 6d. net.

### Other Countries

Report and Balance Sheet of the National Botanic Gardens of South Africa, Kirstenbosch, Newlands, Cape (and the Karoo Garden, Whitehill, near Matjesfontein) for the Year ending 31st December 1934. Pp. 31. (Kirstenbosch: National Botanic Gardens.)

Colony and Protectorate of Kenya. Forest Department Annual Report, 1934. Pp. 36. (Nairobi: Government Printer; London: Crown Agents for the Colonies.) 1s.

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 87. The Orthoptera of Costa Rica. Part 1: Mantidae. By James A. G. Rehn. Pp. 167-272+plates 7-10. (Philadelphia: Academy of Natural Sciences.)

Memoirs of the Geological Survey of India. Vol. 66, Part 1: The Natural Gas Resources of Burma. By C. T. Barber. Pp. x+172+xviii+14 plates. (Calcutta: Geological Survey of India.) 6.8 rupees; 10s. 6d.