

effects. W. BAADE and F. ZWICKY: (1) On super-novæ. Two types of novæ are recognised: (a) common novæ; (b) super-novæ. The former are fairly frequent in certain systems; the latter have appeared in all stellar systems at long intervals, and at maximum brightness emit nearly as much light as the whole nebula in which they originate. Tycho Brahe's nova of 1572 was probably a super-nova of the Milky Way. It is considered that the appearance of a super-nova represents the rapid transition of an ordinary star into a body of much smaller mass. (2) Cosmic rays from super-novæ. Assuming that cosmic rays are related to a sporadic process, such as the 'flare-up' of a super-nova, the intensity of such rays reaching the earth can be derived; the computed intensity is in fair agreement with that obtained by direct observation. The view is advanced that a super-nova represents the transition of an ordinary star to a neutron star, of very small radius and extremely high density, with emission of cosmic rays. EDWIN HUBBLE and MILTON L. HUMASON: The velocity-distance relation for isolated extra-galactic nebulae. These nebulae show the same relationship as the cluster nebulae; hence their luminosity functions are closely similar. H. H. PLOUGH and P. T. IVES: Heat induced mutations in *Drosophila*. Exposure of larvae for 24 hours to a temperature of 36° C. produces six times the number of mutations observed in controls, thus confirming the general results of Goldschmidt and Jollos. The number of mutations is approximately the same whether male or female parent is heated, and is doubled when both are heated. Increased tendency to produce somatic modifications is inherited, but only through the female line. CLYDE E. KEELER and W. E. CASTLE. Blood-group incompatibility in rabbit embryos and in man. Of the two agglutinins of rabbit blood, the embryos contain the same agglutinin as the mother, probably via the placenta, unless they have inherited the other agglutinin from the father. A maternal agglutinin is neutralised in an embryo containing the antagonistic agglutininogen, but the process is gradual and no blocking of the circulation occurs. A similar process probably applies in man. FRANK H. CLARK: Linkage studies of brachyury (short tail) in the house mouse. No linkage was detected with any of the fourteen other mutant genes generally recognised as being inherited independently. EDWARD W. BERRY: Miocene Patagonia. Preliminary studies of a collection from the valley of the Rio Pichileufu, at lat. 41° 10' S. and long. 70° 52' W. The plant remains are almost entirely of leaves, chiefly of dicotyledons, with a few cyprinodont fish scales and beetle elytra. The plant species confirm generally the findings from Mirhoja, lat. 44° 20' S., long. 70° W. that the flora is a mixture of mesophytic and drier soil types, which enjoyed greater and better distributed rainfall and a more genial climate than the present flora. It is also typically American. MARSTON MORSE and EVERETT PITCHER: On certain invariants of closed extremals. G. A. MILLER: Confusions in the use of the mathematical term group. F. A. SAUNDERS, E. G. SCHNEIDER and EMILY BUCKINGHAM: The strontium II and barium II spectra. CHARLES HAIG: The effect of intensity and wave-length on the response of *Avena* to light. For short exposures (1 sec.) and white light, reaction time decreases with increasing intensity up to 100 millilamberts and then increases. The response curves are rectangular hyperbolæ and in two parts, indicating two photoreceptor processes, which are found, by using partially shielded seedlings,

to be located near the tip and base of the stem respectively. The relative sensitivities of these regions to light of different colour are different. T. W. TORREY: Temperature coefficient of nerve degeneration. The results suggest that degeneration is mainly a chemical process. G. H. PARKER: The prolonged activity of momentarily stimulated nerves. Severing one or more long rays in the tail of a catfish or killifish, causes the melanophores in the radial band thus denervated to assume a state of dispersed pigment producing a marked dark band. This condition persists for a day or so to a week. A fresh cut within the dark band produces a secondary dark band; adrenalin causes all the bands to fade quickly, but as its effects wear off, the bands reappear. A 'cold block' applied to a band also causes it to fade. It is concluded that the nerves concerned remain active for periods up to days after severances from their centres. CLARENCE W. BROWN and FRANKLIN M. HENRY: The central nervous mechanism for emotional responses (2). A technique for destroying the deeper nuclear regions within the cerebrum with a minimal destruction of the intervening cortex. A radio frequency current of 3×10^6 cycles generated by a vacuum tube oscillator was used. The electrode adopted consisted of a nickel silver wire coated with bakelite (outer diameter 0.014 in.) and ground to a smooth point. By this means, regulated destruction of deep-seated nuclei can be achieved, while 'restraining' centres in the cortex are uninjured. T. C. SCHNEIRLA: Raiding and other outstanding phenomena in the behaviour of Army ants. Ants of the genus *Eciton* form temporary colony clusters or 'bivouacs' and move off ('raid') in either 'swarms' or 'columns' according to species. A colony remains 'bivouacked' in a given place (statory condition) when eggs are present and also for about three weeks while the young are in cocoons; otherwise they make a new 'bivouac' every evening (nomad condition). The raids show two peaks of activity, in the morning and afternoon respectively.

Forthcoming Events

Saturday, September 29

MICROCHEMICAL CLUB, at 11 a.m. Second meeting to be held at the University of Reading.

NATIONAL SMOKE ABATEMENT SOCIETY, September 27-29. —Sixth Annual Conference to be held at Glasgow. Dr. H. A. Des Voeux, President.

FARADAY SOCIETY, September 27-29. General discussion on "Colloidal Electrolytes", to be held at University College, London. Discussion to be introduced by Prof. H. Freundlich.

Official Publications Received

GREAT BRITAIN AND IRELAND

The Economic Proceedings of the Royal Dublin Society. Vol. 2, No. 32: Weathering of the Stonework of the National Museum and of Government Buildings. By A. G. G. Leonard and James Ginnell. Pp. 529-532. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6d.

Scottish Society for Research in Plant-Breeding. Report by the Director of Research to the Annual General Meeting, 26th July 1934. Pp. 30. (Edinburgh.)

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 1933. Pp. 27. (Kirstenbosch.)

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 86. Zoological Results of the Matto Grosso Expedition to Brazil in 1931. 3: Birds. By Witmer Stone and H. Radcliffe Roberts. Pp. 363-397. (Philadelphia.)