Societies and Academies.

LONDON.

Geological Society, December 16.—W. D. **Lang** and L. F. **Spath**: The black marl of Black Ven and Stonebarrow, in the Lias of the Dorset coast. Pt. I. (W. D. L.). The Black Marl Series of the Geological Survey includes Oppel's zones of *obtusus*, *oxynotum*, and *raricostatus*. The lowest part of the series—the Shales-with-Beef, has already been described in detail. At least twelve horizons can be recognised in the Black Marl above the Shales-with-Beef; as well as two non-sequences. Pt. II. (L. F. S.). New species of ammonites from the Black Marl are described. Notes are also added by Dr. A. E. Trueman on the Echioceratid ammonites; by Mr. L. R. Cox on the lamellibranchs; and by Miss H. M. Muir-Wood on the brachiopods.

EDINBURGH.

Royal Society, December 21.—Sir J. J. **Thomson**: The intermittence of electric force. It is supposed that when a body is under the action of such a force, the increments it receives are each finite in amount and separated by finite intervals of time, the average interval of time being called the time interval of the electric field. For events which last over a large number of time intervals the results are the same as those given by the Classical Theory of continuous force, but for events which can happen in the very short time comparable with the time interval of field an entirely different treatment is required. The path of an electron in an electric field would on this view not be a curve of continuous curvature, but an irregular polygon with a very large number of sides. The intermittence of electric force would lead to some spontaneous dissociation of systems consisting of electrons and positively charged particles, and to the production of Röntgen rays when electrons passed near atoms, but these rays would be very soft unless the electrons moved so quickly that the time they were in the neighbourhood of the atom was comparable with the time interval of the electric field in the atom. Since the time interval gets longer as the strength of the electric field diminishes, periodic electric waves cannot spread out indefinitely into space, for as they travel outwards the intensity of the electric field diminishes and ultimately gets so weak that its time constant is long compared with the period of the waves; the waves will be reflected back at this stage and thus the energy will be confined to a limited volume, and the shorter the period of the waves the smaller will be this volume. This shows that the energy of light must travel in bundles which do not spread out as they travel through space. The conception simplifies the dual theory of light recently brought forward by the author, as it ensures that the energy of the electrical waves in the unit of light should be constant as well as the energy of the quantum.—A. R. **Forsyth**: A chapter in the calculus of variations: maxima and minima for weak variations of integrals involving ordinary derivatives of the second order. The paper constructs the tests for the possession of a maximum or a minimum, by integrals that involve first and second derivatives of an unknown quantity. The curve, representing the relation between the dependent variable and the independent variable, is subjected to completely arbitrary variations throughout its length, these being small in magnitude as regards position, direction, and curvature. The tests are sufficient, as well as necessary, for the small variations specified.—A. C. **Aitken**: On the theory of graduation. A paper dealing with Prof. E. T. Whittaker's theory of the graduation of data. A new method of solution is proposed which is better adapted for computation and also brings out a comparison with other extant methods of graduation.—C. E. **Weatherburn**: On triple systems of surfaces and non-orthogonal curvilinear co-ordinates.

SHEFFIELD

Society of Glass Technology, December 16.—W. E. S. **Turner**: The composition of glass suitable for use with automatic machines. A survey was made of the whole field of glass compositions which have been used, particularly for glass bottles, from the time of the Roman glass makers down to the present day. The introduction of the automatic machine has much limited the range of compositions available. For example, in using a number of types of machines the percentage of lime in the glass cannot be raised safely above 10 per cent., whereas in some of the glass used on the continent and worked by hand 20 per cent. sometimes occurs. The factors which decide the limits of composition are the size of the article, whether colourless or coloured; the method by which the machine is to be charged, that is to say, whether by suction or by gob feeding; and finally by the type of machine itself. Scientifically, the factors of importance are the viscosity of the glass, the rate at which the viscosity changes with temperature, the heat conductivity and heat radiation.—Violet **Dimbleby** and W. E. S. **Turner**: The relationship between the durability and the chemical composition of glass. Tests were made of glasses of similar type in which soda was replaced successively by lime, magnesia, alumina, titania, zirconia, barium oxide and boric oxide. In all, 70 to 80 individual glasses were prepared, and the action of the four reagents, namely, boiling water, hydrochloric acid, sodium carbonate and caustic soda solution, were tested.

CAPE TOWN.

Royal Society of South Africa, October 21.—P. R. v.d. R. **Copeman**: Note on the decrease in acidity during the ripening of grapes. The most important changes occur in the sugar and acid content of the juice. The acidity, as determined by titration, decreases during ripening, and when the logarithm of the acidity is plotted against the time, a straight line is obtained. The concentration of acid varies with the time, and the rate of decrease is proportional to the existing concentration. The acidity at any given time depends upon the variety of grape. The rate of decrease of acidity is independent of the variety, but is dependent upon some seasonal variation. The rate at which grapes ripen during any given season is independent of the variety. At maturity the decrease in acidity becomes practically negligible.—Alexander **Brown**: An extension of Ceva's theorem to polygons of any number of sides. For a polygon of $2m$ sides it gives $m-1$ relations, and for a polygon of $2m+1$ sides it gives m relations. Various special results already known can be derived as particular cases.—L. P. **Bosman**: The hydrolytic properties of certain amino-acids. Falk and Nielson state that the amino-acids glycine, alanine, leucine, aspartic and glutamic, bring about the hydrolyses of esters such as methyl acetate, ethyl butyrate, and olive oil. The actual hydrolyses cannot, however, be attributed to the fact that these acids contain the amino-group. The acidity of the medium seems to be the cause of the hydrolyses.—D. B. **Swart**: Note on the South African marine mussel, *Mytilus Meridionalis*, Krauss (1848). *M. Meridionalis* is established beyond all doubt as a distinct species.—H. G. **Fourcade**: (1) On instruments and methods for stereoscopic surveying. (2) The

optical transformation of projections and its application to mapping from air photographs. (3) On some conditions for the accurate vision of stereoscopic pictures.

ROME.

Royal Academy of the Lincei, November 1.—G. **Armellini**: An apparent oscillation of the solar diameter. Experiments carried out in the Royal Campidoglio Observatory. Measurements made in three Italian observatories in 1924 give, for the sun's diameter, values lower than those obtained in 1923. Support is thus furnished to Hilfiker's and Lane's hypothesis that the sun is a pulsating star.—F. **Zambonini** and G. **Carobbi**: Double sulphates of the rare earth and alkali metals (iii.). Double sulphates of lanthanum and sodium. Investigation of the isotherm for 25° indicates the formation of the stable compound, $La_2(SO_4)_3$, Na_2SO_4, $2H_2O$.—F. **Zambonini** and R. G. **Levi**: Researches on the isomorphism of the molybdates of rare earth metals with those of calcium, strontium, barium, and lead. Röntgenographic analysis shows that the compounds $CaMoO_4$, $SrMoO_4$, $BaMoO_4$, and $PbMoO_4$ possess identical crystalline structures.—Mineo **Chini**: Plane lines, for which the length of the arc is given in polar coordinates, as a function of the anomaly of the extremity.—G. C. **Evans**: The simple potential, and Neumann's problem.—Mentore **Maggini**: The orbit of the binary system OΣ 535, deduced from interferometric measurements.—V. **Ronchi**: The ocular interferometer.—Rita **Brunetti**: The effect of chemical linking on the energy of intra-atomic levels.—A. **Pontremoli**: The orientation in a constant electric or magnetic field in the hypothesis of molecular anisotropy.—L. **Tieri**: Determination of Avogadro's constant by means of doubly refracting solutions of dialysed iron. Results are obtained which show that even liquids which under the ultramicroscope appear to contain in suspension granules of only one type, actually contain granules of different magnitudes. There results, therefore, increased condensation of the granules at the bottom of the liquid, and consequently, for the lower layers, greater double refraction than corresponds with Laplace's law.—Luigi **Rolla** and Giorgio **Piccardi**: Chemical statics of electronic phenomena.—Mario **Amadori**: Products of the condensation of glucose with *p*-phenetidine.—Michele **Giua**: Influence of substituents on the formation and stability of various cyclic compounds. In connexion with the nuclear tension of coumaranone and coumarandione compounds, the condensation of malonyl chloride with β-naphthol has been investigated.—Pietro **Saccardi**: The nature of melanogen. When injected into the animal organism, pyrrole does not pass unaltered into the urine, but is converted by oxidation in the organism into a melanogen which yields an azo-compound different from that furnished by pyrrole.—Tullio **Carpanese**: The epidote of Monte Rosso di Verra (Monte Rosa group). This mineral, of specific gravity 3·343, exhibits the crystallographic constants, $a:b:c=1{\cdot}5803:1:1{\cdot}8045$, $\beta=64°\ 34{\cdot}5'$, and a composition in good agreement with the formula $HCa_2(Al, Fe)_3Si_3O_{13}$.—Cesare **Artom**: Obligatory correlations of true tetraploidism (giantism and cellular magnitude).—Gustavo **Brunelli** and Ettore **Remotti**: The physiologico-etiological significance of the secondary sexual characters in Gambusia.

SYDNEY.

Royal Society of New South Wales, November 4.—J. C. **Earl** and V. M. **Trikojus**: The constitution of australol. The identity of the solid phenol, australol, isolated from certain eucalyptus oils by the late Mr. H. G. Smith, with *p*-isopropyl phenol, has been established. For the purpose of comparison, *p*-isopropyl phenol was prepared synthetically by the following scheme of reactions: magnesium phenyl bromide + acetone ⟶ phenyl methyl carbinol ⟶ isopropenyl benzene ⟶ cumene ⟶ sodium cumene *p*-sulphonate ⟶ *p*-isopropyl phenol.—A. R. **Penfold**: The essential oils of *Melaleuca linariifolia* and *M. alternifolia*. Both these tall papery-bark tea trees follow the water-courses of the coast districts of N.S. Wales and southern Queensland, the former being abundant around Sydney, whilst the latter is plentiful at Copmanhurst on the Clarence River. Terpinenes, cymene, d-a-pinene, cineol, sesquiterpenes (cadinene), and terpinenol-4, with a little sesquiterpene alcohol, are the principal constituents of the essential oils.—Leo A. **Cotton**: Note on the earthquakes at Murrambateman during March and April 1924, and January to April 1925. Although the continent of Australia lies outside the two great earthquake belts of the world in which 95 per cent. of all recorded shocks occur, there are certain areas which are subject to occasional earthquakes. The Yass district is one which has from time to time been shaken, but there is no previous record of such a seismic spasm as that which affected this district during the months of March and April 1924. Altogether some nine or ten shocks were recorded in this interval. The first earthquake was the most pronounced, and the information secured from many residents in the district show that the isoseismals have a pronounced L-shaped distribution which is attributed to movement along two faults which act as partial boundaries of an unstable earth block. A recurrence of seismic activity in the district took place during the period January to April in the following year (1925). Five shocks were recorded in this interval.—M. B. **Welch**: The identification of the principal ironbarks and allied woods. Australia's most valuable hardwoods for heavy constructional work, railway sleepers, poles, etc., are the ironbarks. It is, however, very difficult to separate these woods from certain timbers known as grey gum, which are often substituted for the former. Certain differences exist, however, and these are described.

Official Publications Received.

Sixth Report of the Smoke Abatement League of Great Britain. Pp. 17. (Manchester: 33 Blackfriars Street.)

Contributions to Palaeontology from the Carnegie Institution of Washington. Papers concerning the Palaeontology of the Pleistocene of California and the Tertiary of Oregon. (Publication No. 347.) Pp. iii+92+10 plates. (Washington: Carnegie Institution.)

Archaeological Investigations in the Aleutian Islands. By Waldemar Jochelson. (Publication No. 367.) Pp. ix+145+28 plates. (Washington: Carnegie Institution.)

United States Department of Agriculture. Department Bulletin No. 1339: The Effect of Weather upon the Change in Weight of a Colony of Bees during the Honey Flow. By James I. Hambleton. Pp. 52. (Washington: Government Printing Office.) 10 cents.

Livingstone College. Annual Report and Statement of Accounts for the Year 1924–25. Pp. 24. (Leyton, E.10.)

New Zealand: Department of Lands and Survey. Scenery Preservation: Report for the Year ended 31st March 1925, together with Statement of Accounts and Schedule of Lands acquired and reserved during the Year under the Scenery Preservation Act. Pp. 7. (Wellington, N.Z.: W. A. G. Skinner.) 6*d*.

Transactions and Proceedings of the Botanical Society of Edinburgh. Vol. 29, Part 2, Session 1924–25. Pp. xvi+119–217. (Edinburgh.) 7*s*. 6*d*.

Proceedings of the Royal Society of Edinburgh. Session 1925–1926. Vol. 46, Part 1, No. 1: Some Modern Aspects of Physical Research. Address by the President, Sir Alfred Ewing. Pp. 8. 9*d*. Vol. 46, Part 1, No. 2: Prenatal Death in the Pig and its Effect upon the Sex-Ratio. By F. A. E. Crew. Pp. 9–14. 6*d*. (Edinburgh: R. Grant and Son; London: Williams and Norgate, Ltd.)

Communications from the Geological Institute of the Agricultural University, Wageningen (Holland). No. 9: Report on a Collection of recent Shells from Obi and Halmahera (Moluccas). By Dr. C. H. Oostingh. Pp. 363. (Wageningen: H. Veenman en Zonen.)

New Zealand: Dominion Museum. Bulletin No. 9: Maori Agriculture; the Cultivated Food Plants of the Natives of New Zealand, with some Account of Native Methods of Agriculture, its Ritual and Origin Myths. By Elsdon Best. Pp. viii+172+27 plates. (Wellington, N.Z.)