Societies and Academies.

LONDON.

Geological Society, Mar. 21.—**F. B. A. Welch**: The geological structure of the Central Mendips. The Central Mendips comprise a rectangular area measuring roughly 80 square miles, lying between Shepton Mallet and Cheddar on the east and west respectively. As a whole, the Mendips consist of a west-north-westerly to east-south-easterly ridge, the structure being that of four periclines arranged *en échelon*. The cores of these periclines are of Old Red Sandstone age, with the Carboniferous Limestone Series succeeding. The Central Mendips include the North Hill, the Pen Hill, and part if the Beacon Hill periclines. Of these, North Hill and Pen Hill are more or less anticlinal in structure; but the Pen Hill pericline has been much disturbed by extensive earth movements. A large syncline, which extends from Cheddar to Wells, has been thrust from the south against the southern limb of the North Hill pericline, while at one point a 'window' occurs in this syncline, revealing beds of the main hill-mass beneath the thrust. Parallel to this thrust, at Ebbor, a second great thrust is developed, isolated remnants of which are seen in the small hills north of Wells. Earth movements seem to have been directed mainly from the south, at first producing the ridge with periclines *en échelon*, and separated one from the other by normal synclines. Pressure continued, and appears to have been greatest in the Pen Hill region, where overfolding was developed. Finally overthrusting resulted, and large blocks of beds, bounded by extensive north-and-south faults, formed at the time of the thrusting, were driven northwards.

PARIS.

Academy of Sciences, Mar. 5.—**G. Ferrié**: The operation of world longitudes (October-November, 1926). An account of work done by the international committee. Fifty-two stations belonging to thirty nations took part in the work, and forty-five of these have already sent to the president accounts of their observations. Twenty-two of these have furnished data bearing on the fundamental triangle, Algiers—Li Ka Wei—San Diego, for which results are given.—**C. Sauvageau**: The development of two Asperococcus.—**Luigi Fantappié**: The calculation of matrices.—**S. Stoïlow**: A class of continued transformations with limited variation.—**Henri Cartan**: A theorem of M. A. Bloch, and questions of unicity in the theory of meromorph functions.—**G. Vranceanu**: Completely stable periodic solutions.—**Jacques Mesnager**: The theory of equilibrium of heavy massifs submitted to pressures from below and its bearing on the stability of barrages.—**Mesnager**: Remarks on the preceding communication.—**Henri Mémery**: An important recrudescence of sunspots on Feb. 2, 1928.—**Marcel Dufour**: The refraction of the astigmatic pencil. The third equation of Sturm.—**M. Ponte**: The various spectra of mercury. Details of the spectrum obtained in a tube fitted with a single electrode and submitted to high frequency discharge with very short wavelength (about 12 metres).—**W. Kopaczewski**: The buffer action of the serum in relation with immunity.—**Jacques Bardet** and **Arakel Tchakirian**: The preparation and properties of some germanous salts. Two direct methods are given, one based on the reduction of germanic salts by zinc and sulphuric acid, the other by reduction with hypophosphorous acid in hydrochloric acid solution. Germanous oxide is soluble with difficulty in solutions of sulphuric or hydrochloric acid, and after filtering and rapidly drying, is stable at the ordinary temperature.—**G. Allard**: The determination of the crystalline network of microcrystalline substances by means of radiograms taken with powders. The method described is general, and is not, like Hull's method, limited to substances crystallising in the cubic, quadratic, hexagonal and rhombohedric systems.—**Henri Termier**: A hypothesis concerning the Permian and Trias of Morocco.—**Marcel Martz**: The anomalies of the androecium in a hybrid of the genus Digitalis.—**A. Jullien**: The significance of the eosinophil granulations of the blood cells of *Sepia officinalis*.—**Maurice Caullery** and **Mlle. Marguerite Comas**: The determination of sex in a nematode (*Paramermis contorta*), a parasite of the larvae of Chironomus. From determinations of the number and sex of parasites present on single worms, it was found that the sex depends largely on the number of parasites on each worm, and hence is probably a question of nutrition.—**Charles Pérez**: The evolution of the apparatus for attaching the abdomen to the thorax in decapods (Dromia, Homola).—**Angel Establier y Costa**: Hyperallantoinuria in artificially produced polyuria and diabetes in man. In all the cases examined the polyuria was accompanied by a large increase in the amount of allantoin excreted.—**Marcel Duval**, **Paul Portier**, and **Mlle. A. Courtois**: The presence of large quantities of amino-acids in insects. Analyses of seven different species showed a very high proportion of amino-acids, ranging from 13 to 36 times the amounts present in the blood of mammals.—**C. Levaditi** and **T. E. Anderson**: The neurotropism of *Spirochæta Duttoni*. From experiments on mice inoculated with *Sp. Duttoni*, the brain was found to be virulent long after the blood was sterile. No typical spirochæte could be detected in the brain in these cases. As in the experiments described by Nicolle, Levaditi, Sanchis-Bayarri, and Schoen, the parasites appear to undergo a cycle of evolution, one of the phases of which is invisible and non-filtrable.—**S. Nicolau**: The histo-pathological modifications of the suprarenal capsules and the salivary glands of rabbits killed by experimental enzootic encephalomyelitis (Borna's disease).—**V. Chorine**: The influence of the hydrogen ion concentration of the culture medium on the virulence of the Coccobacillus of the Pyralis of maize.

ROME.

Royal National Academy of the Lincei, Dec. 18.—**G. Armellini**: Measurement of double stars.—**S. Baglioni**: (1) Action of quinine, eserine, pilocarpine, digitonine, sparteine, and atropine on the nervous centres. Experimental investigations on a preparation of *Bufo vulgaris*. None of the poisons named, when applied locally to the dorsal or ventral face of the posterior intumescence of this preparation, causes increase in the excitability or tetanic or clonic convulsions. An apparent exception occurs with digitonine applied to the dorsal face, this resulting, after the lapse of some hours, in tetanic reflexes similar to those produced by strychnine; such action is, however, almost certainly due to a decomposition product of digitalin which has an action resembling that of picrotoxin. (2) Physiological doctrine of the action of poisons exciting the nervous centres. Consideration of the available experimental data seems to justify the enunciation of the following general theory: All poisons acting selectively by enhancing the excitability of the central co-ordinating elements of the posterior corna of the spinal medulla, cause the abnormal increase in the reflex activity which culminates in the typical tetanic convulsions of central origin (strychnine type), whereas those which act selectively by raising the excitability of the central

elements of the anterior corna (motor neurones) cause increase in the reflex excitability, resulting finally in clonic convulsions of central origin (phenol type). This selective action of different poisons is, moreover, a proof that the neurones of the posterior corna and of the anterior corna are endowed with specifically different functional properties. — **F. Tricomi**: The equation $y\partial^2z/\partial x^2 + \partial^2z/\partial y^2 = 0$.—**U. Crudeli**: The elementary geodesic displacement.—**G. Sansone**: The apiristic resolution of the biquadratic congruences.—**Giuseppe Scorza**: Partial minima and maxima for functions of several variables.—**V. Hlavatý**: Complements to the theorem of reduction of orthogonal differential systems. — **G. Krall**: Variation of the field in the equations of elastic motion. — **D. Graffi**: Magnetic induction. A mathematical treatment is given for the problem of magnetic induction for ferromagnetic bodies in the case when the variations in time of the electromagnetic field are so small that the phenomena accompanying such variations may be neglected.—**E. Fermi**: A statistical method for the determination of certain properties of the atom (1). A process is described for calculating statistically the distribution of the electrons round the nucleus. The results obtained render it possible, first, to calculate the energy necessary to ionise the atom completely, that is, to strip it of electrons, and secondly, to determine the variation in potential at different distances from the nucleus and hence to ascertain the electric field in which the electrons of the atoms occur.—**L. De Caro**: The production of lactic acid and of phosphoric acid in 'rigor from thawing.' Quantitative experiments made by Fletcher on the production of lactic acid in striated mammalian muscle subjected to low temperatures showed that, during the freezing of the muscle, there takes place no formation of lactic acid, but some change which disposes it to a more rapid formation of the acid when thawing begins. The results of the author's experiments on muscle from the frog, toad, and dog show that the production of phosphoric acid in the muscle at low temperatures follows a course parallel to that of lactic acid and that this behaviour remains unchanged even after the suppression of the morphological structure of the muscular tissue. 'Rigor from thawing' is accompanied by the same chemical changes as are encountered in the other normal or experimental forms of muscular contraction.—**Camillo Artom**: Effects of cooling the spinal ganglia.—**N. Passerini** and **P. Galli**: Experiments on the action of the sodium chloride contained in irrigation water on certain plants. Under the conditions of pot tests, various annual and perennial plants exhibit for some time marked tolerance towards moderately concentrated sodium chloride solutions, but, owing to the rapid evaporation of the liquid and to consequent accumulation of salt in the soil, even dilute solutions result ultimately in death or damage to the plants. Although such accumulation of salt is not to be feared in the open ground, it is not advisable to employ, for irrigation, water containing more than 1 part of combined chlorine per 1000. For the spontaneous growths of established meadow-land or for arable land with permeable subsoil, this limit may be increased to 2 or, in some instances, 3 parts per 1000.

VIENNA.

Academy of Sciences, Jan. 19.—**W. Figdor**: The influence of light on the form of *Bowiea volubilis* and the increase and structure of its bulbs. Both in the light and in the dark, the main and the side axes show opposite tendencies as to growth in length. —**K. Menger**: Notes on theory of dimensions (4). The dimensions of irreducible continua.

Jan. 26.—**A. Franke** and **E. Gigerl**: Researches on the formation of benzal in glycols.—**A. Franke** and **R. Stern**: Glycol from methylethylacetaldehyde and benzaldehyde.—**F. Schweda**: Calculation of the transversal end frame of open bridges.—**K. Menger**: Metrical researches: (1) Theory of convexity, (2) Euclidean metric, (3) n-dimensional metric.—**A. Methlagl**: Trombidioses in Austrian alpine countries. Various species of Trombicula are reported.—**L. Lämmermayr**: Further contributions to the flora of magnesite and serpentine soils.—**A. Kieslinger**: Geology and petrology of the Kor Alps. (5) Marble outcrops in the region of the map sheet Deutschlandsberg-Wolfsberg.

Official Publications Received.

BRITISH.

The British Mycological Society Transactions. Edited by Carleton Rea and J. Ramsbottom. Vol. 13, Parts 1 and 2. Pp. 144+7 plates. (Cambridge: At the University Press.) 15*s*.

Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1111 (Ae. 285): A General Theory of the Autogyro. By H. Glauert. (T. 2359: T. 2413.) Pp. 36+5 plates. 1*s*. 6*d*. net. No. 1117 (Ae. 290): Scale Effect on Three Aerofoils at Low Levels of LV, R.A.F. 32, Göttingen 433, and Göttingen 410, with 2 per cent. Centre Line Camber. By F. B. Bradfield. (T. 2512.) Pp. 6+4 plates. 6*d*. net. (London: H.M. Stationery Office.)

Transactions of the Royal Society of Edinburgh. Vol. 55, Part 3, No. 24: The Life-History and Cytology of *Reticularia Lycoperdon* Bull. By Dr. Malcolm Wilson and Elsie J. Cadman. Pp. 555-608+6 plates. 9*s*. Vol. 55, Part 3, No. 26: A Comparative Study of the Stem Structure of the Genus Clematis, with special reference to Anatomical Changes introduced by Vegetative Propagation. By Dr. Edith Philip Smith. Pp. 643-664+2 plates. 3*s*. 6*d*. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

Proceedings of the University of Durham Philosophical Society. Vol. 7, Part 4, 1926-1927. Pp. 161-260. (Newcastle-on-Tyne.) 5*s*.

Imperial Agricultural Research Conference, 1927. Report and Summary of Proceedings. Pp. iv+249. (London: H.M. Stationery Office.) 1*s*. net.

Report of the Marlborough College Natural History Society for the Year ending Christmas, 1927. (No. 76.) Pp. 94+4 plates. (Marlborough.) 3*s*.; to Non-Members, 5*s*.

University of London: University College. Report of the University College Committee (February 1927-February 1928), with Financial Statements (for the Session 1926-27), and other Documents, for Presentation to the Senate. Pp. 191. (London: Taylor and Francis.)

The National Physical Laboratory. Report for the Year 1927. Pp. vi+264. (London: H.M. Stationery Office.) 7*s*. 6*d*. net.

A Problem of Empire Suffering: being the Annual Report for 1927 of the British Empire Leprosy Relief Association. Pp. 46. (London.)

List of Council and Fellows of the Royal Society of Edinburgh, October 1927. Pp. 26. (Edinburgh.)

List of the Geological Society of London, March 1928. Pp. 74. (London.)

Agricultural Progress: the Journal of the Agricultural Education Association. Vol. 5, 1928. Pp. 145. (London: Ernest Benn, Ltd.) 5*s*. net.

Proceedings of the Royal Society of Edinburgh, Session 1927-1928. Vol. 48, Part 1, No. 3: On Fourier Constants. By E. T. Copson. Pp. 15-19. 6*d*. Vol. 48, Part 1, No. 4: An X-ray Examination of Saturated Dicarboxylic Acids and Amides of the Fatty Acid Series. By Dr. Edward Henderson. Pp. 20-27. 9*d*. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

Imperial Department of Agriculture for the West Indies. Report on the Agricultural Department, St. Kitts-Nevis, 1926-27. Pp. iv+30. (Trinidad, B.W.I.) 6*d*.

University of Bristol: Department of Agriculture and Horticulture. Bulletin No. 2: Sugar Beet Trials, 1927, and Report of Sugar Beet Conference, February 1928. By A. W. Ling and C. W. Linley. Pp. 55. Bristol.)

Memoirs of the Department of Agriculture in India. Botanical Series, Vol. 15, No. 1: Studies in Khandesh Cotton, Part i. By S. H. Prayag. Pp. iii+49+8 plates. (Calcutta: Government of India Central Publication Branch.) 1.4 rupees; 2*s*. 3*d*.

The Tea Quarterly: the Journal of the Tea Research Institute of Ceylon. Edited by T. Petch. Vol. 1, Part 1, February. Pp. 26. (Nuwara Eliya.)

Journal of the Chemical Society: containing Papers communicated to the Society. March. Pp. iv+529-751+x. (London: Gurney and Jackson.)

FOREIGN.

Department of the Interior: Bureau of Education. Bulletin, 1927, No. 32: Statistics of City School Systems, 1925-1926. Pp. 185. (Washington, D.C.: Government Printing Office.) 30 cents.

Travaux de la Section de Géodésie de l'Union Géodésique et Géophysique Internationale. Tome 4: Rapports généraux établis à l'occasion de la deuxième assemblée générale, 24 septembre-8 octobre 1924. Pp. vi+58+4 planches+79+11+8+33+53+3+4+4+11. (Paris.)

Rapport annuel sur l'état de l'Observatoire de Paris pour l'année 1926 présenté au Conseil dans la séance du 12 mars 1927. Par B. Baillaud. Pp. 20. (Paris.)