

on living animals. The whole residue of the estate, apart from a few small legacies to servants and others, is left to the trustees for the purposes of the trust to form a maintenance fund for carrying out the objects named. Should there be any funds in excess of the requirements of the original scheme, the trustees are directed to utilise them for the establishment of "Murchison of Taradale Memorial Bursaries" at any of the Scottish universities or places of secondary education in Scotland or elsewhere, for the assistance of young natives of Ross-shire of either sex of any age between fourteen and twenty-four, preferably those able to speak and write the Gaelic language.

SOCIETIES AND ACADEMIES.

LONDON.

Faraday Society, December 18, 1916.—Sir Robert Hadfield, president, and later Prof. A. W. Porter, in the chair.—Ezer Griffiths and E. A. Griffiths: A carbon tube furnace for testing the softening points and compressive strengths of refractories. The paper describes a carbon tube furnace designed for the testing of refractory materials under definite load. The specimens are cut from the brick and ground up into the form of short cylinders. Pressure is applied by means of springs suitably connected to carbon rods which carry the specimen under test. Two simple forms of electrode construction are described. In one of them the current is carried by two copper tubes bent into a zigzag form, and cast into two blocks of white bearing metal. The faces of the blocks are cast to the form of the carbon tube to which they are clamped. The copper tubes also serve for water cooling. The temperature of the specimen is directly observed by means of a polarising type of optical pyrometer.—Prof. E. D. Campbell: Do equiatomic solutions in iron possess equal resistances? The conception of steel as a solid solution has long suggested a relationship between its chemical composition and resistance. Benedicks, in 1902, laid down the general law that equiatomic solid solutions in iron possess equal resistances. The experimental work of Arnold has shown the assumptions underlying Benedicks's law to be untenable, and the object of the author's experimental work was to seek a more satisfactory hypothesis. The experiments, which are fully described in the paper, were carried out on seven steels of varying composition, and their specific resistances were measured in both the hardened and annealed states. The deviations from the calculated values cannot be explained on Benedicks's assumption, but they suggest that it is the molecular concentration of the carbides in solid solution, and not the atomic concentration of the carbon, which determines the influence on the specific resistance exerted by such solutes.—R. H. Sherry: Grain-growth in deformed and annealed low-carbon steel. Coarse crystallisation or grain-growth in pure iron and low-carbon steels permanently deformed and annealed has from time to time caused no little difficulty to workers in sheet, wire, cold-drawn bar, and pressings of these materials. The present paper, based on an extended investigation, explains the conditions under which grain-growth occurs.—R. G. Parker and A. J. Dalladay: The union of glass in optical contact by heat treatment (see NATURE, December 21, 1916, p. 317).—Prof. W. C. McCullagh Lewis: The effect of pressure on the equilibrium constant of a reaction in a dilute solution: A simple proof of the expression. The paper indicates a simple mode of deducing the effect of external pressure on the equilibrium constant of a reaction in dilute solution. The method, which involves the simple concept of maximum work, may be found to be of use by teachers of physical chemistry, as students generally find the method of Planck somewhat difficult.

Geological Society, December 20, 1916.—Dr. Alfred Harker, president, in the chair.—Dr. Marie C. Stopes: Recent researches on Mesozoic "Cycads" (Bennettitales). The paper dealt particularly with recently discovered petrified remains which reveal their cellular tissues in microscopic preparations. The distribution of a few of the most interesting representatives of the Bennettitales (including the cohorts Bennettitæ and Williamsonæ) was shown in a table. The group is by far the most characteristic of all the plants of the Jurassic and Lower Cretaceous, during which periods its distribution was almost world-wide. It was locally, if not universally, dominant, and was the most highly evolved plant-group of the epoch of which we are cognisant. Three chief points of interest are noted in the geological distribution of these plants:—(a) That the most numerous highly specialised trunks reach their maximum in the Jurassic and Lower Cretaceous periods, when their distribution was practically world-wide; (b) that the oldest and therefore presumably the most primitive type, *Wielandiella*, is externally less like the living Cycads than the commoner later forms, while these latter are utterly unlike the living genera in their fructifications; (c) that the geologically youngest cone is the largest yet discovered, occurring in the Gault when the extinction of the group appears already to have set in. Contrary to what might have been anticipated from their external likeness to the living Cycads, coupled with their great geological age, the fossil "Cycads" are much more complex and on a higher level of evolution than the living group. It seems to the author to be extremely unlikely that the fossil and the living forms have any direct phylogenetic connection nearer than a remote, unknown, common ancestor. The mooted connection between the fossil "Cycads" and the Angiosperms is highly suggestive, but lacks data for its establishment.

Royal Microscopical Society, December 20, 1916.—Mr. E. Heron-Allen, president, in the chair.—A. Bacot: Note on the relation between the hatching and development of the larva of the yellow-fever mosquito (*Stegomyia fasciata*) and the presence of bacteria and yeasts. In sterile water or in "killed" cultures of various bacteria and yeasts, the author found that the proportion of mosquito eggs unhatched within a normal period was much larger than when a living culture or stagnant water teeming with organic life was employed. Of the "refractory" eggs first mentioned a large proportion hatched out at once on the addition of a small quantity of brewer's yeast, or other living microorganisms, to the previously sterile fluid.—Prof. S. J. Hickson: Certain sessile forms of Foraminifera. After discussing the observations of Schultze and Carpenter, the author gave his reasons for regarding the foraminifer described by the former as identical with *Polytrema miniaceum*, but that studied by the latter as being a different organism, for which he now proposed the new generic name of *Homotrema*; and then detailed the differential diagnosis of the two forms. The author next dealt with the form known as *P. cylindricum*, Carter, which he regarded as the type of a new genus, *Sporadotrema*; all these forms he regarded as having secondarily acquired the sedentary habit after a previous free existence, in contrast with the genus *Gypsina*, which he considered had always been sedentary and encrusting in its habit.—E. J. Sheppard: Note on an exhibit showing migration of nuclear material into an adjacent cell. A slide of the "pollen mother-cells" of *Lilium candidum* was exhibited showing migration of nuclear material (chromatin) from one cell nucleus into the cytoplasm of an adjacent cell, the migration chromatin being preceded and almost surrounded by a liquefaction or absorption zone of the cytoplasm. So far no fusion of the

chromatin with that of its "receptor cell" had been observed, and no explanation of the phenomenon was offered.

PETROGRAD.

Imperial Academy of Sciences, October 19, 1916.—M. D. **Zalésskij**: The carbon flora discovered by V. N. Robinson and I. I. Nikšič in the N. Caucasus.—A. A. **Čuprov**: The mathematical expectancy of the coefficient of dispersion.—V. V. **Zalenskij**: The fate of the spermatozoa and the segmentation of the ovum of *Salpa africana*.—I. A. **Balanovskij**: The new variable in Hercules.—L. S. **Kolovrat-Červinskij**: The disengagement of the emanation from solid or fused radium salts.—P. A. **Zemiatsenskij**: Deposits of fireproof clay in the neighbourhood of Latna, on the Kiev-Voronež Railway, Lepecka (Tambov Government), and Čirikov, on the Griaze-Orlov Railway (Voronež Government).—V. V. **Redikorzev**: New pseudo-scorpions.—V. A. **Lindholm**: Contributions to the malacological fauna of the Government of Nižnij Novgorod.—N. S. **Kurnakov**: The discovery in Russia of potassium chloride or sylvine.

November 2, 1916.—N. Ja. **Cinger**: The most useful species of conic projections.—S. I. **Metalnikov**: The problem of the immortality of unicellular protozoa.—N. A. **Bush**: Valuable trees of the Caucasus.—N. V. **Nasonov**: Supplementary notes on *Ovis orientalis*, Gmel.—A. **Martynov**: Supplementary note on the Trichoptera fauna of the Crimea.

SECTION OF HISTORICAL SCIENCE AND PHILOLOGY, October 26, 1916.—N. Ja. **Marr**: The date of the Mosoch migration from Armenia to Svania.

November 9, 1916.—K. A. **Inostrancev**: The Charput inscription (561 H.).

BOOKS RECEIVED.

The High Price of Sugar and How to Reduce It. By H. H. Smith. Pp. iv+54. (London: John Bale, Ltd.) 1s. net.

Atoms. By Prof. J. Perrin. Translated by D. Ll. Hammick. Pp. xiv+211. (London: Constable and Co., Ltd.) 6s. net.

Laboratory Manual of General Chemistry, with Exercises in the Preparation of Inorganic Substances. By A. B. Lamb. Pp. vi+160+pp. for Notes. (Cambridge, Mass.: Harvard University Press.)

Australia. By Prof. J. W. Gregory. Pp. 156. (Cambridge: At the University Press.) 1s. 3d. net.

The Classics of International Law:—Synopsis Juris Gentium. By Prof. J. Wolfgang Textor. Edited by Prof. L. von Bar. Vol. i., A Reproduction of the First Edition. Vol. ii., A Translation of the Text. By J. P. Bate. (Washington: Carnegie Institution.)

The Interferometry of Reversed and Non-reversed Spectra. By Prof. C. Barus. Pp. 158. (Washington: Carnegie Institution.)

Sissano: Movements of Migrations Within and Through Melanesia. By W. Churchill. Pp. 181. (Washington: Carnegie Institution.)

A Naturalist in Borneo. By the late R. W. C. Shelford. Edited, with a biographical introduction, by Prof. E. B. Poulton. Pp. xxvii+331+plates xxxii. (London: T. Fisher Unwin, Ltd.) 15s. net.

DIARY OF SOCIETIES.

THURSDAY, JANUARY 11.

ROYAL GEOGRAPHICAL SOCIETY, at 5.30.—The Amazon River and Unexplored South America: J. Campbell Besley.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Principles Involved in Computing the Depreciation of Plant: F. Gill and W. W. Cook.

FRIDAY, JANUARY 12.

ROYAL ASTRONOMICAL SOCIETY, at 5.—Probable Motions in the Spiral Nebula M 51 (Canes Venatici) found with the Stere-Comparator.—S.

Kostinsky.—A Determination of the Constant of Aberration: S. S. Hough.—(1) The Part played by Rotation in Cosmic Evolution: (2) Note on the Action of Viscosity on Gaseous and Nebular Masses: J. H. Jeans.—Observations made at Adelaide during the Annular Eclipse of the Sun, July 30, 1916: Adelaide Observatory.

MALACOLOGICAL SOCIETY, at 8.—*Fatella vulgata*, L., and its so-called Variety, *P. depressa*, Penn.: Rev. Dr. A. H. Cooke.—The Occurrence of Manganese in Mollusca: Dr. A. E. Boycott.—Note on the Holotype of *Crioceratites bowyerbanki*: J. de C. Sowerby and G. C. Crick.

MONDAY, JANUARY 15.

VICTORIA INSTITUTE, at 4.30.—Christian Mysticism: Very Rev. Dean Inge.

TUESDAY, JANUARY 16.

ROYAL INSTITUTION, at 3.—The Old Brain and the New Brain, and their Meaning: Prof. C. S. Sherrington.

ROYAL STATISTICAL SOCIETY, at 5.15.

MINERALOGICAL SOCIETY, at 5.30.—Tapiolite in the Pilbara Goldfield, Western Australia: E. S. Simpson.—Palaeophycology; the Organic Origin of some Minerals occurring in Sedimentary Rocks: J. V. Samojloff.—The Simondium Meteorite: Dr. G. T. Prior.

WEDNESDAY, JANUARY 17.

ROYAL MICROSCOPICAL SOCIETY, at 8.—Presidential Address: Alcide d'Orbigny, his Life and his Work: E. Heron-Allen.

ROYAL METEOROLOGICAL SOCIETY, at 5.—Annual General Meeting.—Presidential Address: The Winds of North Africa: Major H. G. Lyons.

ENTOMOLOGICAL SOCIETY, at 8.—Annual Meeting.

THURSDAY, JANUARY 18.

LINNEAN SOCIETY, at 5.—The Comparative Morphology of the Sorus of Ferns: Prof. F. O. Bower.

MATHEMATICAL SOCIETY, at 5.30.

ROYAL SOCIETY OF ARTS, at 4.30.—Between the Tigris and the Indus. The Ben-i-Israel: Sir T. H. Holdich.

CHEMICAL SOCIETY, at 8.—Alloys of Copper and Tin, Aluminium and Gold: Col. C. T. Heycock.

FRIDAY, JANUARY 19.

ROYAL INSTITUTION, at 5.30.—Soap Bubbles of Long Duration: Sir James Dewar.

INSTITUTION OF MECHANICAL ENGINEERS, at 6.

SATURDAY, JANUARY 20.

ROYAL INSTITUTION, at 3.—The Lakes and Mountains of Central Africa: A. R. Hinks.

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