

utility. After the protracted studies of Froude and Rankine in England, published in the *Transactions* of the Institution of Naval Architects (1861-64), and of MM. Bertin and Bénazé in France, the subject may be regarded as exhausted.—On the real position to be assigned to the fossil flora of Aix, in Provence, by M. G. de Saporta. It is argued against the views of M. Fontannes on stratigraphic grounds that the whole series of varied and numerous deposits giving birth to the flora of Aix, cannot be reduced to the gypsum alone, or to the section of this gypsum contiguous to the beds at Cyrènes. In a further paper it will be shown that the palæontological indications are equally opposed to M. Fontanne's opinion.—Note and photographs of the thunderstorm of May 12, 1886: spiral form of lightning, by M. Ch. Moussette. The photographs taken at Auteuil on this occasion seem to indicate a general law that the electrical discharges between the clouds and the earth assume the normal form of irregular spirals.—Observations of the new planet 259 made at the Paris Observatory (equatorial of the West Tower), by M. G. Bigourdan.—On the development in series of the potential of a homogeneous revolving body, by M. O. Callandreau. In this paper the author verifies the two formulas of Legendre and Laplace relative to the exterior and interior points of a spheroid usually defined by the equation $r = a(1 + ay)$.—Mémorial on the rowing-vessels of antiquity, by M. Corazzini. The author attempts to solve the difficult problems associated with the construction of the *naves longæ*, and reconstructs the Roman polyremes in a manner which seems to harmonise best with the monuments and the descriptions of classic writers.—On the refraction of carbonic acid and of cyanogen, by MM. J. Chappuis and Ch. Rivière. The results of the authors' researches on the refraction of carbonic acid at 21° and up to 19 atm. are resumed in the formula—

$$n - 1 = 0.000540\beta(1 + 0.0076\beta + 0.0000050\beta^2),$$

in which n denotes the index for the ray D, and β the pressure in metres of mercury. The refraction of cyanogen has also been studied at different temperatures between the pressures of 1m. and 2m. or 3m. of mercury, the series of experiments relative to a determined temperature being resumed in a formula of the form $n - 1 = a\beta(1 + b\beta)$.—On the electrical conductivity of the mixtures of neutral salts, by M. E. Bouty.—On the decomposition of the perchloride of iron by water, by M. G. Foussereau. The author had already employed the measure of electric resistance to determine the nature and proportion of foreign substances contained in water and alcohol, and the conditions under which these fluids acquire the greatest degree of purity. He now applies the same method to the study of the progressive alterations of fluids, and especially of saline solutions under the influence of the dissolvent. The present paper deals specially with the perchloride of iron.—Note on a transmitting dynamometer with a system of optical measurement, by M. P. Curie. This apparatus consists of a horizontal arbor supported by two bearings. Two pulleys at the extremities of the arbor serve to transmit the motion from the motor to the receiver, and the work done is measured during the motion by the torsion of the arbor between the two pulleys.—Temperature of the deep waters in the Lake of Geneva, by M. F. A. Forel. Observations taken during the years 1879-86 show that at great depths the temperature never falls below 4°, and varies normally between 4°·6 and 5°·6. From his experiments the author also infers that the heat penetrates to the lower layers mainly through the mechanical intermingling of the upper with the deep waters under the action of the winds. The same explanation, he argues, should be applicable to all lakes and to all seas confined by bars, notably the Mediterranean, whose deep waters have a mean temperature of 13°.—Absorption-spectra of the alkaline chromates and of chromic acid, by M. P. Sabatier.—On the heat of transformation for vitreous selenium to metallic selenium, by M. Ch. Fabre. Vitreous is transformed to metallic selenium by heating it to 96° or 97°, the transformation being accompanied by a considerable development of heat, which is here directly determined by means of M. Berthelot's calorimeter.—Action of vanadic acid on the alkaline haloid salts, by M. A. Ditte.—On the fluorides of the metalloids, by G. Guntz. By practical tests the author has verified his hypothesis that the fluoride of lead is decomposable by all the chlorides of the metalloids. With the oxychloride of phosphorus the reaction is so regular that it gives a convenient process for preparing the oxyfluoride of phosphorus.

—On the hydrate of baryta, BaO, H₂O₂, by M. de Forcrand.—A contribution to the study of the alkaloids, by M. Echsner de Coninck.—Isomery of the camphols and of the camphors, by M. Alb. Haller.—Researches on the chemical composition of the grease of sheep's wool, by M. A. Buisine. The grease of Australian wool yielded for 100 of dry residuum 7·1 of acetic acid, 4 of propionic acid, 2·6 of benzoic acid, 2·59 of lactic acid, 1 of capric acid.—Acidimetric analysis of sulphurous acid, by M. Ch. Blarez.—Researches on the development of beetroot; study of the leaf, by M. Aimé Girard.—Comparative studies on the influence of the two orders of vaso-motor nerves, on the circulation of the lymph, on their mode of action, and on the mechanism of lymphatic production, by M. S. Lewachew.—On a process of indirect division by threes of the cellulose in tumours, by M. V. Cornil.—The house-bug and the seat of its fetid secretion: the dorsal abdominal glands of the larva and nymph; the sternal thoracic glands of the adult, by M. J. Künnkel.—On the influence of certain Rhizocephalus parasites on the exterior sexual characters of their host, by M. A. Giard.—On the circulatory system of the Echinidæ, by M. R. Kœhler.—On the seeds of Bonduc, and their active principle as a febrifuge, by MM. Ed. Heckel and Fr. Schlagdenhauffen. These seeds are supplied by two closely allied exotics: *Guilandina Bonducella*, L. (*Casalpinia Bonducella*, Tlem.) and *Casalpinia Bonduc*, Roxb. Their therapeutic properties are shown to reside in the bitter principle, which acts against intermittent fevers as efficaciously as the salts of quinine.—On the Triassic system of the Eastern Pyrenees, in connection with M. Jacquot's recent communication, by M. A. F. Noguès.—Invertebrate fauna of the Mentone grottoes, Italy, by M. Emile Rivière. In these caves the author has discovered 171 species of invertebrates, comprising 20 fossil, 125 living marine, and 26 land species. Amongst the living marine species 50 are at once Mediterranean and oceanic, 62 exclusively Mediterranean, and 6 oceanic.

BOOKS AND PAMPHLETS RECEIVED

"A Word for Ireland," by T. M. Healy (Gill, Dublin).—"Inorganic Chemistry," by Ira Remsen (Macmillan).—"British Fungi, Lichens, &c.," by Holmes and Gray (Sonnenschein).—"Journal of the Mathematical Society of St. Petersburg," vol. vi.—"Outlines of the History of Ethics," by H. Sidgwick (Macmillan).—"Proceedings of the Academy of Natural Sciences of Philadelphia," part 1 (Philadelphia).—"The Handy Guide to Emigration to the British Colonies," new edition, by W. B. Paton (S.P.C.K.).—"Notes from the Leyden Museum," vol. viii., No. 3, July (Brill, Leyden).

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