

the "internal pressure," is explained on the supposition that a "skin" effect exists between the matter in the vessel and the boundary layers. By clearing expression (3) of fractions the author shows that the shape of the isothermals are represented by an equation of the seventh degree in l , which cannot have more than three positive roots, and thence infers that isothermals are not necessarily represented by cubic equations, as is sometimes assumed. Prof. Ramsay said Mr. Rose Innes' formula was much more satisfactory than that of Van der Waal's, which was at best only a rough approximation. The President objected to the use made of the word "discontinuity" in the paper, as being quite different to its precise mathematical meaning. He also pointed out that the author's arguments respecting the effect of finite molecular dimensions was much less general than that of Van der Waal's. Although the new formula agreed with experiment over a longer range of volume than that of Van der Waal's, it would not be safe to argue beyond the range of the experiments it represented.

PARIS.

Academy of Sciences, June 18.—M. Lœwy in the chair.—On the satellite of Neptune, by M. F. Tisserand.—The principle of maximum work and entropy, by M. Berthelot. A general discussion of the theory of maximum work, treated under the heads—(1) Chemical action and the disengagement of heat; (2) the principle of maximum work; (3) entropy; (4) a comparison of the consequences of the principle of maximum work and those of entropy.—Note on *Phyllium pulchrifolium*, by M. Sappey. The author shows that *Phyllium pulchrifolium* exhibits only a superficial resemblance to leaves, and is a true insect in all essential particulars.—On the *Dyrosaurus thevestensis*, by M. A. Pomel. This fossil reptile is the same as that described by M. Phil. Thomas as *Crocodylus phosphaticus*. It is not a crocodile, and should perhaps be termed *Dyrosaurus phosphaticus*.—On the astronomical observations made at Abastouman by M. de Glasenapp, director of the St. Petersburg Imperial Observatory, by M. Lœwy.—A memoir was presented on a theoretical study of the elasticity of metals, by M. Felix Lucas.—Solar observations made during the first quarter of the year 1894, by M. P. Tacchini. A progressive diminution in spots and faculæ has been recorded.—Researches on continued fractions, by M. Sielthjes.—On four connected solutions of the problem of transformation relative to the elliptic function of the third order, by M. F. de Salvert.—The expression of the number of classes deduced from the transformation of elliptic functions, by P. de Seguer.—On the surfaces capable of forming, by a helicoidal displacement, a *famille de Lamé*, by M. Albert Petot.—On a system of chromato-diatonic gamuts, by M. Edmond de Polignac.—The detection of traces of chlorine, by MM. A. Villiers and M. Fayolle. The chlorine is liberated by permanganate in presence of sulphuric acid, and shows, even in small traces, a blue colouration becoming red violet when treated with the following reagent in excess: saturated aqueous solution of colourless aniline 100 cc., saturated aqueous solution of orthotolidine 20 cc., and glacial acetic acid 30 cc.—On the emetics, by M. E. Maumené.—Preliminary notice on a meteorite of a type distinct from the ordinary stony meteorites, by M. G. Hinrichs.—On the influence of fluorine compounds on beer ferments, by M. J. Effront. It is shown that ferments which have gradually become inured to the action of fluorine compounds give more alcohol and less glycerine and succinic acid than ordinary yeast from a given quantity of glucose.—Anatomy of the digestive tube of Hymenoptera, by M. Bordas.—On the presence of a thread cell in the spores of Microsporidizæ, by M. P. Théluhan. The author concludes that the Microsporidizæ should belong to the group of the Myxosporidizæ, as their spores present the same characteristics.—On the structure of the plants of Spitzbergen and of the island of Jan Mayen, by M. Ga-ton Bonnier. The following conclusions have been formulated:—(1) Arctic plants as compared with Alpine plants of the same species are thicker and present a differentiated structure, and contain more numerous lacunæ; (2) the greater humidity of the air and the different character of the light play the principal part in this adaptation of Arctic plants.—The *gommeuse bacillaire* of vines, by MM. Prillieux and Delacroix.—On the presence of remains of Foraminifera in pre-Cambrian rocks of Brittany, by M. L. Cayeux.—Impermeability of healthy epithelium

to drugs and poisons, by MM. Boyer and L. Guinard.—Regulation of thermogenesis by the cutaneous action of certain alkaloids, by MM. L. Guinard and Geley.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—A Text-Book of Ore and Stone-Mining: Dr. C. le Neve Foster (Griffin).—A Hand-book to the Flora of Ceylon: Dr. H. Trimen, Parts 1 and 2 and Plates (Dulau).—Practical Photo-Micrography: A. Pringle (Hiffe).—Travels amongst American Indians: Vice-Admiral L. Brine (S. Low).—Aspects of Modern Study (Macmillan).—Beginner's Guide to Photography, fifth edition (Perken).—Bodenphysikalische und Meteorologische Beobachtungen mit besonderer berücksichtigung des Nachtfrostphänomens: T. Homén (Berlin, Mayer).—Travels in a Tree-top: C. Abbott (Matthews).—The Tidal Streams of the North Sea: F. H. Collins (Potter).—A Monograph of the Bats of North America: Dr. H. Allen (Washington). Bulletin of the U.S. Fish Commission, Vol. xi. (Washington).
PAMPHLETS.—The Calming of Waves: Dr. M. M. Richter, translated (Hamburg, Porges).—On Blinding of the Retina by Direct Sunlight: Dr. G. Mackay (Churchill).—Johns Hopkins University of Baltimore Register for 1893-4 (Baltimore).—Carolina Pirates and Colonial Commerce, 1670-1740: S. C. Hughson (Baltimore).
SERIALS.—Sitzungsberichte der Physikalisch-Medicinischen Societät in Erlangen, 25 Heft, 1893 (Erlangen).—Zeitschrift für Wissenschaftliche Zoologie, lvii. Band, 4 Heft (Leipzig, Engelmann).—Séances de la Société Française de Physique, July-December, 1893 (Paris).—Proceedings of the Liverpool Naturalists' Field Club, 1893 (Liverpool).—Economic Journal, June (Macmillan).—Good Words, July (Isbister).—Sunday Magazine, July (Isbister).—Longman's Magazine July (Longmans).—Bulletins de la Société d'Anthropologie de Paris, Avril (Paris).—Journal of the Royal Microscopical Society, June (Williams and Norgate).—Transactions of the Royal Irish Academy, Vol. xxx. Part xi.: On the Geology of Torres Straits: Profs. Haddon, Sollas, and Cole (Dublin).—Ditto, Vol. xxx. Part xii.: On the Volcanic District of Carlingford and Slieve Gullion, Part I.: Prof. Sollas (Dublin).—Proceedings of the American Philosophical Society, January (Philadelphia).—Proceedings of the Academy of Natural Sciences of Philadelphia, 1893. Part 3 (Philadelphia).—Journal of the Academy of Natural Sciences of Philadelphia, 2nd series, Vol. x. Part 1 (Philadelphia).

CONTENTS.

PAGE

Studies in Forestry. By Prof. W. R. Fisher	193
The Comparative Pathology of Inflammation	194
Our Book Shelf:—	
Leonard: "The Camel, its Uses and Management"	195
Richardson and Ramsay: "Modern Plane Geometry"	196
"Chemistry Demonstration Sheets"	196
Letters to the Editor:—	
Panmixia and Natural Selection.—Dr. Alfred R. Wallace, F.R.S.	196
Discontinuous Colour-Variation.—Prof. T. D. A. Cockerell	197
Niagara River since the Ice Age.—Prof. Warren Upham	198
The Teeth and Civilisation.—Charles S. Tomes, F.R.S.	199
Electrical Theory of Vision.—Dr. E. Obach	199
Climbing and Exploration in the Karakoram-Himalayas. (Illustrated.)	199
A New Form of Object-Glass Mounting. By W. J. S. Lockyer	201
Notes	202
Our Astronomical Column:—	
The Native Calendar of Central America and Mexico	206
The Appearance of the Helium Line	206
Ephemeris for Tempel's Comet	206
The Recent Discovery of Fossil Remains at Lake Callabonna, South Australia. II. (Illustrated.) By Dr. E. C. Stirling, C.M.G., F.R.S.	206
Kafiristan	211
Scientific Education and Research. By Dr. H. E. Armstrong, F.R.S.	211
Scientific Serials	214
Societies and Academies	214
Books, Pamphlets, and Serials Received	216