

Laplace, by M. Tzitzéica.—On Green's and Cauchy's theorems, by M. Chessin.—On a simple relation giving the molecular weight of liquids as a function of their densities and their critical constants, by M. Daniel Berthelot. By combining two laws found experimentally by S. Young and Mathias respectively, the author deduces the expression

$$M = 11.4dT_c p_c \left(2 - \frac{T}{T_c} \right),$$

where M is the molecular weight, d the density at any temperature T, T_c and p_c the critical temperature and pressure respectively. This formula is applied to a considerable number of substances, and a comparison of the molecular weights determined in this way with those obtained from the gaseous density shows that in general the molecular weights in liquids and gases are identical, water, acids, and alcohols being exceptions. The deviations found are probably due to the difficulties of ascertaining the correct critical pressures.—On tungsten bisulphide, by M. Ed. Defacqz. Two methods of preparation are described, the action of hydrogen sulphide upon the hexachloride, and that of sulphur upon tungsten trioxide at a high temperature. The physical and chemical properties are given.—Action of formaldehyde upon menthol and borneol, by M. André Brochet.—Estimation of copper and mercury in grapes, wines, lees, and grape skins, by MM. Léo Vignon and Barrillot. As a consequence of the application of salts of various metals for the destruction of parasitic diseases of the vine, it is necessary to examine the fruit products for traces of these metals. Suitable methods for estimating these minimal quantities are described, and satisfactory test analyses given.—Contribution to the study of the forms and conditions under which the chlorine of the soil usually enters into vegetables, by M. P. Pichard.—On the fermentation of galactose, by M. Dienert.—On some peculiar deformations of the blood corpuscles of fishes, by MM. J. Kunstler and A. Gruvel.—On the casting of the skin in insects, considered as a means of defence against animal and vegetable parasites. Special functions of the casting of the trachea and intestine, by M. Künckel d'Herculais.—Researches on the defensive glands of the Carabides, by M. Fr. Dierckx.—On some new Madagascan fossils, by M. Marcellin Boule.

DIARY OF SOCIETIES.

THURSDAY, MARCH 16.

ROYAL SOCIETY, at 4.30.—The Croonian Lecture: On the Relation of Motion in Animals and Plants to the Electrical Phenomena which are associated with it: Prof. J. Burdon Sanderson, F.R.S.—Experiments in Micro-metalurgy: Effects of Strain: Prof. Ewing, F.R.S., and W. Rosenhain.

LINNEAN SOCIETY, at 8.—A Further Contribution to the Freshwater Algæ of the West Indies: W. West and G. S. West.—On So-called "Quintocubitalism" in the Wing of Birds: P. Chalmers-Mitchell.—Some Facts concerning the so-called "Aquintocubitalism" in the Bird's Wing: W. P. Pycraft.

CHEMICAL SOCIETY, at 8.—Influence of Substitution on Specific Rotation in the Borylamine Series: Dr. M. O. Forster.—Rotatory Power of Optically Active Methoxy- and Ethoxy-propionic Acids prepared from Active Lactic Acid: Prof. Thomas Purdie, F.R.S., and James C. Irvine.

FRIDAY, MARCH 17.

ROYAL INSTITUTION, at 9.—The Electric Fish of the Nile: Prof. F. Gotch, F.R.S.

EPIDEMIOLOGICAL SOCIETY, at 8.30.—Backwater or Hæmoglobinuric Fever: Dr. W. H. Crosse.

QUEKETT MICROSCOPICAL CLUB, at 8.

SATURDAY, MARCH 18.

ROYAL INSTITUTION, at 3.—Mechanical Properties of Bodies: Lord Rayleigh, F.R.S.

MONDAY, MARCH 20.

VICTORIA INSTITUTE, at 4.30.—Marks of Mind in Nature: Prof. Duns.

TUESDAY, MARCH 21.

ROYAL INSTITUTION, at 3.—The Morphology of the Mollusca: Prof. E. Ray Lankester, F.R.S.

SOCIETY OF ARTS, at 4.30.—The Commercial Development of Germany: C. Rozenraad.

ZOOLOGICAL SOCIETY, at 8.30.—Contributions to the Osteology of Birds. Part III. Tubinares: W. P. Pycraft.—On the Marine Copepoda of New Zealand: G. Stewardson Brady.—On the Breeding of the Weka Rail and Snow-Goose in Captivity: F. E. Blaauw.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Papers to be further discussed: Water-Tube Boilers for Marine Engines: J. T. Milton.—Recent Trials of the Machinery of War-Ships: Sir. John Durston, K.C.B., and H. J. Oram, R.N.—Paper to be read, time permitting: Alloys of Iron and Nickel: Robert Abbott Hadfield.

ROYAL STATISTICAL SOCIETY, at 5.—Causes of Changes in Pauperism in England, chiefly during the last Two Intercensal Decades: G. Udny Yule.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.—Automatic Adjustment of the Half-Tone Screen: W. Gamble.

NO. 1533, VOL. 59]

WEDNESDAY, MARCH 22.

SOCIETY OF ARTS, at 8.—Electric Traction: Philip Dawson.
GEOLOGICAL SOCIETY, at 8.—Relations of the Chalk and Drift in Mœn and Rügen: Prof. T. G. Bonney, F.R.S., and Rev. Edwin Hill.—A Critical Junction in the County of Tyrone: Prof. Grenville A. J. Cole.

THURSDAY, MARCH 23.

SOCIETY OF ARTS, at 8.—London Water Supply: Walter Hunter.
INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Hissing of the Electric Arc: Mrs. Ayrton. (Illustrated by Experiments.)

FRIDAY, MARCH 24.

ROYAL INSTITUTION, at 9.—Transparency and Opacity: Lord Rayleigh, F.R.S.

PHYSICAL SOCIETY, at 5.—On the Criterion for the Oscillatory Discharge of a Condenser: Dr. Barton and Prof. Morton.—The Minor Variations of the Clark Cell: A. P. Trotter.

SATURDAY, MARCH 25.

ROYAL INSTITUTION, at 3.—The Mechanical Properties of Matter: Lord Rayleigh, F.R.S.

BOOKS, PAMPHLET, and SERIALS RECEIVED

BOOKS.—The Principles of Bacteriology: Dr. F. Hoeppe, translated by Dr. E. O. Jordan (Paul).—Electricity in Town and Country Houses: P. E. Scutton (Constable).—Lectures on the Evolution of Plants: Dr. D. H. Campbell (Macmillan).—Measurement and Weighing: E. Edser (Chapman).—Les Plantes Utiles du Sénégal: R. P. A. Sebire (Paris, Baillière).—Naturalist's Directory, 1899 (U. Gill).—Iron-making in Alabama: Dr. W. B. Phillips, 2nd edition (Montgomery, Ala.).—The Resources of the Sea: Prof. W. C. McIntosh (Clay).—Experimental Morphology: Dr. C. B. Davenport, Part 2 (Macmillan).—A History of Physics: Prof. F. Cajori (Macmillan).—Unités Electriques Absolues: G. Lippmann (Paris, Carré).—Théorie du Potentiel Newtonien: N. Poincaré (Paris, Carré).—Observations taken at Dumraon, Behar, India, during the Eclipse of January 22, 1898: Rev. V. de C. Campigneulle (Longmans).—Loup-Garou!: E. Philippotts (Sands).—Bergens Museums Aarbog for 1898 (Bergen).—Universal Electrical Directory, 1899 (Alabaster).—Handbook of Physiology: Prof. W. D. Halliburton, 15th edition (Murray).—The Wild Fowl of the United States, &c.: D. G. Elliot (Suckling).—The Internal Wiring of Buildings: H. M. Leaf (Constable).—An Introduction to Stellar Astronomy: W. H. S. Monck (Hutchinson).—Twenty-four Test-Papers in Practical Plane and Solid Geometry (Science Subject 1), Elementary Stage: G. Grace (Macmillan).

PAMPHLET.—The Geology of the Borders of the Wash: W. Whitaker and J. Jukes-Browne (London).

SERIALS.—Observatory, March (Taylor).—Astrophysical Journal, February (Chicago).—Geographical Journal, March (Stanford).—Zeitschrift für Physikalische Chemie, xxviii. Band, 2 Heft (Leipzig).—Schriften der Naturforschenden Gesellschaft in Danzig, Neunter Band, Drittes und Viertes Heft (Danzig).—Mines and Quarries: General Report and Statistics for 1897, Part 4 (London).—Bulletin of the American Mathematical Society, February (New York).—National Geographic Magazine, February (Washington).—Quarterly Journal of Microscopical Science, February (Churchill).—Journal of the Institution of Electrical Engineers, February (Spon).—Middlesex Hospital Journal, February (London).—Engineering Magazine, March (222 Strand).—Atlantic Monthly, March (Gav).

CONTENTS.

	PAGE
The Frilled Fringe of the South Coast	457
Physical Chemistry. By J. W.	458
The Cultivation of Berries	459
Our Book Shelf:—	
Jaubert: "L'Industrie du Goudron de Houille"	460
Danemann: "Grundriss einer Geschichte der Naturwissenschaften"	460
Woolcombe: "Practical Work in Physics"	460
"Ostwald's Klassiker der exakten Wissenschaften"	460
Letters to the Editor:—	
On the Colour of Sea Water.—Prof. Richard Threlfall	461
Another Stockton Dragon. (Illustrated.)—W. T.	461
Chemists and Chemical Industries.—R. J. Friswell; William A. Davis	461
Sunspots and Weather. (With Diagrams.)—Alex. B. MacDowall	462
The Chemistry of the Stars in Relation to Temperature. (Illustrated.) By Sir Norman Lockyer, K.C.B., F.R.S.	463
The Instincts of Wasps as a Problem in Evolution. (Illustrated.) By E. B. P.	466
Sir John Struthers, M.D., LL.D.	468
Notes	469
Our Astronomical Column:—	
Comet 1899 <i>a</i> (Swift)	473
Tuttle's Comet 1896 <i>b</i>	473
New Star in Aquila	473
Photography of Corona	473
Harvard College Observatory	473
Forthcoming Books of Science	474
University and Educational Intelligence	475
Societies and Academies	476
Diary of Societies	480
Books, Pamphlet, and Serials Received	480