

following species: *Eupacilia Degreyana*, *Stigmonota pallifrontana*, *Cacæcia decretana*, and *Gelochia peliella*.—Lord Walsingham, F.R.S., exhibited specimens of several species of the genus *Cryptophasa* of the Tineina, some of the most remarkable being males and females of *Zitua balteata*, Walker, bred by Mr. Sidney Olliff from pupæ found in January last, at Newcastle, New South Wales, in burrows in branches of a species of *Acacia*.—Mr. F. D. Godman, F.R.S., exhibited a larva of a *Cicada*, from Mexico, having a fangoid growth on the head.—Captain Elwes exhibited a large number of butterflies, representing about 180 species, recently collected by himself and Mr. Godman in California and Yellowstone Park. The collection included many species of great interest, amongst others a *Canonympha* described by Edwards as an *Erebia*, a very rare species of *Thecla*, and a remarkable series of species of the genus *Colias*.—Mr. H. Goss exhibited, for Mr. W. J. Cross, an extraordinary variety of *Agrotis segetum*, caught by the latter near Ely in July last.—Mr. W. L. Distant read a paper entitled "An enumeration of the *Rhynchota* received from Baron von Müller, F.R.S., and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson's expedition."—Mr. Poulton read a paper entitled "Notes in 1887 upon Lepidopterous larvæ, including a complete account of the life-history of *Sphinx convolvuli* and *Agria tau*"; and Mr. White exhibited specimens of preserved larvæ of *S. convolvuli*, *A. tau*, and other species referred to in Mr. Poulton's paper. Mr. Jenner Weir, Mr. Kirby, Mr. White, and Dr. Sharp took part in the discussion which ensued.

## PARIS.

**Academy of Sciences**, October 8.—M. Des Cloizeaux in the chair.—Order of appearance of the first vessels in the leaves of *Humulus Lupulus* and *japonicus*, by M. A. Trécul. These researches show that, as already announced by the author so far back as 1853, the stipuli may sprout long before any of the leaf-lobes make their appearance. The verification of the phenomenon is easy either in the *Humulus* here studied or in the *Cannabis sativa* previously described.—On the molecular weight and on the valency of perseite, by M. Maquenne. In a recent communication (*Comptes rendus*, cvi. p. 1235) the author showed that perseite possesses the function of a polyvalent alcohol, and that its ethers present the same centesimal composition as those of mannite and dulcitol. It was also shown that the analysis of perseite yields the same results as mannite, and that these bodies at equal weight equally lower the freezing-point of their solvents. Hence perseite might be supposed isomeric with the mannites,  $C_6H_{14}O_6$ . But further researches, and the study of some new derivatives of perseite, clearly show the inaccuracy of the formula of this substance as determined in the former note, and as previously accepted by MM. Müntz and Marciano. It is now shown to be the immediate superior homologue to ordinary mannite with corrected formula  $C_7H_{16}O_7$ . It is at once the first heptavalent alcohol and the first sugar in  $C_7$  that has yet been determined.—On the orbit of Winnecke's periodical comet, and on a new determination of the mass of Jupiter, by M. E. de Haertl. The results are given of the author's protracted observations, undertaken for the purpose of ascertaining whether any change due to a resisting medium has taken place in the revolutions of this short-period comet, whose return was carefully recorded in 1858, 1869, 1875, and 1886. A fresh calculation is made of Jupiter's mass, based on its disturbing effect on the comet's orbit. The value of the mass that best satisfies all the observations is  $m = 1 : 1047 \cdot 1752 \pm 0 \cdot 0136$ .—Reflected image of the sun on the marine horizon, by M. Riccò. The observations here recorded have been taken since 1886, on the east terrace of the Observatory of Palermo, 2 kilometres from the shore and 72 metres above sea-level. They were interrupted this year by the foggy horizons, probably caused by the eruptions of Vulcano, which began on August 2, and have continued at intervals down to the present time. The observations will be renewed next spring, with the return of the sun to the marine horizon. Under clear skies and in calm weather the elliptical form of the image of the sun is very evident, so that it seems strange the ancient astronomers did not perceive in this phenomenon an indication of the rotundity of the globe.—A study of the heats of combustion of some acids connected with the series of the oxalic and lactic acids, by M. Louguine. The results of the researches communicated in this memoir have reference to the malonic, succinic, pyrotartaric, suberic, sebacylic, and oxyisobutyric acids. The first five present homologous relations between themselves and with oxalic acid; the last is similarly

connected with lactic acid.—On the freezing-points of the solutions of the organic compounds of aluminium, by MM. E. Louise and L. Roux. The determination of the vapour densities of these substances has led the authors to give them the general formula  $Al_2X_6$ . Their further investigations, here described, have been carried out with a view to determining the value of the molecular weights of the organic compounds of aluminium by Raoult's method based on the lowering of the freezing-points of the solutions. Their new determinations confirm their previous conclusions on the vapour densities, and show that these substances can in no case be represented by the simple formula  $AlX_3$ .—M. E. Picard contributes a paper on Laplace's transformation and linear equations with partial derivatives; and the Perpetual Secretary gives the analysis of a note presented by M. G. Govi on a new method for constructing and calculating the place, position, and size of images given by complex optical systems.

## BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Elementary Commercial Geography: H. R. Mill (Cambridge University Press).—Star Atlas: Dr. H. J. Klein, translated by E. McClure (S.P.C.K.).—Reports on the Mining Industries of New Zealand (Wellington, N.Z.).—The Illustrated Optical Manual, 4th edition: Sir T. Longmore (Longmans).—British Birds, August, September, and October: H. Saunders (Gurney and Jackson).—British Dogs, No. 24: H. Dalziel (U. Gill).—The Speaking Parrots, Part 6: Dr. K. Russ (U. Gill).—Elementary Statics: Rev. J. B. Lock (Macmillan).—Chemical Notes and Equations, 3rd edition: R. M. Murray (MacLachlan and Stewart, Edinburgh).—Catalogue of the Fishes in the Collection of the Australian Museum, Part 11: Recent Palæozoic Fishes: J. D. Ogilby (Sydney).—Three Formations of the Middle Atlantic Slope: J. M. McGree.—Zeitschrift für Wissenschaftliche Zoologie, xlvii. Band, 2 Hef (Williams and Norgate).—Bulletin de l'Académie Royale des Sciences de Belgique, No. 8 (Bruxelles).

## CONTENTS.

	PAGE
Applications of Dynamics to Physics and Chemistry	585
Recent Works on Ornithology. By Prof. R. Bowdler Sharpe	587
Our Book Shelf:—	
Aveling: "Mechanics"	587
Smith: "Solutions of the Examples in an Elementary Treatise on Conic Sections"	588
"The Beginner's Guide to Photography"	588
Letters to the Editor:—	
Prophetic Germs.—Prof. E. Ray Lankester, F.R.S.	588
A New Australian Mammal.—E. C. Stirling	588
Nomenclature of Determinants.—Dr. Thomas Muir	589
A Shadow and a Halo.—B. W. S.; A. S. Eve	589
Nesting Habit of the House Sparrow.—G. L. Grant	590
Sonorous Sands.—D. Pidgeon	590
A Shell-Collector's Difficulty.—D. Pidgeon	590
Yorkshire Geological and Polytechnic Society.—James W. Davis	590
Modern Views of Electricity. XI. (Illustrated.)	
By Prof. Oliver J. Lodge, F.R.S.	590
Present Position of the Manufacture of Aluminium	592
The Queen's Jubilee Prize Essay of the Royal Botanic Society of London	594
The Zodiacal Light. (Illustrated.) By O. T. Sherman	594
Chemistry at the British Association	595
Geology at the British Association	596
Notes	597
Our Astronomical Column:—	
The Solar Parallax from Photographs of the Last Transit of Venus	600
The Markings on Mars	601
Astronomical Phenomena for the Week 1888	
October 21-27	601
Geographical Notes	601
Notes on Meteorites. V. (Illustrated.) By J. Norman Lockyer, F.R.S.	602
Dr. Janssen on the Spectrum of Oxygen	605
The Growth of Root-Crops	605
Fletcher's Compressed Oxygen Furnace. (Illustrated.)	606
Forest Conservancy in Ceylon	606
University and Educational Intelligence	607
Scientific Serials	607
Societies and Academies	607
Books, Pamphlets, and Serials Received	608