

that various effects were obtained by making two glasses act on each other. In one case of interior twisted marbling, e.g., a yellowish glass (charged with iron protoxide) reddened only at its contact with the enveloping mass of greenish-blue glass (copper-oxide). In another case (parallel marbling), each pellicle of yellow glass is reddened at its two faces. M. Henrivaux has adopted a similar method at St. Gobain.

September 16.—M. Des Cloizeaux, President, in the chair.—On an adynamic gyrostatic constitution for the ether, by Sir William Thomson. He describes a system of small spheres, connected by rods, with terminal cups moving on the spheres, and, at their middle part, two gyroscopes, with outer rings at right angles to each other.—On an application of the electric transmission of force, made at Bourgneuf, by M. Marcel Deprez. Further details are given of the system, which has worked well since May. The high tension generator, driven by a turbine, has two rings on one shaft, excited by two rectilinear inductors parallel to the axis, having the four poles quite free. The receiver is similar. The machines for light are of the Gramme type; and with a line resistance of 23 ohms, about 50 per cent. of the force imparted to the generator is recovered in light.—Determination of the microbe producing contagious peripneumonia of the ox, by M. S. Arloing. Of the four he describes, he finds the *Pneumobacillus liquefaciens* (as he calls it) the essential element in the virus.—Observations of Brooks's comet and its companion, at Algiers Observatory, by M. Rambaud.—On the occultations of Jupiter's satellites, by M. Ch. André. With three different telescopes at Lyons, the time of contact determined differed to the extent of 2½ minutes; immersion being noted earlier, and emersion later, with the smaller instrument; also the apparent complete visibility of the satellite, continued after contact (as others have observed), is referred to. This is thought to be due to a zone of diffracted light, spread by the object-glass round the geometrical image of the planet, covering the focal image of the satellite.—On the calculations of Maxwell, relative to movement of a rigid ring round Saturn, by M. O. Callandreau.—On the heat of vaporization of carbonic acid near the critical point, by M. E. Mathias. He uses the heat of dilution of sulphuric acid in the water of the calorimeter, as a compensating source of heat, and finds Clapeyron's formula satisfactorily verified. At the critical point the latent heat, *L*, is rigorously *nil*.—On the use of the new Edison phonograph as a universal acoumeter, by M. Lichtwitz. With it, one may form *phonograms*, to serve as acoustic scales, with vowels, consonants, syllables, words and phrases, &c., according to their intensity and acoustic value (as determined by O. Wolf). The sound-source being nearly constant, could be used to compare the hearing of different patients, or the same patient at different times. A set of uniform phonograms could be got by placing phonographs at a fixed distance from a reproducing instrument. Thus aurists in all countries could compare results.—Catadioptric objectives applied to celestial photography, by M. Ch. V. Zenger. Two correction lenses of magnesium glass, of the same focal length, one concave and the other convex, are inserted, the focal length of the system being identical with that of the spherical mirror. The time of exposure is reduced to a third or a quarter, for stars of a given size.—Some supplementary thermal data, by M. J. Ossipoff. Thermal formation of salts of phenylene diamines, by M. Léo Vignon. Comparing the heat of neutralization of the three diamines by hydrochloric acid, he finds orthophenylene diamine to show less than the meta isomer; which, again, shows less than the para. The bisubstituted derivatives of benzene studied by Berthelot and Werner present a similar case.—On the alcoholic fermentation of honey and the preparation of hydromel, by M. G. Gastine. Solutions of honey generally give but poor alcoholic fermentation. The author verified an idea that this is because the ferments, in a medium so poor in mineral and azotized matters, miss the conditions necessary to their evolution.—Physiological action of the poison of the terrestrial salamander, by MM. Phisalix and Langlois. The characteristic symptom is convulsion; and the poison acts successively on the cortical, bulbar, and medullary cells. Temperature rises rapidly, and dyspnoea occurs, followed by asphyxia. Arterial tension is increased.—Cyclone of Jougne, on July 13, 1889, by M. Ch. Dufour. This appeared at 1.15 p.m., on a very hot, calm, cloudy day, in the canton of Doubs, and tore along eastwards 6 km., with a rattle like thunder, lasting two to three minutes. Of many trees uprooted, those at the outset lay mostly east to west; those further on, mostly west to east. The width of region devastated grew from 100 to 250 metres. The

intensity seems to have varied in this space, and to have been greater on the right than on the left side (probably through the velocity of translation being added to that of gyration in the former case). Curiously, the weather changed at the time of the cyclone, from dry and warm to cold and wet.

STOCKHOLM.

Royal Academy of Sciences, September 11.—A new arrangement of the species of the cod-fishes, by Prof. A. F. Smitt.—On types of weather-maps, and on the latest dispositions as to the circulation of the meteorological observations of the Meteorological State Institute to the public in general, by Prof. R. Rubenson.—On the genus *Prisciturben*, Kunth, by Prof. G. Lindström.—Analytic construction of the integrals of a linear homogeneous differential equation of a circular ring, which does not include any singular place, by Prof. G. Mittag-Leffler.—Analytic construction of the invariants of a linear homogeneous differential equation, by the same.—Contribution to the history of the mathematical studies in Sweden during the sixteenth century, by Dr. G. Eneström.—On the constitution of the cumenyl-propin-acid, by Prof. O. Widman.—On hydro-canel-carbon-acid and some of its derivatives, by the same.—A contribution to the question of the readjustment of the atoms within the propyl group, by the same.—Derivatives of the ortho-amid-benzyl-alcohol, by Prof. Widman and Dr. Söderbom.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Hints to Travellers, 6th Edition (Royal Geographical Society).—Travels in France by Arthur Young during the Years 1787, 1788, and 1789: M. Betham-Edwards (Bell).—Contributions to Canadian Palaeontology, vol. i. Part 2: J. F. Whiteaves (Montreal).—The Fauna of British India, including Ceylon and Burma; Fishes, vol. ii.: F. Day (Taylor and Francis).—The Hand-book of Jamaica for 1889-90 (Stanford).—A Treatise on Analytical Mechanics; vol. ii., Dynamics of a Material System, 2nd edition: B. Price (Oxford, Clarendon Press).—Animal Biology, 2nd edition: C. Lloyd Morgan (Rivingtons).—Notes on the Pinks of Western Europe: F. N. Williams (West).—Simple Shorthand: W. Heather (Groombridge).—The Birds in my Garden: W. T. Greene (R.T.S.).—First Mathematical Course (Blackie).—An Elementary Text-book of Geology: W. J. Harrison (Blackie).—On the Motion of the Heart and Blood in Animals: W. Harvey; Willis's Translation, revised and edited by A. Bowie (Bell).—The Rotifera or Wheel-Animacules; Supplement: C. T. Hudson and P. H. Gosse (Longmans).—The British Moss-Flora. Part 12: R. Braithwaite (published by the Author).—A Monograph of the Horny Sponges: R. von Lendenfeld (Trübner).—Records of the Geological Survey of New South Wales, vol. i. Part 2, 1889 (Sydney, Potter).

CONTENTS.

PAGE

The Tertiary Flora of Australia. By J. Starkie Gardner	517
Our Book Shelf:—	
Rankine: "Useful Rules and Tables"	517
Whitmill: "Colour"	518
Letters to the Editor:—	
Sailing Flight of Large Birds over Land.—S. E. Peal	518
Bishop's Ring and Allied Phenomena.—T. W. Backhouse	519
Observations of Twilight and Zodiacal Light during the Total Eclipse of the Sun, December 21, 1889. (With Diagrams.) By Prof. Cleveland Abbe	519
The British Association:—	
Section D (Biology).—Opening Address by Prof. J. S. Burdon Sanderson, M.A., M.D., LL.D., F.R.SS.L. and E., President of the Section	521
Section H (Anthropology).—Opening Address by Prof. Sir William Turner, M.B., LL.D., F.R.SS.L. and E., President of the Section	526
Reports	533
Notes	536
Our Astronomical Column:—	
Comet 1889 e (Davidson)	538
Astronomical Phenomena for the Week 1889	
September 29—October 5	538
Geographical Notes	539
Societies and Academies	539
Books, Pamphlets, and Serials Received	540