

and a few hundred yards ahead the squall was seen approaching. The sea was elsewhere covered with full-sized waves, but under the influence of the hurricane it became one dead-level of creamy foam, the top of every wave being swept off into spray as soon as it arose. When the squall struck the vessels the thermometer fell at once from 81° to 53°; torrents of rain swept the decks, accompanied with continuous thunder and lightning. After two hours the wind changed into a gale from the south-east, followed by a calm. It was noticed that the barometer was unaffected till the last moment, but as soon as the storm arrived it rose two-tenths of an inch, and fell again as it passed over. The electrical instruments, although of the most sensitive character, were not at all affected during the storm. The other papers read were "On the Meteorology of Southland, New Zealand, in 1871," by Mr. C. R. Martin, and "On a Self-registering Tide-gauge and Electrical Barograph," by Mr. H. C. Russell, B.A., Government Astronomer, Sydney.

PARIS

Academy of Sciences, Nov. 18.—M. Faye, president, in the chair.—The meeting commenced with another instalment of the ferment controversy, M. Pasteur rising and objecting to M. Fremy's remarks as reported in the *Comptes Rendus* of the last meeting. M. Bouillaud followed, expressing his regrets that M. Pasteur's proposition with regard to the experiments had not been acceded to. M. A. Trécul then rose, and regretted that certain words which had appeared in the same number had not been uttered at the meeting. He then read a note criticising M. Pasteur's remarks at that meeting. The discussion then dropped, and M. Tresca read a note on the best form for the international standard meters. He proposes a section like the letters H or X.—M. Bouillaud then read a paper on the theory of the production of animal heat.—M. F. Perrier read a paper on the prolongation of the French meridian into the Sahara by means of the trigonometrical junction of Algiers with Spain.—The next paper was by M. Jeannel on the natural production of nitrates and nitrites. Among other conclusions the author arrives at this, that "calcareous humus" in drying determines the combination of the elements of the air.—M. Max Marie presented the concluding paper of his series on the elementary theory of integrals of any order and their periods, after which followed a paper on a new method of analysis founded on the use of imaginary co-ordinates, by M. F. Lucas.—M. C. Dareste presented his fifth paper on the osteological types of osseous fishes.—"Studies on the ventilation of transports" was a paper by M. E. Bertin, giving the results of some experiments on ventilation made on board the *Calvados* and *Garonne*, transports. The apparatus used, worked by the waste heat of the furnaces, evacuated 35,000 cubic metres of air per hour from the lower decks.—Notes on the *Phylloxera* were received from M. Saint-Pierre and M. Loarer. The former has found the insects on the wild vines of Vaulcuse known as *lambrusques*, and hence considers that the general opinion that this disease is the result of cultivation is erroneous. Both letters were sent to the *Phylloxera* Commission, and notes from M. F. Barilla on a remedy for cholera, and M. G. Fabretti on the transmission of infectious miasmata were sent to that appointed to administer the Bréant legacy.—A note from M. Curral on the realisation of perpetual motion in the planetary system was submitted to the examination of M. Phillips, while a note from M. Andru on the quadrature of the circle was, in accordance with a very old rule of the Academy, considered as not received.—M. Serret then presented a note on the planetoid 116 Sirona, by M. F. Tisserand.—M. J. Bourget's Memoir on the Mathematical Theory of Kundt's acoustic experiments followed, after which came a note on "Magnetic Energy" by M. A. Cazin.—M. E. Becquerel next presented a note on the multiplicity of images, and the theory of accommodation, a paper on optical physiology, by M. F. P. Le Roux.—M. Sainte-Claire Deville then communicated an account of M. Cailletet's researches on liquid carbonic anhydride and M. F. Pisani's description and analyses of a new silver amalgam from Konsberg in Norway.—M. Becquerel presented M. Aug Guerot's researches on the action of sulphurous anhydride on recently precipitated insoluble sulphides. The author finds that a hyposulphite is the result of the reaction which takes place in three successive stages, these are the formation of a sulphite and hydrosulphuric acid, the decomposition of the latter, and of the sulphurous anhydride into sulphur and water, and the combination of this sulphur, whilst in the nascent state, with the sulphite formed at first.—A note on the geographical distribution of the *Percina* by M. Léon Vaillant came next; and then M. A. Gaudry's note on a tooth of *Elephas*

*primigenius* from Alaska. The tooth contained as much as 23.97 per cent. of organic matter.—Next came M. A. Laboulbène's paper on the elevation of central temperature in cases of acute pleurisy, on the abstraction of the liquid from the pleura, the temperature rose from 0°2 to 0°3 C. after the operation.—M. Béchamp followed with observations on M. Pasteur's paper, in which he stated that the wine ferment came from the grape skin.

BOOKS RECEIVED.

ENGLISH.—How I found Livingstone in Central Africa: H. M. Stanley (Sampson Low and Co.).—A Report on the Expedition to Western Yunnan, *viz* Bhamo: Dr. Anderson, Calcutta.—Mineral Phosphates and Pure Fertilisers: C. Morfit (Trübner).—The Physiology of Man; Nervous System: A. Flint (Appleton and Co.).—Elements of Zoology: Andrew Wilson (A and C. Black).—Small Pox and Vaccination: Dr. C. Both (Trübner).  
FOREIGN.—Beiträge zur Biologie der Pflanzen; Dr. F. Cohn, Heft II.

DIARY

THURSDAY, DECEMBER 5.  
ROYAL SOCIETY, at 8.30.—On the Colouring Matters derived from Aromatic Azodiamines. 2. Safranine: Dr. Hofmann, F.R.S., and Dr. Geyger.—Synthesis of Aromatic Monamines, by intra-molecular atonic interchange: Dr. Hofmann, F.R.S.—Investigation of the Attraction of a Galvanic Coil on a small Magnetic Mass: J. Stuart.  
SOCIETY OF ANTIQUARIES, at 8.30.—On Certain Prevailing Errors respecting French Chambered Barrows: Rev. W. C. Lukis, M.A.  
LINNEAN SOCIETY, at 8.—On the Skeleton of the *Apteryx*: Thomas A. Allis.—On New and Rare British Spiders: Rev. O. P. Cambridge, M.A.  
CHEMICAL SOCIETY, at 8.—On the Reducing Power of Phosphorous and Hypophosphorous Acids and their Salts: Prof. C. Rammelsberg.—On Hypophosphites: Prof. C. Rammelsberg.—On New Analyses of some Mineral Arseniates and Phosphates: Prof. A. H. Church.  
FRIDAY, DECEMBER 6.  
GEOLOGISTS' ASSOCIATION, at 8.—On Coal Seams in the Permian at Ifon, Shropshire, with Remarks on the Supposed Glacial Climate of the Permian Period: D. C. Davies.—Note on a Well Section at Finchley: Caleb Evans.  
SUNDAY, DECEMBER 8.  
SUNDAY LECTURE SOCIETY, at 4.—On Arctic Experience; with a description of the Esquimaux; John Rae, M.D.  
MONDAY, DECEMBER 9.  
ROYAL GEOGRAPHICAL SOCIETY, at 8.30.  
TUESDAY, DECEMBER 10.  
LONDON INSTITUTION, at 4.—On Elementary Physiology: Prof. Rutherford.  
PHOTOGRAPHIC SOCIETY OF LONDON, at 8.—Landscape Photography: F. C. Earl.—A New Actinometer: J. R. Johnson.  
WEDNESDAY, DECEMBER 11.  
SOCIETY OF ARTS, at 8.—On Galvanic Batteries: Rev. H. Highton.  
THURSDAY, DECEMBER 12.  
ROYAL SOCIETY, at 8.30.  
SOCIETY OF ANTIQUARIES, at 8.30.  
LONDON MATHEMATICAL SOCIETY, at 8.—On Geodesic Lines, especially those of a Quadric Surface; and on the Mechanical Description of certain Quartic Curves by a modified Oval Chuck: Prof. Cayley.—Note on the breaking up of the Inharmonic-ratio Sextic: J. J. Walker.

CONTENTS

	PAGE
THE COMETARY STAR-SHOWER. By Prof. A. S. HERSHEL, F.R.S.	77
FERMENTATION AND PUTREFACTION, II. By Prof. WYVILLE THOMSON, F.R.S.	78
THE FINDING OF LIVINGSTONE. (With Illustration.)	81
OUR BOOK SHELF	83
LETTERS TO THE EDITOR:—	
Ipecacuanha Cultivation at Kew.—G. KING, F.L.S.	83
Great Meteoric Shower (With Diagram).—REV. S. J. PERRY, F.R.S.; A. W. SCOTT; REV. H. H. HIGGINS; E. V. PIGOTT; J. CURRY; W. F. DENNING, F.R.S.; T. FAWCETT; W. SWAN	84
Metamorphosis of Insects.—PROF. P. M. DUNCAN, F.R.S.	86
PRIZES OF THE FRENCH ACADEMY OF SCIENCES	86
MRS. SOMMERVILLE	87
NOTES	87
THE BIRTH OF CHEMISTRY. V. By G. F. RODWELL, F.C.S. (With Illustrations.)	90
ON THE ECLIPSE EXPEDITION, 1871, II. By J. NORMAN LOCKYER, F.R.S.	92
SCIENTIFIC SERIALS	94
SCIENCIES AND ACADEMIES	95
DIARY	96
BOOKS RECEIVED	96

ERRATA.—No. 157, p. 549, 2nd col., l. 15: For "2328'3 = 2,250,821,000," read "2328'3 × 2,250,821,000," p. 541, 1st col., l. 14 from bottom: for "absolute certainty" read "supposed absolute certainty." No. 160, p. 47, 1st col., l. 14: for "water-fall" read "water falling."