

mathematical theory of dynamical electricity, and a memoir by M. E. Mathieu on the integration of equations to the partial differences of mathematical physics.—M. du Moncel presented some observations relating to a recent communication by M. Ruhmkorff upon some experiments in magneto-electric induction, in which he claimed to have already ascertained and published facts analogous to those of the German author.—M. P. A. Favre read a continuation of his thermic researches upon the electrolysis of the hydracids.—A fifth letter from Father Secchi on the various aspects of the protuberances and other remarkable parts of the surface of the sun was read, in which he describes the results of simultaneous observations made by himself at Rome, and by M. Tacchini at Palermo.—M. Secchi also presented a note on a new method of observing the eclipses and passages of Venus, by means of a spectroscopic apparatus modified by having at a distance of about 20 centimetres in front of the spectroscope, an additional prism having its refringent angle parallel to the fissure.—The chemical papers were as follows:—a theory of simple reactions limited by inverse action, and an application of the same to the transformations of phosphorus, by M. J. Lemoine.—Researches in chemical statics, by M. Sias, containing a discussion of the phenomena which occur in the precipitation of dilute solutions of salts of silver by hydrochloric, hydrobromic, and hydriodic acids, and by chlorides, bromides, and iodides. This paper contains some results of great importance in the analysis of bodies containing silver.—The conclusion of the second part of M. Berthelot's investigation of the ammoniacal salts.—A note on the transformation of glucoses into monatomic and hexatomic alcohols, by M. G. Bouchardat, communicated by M. A. Wurtz. The author acts upon the glucoses by means of an amalgam of sodium. He describes its action upon glucose and sugar of milk.—A note on the hexabromide and hexachloride of silicium, by M. C. Friedel, also presented by M. A. Wurtz; and a note on the method of determining the gases evolved by an explosion of nitroglycerine, by M. L. L'Hôte, presented by General Morin. From the researches of the last-mentioned author it appears that 1 gramme of nitroglycerine produces 284 cub. centim. of gas, containing by volume 45.72 of carbonic acid, 20.36 of binoxide of nitrogen, and 33.92 of nitrogen.—M. Elie de Beaumont called attention to some specimens of native phosphate of lime from Caylux and Cajare, and noticed the importance of these deposits for agricultural purposes. M. Combes also remarked upon this subject.—M. Chapelas presented a note on a remarkable meteor observed during the night of the 19th October.

PHILADELPHIA

Academy of Natural Sciences, May 9.—The President, Dr. Ruschenberger, in the chair.—Prof. Cope demonstrated some anatomical points of importance in the classification of some of the Siluroids of the Amazon, noticing first those which have no swimming-bladder, but having the post-temporal bone pierced in a sieve-like manner, forming minute tympana; these he characterised as *Otocinclus*. Others having huge swim-bladders, gun-boat style of shape. No adipose fin; the back naked. No lyre plate, indicated as *Zathorax*. A third, body protected by bony shields above. No adipose fin; the scapular arch dermo-ossified and lyre-shaped below; indicated as *Physopyxis lyra*. A fourth, shielded all over its sides, with the under lip turned back, genus *Corydoras*. A fifth, where the under lip is separated, except at the ends, forming loops, named *Brochis*. In the sixth, where the lips are separated from the beard distally forming chin beards, indicated as *Dianema*.

May 16.—Dr. Carson, Vice-President, in the chair.—“Remains of Mastodon and Horse in North Carolina.”—Prof. Leidy exhibited two photographs, received from Prof. W. C. Kerr, State Geologist of North Carolina, representing some remains of *Mastodon americanus* found in that State. One of the specimens represented is that of the greater part of the lower jaw of a mature male, retaining both incisor tusks and the last two molar teeth. The latter, with their angular lobes separated by deep angular and nearly unobstructed valleys, are quite characteristic of the species. The incisors are an inch and three-fourths in diameter. The last molar has four transverse pairs of lobes and a well-developed heel. The penultimate molar has three transverse pairs of lobes. The specimen was obtained from gravel overlying the miocene marl near Goldsboro, Lenoir Co., N.C. An isolated last lower molar of the same species, represented in company with the jaw, was obtained in Pitt Co.—Prof. Leidy also exhibited a specimen of an upper molar teeth, which Mr. Timothy Conrad had picked up from a pile of miocene marl at

Greenville, Pitt Co., N.C. He suspected, from its size and intricacy in the folding of the enamel of the islets at the middle of the triturating surface, that the tooth belonged to the post-pliocene *Equus complicatus*, and was an accidental occupant of the miocene marl. It may, however, belong to a Hipparion of the miocene period, but the imperfection of the specimen at its inner part prevented its positive generic determination.

BOOKS RECEIVED

ENGLISH.—A Manual of the Anatomy of Vertebrated Animals: Prof. Huxley (Churchill).—A Synonymic Catalogue of Diurnal Lepidoptera: W. F. Kirby (Van Nostrand).—Description of an Electric Telegraph: Sir Francis Ronald (Williams and Norgate).—Spiritual and Animal Magnetism: Prof. J. G. Zerffi (Hardwicke).—An Elementary Treatise on Statics: J. W. Mulcaster (Taylor and Francis).
 FOREIGN.—(Through Williams and Norgate.)—Verhandlungen des internationalen Congress für Alterthumskunde u. Geschichte zu Bonn.

DIARY

THURSDAY, NOVEMBER 2.

LINNEAN SOCIETY, at 8.—On the Origin of Insects: Sir John Lubbock, Bart., F.R.S.—Notes on the Natural History of the Flying Fish: Capt. Chimmoo.—On a Chinese Gall, allied to the European Artichoke Gall: A. Müller, F.L.S.
 CHEMICAL SOCIETY, at 8.—On Anthraflavic Acid: W. H. Perkin.
 LONDON INSTITUTION, at 7.30.—On Michael Faraday; the Story of his Life: Dr. J. H. Gladstone, F.R.S.

FRIDAY, NOVEMBER 3.

GEOLOGISTS' ASSOCIATION, at 8.—On the Old Land Surfaces of the Globe Prof. Morris.

MONDAY, NOVEMBER 6.

LONDON INSTITUTION, at 4.—On Elementary Physiology (II.): Prof. Huxley, LL.D., F.R.S.
 ANTHROPOLOGICAL INSTITUTE, at 8.—On the Order of Succession of the several Stone Implement Periods in England: J. W. Flower, F.G.S.—Notes on some Archaic Structures in the Isle of Man: A. L. Lewis.

TUESDAY, NOVEMBER 7.

SOCIETY OF BIBLICAL ARCHÆOLOGY, at 8.30.—On the Religious Belief of the Assyrians: H. Fox Talbot.
 HACKNEY SCIENTIFIC ASSOCIATION, at 7.30.—Conversations.
 ZOOLOGICAL SOCIETY, at 9.—Report on Recent Additions to the Society's Menagerie: The Secretary.—On the Recent Ziphid Whales, with a description of the Skeleton of *Bevardius armouxii*: W. H. Flower, F.R.S.—On the Habits of the Nose-horned Viper (*Vipera nasicornis*): Herbert Taylor Ussher, C.M.Z.S.

WEDNESDAY, NOVEMBER 8.

GEOLOGICAL SOCIETY, at 8.—Notes on the Diamond Gravels of the Vaal, in South Africa: G. W. Stow.—On the Geology of the Diamond Fields of South Africa: Dr. John Shaw.—Notes on some Fossils from the Devonian Rocks of the Witzenberg Flats, Cape Colony: Prof. T. Rupert Jones.

THURSDAY, NOVEMBER 9.

LONDON MATHEMATICAL SOCIETY, at 8.—On the Partition of an Even Number into two Primes: J. J. Sylvester, F.R.S.

CONTENTS

	PAGE
RIPPLES AND WAVES By Prof. Sir WILLIAM THOMSON, F.R.S.	1
ALBUPT ON THE OPHTHALMOSCOPE. By Dr. H. POWER	3
OUR BOOK SHELF	4
LETTERS TO THE EDITOR:—	
An Universal Atmosphere.—W. MATTIEU WILLIAMS, F.C.S.	5
Pendulum Autographs.—Geo. S. CARR	6
Exogenous Structures in Coal-Plants.—Prof. W. C. WILLIAMSON, F.R.S.	6
Classification of Fruits.—Dr. MAXWELL T. MASTERS, F.R.S.	6
The Berthou Dynamometer.—Rev. T. W. WEBB, F.R.A.S.	6
New Form of Cloud	7
Spectrum of Blood.—H. C. SORBY, F.R.S.	7
Earthquake in Burmah.—Major CHARLES HALSTED	7
A Plane's Aspect.—Dr. T. A. HIRST, F.R.S.; Dr. C. M. INGLESBY; J. K. LAUGHTON	7
Geometry at the Universities.—RICH'D. A. PROCTOR, F.R.A.S.	7
DEEP-SEA DREDGING IN THE GULF OF ST. LAWRENCE. By J. F. WHITEAVES	8
THE REDD LECTURE AT CAMBRIDGE	9
THE CONJOINT EXAMINATION SCHEME	9
SIR RODERICK MURCHISON. By Prof. Arch. GEIKIE, F.R.S. (With Portrait)	10
HOMOPHONY AND MIMICRY. By ALFRED W. BENNETT, F.L.S.	12
NOTES	12
THE GEGNOSY OF THE APPALACHIAN AND THE ORIGIN OF CRYSTALLINE ROCKS. By Prof. T. STERRY HUNT	15
INSTRUCTIONS FOR OBSERVERS AT THE ENGLISH GOVERNMENT ECLIPSE EXPEDITION, 1871. II.—Polariscope Observations. (With Diagrams.)	18
SCIENTIFIC SERIALS	19
SOCIETIES AND ACADEMIES	19
BOOKS RECEIVED	20
DIARY	20