

Academie des Sciences, July 10.—M. Claude Bernard in the chair. Notification was received of the death of M. Haidinger, the keeper of the great aerolitic collection at Vienna and a correspondent in the section of mineralogy.—The public sitting, which, according to the rules, was held before the secret one, was rather long and interesting. M. Puiseux was unanimously elected a member of the section of geometry (this honour is very seldom paid to any member). M. Puiseux belongs to the scientific staff of the National Observatory. He was much praised many years ago by Cauchy for his calculations on variations of weight and of its effects. He was a contributor to Lionville's *Journal de Mathematiques*.—M. Boussingault described some experiments showing that water is not liable to freeze irrespective of the degree of cold to which it is submitted, as long as it is not allowed to expand in order to change into ice. It is the complement of the celebrated Florentine experiment. M. Boussingault exposed water to -13° Cent. enclosed in strong steel tubes as used for rifled guns, without any congelation taking place. On unscrewing the steel end of the barrel, the congelation was instantaneous. The fluidity of the water was made manifest by small steel spheres, which moved freely inside the guns during the whole process, and would have been stopped by congelation. A very long conversation took place between M. Boussingault and several members who proposed many objections, to which he found ready answers.—M. Saint-Venant read a long report on a memoir presented by M. Maurice Levy on several Equations showing the internal movements of molecules when a ductile body is submitted to external pressure.—M. Faureyron was a French engineer of great reputation, known by the invention of "turbines" or hydraulic wheels. He bequeathed to the Academy a certain sum in the funds to give a 40^l. prize to the best memoir on Practical Mechanics every two years. The Academy appointed a committee of five of its members to draw up a programme for the next competition. The competition is to be open to all, irrespective of nationality and qualification, except to the members of the different French academies.—M. Brown, the astronomer at the celebrated Trevandum Observatory, read a most important note on the "Diurnal Lunar Variation," which he proved has sometimes to exceed the solar variation. The law is illustrated by calculating the maximum. Every day there are two maxima of lunar action. In June, when the moon is on the 6th and 18th horal meridian, in December on the 0th and 12th, and in the intermediate months on the intermediate meridians, according to progressive changes. The excursions are greater when the moon is nearer to us (perigee), and when the passage of the moon to the maximum meridian is by daylight. This difference is very great, the *nocturnal* max. reaching only $\frac{1}{2}$ of *diurnal* max. The law is worth the most serious consideration, as connections between variations of magnetism and temperature are becoming every day more and more frequent. It may lead to the discovery of the lunar influence on meteorology, which discovery will be *initium sapientie*.—M. W. de Fonvielle sent a note discussing certain singular phenomena which were observed in Scotland during the stormy periods of June 18 and July 18. The facts were quoted from the *Scotsman*, an Edinburgh paper. The note was printed in the *Comptes Rendus*. The author is anxious to see if "mirages," as observed on the Isle of Man, can be considered as having been a presage of the stormy weather. He wrote also upon certain accidents, showing that it is dangerous to move metallic objects during thunderstorms. M. Chapelas presented the results of observations made during twenty years (1848-1868) on 39,771 meteors, out of these 23,481 were observed in summer when the nights are short, only 2,145 in winter when the nights are long. The mean direction is S.S.E. The numbers of meteors vary in *inverse ratio* with their magnitude:—1st magnitude 2,497, 2nd magnitude 3,918, 3rd magnitude 7,137, 4th magnitude 8,847, 5th magnitude (an exception to the rule) 8,050, 6th magnitude 9,322 (very slight augmentation). He says, moreover, it shows that falling stars are more frequent in high altitudes. It is true, assuming falling stars to be essentially of the same magnitude, and differing only apparently from distance.

RIGA

Society of Naturalists, February 1.—Prof. Schell discoursed upon the importance of water-levels on the coasts of the Baltic provinces, and described some anemometers.—M. Schroeder communicated a notice relating to the avifauna of the Baltic provinces, in which he mentioned several species to be struck out of or added to the previously published lists. He

made the total number of species, 272.—Baron F. Hoyningen-Huene communicated a continuation of his phenological observations, during the year 1870, containing a report on natural phenomena observed from March to October.

PHILADELPHIA

American Philosophical Society, April 1.—Prof. Cope made remarks on the Vertebrata obtained in the Port Kennedy bone cave by Chas. M. Wheatley, stating the number of species to be forty-two. The Mammalia were referred to orders, as follows:—Edentata, 6 species; Rodentia, 14; Insectivora, 1; Chiroptera, 1; Ungulata, 8; Carnivora, 4; total, 34, of which about half are new to science. Birds and Reptiles, 8 species. He made remarks on the nature and origin of the post-pliocene fauna, the origin of the caves, and possible topographical history of the country in that connection.—Pliny E. Chase read a paper on "Resemblances between Atmospheric, Magnetic, and Ocean Currents."—Lieut. Dutton presented some views on regional subsidence and elevation, and mentioned the physical changes produced by the metamorphism of rocks as an agent in changing the contour of the earth's surface. The obliteration in specific gravity produced by change of chemical constitution of interior rock strata was an important cause of the elevations and subsidence of the earth's crust, generally overlooked.

BOOKS RECEIVED

ENGLISH.—Our Sister Republic; a Gala Trip through Mexico in 1869-70 (Trübner and Co.).

FOREIGN.—(Through Williams and Norgate)—Medizinische Jahrbücher: S. Stricker, &c., vols. 1 and 2.—Naturwissenschaftliche Vorträge: J. R. Mayer.

PAMPHLETS RECEIVED

ENGLISH.—National Health: H. W. Acland, M.D.—How to Live on 6d. a Day: Dr. Nichols.—A Sanitary Inquiry: R. Weaver.—Art and Religion: J. Gilbert.—The Universal (change in Natural Elements: R. Mansill.—Fauna Perthensis, part 1: Lepidoptera: F. Buchanan White, M.D.—Proceedings of the Liverpool Field Club for 1870-71.—Transactions of the Chemical Society of Newcastle-on-Tyne, vol. 1, for 1868-71.—Mechanical Building: G. Ryland.—Proceedings of the Geologists' Association for 1870.—A Key to the Natural Orders of British Flowering Plants: T. Baxter.—Natural History Transactions of Northumberland and Durham, vol. iv., part 1.—The Manufacture of Russian Sheet-Iron: J. Percy, M.D.—The Quarterly Weather Report of the Meteorological Office.—Transactions of the Norfolk and Norwich Naturalists' Society, 1870-71.—Papers on the Cause of Rain, &c.: G. A. Rowell.

AMERICAN.—Report of the Committee on Building Stores to the Board of Capitol Commissioners of the State of Iowa: Prof. Hinrichs.—The School Laboratory of Physical Science: Prof. G. Hinrichs.—The Principles of Pure Crystallography: Prof. G. Hinrichs.—Third Annual Report on the Noxious, Beneficial, and other Insects of the State of Missouri: C. V. Riley.—Bulletin of the Museum of Comparative Zoology at Harvard College, vol. iii, No. 1.—Preliminary Report on the Vertebrata discovered in the Port Kennedy Bone-Cave: Prof. E. D. Cope.

FOREIGN.—L'Académie des Sciences pendant le siège de Paris: G. G. de Caux, Paris.—Bulletin de l'Académie Imp. des Sciences de St Petersburg, vol. xv., No. 17-31, vol. xvi., No. 1-4.—Ricerche sulla propagazione dell' elettricità nei liquidi: Dr. D. Macaluso, Palermo.

CONTENTS

	PAGE
THE NEWCASTLE-UPON-TYNE COLLEGE OF PHYSICAL SCIENCE . . .	277
PERCY'S METALLURGY OF LEAD . . .	218
NEWMAN'S BRITISH BUTTERFLIES. By W. S. DALLAS, F.Z.S. (<i>With Illustrations.</i>) . . .	219
OUR BOOK SHELF . . .	220
LETTERS TO THE EDITOR:—	
Cotteau's "Echnides de la Sarthe."—A. AGASSIZ . . .	220
Mr. Howorth on Darwinism.—A. R. WALLACE, F.Z.S.; Dr. L. S. BEALE, F.R.S.; T. TYLER; Dr. J. ROSS; B. T. LOWNIE, F.R.C.S. . . .	221
Recent Neologisms.—A. R. WALLACE, F.Z.S. . . .	222
Fertilisation of the Bee Orchis.—A. W. BENNETT, F.L.S. . . .	222
Saturn's Rings.—R. A. PROCTOR, F.R.A.S. . . .	223
Ocean Currents.—J. K. LAUGHTON . . .	223
Formation of Flints.—M. H. JOHNSON, F.G.S. . . .	223
Affinities of the Sponges . . .	224
Sun-Spots.—T. PERKINS . . .	224
EDOUARD KENE CLAPAREDE . . .	224
ALEXANDER KEITH JOHNSTON, LL.D. . . .	225
PAPERS ON IRON AND STEEL. V.—The Bessemer Process. By W. MATTIEU WILLIAMS, F.C.S. . . .	226
THE CAUSE OF LOW BAROMETER IN THE POLAR REGIONS AND IN THE CENTRAL PART OF CYCLONES. By W. FERREL . . .	226
RECENT MOA REMAINS IN NEW ZEALAND. II. By Dr. JAMES HECTOR, F.R.S. . . .	228
NOTES . . .	228
ON THE RECENT SOLAR ECLIPSE. By J. NORMAN LOCKYER, F.R.S. . . .	230
SCIENTIFIC INTELLIGENCE FROM AMERICA . . .	233
SCIENTIFIC SERIALS . . .	233
SOCIETIES AND ACADEMIES . . .	234
BOOKS AND PAMPHLETS RECEIVED . . .	236

ERRATUM.—Vol. IV. p. 203, first column, line 27, for "503° C." read "50° C."