

—Dr. Maddox's paper on the structure of Spermatozoa was postponed until the next meeting in consequence of the lateness of the hour.

## PARIS.

**Academy of Sciences, November 3.**—M. Duchartre in the chair.—Notice of the works of M. Pierre de Tschihatchef, by M. Daubrée. M. de Tschihatchef died at Florence on October 13. He was born at St. Petersburg in 1815, and elected a correspondent of the Academy in the Geographical Section when about thirty years of age. An account is given of his many scientific works.—A photo-chronographic apparatus that may be used to analyze every kind of motion, by M. Marey. A photographic film is caused to move across the focus of the lens of a camera. The motion is imparted by an electric motor, and with the arrangement described the film may be arrested fifty times a second for the production of as many views of the object being photographed. A plate giving six views of a trotting horse accompanies the note.—On the relation of gangrenous septicæmia to lock-jaw, with special reference to the associations of virulent microbes, by M. Verneuil. From a series of surgical and chemical experiments, the author is led to believe that the co-existence in man of certain forms of mortification and lock-jaw is not accidental, but results from the simultaneous production in the wounds of two microbes well known to Pasteur and Nicolaïer.—On the movements of a double cone, by M. A. Mannheim.—On the periodic functions of two variables, by M. Appell.—On a particular case of Lamé's equation, by M. V. Jamet.—Undulatory pressures produced by the combustion of explosives in a closed vessel, by M. Vieille.—On Bunsen's photometer, by M. R. Boulouch.—The rotation of the earth on its axis produced by the electro-dynamic action of the sun, by M. Ch. V. Zenger. The author has caused a hollow sphere to rotate under the action of the two poles of a Wimshurst machine, and thence argues that the planetary motions in our solar system have an electro-dynamic origin.—Action of borax in alkaline developing baths, by M. P. Mercier.—On the affinities of iodine in the dissolved state, by MM. Henri Gautier and Georges Charpy. The authors have studied the chemical behaviour of solutions of iodine in different media. Shaking the solutions with a lead amalgam, they find the colours of the mixture of iodides obtained in each case—that is, the proportions of the iodides of lead and mercury respectively—depend on the kind of solution employed.—On the  $\gamma$ -cyanoacetoacetic ethers and the hydrochlorides of the corresponding imides, by MM. A. Haller and A. Held.—Researches on the conditions of the reactions of the isopropylamines: limit to the production and development of propylene, by MM. H. and A. Malbot. The authors have studied (1) the action of isopropyl iodide on very concentrated aqueous ammonia in equi-molecular proportions, at the ordinary temperatures; (2) the same at  $100^\circ$ ; (3) the same above  $100^\circ$ ; (4) the action of isopropyl chloride upon aqueous ammonia at  $140^\circ$ . From the results of experiment, they have summarized their conclusions as to the character of these reactions between aqueous ammonia and isopropyl iodide and isopropyl chloride.—The Hanne-ton parasite, by M. Le Mout. —On certain formations on copper and bronze, by M. Raphael Dubois. The author has observed and studied some white mycelium flakes, very similar to those of *Penicillium* and *Aspergillus*, in solutions of concentrated copper sulphate neutralized by ammonia and used for the immersion of the gelatine plates employed in photogravure. Similar formations have been observed on bronze.—On some rocks from the Lunain valley, supposed to have been used to polish stone implements in Neolithic times, and on the action of water in the Stone Age, by M. Armand Viré.—On the formation of abrupt escarpments of earth that interrupt the slope of valleys in the north of France, where they are known as *rideaux*, by M. A. de Lapparent.—Experimental contribution to the history of the dendrites of manganese, by M. Stanislas Meunier.

## DIARY OF SOCIETIES.

## LONDON.

## THURSDAY, NOVEMBER 13.

**MATHEMATICAL SOCIETY, at 8.**—The Influence of Applied on the Progress of Pure Mathematics: the President.—Spherical Harmonics of Fractional Order: R. A. Sampson.—Proofs of Steiner's Theorem relating to Circumscribed and Inscribed Conics: Prof. G. B. Mathews.—On an Algebraic Integral of Two Differential Equations: R. A. Roberts.—Some Geometrical Theorems: Osher Ber.

**INSTITUTION OF ELECTRICAL ENGINEERS, at 8.**

NO. 1098, VOL. 43]

## FRIDAY, NOVEMBER 14.

**PHYSICAL SOCIETY, at 5.**—On Certain Relations existing among the Refractive Indices of some of the Chemical Elements: Rev. T. Pelham Dale.—Tables of Spherical Harmonics, with Examples of their Practical Use: Prof. Perry, F.R.S.

**ROYAL ASTRONOMICAL SOCIETY, at 8.**

**AMATEUR SCIENTIFIC SOCIETY, at 8.**—Geological Travels in France, Spain, and Algeria: G. F. Harris.

## SUNDAY, NOVEMBER 16.

**SUNDAY LECTURE SOCIETY, at 4.**—Captain John Smith, the Heroic Pioneer of English Colonization in America: Willmott Dixon.

## TUESDAY, NOVEMBER 18.

**ZOOLOGICAL SOCIETY, at 8.30.**—A Catalogue of the Reptiles and Batrachians of Barbary (Morocco, Algeria, Tunisia), based chiefly upon the Notes and Collections made in 1880–84 by M. Fernand Lataste: G. A. Boulenger.—Remarks on the Chinese Alligator: G. A. Boulenger.—On some New Species and Two New Genera of Araneidea: Rev. O. P. Cambridge, C.M.Z.S.—On some Upper Cretaceous Fishes of the Family Aspidorhynchidae: A. Smith Woodward.

**ROYAL STATISTICAL SOCIETY, at 7.45.**—Inaugural Address: Dr. Frederic John Mouat, President.

**INSTITUTION OF CIVIL ENGINEERS, at 8.**—Steam on Common Roads: John McLaren. (Discussion.)—The Vibratory Movements of Locomotives: Prof. J. Milne, F.R.S., and John McDonald.

## THURSDAY, NOVEMBER 20.

**ROYAL SOCIETY, at 4.30.**—The following papers will *probably* be read:—On the Determination of the Specific Resistance of Mercury in Absolute Measure: Prof. J. V. Jones.—The Spectroscopic Properties of Dust: Profs. Living and Dewar, F.R.S.—On the Specific Heats of Gases at Constant Volume; Part I., Air, Carbon Dioxide, and Hydrogen: J. Joly.—Magnetism and Recalescence: Dr. Hopkinson, F.R.S.

**CHEMICAL SOCIETY, at 8.**—Ballot for the Election of Fellows.—The Estimation of Cane-Sugar: C. O'Sullivan and F. Tompson.—New Method of Determining Specific Volumes of Liquids and their Saturated Vapours: S. Young.

**LINNEAN SOCIETY, at 8.**

**ZOOLOGICAL SOCIETY, at 4.**

## SATURDAY, NOVEMBER 22.

**ROYAL BOTANIC SOCIETY, at 3.45.**

## CONTENTS.

## PAGE

The Cure of Consumption . . . . .	25
Clerk Maxwell's Papers. By the Right Hon. Lord Rayleigh, F.R.S. . . . .	26
Sap . . . . .	27
Indoor Games. By W. . . . .	28
Our Book Shelf:—	
Potts and Sargent: "Elementary Algebra" . . . . .	28
Stewart: "Heat and Light Problems" . . . . .	28
"Annalen des k.k. naturhistorischen Hofmuseums, Wien" . . . . .	28
Hall: "Exercises in Practical Chemistry" . . . . .	29
Blanford: "An Elementary Geography of India, Burma, and Ceylon" . . . . .	29
Letters to the Editor:—	
Araucaria Cones.—Dr. A. Irving; John I. Plummer; E. Brown . . . . .	29
Squeaking Sand <i>versus</i> Musical Sand.—Prof. H. Carrington Bolton . . . . .	30
Honeycomb Appearance of Water.—J. Shaw . . . . .	30
On the Soaring of Birds.—G. W. H. . . . .	30
A Bright Green Meteor.—J. P. Maclear . . . . .	30
Weighing by a Ternary Series of Weights.—J. Willis . . . . .	30
The Cell Theory, Past and Present. II. By Sir William Turner, F.R.S. . . . .	31
The Laboratory of Vegetable Biology at Fontainebleau. ( <i>Illustrated.</i> ) . . . . .	37
Benjamin Franklin . . . . .	39
Notes on the Habits of some Common English Spiders. By Prof. C. V. Boys, F.R.S. . . . .	40
Notes . . . . .	42
Our Astronomical Column:—	
Measures of Lunar Radiation . . . . .	44
The Star D.M. + $33^\circ 47'$ . . . . .	45
The Nyassaland Region . . . . .	45
The Botanical Mythology of the Hindoos . . . . .	46
University and Educational Intelligence . . . . .	47
Societies and Academies . . . . .	47
Diary of Societies . . . . .	48