

"On the geodesic lines of surfaces of opposite curvatures," by M. H. Poincaré.—Observations on the new Perrine comet (1897, October 16), made at the Observatory of Paris, by M. G. Bigourdan.—Observations of the same comet made at the Observatory of Toulouse, by M. F. Rossard.—On the deformation of quadrics, by M. C. Guichard.—On systems completely orthogonal in space of  $n$  dimensions, and on the reduction of more general differential systems, by M. Jules Drach.—On Weingarten surfaces, by M. A. Pellet.—On a new method of reducing the time of exposure in radiography, by M. Gaston Ségué.—A thin glass plate is coated on both sides with an emulsion of gelatino-silver bromide, and allowed to dry. This is then enclosed between two flexible screens, formed by M. Becquerel's calcium violet in suspension in celluloid, and the whole pressed together between cards. A photograph of the thorax, using a six-inch coil, with thirty seconds' exposure, was completely satisfactory, every detail being shown with great clearness.—On a new bianodic bulb, with a red phosphorescence. The glass of the bulb is tinged with didymium chloride. The fluorescence is red instead of green, giving twice as much of the X-rays as ordinary glass. The effects on the screen are very brilliant, and can be seen by persons colour-blind to green.—Researches on saline solutions; lithium chloride, by M. Georges Lemoine. Thermal data, showing the heat of dilution of solutions of lithium chloride in water, methyl and ethyl alcohols.—On some basic salts of magnesium, by M. Tassilly. The preparation and properties of the oxybromide  $MgBr_2 \cdot 3MgO \cdot 12H_2O$  is described.—The separation and direct estimation of chlorine and bromine in a mixture of alkaline salts, by MM. H. Baubigny and P. Rivals. The separation is effected by potassium permanganate in presence of a large excess of copper sulphate. Analytical results are given, showing the trustworthiness of the method under varying conditions.—On some combinations of metallic acetates with phenylhydrazine, by M. J. Moitessier. Double salts are formed with phenylhydrazine by the acetates of zinc, cadmium, manganese, cobalt, and nickel.—The methods of estimating diabetic sugar, by M. Frédéric Landolph. A comparison of the results obtained in the estimation of diabetic sugar by the polariscopic, fermentation, and copper reduction methods, showed that only the optical can be depended upon.—Optical and reducing power of the flesh of flies, by the same.—Action of the X-rays upon the cutaneous evaporation, by M. L. Lecerle. In the rabbit, the evaporation of a given portion of the skin can be almost completely suppressed, and the effects continue for some time after the exposure. On the human hand, evaporation is somewhat checked, but the action is fugitive, and the evaporation rapidly recovers its original value.—On yellow fever, by M. le Dr. Domingos Freire. A description of the habits and mode of growth of the bacillus, *Micrococcus xanthogenicus*. Attenuated cultures of this bacillus, injected into animals and man, produce a mild form of yellow fever, which confers immunity from the disease. Since 1883 some 13,000 persons have been inoculated, of all ages and nationalities. The subsequent mortality from yellow fever, in spite of violent epidemics which have raged, has not exceeded six per thousand.—Observations on the circulation of the Amphictenia, by M. Pierre Fauvel.—On the differentiation and development of the woody elements, by M. L. Jules Léger. The discovery of a Miocene bat at Grive-Saint-Alban, by M. Claude Gaillard. A complete humerus, and some fragments were discovered.—On the Armand cave, by MM. E. A. Martel and A. Viré. A description of the results of the exploration of a subterranean cave, 207 metres deep, the most remarkable feature being a forest of two hundred stalagmitic columns, of heights varying between three and thirty metres.

## DIARY OF SOCIETIES.

THURSDAY, NOVEMBER 4.

LINNEAN SOCIETY, at 8.—The Attraction of Flowers for Insects: Sir John Lubbock, Bart.—Transfusion-Tissue: its Origin and Function in the Leaves of Gymnospermous Plants: W. C. Worsdell.

CHEMICAL SOCIETY, at 8.—The Properties of Liquid Fluorine: Prof. Moissan and Dewar.—The Liquefaction of Air and the Detection of Impurities: Prof. Dewar.—The Absorption of Hydrogen by Palladium at High Temperatures and Pressures: Prof. Dewar.

INSTITUTION OF MECHANICAL ENGINEERS, at 7.30.—Mechanical Features of Electric Traction: Philip Dawson.

FRIDAY, NOVEMBER 5.

RÖNTGEN SOCIETY, at 8.—Address by Prof. S. P. Thompson.

MONDAY, NOVEMBER 8.

ROYAL GEOGRAPHICAL SOCIETY (Queen's Hall, Langham Place), at 8.45.—Introductory Address by the President.—The Jackson-Harmsworth Arctic Expedition: Frederick G. Jackson.

TUESDAY, NOVEMBER 9.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Manchester Ship Canal; Sir E. Leader Williams.—The Mersey Estuary Embankments—Eastham Division: Whately Eliot.—The Mersey Estuary Embankments and other Works—Runcorn Division: Sir E. Leader Williams.—The Irlam Division: W. O. E. Meade-King.

ANTHROPOLOGICAL INSTITUTE, at 8.30.—Works of Art from Benin City: C. H. Read and O. M. Dalton.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.—The Spectroscope: E. W. Maunder.

THURSDAY, NOVEMBER 11.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Accumulator Traction on Rails and Ordinary Roads: L. Epstein.

MATHEMATICAL SOCIETY, at 8.—On the Poncelet Polygons of a Limaçon: Prof. F. Morley.—On an Extension of the Exponential Theorem: J. E. Campbell.—The Integral  $\int \frac{dx}{x^n}$  and Allied Forms in Legendre's

Functions, between Arbitrary Limits: R. Hargreaves.—The Character of the General Integral of Partial Differential Equations: Prof. Forsyth. F.R.S.

FRIDAY, NOVEMBER 12.

ROYAL ASTRONOMICAL SOCIETY, at 8.

## BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Light, Visible and Invisible: Prof. S. P. Thompson (Macmillan).—Chauncy Maples, D.D., F.R.G.S. (Longmans).—Cheltenham as a Holiday Resort: S. S. Buckman (Cheltenham, Norman).—Twentieth Annual Report of the Local Government Board, 1895-96: Supplement containing the Report of the Medical Officer for 1895-96 (Eyre).—Die Wissenschaftlichen Grundlagen der Analytischen Chemie: W. Ostwald, Zweite Vermehrte Auflage (Leipzig, Engelmann).—The Works of Xenophon, translated by H. G. Dakyns, Vol. 3, Part 2 (Macmillan).—Hints to Teachers and Students on the Choice of Geographical Books for Reference and Reading, with Classified Lists: Dr. H. R. Mill (Longmans).—Das Kleine Botanische Practicum für Anfänger: Dr. E. Strasburger, Dritte Umgearbeitete Auflage (Jena, Fischer).—A Geological Map of the Southern Transvaal: Dr. F. H. Hatch (Stanford).—Map of the Transvaal, showing Physical Features, &c.: Dr. F. H. Hatch (Stanford).—My Fourth Tour in Western Australia: A. F. Calvert (Heinemann).

PAMPHLETS.—A Popular Introduction to the Study of the Sun: G. M. Knight (Philip).—Reforms needed in our System of Elementary Education: T. C. Horsfall (Manchester, Cornish).

SERIALS.—Chambers's Journal, November (Chambers).—The Record of Technical and Secondary Education, October (Macmillan).—Natural Science, November (Dent).—Mittheilungen der Prähistorischen Commission der Kais. Akademie der Wissenschaften, 1. Band, No. 4 (Wien).—Journal of the Royal Microscopical Society, October (Williams).—Contemporary Review, November (Isbister).—Good Words, November (Isbister).—Sunday at Home, November (Isbister).—The Transactions of the Royal Irish Academy, Vol. xxxi. Part 4 (Dublin).—National Review, November (Arnold).—Humanitarian, November (Hutchinson).—An Illustrated Manual of British Birds: H. Saunders, 2nd edition, Part 1 (Gurney).

## CONTENTS.

	PAGE
Mimicry in Butterflies and Moths. By E. B. P.	1
A Devonshire Geologist. By H. B. W.	4
Mexican Archaeology	6
Our Book Shelf:—	
Gabba: "Manuale del Chimico e dell' Industriale"	7
Vender: "La Fabbricazione dell' Acido Solforico, dell' Acido Nitrico, del Solfato Sodico, dell' Acido Muratico"	7
Gherzi: "Leghe Metalliche ed Amalgame"	7
Kimura: "Lectures on Quaternions."—J. P.	7
Uie: "Lehrbuch der Erdkunde für höhere Schulen"	7
Denning: "The Great Meteoric Shower of November"	7
Letters to the Editor:—	
A Bee's Movements in a Room.—J. Parkin	8
A Test for Divisibility.—Henry T. Burgess	8
International Congress on Technical Education	9
Microscopic Study of Alloys. (Illustrated.) By T. K. R.	11
Notes	12
Our Astronomical Column:—	
The Photography of Faint Moving Celestial Objects	16
Sunspots and the Weather	16
Comet Perrine, October 16	16
The Director of the Lick Observatory	16
Relation between Individual and Racial Variability	16
On the Constitution of the Electric Spark, By Prof. Arthur Schuster, F.R.S.	17
Physiology at the British Association	17
On the Summit of Mauna Loa	20
Palestine Exploration. By Lieut.-Colonel C. R. Conder	21
University and Educational Intelligence	22
Societies and Academies	23
Diary of Societies	24
Books, Pamphlets, and Serials Received	24