

for 1/200th of a second, during which the back E.M.F. of the poles was opposed to a single cell. The effect of the cooling of the carbons was thus eliminated, and the conclusion is drawn from the experiments, that the arc behaves exactly like an ordinary resistance, and presents no counter electromotive force comparable in magnitude to the difference of potential of the carbon poles.—On the action of electric charges upon the discharging power given to air by the X-rays, by M. Émile Villari.—On the properties of gases traversed by the X-rays, and on the properties of luminescent or photographic bodies, by M. G. Sagnac. A connection is traced between the rapidity of discharge of a conductor by the gases exposed to the X-rays, and the luminescence of the same gases.—The penetration of metals by the Röntgen rays, by M. Radiguet.—On the spectrum of carbon, by M. A. de Gramont. A method is described for obtaining the spectrum of carbon free from foreign lines. Short intense sparks are passed through an alkaline carbonate, kept in a pasty state by a red-hot platinum spiral, the whole being placed in an atmosphere of dry carbonic acid or hydrogen. The spectrum obtained was identical with that given by Siberian graphite, with the exception of a doubtful ray in the red exhibited by the latter. Retort carbon, in spite of careful purification, gave numerous rays attributable to impurities such as calcium, barium, and iron.—Action of copper hydrate upon solutions of silver nitrate, by M. Paul Sabatier. The precipitation of cupric nitrate solutions by silver oxide appears to give rise to a basic nitrate of copper and silver.—Hydrobenzamide, amarine, and lophine, by M. Marcel Delépine. A thermochemical paper.—New syntheses with cyanosuccinic ether, by M. L. Barthe.—On some combinations of phenylhydrazine and metallic nitrates, by M. J. Moitessier.—On the aloins, by M. E. Léger.—The function of auto-intoxication in mechanism of the death of animals deprived of their subrenal capsules, by M. D. Gourfein.—Nuclear purification at the commencement of ontogenesis, by M. L. Cuénot.—Variations of the lower fungi under the influence of the medium, by M. Julien Ray.—On the germination of grains of Leguminosæ containing parasitic larvæ, by M. Edmond Gain.

AMSTERDAM.

Royal Academy of Sciences, June 26.—Prof. van de Sande Bakhuyzen in the chair.—Prof. Bakhuis Roozeboom, on melting-lines of systems of two and three organic substances.—Mr. Hamburger read a paper on a method of separation and quantitative determination of diffusible and non-diffusible alkali in serous fluids.—Prof. van Bemmelen made, on behalf of F. Schreinemakers, a communication concerning an inquiry into equilibriums in systems of three components in which two liquid phases occur.—Prof. Kamerlingh Onnes presented a paper, by Mr. E. van Everdingen, on the Hall effect and the increase of magnetic resistance in bismuth; and, on behalf of Mr. A. van Eldik, measurements of the capillary ascent of the liquid phase of a mixture of two substances in equilibrium with the gaseous phase.—Prof. Haga presented, on behalf of Dr. C. H. Wind, a contribution entitled "On the influence of the dimensions of the source of light in Fresnel's diffraction phenomena, and on the diffraction of X-rays" (second paper). In this paper the theory developed in the first paper was applied to the case of a narrow rectangular screen for obstacle. The shadow must consist principally of a nucleus, surrounded by maxima, or else—if the screen is very narrow—an illuminated space in the middle between minima, again followed by maxima. The distance of these maxima and minima from each other renders it possible to estimate the wave-length. Experiments with rays of light, as well as with X-rays, yielded diffraction images as expected; and from this it follows—at any rate, that in the case of X-rays— λ is very small.—Prof. Franchimont, on the action between methylnitramine and potassium nitrate in an aqueous solution at the ordinary temperature. The principal products are potassium nitrate, nitrogen and methylalcohol, besides dimethylnitramine and isodimethylnitramine. Secondary products are, among others, a little carbonic acid and a very volatile substance with a strong isonitril smell. The principal reaction is regarded by the author as an addition of methylnitramine to nitrous acid, followed by a decomposition of the product into nitric acid and diazomethyl hydrate; the latter then yields nitrogen and methylalcohol, and at the same time methylates a small portion of the methylnitramine. The author further states that all acid and all neutral aliphatic nitramines, and also nitro-urea, when treated with zinc in a solution of acetic acid, to which α naphthylamine, dimethylaniline, aniline, metaphenyl-

enediamine, &c., yield colouring matters, and that these reactions closely resemble those of nitrous acid, though an examination of the colouring matters themselves gives rise to doubt whether they are due to those reactions.—Prof. van der Waals presented: (a) On behalf of Prof. C. A. J. A. Oudemans, a paper in which the author publishes the finding of some fungi, hitherto unknown and injurious to agriculture, as *Brachyspora pisi* on the leaves of green peas (*Pisum sativum*), *Marsonia secalis* on the leaves of rye (*Secale cereale*), *Hendersonia grossularia* on the leaves of the gooseberry (*Ribes grossularia*), and *Fusicladium fagopyri* on the leaves of buckwheat (*Fagopyrum esculentum*). The author further points out that the names *Helminthosporium gramineum*, Eriksson, *Helm. teres*, Sacc., and *Helm. gramineum*, Rabh., are synonymous; and that the last-mentioned, being the oldest, ought to be retained; and finally describes a new genus of *Verpa*, growing in Java on refuse of *Indigofera tinctoria*, from which the colouring matter has been extracted, and which plant is eaten by the Javanese; the author calls this genus *Verpa indigocala*. (b) On behalf of Prof. Lorentz, a paper by Dr. C. H. Wind, on the dispersion of magnetic rotation of the plane of polarisation, with a note added by Prof. Lorentz. (c) On behalf of Dr. P. Zeeman, a paper on doublets and triplets in the spectrum produced by external magnetic forces (ii.).

BOOKS RECEIVED.

BOOKS.—A Course of Practical Chemistry: M. M. P. Muir. Part I. Elementary (Longmans).—Organic Chemical Manipulation: Dr. J. T. Hewitt (Whittaker).—Geographical Journal, Vol. ix. (Stanford).—A System of Medicine: edited by Dr. T. Clifford Allbutt, Vol. 3 (Macmillan).—The Potentiometer and its Adjuncts: W. C. Fisher (Electrician Company).—Cuirassés et Projectiles de Marine: E. Vallier (Paris, Gauthier-Villars).—Les Huiles Minérales: F. Miron (Paris, Gauthier-Villars).—Physikalisches Praktikum: E. Wiedemann and H. Ebert, Dritte Verbesserte und Vermehrte Auflage (Braunschweig, Vieweg).—La Cure d'Altitude: Dr. P. Regnard (Paris, Masson).

CONTENTS.

	PAGE
M. Faye on Cyclones	289
The Yew	290
Our Book Shelf:—	
Lauterborn: "Untersuchungen ueber Bau Kernteilung und Bewegung der Diatomeen"	291
"Journal and Proceedings of the Royal Society of New South Wales for 1896"	291
Demoor, Massart, and Vandervelde: "L'évolution régressive en biologie et en sociologie"	292
"The Geographical Journal"	292
Letters to the Editor:—	
The Electro-Chemical Equivalent of Silver.—Lord Rayleigh, F.R.S.	292
Acetylene for Military Signalling.—A. E. Munby	292
Disappearance of Nitrates in Mangolds.—T. B. Wood	293
Globular Lightning.—Rev. E. Hill	293
"Bicycles and Tricycles."—R. H. Housman; C. V. Boys, F.R.S.	293
"A Text-book of Histology."—Dr. Arthur Clarkson; The Reviewer	293
A Phenomenal Rainbow.—H. Stuart Dove	294
Fire-fly Light.—Dr. Carlo del Lungo	294
The Evolution of Stellar Systems. By Dr. William J. S. Lockyer	295
Thierry William Preyer	296
Notes	297
Our Astronomical Column:—	
New Observations of Venus	300
The Yerkes Observatory	300
Resolving Power of Spectroscopes	300
The Horizontal Gyroscope	300
Some Problems of Arctic Geology. (Illustrated.)	
I. By Dr. J. W. Gregory	301
Scientific Investigations of the Scottish Fishery Board	303
The Physiology of the Emotions. By Dr. Harry Campbell	305
On the Ascent of Water in Trees. By Francis Darwin, F.R.S.	307
University and Educational Intelligence	310
Scientific Serials	311
Societies and Academies	311
Books Received	312