

of Willard Gibbs to explain the variations of specific heat of such bodies as nitric oxide and acetic acid. The results confirm the idea that such variations are due to the gradual dissociation of polymeric forms.—G. Lippmann, an absolute spherical electrometer. Two hollow metal hemispheres, one fixed, the other held by a trifilar suspension, when similarly electrified, repel one another, with a force actually proportional to the square of the potential. The displacements are read optically.—MM. Bichat and Blondlot, on an absolute electrometer with continuous indication. This is an apparatus of three concentric cylinders, the innermost of which is suspended from a balance. The theory of it is already known.—P. Janet, on the formula of Van der Waals, and its application to capillary phenomena.—F. and W. Kohlrausch, the electro-chemical equivalent of silver (abstracted from *Wiedemann's Annalen*).

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, August 23.—M. Fizeau in the chair.—Elliptical elements of Brooks's Comet III. 1886, by Mr. J. R. Hind. The elliptical orbit, deduced from the observations made at Nice on May 25 and July 1, and at Algiers on June 3, is as under :—

$T = 1886 \text{ June } 6^{\text{h}} 57^{\text{m}} 14^{\text{s}}$  Greenwich Mean Time

$\pi$ ... ..	229 45 58.0	} Mean Equinox 1886.0
$\omega$ ... ..	53 3 25.7	
$i$ ... ..	12 56 1.8	
$\phi$ ... ..	37 27 10.2	
$\log a$ ... ..	0.5329478	
$\mu$ ... ..	563.0992	
Period ... ..	6 <sup>a</sup> .301	

—On the measurement of very strong pressures and on the compressibility of fluids, by M. E. H. Amagat. For the measurement of very high pressures the author has adopted the principle of the manometer with differential pistons. In order to obtain accurate results, the condition had to be realised of maintaining the pistons in complete action while keeping them perfectly air-tight. The reading of the volumes of compressed fluid was effected by the process already indicated by Prof. Tait, of Edinburgh. Water and ether have been studied at zero and at the two respective temperatures of 20° and 40° C. Respecting the variation with pressure, it is shown that the coefficient diminishes gradually with the increase of pressure, and this takes place throughout the whole scale of pressures, contrary to the opinion of some physicists. At 3000 atmospheres the volume of water was reduced one-tenth, and its coefficient of compressibility one-half. This coefficient between 2590 and 2981 atm. was 0.0000238, and that of ether between 1623 and 2002 atm. 0.000045. The study of ether will be continued and pushed to 3000 atm., and in a future communication will be given the coefficients of compressibility and of dilatation for several other fluids up to 3000 atm. A number of gases will then be examined with the same apparatus and within the same limits of pressure.—On the purple of the solar spectrum, by M. Camille Koechlin. The solar spectrum yields only two simple colours, blue and yellow. The third is blended with yellow and blue to constitute the reds on the one hand, the violet, on the other, purple being red deprived of yellow or violet deprived of blue, or simply the spectrum without yellow or blue. If on the red of one be projected the blue of another spectrum or on the violet of the first the yellow of the second, the result is purple. The red or the violet may again be restored by applying to the purple the yellow or blue of a third spectrum. And if these applications be made with reversed prisms, so that the complementary colours reciprocally cover each other, the spectrum will present at both extremities a purple region with yellowish-white interval. Purple, being a simple colour, will thus never be obtained by mixture, but only by extracting the yellow from a red or the blue from a violet. The solar spectrum contains the elements of all shades, either by mixtures or by diluting with white or extinction with black. In the latter case the colours containing blue preserve their tint, while those on the opposite side of the yellow become changed in character. Thus green, blue, and violet yield the so-called deep greens, blues, and violets, while the yellow, orange, red, and purple cannot be intensified, but pass over to olive, brown, garnet, or amaranth.—On the branchial apparatus and muscular and

nervous systems of *Amaracium torquatum*, by M. Charles Maurice. In this Compound Ascidian, which abounds at Villefranche-sur-Mer, the branchial apparatus presents thirteen rows of stigmata, and is otherwise characterised by three fundamental peculiarities connected with the transverse sinus.—On a larva of *Lampyrus noctiluca* surviving the loss of its head, by M. François. This specimen, which had lost the whole of the cephalic region, was found in a perfectly healthy and normal condition, and although destitute of any buccal orifice, it showed on dissection an abundance of adipose tissue. The cesophagus, however, had changed its position, and contained no trace of alimentary matter.—On the cyclone that swept over the Gulf of Aden in June 1885, by Admiral Cloué. As supplementary to the previous statement on this subject, the writer has collected further details from the captains of some English and Dutch vessels overtaken by the storm, and from Obock regarding the caravan which was *en route* for Shoa when the whirlpool swept by.—Remarks on Dr. W. C. Gore's memoir on the "Projectiles of the Future," presented to the Academy, by M. Larrey. In the interests of humanity, which are above those of war, it is argued that the use of explosives should be more and more restricted, and replaced by projectiles calculated rather to wound than to kill the combatants. With this object it is proposed to substitute for the explosive bullets now in use the so-called "Lorenz" projectiles, which are described as "the missiles of the future."

BOOKS AND PAMPHLETS RECEIVED

"Report of the Entomologist C. V. Riley for 1885" (Washington).—"Bulletin of the U.S. National Museum, No. 30," by J. B. Marcou (Washington).—"Géologie de l'Ancienne Colombie, Bolivarienne Vénézuéla, Nouvelle-Grenade et Ecuador," by H. Karsten (Friedländer, Berlin).—"Jahrbuch der Meteorologischen Beobachtungen der Wetterwarte der Magdeburgischen Zeitung," Jahrgang iii., 1884, by Dr. R. Assmann (Magdeburg).—"Reports on Insects injurious to Hop Plants, &c.," No. 3 "Insects injurious to Fruit Crops," by C. Whitehead (Eyre and Spottiswoode).—"Lectures to Kindergartners," by E. P. Peabody (Heath and Co., Boston).—"Transactions and Proceedings of the New Zealand Institute, 1885," vol. xviii., by J. Hector (Wellington).—"Philip's Planetarium, showing the Principal Stars visible for every Hour in the Year" (Philip).—"Catalogue of the Blastoida in the Geological Department of the British Museum (Natural History)," by R. Etheridge, Jun., and P. H. Carpenter (London).—"Choice and Chance," 4th edition, by W. A. Whitworth (Bell and Son).

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