measurement of stellar distances, by MM. Lœwy and Puiseux. In previous communications the authors have developed the theory of the optical system formed by a double plane mirror cut out of a single block of glass in the form of a prism, and placed in front of the object-glass of an equatorial. The properties of the apparatus are now demonstrated, and a practical method of observation deduced.—On the reduction of sulphates of the alkalies by hydrogen and by carbon, by M. Berthelot.—The author discusses in detail the mechanism of the reactions taking place in these reductions, with especial reference to the conditions obtaining during the process of manufacturing sodium carbonate. The equation $K_2SO_4 + 4H_2 = K_2S + 4H_2O$ expresses approximately the final state of the system, but does not at all represent the course of the reaction, which is probably as follows :—

$$(1)\ K_2SO_4 + 4H_2 = KHS + KOH + 3H_2O;$$

the KHS then decomposes.

$$(2)\ 2KHS = K_2S + H_2S,$$

and the H_2S reacts with the KOH.

$$(3)\ KOH + H_2S = KHS + H_2O.$$

Equations (1) and (3) represent exothermic reactions, (2) is the expression of an endothermic dissociation which takes place at the temperature of reduction. In addition to the above an exothermic reaction takes place between the alkaline sulphide and water vapour, thus—

$$(4)\ K_2S + H_2O = KHS + KHO.$$

The reduction by hydrogen takes place at a comparatively low temperature. With respect to the action of carbon upon the alkaline sulphates, it is shown that solid carbon even at a very bright temperature fails to react with the sulphate, but that carbonic oxide at a bright red heat reduces the salt according to the equation—

$$(5)\ K_2SO_4 + 4CO = K_2S + 4CO_2,$$

the reaction being markedly exothermic.—Note by M. Blanchard accompanying the presentation of a work on the "Actions of the Products secreted by Pathogenous Microbes."—On the fossil Hippopotami of Algeria, by M. A. Pomel. The genus Hippopotamus has been represented in Algeria at different times during the Quaternary period, and the author describes the order in which the types succeeded each other. Of four species, two are said to be certainly special, and probably also a third, whilst the last is almost unknown.—Observations of Brooks's comet (*a* 1890) made with the Brunner equatorial at Toulouse Observatory, by M. E. Cosserat. Observations of the position of the comet, extending from April 28 to May 14, are given.—On the curve representing diffraction phenomena, by M. Ernest Cesaro.—On the characteristic equation of nitrogen, by M. Ch. Antoine. Some experiments by M. Amagat on the compression of nitrogen between 39·5 and 421·1 atmospheres are used to calculate the value of $\frac{pv}{D(\beta + t)}$, where p is the pressure, and v the volume of a gas. Taking $D = 2{\cdot}830 + 0{\cdot}00191p^{1\cdot1}$, which, however, can only be taken as a first approximation, the mean value found is 3·10.—On the ballistic electrometer, by M. Gouy.—The month of May 1890 at the Observatory of the Parc de Saint-Maur; the cold of June 1, by M. E. Renou. The month of May was remarkable for low mean pressure, viz. 753 mm. at an altitude of 49·38 m. The mean temperature was 14°·0, or 0°·7 above the average of other years. On June 1 the minimum thermometer 2 metres above the ground registered 2°·7, and the ground thermometer registered 3°·3 below zero at sunset.—On the determination of the molecular weight at the critical point, by M. Philippe A. Guye. M being the molecular weight of any body, k the critical coefficient (the relation of the absolute critical temperature to the critical pressure), and R the specific refractive power, given by the formula of Lorentz and Lorenz, we have $M = 1{\cdot}8\,\frac{k}{R}$. The author shows the agreement of the results obtained by calculation with those experimentally determined, and claims that his method should rank with the vapour-density and cryoscopic methods of determining molecular weights.—On the chloro-salts of iridium, and the atomic weight of this element, by M. A. Joly. The double chlorides of iridium and potassium and iridium and ammonium are described, and from the results of their analyses the atomic weight of Ir is found to be 192·75 (H = 1); Seubert's value is Ir = 192·744.—On the oxides of manganese obtained in the wet way; second part—manganous acid, by M. A. Gorgeu.—On some new double iodides of bismuth and potassium, by M. Ch. Astre. There are now five of these double iodides known—namely, $(BiI_3)_2$, KI; $(BiI_3)_2$, 2KI, $2H_2O$; $(BiI_3)_2$, 3KI, $2H_2O$; $(BiI_3)_2$, 4KI; and $(BiI_3)_2$, 6KI; of which the three latter are new, and form the subject of the present paper.—On soda-alum, by M. E. Augé. The properties of this body are incorrectly described in text-books. The author contrasts the observed properties with the properties attributed to the compound by most authors.—The *bouquet* of fermented drinks, by M. Georges Jacquemin.—New researches on the origin of omphalocephalic monsters, and on the primitive duality of the heart in the embryos of Vertebrata, by M. Dareste.—On the arrangement of the collections of molluscs at the Natural History Museum, by M. Edmond Perrier.—On the development of blastodermic layers in *Géphyrica tubicola* (*Phoronis Sabatieri*, nov. sp.), by M. Louis Roule.—On the androgynous castration of the *Muscari comosum*, Mill., by the *Ustilago Vaillantii*, Tul., and some remarkable phenomena accompanying the parasitic castration of the *Euphorbia*, by M. Ant. Magnin.—On the æleolithic syenite of Montreal, and on the endomorphous and exomorphous contact modifications of this rock, by M. A. Lacroix.—Action of soluble substances produced by microbes on inflammation, by MM. Charrin and Gamaleia.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Characteristics of Volcanoes: J. D. Dana (S. Low).—A Contribution to the Natural History of Scarlatina: Dr. D. A Gresswell (Oxford, Clarendon Press).—A Manual of Pharmaceutical Testing: B. S. Proctor (Office of the *Chemist and Druggist*).—Aluminium, 2nd edition: J. W. Richards (S. Low).—Die Gesetze und Elemente des Wissenschaftlichen Denkens, Erster Band: Dr. G. Heymans (Leiden, van Doesburgh).—British Cage Birds, Part 2: R. L. Wallace (Gill).—The Canary Book, Part 2: R. L. Wallace (Gill).—Elementary Algebra, 2nd edition: C. Smith (Macmillan).—Induction and Deduction: C. C. W. Nadens (Bickers).—The Philosophy of Clothing: W. M. Williams (Laurie).—Madagascar; or, Robert Drury's Journal: edited by Captain Oliver (Unwin).—Blackie's Modern Cyclopedia, vol. 6 (Blackie).—Fifty Years of Science, 4th edition: Sir J. Lubbock (Macmillan).—Sanity and Insanity: C. Mercier (Scott).—Nature and Woodcraft: J. Watson (Smith and Innes).—Den Norske Nordhavs-Expedition 1876–78, xix. Zoologi—Actinida: D. C. Danielssen (Christiania, Grondahl).—Observations of the New England Meteorological Society in the year 1888 (Cambridge, Mass., Wheeler).—Meteorological Observations made at the Summit of Pike's Peak, Colorado, January 1874 to June 1888 (Cambridge, Mass., Wheeler).

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