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April 5.—Mr. W. Crookes, F.R.S., in the chair.—The following papers were read:—Researches on the constitution of azo- and diazo-derivatives; part iii., compounds of the naphthalene β -series, by Prof. R. Meldola, F.R.S., and Mr. F. J. East.—The action of finely divided metals on solutions of ferric salts, and a rapid method for the titration of the latter, by Mr. D. J. Carnegie.

Anthropological Institute, April 10.—Francis Galton, F.R.S., President, in the chair.—Captain Strachan exhibited a young Papuan boy brought by him from the north-west coast of New Guinea.—Mr J. Allen Brown read a paper on some small highly specialized forms of stone implements, found in Asia, North Africa, and Europe.—A paper by MM. Henri and Louis Siret, on the early age of metal in the south-east of Spain, was read.

PARIS.

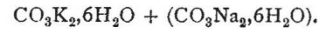
Academy of Sciences, April 16.—M. Janssen, President, in the chair.—On the spectra of oxygen, by M. J. Janssen. Attention is called to Olszewski's recent experiments with liquefied oxygen, which fully confirm the results of the author's researches on the phenomena of elective absorption in oxygen gas. The bands already determined by him have been observed by Olszewski with a thickness of 7 millimetres of liquid oxygen, while a thickness of from 4 to 5 millimetres would be required to detect the presence of the strongest band, which occurs in the neighbourhood of D. This is a remarkable confirmation of the law of the product of the thickness by the square of the density regulating one of the two systems of bands described by M. Janssen.—On the relations of atmospheric nitrogen to vegetable soil, by M. Th. Schloesing. This is a reply to the objections recently urged by M. Berthelot against the character of the author's researches, and the general conclusions based on them. He denies the validity of M. Berthelot's criticisms, and insists that he does not deny the fixation of atmospheric nitrogen in vegetable soils. He maintains, however, that the phenomenon is neither determined by his own experiments nor demonstrated with sufficient accuracy by M. Berthelot's analyses.—On a source of algebraic equations whose roots are all real, by M. G. Foutet. An algebraic process is explained, by means of which equations, all of whose roots are real, may be combined in such a way as to obtain from them fresh equations possessing the same property. The following theorem is proposed and discussed: If the equation

$$F(x) \equiv a_0 x^n + a_1 x^{n-1} + a_2 x^{n-2} + \dots + a_{n-1} x + a_n = 0$$
 has all its roots real, then the equation

$$\phi(x) \equiv a_0 f(x) + a_1 f'(x) + a_2 f''(x) + \dots + a_{n-1} f^{(n-1)}(x) + a_n f^{(n)}(x) = 0,$$

in which $f(x)$ represents an entire polynome of equal or higher degree to n , has at least as many real roots as the equation $f(x) = 0$; and if it has more, the excess is an even number.—On Foucault's gyroscope, by M. E. Guyou. An elementary solution is given of the problem connected with the rotation of a solid body suggested by the movement of this apparatus.—On a new method of measuring the heat of evaporation of liquefied gases, by M. E. Mathias. The calorimetric methods usually employed are either those of *variable* temperature or of the *fixed* temperature of melting ice. But for the purpose of his researches the author has had to employ one of *constant* temperature, the nature and advantages of which are here described. It is specially applicable in the case of gases which, like ethylene, carbonic acid, and the protoxide of nitrogen, have their critical point at the ordinary temperature.—On a class of electric currents set up by the ultra-violet rays, by M. A. Stoletow. Hertz, Wiedemann, and others having shown the influence of the ultra-violet rays on electric discharges at high tension, the author here inquires whether a similar effect may not be obtained with electricity of feeble potential.—On a regulator of electric light, by M. Charles Pollak. In the apparatus here described the move-

ment required to be communicated to the carbons in order to supply and maintain the electric arc is obtained by the thermic expansion of the conducting wires. This appliance, which regulates the electric arc for a period of three hours consecutively, has the advantage of extreme simplicity, dispensing with all intricate mechanism, as well as with electro-magnets.—On a sodico-potassic carbonate, by MM. L. Hugouneq and J. Morel. The authors have obtained this substance by exposing to the open air at a temperature of 12° to 15° C. a solution of carbonate of soda containing carbonate of potassa in the presence of a great excess of iodide of potassium mixed with phosphate and chloride of sodium. It approaches the formula—



These researches show generally that the carbonates of soda and of potassa may crystallize together, yielding isomorphous mixtures, which can scarcely be represented by definite formulas.—New experiments on inoculation against rabies, by M. G. Galtier. These experiments, made on sheep and goats, show that herbivorous animals may be successfully preserved from the bite of mad dogs by the usual processes of inoculation, whether applied before or immediately after the attack.—A communication was received from the Minister of Public Instruction announcing the results of the measures recently taken to determine the exact superficial area of France calculated by the planimetric method. This estimate gives 536,408 square kilometres, which is 8012 more than that indicated by the Bureau of Longitudes, and 2929 more than that of the Russian General Strelbitsky.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Outlines of Qualitative Analysis: G. W. Slatter (Murby).—Text-book of Biology: J. R. A. Davis (Griffin).—British Birds: Key List: Colonel L. H. Irby (Porter).—In Pursuit of a Shadow: A Lady Astronomer (Trübner).—A Treatise on Alcohol, 2nd edition: Dr. T. Stevenson (Gurney and Jackson).—Allgemeine Geologie: Dr. Karl von Fritsch (Engelhorn, Stuttgart).—Arithmetic for Beginners: Rev. J. B. Lock (Macmillan).—Nature Readers. Sea-Side and Way-Side, No. 1: J. W. Wright (Heath, Boston).—Mr. Tebbutt's Observatory, Windsor, New South Wales: J. Tebbutt (Sydney).—Bulletin du Musée Royal d'Histoire Naturelle de Belgique, Tome v. No. 1.

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