posed of the Chief Secretary, a vice-president, and officials, for whose appointment powers are given. To them will be transferred various powers now scattered over other boards. As to the financial resources to be placed at the disposal of the new department, it is calculated that the total income from all sources will amount to from 160,000*l.* to 170,000*l.* a year ; and this money will be applied to aiding and encouraging agriculture and other industries and technical instruction. The board to be formed under the Bill will be aided and advised by three bodies to be called into existence—a council of agriculture, a board of technical instruction, and an agricultural board—which will have very wide and important duties to perform. Speaking broadly and generally, the income of the board is to be devoted as follows : 55,000*l.* to technical instruction ; 10,000*l.* to the improvement and development of the sea fisheries ; and the remainder to agriculture and rural industries.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 24.—M. van Tieghem in the chair.—Presence of iodine in notable proportions in all plants containing chlorophyll of the Algæ class, by M. Armand Gautier As a result of numerous estimations of iodine in Algæ containing chlorophyll it was found that iodine is a constant element of the protoplasm of these plants, both in sea water and fresh water, the latter, however, containing much smaller quantities of iodine. Thus, where 100 grams of dried marine Algæ give 60 mgr. of iodine, the same weight of fresh water Algæ gave only 0·25 to 2·4 mgr.—On the theory of partial differential equations, by M. N. Saltykow. The author's previous work on this subject was restricted to equations resolved with respect to partial differentials. Since, however, the solutions of the equations may offer considerable difficulties from the point of view of practical applications, the theory of any equations whatever in involution is here given.—On indeterminate equations of the form $x^\lambda + y^\lambda = cz^\lambda$, by M. Edmond Maillet.—On a correspondence between two ruled spaces, by M. A. Demoulin.—On the magnetic field inside a hollow cylinder traversed by a current, by M. W. de Nickolaieve.—On the dielectric cohesion of rarefied gases, by M. E. Bouty. In a preceding note it has been shown that when a tube containing a rarefied gas is placed in an electrostatic field, there is a critical intensity of field, f, below which the gas acts as a perfect dielectric and above which the gas allows the passage of a discharge. In the present paper the relation between the critical intensity, f, and the pressure of the gas, p, is quantitatively examined, and the result expressed in the form

$$f = A\left(1 + Bp + \frac{C}{p}\right),$$

where A, B, C, are constants, B, and perhaps C, being independent of the nature of the gas, and A increasing with the molecular weight of the gas.—The instantaneous disappearance of the Kerr phenomenon, by MM. H. Abraham and J. Lemoine. By the use of a rotating mirror M. Blondlot has shown that the time that elapses between the suppression of the electric field and the disappearance of the Kerr effect is less than 1/40,000 of a second. In the present paper it is shown by a different method that the time cannot exceed 1/10,000 of this, namely 1/400,000,000th of a second.—On the isomeric states of chromic acetate, by M. A. Recoura. A detailed description of the normal acetate, possessing the properties of an ordinary metallic salt, and the violet acetate, in cold solutions of which alkalis give no precipitate.—Mixed copper-silver salts, by M. Paul Sabatier. The salts described are the basic nitrates, $3Cu(OH)_2 . 2AgNO_3$, and $2Cu(OH)_2 . 2AgNO_3$, two similar chlorates, the sulphate, $3Cu(OH)_2 . Ag_2SO_4$, and the thiosulphate $2Cu(OH)_2 . Ag_2S_2O_3$.—On the purification of iridium, by M. E. Leidié. The method suggested is based upon the conversion of the metal into chlorides, and subsequent use of sodium nitrite. The iron and lead are first precipitated as oxides, and gold as the metal, the solution then containing double nitrites of ruthenium, rhodium, and iridium, and sodium osmiate. The ruthenium and osmium are eliminated as volatile peroxides, and the rhodium and iridium converted into the double chlorides with sodium chloride, these being readily separable.—On a double nitrite of ruthenium and potassium, by M. L. Brizard. The new salt described has the composition $Ru_2H_2.(NO_2)_4 . 3KNO_2.4H_2O$.—On the reducing properties of boron and aluminium, by MM. Duboin and Gauthier.—Oxid-

ation of propylglycol by bromine water, by M. André Kling. By the reaction of bromine upon propyl-glycol,

$$CH_3 . CH(OH) . CH_2OH$$

in sunlight, an appreciable amount of acetol,

$$(CH_3 . CO . CH_2 . OH),$$
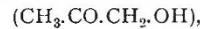
is produced.—On some opium alkaloids, by M. Émile Leroy.—Determinations of the heats of combustion, neutralisation, and solution of codeine, thebaine, papaverine, and narcotine.—On the elimination of nitrogen and phosphorus in infants nourished at the breast, by M. Œchsner de Coninck.—On dichlor-3.4-butanoic acid, by M. R. Lespieau. Of the two possible formulæ for this acid,

$$CH_2 . Cl . CH(OH) . CH_2 . CN \text{ and } CH_2Cl . CH(CN) . CH_2 . OH,$$
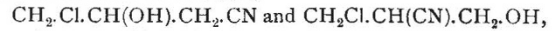
experimental evidence is given in favour of the former.—Action of bromine on isobutyl bromide in presence of anhydrous aluminium bromide and aluminium chloride, by M. A. Mouneyrat. Starting with the monobromobutane,

$$CH_3 . CH(CH_3) . CH_2Br,$$

by the action of bromine in presence of aluminium bromide, four substances are obtained, isobutylene bromide, a tribromoisobutane, boiling at 130° under 26 mm. pressure, tetrabromoisobutane, all in small quantities, and, as chief product, a tribromoisobutane boiling at 112°, probably $CH_3 . CBr(CH_3) . CHBr_2$.—On the composition of the albumen of the carob bean ; production of galactose and mannose by hydrolysis, by MM. Ed. Bourquelot and H. Hérissey.—Experiments on the state refractory to the serum of the eel, by MM. L. Camus and E. Gley. The natural immunity of the hedgehog to the poisonous action of eel serum is now shown to be also possessed by other animals, such as the common frog, toad, chicken and pigeon. This immunity, which the authors have shown to be due to a specific resistance of the red blood corpuscles, is called by them cytologic immunity, to distinguish it from the humoral or acquired immunity resulting from the production of antitoxin in the immunised animal.—Experimental researches on an agglutinine produced by the albumen gland of *Helix pomatia*, by M. L. Camus.—Intra-uterine transmission of vaccinal immunity and the antivirulent power of the serum, by MM. Beclère, Chambon, Ménard, and Coulomb.—On the branchial respiration in Diplopods, by M. M. Causard.—On the breccias of the Briançonnais, by M. W. Kilian.—On a bathymeter founded upon the use of Crusher cylinders, by MM. Charbonnier and Galy-Aché.

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