

ABSTRACTS.

GENERAL AND INORGANIC CHEMISTRY.

On Faraday's Law. M. BERTHELOT.

Equal electric currents, passing through electrolysable salts, separate in equal times weights of the several metals proportional to their equivalents. Thus the same current precipitates at the negative pole 107.9 grammes of silver ; 103.5 of lead ; 39.1 of potassium ; 68.5 grammes of barium. To make them proportional to atomic weights, there should be for 107.9 grammes of silver, 207 of lead, *i. e.*, double the weight actually thrown down. Also for 39.1 grammes of potassium, there should be 137 gr. of barium, which is not the case. In the same manner for electro-negative elements, the weights separated are 35.5 of chlorine, 8 of oxygen, and not 16 of oxygen.

The idea of plurivalence is older than the new atomic notation. This idea is the same for chemists who use equivalent weights, as for those who prefer atomic weights, and has nothing to do with the fact that Faraday's law is expressed more simply by equivalents than by atomic weights, in the case of electro-positive, as well as in the case of electro-negative elements. (*Comptes Rend.* XCVIII. 264.)

P. C.

Note on Faraday's Law. A. WURTZ.

In the interpretation of Faraday's law, atomic weights do not enter; the question is one of *valency*. The weights of plurivalent metals deposited at the negative pole do not agree with the *equivalents*. In the electrolysis of cuprous chloride, for 35.5 of chlorine at the positive pole, 63.5 of copper are deposited on the negative pole, and this number is not the *equivalent* of copper. In the electrolysis of bismuth chloride, 70 of bismuth are deposited. This number is not the equivalent of bismuth.

M. Wurtz adds: "Mr. Berthelot accepts this statement. If he prefers, in interpreting Faraday's law, to use numbers established forty years ago, which, in the case of plurivalent elements, do not represent equivalent quantities, it is only a question of personal choice, and I have nothing to object."

(*Comptes Rend.* XCVIII. 321.)

P. C.

Liquefactions of Hydrogen. S. WROBLEWSKI.

Hydrogen is compressed to 100 atmospheres, in a vertical tube of 2 millimetres, exterior diameter, and from $\frac{2}{10}$ to $\frac{4}{10}$ mm. interior diameter. A screw permits release of pressure more abruptly than in M. Cailletet's apparatus. After cooling the tube by a succession of ebullitions of oxygen, the author noticed, in the hydrogen tube, when the gas expands, an ebullition analogous to that observed by M. Cailletet in oxygen. It takes place a short distance from the bottom of the tube, but is less distinct, because of the feeble density of liquid hydrogen.

In discussing this paper, M. Cailletet said that he had compressed hydrogen at 300 atmospheres. On expansion a thin fog was visible throughout the entire tube, showing liquefaction of hydrogen.

(*Comptes Rend.* XCVIII. 304.)

P. C.

Heat of Formation of Fluoride, Chloride and Oxychlorides of Antimony. M. GUNTZ.

From the thermochemical results obtained, the author concludes that a definite compound, $\text{SbF}_3 \cdot 3 \text{HF}$ forms, which, however, he has as yet been unable to isolate.

The heat of formation of SbCl_3 from the oxide was found to be 47.4 cal. The oxychloride SbO_2Cl , formed in the same manner corresponded to the highest thermal effect. Attempts to prepare a pure hydrate, $\text{SbO}_3 \cdot 3 \text{HO}$, were unsuccessful. (*Bul. Soc. Chim.* XLI., 370.)

E. W.

Russian Chemical Society. Correspondence of O. DAVIDOFF.

M. Tchijevsky has investigated the volatilization of salts by evaporation of their aqueous solutions with regard to some alkaline carbonates. The conclusions are, 1st, That the amount of salts removed with the aqueous vapor are sometimes quite considerable. 2d, That the volatilization of the salt increases with the concentration of the solution up to a maximum, after which it diminishes. It is *nil* for the dry salt (at 100°). 3d, The volatilization increases with the increase in molecular weight of the salt. Thus it is so small for lithium salts that it could not be determined, and is greater for sodium potassium and rubidium salts.

M. Prokofieff notes analogy between B and C_2H_3 , thus B_2O_3 and acetic anhydride $(C_2H_3)_2O_3$; $Na_2B_4O_7$ and $K_2(C_2H_3)_4O_7$, the salt obtained by combination of acetic anhydride with potassium acetate; B N and acetonitrile, C_2H_3N . Thus far the author has not been able to prepare B N.

M. Lubavine gives the analysis of a phosphorite of Nijni Novgorod. Dried at 110° the results were as follows :

Hygroscopic moisture.....	2.13
Organic substance.....	0.61
Silica soluble in soda solution.....	5.84
Residue insoluble in HCl and in soda, (principally SiO_2)	8.99
CO_2	4.13
P_2O_5	25.46
SO_3	0.09
CaO	35.49
MgO	0.61
MnO	0.16
Fe_2O_3	4.42
Al_2O_3	4.99
Na_2O	0.72
K_2O	0.59
CaF_2	4.16
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	98.39

(*Bul. Soc. Chim.*, XLI., 390.)

E. W.

On Haydenite. H. N. MORSE and W. S. BAYLEY.

Haydenite from the gniess quarries near Baltimore, was found to contain 1.46–1.46% of BaO, a constituent not previously reported in this mineral. A complete analysis is given. Haydenite is considered by the authors to be identical in composition, crystallization and physical properties with chabazite. (*Am. Chem. Jour.*, 6, 24.)

A. A. B.

The Physiological Effect of Boracic Acid. J. FORSTER.

An abstract from the *Berichte* (1883, p. 1754.) Taken with the food in small doses 0.5 — 3.5 grms. per day B_2O_3 increases the proportion of solid excrements and increases also the proportion

of N and dry substance in these. The effect is to carry off albuminous matters by making them insoluble, possibly also the *weir* of the intestines is greater, a greater quantity of epithelium, etc., being therefore carried off. Separation of gall is notably increased. The use of boracic acid is especially to be avoided in connection with milk and egg foods, and especially in the case of children or sucking infants. (*Ding. Pol. J.* 251, 170.) A. A. B.

On the Physiology of the Carbohydrates in the Animal System. F. W. PAVY.

By a series of experiments it is found that the ferment which effects the transformation of glucose into a body of lower copper-reducing power resides principally in the paunch, reticulum and third stomach (many plies) of the sheep, the fourth, or true stomach, yielding little of this ferment, and the intestines none at all. The results were obtained by artificial digestion of the carbohydrate in question with portions of the stomach, etc., of recently killed animals. The minimum copper-reducing power in a product of digestion of glucose was one in which this power was to that of glucose as 40 to 100. In contradiction of the statement of Bernard, digestion of cane sugar is found to take place, although in lesser degree, in the *stomach* and is *not* confined to the small intestine. In the ruminants this function resides almost exclusively in those parts of the digestive apparatus anterior to the true stomach. With large quantities of the ferment, cane sugar is wholly inverted, but with reduced quantity or time of exposure maltose, dextrine or unchanged cane sugar are found. Cane sugar was distinguished from maltose in the products by its ready inversion on boiling with weak (2%) solution of citric acid. Maltose requires sulphuric acid for inversion. Cane sugar taken into the stomach is not found as such in the portal blood nor as glucose, but as a product of lower reducing power approximating that of maltose. (*Chem. News.* XLIX. 154, *et seq.*) A. A. B.