

cury. It forms a magnificently crystalline amber-yellow mass. $SG=2.6$. Fuses at 39° , boils at 230° . The chloride boils at 135° . The difference $= 3 \times 31\frac{1}{2}$ which is exactly the same difference as between the bromide and chloride of silicium. According to Kopp, the boiling points of the bromides differ from those of the chlorides by 32° for every equivalent of bromine replacing chlorine. According to this the formula of Titanic acid would be TiO_3 , and the equivalent would require alteration. Further experiments are required to test this hypothesis.

Mercury.—R. Weber has examined the behaviour of sulphide of mercury to the compounds of the alkalic metals, and finds that it is capable of forming a crystalline sulpho-salt with the protosulphides of potassium or sodium, which compound however can only exist in presence of free alkali. According to Lunner the potassium salt is $KS + HgS + 5HO$.

Silver.—Mr. Hambly has made some valuable experiments on the loss of this metal, resulting during its cupellation. Plattner has also investigated the cause of the loss of silver observed during the roasting of its ores, and he is inclined to believe from some experiments on the subject, that it results from the fact of oxide of silver being formed, which is again reduced in an exceedingly finely divided state, and is thus carried off by the gas of the furnace.

Sulphur in Hops.—It is often of importance to determine whether hops have been treated with sulphurous acid. The old silver test being of little value, Heidenreich evolves hydrogen from zinc and hydrochloric acid, with which the hops have been mixed; the formation of sulphuretted hydrogen, indicated by the brown color produced on passing the gas through a solution of acetate of lead, proves the presence of sulphurous acid. Wagner adopts the same process, but uses a pale solution of nitroprusside of sodium made slightly alkaline. The test is exceedingly delicate, but will not succeed if the hops have been kept some months.

Iodates.—Rammelsberg has carefully examined the crystalline forms of the double salts formed by biniodate of potassa with chloride of potassium and sulphate of potassa. The formulæ are $KCl + KO, 2IO^3$ and $KO.IO + 4KO.2SO^3$ the latter being remarkable as containing anhydrous bisulphate.—*Pogg. Ann.* 97, p. 92.

Silicium.—Wöhler has described the properties of the graphite modification of silicium, obtained by fusing aluminium with dry silicofluoride of potassium or sodium. The mass is crushed, the aluminium extracted by hydrochloric acid, the silica by hydrofluoric acid, the residue washed. It forms opaque metallic crystalline leaves, very similar to graphite, but with more metallic lustre; it is harder than glass, but softer than topaz. $S. G. = 2.490$, being less than that of its oxide. Cannot be oxidized by oxygen even when heated to whiteness, infusible, like the amorphous silicium, when heated with carbonate of potassa, it oxidizes and produces combustion. Insoluble in acids, but slowly dissolved by solutions of potassa or soda. Combines readily with chlorine. *Pogg. Ann.* 97, p. 484.

Chromates.—Löwe has examined two chromates of bismuth, one obtained by precipitating nitrate of bismuth with chromate of potassa, the other by the action of dilute acids on the salt so formed. The formulæ are $3BiO^3 + 2CrO^3$ and $BiO^3 + 2CrO^3$. *J. f. Pr. Ch.* 67. 288.

Solubility of Sulphate of Baryta in acids.—Mr. Noad has made some experiments to determine the effect of dilute hydrochloric acid in rendering sulphate of baryta soluble, in reference to Calvert's statements. (Vide ante, No. III., p. 311.)