

CHEMISTRY.

Amorphous Phosphorus, prepared by keeping common phosphorus for some time at a temperature between 446° — 482° F. in an inert atmosphere, whereby it becomes incapable of spontaneous inflammation, has lately been used largely in the arts; as thus obtained, it is always mixed with some unaltered phosphorus, from which it is with difficulty purified by repeated washings with sulphuret of carbon, the process is attended with danger. Nickles puts a little of the sulphuret into the retort, in which the conversion has been effected; heats gently to separate the cake, adds a solution of chloride of calcium, of 38° — 40° Beaumé, and shakes the mixture. The sulphuret of carbon floats on the surface, containing nearly all the unchanged phosphorus, a second portion will remove every trace, and leave the amorphous substance quite pure.

Chlorine.—C. T. Dunlop employs the residuum of the manufacture of chlorine in preparing an oxide of manganese, which can be again employed for the same purpose, being equal to about 80 per cent. of pure peroxide. The chloride is converted into carbonate by carbonate of ammonia, or by lime and the subsequent treatment of the hydrated oxide with carbonic acid, or by the joint action of carbonic acid and carbonate of lime. The carbonate is heated in contact with the air until oxidized.

Oxide of Cobalt.—By calcining the oxalate, the chloride, or the peroxide, with sal ammoniac, in the two latter cases in a current of oxygen or atmospheric air, and boiling the mass with hydrochloric acid, Schwarzenberg obtained the proto-peroxide in the form of octohedral crystals, insoluble in most acids, and not magnetic.

By fusing an oxide of cobalt with hydrate of potassa, for a length of time, he obtained a black, micaceous, soft, scaly substance, which is not acted on by cold dilute nitric acid. On the supposition that cobaltic acid is Co^3O_5 the new salt would be $\text{KO}, 3\text{Co}^3\text{O}_5 + 3\text{H}_2\text{O}$.

Antimony.—Schneider has determined the equivalent of this metal, by reducing its native sulphide in a current of hydrogen at a low temperature; he finds a number much lower than that of Berzelius, viz. 1593 instead of 1613. [Is it not possible that a small quantity of antimoniu-retted hydrogen may have been formed? Berzelius' numbers have not been generally found very incorrect.—H. C.]

Tungsten.—A. Riche prepares the metal by acting on tungstic acid heated with hydrogen for several hours in a porcelain tube. It appears as small hard crystalline grains, infusible in the heat of a furnace, but fusible by 200 Bunsen's elements. It is not oxidized in the air unless at a very high temperature; it combines with chlorine at 572° F. Nitric acid slowly converts it into tungstic acid. At a red heat it rapidly decomposes water. Iodide of tungstmethyle can be obtained in the usual way, and from this the oxide, which forms uncrystallizable salts. The equivalent of tungsten is 87.

The terchloride is obtained by the action of chlorine or the metal, and the bichloride in small quantities by the action of hydrogen on the terchloride. By heating one part of tungstic acid with three parts of charcoal in a current of chlorine, the so called chloride is obtained, which the author finds to be WCl_2O , with $2\text{H}_2\text{O}$ it gives $\text{WO}_3 + 2\text{HCl}$. The bisulphide was also obtained.

Titanium.—Mr. Duppa has obtained the bromide by passing bromine over a heated mixture of titanous acid and charcoal, and purifying by distillation over mer-