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# Perchloride of chromium

M. Wöhler

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The following process yields a pure and perfectly crystallized oxide of chromium :—heat neutral chromate of potash to redness in a porcelain tube, and pass a current of chlorine over it ; the chlorine is entirely absorbed, oxygen is disengaged, and there remains in the tube a mixture of oxide of chromium in fine crystals, and chloride of potassium : this crystallization of oxide of chromium appears to have some analogy with that of peroxide of iron in the calcination of a mixture of common salt and sulphate of iron.

The temperature at which the reaction is effected influences the crystallization of the oxide ; when the operation is conducted at a low temperature, the oxide is in large transparent laminæ of a green colour ; but when the chlorine is passed over the chromate previously made very hot, the oxide of chromium produced is then black and very hard, and resembles that prepared by M. Wöhler's process, which consists in decomposing by heat the bichromate of perchloride of chromium.—*Ann. de Ch. et de Phys.*, December 1844.

#### PERCHLORIDE OF CHROMIUM. BY M. WÖHLER.

By the following process a chloride of chromium is obtained which contains more chlorine than the protochloride :—put into a porcelain tube some peach-blossom coloured crystallized anhydrous chloride of chromium ; heat it and pass over it a current of chlorine ; it is readily converted into a brown substance, which sublimes and has all the properties of a perchloride.

This perchloride differs, in the first place, from the protochloride by its colour ; secondly, the anhydrous protochloride is well known to be insoluble in water, whereas the perchloride is soluble and even deliquescent ; when treated with hot water it is immediately decomposed, and yielding chlorine is converted into protochloride. The author has not yet obtained this compound quite free from protochloride, and has not, therefore, yet submitted it to analysis.—*Ann. de Ch. et de Phys.*, December 1844.

#### DOUBLE CHLORIDE OF POTASSIUM AND CHROMIUM.

M. Fremy remarks, that it is well known that chloride of chromium does not combine directly with the alkaline chlorides ; but he found that when these two chlorides were formed together, they combined and formed double chlorides ; thus when chlorine is passed over a mixture of charcoal and chromate of potash, a fine double chloride of potassium and chromium is formed ; this is effected by putting the mixture into a tubulated earthen retort, and when red-hot passing a current of chlorine over it ; a considerable quantity of anhydrous protochloride is formed, which sublimes, and at the bottom of the retort there is found the double chloride of potassium and chromium. This salt has a fine rose colour ; it is very soluble in water and deliquescent ; the water, which at first dissolves it, afterwards decomposes it into chloride of chromium and chloride of potassium. This action shows that it is not possible to preserve this salt in the humid way ; it was found impossible directly to combine, by the agency of