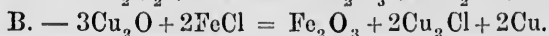
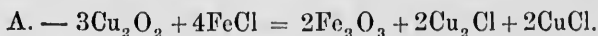


EXPLANATIONS.

Chloridizing the Copper.—The reaction between protoxyd of copper and protochlorid of iron gives rise to peroxyd of iron, and a mixture of the two chlorids of copper, two thirds being as dichlorid, and one third as protochlorid of copper, as shewn in the equation A. The red oxyd or dinoxyd of copper in like manner gives rise to peroxyd of iron, but yields a mixture of two thirds dichlorid and one third of metallic copper, as shown in the equation B.



Inasmuch as the metallic copper (2Cu) set free in B. is readily converted into dichlorid by the protochlorid, (2CuCl) of A, it follows that if not more than one half of the copper be dinoxyd, the remainder being protoxyd, the whole will be chloridized by the action of the protochlorid of iron bath.

Solubility of the Dichlorid of Copper.—While the protochlorid of copper is very soluble, the dichlorid is insoluble in water, but readily soluble in a strong solution of sea-salt, and of most other chlorids. A saturated brine at a temperature of 194° Fahrenheit, (90° Centigrade,) will hold in solution more than 16 per cent. of dichlorid of copper, and at 104° F. (40° C.) more than 8 per cent. A brine containing fifteen parts of salt to one hundred of water, dissolves at 194° F. (90° C.) 10·0 per cent., at 104° F. (40° C.) 6·0 per cent., and at 57° F. (14° C.) 3·5 per cent. of dichlorid of copper. When these strong solutions are diluted with water they deposit much of the dichlorid as a white crystalline powder. A solution made with five parts of salt to one hundred of water, dissolves at 194° F. (90° C.) only 2·6 per cent., and at 104° F. (40° C.) only 1·1 per cent. of dichlorid of copper. The above figures are approximate and a little below the results of actual experiment. 100 parts of dichlorid contain 64 parts of metallic copper.

Composition of the Bath.—The equivalent weight of protosulphate of iron or copperas is 139, and that of common salt 58·5,