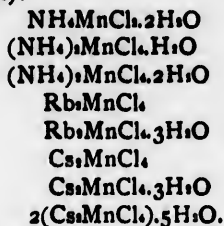


## PART I.

## MANGANESE COMPOUNDS.

The following is a list of the salts hitherto described containing manganous chloride, combined with the chloride of some alkali metal (or of ammonium):



Each of the salts in this very irregular series will be considered in detail in its proper connection. There is, however, a salt which should be considered before taking up the compounds in this list and those closely related to them.

*Manganous Chloride,  $\text{MnCl}_2 \cdot 2\text{H}_2\text{O}$ .*

In attempting to prepare a double chloride of manganese and lithium, and also of manganese and magnesium, a substance was obtained which proved to be manganous chloride with two molecules of water of crystallisation instead of four, which is the normal number. The new form of the substance was obtained by adding a considerable quantity of ordinary manganous chloride to a concentrated solution of lithium chloride in water, then evaporating somewhat and allowing to cool. When magnesium chloride was used instead of lithium chloride, either alcohol containing water, or water alone served as the solvent, a few drops of hydrochloric acid being usually added. When magnesium chloride is present there must be added a considerable excess of manganous chloride, or a double salt will be produced instead of the simple chloride. Manganous chloride, as thus obtained, crystallised in beautiful pink crystals, usually about one centimeter in length and quite slender. The ends of the crystals were frequently hollow for some distance inward. They usually formed radiating groups, but were sometimes obtained in perfectly definite crossed twins.