Efforts were made to produce, if possible, mixed salts (a chlor-bromide and a chlor-iodide) of definite composition. These experiments will now be described.

If a hot, saturated solution of manganous chloride be saturated with potassium bromide and then allowed to cool, crystals are deposited exactly similar in appearance to those of the salt $KMnCl_3.2H_2O$, but containing a considerable amount of bromine. On evaporation of the solution further deposits of crystals can be obtained. The percentage of bromine was found to vary in different crystallisations, as shown by the following analyses, the first being of a very early deposit and the second of a much later one:

I. 0.7380 gram of the salt was dissolved in 500 cc. of water and divided into two equal parts. In each portion the chlorine was precipitated as silver chloride, one of the precipitates being collected and weighed in a Gooch crucible, while the other was reduced to metallic silver in a current of hydrogen.

0.3690 gram gave 0.6621 gram AgCl + AgBr, and 0.4823 gram Ag. Hence Br = 0.03836 gram = 10.40 per cent., and Cl = 0.14144 gram = 38.33 per cent.

II. The amount of silver which a given weight of the salt would precipitate was determined volumetrically (by Mohr's method), and, in a separate portion, the weight of the mixed precipitates formed from a given amount of the salt was determined. This method is more rapid than the one previously mentioned, but the results are probably less accurate.

0.3134 gram salt gave 0.5434 gram AgCl + AgBr, and 0.3238 gram precipitated 0.40001 gram Ag. Hence Br = 0.0521 gram in 0.3134 gram salt = 16.62 per cent., and Cl = 0.1041 gram in 0.3134 gram salt = 33.22 per cent.

III. A complete analysis was made of a deposit intermediate between the two just given.

0.4719 gram lost at 105°–110° 0.0671 gram H_2O = 14.22 per cent. H_2O, and gave 0.1564 gram K_2SO_4 (14.88 per cent. K), and 0.1395 gram Mn_3O_4 (21.29 per cent. Mn).

0.3426 gram gave 0.5966 gram AgBr + AgCl, and 0.3133 gram precipitated 0.3916 gram Ag. Hence Br = 14.53 per cent., and Cl = 34.62 per cent. In this case the potassium was weighed as sulphate, to ensure the absence of bromine.