

A READY APPROXIMATE TEST FOR IRON.

By ED. F. MOODY, A. M.

HAVING observed the almost constant presence of small quantities of iron in solutions, I have frequently found it desirable to gain an approximate idea of the proportion, by an easy method and at a moment's notice. Not meeting with any formula to that effect, I prepared the following table for my own use:

One grain of iron per-hydrogen was dissolved to sesquichloride, and thrown into a pint (7291 grs.) of distilled water, and each measured addition of water well stirred in before testing. The tests applied were saturated solutions of ferro-cyanide and sulpho-cyanide of potassium. Small tubes were used, unless otherwise indicated. No time was allowed, to observe whether a precipitate fell or not, indications being as to color only.

Although the color produced by sulpho-cyanide was permanent as long as observed, yet, as it was possible that a trace of nitric acid might be present, or that a portion of the proto-chloride might not have been changed into the per-salt, the same experiment was repeated, varying the iron solution. In this case iron per-hydrogen was heated in an atmosphere of dried chlorine gas and 2.93 grs. (equal to one grain of iron) of the dry crystals of sublimed sesquichloride were dissolved and poured into distilled water, as before, and another portion of the crystals tested for proto-salt. The results did not differ sensibly from the first experiment.

As an aid to the memory, the weight of the liquid measure is recorded to the nearest 10,000 grains.

I.—WITH FERRO-CYANIDE OF POTASSIUM.

LIQUID MEASURE.	ONE PART OF IRON IN PARTS OF SOLUTION.	COLOR.
One pint.....	7.291	Deep.
	30.000	Light.
One gallon.....	60.000	"
	90.000	Faint.
Two "	120.000	"
	140.000	Mere tint.
Three "	175.000	" in large tube.
	200.000	Extremely faint upon looking down a full 6-inch tube over white paper.
	220.000	" " "
Four "	230.000	No trace.

The examination was continued from this point with sulpho-cyanide, due precaution being observed to keep the liquid slightly acid.

II.—WITH SULPHO-CYANIDE OF POTASSIUM.

LIQUID MEASURE.	ONE PART OF IRON IN PARTS OF SOLUTION.	COLOR.
Four gallons	230-000	Deep tint.
Five "	300-000	Medium tint.
Six "	350-000	Faint "
Seven "	410-000	" "
Eight "	470-000	Very faint tint.
Nine "	525-000	" " "
Ten "	580-000	" " "
Eleven "	640-000	" " " large tube.
Twelve "	700-000	Extremely faint upon looking down a full 6-inch tube over white paper.
Thirteen "	760-000	" " "
" and half	790-000	" ? " ? " ?
Fourteen	816-000	No trace.

To apply the above, carboy chloro-hydric acid gives a deep blue with the ferro-cyanide, or one grain of iron in about a quart. B and C's common HCl gave a much lighter color, or about one grain to the gallon. A sample of refined sulphate of zinc corresponded to one grain of iron in four to five gallons of the saturated solution. It was evidently purified, according to the indications afforded by ferro-cyanide. A sample of pharmaceutical chloride of zinc, regarded as pure, appeared to contain one grain in 450,000, or about seven to eight gallons.

From the London Mechanic's Magazine, July, 1867.

ELECTRO-CAST BRONZES.

IN a former article on the English bronzes in the Paris Exhibition, we referred to the advantages of electro-casting over pyro-casting, and adverted to an erroneous impression generally existing as to the want of solidity of the former as compared to that of the latter, and then promised to give a detailed account of the process of electro-casting to assist to remove that erroneous impression. We will now attempt to redeem that promise. We will begin by assuming that the model is formed in clay, or that a plaster cast is taken from it in portions of suitable size for the convenience of casting, if the figure be large, or if small in one piece. Each portion is first saturated with boiled linseed oil, or some suitable varnish, to prevent it