

This mixture was treated in the usual manner. The product weighed 8900 grains, and contained

Soluble.....	2.77 per cent.	= 246 grains copper.		
Insoluble.....	.25 "	22.2 "	"	"
Unaccounted for.....	1.3 "	1.3 "	"	"
		270.4	"	"

Thus 91.4 per cent of the copper contained in the ore originally used was recovered in a soluble form.

The residue from the experiment last described, after thorough lixiviation and drying, contained 0.44 per cent copper. Now very few of the slags from copper furnaces contain less than this percentage, and the refuse products of ordinary ore in dressing-operations seldom assay less than 1.5 per cent. In having produced therefore a residue containing as low a percentage as the above, it may be assumed that a point was raised where its copper contents might be disregarded. This residue consists, however, almost exclusively of iron oxide and the earthy matrix of the ore, and by virtue of the former is of value for mixing with fresh ore to produce the oxidation of the sulphur, and the consequent extraction of the copper contained therein. In order to test its usefulness in this respect a fourth calcination was made, with the following mixture:

2000 grains residue of 0.44 per cent	= 8.8 grains copper.
1000 " fresh ore of 8.6 "	= 86 "
600 " salt.....	

3600

94.8 grains copper.

The product weighed 3710 grains, and contained as follows:

Iron oxide and insoluble matter.....	72.13	
Cupric oxide insoluble in water and dilute sulphuric acid.....	.27	= 0.22 copper.
Cupric oxide soluble in dilute sulphuric acid.....	.13	= 0.11 "
Sulphate of soda.....	19.22	= 4.33 sulphur.
Chloride of copper.....	4.7	= 2.22 copper.
Perchloride of iron.....	1.42	
Chloride of sodium, by difference.....	2.13	
	100.00	

Of the 94.8 grains copper contained in the original ore, there were consequently

Dissolved by water.....	82.36 grains	= 86.88 per cent.
Dissolved by dilute acid..	4.08 "	= 4.3 "
Left in residue.....	8.16 "	= 8.6 "
Unaccounted for	.20 "	= .22 "

94.80