

aner. The product

246 grains copper.

2.2 " "

1.3 " "

1.4 " "

the ore originally

ed, after thorough

at copper. Now

in less than this

ore in dressing-

having produced

as the above, it

copper contents

however, almost

the ore, and by

resh ore to pro-

ment extraction

its usefulness in

the following

ins copper.

"

ns copper.

as follows :

.22 copper.

11 "

33 sulphur.

22 copper.

ore, there

cent.

If however we neglect the 8.3 grains copper contained in the residue used, which it is perfectly reasonable to do, then 95.7 per cent. of the copper in the ore is dissolved in water alone, and the whole of it on the additional use of a slight quantity of dilute sulphuric acid. One of the most striking facts deducible from the results of this experiment is that 46.64 per cent of the sulphur contained in the original ore was converted into sulphuric acid, and then into sulphate of soda. The amount of chlorine liberated by the formation of such a large quantity of this salt, must have been greatly in excess of what was necessary to render the copper soluble.

On account of this latter circumstance I attempted to reduce the quantity of salt used, and made four calcinations in the proportions of two parts of residue, one part of fresh ore, and one fourth of a part of salt. The ingredients, used with their copper contents, were as follows.

	1.	2.	3 & 4.
	GRS.	GRS.	GRS.
Residue.....	2000 with 8.8 Cu	1500 with 6.6 Cu	2000 with 20 Cu
Fresh ore.....	1000 " 86.0 "	750 " 64.5 "	1000 " 86 "
Salt.....	250 "	175 "	250 "
	3250 with 94.8 Cu	2425 with 71.1 Cu	3250 with 106 Cu

The products of these four experiments contained of copper respectively :

	1.	2.	3.	4.
	GRS.	GRS.	GRS.	GRS.
Soluble in water.....	59.11	40.5	62.22	66.00
Soluble in dilute SO ₃	14.69	7.3	3.60	10.00
Insoluble	} 21.00 {	7.3	18.18	17.21
Unaccounted for.....		16.0	22.00	12.79
	94.8	71.1	106.00	106.00

These results were by no means encouraging, yet the quantity of salt was quite sufficient for chloridizing the copper. One fact must however be mentioned with regard to these trials; they were very diligently stirred during the calcination.

No other resource was left but to return to experimenting with a larger quantity of salt. Accordingly the following ingredients were mixed and calcined :

2950 grains residue of 1.0 per cent. =	29.5 grains copper.
1500 " fresh ore of 8.6 " =	129.0 "
750 " salt.....	
5200 grains containing.....	158.5 grains copper.