

quantity was sufficient to  
de-chloride. It becomes  
copper contents, 47  
temperature was kept very  
possibly have affected  
of the calcination  
decomposition of  
copper.

accounted for in the  
volatilized, the fol-

mer.

al to 41.2 grains  
temperature until  
chlorine ceased.

7.33

$1.87 = 1.5$  copper.

2.6

$3.14 = 3.8$  copper.

0.06

0.00

at of the copper  
and that twenty-  
but whether in  
in. If we cal-  
in this experi-  
chlorine was de-  
the copper as  
pose that the  
of oxide, and  
e. The result  
was decisive,  
the product;  
periment also  
ess of chlorine

It will be recollected that the experiments just described were made with an ore poor in sulphur; containing no more of that element in proportion to the copper than is contained in copper pyrites. The results not proving satisfactory, I proceeded to experiment upon ores containing more sulphur, taking care always to keep the temperature very low, and to interrupt the calcination so soon as the development of sulphurous acid had ceased, and while that of chlorine and other gases was going on. The following are some of these experiments, with their results:

500 grains ore from Escott, containing 10.4 per cent copper (and both iron pyrites and copper pyrites), were calcined with 500 grains of iron oxide and 200 grains of salt. The product weighed 1184 grains, and gave with water a solution from which iron precipitated 49.6 grains of copper. Since fifty-two grains were present in the ore operated on, it is evident that 94.2 per cent of the copper was removed in a soluble form.

500 grains ore from Escott, containing 4.5 per cent of copper, and a considerable amount of iron pyrites, were calcined with 100 grains of iron oxide and 100 grains of salt. The result weighed 618 grains, and when heated with water yielded a solution containing 22.2 grains copper. 22.5 grains were present in the original ore; hence 97.7 per cent of the copper was dissolved.

300 grains of the same Escott ore, with 4.5 per cent of copper, 300 grains of ore from Bruce Mines containing 8.7 per cent of copper (and no iron pyrites), 300 grains of iron oxide, and 300 grains of salt, were calcined until chlorine was strongly developed. The result treated with water gave a green solution containing thirty-six grains of copper. Since the ore used in this experiment contained 39.6 grains copper, 90.9 per cent of the metal was removed in a soluble state.

300 grains of Bruce Mine ore of 8.7 per cent, 200 grains of iron pyrites from Brockville, 300 grains of iron oxide, and 200 grains of salt were calcined in the manner above mentioned. The product gave with water a solution containing 27.1 grains copper. The ore contained only 26.1 grains, and the excess may have been derived from the iron pyrites. In this case, therefore, the whole of the copper of the ore was dissolved.

The same mixture as the preceding, calcined for a longer time, yielded only 14.5 grains of copper in a soluble state.

400 grains of Bruce Mine slimes of 5.1 per cent, 400 grains of iron oxide, 100 grains of pyrites from Brockville, and 100 grains