it cannot make up for a deficiency of sulphur in the original ore; and with or without common salt that ore will be treated with the greatest advantage which contains the largest proportion of sulphur. In proof of this the two following experiments may be cited:

1000 grains of slimes from the Bruce Mines, containing 5.20 per cent. of copper in the state of copper pyrites, but no admixture of iron pyrites, were calcined with 100 grains of common salt. The result yielded to water 13.7 grains of copper. Hence only 37.9 per cent. of the copper was extracted.

500 grains of ore from Escott, containing 10.4 per cent. of copper and an admixture of iron pyrites, were calcined with 100 grains of salt. The product yielded to water 40 grains of copper. Consequently 76.9 per cent. of the metal was removed.

In reflecting on the necessity of a sufficient supply of sulphur, it occurred to me that any means which would facilitate the conversion of the sulphur into sulphuric acid, instead of allowing it to escape as sulphurous acid, would be of advantage if applied in such calcining operations as those here referred to. Having in former experiments * demonstrated that the addition of peroxide of iron increased the amount of sulphuric acid formed in such calcinations, it occurred to me that it might be possible even with an ore containing no more sulphur, in proportion to the copper, than copper pyrites, to convert so much of it into sulphuric acid, as would in the presence of common salt develop sufficient chloride to render the whole of the copper soluble. I accordingly calcined the following materials together:

200 grains copper pyrites.
400 grains ferric oxide.
200 grains salt.

800 grains in all.

The copper pyrites, which was from Escott, contained 23.5 per cent; = 47 grains of copper. The residue after calcination weighed 657 grains, and on analysis gave—

Insoluble iron oxide.....	67.9
Insoluble cupric oxide.....	2.2 = 1.8 copper.
Sulphate of soda.....	10.1
Chloride of copper.....	3.4 = 1.6 copper.
Chloride of sodium (by difference.)...	16.4
	100.0

* Canadian Naturalist, vol. vii, p. 196.