

is never obtained at the first or second treatment, since the sulphur is used as a means of concentrating the copper, while at the same time the impurities are to be got rid of. The matte is broken up and placed in the reverberatory furnace together with silicious fluxes. The iron and other impurities in the form of sulphides become reduced to sulphates, then to oxides, and are carried off into fluxes. This process is repeated several times until an almost pure sub-sulphide of copper is obtained, which will also contain any metallic copper which has been reduced in any of the processes. This last form is called white metal, which is next smelted with a small amount of coke or coal and thoroughly roasted to an oxide, which is afterwards roasted with a fresh supply of coal, when the carbon combines with the oxygen and sets free the metallic copper in the form called blister copper. This is treated by hammering and rolling to bring it into a marketable form.

It has been the object of this paper to treat only of the reduction of the ores to the form of mattes, so that this last sketch is only given to show in a very few words the treatment after it leaves our Canadian smelters. With the activity shown during the last ten years, together with the prospects of the future, it is to be hoped that our vast mineral resources will justify the putting up of smelters for the perfect treatment of copper ores in our own country. Our one great drawback is, of course, the lack of coal, but if the mining companies can succeed in getting the duty on that article removed, doubtless we will soon have a perfect smelting process, and then we have every reason for believing that Canada will become the chief source of the supply of copper for the world.