

it should be crushed and calcinated in a few hours in calcining furnaces. Heap roasting of matte takes about as long as the ore, because it has to be re-roasted two or three times, as it does not roast freely like the ore. But as there is only about one-sixth so much to handle as of the raw ore, the expense of ore per ton is not heavy. A matte of about 50 to 60 per cent. of nickel is produced by the so-called concentration smelting.*

The ancient treatment of this matte has been described in every well-known metallurgical book ; it is slow and expensive. Dr. Peters tells us that "Efforts are being made to improve upon it, and one of the principal nickel-smelting companies at Sudbury is erecting a plant to Bessemerise this rich sulphide of copper and nickel.

"According to the laws of chemical affinity, as modified by the high temperature employed, we know that the iron still remaining in the matte ought to oxidise first, forming with silica a slag that may be poured off. Next the nickel should oxidise and slag away, leaving behind the pure copper.

"But whether such accurate results will be reached in practice seems to me rather doubtful.

"In the Bessemerising process, as applied to iron, the

* "Modern American Methods of Copper Smelting," by Edward Dyer Peters, junior, M.E., M.D. (fourth edition), New York 1892, p. 295.