

At Copper Cliff the Canadian Copper Company have spared neither trouble nor expense in the construction and equipment of their roast yard. The natural rough and uneven surface has been cleared and levelled, and the whole given a gentle slope, which, with carefully made drains, serve to remove at once any rain or surface water. These precautions have to be taken to prevent loss of copper as soluble sulphate of copper, which is liable to be washed out by the rain.

At the Murray mine a large shed has been erected to roast ore during the winter months, with openings in the roof to allow of the escape of sulphurous fumes, but during last summer they had no regular roast yard, and the few heaps burnt could only be placed where the surface of the ground would permit. This was also the case at the Blezard and Worthington mines, and the mechanical loss alone from this carelessness must have been of considerable moment. The shaft of the Copper Cliff mine, on an incline of  $45^{\circ}$ , has reached already a depth of nearly 600 feet. It is provided with a double skip road, the skips dumping automatically at the mouth of the breaker in the top of the rock house. Here the ore is sledged to a proper size for the  $15 \times 9$  in. Blake crusher set to about  $1\frac{3}{4}$  inches, which has a capacity of nearly 20 tons an hour. It is then passed through a revolving screen where it is sized into three classes for the succeeding operation of roasting. The coarse size passes a 4-inch ring, the medium or ragging, a  $1\frac{3}{4}$ -inch ring, while the fines pass through one  $\frac{3}{4}$  of an inch in diameter. Each of these sizes falls into a separate bin under which a car runs. Thus the ore is loaded automatically into cars holding  $1\frac{1}{2}$  tons, whence it is transported to the upper story of the ore shed. There it falls into a series of bins from which it is loaded by means of inclined steel shutes into the cars and taken up a rather steep grade to a high trestle which extends the whole length of the roast yard. The only wood that can be obtained is dead pine, a good deal of the surrounding district having been burnt over about 20 years ago. This can be procured very cheaply, and although it does not roast the ores as thoroughly as hard wood, it makes very fair and economical fuel, and serves on account of its short fierce heat to ignite the pile, and this once started continues burning on account of its sulphur contents. These piles are built as follows :—The place selected