furnaces than in the revolving cylinder, where indeed one cord a day would roast ten tons of ore.

There was no comparison, either, in the cost of labor in these different systems (in the revolving cylinder it was about 50 cents per ton), and our results give a very decided advantage to the automatic continuous cylinder in the uniformity of the roast. It was found that ore which took one hour and three-quarters to pass through the cylinder was thoroughly roasted, so far, at least, as was necessary for amalgamation.

The chief objection to the cylinder was in the amount of flue-dust made, and that in a somewhat less degree is also the objection to any hand-rabbled furnace. The arsenic fumes are very dense, and when aided by a rapid current of air, they easily carry over dust and gold.

The question is not at all one of roasting the ore, for arsenical sulphurets roast much more easily, more quickly, and sinter less than simple sulphurets; but the important question—the only practical difficulty found in the treatment of these ores—is that of preventing a loss of extremely fine gold, which is mechanically carried over with flue-dust and arsenic fumes. This cause of loss, though it will probably always exist to a greater or less extent, does not appear by any means insuperable; but our tests have thoroughly convinced us that, both on the score of expense and loss in flue-dust, no hand-rabbled furnace is admissible. The automatic continuous revolving furnace, known in the Western States as the White & Howell furnace, and in England as the Oxland, is entirely satisfactory so far as expense is concerned; but without special precautions, it will make too much flue-dust. By taking out most of the shelves, or leaving only sufficient to turn over and not lift the ore (which when hot, runs like quicksand), the greater part of the loss which we encountered would, no doubt, be avoided. There are other modifications in the revolving cylinder which have suggested themselves; but as they have not been tried, they need not be mentioned here.

In Philadelphia, a revolving hearth, with fixed rabbles, and with a preheating furnace forming the flue from the revolving hearth, has worked well, and undoubtedly made less dust than the cylinder.

Of course, some of the gold escaping is recovered by the retreatment of the flue-dust; but there would still be a loss, which should, and in a great measure undoubtedly can, be avoided.

The roasted ore was found to amalgamate with the greatest possible facility, 80 and even 85 per cent. of the gold contained in the