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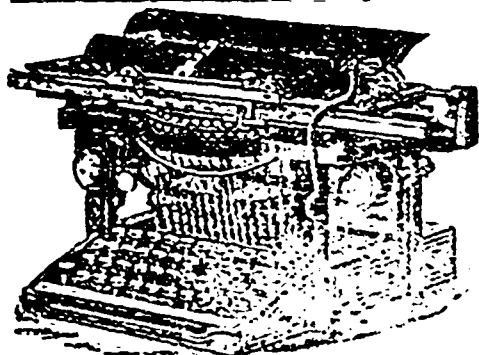
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JAMES JACK, St. John, N. B.

The question of durability, or wear and tear, is very important, and has commanded the close attention and scrutiny of the engineers who have had this matter in charge, and while crucial experiments have not so far extended beyond four months, still we feel justified in saying that the wearing parts of the mill will not depreciate or require renewal as often or to such an extent as the same renewal or repair is required in any other existing process for the recovery of gold.

Only the best material is used for the wearing parts, and experiments which are now being conducted with chrome steel, have so far shown no perceptible wear and tear. Every effort has been made, and will continue to be made, to definitely settle this very important point, and we fully believe that the wear and tear so far as the grinding parts are concerned, have been reduced to a minimum.

This is essentially a mill for the extraction of gold, and while it does in effect extract a considerable portion of the silver, which is often combined with the gold, it does not save all the silver in the amalgam, and when that metal is an important constituent in value of the ore, the residue passes over in the slimes, which may be pan amalgamated, or treated by different methods that are now under consideration, both mechanical and chemical, either or both of which it is believed, can be applied effectually and cheaply, and all the silver saved.

Many of the important facts regarding the Crawford mill are discussed in the circular now before you, hence I do not propose to weary you with a repetition, but refer you to the fact that results of primary importance have been obtained by the treatment of the Canadian ores with the Crawford mill, under the observations of gentlemen well known to be close critics of the highest character. It is possible that some of these gentlemen may be present, and, if so, I shall cheerfully appeal to them for a confirmation of my conclusions as to its merits.

The Crawford mill has now been sufficiently tested and examined to warrant its presentation to all parties interested in mining gold areas. It will soon be in operation in the gold producing states of the Union, and probably will work a change in the amount of gold produced, as well as the value of the mines from which it is obtained.

It will not only, as we believe, make mines remunerative which are now abandoned, but it will provide the means for the profitable recovery of gold contained in the large deposits of tailings which have accumulated and in many instances remain as a bequest from the use of stamps, ordinary mills, or chlorination.

Some facts relating to this latter process may be interesting, and while not offered for the purpose of depreciation or antagonism to a well-known and much-esteemed process for the recovery of gold, are presented from the official reports of the U. S. census, recently published, in which the question of chlorination is ably discussed, and therefore may be worth consideration.

In that report the writer goes on to say, in the chapter on California, page 144, and speaking of the general use of chlorination in that state to obtain the gold from concentrates:—

"A chlorination plant, with a capacity of six tons in 24 hours, costs from \$6,000 to \$7,000, and it will cost such a plant about \$10 a ton to treat the concentrates. From 90% to 92% of the gold value of the concentrates was recovered. At all important points in California there are now custom chlorination works, which charge about \$20 per ton for treatment, and guarantee about the above percentage of returns."

In the *Engineering and Mining Journal* of August 10th, 1889, quoted in the report, page 143, appears the following:—"The chief objection to a plant of 50 tons or more capacity in 24 hours for the Platner process, is the enormous size and the length of time it requires to complete a single operation. The limit to the size would probably be a 50 ton capacity; when more is treated another battery of tanks would be necessary."

Assuming these conclusions to be correct, as to cost of chlorination by the Platner process, and that the article from the *Journal* is correct as to capacity, it may be useful to contrast the cost and results of treating the same amount of ore by the Crawford mill; thus Platner's process to treat 50 tons of ore every 24 hours will require an expenditure for plant of \$50,000, which can be treated at the mill at a cost of \$10 per ton, equalling \$500, and saving from 90% to 92% of gold.

5-12 inch Crawford mills can be put in place, if the approach is at all reasonable, for the sum of \$15,000, and will save from 90% to 92% of the gold at a cost not exceeding \$1 per ton, thus showing in favor of the Crawford mill \$35,000 in cost of plant, and a saving in treatment of \$450 on every 50 tons of ore treated.

It may be that the cost of a chlorination plant to handle 50 tons of ore daily would be less in proportion than the same plant to handle 6 tons. Of this I can have no accurate means of judging, but as a general rule the cost of constructing any elaborate plant will exceed the estimate. But in regard to the Crawford Mill there can be no mistake, if the place where it is to be located is in California and within 30 miles of a railroad station.

This contrast is made with the Platner process for the reason that it is the favored and recognized process used in California, where the largest amount of gold now produced is subjected to the chlorination process. The cyanide or other process may be equally or more valuable, but I submit that in the main the same results would be obtained.

In regard to the amount of gold which is obtained by the Platner process, I have recently had occasion to treat a small amount of slimes sent to the metallurgical works in New York from a large chlorinating establishment in Nevada, and was somewhat surprised at the per cent. of gold I was still able to recover from the samples by passing it through the Crawford mill, as in one sample there was found to still remain gold to the value of \$8.27 per ton, and in the other \$6.20, which had not been saved by the chlorination.

Note "A" (No. 1).—While recognizing the general attachment of mining