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ke district for

to give an equivalent to 10 dwts. to the ton. The same observation applies in other forms to all the other properties in the district.

"At a depth of 330 feet on the Tudor lode, the yield was 7 dwts. por ton, and the mineral not paying expenses, the work was stopped. It has been shown that it is probable that one-third of the gold was lest in the It is probable that one-third of the gold was lost in the tailings, which were allowed to escape from the copper plates in front of the battery directly into the river. This would give a total average of gold in the quartz of 10 dwts. 12 gr., of which 7 dwts, was saved, and 3 dwts. 12 grs, lost. Assuming that 76 per cent. of the gold in the tailings could be recovered by the usual processes, at a cost of one-fourth, this would leave a profit on the tailings of 1 dwt. 16¹/₃ grs., and swell the total yield to 9 dwts. 15 grains per ton. A round buddle, with a bed 18 feet in diameter, and whose axis revolves at the rate of 3 or 4 revolutions per minute, will work up from 35 to 40 tons of tailings in A hours. A rotating buddle will do the same amount of work in much less time, and may consequently be made of smaller diameter. By the substitution of proper machinery, much manual labour in milling could be saved. Ten men were employed during 24 hours in breaking and feeding 35 tous of quartz; why should not this work be done by 4 men feeding a 'breaker' with hopper, and moved by the surplus water-power? Each of the stone-breaking machines at the Port Philip Company's unnes break 8 tons of quartz per hour, at a cost, including wear and tear, of about 10d. per ton. One of these machines would break 35 tons of quartz in 42 hours, at a cost of about 5 dols, by water-power, the estimate 10d. (stg.) a ton being based on steam power. Hence, with a 'breaker' and 'hopper,' a day might be effected, and the risk of gold being stelen during this part of the treatment reduced to a minimum, by which it is not improbable a still greater saving might be effected. "I have selected as an illustration of mining economics

"I have selected as an illustration of mining coonomies at Waverley the method of treating the quartz at the cheapest mill, namely, one driven by anyle water-power. All the other mills in operation are driven by steampower, anadgamation takes place in the battery and on tables; but no effort is made to concentrate the tailings, As long as quartz continues to yield the unusual average of 1 oz. to 1 oz. and 10 dwt, to the ton, the conomical treatment of the tailings is not a matter of vital importance, but when the average diminishes to 9, 8, and even 7 dwts. per ton, it becomes one on which, other things being equal, the continuance of active operations depends. provided that those operations are necessarily limited to one or two leads."*

Let these statements of facts in 1868 be contrasted with the following in March, 1870. My authority is one of the mine-owners at Waverley, to whom I applied for information respecting the progress of his works, in February of the present year. 'The mill an' mine are the same as referred to in the preceding par graphs:—

all "inner are not state to retrieve to the south side, on "I work at present four shafts on the south side, on tribute, which leaves my men with a yield of 3 dwts. per ton on average, from 1 dol. to 1 dol. 50 e, clear wages for every working day, and to me something over 50 cents per ton. The difference between 1 dol. and 1 dol. 50 e, wages depends entirely upon the greater or smaller ability and industry of the miners, by which they will raise larger or smaller quantities of quartz per day, which, with such a small yield as 3 dwts, per ton is all important.

"My arrangement with the miners is, that they get for their labour and the expenses, except crushing and hauling, all the gold, and pay mo for crushing and hauling 1 dol. 25 c. per ton.

" Report on the Waverley gold district, 1869.

"The lodo is from twelve to eighteen inches thick, and three men raise, on an average, from fifty to sixty odd tons of quartz per month. That the lode works extraordinarily easy is a matter of course; deducting the crushing and hauling, there romains not much more for the raising of the quartz than a little over 1 dol. 50 c. per ton.

⁶¹ In proof of my own profit of at least 50 cents per ton, you will find the following calculations:—I crush with eight stampers, in twenty-four hours, at least 13 tons on the average, and for this work I employ two very experienced feeders, who have, at the same time, charge of the mill, and two breakers. Of the feeders, one receives 1 dol. 40 c, and the other, 1 dol. 35 c. a day; and of the breakers, one 1 dol. 25 c., and the other, a boy, 1 dollar per day, that is altogether 5 dollars. This makes, with 13 tons, 38 dols. 5 c. per ton. The whole expenses of wear and tear (in the main part stampers' shoes) and loss of quicksilver, are under no etreumstances higher than 15c. per ton, which would bring the crushing expenses up to 53 dols. 5 c. per ton. The hauling costs 20c. per ton, and this shows that I make at least 50c. per ton clear.

50c. per ton elear. $^{\circ}$ 1 think this is the first instance that a lode of this thickness has ever been worked with a profit, at a yield of 3 dwts.

"Quite different is it with the South Tudor lode, which works very hard, a great deal harder than ever the north dip worked. The two reasons of this are, first, that the south dip is so very much flatter than the north dip, and, second, hat the small band of soft slate (goudge) which was nearly everywhere (with some interruptions) on the north dip, is nearly entirely wanting on the south dip, which makes the stripping of the lode a by far more difficult task. Nevertheless, I work the lode as cheap as I ever worked the north dip in the cheapest time; but the men had to work harder to make a living by it than they ever worked before. If it was not for the great searcity of work, they scarcely would endure it long, particularly in this humid winter, where half their time is lost by water-pailing (hoisting water in buckets).

"I pay 10 dollars for sinking and 40 cents for stopping, the men to lind everything, which brings up the cost, erushing and hauling included, to about 9 dollars per ton. I am putting up now a gin, and commence to sink down one shaft in advance of the others, preparatory to dispensing with all sinking except in the one shaft, which will always be the deepest point, and from which the lode is stopped out cast and west, in the form of terratees. I have no doubt that this arrangement will bring down the expenses to 8 dollars per ton, everything included. How long I shall be able to work without a pump I cunnts say, but Lake Major Company has worked without it down to 300 feet, though I have at present by far more water than there was in this part of the north dip.

"My experience on the north dip has convinced me that, as long as the formation remains the same, the mining expenses do not increase, down to at least 300 feet, and I am sure a good deal further, except in expenses of the pump. Where there is a pump, a horse gin will raise from two shafts all the quartz that can be mined, just as well from 300 feet depth as from 100 feet. I do not save the pyrites yet, because I have not yet put up a German buddle." "The system of mining generally adopted in Nova

The system of mining generally adopted in Nova Scotia greatly increases the expenses of raising the quartz. On the plan, page 615, the positions are marked of the shafts on part of the Tudor and north lodes.

The north lead and the Tudor lode are, on an average, 60 feet apart at their outcrops, their dips being nearly the same. The number of shafts sunk by different companies on these leads, within a mean distance of 2,000 feet, is 54, having a mean depth of 200 feet. This is equivalent to a shaft to every superficial area of 47 feet square.