

sum would pay off the principal, with 10 per cent. interest thereon, in a little under three years, and I have no doubt that the auriferous ground immediately commanded by the race would last out more than that time, even if fully worked with thirty heads of water per day.

On the theoretical basis above assumed, therefore, it would appear that the undertaking would be highly remunerative, but it would be very delusive to suppose that any such results as these could be reasonably anticipated in practice, for the following reasons :—

First.—The supply of water constantly procurable from the creek would not, in my opinion, be anything like ten heads, and it would be very difficult to say, under existing conditions of water rights already granted, how much it would be, or to guarantee that it would amount to more than two or three heads. When I saw the creek at proposed source of race, on 23rd ult., it was running about eight heads, which may be about its average, but is certainly not its minimum, and out of that there has to be an allowance made for a water right held, higher up the creek, for six heads, which was not being exercised at all at the time I was there. Besides this, too, there are two other water rights, amounting together to sixteen heads, held still higher up the creek, which, I estimate, from the water I saw in the races, could only have been partially exercised during the time I was there, so that if all these existing rights were fully exercised there would only be available, during dry weather, for the race now proposed, such water as finds its way into the creek between the level of the three existing rights above mentioned and the source of proposed race, a quantity which could not be safely estimated at more than two or three heads. Unless the existing rights, or some of them, are abandoned, or otherwise arranged for, there would, therefore, be no guarantee that, although not fully exercised now, they would not be so at an early date, thus limiting the available supply of water which can safely be reckoned upon, under existing conditions, as constantly procurable for proposed race, to two or three heads.

Second.—It is found in practice that, in consequence of a variety of causes, such as the cleaning up of claims, or the abandonment of same, and such like, it is not possible to sell constantly all the water available in a race for gold-mining purposes, and the average of sales from these causes is generally reduced to about two-thirds of the available supply. This applies all the more strongly where the supply is a large one.

Third.—It very seldom happens that the price ruling for water at any given time is maintained when the supply is increased ; and this is all the more the case when the supply is largely increased. It would not, therefore, be safe to estimate in the present case, that more than from 20s. to 30s. per head of water would be obtained for any considerable increase in present supply, or for any considerable time.

Taking now the minimum, as I before took the maximum of the possible results, there would be say 2½ heads of water constantly procurable from the creek, which is equivalent to 7½ heads per day of 8 hours, and assuming that two-thirds of this is sold constantly at 20s. per head per week, the gross revenue would be £260 per annum. As the maintenance and management then of even a very small race, if held by a company or the Government, would absorb all this revenue, there would be nothing left for interest ; so that although the cost of construction (including reservoirs,) under these conditions would not probably exceed £4,000, it is evident that the result would be a loss of that amount.

Unless the existing conditions as regards available water became modified, therefore, it would appear that the proposed undertaking offers no prospects of being a financial success.

Water Supply for Workings on North Side of Maerewhenua.

This is proposed to be attained in a similar way to proposal for south side, namely, by a water race from the Otekaike River, constructed to carry about 10 heads of water (along one of three alternative routes), together with reservoirs capable in the aggregate of holding the supply from race for sixteen hours out of the twenty-four. The alternative routes are as follows :—

First alternative : “The short tunnel line,” indicated on map in green.—By this proposal it is suggested to take all the water available at source of race out of the Otekaike River, and, after carrying it for a mile along the Otekaike Valley, and through a tunnel into the north branch of the Maerewhenua, to let it drop into that stream, from which it would be picked up lower down, together with such water as might be available in north branch of Maerewhenua itself, and carried on to the auriferous ground proposed to be commanded. The length of race which would have to be constructed for this project would be about 27½ miles, of which 46 chains would be tunnelling, and its cost, including reservoirs, would be about £15,000. In order to pick up a little more water out of tributaries of the Maerewhenua, it might be desirable also, in connection with this proposal, to construct a catchwater race, as indicated on plan by green dotted line, and the length of this would be about 6 miles, and its cost about £1,000. The total cost would, therefore, be about £16,000.

Second alternative : “The long tunnel line.”—This would commence at Otekaike River, at head of green line, and would follow same for 1 mile ; then along strong red line for a distance of 10 miles ; then along dotted red line for 87 chains ; then down creek (called Ben Lomond Creek,) to green line at the figures 1520 ; then along green line to end. The length of race to be constructed in this case would be about 27 miles, of which 87 chains would be tunnelling, and its cost, including reservoirs, would be about £21,000.

Third alternative : “The contour line.”—This would commence at Otekaike River, at head of green line, and would follow same for 1 mile, and then along strong red line to its end. The length of race to be constructed along it would be about 33 miles, and its cost, including reservoirs, would be about £12,000.

As the second of these alternatives is much more costly than either of the others, without possessing any special advantages commensurate with its extra cost ; and as it would also, on account of the long tunnel, take much longer to construct than either of the other routes, I think it might safely be left out of consideration.