

There are three other strong and apparently well-defined reefs occurring between the reef just described and the main road, a distance between a quarter and half a mile, in all of which gold has been found, and in which it would therefore be advisable thoroughly to prospect. Of one nearly 8 feet thick, 50 tons were crushed by Mr. Eggers, and produced at the rate of $2\frac{1}{2}$ dwts. per ton, though previous small trials had indicated a far better yield.

APPENDIX 2.

THE CANADA REEF AND BRUCE COMPANY, TOKOMAIRIRO.

This reef, to which I was kindly conducted by Mr. Capstick, jun., of Tokomairiro, numbers amongst the strongest and best defined of the province. Its strike is E. and W., and its dip north at 75° to 80° . It shows fine smooth walls with clay-casings, and crosses the country both in strike and dip—the latter a blue and greyish-blue hard phyllite, striking E. 23° S., and dipping southward at 75° to 80° . The length the reef is traceable reaches perhaps a mile, and it has more or less extensively been worked at various places by adits, deep open cuttings, and shafts over a distance of nearly half a mile, the workings furthest west lying high on the steep mountain slope facing the north branch of the Tokomairiro River. At present it is worked about half a mile east of the river by a fine vertical main shaft, $7\frac{1}{2}$ by $3\frac{1}{2}$ feet in the clear, arranged for ladders, double hoisting, and a 6-inch drawing lift. This shaft, sunk close to the reef, is 80 feet deep, and a cross-cut from the bottom north struck the reef at 10 feet. From this point a drive along the strike of the reef extends westward 180 feet, and eastward 550 feet, meeting at 400 feet a windlass shaft, from which stoping is being carried on towards the main shaft. As regards the nature of the reef, it consists of alternating blocks of good and hungry-looking quartz and mullock, dipping apparently eastward at a steep angle, and varying in thickness from 2 to 7 feet. A small block of hungry, white, and glassy stone exists close east of the main shaft, but farther on fine seamy, ferruginous quartz appears in the eastern drive, and continues, though interrupted by occasional small bands of mullock, the whole distance to the windlass shaft. West of the main shaft the reef looks well, and carries much pyrites along to very near the end of the drive, where a block of mullock makes its appearance. All the quartz passed through contains gold in very fine particles, but the blocks of the seamy, good-looking stone most, and there are in them also occasional narrow shoots, which, if taken out by themselves, would give very good returns. Such work, however, would amount to nothing else but robbing or picking the eyes out of the mine, and prove also the most expensive in the end; and Mr. Todd, the skilful mining manager, intends therefore, very properly, to work all out straight ahead. The quantity of stone available in this way on the eastern side alone will be very considerable, as by far the greater part of the backs between the level and the surface is still standing, and the windlass shaft lies 50 feet higher than the main shaft. Touching the yields, they are rarely above 5 dwts. of gold per ton, and according to Mr. Driver, the legal manager of the company, the mine pays its way at less than, and leaves a profit at, that figure. From what I could learn about the character of the reef in the old workings towards the west, it was very similar as in those just described—*i.e.*, blocks of quartz, alternated with such of mullock, and the former proved more or less auriferous. At one place, in fact, in an adit driven from the steep slope facing the Tokomairiro River, a patch of stone was found, yielding 5 oz. of gold per ton. The reef might on this side be opened by an adit from the river at a depth of perhaps 300 feet or over.

The crushing machinery consists of one battery of five heads of revolving stamps, driven by a fine turbine, which also work the hoisting gear and pumps for the shaft. The gauge of the gratings is 122 holes to the square inch, and the battery is supplied with a self-feeding hopper. The speed of the stamper is from 72 to 76 blows per minute, and the crushing capability of the battery 50 to 54 tons per week. As gold-saving appliances, are used two quicksilver troughs, with splash-board and 8-inch fall each, and four lines of blanket-strakes of 15 feet in length, laid at an inclination of 1 foot in 12. The blanket-sand, which contains a good deal of pyrites, is treated in the common revolving-barrel, and a dolly-tub and strake serve for collecting the quicksilver and amalgam. The aggregate of these appliances, which are each carefully superintended by Mr. Todd, and work to his satisfaction, comes very near to that of the Port Phillip Company, previously recommended. On considering the character and extent of the reef, in connection with the fact that, with good management, so small a yield as 5 dwts. per ton, and from so small a quantity of stone as the small battery is able to crush, already leaves a profit, I think there can hardly be a doubt that this mine would become a steady dividend-paying one, if worked on a larger scale, and with increased crushing power; at any rate, as the turbine is strong enough to drive another five heads of stamps, these ought, at least, to be added. About 6 chains to the north of the reef just noticed, and running quite parallel with it, its strike being E. and W., and the dip north at 75° to 80° , there is another reef, originally worked by the Table Hill Company, but apparently for a long time neglected. This is also remarkably well defined, judging from the fine smooth walls exposed in the top part of the old workings, which extend for 7 to 8 chains in length. According to Mr. Todd, its thickness ranged in these workings, which are quite inaccessible, from 2 to 7 feet, and its block structure, and the mode of occurrence of the gold, were quite the same as in the Canada Reef. The top portion paid in the average 5 to 6 dwts. per ton, but in depth it became poorer, the stuff from about 150 feet down, where it was opened, but not much worked, by an adit from the northern face of the hill, yielding only about 2 to 3 dwts. per ton. This, in connection with considerable expense attached to the timbering of the workings, and more especially to the conveyance of the stone to the crushing machine, brought the mine to a standstill. However, if this latter expense were saved by the machine being shifted to the bottom of the hill, near the mouth of the adit, the prospects of the reef are still such as to warrant the hope of its paying renewed working. As regards the crushing machine, which lies by road nearly a mile away on the slope facing the Tokomairiro River, it consists of two fine batteries of five heads of revolving stamps each, driven by a splendid water-wheel of 39 feet in diameter—perhaps the largest in the province. On account of the absence of a fly-wheel, the working of the batteries must, however, have been very unsteady. The gratings have 122 holes to the square inch, and the gold-saving appliances,