

Many other readings were taken of course, but the three here mentioned are on the highest points of the top of the terrace, the point to be gained. There are several claims at about the same level as the last mentioned on the top of the terrace, O'Connor's, Leary and Stains', Balkan's, &c., all on what used to be known as Back Creek, but which is now either sluiced away or obliterated by tailings, &c.

Returning to the 29 ft. delivery below the top of the terrace near Handley's Dam there is this point to be considered: The average depth from the surface of the known auriferous gravel drift seems, from recognized authorities, to be between 75 ft. and 80 ft. all along the terrace. So taking the least at 75 ft.; then $75' - 29' = 45'$ discharge above the bottom of the auriferous drift, which means, in other words, 101 ft. pressure from the head or intake of the siphon for sluicing down the upper face of the terrace: at Rimu, 231 ft. pressure to the bottom of the auriferous deposit; and at Seddon's Terrace, 151 ft. pressure, &c. A diagram is attached illustrating the above.

I think the above figures show that the water from the Kanieri Lake does command the terrace so far, at a fair working pressure for sluicing for a distance of a mile and a quarter to the southward of Rimu as far as Arch Creek on the top of the terrace, and, if the estimate of the depth of the auriferous drift from the ground surface be correct, a considerable area of ground near the top of the terrace for another mile beyond to Handley's Dam. Beyond this point again the top of the terrace rises towards Overlook Hill.

On the lower level several claims are being worked to good advantage with the limited supply of water available. Five parties along the terrace face between the upper and lower roads are sluicing and breaking good ground, others are tunnelling and slabbing in anticipation of a better supply of water being laid on by the construction of the race. There is abundant tailing room on the flat at the foot of the terrace, and plenty of fall for the ground proposed to be sluiced. The promoters of the race have acquired the right to take 150 sluice-heads of water from the lake, eighty of which it is proposed to convey to the terrace by means of the race. Grimmond and Company have a special claim of 100 acres at Handley's dam, and they have also acquired the race constructed from it.

Mr. McFarlane says, referring to the auriferous nature of the terrace: "The bulk of this ground has been prospected by shafts sunk in various localities, some being over 150 ft. deep, and from information received from the miners who have sunk some of these shafts, as well as from prospects personally tried by myself, I am confident that the value of the dirt throughout the 1,300 acres for an average depth of 75 ft. may be taken at the low estimate of 4d. per cubic yard. This would give the value of the gold to be won £2,621,000 sterling."

Mr. Lord says: "The extent of auriferous ground commanded by the race is about 1,280 acres of deep ground in the vicinity of Back Creek, Rimu, and Brighton Terrace. Besides this there is room for future extensions right down to the sea beach."

Mr. Alexander Aitken says: "The area of auriferous ground in the locality referred to (*i.e.*, Seddon's Terrace) is not less than 1,250 acres, and future working will in all probability extend that area. A low estimate of the depth of the material—most of which contains gold—to be sluiced away on that area would be 75 ft. The quantity of material to be sluiced away would therefore be at least 121,000 cubic yards per acre." Again: "Besides the ground in the neighbourhood of Rimu, the proposed race will pass through a large and extensive belt of auriferous country between Lake Kanieri and the valley of the Hokitika River, portions of which are now being worked. There are workings at Butcher's Creek, Coal Creek, and right hand branch of the Kanieri River, all of which are crossed by the line of race, and fair prospects have been obtained at Blue Bottle Terrace. An area of more than 2,000 acres is commanded at this locality by the proposed race, and portions are known to be payable, and would be worked if water was available."

On the other hand Mr. J. A. Smyth, who made the first reconnaissance survey, does not give a very hopeful opinion of the scheme, both with respect to the area to be worked and the suitable position of the race. And Mr. H. A. Gordon, in the report on mines for 1893, says: "Water would have to be delivered at a height of 450 ft. above sea-level, in order to command the working in this locality." By actual levels it is now shown, however, that it can be done at an elevation of 358 ft.

Beyond the foregoing opinions there appears to be no data of the depth of the auriferous gravel or of its value, Mr. McFarlane being the only one who reports having made a personal examination.

It appears to me that there is a large area of auriferous ground to be worked towards the sea from Rimu. I have, however, no reliable data, the opinion is based upon statements made by members of the Miners' Association and other reliable judges, which although, perhaps, to a certain extent interested, I do not think should be altogether doubted. Opinions are very decided in the matter that if water is brought in profitable employment will be found for a large number of miners for many years; and, weighing the question in an impartial manner, I am of opinion that the construction of the race would be a desirable work in connection with a general scheme for water conservation on this goldfield.

The final conclusion I arrive at is: Although the proposed race will not command the whole of the highest parts of the top of the terrace, there is a considerable area of auriferous ground for a distance of two and a quarter miles along the terrace to the southward of the Rimu township that could be sluiced to advantage by water from the source in question, and that, after carefully considering the subject, I find there is no practical difference in the levels between Messrs. McFarlane, Lord, and myself, because my last barometer level of 50 ft. above the lake on top of the terrace agrees with their 350 ft. level at the race termination at Handley's reservoir, which is about 29 ft. below mine, thus showing our total fall of 79 ft. from Kanieri Lake coincide.

Ross United Gold Mining Company.—Race No. 1.

Receiving instructions by telegram, 3rd July, to report on drainage of Ross Flat, I left Hokitika for Ross, and met Mr. Ellis, acting-manager of the company, who wished me to accompany him up Donnelly's Creek to inspect a site for a supplementary water conservation for sluicing purposes on the company's claim.