

of the race, however, crosses the boundary of the Waimea-Kumara Water-race Reserve, and encroaches thereon to the extent of about six chains to enable a connection with the Kawhaka Creek about three miles and a half above the main dam. This connection appears to be the only object, for there is no known auriferous ground within many miles of any portion of the race.

Quoting from a report by Mr. Aitken, "The water-rights held by Mr. Wylde would be valuable for augmenting the supply in the Waimea-Kumara Water-races, but for no other purpose, and the race has been marked out with apparently that intention, and not for the purpose of bringing in an independent race to work any known auriferous ground." Again, he says, "There has been no outlay of money on the race by any one, except expenses of preliminary survey and applying for the rights." The conditions of the Act have therefore not been complied with.

The question seems to be, setting aside the point raised of legality of entrance on the reserve to form the connection, whether the water from this source is wanted now, although perhaps in the future the race may be of value to the district. By means of the new substantial timber byewash at the Loopline Dam, which is now nearly completed, the present level of the reservoir can be raised 18 in. at least, or even 3 ft. with safety, without adding to the embankment, by closing the sluice-doors. This additional level, spread over such a large area, will enormously add to the daily supply in dry seasons. At the time of my visit the surplus water which can now be stored was running over the byewash.

Mr. Aitken also has another inexpensive scheme for increasing the supply in this reservoir—costing about £1,000—by bringing in the water from a neighbouring creek which is now running to waste; and, as Mr. Wylde's proposals have now been declined, I recommend this scheme as worthy of favourable consideration, in the event of more water being immediately needed.

Looking to future requirements for opening out new claims, another race is in view which would be a more valuable addition to the present supply, as it would divert the headwaters of the Arahura-Wainihinihi into the Kawaka watershed. No survey has, I believe, yet been made, but it is known that the saddle, over or through which it would pass from the one watershed to the other, has the advantage of being 100 ft. lower than the Kawhaka saddle, through which Mr. Wylde's race would be brought.

In conclusion, I need only refer to former remarks in Otago Central reports on the necessity for investigation of existing rights held by individuals who have not complied with the conditions under which those rights were granted, and retain them greatly to the detriment of any general scheme of water conservation, in many instances evidently for no other object than anticipating ultimate pecuniary benefit.

Kanieri Lake and Back Creek-Rimu Water-race.

From Kumara, I arrived at Hokitika 1st July instant, and placed myself in communication with the Mayor, and next day, in company with Hon. J. A. Bonar and Mr. Stains, County Chairman, drove to Kanieri Lake.

Being requested to check the surveys of Messrs. McFarlane and E. A. Lord, with a view of ascertaining if the water by this proposed race from the lake would command the terrace on the left bank of the Hokitika River, as represented by the reports, I determined to run a series of barometric levels back from the lake at the race intake at Sunny Bight, by way of the road to Kanieri and Rimu Townships to the termination or point of discharge on Seddon's Terrace, deeming that course, with an examination of the plans and sections, quite sufficient for all practical purposes, inasmuch as considerable time would be required to clean out and releve Mr. McFarlane's line, which would really involve another survey. The levels had already been closely checked by Mr. Lord, who has large experience in the survey and construction of water-races, and proved to be practically correct.

It may here be mentioned that a previous survey had been made by Mr. J. A. Smyth, who found that the loss of fall by the circuitous route he took would prevent the water being brought to a sufficient level to work the higher ground on Seddon's Terrace. Mr. McFarlane, who came next, reduced the length and fall of the race by taking a more direct line, and using tunnels instead of following the contour of the country, and claimed to deliver the water on the terrace at an altitude sufficient to command the whole field. But to accomplish this, a part of his scheme was the raising of the surface of the lake 11 ft., by throwing a dam or weir across the Kanieri River at the outlet from the lake. Now, clearly, to raise the level of the lake for the only purpose of gaining elevation, and taking the water from the surface, would defeat the object, because the water conserved below the embankment henceforth would be useless. The lake, in my opinion, rather should be tapped at its lowest summer level, thus gaining the benefit of the 3 ft. natural rise, and then, if found necessary, the storage could be afterwards increased by raising a weir or dam. However, a few feet on the terrace either way is not of vital importance.

The total length of the race as surveyed from the lake to Handley's Dam, on Seddon's Terrace, is six miles and a half, and follows the firm line shown on the plan attached in ditching, fluming, and tunnelling to Bluebottle Terrace, and from thence across the flat and the Hokitika River to Handley's Dam in a siphon with a total fall including the hydraulic grade of the siphon of 79 ft. Now, ignoring Mr. McFarlane's 11 ft. elevation, and starting at O, the lake surface, I levelled down the road to Kanieri and across the bridge to Rimu Township, where we were joined by Mr. McKay and other miners interested in the field, and found that point 180 ft. below the lake level. Then that $180' - 79' \text{ fall of race} = 101' \text{ discharge above Rimu}$. Thence following the road on top of Seddon's Terrace a mile and a quarter to the southward of Rimu, found it 100 ft. below the lake level. Then that $100' - 79' \text{ fall of race} = 21' \text{ discharge above the top of the terrace}$. Crossing Arch Creek at Prospector Claim, about one mile beyond, still on top of the terrace near and above the level of Handley's Dam found it 50 ft. below the lake. Then taking first the fall of race of $79' - 50' = 29'$ below the top of the terrace.