

The section shows a height of 23 ft. and a base of 28 ft. The total cost of the whole structure I found rather complicated and difficult to obtain, but it is generally—or, rather, variously—stated to be between £3,000 and £4,000. Computing the quantities, however, from Mr. Davey's section, and the contract prices furnished by him, it should have cost about £3,650; so that the recent offer of the company to dispose of the dam for £6,000 and the reservation intact of the existing rights in the reservoir to the company, it seems to me, should not be accepted.

The company hold a prior right to the water in the lake, and, in addition, there are no less than thirteen existing rights, with a total of 184 Government heads of water. It therefore appears that if the water is continuously drawn upon to this extent it is a question whether, except in times of an abnormal flood of melting snow or rainfall, the lake-level would remain at another 10 ft. over such a large area as 1,500 acres.

Attached is a plan of the lake and a cross-section of the existing dam with the proposed addition shown of 10 ft. The base is sufficiently wide and strong to carry this at the same stepped batter with a width on the top of 6 ft., and an extension of the outset or plinth for the lifting-gear for the sluices of 2 ft. on the top.

The dam in its present form should not, in my opinion, be raised more than 10 ft., and I estimate the cost of that addition at £1,260. This is not a large amount for such work if it could be shown that the mining interest generally would be benefited thereby, but I cannot help thinking that the only gainers under the circumstances would be the Roxburgh Amalgamated Gold-mining Company and the owners of the existing prior rights.

LAWRENCE AND UPPER WAIPORI.

From Miller's Flat to Lawrence along the road there are numerous fruit farms and gardens, which seem from their appearance to be well watered by the creeks and streams running in the gullies from the foot-hills, and from inquiries I found there was no great demand for water for irrigation purposes.

At Lawrence the only demand I heard of for mining purposes was a desire for a dam up the River Beaumont to work the river-bed and auriferous terraces in the vicinity. By report, a dam would be required 45 ft. in height and 140 ft. in length to form a reservoir of about 800 acres. A race three miles and a half in length would bring the water on the ground at a 700 ft. elevation. There are several existing prior rights above the dam to be considered.

As I had determined to push on to Upper Waipori, where it was reported water was required for mining, I did not inspect this site.

I may here mention that the Blue Spur Company own several small dams in the surrounding hills, from which water is drawn for working the claim, which had stopped operations through the pipes and boxes being frozen.

Upper Waipori.

There is a demand for water here, and on arrival I was told of a suitable site in Long Gully, about five miles from the township, the water depending on melting snow and a small stream running about one head and a half, with a fair watershed and drainage-area. It is reported to be a narrow rocky gorge, opening out behind in a small flat, in the usual manner in these places. I regret to say that I could not go up to inspect it as the hills were enveloped in a dense mist, and, being advised the weather would be likely to continue so for several days, to avoid useless expense in horse-hire, &c., I returned the same day to Lawrence.

The OPQ and the Blue Spur Companies hold prior rights to the head-waters of the Waipori River.

CONCLUSION.

It will be gathered, I think, from the foregoing that water is, both for mining and irrigation purposes, urgently required in Central Otago. The numerous prior rights monopolizing the water in all the principal creeks and streams is a serious drawback in the way of even any moderate system of water-conservation, involving as it would the extinguishment of rights either by purchase or compensation. Still, I am inclined to think that for mutual benefit there are instances in which equitable arrangement may be made, so that the owners of existing rights shall receive their granted number of heads of water and, in addition, the advantage of a supply from conservation in the dry time of year. That the conditions have not been complied with in many cases I am sure there is little doubt, and after a searching investigation they could be cancelled.

Speaking generally, it may be well to mention that, of the two, although both are of great importance, I think water is required more for irrigation than mining.

WESTLAND.

Wylde's Water-race, Wainihinihi River.

According to instructions to report on the Rimu and Back Creek Water-race, and the proposals of Mr. James Wylde for purchase of his rights in the Wainihinihi River in connection with a projected race to supplement the water-supply on the Kumara Goldfields, I proceeded to Kumara and consulted with Mr. Aitken, water-race manager, on the subject.

After an examination of the plans, &c., it was not considered necessary—as the line would have to be cleared for the purpose—to make a personal examination of the ground.

Briefly, the proposed race is intended to connect with the Government dam and water-race system, and a preliminary survey has been made of the route about 154 chains in length, with a grade of 8 ft. to the mile, and it is claimed to deliver 116 sluice-heads of water for twelve hours daily. The construction of the race presents no special difficulty, with some exceptions of precipitous rock-cutting and loose sidings, and the average amount of fluming. The termination