

on the Mangatoetoe Creek for the purpose, which embraces the site for a dam and reservoir, selected by me, and mentioned in my preliminary report on permanent supplies for these mining townships. Undoubtedly the water from this source is the purest and most permanent to be obtained in the neighbourhood, and the elevation sufficient to command a fair pressure for fire-extinction.

Applications have been made for additional supplies for the growing mining townships of Golden Cross and Waikino, a portion of the latter being a Government township; and at a higher elevation a private township has been laid out, and is becoming rapidly settled by people working at the Waihi Company's battery. The county engineer has trial surveys in hand in connection with supplies for both settlements, but is of opinion that it will be an expensive undertaking, owing to the elevation of the tenements and the scarcity of pure and permanent creeks in the immediate neighbourhood. For Waikino a £2 for £1 subsidy has been asked for up to £800.

Complaint has been made by the Maoris residing round and about Paeroa, on the banks of the Ohinemuri River, that the water is rendered poisonous or impure, and a cause of sickness, by the cyanide discharge from the works at Waikino and Karangahake. It has been proposed to tap the mains of the Paeroa water system for a supply, but nothing as yet has been done in the matter. Although the water is always discoloured, I think it very doubtful that any deleterious influence of the cyanide tailings would extend as far as the immediate neighbourhood of Paeroa. This may be decided by analysis, and, if confirmed, it appears to me the Natives have a strong claim, as before the introduction of mining the water was in constant use by them.

Several plans and reports in connection with the above water-supplies have been revised and recorded.

SOUTH ISLAND.

The Eweburn Storage-reservoir is now practically completed, securely fenced, and the back slope of the dam sown with grass. The miners in and around Naseby have had the benefit of the increased supply of water in the Mount Ida Race almost from the time the outlet-valves were erected.

Representations having been made to the department in December last that the dam showed signs of weeping, I met Mr. Hayes, Inspecting Engineer, in consultation, and we considered that there was no danger to be apprehended, and that the water percolated mainly through and over the natural spur upon which the eastern wing of the dam rests, and also ran down from the surface of the terrace land above, and partly flooded the flat between the back slope of the dam and the Mount Ida Water-race. As a precaution, however, it was considered advisable to draw off the water to below the line of seepage, strip the water-face of the spur, and sluice in a mixture of clay and gravel, which has since been carried out. I wish to point out that this weeping is no sign of weakness in the construction of the dam itself, as it is a well-known fact that all earthen dams, especially of such magnitude as the Eweburn, take sometimes years before they tighten up completely. The total cost to 31st March, 1901, has been £16,182 13s. 2d.

In connection with irrigation of the Ida Valley, a detail survey has been made of the dam-site selected last year at the lower end of the gorge, and working-plans, &c., for a masonry dam, are now in course of preparation. This reservoir is intended to supply the farms in the north end of the valley as far as the Poolburn, and if the scheme is carried out another reservoir will have to be constructed at the south end, either on the Moa Creek or in the Poolburn Gorge; if the latter, it will serve also for sluicing purposes at the German Hill claims, where the miners are in want of a much larger body of water than can be supplied by the present private dams constructed in the neighbouring small creeks.

Another excellent reservoir-site has been selected at the foot of the range about five miles from Hill's Creek, which, although not intended to form part of the present scheme of irrigation, may in the future be useful both for mining and irrigation. The Mount Ida Water-race, as in the case of the Eweburn Dam, passes close in front of it, which is a great advantage. The dam would be of earth, founded on a bed of lignite, and sound clay immediately below the surface, and, although some 7 chains in length, but only 25 ft. in height at the by-wash in the deepest part, consequently inexpensive. The reservoir would contain a large body of water, and be an excellent supplementary supply in case of a prolonged drought, as it is situated on a good permanent creek, running at a minimum of not less than six sluice-heads.

When in this neighbourhood I went over the section of the race from the Eweburn Dam northward to Idaburn, and found it in a very unsatisfactory condition. It requires costly repairs, and enlarging; and in many places heavy slips of loose schist rock have constantly to be cleared. At one place where the siding is steep and the rock loosely laminated the bottom fell completely out. It is proposed to abandon this section of the race, and lay a siphon straight across the Wedderburn Valley, cutting off four miles and a half. The siphon will be 40 chains in length, of 27 in. wrought-iron slip-joint pipes, laid on the ground, with a small bridge across the creek. Beyond to the Idaburn, two miles and a quarter, the country is sounder, and the race can be enlarged, cleaned out and maintained cheaply. The siphon will serve for twenty-five or thirty years, but to maintain the race by the present route of four miles and a half over such treacherous ground will be very costly. The total length of this race is sixty-four miles from the intake on the Manuherikia River into Naseby—a great length to maintain; and if the section from the Eweburn Dam to the Idaburn—including the laying of the siphon—is enlarged it will in future be easy to keep the remainder in 'air working-order. Recognising the advantage of storing all water to be obtained for use in exceptionally dry summer weather, I have prepared a report recommending that a total sum of £1,966 shall be allocated to this special and necessary work.

GENERAL.

Central Otago, or those portions known as the Maniototo Plain, Ida Valley, and Dunstan Flat, are during summer, and even winter, except for moisture by snow, exceedingly dry, the average