

At the time of my visit, the 20th April, the river-water was very low, certainly not running more than from nine to ten heads, which represented the surplus of the water after serving the high-level race three miles higher up. This race is estimated to convey, generally, twenty-five heads for motive-power to the batteries at the Waiokaraka Flat, but at that time it carried about half.

As before remarked, the proposed race is designed to carry a hundred sluice-heads eight months in the year, running day and night, which means there must be 125 heads in the river for that period without the assistance of storage to supply the constant demand, and that for the remaining four months in the year the race would be only one-half full.

A good site for a large reservoir is available just below the proposed intake, but the timber-floatage rights would be interfered with, unless at a large outlay flood-gates to release the logs from the dam when required were constructed for the purpose.

Information as to an average rainfall in the Kauaeranga Valley is difficult to obtain, no record having been kept, and the absence of maps showing approximately the ridges of watersheds of drainage areas preclude even an average estimate of the mean river-discharge at the point of entry in the race. This being the case, I would suggest that before any work of construction is commenced it should be definitely decided that the water can be stored in sufficient quantity to tide over at least six months of the dry season; and also recommend that a series of close observations by gauging the stream be taken once a week, extending over a period of, say, twelve months, to obtain a mean of the maximum and minimum flow (excluding abnormal floods), from which data modifications, if required, can be made in the plans of the race as designed. In this trial an accurate transverse section of the river should be taken in a suitable reach near and above the proposed intake for obtaining the area and velocity, and a tide-gauge erected from which the rise and fall can be noted, and an accurate register kept. From my own observations of the indications on the river-banks for lodged *débris*, &c., I am forced to the conclusion that there is not sufficient water to fill the race in addition to that taken by the present high level.

With regard to there being sufficient demand at present for an extra hundred sluice-heads of water by this proposed race over and above the batteries stated to require it, no doubt it would tend to the development of the goldfield: water, it is represented, being wanted in the near future for the extension of Grahamstown and Shortland, and industrial purposes other than mining. Having only a limited knowledge, however, from my recent visit I am hardly prepared to say that such an expenditure is not warranted on increased water-power in proportion to the amount of quartz of payable quality available; at the same time, I consider that a work of such magnitude should not be undertaken by the Government until full and definite information can be obtained as to the quantity of water constantly flowing in the river. In conclusion, I have to thank Mr. Hollis, County Clerk, for his courtesy and assistance, also Messrs. McLaren and Adams for their readiness in affording information.

T. PERHAM.

Coromandel Mining Township Domestic Water-supply.

I now submit report on a domestic water-supply for this township, together with a general sketch-plan and plan of head-works:—

There can be no doubt that this is a matter of urgency, both on the score of health of the community and for the extinguishing of fires. Owing to the streams to the north-east of and running through the town being strongly impregnated by mineral acids from the numerous mining works in the hills, added to the impurity of water in the wells, typhoid fever and sickness generally prevail during the summer months, especially among the infant population, by people using other than rain-water in tanks, which are few connected with the private houses. I am inclined to think that to a large extent this mischief has been caused by the constant pumping on the low levels from the numerous shafts draining the wells, and in many cases contiguous cesspits, into and from one another through the porous, gravelly soil, and the inhabitants making use of the residue for drinking and household purposes. In evidence of this, old residents state that several small streams and wells formerly containing pure water are completely dried up, and others near these powerful pumps partially so. Surface drainage into the creeks, of course, does not tend to the health of the town.

Several schemes have from time to time been formulated for a pure water-supply. One to take water by a cut race from the Whangaraki (the principal creek running from north to south through the town) at a point just above the small tributary known as Madam's Creek to a reservoir on the Kahakaharoa Stream, and picking up the water from the Whakanekeneke, or Courthouse, Creek; thence in pipes down Ring's Road through the town to the sea-beach, in connection with a supplementary supply from the Karaka Creek; the intention being in this case to combine power for mining purposes with domestic and fire-extinguishing supply. Another to convey the water from the Waiau River, but to obtain sufficient elevation for pressure at the upper portion of the town it was found to be necessary to go up the river a distance of seven miles from the town, and, in addition to head-works, create filter-beds, &c., involving, besides a heavy first cost of over £15,000, annual expenses in cleaning and maintenance. I may here mention that the water in the Karaka Creek alone was not considered sufficient for a supply during the summer months.

An alternative suggestion has been also offered for sinking a well on the gravel flat near the Karaka Creek above contamination of drainage, and pump the water therefrom to a service or storage-reservoir near and on a suitable elevation, and from thence distribute the water through the town. This latter scheme, although quite practicable, would be a permanent charge in annual maintenance and wages, in addition to a rather heavy first cost for expensive perishable machinery. It appears to have been advocated only as the readiest means to supply immediate wants, pending a general extended gravitation system from the Waiau River.