Revenue.

	£	s.	d.
Fuel—As 200 h.p. : 762 h.p. :: £1,812 10s :	6,579	7	6
Gold, former quantity doubled	12,420	0	0
Gold, „ „	810	0	0
Boiler, „ „	546	0	0
Miscellaneous	208	12	6
	£20,564	0	0
Expenditure as before	9,900	0	0
Profit at rate of over 10 per cent.	£10,664	0	0

In the case of threatened competition from a Pumping Company, as before explained, the profits on water supplied to tables would be reduced one-half, or by £5,850. This would reduce the total profits on low level to £5,708, or 17 per cent., and on the high level to £4,814, or about 4¾ per cent. (assuming the competition to extend only to the batteries within 130 feet of sea level.)

SUMMARY.—LOW-LEVEL RACE.

The profits which may be expected from this scheme are as follows:—

1. On supposition that the batteries on the beach will use the water, and that there will be no competition from parties pumping sea water: Profits, £4,383, or 13½ per cent.
2. On supposition that such competition arises: Profits, £1,462, or 4½ per cent.
3. That no competition arises, but that the companies on the beach do not use the water: Profits, £1,800, or 5½ per cent.

Of these three suppositions, I consider the third the most likely. Should the works at the Thames become much extended, there is little doubt but a Pumping Company would be formed; but in that case the profits would be more increased by the increase of business than diminished by the reduction of rates.

On the whole, I consider the scheme as one sure to pay a fair return, and likely to become very profitable.

HIGH-LEVEL RACE.

With the amount of work which it is at all likely can be done for many years to come by this race, there would be a loss of from £6,000 to £9,000 a year; and even on the extreme supposition that work would be doubled by the increased facilities which the construction of the race would give, there would be a profit of only about 4¾ per cent. in the face of the competition which would be sure to arise.

It is possible that higher rates could be levied than I have estimated, although I do not myself think so. The opinion of managers of mines as to the value of water per stamper is very discordant, due of course to the difference in the quantity and quality of their present supply of water, and to the expense of carting fuel to their engines. The highest value estimated is £40 per stamper for both motive power and tables for a battery with a supply of water bad in quality and insufficient in quantity; the lowest is £10 per stamper for a mine with a supply of good water sufficient for the tables at all seasons, and for motive power during half the year. My estimate works out to about £19 per stamper, and will probably be found to err on the side of being too high rather than too low.

I have, &c.,

JOHN CARRUTHERS,
Engineer-in-Chief.

P.S.—I have received a letter from Mr. N. P. Carver, of Shortland, in which he proposes to bring a supply from the Kauwaeranga Creek, at a level of 100 feet above sea level or 30 feet below the low-level race. The 130 feet race begins just above the junction of Hihi Creek with the Kauwaeranga, and the 100 feet race just below it. As this creek had during the dry weather of February last, a supply of 5 heads it is of great importance to make use of it. The number of stampers which would be cut off from the water supply by lowering it from 130 to 100 feet would be fifteen.

It is unlikely that any material difference in cost, revenue, or expenditure would arise from lowering the race 30 feet, so the remarks above made about the low-level race may be considered as applying to Mr. Carver's scheme.

The advantage of getting 5 heads added to the supply during dry weather is so great that it would be well worth examining the scheme should a low-level race be adopted.

J. C.

No. 4.

Mr. C. E. HAUGHTON to Mr. O'NEILL.

SIR,— Grahamstown, 26th April 1872.

I am instructed by the Government to request that you will, at your earliest convenience, undertake a reconnaissance survey of the dividing range between the Upper Tararu and the Kauwaeranga River, with the view of ascertaining the practicability and extent of a water race between the above-mentioned river and the head of the Moanataiari Water Supply Co.'s Race, and I should wish your report to include an estimate of the tunnelling probable to be required, and approximately of the quantity of water which may be obtained in dry seasons from the several available sources, detailing the same, along the Kauwaeranga to the intersection of the proposed extension with the main branch of that stream.

I have, &c.,

C. E. HAUGHTON,
Under Secretary for Gold Fields.

J. J. O'Neill, Esq., C.E., Auckland.