

The managers of batteries and other gentlemen connected with the field, whom I met upon two occasions in conference upon the general subject of water supply, with the single exception of Mr. Grove, concurred generally with the opinions expressed by Mr. Gibbons, and in considering that the objections above stated were fatal to the success of the high-level scheme.

The Low Level.

The low-level scheme, or a modification thereof, would afford a sufficient supply to be of essential value to the field, and the works can be constructed for a sum of money within the limits of what might fairly be apportioned, under "The Immigration and Public Works Act, 1870," to the Hauraki Gold Field. It may fairly be computed that, even at the most moderate rental suggested by battery proprietors for the use of the water, a remunerative return upon the capital invested will be received by the Government. I have caused to be prepared, and have appended hereto, a complete tabular return, up to 8th May instant, of all steam and water nominal horse power used for crushing, reducing, pumping, and winding upon the field; also, a table showing the steam power used in the manufacture of mining plant, and the nominal horse power of engines in course of erection. The sketch plan also appended shows the position of every battery and machine-house, with numerical reference to the tables, and their position as to the high and low level schemes respectively. It will be seen at a glance that the very large majority of these are commanded by the low level, and are in a position to avail themselves of water power from that source.

In the course of my inquiries I addressed myself very particularly to the question as to how far the water supply, if brought in, would be likely to be made use of; premising that the Government would expect that the outlay should prove remunerative, and that no burthen of expenses or interest should be thrown upon the Colony.

The whole amount of motive power available under the present specification will not probably exceed 340 h.p., calculating the delivery at the average estimated quantity, with a fall of 110 feet (132 feet is to the sea level), and this, I feel sure, would be at once taken advantage of by batteries at present in work. Although no specific amount was named by the battery managers, as to what would by them be considered a fair rental for the water, I am inclined to think that a calculation of 5s. per stamphead per week might be taken as an average, which, reckoning roughly a stamphead to a h.p., would produce a revenue of £4,420, or over 15 per cent. upon the cost of construction of the race, according to the estimate of Mr. J. J. O'Neill, C.E.

The saving effected by the use of water as a motive power is so very important, that there exists in my mind no doubt whatever that, up to the extent of 1,000 h.p., any supply available would be continuously taken advantage of. In illustration of this I append a memorandum furnished by Mr. John Gibbons, showing the estimate,—considerably under the mark, I have reason to know,—of the working expenses of a 30 h.p. engine; and the saving which upon this basis he calculates would be afforded to the field by the introduction of the low-level scheme.

Mr. T. W. Walker, the manager of the All Nations Gold Mining Company, was also good enough to furnish me with an estimate (appended hereto) of the probable revenue derivable; but I think his totals are based upon the calculation of a larger quantity of water than would be available under the present specifications. The question, however, of the work proving sufficiently remunerative, is, in my opinion, settled beyond all reasonable doubt.

Modification of the Low Level.

I now come, in due course, to the various modifications of the low-level scheme, which were submitted to me, and upon which, as they practically involve questions of engineering, I do not feel called upon to offer any specific opinion.

The first is that of Mr. Sims, the Engineer of the Caledonian and Imperial Crown Gold Mining Companies, whose proposal is simply to adopt a level somewhat higher than the low level, and to use iron piping, as in California, for the whole distance. I append his memorandum upon the subject, together with the resolution, approving of the scheme, which was adopted by a public meeting of local engineers and mine managers.

Mr. Millett, the Provincial District Engineer, an officer of very considerable experience in these matters, proposes a modification again of this; and, judging unprofessionally, his plan appears to me very worthy of consideration. It is, briefly, to bring the waters of the Hihi Creek into the low-level race by means of a flume over the Kauwaeranga, thus obtaining five additional heads of water. As to construction of the main race, he recommends the use of iron pipes for the last four miles, where it will pass through private property, and heavy compensation will be probable for taking through a wide, open ditch. His memorandum is appended.

Next we have a scheme proposed by Mr. Carver, which, I believe, has already been laid before the Chief Engineer. I thought it advisable, under the circumstances (Mr. Carver having been employed in Mr. O'Neill's survey), to submit his proposal to that gentleman, whose remarks will be found, with Mr. Carver's letter, appended hereto. From an unprofessional point of view, I can see no advantage from this modification of the low level, whilst the construction of so large a storage reservoir, with a 50-foot dam, would clearly be very costly, and not without serious risk of future accident.

Third Proposed Supply.

The third proposed supply suggested by Mr. Whitaker, appeared to me of so very important a character, if practicable, that I availed myself of your authority, and instructed Mr. J. J. O'Neill to undertake a reconnaissance survey of the line of race. Being personally engaged upon the Kaipara Railway works, Mr. O'Neill intrusted the matter to Mr. D. Simpson, an experienced engineer and surveyor, thoroughly acquainted with the country, whose report is appended for your information.

The scheme, without doubt, is practically impossible, with any consideration for supply or expense; but the cost of the survey has been well repaid by the question being definitely set at rest, and all misapprehension upon the subject removed.