

is concerned we found very little water, there being not more than three sluice-heads coming down the creek at the foot of the falls. This quantity in dry weather would, no doubt, dwindle away to practically nothing, so that it could not be depended upon as a source of permanent power. Mr. Park, of the School of Mines, and Mr. Orchiston, Inspector of Telegraphs, who accompanied us, scrambled up to the top of the falls, and found the height, as shown by an aneroid barometer, to be 825ft. from base to top. The country round about is covered with dense bush, so that even if there was power here it would entail a considerable expenditure to clear a route for the power-line, and make a track sufficiently good to get up the apparatus.

For any mine requiring power in the immediate neighbourhood this fall might be of use, as one sluice-head of water would give fully 65-horse power.

Another suggestion was to construct a dam or weir across the Kauaeranga, a few miles above Grahamstown, where the river is narrowed down considerably by rocky bluffs on each bank, forming natural buttresses against which the dam or weir could be built. It was considered that it might be practicable to make the dam the height of the Thames County Water-race, which passes close by, and by forming a huge reservoir, insure a constant supply of water to the race as well as creating a source of power that might be electrically transmitted to Grahamstown and neighbourhood. The height of the race above the river-bed was found at this point to be about 71ft., so that the construction of a dam of this height was practically out of the question on account of the enormous outlay necessary.

We then considered a suggestion to construct a weir 50ft. in height, and then by means of a water-race, three or four miles in length, to increase the fall to about 100ft. It might be possible to obtain a constant supply of water of about 100 sluice-heads, as the weir would dam back the river for about a mile or a mile and a half, thus forming a very large storage area.

This quantity of water would give about 790-horse power to be electrically transmitted to Grahamstown, where it could be used for working the big pump.

Assuming that about 550-horse power was given out by the motors at Grahamstown, which is allowing 70 per cent. efficiency, it is questionable whether electricity could compete in this case with modern steam pumping-machinery, owing to the very heavy expenditure necessary for construction of weir and water-race. Mr. Gordon's rough estimate for weir and race was £86,500, to which must be added about £14,000 for pipes, turbines, buildings, and electrical plant, &c. This would represent a capital outlay of, say, £100,000. The annual expenses would be probably as follows:—

Interest at 6 per cent. on £100,000	...	...	...	...	£	6,000
Depreciation, 2½ per cent. on £86,000	...	...	...	...	...	2,150
Depreciation, 5 per cent. on £14,000	...	...	...	...	...	700
Engineer and assistants	...	...	...	...	...	750
Oil and sundries	...	...	...	...	...	150
						<hr/>
						£9,750

The annual cost per brake horse-power on the above expenditure amounts to £17 14s. 6½d.

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