

possible. The cost of this scheme would be excessive, on account of the great quantity of water to be handled and the high dam necessary. I do not think it is necessary to spend any time or money on this location now.

*Orakei Korako Rapids.*—While there is apparently great energy wasting here, it is not in a favourable location to be developed, and has not advantages enough in its favour to warrant any investigation at present. The head is very much less than at the Rainbow Falls, and the banks of the stream are not nearly so favourable for a dam. It would be extremely costly to develop.

*Aratiatia Rapids.*—Situated in the Waikato, about four miles below the Huka Falls, this is at once the most beautiful and most valuable power-location on the river. In many respects the rapids are more beautiful than the falls, which can boast of only one advantage, that of the possibility of a small dam controlling the outflow of Taupo. There is such a slight grade between the falls and the rapids that it is possible to build only a 10 ft. dam at the head of the rapids without flooding the falls. This limits the energy available at the rapids to 56,800-horse power, obtained by means of a fall of 110 ft. A dam only 10 ft. high and 10.1 chains long ought to be built very reasonably. However, the section of the river is not completed for the deep part of the stream, and that is where the expense will come in. No contours are shown to tell whether the terraces will carry the necessary races.

The only place at present to which it seems wise to transmit power from this district is Auckland and its suburbs. There are so many more suitable places to develop near Wellington, Napier, and New Plymouth that it is better to utilise them instead of transmitting the energy so far, on account of the expense. This is, however, a very valuable power-location, and, I think, the best one on the river; however, more complete surveys will have to be made before any estimate can be made of the cost of its development. This location shows, with Huka, the disadvantage of considerable distance from the railroad, hence a large expense would be incurred in transporting machinery and material.

*Huka Falls.*—This is the most noted power-location of the Island, and it is very valuable; but it is not so good as the Aratiatia Rapids, and will be even more expensive to develop. It is a beautiful spot and justly attracts a great deal of attention. The surroundings are such that the contrasts make the district one that charms. To a certain extent you are not pleased at first, but as time goes on you get an entirely different feeling, and when away you want to see it all over again.

The flow of the stream as given by P.W.D. 20642 is 6,346 sec. ft. Professor Forbes gave it as 5,600 sec. ft., but I am inclined to think that 5,000 sec. ft., the figure I have taken, is nearer the minimum. The development of this locality would be quite expensive on account of the low head and the heavy excavations necessary for the power-house.

What was said in regard to Aratiatia applies here with equal force. It does not seem wise to transmit energy from this district at present on account of the expense; however, the time will come, and it depends on yourselves how soon you will develop one or more of these locations.

The rainfall for this watershed is only recorded for the Taupo Township. I would therefore suggest that plans be made to get records for as high altitudes in this district as is possible. I think you will have no trouble in getting some of the stations to record them, as well as the height of the lakes and rivers, and the frequency and force of thunderstorms. It would be especially advisable to secure records of the height of Taupo each day during the year.

In view of the fact that a dam at Huku will submerge some geysers near the Spa, it will be wise to have some experiments carried out with the local geysers to find what degree of activity they will maintain when submerged by a given depth of water; also what temperatures are maintained, and at what temperature action commences, and whether, when a great quantity of cold water is over them, they will become a leak.

*Rotoaira.*—This little lake of six square miles nestled away in the high ground above Lake Taupo is worthy of some attention. The inflow is limited and the natural drainage-area very small. The distance and the limited amount of power available with small expense do not seem to justify any surveys at present. It would be advisable, however, to gather what information is possible in regard to rainfall, snowfall, height of the lake and river, and storm data for future reference.

*Rangitikei River.*—The locations examined on this stream were all near Mangaweka and Hunterville. This stream has a very large drainage-area, and at the time we visited it had a magnificent flow of water. While I do not think it was the minimum, however, there are no lakes in its watershed to equalise the flow, and even though the greater part of the country above is brush-clad, there will be a great variation in the flow of the stream. Any development at the points examined would be, on account of the very high and long dams suggested, exceedingly expensive, which the needs of the district do not now warrant. Complete surveys alone will decide the feasibility of these plans to utilise these locations, but I would not recommend spending the money now.

*Manawatu.*—The location visited was the justly noted gorge between Palmerston North and Woodville. We spent considerable time here, but do not see that any money can be spent here to advantage. The head available is so slight and the plans to utilise it necessarily so extensive that the cost is prohibitive. The variation in the height of the stream between minimum flow and flood is so great that it would be difficult to handle. I also doubt if surveys would reveal as much head available as I have listed, hence, though the place is beautiful from a tourist's point of view, it is worth little at present from a power standpoint.

*Waikaremoana.*—We were unable to visit this very interesting and beautiful spot on account of lack of time, but the surveys furnished, together with the gaugings, indicate a very valuable power-site. The total head cannot be utilised unless the underground channels are choked. This, however, may be an impossibility. As it is, the lake is a very valuable equaliser. The recorded variation of 12 ft. allows for the storage of sufficient water to keep up the full flow of the river over four months. One great disadvantage is the numerous outlets at different levels; however,