These should all be extended till they intersect the river. The 30 ft. and 50 ft. contours above the level of the falls should be run around to the north till they intersect the Mangakahia. After this work is completed the possibilities of this location can be stated fully, and not until then. I would also suggest that records be kept of the rainfall, snowfall (if any), heights of streams, and frequency and force of thunderstorms for the district.

Okere Falls.—Situated in Rotorua County, in the Kaituna River, which is the outlet for Lakes Rotoiti and Rotorua. There appears now on nearly all the maps a second outlet to Lake Rotoiti (the Pahopaki River), but as we did not visit it, I judge the maps are in error. The falls themselves are of no great value for power purposes, but the total drop in the river in a distance a trifle less than a mile gives an available head of 101 ft. This, with a dam which should raise the height of Lake Rotoiti 5 ft., will give a total of 106 ft. maximum and a storage that will be of exceeding great benefit in cases of drought; in fact, the storage secured by raising the level of the lakes as suggested will be sufficient to maintain the flow of 500 ft. per second for ninety-one days, not counting any losses. The rainfall for this region as recorded at Rotorua is about 50 in. per year, and the precipitation is well distributed over the entire year. This district is a strange one, and tends to make one chary of recommending a large outlay of capital in it; but as one gets more accustomed to it this feeling wears off to a great extent. The measured outflow of this lake seems high for the area drained, but, of course, the equalising effect of the storage of the lakes is very great.

This location is thirteen miles from Rotorua, the terminus of the railroad, so that transportation would not be a serious item against it. The distance from Auckland (153 miles) is the most unfavourable condition.

The maps and surveys furnished me of the falls district are not complete enough to make any complete estimate of cost of the plant. I do not think, however, that it would be excessive.

In order to decide whether this location can be developed to advantage it would be necessary to know whether the level of the lakes can be raised, and how much for storage purposes. To determine this, contours will have to be run wherever land is considered valuable to determine the extent of the damage. As near as can be estimated, if 10,000-horse power in machinery is installed, provision should be made to ultimately raise Lake Rotoiti 5 ft. and Rotorua 3 ft. In the immediate neighbourhood of the falls contours should be run every 10 ft. on the west side of the river from 10 ft. above the level of the lake near its outlet to at least a quarter of a mile below the lowest point indicated on map 2496, and from the river to at least a half-mile west of it. Also, several fly-lines should be run down the east side of the river to determine if there is a better route for races or pipe-lines. The country immediately north of Lake Rotorua should be prospected to see if it is possible to cross it to advantage with a pole-line, as it will greatly increase the length of a line heading for Auckland if it has to be carried around the south side of the lake *viâ* Rotorua.

If the amount of power listed can be developed here without too great expense it will be better than the powers in the Waikato for the initial development to supply Auckland District, for two reasons at least. It is twenty-five miles nearer, and transportation from the railroad is not near so serious.

I would suggest that more complete records be kept of the heights of the lakes and streams and of thunderstorms for this district. The rainfall for this watershed is not accurately known, though at Taupo Township it is recorded as 50 in.

We now reach the power-locations of the upper Waikato, by far the largest river, and its drainage-area of 5,600 square miles, the largest of any stream in the North Island. It not only drains very high bush-clad country, but also has Lake Taupo as an enormous equaliser, and its variations should be very gradual. The places where power can be developed are as follows:—

Atiamuri Rapids.—Situated at the crossing of the Rotorua-Taupo Road, it is thirty-two miles from Rotorua by road and thirty-six miles from Pataruru, from which a great many of the supplies for the Taupo district are handled *viâ* Atiamuri. To utilise power here there would need to be a very heavy expense for a dam to raise the water-level 20 ft. or 30 ft., according to what the benefits would be. This probably is not the best place to put in the initial development, but it is certainly a valuable location. The amount of power listed as available here is very conservative. However, there will be no storage to amount to much, so that only the minimum flow can be depended upon. Before anything further can be stated as to the possibilities or cost, surveys will have to be made to get the exact head available, the possible height to which a dam can be built, condition of foundations, land submerged, interests that may be interfered with, and power-house location and length of pipes. I would suggest that rainfall, heights of the river, and thunderstorms be observed here, and records kept so that all the data possible will be available.

Rainbow Falls.—Situated only about three miles and a half above the Atiamuri Rapids, it has very closely the same flow; in fact, I have used the same flow in cubic feet per second for all these locations, disregarding altogether the drainage-area below the lake, because there are no lakes in it, and hence the minimum flow is probably small. There would be needed here only a small dam to control the flow; in fact, a high dam would be excessively expensive, because very long. The head as given can be easily secured, but the machinery expense, on account of the very low head, will be very heavy. There have been no surveys here, and it is more than probable that conditions will not warrant their being made for some time to come, unless conditions at other places do not turn out as flattering as is anticipated.

Gorge below Orakei Korako.—The Waikato at this place has cut through the high ground, and made its way between very high vertical walls. This is about three or four miles above the Rainbow Falls, and appears to be of such a formation that a very high dam could be built here. It may be possible, by the construction of a dam here, to divert the water into a race to carry it past the Rainbow Falls and utilise the drop there in combination with that created by the dam. The appearance of the country does not encourage this view; however, a survey will show what is