plant, woollen-mill, and other small industries, besides the town of Yuba City across the Feather River, with its county buildings, barley-mill, and packing-houses, made a very fine load when taking their energy from the plant mentioned. Marysville already had an electric plant, operated by steam in connection with a gasworks, both of which were purchased, and the lighting, gas, and power interests combined soon after the transmission system was gotten into operation, which occurred early in 1899.

The year 1898 was very dry, and all water interests suffered terribly. Some of the water systems were out of service completely. It was this occurrence which emphasized the value of the Yuba River for power purposes, and measurements were at once taken and plans made to utilise it to its fullest extent. This valuable water-right was in the possession of the Yuba Power Company owning the Marysville transmission plant. Contracts were made with the Nevada County Electric Power Company, owning the Nevada County system, for 3,000-horse power, and with the Sacramento Electric, Gas, and Railway Company for 5,000-horse power. The distance to Nevada County was only seven miles and a half, but to Sacramento was over sixty-one miles. During 1899 work was prosecuted with vigour on the new and large plant, which was named "Colgate," Current was put into Sacramento in September, and a month or two later a thirty-mile line to Oroville went into service handling gold-dredgers.

It was in the winter of 1899 that the plan was conceived of running a long line from "Colgate" to the Bay of San Francisco. So the Nevada County and the Yuba County plants were consolidated, and work was at once started on this new plan. Surveys for the 140 miles of line were started in the spring of 1900, and current was put over the line to the bay on the 17th February, 1901. Contracts had been made for lighting the little towns *en route*, and for handling the street-cars in Oakland. Also, the Standard Electric Company, which had been working on its long-distance plant for some time, had trouble unexpectedly developed, and in order to hold their contracts, engaged to use all the power the Bay Counties Power Company could spare. It was during the summer of 1901 that the systems of the two companies were connected, and a distance of over two hundred miles handled commercially and continuously for a number of months.

The machinery now operated by current from this system includes the following: For mining purposes—air-compressors, pumps, hoists, stamp mills, rock-breakers, concentrators, gold-dredgers; for commercial service in towns and along the main arteries—machine-shops, foundaries, planing-mills, ice machinery, laundry machinery, pumping for drainage, waterworks, flour-mills, feed-mills, woollen-mills, silk-mills, cement-works, fruit-canneries, creameries, agricultural-machinery factories, tanneries, smelters, boot and shoe factories, oil-refineries, ship-yards, jute-mills, street-railway systems, irrigation, interurban railroads. Thus you will see that the uses to which electric power has been applied extend to almost every industry where power is needed, besides the ever-present electric-light and fan motor. Heating and cooking have not been done to any great extent, largly on account of the initial cost of the apparatus. This objection is now overcome to a great extent, prices having been established on the necessary articles so that they are in reach of every one; it only remains to educate people to use them.

The record has been with the Bay Counties development that they were never able to furnish all the business that offered; even with the very large plants building they will not be able to keep the supply up to the demand. This has been the record of the majority of other plants also. You will find it the same with any development you may propose to instal.

Narrative.

Leaving San Francisco the 17th September, 1903, after an uneventful voyage we arrived in Auckland on the 5th October, and were met by your Mr. P. S. Hay and Mr. A. Ross. We took the steamer "Wellington" for Whangarei Harbour that evening, and arrived early on the morning of the 6th, where we were met by Mr. Dickson, who helped us in every way and accompanied us on the trip. We drove at once to Poroti, where we lunched, and, leaving our baggage, proceeded to the Wairua Falls. The roads were very bad, and we had gone only part way when it commenced to rain, and continued nearly all the afternoon. We made what examination was possible, and saw at once that the information given us was not complete enough for our purpose. We took barometer-readings, and made as careful an examination as the storm would permit. After finishing our work we returned to Poroti, where we stayed all night.

October 7: We returned to Whangarei in the forenoon, and in the afternoon we visited the kauri-gum warehouse and the cement-works.

October 8: We took the steamer "Wellington" for Auckland, where we arrived that evening.

October 9: Mr. Hay had some railroad-work that demanded his attention, so I busied myself in Auckland preparing for the trip overland to Wellington.

October 10: Went by train to Rotorua, where we stayed over Sunday.

October 12: Took a launch across Lake Rotorua to Okere Falls; visited the present generating-station and examined the conditions there; also took barometer-readings at the lake and down the river some distance. I also looked into the question of providing additional supply of electricity for Rotorua. This question will be reported on separately. The plant now in service to supply Rotorua is an excellent one, and is very well taken care of.

October 13: Took a motor-car from Rotorua to Wairakei. This trip, although it consumed the whole day, was a very enjoyable one.

October 14: Visited the Huka Falls, Lake Taupo, and the Aratiatia Rapids.

October 15: Took saddle-horses and rode to the Orakei Korako Rapids and down the river to Atiamuri, examining on the way the Orakei Korako Rapids, the gorge just below the Orakei Korako Rapids, Rainbow Falls, and the Atiamuri Rapids. We were so fatigued by the time we reached