

case was then forwarded to Ottawa, and the Federal government instructed and retained Mr. John R. Freeman, of Providence, R.I., to advise the government and to see that the interests of the city were protected. Mr. Freeman advised the government that the water supply would be properly protected if the lake were cleared of all timber, living and dead, and all vegetable matter, etc., up to the height of the spillway of the proposed dam. He further advised that the Power Co. should construct at their own expense a tunnel on the east side of the dam in solid rock, and construct a water tower, some 1,000 ft. above the dam, to such plans as were to be approved by himself and the writer.

The work of clearing the site for the dam was started under Mr. Schuyler's régime. In 1911 Mr. G. R. G. Conway, M.Can.Soc.C.E., was appointed chief engineer to the Vancouver Power Co. and the construction of the dam, the clearing of the land, the driving of the tunnel to the city's new intake tower, and the building of the tower was completed under his supervision and direction.

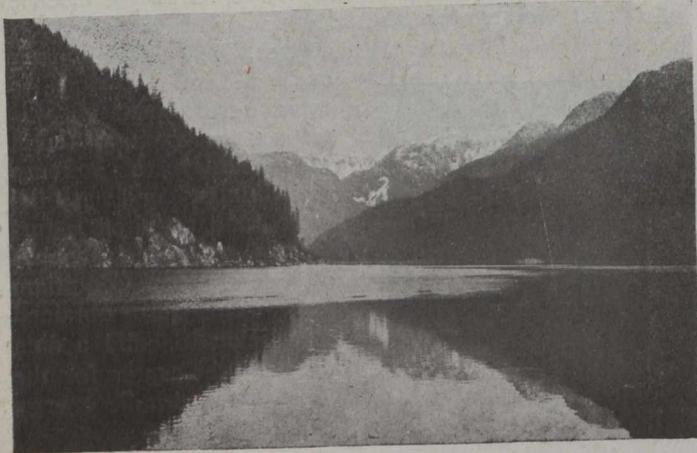


Fig. 2.—Coquitlam Lake.

In 1909 the corporation of the city of New Westminster desired to increase their water supply and instructed the writer to proceed with the work of constructing a pipe line which would deliver not less than six million Imperial gallons per day.

The Lake.—Lake Coquitlam, named after the Coquitlam Indians, lies some fifteen miles in a northeasterly direction from New Westminster. (See Fig. 3.) It is about seven miles in length, varies from a quarter to half a mile in width, and has an area at its original level of about 2,328 acres. It is surrounded by high snow-capped mountains, on whose sides are the ravines within which are formed the glaciers assuring a constant supply, even during the most prolonged droughts. Many creeks and waterfalls discharge into the lake from the mountain sides, a type of which is shown on Fig. 1. The area drained by the lake is about 105 square miles. (See Figs. 2 and 3.)

Rainfall.—The average annual rainfall at the lake is 156 inches. Records have been kept for the last ten years by the Vancouver Power Co. The maximum rainfall recorded in one year is 180 inches. The average rainfall in New Westminster is 58 inches.

Run-off.—The co-efficient of run-off is estimated to be between 75 per cent. and 80 per cent.

Lake Levels.—The original surface elevation of the lake was 432 ft. above sea-level, and its greatest depth

is 200 ft. below sea-level. The spillway elevation of the dam is 503 ft. above sea-level.

The Character of the Water.—Much has been written by eminent engineers and others during late years as to the value of a pure water supply, and standards of purity have been set up as typical of what is a pure water. Many of the largest cities of Europe and America are satisfied to-day with a supply, either filtered or otherwise, whose purity does not come anywhere near the standard. In the far west, in British Columbia, New Westminster holds the distinction of being favored with a water supply whose purity may be taken as a standard, and whose degree of purity is even better than that set, viz.: That not more than 100 bacteria shall be found in the 40 cubic

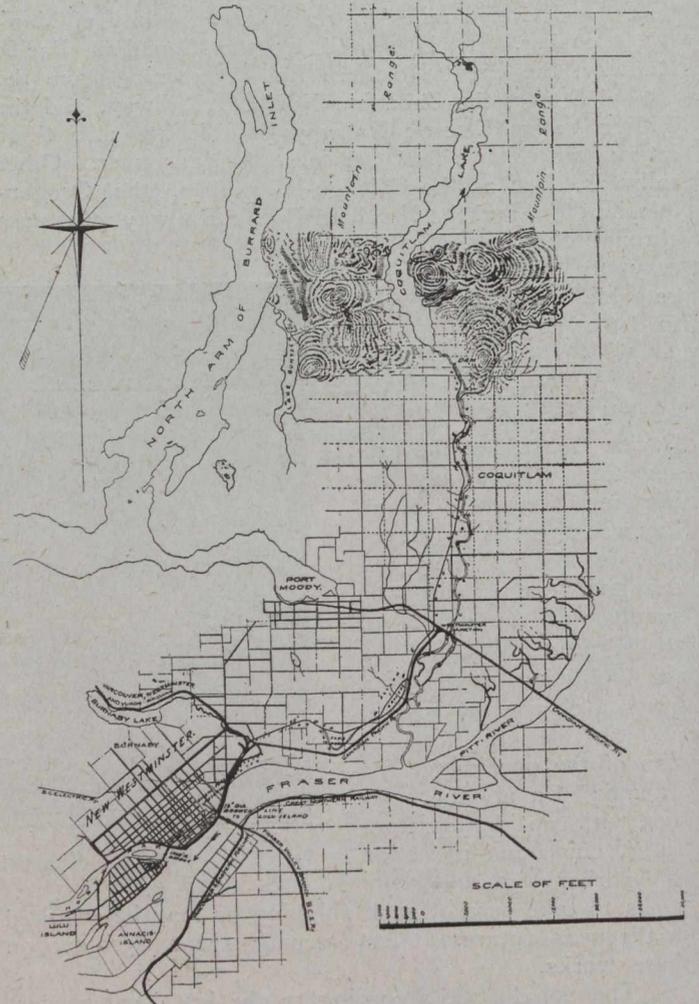


Fig. 3.—Key Plan, 25-in. Water Main.

centimeters of water sampled. The water in Lake Coquitlam has shown, in a series of examinations, no pathogenic organisms, and occasionally only 40 bacteria in the samples analyzed. The writer feels that he will not be contradicted in saying that no other natural surface water supply has been found equal to this, for its purity. The lake, as before mentioned, is surrounded by high mountains, averaging in height between 4,000 ft. and 5,000 ft., covered entirely by evergreen timber and undergrowth. Absolutely inaccessible from the outside world (except by one road constructed for the pipe line), it is thus free from any human contamination. The water is also free from color and turbidity (except during heavy autumn rains when slight turbidity is sometimes noticeable). The great depth of the lake, its coldness, the long