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NEW WESTMINSTER WATERWORKS CONSTRUCTION

DETAILED REVIEW OF DESIGNS, MATERIALS AND METHODS USED IN OBTAINING PURE WATER SUPPLY—LAYING 12-IN., 13-IN. AND 25-IN. STEEL WATER MAINS.

By JOHN WILLIAM BERNARD BLACKMAN, M.Can.Soc.C.E., M.Am.Soc.C.E.,

City and Water Engineer, New Westminster, B.C.

THE city of New Westminster is situated about fifteen miles from the mouth of the Fraser River, and twelve miles by road from the city of Vancouver. It is served by the Canadian Pacific Railway, the Great Northern Railway coming from the United States, the Canadian Northern Railway, and the Fraser Valley Electric Railway Co. It has also three interurban electric rail services to Vancouver. Other railways, such as the Chicago-Milwaukee, the Oregon-Washington, and the Northern Pacific Railway must pass through this city on their way to Vancouver. The rateable value of the city is \$16,163,250.

As a fresh-water port, New Westminster stands second to none on the Pacific Coast. At the present time, without any harbor improvements, retaining walls, jetties or dredging, vessels up to 23 feet draught can clear the sandbar at the mouth of the Fraser. Dredging by the Dominion Government gives a channel of 30 feet at high tide. In anticipation of the opening of the Panama Canal the city has, with considerable foresight, completed a section of harbor improvements so as to take care of such shipping as may be required in the near future. It has recently spent \$500,000 on these works.

The population, according to the last local census, was 17,000, with a suburban population of about 30,000.

In 1899 a 14-inch diameter pipe was laid from Lake Coquitlam to the city, delivering a minimum of 600,000 gallons per day.

Before proceeding further with the technical description of the water supply, it is desirable to give a brief résumé of the various interests and engineers concerned with other works, with which the writer came into contact in connection with the municipal water supply at Coquitlam Lake.

The city acquired the rights and charter of the Coquitlam Waterworks Co. in 1885, and was owner of the water shed round Coquitlam Lake, the land of the old intake works, all the water that it required for domestic purposes, and in addition 1,000 miner's inches*

*A British Columbia miner's inch is 1.68 cu. feet per minute.

for any other purpose it required. Some ten years ago the Vancouver Electrical Power Co. acquired rights for 5,000 miner's inches, for their hydraulic power plant on the Burrard Inlet, and to obtain sufficient hydraulic energy to drive their water-wheels, drove a tunnel two miles in solid granite through the mountains to tap Lake Coquitlam. The Vancouver Power Co. is a subsidiary company of the British Columbia Electric Railway Co.; the latter company until recently supplied all the electric light and power for the electric railways of Van-

couver, New Westminster and district. Owing to rapid development of this district the company found it necessary to increase their units, and at the same time acquired a further 5,000 miner's inches of water on Coquitlam Lake. They also obtained permission to build a dam to store the water for the increased hydraulic energy required.

In 1909 the company retained the services of the late James Dix Schuyler, M. Inst. C.E., M. Am. Soc. C.E., of Los Angeles, Cal., a well-known consulting engineer on water power and the construction of hydraulic fill dams.

Upon Mr. Schuyler's recommendation, plans were drawn up for a dam to be constructed raising the lake from elevation 432 ft. above sea-level to elevation 503 ft. above sea-level. The dam was to occupy a position on the site of, and absorbing the old municipal waterworks intake, screen house, gate house, etc. The municipality strongly objected to this action, fearing that the purity of the water might be impaired, and that their rights at the lake were being taken away from them; they entered a strong protest, and commenced an action to restrain the company from proceeding with the works. In the first instance the provincial government of British Columbia had control of these water rights.

They retained Mr. A. O. Powell, M.Am.Soc.C.E., of Seattle, Wash., to make a report to them on the construction of the proposed hydraulic fill dam and the effect it would have on the water supply. During this time a case in the high courts between the Federal and Provincial governments was pending as to which government had control of the water rights. The case was decided in favor of the Federal government. The municipality's

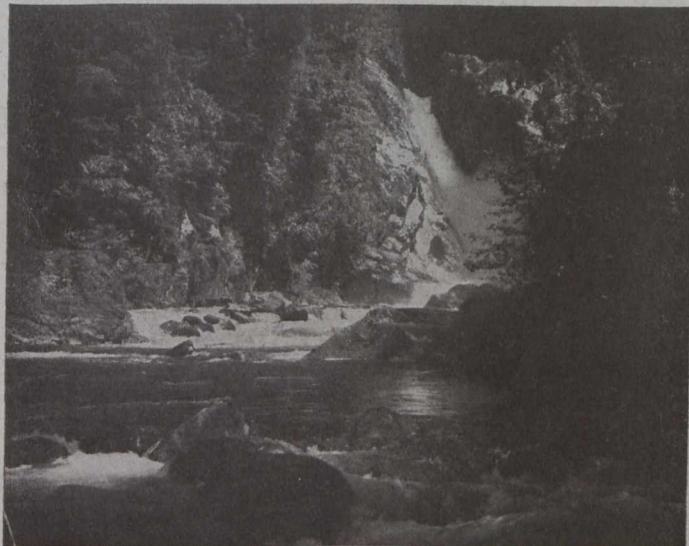


Fig. 1.—Coquitlam Falls, Head Lake.