

wide crest. This is due to the fact that the stability of the dam had to be such as to satisfy the sentimental objections of the population living below the dam, although these dimensions were entirely unnecessary from an engineering point of view.

The spillway, which is capable of discharging over three times the maximum recorded flood, was excavated on the east bank of the river in solid granite, about 90,000 cu. yds. of material being removed and deposited by the cableways to the rock toes. Over the spillway a steel bridge of two spans, each 125 ft. in length, has been constructed to form a continuation of the roadway over the dam to the Westminster intake tower.

Westminster Water Supply.—Lake Coquitlam has, since the year 1892, been utilized as the source of water supply for the City of New Westminster. A company called the Coquitlam Waterworks Company, formed in 1886, now owned by the Vancouver Power Company, sold

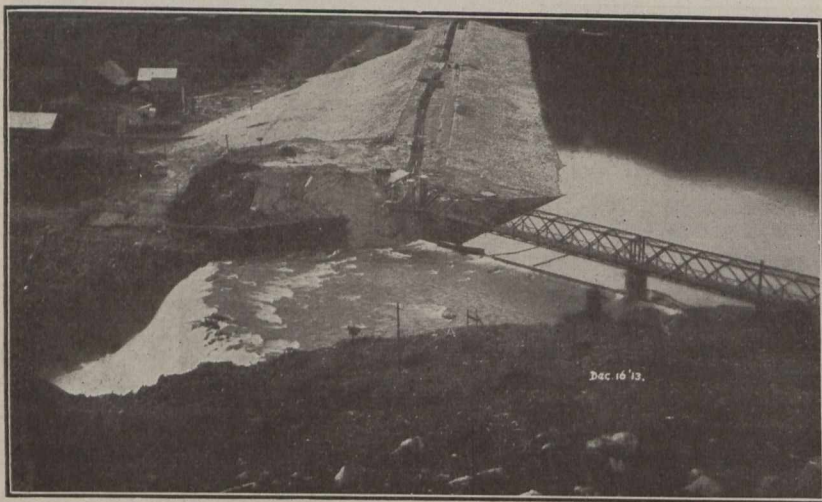


Fig. 8.—Coquitlam Dam and Spillway, Nearing Completion.

to the City of New Westminster in the year 1889 certain rights in the waters of Coquitlam Lake for the purposes of the city supply, and the works were begun by the city soon afterwards. This supply was first drawn from Lake Coquitlam in the year 1892, from an intake which was situated on the west bank of the river near what was subsequently the site of the old crib dam. From this intake a 14-in. steel pipe main was carried to a distributing reservoir in the City of New Westminster. This main was sufficiently large to supply water for that city until 1912.

Under the agreement entered into between the Vancouver Power Company and the Department of the Interior of the Dominion Government the company undertook to carry out certain improvements for the protection of the Westminster water supply, and among other things that were agreed upon was the provision of the new intake tower situated 1,000 ft. north of the old intake on the east bank of the lake. From this intake tower a tunnel 1,940 ft. long was constructed, the greater part of its length, being in solid rock 4 ft. wide by 7 ft. high, with a concrete invert. In other portions where the tunnel passed through cemented gravels and clays, it was formed of 48-in. steel pipe backed with concrete. The intake tower is a heavy concrete tower which has its foundations on rock. The outlet of the tunnel is at El. 428, or 4 ft. lower than the lowest draw-off of the Coquitlam-Buntzen power tunnel, while the floor of the gate house on the top is at El.

518, corresponding to the crest level of the new dam. The intake tower is circular in plan, and has an inside diameter of 18 ft. top and bottom. The walls are 4½ ft. thick, from the bottom to El. 465, and then taper to 18 in. thick at El. 518. A concrete arch bridge connects the intake tower with the roadway on the shore. In the walls of the tower there are four 40-in. square openings fitted with cast iron gates, and cast iron screens on the inside, the exterior openings being protected with wrought iron screens. These openings are placed at El. 430, 451, 469 and 487, distributed around the outer wall of the tower. The copper screens are arranged so that they can be raised for cleaning purposes to a floor inside the tower placed at El. 508. In addition to the control of water from the exterior of the tower, a secondary control is obtained within the tower so that the water may be drawn off at any desired elevation. This intake consists of a standpipe 42 in. in internal diameter, built up in four separate sections, each section having conical seats on the upper and lower ends, and each section fitting to the one next below it. The bottom section rests on a special cast iron elbow set in the base of the tower. These intake pipe sections are guyed to 60-lb. rails placed on opposite sides of the pipe, and bracketed to the tower wall at frequent intervals. Lifting rods 1½ in. in diameter are attached diametrically opposite near the top of each pipe section. The intake is operated by hand by means of a special lifting gear which may be attached to any set of lifting rods. The openings into the intake pipe are at El. 433, 451, 473 and 481. To form the approach to the tower a channel was excavated within a cofferdam 20 ft. wide at the bottom with side slopes 1½ to 1, heavily rip-rapped with rock.

For the protection of the Westminster water supply the company carried out extensive clearing operations on the shores surrounding the lake, which were covered with a heavy growth of cedar and hemlock. For a distance of over three miles above the intake, the whole of the land to be flooded was cleared and the stumps sawn close to the ground. The clearing over this section was completely done to El. 508, and in the upper part of the lake the whole of the shores have been cleared to El. 480. The total area of land completely cleared amounts to approximately 750 acres.

This work proved enormously difficult, owing to the steep sides of the lake and the necessity of constructing rafts plated with steel for burning much of the debris. The cost of clearing has been upwards of \$600,000. The lowest cost for clearing was about \$350 an acre, while sections of the work in swamps where the timber was decayed and heavy, cost as much as \$2,000 an acre.

The Coquitlam Lake water is of wonderful purity and is almost sterile. The following is a typical analysis of the water:—

Water Analysis—October 18, 1913.

(Parts per million.)

Physical Examination—		
1. Turbidity	.....	None
2. Reaction	.....	Neutral
3. Smell	.....	None
4. Taste	.....	Good
5. Sediment	.....	Slight
6. Color	.....	30