separate layers where the spacing is less than 4 ins. At the junction of the two domes, a great excess of concrete was provided to take care of the thurst of the outer dome while the tank was empty or partially full. The reinforcing of the inner dome consists of ½-in. rods placed on 6 to 8-in. centres. These rods were provided to take care of stresses, due to the elastic deformation; otherwise the dome is stressed in both directions in compression only, and would not require any reinforcing.

A mixture of concrete of 1:1:2, or slightly richer, was used in all portions of the tank in direct contact with the water. All other concrete consisted of a mixture of 1:2:4. The lower sheel was built by means of wooden forms 6 ft. deep, which were suspended from 1-in. rods imbedded in the concrete, and 8 ft. apart. These 1-in. rods served as a support for a hollow screw, the turning of which moved the forms up. It was found, however, that not more than 4 to 6 ft. could be concreted in any day.

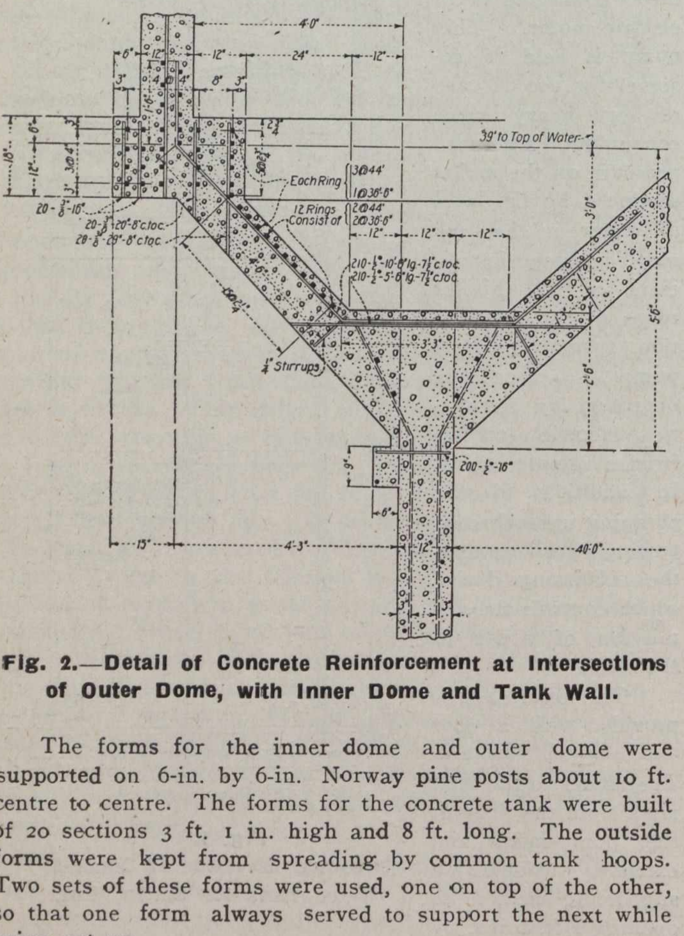

Fig. 2.—Detail of Concrete Reinforcement at Intersections of Outer Dome, with Inner Dome and Tank Wall.

The forms for the inner dome and outer dome were supported on 6-in. by 6-in. Norway pine posts about 10 ft. centre to centre. The forms for the concrete tank were built of 20 sections 3 ft. 1 in. high and 8 ft. long. The outside forms were kept from spreading by common tank hoops. Two sets of these forms were used, one on top of the other, so that one form always served to support the next while being set up.

In order to prevent a leak at the junction of two days' work, due to careless removal of laitance or insufficient tamping of the new concrete, a dam or sheet steel 6 ins. wide and No. 28 gauge was imbedded 3 ins. in the concrete at the end of each day's work. These dams came in lengths of 82 ft., which is one-half the circumference of the tank. The roof forms were supported on 4-in. by 4-in. uprights about 8 ft. centre to centre. As they were 44 ft. long, they were braced in two directions every 10 ft.

The concrete plant consisted of a Chain Belt mixer placed near the centre of the tank, which discharged the concrete into a hoisting bucket. The bucket ran inside of a wooden tower, which was built of four 4-in. by 6-in. uprights suitably braced and 140 ft. high. It was raised by means of a hoisting engine placed about 50 ft. from the centre of the tank and outside of the structure. The hoisting bucket discharged the concrete into a hopper, which was also placed inside of the hoisting tower, and from here was spouted through a system of pipes and flexible spouts into place. The hoisting tower placed in the centre necessitated an opening in the bottom and the roof of the tank. These openings were closed and concreted after the rest of the structure was finished. The contract cost of the tank was $23,500.

In the opinion of Mr. Mensch designer and builder of this tank, there are two reasons for the comparatively rare use of concrete for elevated tanks, namely:—

First, because of the inexperience of engineers and contractors in designing and building an absolute water-tight structure of concrete. In a reservoir, which is placed on the ground, wet spots in the walls, or even slight leaks, are not very objectionable, while in elevated structures they are sources of danger from frost, and decidedly unsightly. While wet spots and slight leaks are often overlooked in wooden and steel tanks, they are sources of anxiety in concrete tanks.

Second, because the cost of a concrete structure of this character is, as a rule, considerably higher than that of a steel structure.

Elevated concrete tanks possess some points of advantage, however, over steel tanks. An important advantage of concrete tanks for service in northern climates is that their thick walls prevent, to a considerable extent, the formation of ice within the tank. Under unfavorable conditions of weather and protection from freezing, ice formed within large tanks sometimes attains a thickness of 5 ft. or more. Other points of advantage of concrete tanks are that they do not require painting, and that from the nature of the construction material employed ornamental effects are readily available for slight additional cost.

The tank herein described was built as one part of the extensive improvements to the water works system of Berlin, which have been made during the past year. Messrs. Bowman and Connor Consulting Engineers, of Berlin and Toronto, planned these improvements, with the exception of the water tank. The design of the tank was checked by Mr. Connor.

The length of the Esquimalt Graving Dock at Victoria dock to gate is 450 feet, level with keel blocks; 480 feet with gate on outer kerb. The width of gates is 65 feet. The depth of water varies from 27 feet to 29 feet 6 inches at springs, according to the season of year. The use of the dock will be subject to the following tariff:—

Gross tonnage of vessel.	For the first day of docking.	For each following day, including undocking day.
For all vessels up to 1,000 tons	$300.00	5 cents per ton.
From 1,000 to 2,000 tons	350.00	4½ cents per ton.
For all vessels above 2,000 tons	400.00	4 cents per ton up to 2,000 tons and 2 cts. per ton on all tonnage above 2,000.
Vessels from 430 to 450 ft. in length	550.00	
Vessels from 450 to 480 ft. in length	700.00	

Possessing a large quantity of paper-making woods, British Columbia affords a promising field for the paper-maker. Pulpwood forests border the ocean and many navigable waters, simplifying transportation, and there are numerous water-powers to supply motive power to the mills. The rapid denudation of the pulp areas of the United States will soon compel it to look to Canada for its supply of wood pulp, which, according to the regulations now in force, must be manufactured in the province. There is, besides, a present demand for pulp in Japan, China and Australia, and when the industry is fairly developed, the ocean freights will enable profitable exportation to Great Britain and Europe.