TRAVELLING CONCRETE PLANT.

A NOVEL concrete mixing plant with elevator tower and distributing chute is described in the "Canal Record" of Panama. It is being used for mixing and placing the concrete in the caisson shells and superstructures of the quay wall and pier now under construction at the Balboa terminals. Four units of the type are in use. The system has advantages of convenience, speed, and reduced labor cost.

Each unit consists of a hoisting engine, of approximately 20 horse-power, steamdriven; a ½-cubic yard portable mixer; an elevator for raising the concrete so that it can be distributed from a hopper by gravity; and a jointed distributing chute, for placing the concrete from the hopper. All of these items are mounted on a single flat car, resting on a 5-foot gauge track. The plant is advanced along the track with the progress of the placing. The sand, rock, and cement for the concrete may be handled to the mixer direct from cars coupled to the flat car in the rear, or from stock piles alongside the site of operations. In either case, they are carried to the mixer in wheelbarrows, over suitable staging.

The hoisting engine boiler furnishes steam for the mixer, and, by cables running over sheaves at the top of the elevator tower, raises and lowers the elevator car.

The elevator is a hollow timber framework, 4½ by 6 feet in plan. In the unit of which the side and front views are shown herewith, the tower rises to a height of 41 feet 3 inches above the deck line; in this type, the distributing chute is 52 feet long, with a distributing radius of 48 feet. In two other units of similar general design, the chute is longer, having a distributing radius of 78 feet. The elevation of the tower is determined by the requirements of distributing the concrete by gravity. In each case, the tower is braced by timber outriggers.

The elevator car is the body of an ordinary ½-yard Decauville dump car, mounted on trunnions. At an elevation determined by the length of the chute, it dumps automatically into a hopper which rests on a projection on the front side of the elevator shaft. The hopper is six by six feet in plan at its top, converging into juncture with the distributing chute. It has a capacity of about one cubic yard.

The distributing chute is of 14-inch steel pipe. It is in two sections of equal length, connected by means of a swivel joint. The upper section is known as the swivel arm, and the lower section as the nozzle arm. The upper section is connected with the hopper discharge by a swivel joint, and can swing to either side to a position at right angles with the axis of the flat car. The nozzle arm, swinging under the upper section, can describe a circle, the centre of which is the joint between the two sections. This combination of motions allows the mouth of the chute to be placed over any point in the semicircle described by swinging the chute with both sections extended in the same plane.

The method of supporting the chute is of especial interest. Both sections of the chute are supported by means of a pivoted latticework boom, projecting outward and upward from the front of the base of the elevator tower. The timbers of the boom pass on both sides of the upper section of the chute, allowing its support to be effected by the cross pieces. In addition, the boom passes far enough beyond the upper section to allow vertical guys to be attached to the intermediate joint, and slanting guys to be extended to the end of the nozzle arm. This does away with extraneous supports for the nozzle arm, and with the services of laborers in carrying it from point to point.

The system allows the mixing and placing of from 180 to 200 cubic yards of concrete per day from the ½-yard mixer. The arrangement of the chute allows the placing of concrete all over the semicircle in front of the mixer without the use of men with wheelbarrows, operating on runways laid over the reinforcement. These features are especially desirable in the pier construction, where it is important to complete a section, including a main girder and extending half-way to the girders on either side, in one day, in order that the concrete may harden in a complete unit.

In the new pier No. 1, each section is 29 feet 6 inches long by 75 feet 11 inches wide, and contains 191 cubic yards of concrete. One mixing unit will complete a section a day; but in case of breakdown, another unit can be withdrawn from caisson work and sent to supplement the placing for the pier. Each outfit is practically as portable as a wrecking crane.

The force for each unit consists of approximately 30 silver employees in charge of a white foreman. Twenty-five men are engaged in wheeling materials from cars or stock piles and supplying the mixer; one man is in charge of the mixer; one runs the hoisting engine; and three are out at the end of the chute distributing the concrete into the forms. This arrangement makes the labor cost very low.

The report of the Timiskaming and Northern Ontario Railway Commission for the year ended October 31st, 1913, shows a total mileage of the railway in operation at the end of that year amounting to 432.77, including 252.8 miles of main line, 80.64 miles of branch lines, and 99.33 miles of yards and sidings.

It has been decided to construct dams along the creek at Caron, Alta., for the purpose of protecting the infiltration pipe gallery and to increase the storage capacity of the Caron head works. They will be built of concrete and will be finished this summer.

In the two years, 1912-13, in British Columbia, the demand for structural materials—stone, cement, clay products, etc.—has not been so great latterly as in 1910 and 1911, so the value of the output of this class of non-metallic minerals was probably lower in 1913, and in the absence of data on which to base calculations no definite statement can be made. The marble-quarry in the Ainsworth Mining Division was worked and marble was shipped from it. Near Victoria, on Saanich Arm, a second cement manufactory was started, and near Princeton a beginning to produce cement was also made, but in neither case was a large output made. The Vancouver-Portland Cement works at Tod Inlet continued to make an important production. The destruction by fire of the large pottery works at Victoria has added to the decrease in production of structural materials, but this loss in output is only temporary, the erection and equipment of new works having been provided for.

The following table shows the mileage of the various classes of work carried out under Street Improvement By-laws and General Revenue for 1913 at Vancouver, B.C.:—

	Miles.
Clearing and rough-grading streets	22.134
Ditching and crowning streets	4.516
Clearing and rough-grading boulevards	17.822
Clearing and rough-grading lanes	5.250
Grading streets	12.688
Grading boulevards	15.155
Grading lanes	3.009
Rocking streets	5.148
Rocking lanes	2.110
Extending rocking to curbs	1.228
Resurfacing streets	4.405
Plank roadways, streets	22.941
Plank roadways, lanes	12.107
Three-plank walks	32.460
Bulkheads	.825
Culverts and box-drains	.664