

kept in a place where the atmosphere was almost constant as to humidity.

Owing to the design of the steel work, it was necessary to have a precision of $\frac{1}{8}$ inch in the finishing of the tops of the piers. Points were set for the forms, and after considerable concrete had been put in, points were set with fine nails for the finishing of the top of the pier.

The transit used was a Gurley light mountain transit that was used by the author on the harbor work of the G.T.P. at Prince Rupert, B.C., and afterwards remodelled

point. The alidade was unclamped and swung over the necessary arc, and the telescope sighted carefully on the other point and the alidade clamped. Without reading the vernier, the limb was unclamped and the telescope carefully sighted on the first point and the limb clamped. The alidade was again unclamped and swung through the arc, and the telescope carefully sighted again on the second point and the alidade clamped. The vernier has now travelled twice over the arc, and the value of the angle is therefore one-half of the reading. This was



Fig. 14.—River work being carried on during winter of 1907-08. Fig. 15.—Pedestals complete on river bottom with work on west bank in progress. Fig. 18.—Looking eastward, showing sub-structure in progress. Fig. 19.—Erection of steel-work. Bent 47 just completed.

to suit the conditions at Lethbridge. The horizontal limb and verniers were graduated to read to 20 seconds, and attached to the standards were special magnifiers for reading both limbs. These were attached to the standards by means of universal three-joint arms, allowing the lens to be placed over any point on either vernier. To further facilitate the determining of the angles required in triangulation, the process of "repetition" was used so as to distribute any inaccuracies of the graduations of the horizontal limbs, over several readings. After setting the vernier at zero, the telescope was sighted on the first

done until the vernier indicated six times the actual value of the reading, and of course, this reading divided by six gave the value of the angles used in the computations. The angles were also read from both verniers, and in case of any difference, the mean was used. Errors due to angular distance between the verniers and to eccentricity of the graduated limb were largely eliminated by this method.

The plant used by the contractors for the sub-structure was as follows: 2 orange peel dredges, 1 clam shell dredge, 1 drag line dredge or excavator, 3 stiff leg