larger openings. Photo No. 5 shows a 6 x 8 flat top culvert 75 feet long, located in Orono.

During last January and February a 20-foot concrete arch culvert was built about one mile west of Orono, in a 34-foot fill. The water was heated with steam, and the gravel was shovelled around an old boiler in which a wood fire was kept burning. Each night the newly laid concrete was covered with straw ticks, shown in photograph, and in no case did the thermometer register less than 40 degrees F. next morning when taken out. One foundation was put in at a time, and when ready for the arch forms, the first was carefully thawed out with steam and hot water, the two walls were then built together until the arch ring was reached. The ends of the culvert were boarded up, a stove placed inside, and the whole of the arch ring of 110 yards was put on in one shift from 7 o'clock a.m. to 11 p.m., the temperature varying from 25 degrees to 40 degrees F.

One of the largest structures on the line is the steel viaduct two miles east of Bowmanville station. The east abutment seen in the foreground is 38 feet high from ground level to base of rail. A gin pole 40 feet long was fastened to the forms and concrete hoisted in a bucket by team. These buckets were made from three quarters of an oil barrel, re-inforced, and built at the local blacksmith shop. The amount of concrete placed per day varied from 50 yards in the foundation to 10 yards at the top, a ¾-yard Coring Batch mixer, motor driven, being used. In the background is the west abutment, height 20 feet with parallel retaining walls. Ten pairs of pedestals will support the superstructure which is made up of 40-foot and 75-foot plate girders, the total length of the viaduct being 650 feet.

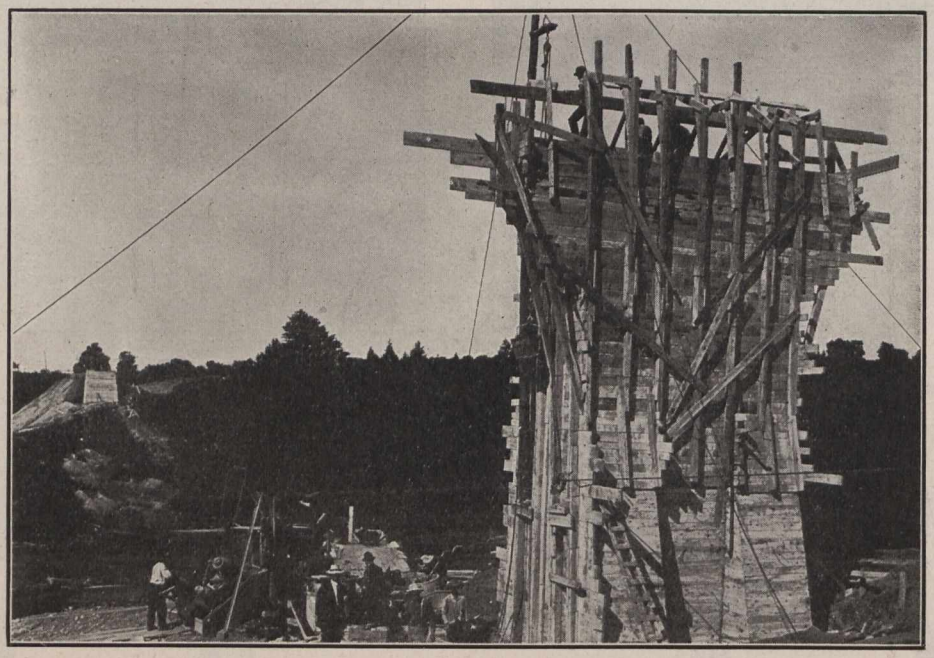
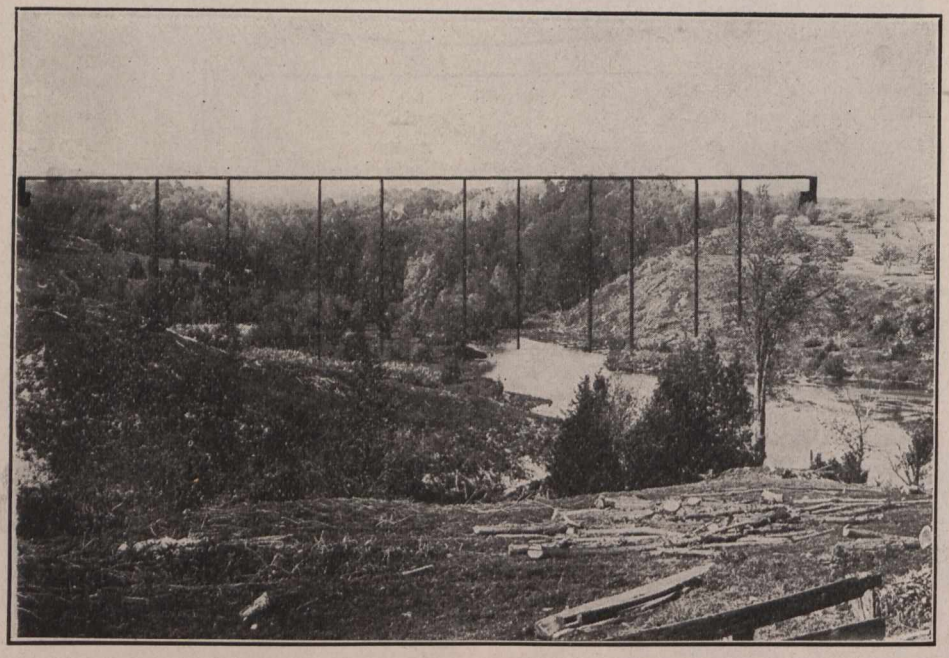


Fig. 9.
Abutment, Stephen's Crossing.



Sketch of girders at Stephen's Crossings.