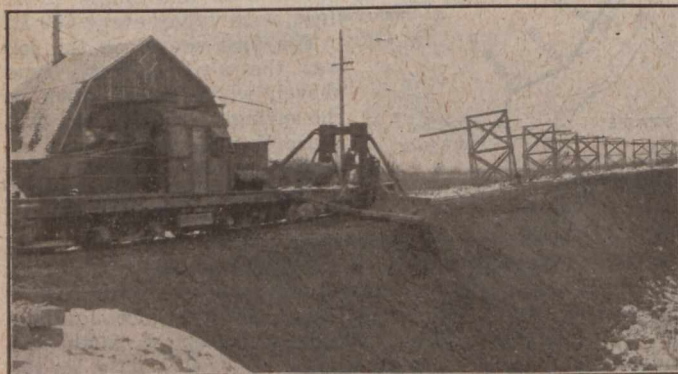


TWO VIEWS SHOWING CHANNEL CUT—AT LEFT, STA. 443+00, LOOKING WEST—AT RIGHT, STA. 448+00

yds. of rock; and from the river section, 2,000,000 cu. yds., mostly earth. These figures include the work already done.

The heavy rock fill section across the Whirlpool gully, illustrated on page 250 by the section at Sta. 335+00, is in an advanced stage of construction, approximately 50% of the rock being already in place. Behind the rock fill the whole of the gully is being backfilled with earth to the extent of 1,500,000 cu. yds., 80% of which is now in place. Each rock fill flanking the canal at this point has the following dimensions: Length at top, 650 ft.; length at base, 350 ft.; width at top, 20 ft.; width at base, 160 ft. Between these



JORDAN SPREADER PUSHING BACK DUMPED EARTH AT ST. DAVID'S DISPOSAL AREA

rock fills the base of the canal section is backfilled with rock to a depth of 8 ft.

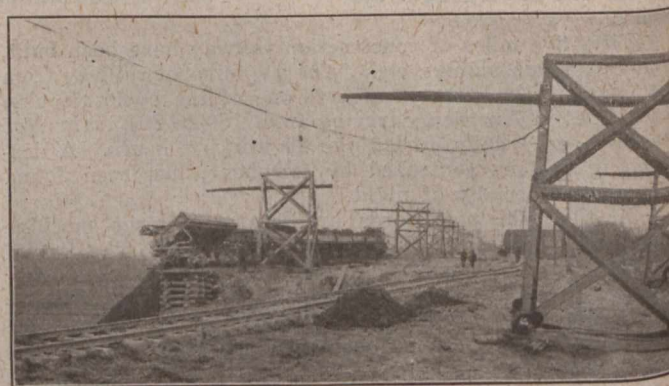
Incidentally it may be mentioned that the filling of the Whirlpool gully and its offshoots will reclaim a considerable tract of land that will ultimately be of great value for factory sites.

The power-house site, which is at the foot of the steep cliff just above the Lewiston bridge, was difficult of access. An electric shovel is now cutting its way from Queenston to the power-house site, along the bank of the river, about 30 ft. above normal water level. Besides cutting its own path, the shovel is doing the necessary grading for the construction railway, which will run right into the power-house site.

As can be seen from the sketch on page 255, this construction railway connects with the Michigan Central, making use of a portion of the International Railway's present tracks and also of the new tracks that will be built by the International Railway. This new route will give the International Railway a better approach, having a much less dangerous grade, to the Queenston dock, and will also permit the use of the large gully south of the dock as a dump for the material excavated from the power-house site.

The construction railway has been completed from the forebay to Sta. 170, and to the disposal area at St. David's. It has also been constructed from the Welland river to Sta. 40, and will soon be connected between Sta. 40 and Sta. 170. Switching arrangements have been completed at the Welland river for interchanging traffic with the Michigan Central's Welland-to-Niagara Falls line.

The channel south of Hog Island, where the intake will be constructed, is being widened and deepened, and this work is practically completed. The dredge is now working in the Welland river digging out the piers of the old highway bridge. The dredged material is floated down the Niagara river on scows and dumped. An "unloader" is moored to a stone-filled crib in the river, and the scows are controlled by the steel wire cable running from the drum of this "unloader," with the result that only two tugs are required to guide each loaded scow and "spot" it over the dumping site; moreover, the chance of a scow breaking loose from the tugs and going over the Falls is largely obviated.



TRAIN UNLOADING AT ST. DAVID'S DISPOSAL AREA—NOTE LOW-LYING GROUNDS AT LEFT, PROVIDING DUMP 200 ACRES IN EXTENT

The towers for the cableway, which is being used to a great extent in the widening of the Welland river, run on standard gauge tracks. Each tower has two tracks at 40-ft. centres and hauls itself along by its own motor by means of a line to a deadman. No work has been done as yet on the control works at the junction of the canal with the Welland river, nor in connection with the intake itself.

Prof. R. W. Angus, of the University of Toronto, has been engaged this summer and last summer in experiments with hydraulic similarity models at Dufferin Islands, near the Ontario Power Co.'s intake in the Niagara river; and the Chippawa intake, which will extend into the river from Hog Island, as roughly indicated on the plan on page 251, will be built in accordance with the results of these experiments.