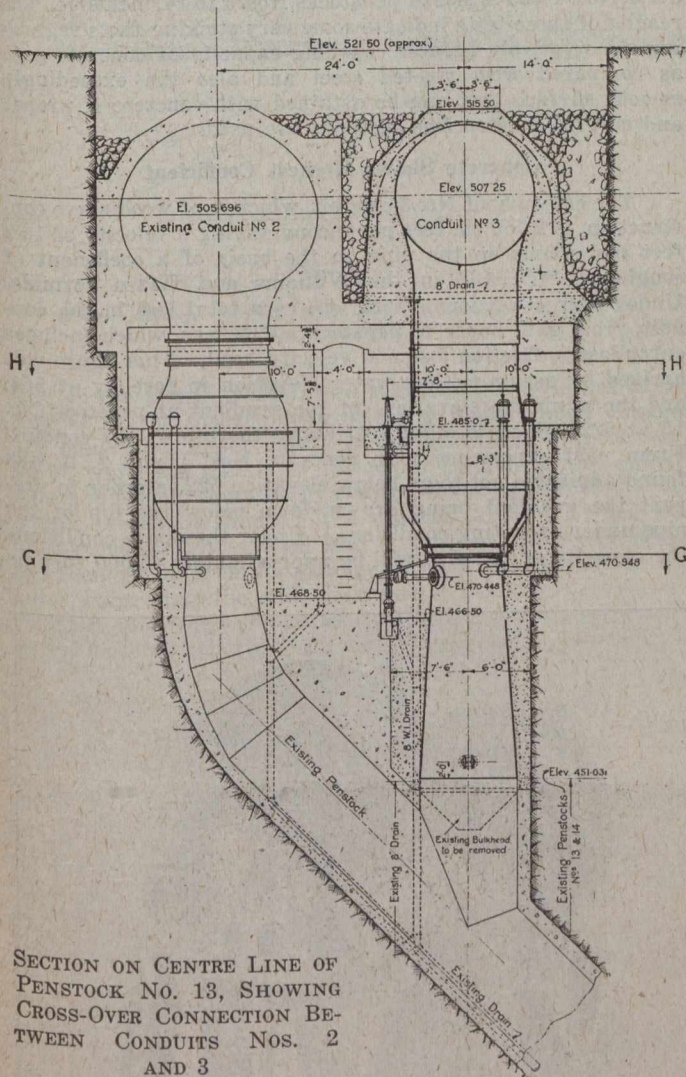


## EXTENSION TO THE ONTARIO POWER CO.'S PLANT

(Continued from page 144)

of the chief advantages of having the crane carried on a structure independent of the walls themselves.

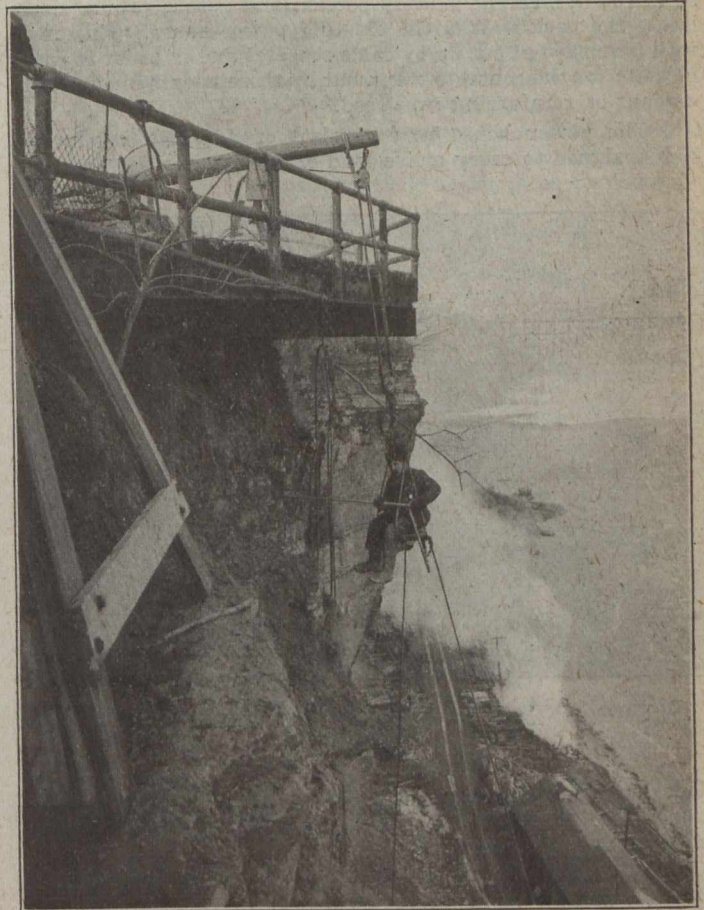
In the construction of the power house for units No. 1 to No. 14, a weir was placed at the end of the draft tube outside of power house wall, which holds the tailwater level on the units at elevation 353 approximately, except under high water conditions in the Niagara River, when the river level is above this elevation. The normal level of the Niagara River below the Falls is at elevation 343, which means an average 10-foot loss of head on the whole plant. In order to gain this head on the present extension, turbine units No. 15 and No. 16 were set 10 feet lower than units Nos. 1 to 14, inclusive, previously installed. This puts the power house extension floor level at elevation 358, or ten feet below the old floor level.



SECTION ON CENTRE LINE OF PENSTOCK NO. 13, SHOWING CROSS-OVER CONNECTION BETWEEN CONDUITS NOS. 2 AND 3

In order to protect the power house against a recurrence of the high water conditions which prevailed in 1909 and which flooded the power house by breaking through the windows in the front wall, the window sills were raised to elevation 388 and the walls strengthened to take the full water pressure up to this elevation. In subsequent extensions, including the present one, this elevation of sill has been maintained and the front wall designed as a retaining wall to take the full water pressure up to the window sills, which in the present extension is that due to 40 feet of head. The front wall of the present extension was designed as a reinforced cantilever wall similar to the walls on the previous work, but on account of lowering the power house floor 10 feet, the wall was increased in height a similar amount. As the thickness of the concrete in the front walls was controlled by the thick-

ness of the walls in the previous work, the design was made somewhat difficult. In order to overcome these difficulties, an excessive amount of reinforcing had to be used in the wall. In the north wall the same height had to be taken care of in



SCALING LOOSE MATERIAL FROM CLIFF ABOVE POWER HOUSE SITE—INTERNATIONAL ARCH BRIDGE IN DISTANCE

the design as in the case of the front wall, but here there was no limit in the thickness of the wall. After a study of several different types of walls, the semi-reinforced cantilever and gravity-wall was chosen as the best suited for the condi-



SURGE TANK FLOOR ASSEMBLED READY TO LOWER ONTO FOUNDATION

tions. In the north wall an opening is left of sufficient size for taking a railway car into the power house at elevation 368. A standard gauge track runs the full length of the power house at this elevation, and passing through the north