

Canada Rushing Huge Niagara Development As War Conservation Measure

World's Largest Electric Shovels Digging 8½-Mile Canal Around Falls and Rapids to 300,000-Horsepower Power House in Heavy Overburden and Rock—Development to Cost \$25,000,000

DIGGING partly in fine, wet clay sand, productive of dangerous slides when undrained, and partly in very stable red clay, the two largest electric revolving shovels in the world are stripping the site of the Queenston-Chippewa Canal, most of the flow section of which will be in rock. The canal, which will take water from the Niagara River above the Falls through the Welland River, locally known as Chippewa Creek, and deliver it to a 300,000-hp. power plant below the last rapids, is part of a project to develop 305 ft. net head of the 327-ft. difference in level between Lakes Erie and Ontario. The work is being pushed during the war by the Hydro-Electric Power Commission of Ontario as a conservation measure, made urgent by the great shortage of power, both steam and electric, in the territory served by power from Niagara Falls, and by the fact that none of the plants now in operation at the falls can be made to develop more than two-thirds of the total available head, while the treaty limit of possible diversion from the falls has been nearly reached, making it necessary to utilize the small surplus of available water under the maximum head which physical conditions will permit.

The construction, which is being carried on by forces of the commission, involves the removal, from the Welland River and the artificial section of the canal, of 13,000,000 yd. of earth, which is being taken out by cableway and dredge on the river section and by the big shovels in the dry cut, and 4,000,000 yd. of rock from the canal and forebay, to be removed by the big shovels and by standard railroad shovels. In addition to the power house and the gatehouse, ten concrete arch bridges, three of them carrying railroads, and a reinforced-concrete intake structure requiring extensive coffer-



CANAL FROM WELAND RIVER TO NIAGARA GORGE BELOW RAPIDS