

APPENDIX

from Hog Island to Montrose, will be part of the Welland River, now emptying into the Niagara River, but whose flow will be reversed by means of dredging the necessary down grade as far as Montrose, from whence the canal will diverge from the river across country to the forebay. The latter will be 1000 feet long and will widen out from canal width at its beginning to a width of 500 feet in front of the headworks. The canal will be cut largely through rock and in part through earth. The excavation for the forebay, headworks, penstocks, and generating station will be in solid rock.

From the headworks water will be conveyed through nine steel penstocks, 16 feet in diameter at the upper end and 14 feet in diameter at the lower end, and one 5-foot diameter service penstock, all laid in trenches excavated in the gorge face and leading to the generating station in the gorge below. Each of the nine penstocks will supply a turbine of 52,500 horse power capacity under a head of 305 feet, when running at 187.5 revolutions per minute. The turbines will be of the vertical single-runner type. They are the most powerful as yet designed and constructed, and will each be direct connected to a three phase 25 cycle generator, delivering power at 12,000 volts. A feature of the turbine foundations will be the provision of sub-basement tunnels, which will permit of the lowering and removal of the turbine runners for renewal or repairs, thus obviating the usual necessity for dismantling the generator in order to remove the turbine runners. The generators will each be provided with an individual direct connected exciter. The initial installation will consist of four 52,500 horse power units, the remaining units being added from time to time in line with future power demands. All power transmitted from this plant will be carried at 110,000 volts.

The Ontario Power Company.—This development, situated on the Niagara River, was the pioneer of the extensive develop-