

be bolted steel plates which, together with the frame, will comprise the form. Jacks will be inserted at intervals between the tower and the frame, so that the frame can be adjusted in proper alignment, and so that it can be swung back toward the tower after the side walls have been poured and have set sufficiently to allow the forms to be moved to the next position further along the canal.

As each of these towers carries two sets of forms, one



Photo by McCarthy Aero Service, Ltd.

FIG. 6—AERIAL VIEW OF CANAL NEAR STA. 240

for each wall of the canal, the opposite sections of both walls can be poured at the same time. While one section is being poured, the walls that have been poured behind the forms of the other tower will be allowed to set, so the mixing plant will work first with one tower and then with the other, and will always be between the two towers.

The mixing plant and tower from which the concrete will be poured will be mounted on a flat-car substructure similar to that used for the form towers. The forms which will lead the way along the canal will have side plates to retain the concrete, but the second (or following) set of forms will not need side plates, as the walls will be poured in alternate 40-ft. lengths, and the second set of forms will be used only for pouring the intermediate 40-ft. sections.

At a height of 2 ft. above the floor of the canal each of the forms will be inclined at an angle of 45 deg. to meet the floor slab, thus forming the fillet that will join each

side wall to the floor. The panels comprising the forms will be 1½ by 3 ft., and will be fastened to the frame in such manner that any panel or panels can readily be removed to permit the insertion of the end of the chute, and for spading, etc.

The equipment for the concreting plants is being supplied by F. H. Hopkins & Co., Ltd., the forms being manufactured by the Hydraulic Pressed Steel Co. The towers will be equipped with chain blocks, supplied by the Herbert Morris Crane & Holst Co., Ltd., for swinging back the frames carrying the forms when it is desired to move ahead.

Drain-tile will be laid back of the concrete walls wherever there is any indication that it is likely to be required.

There will probably be approximately 150,000 cu. yd. of concrete in the side walls. While the minimum thickness of the walls is to be 6 in., the average thickness will be considerably more owing to the uneven rock surface. In order to make the rock surface as smooth as possible before concreting, a scaling tower is being used. This tower nearly fills the whole prism of the canal in the rock section, and is built upon trucks. It carries at each side a platform that can be raised and lowered, and upon which the scalers work. The scaling is done with hand air-tools, the air being supplied from the pipe lines which parallel the canal.

The forebay will also be lined, but it has not yet been decided whether to concrete it in the same manner as the canal prism or to "gunite" it.

During the past year the construction railway has been extended for the whole length of the canal on the west side as far as Sta. 11. There are 29 miles of main and yard lines; altogether, counting service lines, there are 65 miles of track.

A new disposal area is being used which is one mile south of Lundy's Lane, approximately opposite Sta. 110, and only one-half mile west of the canal. This new disposal area will accommodate approximately 200,000 cu. yd. of material. The original disposal area at St. David's, which is two miles west of the canal (approximately west of Sta. 320) is still being used to a certain extent. The St. David's disposal area is large enough to hold all of the material that has to be excavated from the whole canal, as it is estimated that if entirely filled it would hold 21,000,000 cu. yd.

About 6,000 cu. yd. of rock are being taken out every day. At times as much as 2,000 cu. yd. per day, or 65,000 cu. yd. per month (measurement in place) are taken out by one shovel. The crusher plant has a capacity of 3,500 cu. yd. (loose measurement) per day. Last month 560,000 cu. yd. of material were moved from the canal prism, of which 90,000 cu. yd. were rock; and an additional 45,000 cu. yd. of material were dredged in the Welland River section. When all the new equipment that has been ordered is received, it is expected that the work will go ahead even faster than the splendid records that have been made in the past.

Among the new equipment that has been ordered are 60 "Western" dump cars of 20-cu. yd. capacity, 3 electric locomotives, 7 steam locomotives, 10 Ingersoll-Rand compressors of 1,000-cu. ft. capacity against 125 lb. pressure (for a new sub-station at Montrose), 2 Bucyrus spreaders of the latest and heaviest type, 2 London concrete mixers, 2 Ransome concrete mixers and a large number of pumps.

At the powerhouse site rapid progress is being made. The site has been entirely cleared and excavation for the