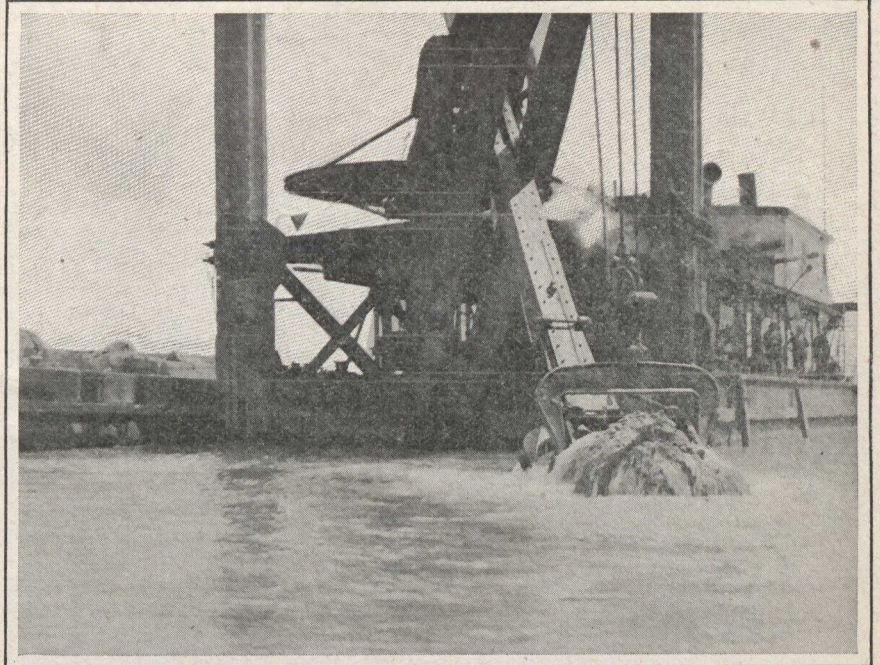


One of the largest parts of the whole work is the making ready of the harbour at Port Weller. Here a dump train is "filling in."



The Dredge "Dominion" at work at the canal entrance. It is one of the newest types.

The New Welland Ship Canal

A Canadian Public Engineering Work Second in Some Features Only to the Panama Canal

By HUGH S. EAYRS

Photographs by courtesy of Canadian Northern Railway

SUPPOSING someone came along and told people that for a dollar or two they could see that immense undertaking, the construction of the Panama Canal, people would go. Yet here in Canada, in the picturesque Niagara Peninsula, a fifty million dollar public work, one of the world's largest tasks in the way of ship canal building, is the Welland Ship Canal, which is surpassed only in some features by the great Panama waterway itself. The new Welland Ship Canal will replace the present channel of water connecting Lake Ontario with Lake Erie, and follows the same line as the present from Lake Erie to Allanburg pretty generally. The object of the newer and larger and improved waterway is a first link in the chain of progress whereby liners will be able to come from the Atlantic to Port Arthur. At present they cannot get any farther than Prescott, on the St. Lawrence. The ultimate object is to have them come up the St. Lawrence, across Lake Ontario, and Lake Erie, and thence across Lake Superior to Port Arthur. Last year, work was commenced upon this first part of the larger work, the facilitating of the progress of small vessels, and the making of provision for larger vessels across from Ontario to Erie.

The Welland Canal is one of the oldest in Canada, for it was started at the time of the great canal agitation in the early twenties of the last century. As originally built, it connected its present termini, Port Colborne and Port Dalhousie, but the difficulties of excavation at the so-called "Deep Cut" through the divide in the centre of the Peninsula prohibited the use of the Welland River or Lake Erie as a source of water supply, and required a summit level fed by a feeder twenty-seven miles long, extending from the Grand River, which lies to the west of Port Colborne. Later the Deep Cut was made, and the water supply taken from Lake Erie, the summit level of the canal. The level of the Welland River is still lower than the lake level. In 1841, an enlargement of the small canal was made, and its bottom



The new canal is indicated by a double line, and except a new cut at the Ontario end, follows the same route as heretofore.

Port Colborne and Allanburg, a distance of about fifteen miles, the old route was untouched, except that the canal prism was again widened and deepened, but from Allanburg to Port Dalhousie, eleven miles, a new route was chosen. The work on this took from 1875 till 1877, and the present canal is the one then finished. It is still used for small vessels, and for the power generated, and will be in use while construction on the new waterway is going on, but it is inadequate for general trade.

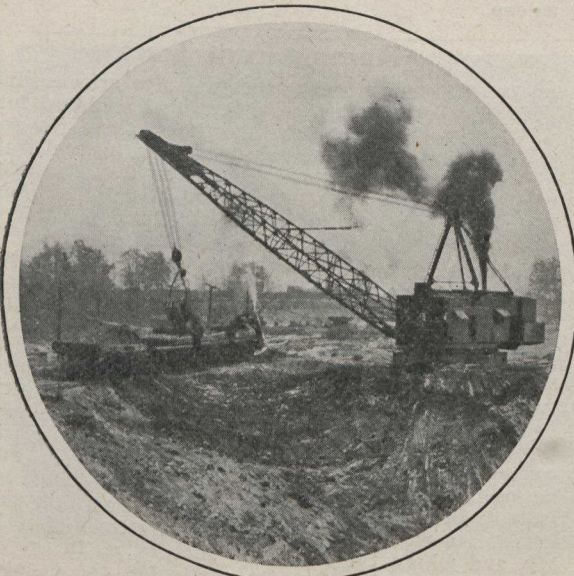
NOW, the location of the canal is again to be partially changed. Its termini are to be Port Weller and Port Colborne. Port Weller is about three or four miles from St. Catharines. The new canal follows the present one from Port Colborne to Welland. From Welland to the point where the present canal leaves the Welland River, the new canal takes its alignment in the bed of the Welland River. From the Welland River to Allanburg, the old route—that is, the first, and the present route—is followed. It is from Allanburg on to Lake Ontario that the most radical change is made, for an entirely new cut-off is projected, on a much better alignment than the present one, which, incidentally, it crosses twice. Lake Ontario is thus reached about three

miles east of the present harbour at Port Dalhousie, at Port Weller.

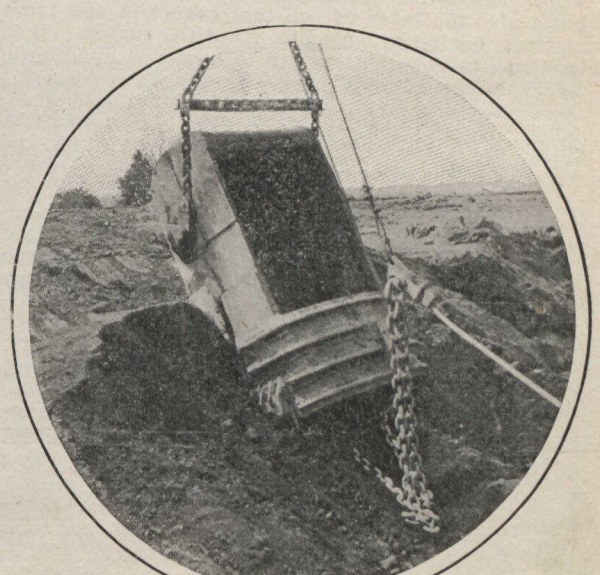
The total length of the new highway from lake to lake will be twenty-five miles, five miles shorter than the present canal, and there will be only seven locks on the new against twenty-seven locks on the old. These locks will be built throughout of concrete founded on bed-rock, and the walls will be eighty-two feet above the top of the gate sills. Two of the locks will have walls over one hundred feet high. The gates, a notable feature, are to be amongst the largest ever built, and will weigh eleven hundred tons each. The locks are to be so constructed that eight minutes will suffice for their filling, which is a great reduction on the time at present taken. The dimensions of the locks are to be eight hundred feet in usable length by eighty feet in width in the clear, with thirty feet of water over the sills at extreme low stages of the lake. There are some special features of the work which are attracting the interest of the engineering world. There is a pair of twin guard gates, located immediately to the south of Lock No. 7. This is as special protection against the heavy body of water formed by Lake Erie. Another new device is that at the head of each lift-lock there is a pond provided as a regulating basin from which the water to fill the locks will be drawn instead of from the canal. These reservoirs, which vary in area from 107 to 150 acres, will have the effect of preventing the formation of objectionable currents and surges in the locks and canal.

AS the ship canal is to be carried over the Welland River, some long and expert work is necessary to raise the level of the river to that of the summit level of the canal. This is to be done by means of a dam across the river at Port Robinson, which will flood some sixteen acres of low lying land adjoining the river-bed. The magnitude of this part of the work alone may be judged by the fact that from the river level to the canal

(Concluded on page 15.)



The Big Cut at Port Weller.



A type of drag line bucket new to Canada.