

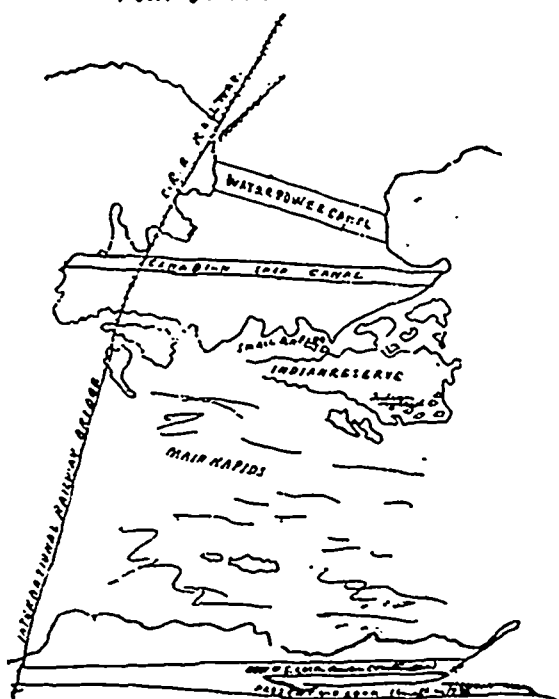
THE SAULT STE. MARIE SHIP CANAL.

The River St. Mary, flowing a distance of sixty miles, carries the waters of Lake Superior into Lake Huron. It runs its noble course in varying width from about one hundred feet at one point to four miles at another, and forms in its main channel part of the international boundary. As it passes between the Canadian town of Sault Ste. Marie and the Michigan city of the same name, it rushes over a rocky bed in shallow rapids of half a mile in length, with a difference of nearly nineteen feet between the upper and lower levels. To overcome this impediment to navigation, there was built on the Michigan side a canal, which was completed in 1855. Another canal was built parallel and close to this and completed in 1881. In 1889, the United States Government commenced work on a new canal on the site of the one of 1855, now demolished to make room for the new one, which is likely to be finished next year. Our neighbors will then have two canals to accommodate the immense and growing traffic which now presses very hard on the canal of 1881, at present the only one in use.

The project of a Canadian Ship Canal has been suggested at different times, and as early as 1851 an attempt was made to form a company for its construction. This company did not become incorporated owing to the opposition of the late Sir Francis Hincks, then Prime Minister. The action of Sir Francis was made the subject of grave charges against him, which, however, were fully disproved on an investigation by a select committee of the Legislative Council in 1855. But even earlier than the time of Sir Francis, and earlier than anyone now living can remember, a canal and lock had actually been constructed and used on the Canadian side. No trace of this canal was visible until, when excavations were being made in May, 1889, for the water power canal, the timbers of the old canal were unearthed. It was built in 1797 by the North-West Company—in its time a rival of, but afterwards amalgamated with, the Hudson Bay Company—and was destroyed by the United States soldiers in the war of 1812. The curious reader can obtain fuller details of this canal at page 25 of the Canadian Archives of 1886.

The need of the Canadian Ship Canal has been specially felt on two memorable occasions. The first of these was when the United States Government refused to allow Sir Garnet Wolseley to go through the Michigan canal with the Canadian troops on their way to quell the first Riel rebellion. The other was during the canal toll excitement of last year. Every Canadian would have been better pleased if the Government had then been in a position of independence. It would have been so, and the Washington Treaty, too, would have been different in terms, if our ship canal had been built twenty years ago. Apart from these political considerations, however, the growth of Manitoba and the North-West and the consequent increase of lake traffic require the building of this work.

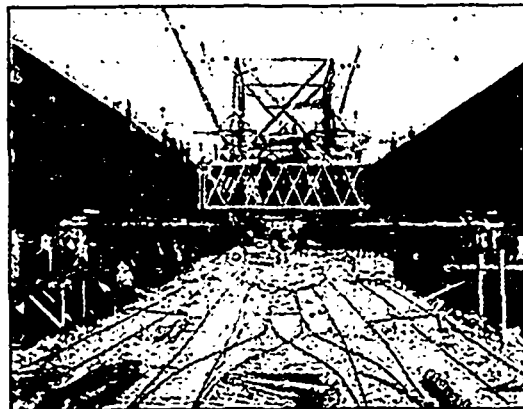
TOWN OF SAULT STE. MARIE, ONT.



Work was commenced on the 1st May, 1889, by Hugh Ryan & Co., the contractors. The whole of the work will be completed in the summer of 1894.

Before ground was broken, the neck of land shown in the map

was a wild and beautiful piece of nature. There were many small streams where the fishermen caught fine specimens of speckled trout, and plank bridges thrown across these streams afforded a means for the strolling tourist to reach the Indian fishing village, which is still on the banks of the main rapids. There are now left but two of the streams, the construction of the ship canal and of the water power canal having destroyed the others.



LOCK PIT WALLS.

The general formation of the ground consists of an upper stratum of sandy loam mixed with boulders, and below this red Potsdam sandstone of varying hardness. The work of excavation gives employment to about four hundred men on an average. The facing or cut stone comes from Amherstburg, while the backing stone comes from Meldrum Bay on Manitoulin Island. The quarrying of the stone gives employment to upwards of two hundred men in the two quarries, and a fleet of vessels is required for the transportation of the material. It takes about two hundred stone cutters and masons to do the work of the lock-pit walls. There are also numerous machinists, carpenters, etc., and no fewer than eighteen blacksmiths. The magnitude of the operations being carried on may be better conceived from the statement that there are fifty-three teams of horses and ten miles of railroad track. The bottom of the canal is now like a railway yard, and is a scene of constant activity; tram cars, carrying stone and concrete, being constantly moved and switched.

The stone is all brought to this railway yard and hoisted by three travelling derricks stationed at points convenient for the work as it progresses. These derricks are each built on a truss reaching from one wall to the other, and carried on a track of a gauge of forty-eight feet six inches. The walls on which these derricks rest are the walls of the culvert, the bottom of which is twelve feet below the bottom of the lock wall. They project below the lock-pit, thus making a channel under the basin or floor of the lock: a narrower channel will be used for culverts to convey the water into and out of the lock. After the masonry is completed and the derricks are taken away, a timber covering will rest on the walls, which project as above described. The derricks are so built that they have hoisted the stones that are laid in the lowest course, and will hoist the coping stones, which will lie on top, forty-four and one-half feet higher. Each derrick has four masts, two for each wall. The engine on each derrick drives five sets of drums, four being for hoisting and the fifth for locomotion of the derrick on the tracks.

The various pieces of machinery for hoisting, pumping, drilling, stone-crushing and other purposes require a large amount of power. Water-power has been utilized, and one thousand horse-power obtained. This both drives the air compressor and transmits power by cable to various machines on the work. The compressor is here used for the first time in Canada on a public work, though it is also used, I believe, in mining. The great merit of air compression is that the power can be transmitted a long distance without loss, unless by a possible leakage. On this work it is used for some of the rock drills and hoisting derricks. Others of these drills and derricks are driven by steam-power. The total number of derricks is forty. The cable runs the pumping engine which keeps the big ditch dry, and also transmits power to a stone-crusher 1,300 feet away. There are two stone-crushers, one with a capacity of fifteen or thirty tons per hour, and the other able to crush from twenty five to forty tons in the same time.

The work is mainly carried out for the contractors by one of the three members of the firm, Michael J. Haney, who is well known as a civil engineer. In the course of four years of construction but one man has been killed; his death was caused by the breaking of a derrick.