

Georgian Bay Canal—Present and Proposed Routes



MONTREAL correspondent of the London Times writes: "The construction of the Georgian Bay Ship Canal is a work which is certain to be undertaken sooner or later by the Canadian Government. After many years of agitation on the part of private individuals, the matter a few years ago reached the stage at which deputations from the sections likely to be benefited by the canal began pressing the issue upon the Federal Government. The proposed route—from Montreal along the Ottawa River to Lake Nipissing and down the French River to Georgian Bay—is no new route, being one of the oldest and most historical in Canada. It was along this waterway that, three hundred years ago, Champlain, following the old Indian route, made his way into the heart of the country. The present waterway, though much the longer, superseded the original Ottawa River route because of its commercial value, as almost throughout its length it afforded a safe and rapid passage for the largest boats afloat. It included three large lakes, Ontario, Erie, and Huron, making up the greater portion of the distance, along which the British Navy could pass with safety. The remainder of the route presented difficulties at various points, such as in the St. Lawrence River some distance above Montreal, and in the Niagara River, connecting Lakes Ontario and Erie; but these were more easily overcome than those of the Champlain route, so that the longer route triumphed, and the shorter fell into disuse as a through commercial waterway. Naturally, the country opened up more rapidly along the line of the through waterway, the Ottawa River sections being left to the lumberman and the settler."

Advantages of the Proposed Route

During the past decade or so this district, however, has been assuming greater importance; the opening up of the Canadian Pacific through line of railway across the continent gave it an impetus, and towns and industries of more than local importance are now springing up and developing throughout the district. This of itself would justify the expenditure of a considerable sum of money on the development of the waterway, and has occasioned much agitation in that direction. In addition to this is the development of the wheat fields of the Far West, and the necessity for the shortest and quickest possible waterway down which to bring the grain from the West to the head of ocean navigation, Montreal. Competition with the transportation routes of the United States was no small incentive, as it was clear that if the Canadian waterways could be shortened without too great an expenditure, this country would do the grain-carrying business of the North American Continent during the period of navigation. These considerations, a few years ago, induced the Federal Government to undertake a full and complete survey of the disused route for the purpose of ascertaining the approximate cost of its conversion into an adequate commercial waterway, and the advantages it would offer as compared with the route now employed. The survey was a most careful and comprehensive one, and early in July an interim report, containing its chief features, was presented to the House of Commons by the Minister of Public Works. The Government has not yet indicated its intentions in the matter, and there is small doubt that decision upon the subject will be delayed for some little time to come.

The intentions of Sir Wilfrid Laurier (if returned to power) are shown by his speech at Hull (Ont.) on Monday, the 10th inst. He stated that if the country's revenue continued to increase at its present rate, the Georgian Bay Canal could be taken in hand as soon as the Trans-continental Railway was completed.

Cost and Description of Canal

The cost of the canal is estimated at \$93,890,000 to \$99,689,000, and it is calculated that the canal will require about ten years to construct. At present boats bringing grain from the interior, pass eastward through Lakes Superior or Michigan, and turn southward through Lake Huron, proceeding round the southern extremity of the Province of Ontario. By the new route, they would continue eastward across Lake Huron and into Georgian Bay, where they would enter the French River and, continuing eastward, would pass upward through Lake Nipissing to the highest point in the route, after which they would descend the Ottawa River to Montreal, which is situated close to the confluence of the Ottawa and St. Lawrence Rivers. It is proposed to construct the canal on the "dam and lock system," with slack water reaches between the structures. The estimates are based on a waterway of at least 22 feet in depth at the shallowest points. The locks along the route would all be constructed of concrete, and have a length of 650 feet, a width of 65 feet, and a depth of 22 feet. This would permit the passage of ships of 600 feet in length, 60 feet in beam, and with a 20 feet draught. The total distance from Montreal to French River village, at Georgian Bay, is 440 miles, of which all save 20 or 30 miles follows the course of some river or lake. According to the route used—there being alternative routes near Montreal—the total canal cutting would vary from 28 to 34 miles. The length of submerged channels to be excavated would be about 60 miles, besides which about 12½ miles would have to be removed at shoals, sharp bends, etc., in order to form wide chan-

nels. This would leave about 332 miles of natural waterway which would not require any improvement save the raising of the water surface.

Altitude and Lockage

The highest point along the route is reached at a distance of 333 miles westward from Montreal, that is, about three-quarters of the distance from Montreal to the Bay. At this point, the height above the sea level is 667 feet, so that as Montreal is 18 feet above the sea level, the rise is 650 feet, while Georgian Bay being 576 feet above sea level,

Rivers after the proposed improvements have been fully carried out. These improvements would entirely alter the general features of the route. For the purpose of lockage, the falls would be concentrated and all the small rapids obliterated. This concentration of the falls at one point would eliminate the greatest difficulty in the development of water-power. The alteration of so many existing features of the route cannot be done without destroying some of the present water-power to which rights have probably already been secured by different individuals and interests.



This map shows the routes by which grain is now brought from the grain centres on Lakes Superior and Michigan to Montreal and via Buffalo and the Erie Canal to New York, together with an outline of the Georgian Bay Canal.

the rise from that point to the summit is 99 feet. In gaining the summit from the eastern or Montreal end of the route, some 22 or 23 locks, with lifts of from 5 to 50 feet each will be employed, while from the western or Georgian Bay end only four locks, with lifts of from 22 to 29 feet each will be needed. At the summit of the route, which will embrace Lake Talon, the Little Mattawa River, and Turtle and Trout Lakes, it is proposed to provide a system of reservoirs for the storage of a portion of the surplus waters during the flood seasons, thus securing a reserve supply which may be liberated according to requirements during the periods of low water. A water supply with a flow of 540 cubic feet per second will be afforded throughout the period of navigation (about 210 days) allowing an average of twenty-four passages per day, or 5,040 passages for the season of navigation. This supply of water may be increased by 700 cubic feet per second by the expenditure of \$300,000 in creating storage reservoirs further south at the head of the Amable du Fond River.

Water-Power

The report indicates that, although it is doubtful if 150,000 horse-power at minimum flow could be developed from the route at present, it is probable that nearly 1,000,000 could be secured along the Ottawa and French

It is probable, however, that the owners would be willing to be compensated by power-rights at other points. The raising of levels would also place considerable stretches of land under water and necessitate compensation for those also. The estimates of the cost, however, contain provision for all such charges.

The Montreal Terminus

The estimates take into consideration two alternate finishing routes; one of which costs



This map shows in some detail the proposed route by which vessels would leave Lake Huron at Georgian Bay, enter French River, cross Lake Nipissing, and proceed along the Ottawa River to Montreal.

considerably more than the other, but which would have as its terminus the present harbor of Montreal. This harbor, it may be worth stating, is situated on the southern portion of the island of Montreal, midway between its eastern and western extremities. At

this point the island is about ten miles wide; its length is 40 or 45 miles. It lies at the confluence of the St. Lawrence and Ottawa Rivers. Part of the latter flows along the north side, as the Riviere des Prairies, and joins the St. Lawrence at the foot of the island, the remainder forking southward and immediately joining the St. Lawrence River, and, with it, forming the Lake St. Louis, a short distance above Montreal. The waters are here known as the St. Lawrence River, and, as such, pass through the Lachine Rapids to Montreal where the ocean vessels lie at the docks. The cost of the Georgian Bay Canal via the latter route, is estimated at \$99,689,000; while, if the Riviere des Prairies route along the north of the island be used, the cost is only \$93,890,000. It is not explained what arrangements would be made for harbor facilities in case the cheaper route were chosen. Such a selection, however, seems very remote, unless the boats, after reaching the St. Lawrence, came back to the ocean vessels at Montreal.

Comparisons of Routes

As regards distances from the different ports on the Great Lakes, from which the wheat crops are mainly shipped, to the Atlantic seaports and to Liverpool, the Georgian Bay Canal route easily has the advantage over any existing water route either in Canada or the United States. The advantage of the proposed route, in the question of mileage, over the present water routes is as follows:—

	Advantage over U. S. route via New York.	Advantage over present Canadian route.
Miles.		Miles.
From Ft. William, Canada, to Liverpool	308	382
From Duluth to Liverpool	306	382
From Milwaukee to Liverpool	274	370
From Chicago to Liverpool	274	370

The distance from Fort William or Port Arthur, Ontario, and Duluth, U.S.A., to the port of Montreal, is 424 miles shorter via the Georgian Bay Canal than from the same ports to New York by the United States route via Buffalo and through the Erie Canal. When the comparison is made applicable to railways in the United States, instead of to waterways, the comparison is even more in favor of the Georgian Bay Canal.

Of more importance than that of mileage, however, is the comparison as regards dura-

tion of voyage. From calculations made of the speed allowable in the different stretches of the Georgian Bay Canal, with about three-quarters of an hour delay in passing each lock, it would appear that boats will require an average of about 70 hours to pass through from the Georgian Bay to Montreal. This means a saving of from one and three-fifths to two days as compared with any other existing water route from the head of the lakes to an ocean port. A further advantage is obtained in the fact that boats of very much larger capacity may be brought through the Georgian Bay Canal locks than through the locks of the existing Canadian route. After making proper allowances for safe and easy passage through the locks, the largest boats possible for the present route have a length of about 255 feet, a beam of about 43½ feet, and a draught of 9 feet, while the locks along the new route would be designed to accommodate boats of 600 feet length, 60 feet beam, and 20 feet draught. This would make an enormous difference in carrying capacity.

Opposition to the Scheme

An important comparison remains to be considered, and that one is less advantageous to the proposed route than those mentioned. The opponents of the Georgian Bay Canal urge that more money should be spent upon improvements in the present route instead of upon such a very big work as that proposed. From all that can be learned, it would seem that if the locks along the present route were enlarged and deepened, and assuming that the number of locks would be greatly reduced by the improvements, the time of transit could be reduced to such an extent that the proposed route would have practically no advantage over it. It is contended that the saving of distance in the latter route would be offset by the greater rate of speed which could be maintained throughout almost the entire distance of the present and longer route. The period of navigation on both routes would be about the same, viz., about 210 days during the year.

In considering the new canal, in addition to the advantages it possesses over present routes, many other benefits must not be lost sight of. One of these is that the canal is entirely within Canadian territory, an advantage which would be more evident in time of war. The main advantages, however, apart from those shown in the comparisons given above, are the enormous water power developed along the route and the fact that the section of country through which the canal would run is rich and capable of great development. Its importance is already a justification for an improvement in its waterways, if only for local traffic. Additional water power, to the extent of at least 800,000 horse power, it is stated, can be developed by the canal, which power, estimated at the conservative price of \$10 per h.p. per year, would alone be worth \$8,000,000 per annum.

BIRDS AVOID THE SEA

The great autumnal exodus of birds from England is nearly over. For weeks past it has been going on, cuckoos, swifts, flycatchers, and nightingales leading the way, followed by swallows, martins, night jays, and a score of others, while the rear will be brought up in about a fortnight's time by the chaffinch, which is always the first to come and the last to go.

One very curious feature in this annual migration is the fact that the birds never fly straight from Great Britain to their destination in Egypt or Arabia. They follow a zigzag course. First of all, crossing the Channel at certain specified points, they make for Northern Germany, where the great gathering of the feathered clans takes place. There the vast host breaks up into four divisions, the first flying southwest through France and Spain to the Straits of Gibraltar; the second due south to the Gulf of Genoa, and thence across Corsica and Sardinia to Tunis; the third a little more to the east, so as to pass down Italy and through Sicily to Tripoli, while the fourth goes southeast through Austria and Greece, and so by way of Crete to Alexandria. Then, on reaching the African coast, they will turn due east and fly straight on till they reach their winter haunts.

The reason why the birds adopt these strangely circuitous routes is simply that they hate crossing the sea, and always prefer an overland journey, although it may be very much longer. And their great idea is to make the passage of both the English Channel and the Mediterranean Sea at the narrowest points. So they willingly fly an extra thousand miles or so by land, both in autumn and again in spring, in order to avoid a flight of fifty or sixty miles across the water. And nothing will turn them from these old ancestral "fly lines," which seem to date back to the time when the Mediterranean was a series of lakes and Britain was connected with Denmark by means of the Dogger Bank.

The Australian mail brings news, says the Standard of Empire, of a remarkable achievement by a well-known Queensland drover, G. du Moulin, who successfully brought twelve hundred head of cattle from Hodgson Downs, in the Roper River district of the Northern Territory, to Charleville, a distance of 1,750 miles. The march occupied just under twelve months, and the first three hundred miles of it was through trackless bush which could only be navigated by means of a compass and the aid of a half-savage Warrigal of the far north. Mr. du Moulin believes that the proposed Transcontinental Railway would open up, between Cloncurry and the South Australian border, a country extremely rich in minerals, while beyond lie thousands of square miles of splendid pastoral lands.

Mr. Haldane on the Territorial Army



A meeting of members of the Royal United Service Institution, held at the Institution in Whitehall, a paper on "The Training of the Territorial Army" was read by Lieutenant-General R. S. S. Baden-Powell, C.B., the general officer commanding the Northumbrian Division. The Secretary of State for War presided, and there was a large attendance of members.

Mr. Haldane, in introducing the lecturer, alluded to the fact that it was proposed to ask for 24,000 men to join the Special Reserve, and that funds had been provided for that purpose. There were those who thought that because they wanted to get in unemployed workmen to that force they would be losing quality by so doing. But it was quite the contrary. They had a larger number than ever to pick and choose from, and were sticking to their standards tightly in those they were taking in. He hoped for the best results to the Army from this new enterprise. The coming year was one which was likely to prove of as great importance in the history of the Territorial Force as the year that had gone by. In the year that had gone by the force was born; in the year that was before them the principles which defined the purposes for which the Force was to be organized and used had to be born. Their plans were already in an advanced condition, and very little had yet to happen before they would become operative. In the history of the British Army, the point on which we had been most defective was a definite conception of what mobilization meant. It was all very fine to have battalions and batteries and even brigades, and to be able to dribble them out after two or three months' interval. But in modern war everything depended upon rapidity. And that was quite as true of defence against invasion as it was of other things. The essence of defence was the capacity of rapidly taking the offensive, and dealing the

counter stroke before the initial stroke had actually been dealt. If rapid mobilization was essential, and if they were fighting in great units in which mixed arms were represented in their due proportions, rapid mobilization became a very difficult problem. That is why the Special Reserve was receiving the attention which it was receiving at this moment, and that was the great problem of the Territorial Force. That was why they swept away the old organization of the Volunteers and Yeomanry, which was no organization, so far as rapid mobilization was concerned, at all. They had laid the foundation, in the shape of the Territorial Force, of an organization which lent itself to rapid mobilization, and the question was whether they could work that out. Time only would show. It was useless to prophesy, or to conjecture about public spirit; and what it would bring forth. They hoped to produce very shortly plans dealing with the whole situation comprehensively. The essence of the duty of the Force was to protect against possible invasion, and in that way to render invasion unlikely. For that purpose the Force must exist in sufficient strength. The Navy could account for a great deal of the larger invading force become. The smaller the invading force was, the more danger there was of its evading naval vigilance. The essence of the plans they were prepared to further would be to distribute the functions of the various units of the Territorial Force. Suppose the enemy to come and threaten invasion. He might land at a number of points very distant from one another. It was plain that you must have local defence, local Territorial Force arrangements, prepared to catch him at those points. The purpose of the local force, and undoubtedly the Territorial Army, must be in part to organize so as to provide the proper local force and the proper local knowledge and training for each particular area—not to do the whole work. There must be at the back

of it a force mobile over the whole area, designed so that it could be brought up at the shortest notice, and the function of that force must be to crush the enemy, who had been delayed by the local force. What was essential was that there should be a complete scheme hanging together of the whole of which those who were at the head were cognizant, and which would enable every part to fit into its place. (Cheers.)

General Baden-Powell, in the course of his paper, said that the essential preliminary points for all training which the instructor must know were (1) the object and aim, and (2) the standard required. Their object was to have a self-contained force of all arms, organized and trained in a state of efficiency and readiness (1) to check locally sudden raids on our coasts; (2) to support the Regulars in repelling invasion; (3) to take the place of the Regulars for general defence of Great Britain in the event of their being required over the seas. The standard must be, as nearly as possible, up to that of possible enemies. The steps to those ends were the organization of the Territorials in complete self-contained divisions, which had already been carried out, and training to a state of efficiency, which was about to be done. Progress to date was very promising. When they got the individuals trained, officers and men, they could go to work effectively in larger units.

A discussion followed. Cardinal Coullie, Archbishop of Lyons, has issued a stern prohibition against the priests and clerical students of his diocese riding bicycles, holding that the practice is contrary to the gravity of the priestly calling and distinction of conduct which should mark the clergy. An appeal to Rome, it is believed, would be fruitless, for Pius X., when he was Cardinal Sarto and Bishop of Mantua, took the same step, forbidding clergy the use of bicycles.