

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1997

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming are checked below.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☐ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☐ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from filming / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- ☐ Additional comments / Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed / Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☒ Showthrough / Transparence
- ☐ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary material / Comprend du matériel supplémentaire
- ☐ Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image / Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.
- ☐ Opposing pages with varying colouration or discolourations are filmed twice to ensure the best possible image / Les pages s'opposant ayant des colorations variables ou des décolorations sont filmées deux fois afin d'obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below / Ce document est filmé au taux de réduction indiqué ci-dessous.

10x		14x		18x		22x		26x		30x	
	12x		16x		20x		24x		28x		32x

The copy filmed here has been reproduced thanks to the generosity of:

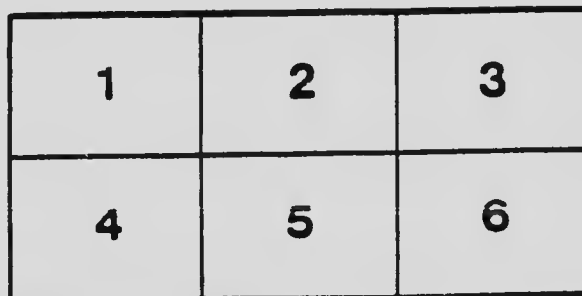
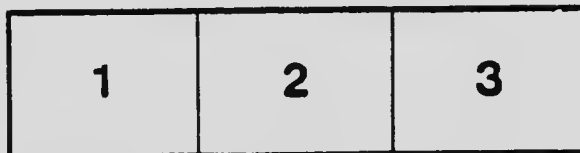
National Library of Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \longrightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

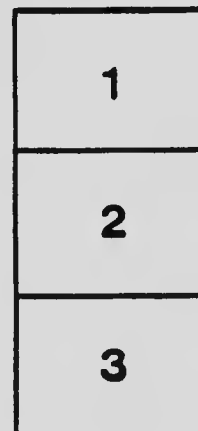
Bibliothèque nationale du Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \longrightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



1.0



4.5

2.8



2.5

5.0

3.6

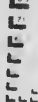
3.2



2.2

4.0

3.6



4.0



2.0



1.1



1.8



1.25



1.4



1.6



APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

19. 4-50
THE
GEORGIAN BAY CANAL

BY
S. J. MCLEAN

REPRINTED FROM THE NORTH AMERICAN REVIEW
NOVEMBER, 1909

NEW YORK
THE NORTH AMERICAN REVIEW PUBLISHING CO.

Library of Parliament

HE 401

G4

M3

Copyright, 1909, by
The North American Review Publishing Company

THE GEORGIAN BAY CANAL.

BY S. J. MCLEAN.

From the beginning of its canal policy, Canada has been interested not only in obtaining a cheap water route for its own produce, but also in attracting traffic to this route from the United States. While the Canadian Parliament declared, in 1875, in favor of a fourteen-foot waterway from the Lakes to the seaboard, it was not until 1900 that this was obtained. The fact that the Erie Canal, owing to its lagging behind in point of technical improvements, has become of minor importance in the transportation of grain to the seaboard has caused New York to fear the diversion of traffic to the St. Lawrence route. This was used as an argument by the Erie Canal Commission in 1899 in favor of the improvement of the Erie Canal. The diversion of a large part of the export grain traffic to Montreal during the season of 1908 has attracted further attention to the competition of the Canadian route. Canada has expended, in round numbers, \$116,000,000 on its canal system; \$94,000,000 of this amount have been expended in the last forty years. Over seven-eighths of the latter sum has been expended on the route from Lake Superior to Montreal.

While a large part of the expenditure has been concerned with the development of a waterway competitive for American traffic, it is only of recent years that the anticipations have begun to be realized. The canal at the Canadian "Soo" competes for American traffic. This canal was opened in 1895. In 1896 the tonnage passing through was 7.9 millions; by 1907 the tonnage had doubled. The Canadian canal percentage of the total traffic passing through the two "Soo" canals is gradually increasing. In 1901 it was 8 per cent.; in 1907 it amounted to 26 per cent.; this represents both a relative and an absolute increase. The

tonnage passing through the Canadian canal, like that using the American canal, consists almost wholly of low-grade bulky freight, the greater part being east-bound. In 1907, 12.5 millions of tons of freight passed down through the Canadian canal, an increase of 76 per cent. over 1906. The canal is not, however, successful in carrying a large portion of this down by the St. Lawrence route. Of the 1907 grain shipments from Port Arthur and Fort William 24 per cent. went by water to Canadian points east of the Welland Canal; while 43 per cent. went to Georgian Bay and Lake Huron points, whence it was handled by rail. It must be remembered that, while the "Soo" Canal permits the passage of the large Lake-going vessels, conditions are different in the case of the Welland and the St. Lawrence canals. In general, a vessel 247 feet in length, 42 feet 6 inches wide, drawing 13 feet and carrying 2,212 tons of cargo may be regarded as typical of the ordinary vessel accommodation afforded by these canals.

Early in 1907 a deputation of vessel-owners and grain-shippers memorialized the Dominion Government to so deepen and improve the Welland Canal as to accommodate the largest vessels of the Upper Lakes. The Government has at present under consideration a project for deepening the canal to twenty-five feet. The various commercial organizations are, however, by no means agreed on this question. At present it takes a vessel from sixteen to nineteen hours to lock through the canal, according to the conditions of traffic. The same expenditure of time would permit the vessel to get back to the Detroit River. In the case of the larger vessels it would be more economical to pick up a coal cargo on Lake Erie and go west to the river than to continue east, attempting to pick up a cargo west-bound from the light traffic offering from Lake Ontario or the St. Lawrence River. It is true that if the canal were improved the time disadvantage would be lessened, but it would not be eliminated. As regards the deepening of the St. Lawrence canals, it may be noted that the transportation of grain in barges from Prescott to Montreal has certain advantages. The exporter can bring his barges alongside the ocean-going vessel at Montreal, thus saving elevator charges which have been complained of as exorbitant. If the ocean vessel is not ready to load, the demurrage charges on the barges are low.

It is under such conditions of dissatisfaction with the Lower

Lake and river canals that there has been a renewed interest in the Georgian Bay canal route. The project for a canalized waterway from the Upper Lakes by way of the French River, Lake Nipissing and the Ottawa River to Montreal attracted attention so early as 1815. In 1856 and in 1860 surveys were made. Undoubtedly this route has great advantages in point of distance. A vessel going from the "Soo" or from the Straits of Mackinaw to Montreal would by this route practically take one side of a triangle, as compared with two sides of the triangle by way of the Lower Lakes. The following table shows some of the distance advantages of the route:

From.	To.	Via Lower Lakes in miles.	Via Georgian Bay Canal in miles.	Advantage in favor of canal.
Chicago.....	New York	1,389	—	—
Chicago.....	Montreal	—	905	484
Duluth.....	New York	1,500	—	—
Duluth.....	Montreal	—	997	503
Fort William.....	Montreal	1,296	—	—
Fort William.....	Montreal	—	934	362

The earlier surveys were concerned with obtaining a depth of from ten to twelve feet, and the cost of construction was estimated at from \$12,000,000 to \$24,000,000. In more recent years the increase in the average draught and carrying capacity of Lake-going vessels has led to a change of opinion in regard to the depth and cost of construction. While some, at an earlier period, favored a barge canal, the recent interest has been concerned with a waterway which will permit a Lake vessel to unload at Montreal. The Canadian Government has recently completed a comprehensive engineering survey of the whole route based on a minimum depth of twenty-two feet. The project submitted would permit the passage of the largest Lake vessels from Lake Huron to Montreal. In finding that the route was feasible from an engineering standpoint, the report of the survey was confirmatory of the opinion expressed by the "Engineering News" in its issue of March 5th, 1903:

"From an engineering standpoint, disregarding for the moment political boundaries, there can be no doubt that the Ottawa route is by far the best for a deep waterway from the Upper Lakes to the sea. So far as export traffic from the northwest to Europe is concerned, it offers by far the best possible route. . . ."

In comparing this route with existing or projected routes the question of the elevation to be overcome is of importance. Be-

tween Montreal and Georgian Bay there are 410 miles of navigation. Natural channels are available for 80 per cent. of this distance. To reach the summit level, 659 feet of lockage will be necessary. By the Welland Canal route only 534 feet of lockage are necessary. The Georgian Bay route has also to be compared with the proposed deepening of the Mississippi River as well as with the artificial waterways projected to connect Georgian Bay with Lake Ontario. The proposed deep waterway from Lake Michigan to the Gulf of Mexico would give a route of 1,625 miles. It is true that the estimated cost of a deep waterway by this route does not call for more than \$40,000,000. But there must also be considered the nature of the stream, its tortuous course, which is 60 per cent. longer than the direct distance, and the large amount of silt carried down by the river. These conditions will necessitate a continuous expenditure for dredging which will not be present in the case of the Ottawa River route. In addition, the longer ocean voyage from the mouth of the Mississippi and the higher ocean freight rates prevailing by way of the Gulf of Mexico are disadvantageous to this route. The voyage from Chicago to the Gulf of Mexico is 274 miles shorter than from Chicago to the Straits of Belle Isle by the Ottawa River. From such an Upper-Lake point, however, as Duluth the Ottawa River route is 600 miles shorter. In both cases there must be remembered the disadvantages of the longer ocean voyage from the mouth of the Mississippi.

Brief mention may be made of the two competing Canadian projects. The proposed Huron Ontario Canal from Georgian Bay to Lake Ontario has had almost as long a history as the Georgian Bay Canal project. It is not clear, as was pointed out by the United States Deep Waterways Commission, whether there is a sufficient supply of water at the summit level to feed the locks both ways. The Trent Valley Canal, which is partially constructed, affords a tortuous water connection between Georgian Bay and the eastern end of Lake Ontario by a route which is six times as long as the direct land route. The canal is being constructed as a barge route. From an engineering standpoint it has attracted attention by the construction of two large hydraulic locks, one of which has a lift of sixty-five feet. The lockage by this route is about 500 feet greater than by the Welland Canal.

While the Georgian Bay Canal is feasible from an engineering

standpoint, the important question is its probable traffic future. The saving in time, consequent on the shorter distance, and the reduction in rates consequent thereon, may be expected to attract traffic. Taking the Panama Canal estimate, four miles per hour would be the maximum speed on the canal portion of the route. It may be noted in passing that on the Welland Canal, which has, however, some sharp curves, the speed falls below this. But on the basis of four miles per hour we find that this route would permit vessels to move from Georgian Bay to Montreal in seventy hours, giving an advantage of from one and one-half to two days over existing routes. This calculation is based, however, on the conditions affecting the existing fourteen-mile waterway by way of the Welland Canal. If the St. Lawrence route to Montreal were deepened to twenty-two feet, it is probable—subject to the traffic conditions spoken of above—that the Georgian Bay Canal would have no advantage in point of time. The deepening of the Lower Lake and river canals and the increase in the size of the locks would lessen the amount of lockage. At the same time, the longer stretches of lake and river navigation would permit higher speeds than would be possible on the northern route.

During 1907 the wheat rate from Chicago to Buffalo by Lake averaged 1.5 cents per bushel, while from Duluth to Buffalo it was 1.8 cents. During the same period the rail rate on export wheat from Buffalo to New York was from five to five and one-half cents. The Lake and canal rate by the St. Lawrence to Montreal has averaged over a period of years four and one-half cents. Since it is estimated that the Georgian Bay Canal can carry wheat to Montreal at a profit at two cents per bushel, its rate advantages are apparent.

One of the objections urged against this route is the shortness of the season. The Lake season opens with the opening of the Straits of Mackinaw about April 20th and ends about December 12th. During the season of 1906 the Canadian "Soo" Canal was open 253 days. The Georgian Bay route would be available for about 210 days out of the year. By the Welland Canal twenty-two days more navigation would be afforded. Another factor to be considered is that of wind detention in the canalized portions of the route. The high sides of steel vessels make them difficult to handle in a high wind. On the Welland

and St. Lawrence canals there have been cases where a vessel has lost two days on a trip on account of wind detention. It must be remembered, however, that such detentions have taken place where vessels which, while capable of greater loaded draught, were unable to draw more than fourteen feet because of the limited depth of the canals. With a deeper channel by the northern route, the vessels would be stiffer and less subject to wind resistance. Against the shorter season and the possible factor of wind resistance must be set the fact that the shorter distance would permit a larger number of trips during the season.

A significant fact in the development of Lake transportation has been the increasing importance of the Upper Lakes. The great increase in the traffic passing through the "Soo" Canals is one index of this. With the development of the United States, the westward movement of grain centres and the expansion of population have lessened the transportation importance possessed by the Lower Lakes in the early days of the Canadian canal system. The northwestward trend of the wheat centre is especially significant. The result of these changes is that the shortest lines of communication from the northwest to the seaboard lie across Canada. The great development which the Canadian Northwest is undergoing further accentuates the importance of this. In the United States a fractional change in rates determines whether a section, whose grain normally moves south, shall send it to the Lakes. The States of Indiana, Illinois, Iowa, Wisconsin, Michigan and Minnesota, which lie within the sphere of influence of the Georgian Bay Canal, had, in 1900, a population of 18.8 millions. If one foot of a pair of compasses is placed at Chicago and the other at Duluth, the circle described with this radius will pass through Kansas City. In Canada all the provinces, with the exception of British Columbia, would be vitally interested in the Georgian Bay route. The possibilities of traffic from the Canadian Northwest are of great importance. In Manitoba the percentage of the total land area under cultivation is only 7 per cent., while in Alberta and Saskatchewan it is only 2 per cent. Recognizing that the cultivable area will fall short of the total land area, there is still great opportunity for development. The minimum estimate of the ultimate wheat yield of the northwestern provinces of Canada is 254,000,000 bushels, the maximum 812,000,000.

Mr. G. Y. Wisner, an American consulting engineer of high repute, estimates that the canal will attract 8,000,000 tons of traffic. In 1907 the corn receipts at Buffalo were 28,000,000 bushels. In competition for a large portion of this tonnage the canal would have an advantage, and an especial advantage, over the Mississippi because of the cooler route through northern waters. In 1888 Sir William Van Horne stated that anything that would tend to lessen the cost of transportation between the northwest and the seaboard must unquestionably have a beneficial effect. As he has elsewhere graphically stated, the difficulty has been that Canada has enlarged the transportation funnel in the northwest without enlarging the spout. In his evidence before a committee of the Canadian Senate, he said that the canal should lead to the utilization of various kinds of forest products which could not, under existing conditions, stand the cost of transportation. It should also have a most favorable effect on the development of the mineral resources of the Ottawa Valley. So far as the railways were concerned, he held that the canal would create more traffic than it would take away. The power possibilities of the route are emphasized by the report of the Government Survey, which states that 1,000,000 horse-power are available along the route.

In addition to traffic in grain and lumber, a considerable part of the dairy and packing-house products of the sections of the United States adjacent to the Lakes might be attracted by the supplying of cooling and refrigerating facilities. At present there is a great disparity between the east-bound and west-bound Lake traffic. The large amount of empty cargo space west-bound gives a low rate on coal. The location of the canal would not permit it to compete for American coal. In the movement of salt, chiefly from New York points, the location of the canal would also rule it out of the running. A considerable part of the west-bound traffic might be obtained from general merchandise and package freight, of which about 1,750,000 tons moves on the Lakes, chiefly westward. In the transportation of cement the canal could also develop a large traffic. Canada manufactures over 2,000,000 barrels of Portland cement annually. Seven-tenths of the cement plants of Canada are located in Ontario; an increasing demand for cement may be expected in the Canadian Northwest. The traffic in Nova-Scotian coal may also be largely increased. At

present over 1,000,000 tons of this coal reach Montreal annually. It would be possible to expand the demand for this coal in the West both for manufacturing and for domestic purposes.

The American people have always been interested in the development of the Canadian transportation system. In the meetings of the National Ship Canal Convention at Chicago in June, 1863, the advantages of the Canadian waterway system were recognized even by those who feared the competition. The Legislature of Illinois passed, in 1863, a joint resolution appointing commissioners to proceed to Canada to solicit the "earnest consideration and early action upon a subject of great and increasing importance of enlarged and cheaper outlets to tidewater by way of the lakes and rivers and new or enlarged canals of Canada. . . . The great avenue to the Atlantic through the St. Lawrence being once opened to its largest capacity, the laws of trade, which it has never been the policy of the Federal Government to obstruct, will carry the commerce of the Northwest through it." At the Commercial Convention in Detroit in 1865, Mr. Aspinwall of Detroit said the navigation of the St. Lawrence River and canals could be improved to give a safe and clear draught of fourteen feet to tidewater, and that this would be important to "the future welfare of the great and growing Northwest." The United States Deep Waterways Commission gave a qualified approval to the Georgian Bay Canal when it said: "The function of the Ottawa route is as a future loop line for through business when traffic conditions shall have been sufficiently developed by the Erie-Ontario route." The importance of the direct-rail route across Canada is manifested by the growth of the in-transit trade. When, partially through a belief that economic pressure would lead to annexation, there was a proposal to rescind the bonding privilege the outburst of protest from the New England and the Northwestern States showed how important the short lines across Canada were to the welfare of the United States.

From time to time arguments have been advanced against Canadian and in favor of American routes on the ground of the assumed hostile intent from a military standpoint of the former. With those who insist on looking at the matter from this standpoint it is useless to argue. But those interested in commercial development will agree that any transportation route which must be supported by a reference to a war scare thereby condemns

itself. The low rate is the thing; and the sober sense of the American people may be relied upon to see that the only war Canada is interested in is that of commerce, not of arms.

The Georgian Bay Canal project brings up the important question of the increasing size and draught of Lake vessels. It must be recognized that, notwithstanding the shorter route, there is some question whether there will be sufficient traffic west-bound from Montreal to attract large Lake vessels in preference to the run to Lake Erie ports. In favor of the canal it may, however, be urged that the development of a large bulk of east-bound tonnage will increase the volume of ocean-going tonnage entering Montreal and that the result of this will be a large volume of inbound tonnage. Enthusiasts have claimed that not only will the canal attract the Lake type of vessel, but that it will also lead to direct voyages from the Great Lakes to European ports, thus obviating the disadvantages of breaking bulk. Although ocean voyages were made in earlier days by small sailing-vessels sailing from Lake ports, for example, the "Dean Richmond" in the fifties, this is not conclusive. The experiences in 1901 of the vessels built for the Counselman Syndicate by the American Ship-building Company are more in point. Although they journeyed under their own steam from Chicago and Detroit to European ports, the venture was so unprofitable that it was given up after one season. There are, it is true, vague hints that this was due to the underhand machinations of those adverse to this route. Without speculating in regard to motives, sufficient economic causes exist to explain the lack of success. The fact that the vessels could not load to their full depth of twenty feet until Montreal was reached was peculiar to the existing canal depth. In addition, they could not compete in cargo capacity with the larger vessels either of the Lakes or of the ocean. Their sailors were paid on the Lake scale of wages, which is about twice as great as the ocean scale. In addition, the vessels were subjected to high insurance charges.

In Canada the ship-building industry on the Lakes has not been greatly developed. The largest vessel so far built, one 510 feet in length, was recently launched at Fort Erie. The bonding system used in vessel construction on the American side of the Lakes is practically non-existent in Canada. In general, Canadian firms interested in Lake traffic find they can save time by

obtaining vessels from Great Britain. Such vessels have, of course, to be built to withstand the stormy passage of the north Atlantic. The American vessel engaged in the Lake traffic can be more lightly constructed. The stronger hulls, etc., needed for the ocean voyage add about twenty per cent. to the cost. The Lake vessel, on account of the smaller amount of coal needed to be carried, has greater cargo space in proportion to size than the ocean-going vessel. In general, the latter costs about twice as much per ton of cargo capacity as the former. A combined Lake and ocean type of vessel would lack the economic advantages attaching to the more specialized types.

The Georgian Bay Canal will be a costly work. Construction through the Laurentian formation will be expensive and will take about ten years to complete. It is estimated that the canal will cost \$105,000,000; even if money can be obtained at three per cent., the interest charge will exceed three millions; in addition, maintenance charges must be considered. Although Canada has greatly increased its resources of recent years, the demands upon these are also great. The Government, while favoring the construction of the canal, has not given a definite indication of the policy it proposes to adopt. The English Company, known as the Montreal, Ottawa & Georgian Bay Canal Company, which was chartered in 1894, has done considerable survey-work. It has offered to construct the work if interest on its bonds is guaranteed, the right to regulate the tolls being reserved to the Government. Pending a definite announcement of policy, the Government has reserved the right to expropriate the private company. Conditions favor Government construction and operation. The fact that the canal would be, if in private hands, a toll canal gives point to the desire for Government ownership and management. For since 1903 there have been no tolls on the through traffic of the Canadian canals. The advantage of canal development is looked for in the expansion of Canada's trade and resources, not in direct contributions to the revenue of the country from the tonnage utilizing the canals.

Library of Parliament

