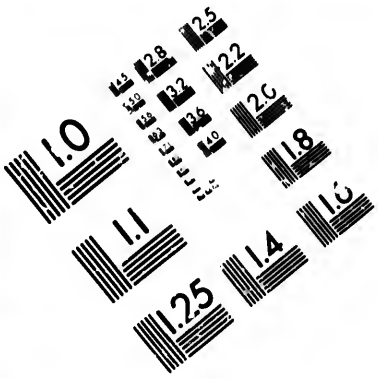

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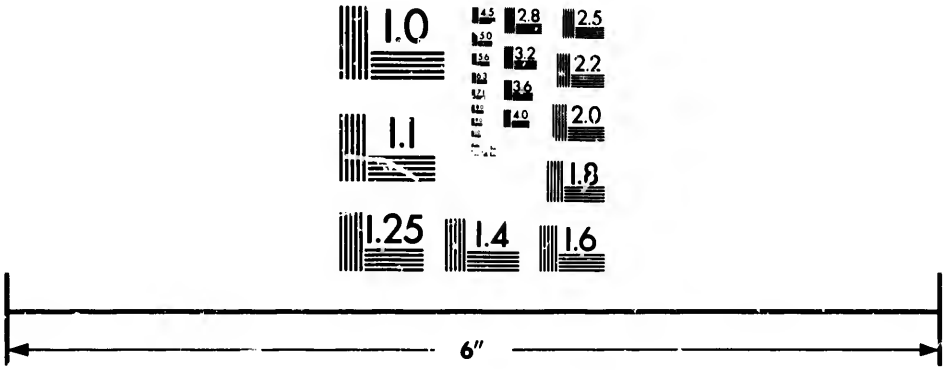

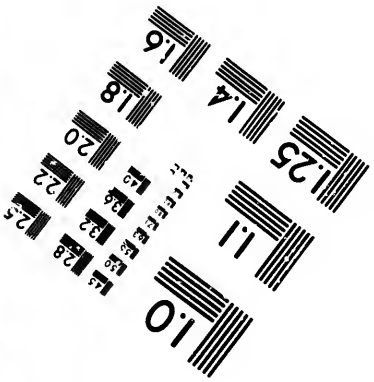

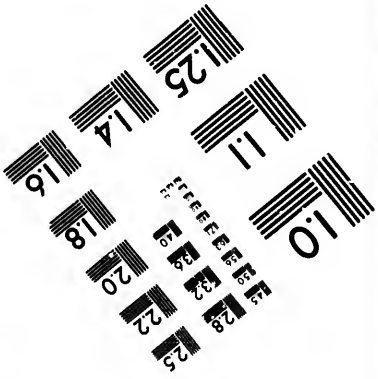

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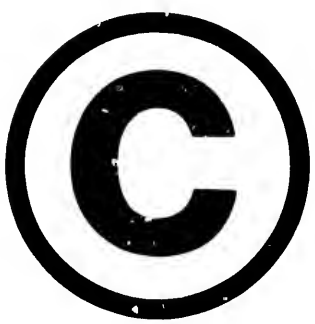

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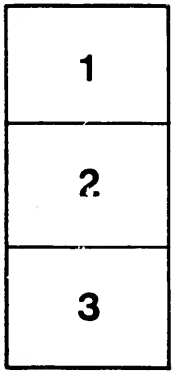

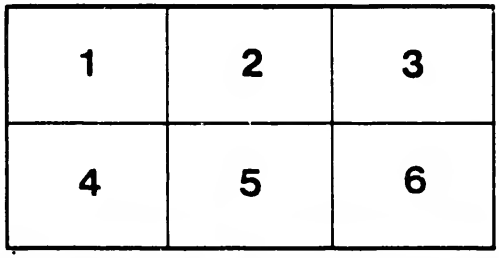

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ANSWERS TO QUESTIONS

IN

CIRCULAR

ISSUED BY

CANAL COMMISSIONERS,

25th Nov., 1870,

RESPECTING

CANAL ENLARGEMENTS.

ST. CATHARINES:
Printed at the "Daily Journal" Steam Printing House, Ontario St.
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St. Catharines, 7th February, 1871.

The Hon. J. R. Benson and T. R. Merritt, Esq., (M. P. for the County of Lincoln,) having asked my views respecting the Questions contained in a Circular dated the 25th Nov. last, respecting Canal improvements, issued by the Canal Commissioners appointed by the Privy Council of the Dominion of Canada, "with instructions to institute a thorough "enquiry into the whole subject, in all its bearings, both in "a Commercial and Engineering point of view—with the "object of obtaining such reliable information, as may furnish "the data on which to base a plan for the Improvement of "the Canal system of the Dominion.

I have in reply thereto taken up each question seperately, as far as regards the "Welland and St. Lawrence Canals," as I consider them the most important: as to the other Canals now constructed, and those projected, I have thought best to answer in general terms—and although the gentlemen above mentioned may not fully endorse the opinions herein set forth, still I have endeavored to carry out the views entertained by the late Hon. Wm. H. Merritt, who made the subject the study of his life.

WELLAND CANAL.

QUESTION No. 1.—To what extent should the Welland Canal be enlarged, viz.: to what depth of water; to what width of Locks; and to what length of Chambers between Gates?

ANSWER.—Locks 300 x 45 feet, with 12 feet of water on mitre cill.

QUESTION No. 2.—What is the most suitable size of vessels, with reference to the genera' capabilities of the navigation, in order to carry produce from Chicago to any port on Lake Ontario, on the most economical terms; and which kind—whether steam or sail vessels—are likely to be the most suitable?

ANSWER.—The class of vessels that would be built (provided the Locks are enlarged), I think, would be Propellors of 250 to 275 feet length, over all, and from 30 to 40 feet beam, the same as most of those now employed in the trade between Buffalo and Chicago, capable of carrying from 35 to 45,000 bushels of grain, when drawing from 10 to 10½ feet of water

The principal object, however, should be to enlarge the Welland Canal, so that the larger class of vessels now navigating our inland waters (viz.: Lakes Superior, Michigan, Huron, and Erie,) can reach Lake Ontario and the lower ports on the St. Lawrence River without transhipment. The necessity for this enlargement has been brought before the Legislature from year to year in the Report of Public Works, as far back as 1854. If evidence is necessary, I would refer to a petition submitted to the Commissioner of Public Works in 1854, bearing the signatures of upwards of 140 merchants, forwarders, shipowners and others, who estimated the damage accruing from detention in the Canal then, at no less a sum than $259,510, and this nuisance has increased every year since that period.

QUESTION No. 3.—What classes and sizes of vessels—whether steam or sail—are now employed in the trade between Chicago and Buffalo, and between ports on Lakes Superior, Erie and Michigan.

ANSWER.—By Reference to the American Lake Underwriter's Registrar for 1868, it will be seen that there is at present navigating

the Upper Lakes, 124 steamers, 389 propellors, steam-barges and tugs, and 1,666 sailing craft, 275 *of which cannot pass the Welland Canal on account of their size*: and there is on the Canadian Lake Underwriter's List for 1870, 167 steamers, 121 propellors, steam-barges and tugs, and 373 sailing craft, 67 *of which cannot pass the Welland Canal.*

QUESTION No. 4. -Is there any difference between the average cost of carrying grain from Chicago to Kingston and Oswego? If so, is it in any way owing to a relative scarcity of Canadian bottoms, or to the Navigation Laws of the United States, or from what other cause?

ANSWER.—The difference between the average cost of carrying grain from Chicago to Kingston or Oswego is merely nominal; but owing to the present Navigation Laws of the United States, Canadian vessels are debarred from competing for the American grain or produce trade; as an instance of which I would mention that all Canadian vessels entering Lake Michigan are obliged to make a Customs Report at Sheboygan, and that up to the 26th June, 1870, only 19 Canadian vessels had done so.

QUESTION No. 5.—What reduction per bushel in the rates of freight from Chicago to Kingston or Oswego would result from the enlargement of the Welland Canal to the capacity of the largest class of vessels now carrying from Chicago or Milwaukee to Buffalo?

ANSWER.—The reduction between the points mentioned, I think, would be from 1½ *to* 2 *cents per bushel*, provided the enlargement takes place. The great object, however, is not simply the reduction of freight, (for competition will always keep rates within bounds) from Chicago to Kingston or Oswego, but to divert the *American carrying trade lower down the St. Lawrence*, viz.: to the nearest point from which they can supply the Eastern Markets without transhipment; as it is well known on change, both in Chicago, Milwaukee, and other upper Lake ports, that it is not the Lake freights which effect the cost of delivery so much as the *Tolls on the Erie Canal, Commissions, Shortage, Insurance, and cost of transhipment.* A practical test of this was made in 1860, by the late Hon. W. H. Merritt, who purchased 16,000 bushels of wheat in Chicago, shipped 6,000 bushels *via* Buffalo and New York, and 10,000 bushels *via* Montreal, for Liverpool, and by reference to the "Report of a Select Committee appointed to enquire into the causes which have diverted the trade of the West through the United States, by way of New York, and the best mode of regaining it," printed by order of the Legislative Council in 1861, page 21, it will be seen that the actual cost of transit at the rates then charged (and which rule at the present time,) was 20 cents from Chicago to

New York, and 17½ cents to Montreal, giving 2½ cents in favor of the St. Lawrence route, the charges on which for Commission, Insurance, &c., &c., were enormous.

The enlargement of our Canals would, in my opinion, have the effect of making our Lower Canals yield a revenue (over and above the cost of management, repairs, &c.,) provided we could divert only *one-third* of the American trade of the West through Canadian Channels; as it is the *tolls* derived from the small portion of that trade now passing the Welland Canal to the American ports on Lake Ontario has enabled it to yield a revenue (viz.: in 1867-8 tolls collected from Canadian vessels passing the Welland Canal, $10,664 03; American do., $16,954 24. St. Lawrence Canal, Canadian, $9,018 38; American, $83 57). The total revenue from property, rents, &c., being $226,887 63.

This same year the tolls on the New York State Canals yielded a revenue of $3,293,301 13 over and above the cost of management, repairs, &c., (see report of Buffalo Board of Trade for 1869, page 83) one-fourth of which sum would be more than sufficient to pay 6 *per cent.*, not only on the proposed enlargements of the St. Lawrence and Welland, but on the construction of the Caughnawaga and Bay Verte Canals, viz: St. Lawrence enlargement $3,500,000; Welland enlargement $2,500,000; Bay Verte, (construction) $2,500,000; Caughnawaga, (construction) $3,369,400; total $11,869,400 say in round numbers $12,000,000, 6 per cent. interest on which amounts to $720,000.

The enlargement should also be made for the following reasons, viz.: the St. Lawrence is the natural outlet to the sea board, and has an untaxed water navigation of over 1,558 miles from Duluth at the head of Lake Superior to Quebec, save and except 71¾ *miles* of canalling, on which tolls are now levied (see general report of the Board of Works for 1867, page 9), and lies on the nearest and most direct route between the greatest food-producing and food consuming countries in the world, as pointed out in an admirable prize Essay, published in 1850, by Thos. C. Keefer, Esq., wherein he states "that if a thread be stretched upon a globe from any point in the British Channel to Toledo, on Lake Erie, and arranged so as to be upon the shortest line, it will be found that the St Lawrence does not divert at any point more than 30 miles," and that Toledo is 566 miles nearer Liverpool *via* the St. Lawrence, than *via* the Erie Canal and New York. It is also a well established fact that *the larger the craft employed the cheaper the cost of transport*, and notwithstanding any political difficulties which may arise between us and the United States, the shortest and cheapest route will be preferred. The actual cost of transport of a ton of goods per mile being as follows: Ocean 1 mill, Lake 2½ mills, Canal 6 mills,

and Rail 6 to 10 cents, (as estimated by W. J. McAlpine, State Engineer of New York, in 1855, and John B. Jarvis, Esq., C. E., who made the survey and drew up the report on the Caughnawaga Canal in 1855) shows clearly that Railways cannot compete with water for the transport of cereals or produce, during the season of navigation, and the cost of constructing two miles of Railway would build a Propellor of the dimensions above alluded to.

That the St. Lawrence route is the cheapest, is well known to the Forwarders and Merchants of Buffalo, as will be seen by reference to the report of the Board of Trade for the City of Buffalo for 1869, page 99, wherein the following occurs, viz., "That every bushel of wheat carried from Toledo to Montreal, to Liverpool, has an advantage over the Buffalo route of *four cents*, is a convincing argument against high tolls.

	cents per bushel.
From Toledo to Buffalo	.04
Elevating at Buffalo	.02
Erie Canal Freights to New York	.14
Ocean Freights, New York to Liverpool	26½ @ 46½
From Toledo to Kingston	07½
" Kingston to Montreal	.05
" Montreal to Liverpool	36 @ 42½
Difference between the Buffalo and Montreal—in favor of latter	.04

QUESTION No. 6.—What is the average difference for the last three years in the rates of freight from Chicago to Buffalo and Kingston or Oswego?

ANSWER.—The average rate for 1869, from Chicago to Buffalo, (by steam) was 30 cents per bbl. on flour, and (by sail) from Chicago to Buffalo or Port Colborne, 6¾ cents per bushel on wheat, and from Chicago to Kingston or Oswego, 11 cents.

QUESTION No. 7.—What is the average difference, for the last three years, in the rates of freight between Buffalo and New York, and between Oswego and New York.

ANSWER.—The average rate *via* Erie Canal from Buffalo to New York, in 1869, was 16 cents per bushel of wheat.

The *rates of freight*, in my opinion, is not so much the object as to get control of the carrying trade, the *tolls* derived from which will cause our Canals to yield a revenue.

QUESTION No. 8.—What difference in the demand for Sea or American Salt, and steam or other Coal, would result from the employment of the largest class of American vessels on the Upper Lakes in the Kingston trade?

ANSWER.—The discovery of Salt Wells at Goderich, and the cheapness with which Salt can be placed in the Western Markets will so equalize the demand for that article, that the freights on Onondaga or Sea Salt will be materially lessened, and Salt will have to be carried at very low rates, (merely as ballast) by vessels which cannot procure a better paying return freight.

With regard to Coal, I think so far as the American demand in the West is concerned, English or Nova Scotia Coal will not be able to compete with the Pennsylvania Coal regions, unless carried at very low rates, and free of toll. In the event, however, of our Canals being enlarged, and the largest class of Steamers and Propellors are enabled to proceed as low down the St. Lawrence as Quebec, they will use *Coal for fuel*, and create quite a demand for English and Nova Scotia Coal.

QUESTION No. 9.—What have been the relative rates, for three years of freight from Chicago to Montreal, and Chicago to New York—distinguishing between the summer rates and the winter rates?

ANSWER.—The rate of freight from Chicago to New York in 1869 averaged $1.25 per bbl. flour, rail all the way, and from 80 cents to $1.00 water and rail; from Chicago to Montreal 70 cents on bbl. flour, and 20 cents per bushel wheat.

QUESTION No. 10.—Has there been, during the last twenty years, any increase in the relative number of any one class of carrying vessels?

ANSWER.—Steam is fast superseding sailing vessels in the carrying of all descriptions of freight, except lumber and timber, and the principal parties in that trade on the Upper Lakes have introduced a class of Steam-Barge, capable of carrying a cargo sufficient to pay her own running expenses, and so constructed as to take a tow of five or six Barges which are principally the smaller class of schooners which have heretofore been employed in the Lake trade, the heavy spars and rigging being taken out and smaller ones substituted, so as to enable the craft to take care of herself in heavy weather, or in case of breaking loose from the tow. Large Barges also have been found to answer a good purpose, as will be seen by referring to the Upper Lake Underwriter's List, such as the Barge *Baltic*, 825 tons, and *Enterprise*, 1,140 Tons. The Barque *W. T. Groves* has been converted into a Propellor, with sufficient steam power to tow two or three loaded vessels of large capacity, and is able to carry herself 50,000 bushels of corn, or 46,000 bushels of wheat; or including tow, 200,000 *bushels grain each trip!* (see Buffalo Board of Trade Report for 1869, page 5).

QUESTION No. 11.—What are the dimensions, power and tonnage

capacity of the largest Propellors now doing a profitable business on the Upper Lakes?

ANSWER.—The largest Propellor on the Underwriter's List is the *Nebraska*, of 1,304 tons, and valued at $85,000. There is also on the List 11 Propellors over 850 tons, and 60 over 500 tons.

QTESTION No. 12.—Viewing time, insurance, and interest as elements of cost, can Propellors carry freight between Chicago and Kinston as cheaply as sailing vessels, or can they carry at less cost?

ANSWER.—Owing to the limited capacity of the present Locks on the Welland Canal, sailing vessels can carry more cheaply than Propellors, as a vessel built according to the size of the present Locks can pass through carrying from 17,500 to 18,000 bushels without lighterage, and at no extra expense over her usual daily expenses, other than the cost of towage, whereas a Propellor of the same size can only pass carrying from 12 to 14,000 bushels, owing to space occupied by her engines, boilers, &c., and is obliged to use as much fuel as would carry her 300 or 400 miles in open navigation, besides the daily working expenses for crew, &c., are considerably above those of a sailing vessel. The great advantage the Propellor has over a sailing vessel is the certainty in delivery of freight at the port of destination, in the shortest space of time.

QUESTION No. 13 & 14.—What is the cost, and what are the daily working expenses of a sailing vessel of 500 tons capacity, and one of 1,000 tons?

ANSWER.—A vessel of 500 tons will cost from $15,000 to $16,000, and her daily working expenses about $15. A vessel of 1,000 tons, from $25,000 to $35,000, and daily working expenses $17.50—being very little more than one of 500 tons. The daily working expenses of a vessel of 300 (such as now pass the Welland Canal) being from $13.41 to $13.51, as ascertained from actual experience.

QUESTIONS 15 & 16.—What is the cost and what are the daily working expenses of a propellor of 500 tons capacity, and one of 1,000 tons?

ANSWER.—A Propellor of 500 tons can be built for about $40,000, and those of 1,000 tons. built on the American side, are estimated at $80,000; but I think they could be built for a less sum by Canadian ship-builders, the cost, however, depends very much upon the manner in which they are built. The *Enterprise*, of 670 tons, built by the Welland Railway Company, cost $44,000, and the *Dalhousie*, of 353 tons, cost $28,000, the daily working expenses of which, including insurance and outfit, is estimated at about $100—it having been found

from two years experience, that it costs nearly as much to run the smaller as the larger vessel, the principal saving being in fuel, thus showing most conclusively (as above stated in answer to Question No. 5) "that the larger the craft the cheaper the cost of transit."

ST. LAWRENCE CANALS.

QUESTION No. 1.—Is it your opinion that the carrying of produce from the West can be best and most economically performed by the vessels which navigate the Lakes proceeding through the Canals to their destination, or by transhipment at Kingston of their cargoes into barges specially adapted for Canal transportation, and what would be the difference of cost between the two systems?

ANSWER.—Every transhipment, as a matter of course, adds to the cost of transport, and my impression is that under present circumstances the cheapest way to transport grain and other light freights from the Upper Lake ports to the Eastern Markets, would be to load Barges at the port of shipment and tow them to their destination, say Kingston, Oswego, Ogdensburgh, Montreal, &c., &c., by Propellors, themselves capable of carrying a cargo sufficient to pay their own running expenses, as is now done on the Upper Lakes.

The difference of cost cannot be arrived at definitely, as the experiment has not been properly put to a proper practical test, but I should say that a saving of at least from 2 to 3 *cents per bushel* would be effected between Chicago and Montreal.

QUESTION No. 2.—In the event of Barge transportation being preferred, to what extent, in your opinion, is it desirable to increase the length, breadth and depth of the Locks?

ANSWER.—The use of Barge transportation between Kingston and Montreal would be unnecessary, provided Locks of a uniform size and 12 feet depth of water is adopted from Port Colborne to Montreal.

QUESTION No. 3.—Are there any points on the Canals, or connected with the Canal navigation which, in your opinion, can be materially improved, so as to facilitate the passage of carrying produce through the Canals?

ANSWER. The enlargement of Locks on the present Canals to a uniform size and depth of water of 12 feet on mitre cill is all important, for at present vessels drawing more than 8 feet frequently get aground, especially in passing the Culverts under the Cornwall Canal,

and the strong current in the Lachine Canal, caused by the use of water for manufacturing purposes at Montreal, is a great cause of complaint made by Masters of vessels using the Canal.

QUESTIONS No. 4, 5 & 6.—As to the largest vessels navigating the St. Lawrence Canals; whether such capacity could be increased without enlarging the present Locks; and the average rate on wheat and flour from Kingston to Montreal for the last three years; can be best answered by Kingston Forwarders, but by referring to the Report on the Trade of the Dominion, published by W. J. Patterson, Secretary Montreal Board of Trade in 1867, page 136, it will be seen that the charges from Kingston to Montreal on grain, in 1866, was 5 cents per bushel, and in 1867, 4 cents.

QUESTION No. 7.—Is it practicable or advisable to enlarge the St. Lawrence Canals, and deepen the Upper St Lawrence River to the extent necessary to enable Ocean vessels, drawing 16 feet or over, to navigate from the Ocean to the Upper Lakes?

ANSWER.—The depth of water in any of the Ports on Lake Ontario, either on the Canadian or American side, will scarcely admit of a vessel entering drawing over 11 feet, and the cost of deepening them so as to admit vessels drawing 16 feet and keep them so would be enormous; therefore I do not see any necessity for deepening the Upper St. Lawrence, even if practicable (which I very much doubt,) for vessels drawing 16 feet water.

QUESTION No. 8.—As to the number of vessels carrying Canadian products drawing 16 feet or less, and whether the number is increasing or diminishing, can be best answered by parties residing in Montreal. With reference to QUESTION No. 9, whether vessels adapted for Ocean navigation can compete with Barges and vessels usually employed on our Lakes and Rivers, I can only say I do not think so.

QUESTION No. 10.—Is it your opinion that Schooners or other vessels built to navigate the Lakes or inland waters of the Dominion, can compete successfully in the trade to Europe, with vessels specially adapted to Ocean navigation?

ANSWER.—I think our ship-builders might build a class of vessel (called on the Lakes fore-and-afters) either two or three masted, which could safely cross the Atlantic with cargo, and be sold to parties interested in the coasting trade of Great Britain or the Mediterranean, but their small carrying capacity, slight draft of water, high rates of insurance, &c., would debar them from competing for Ocean freights between Montreal and Liverpool. If, however, the dimensions of the Locks and depth of water be increased as recommended, sea-going

vessels of from 1,000 to 1,500 tons could be built at any of our Upper Lake ports, where suitable material can be had, quite as cheaply as is now done at Quebec, Nova Scotia or New Brunswick, partially loaded on the Lakes so as to pass the Canals, complete their cargo on arriving at Montreal or Quebec, and proceed to any sea port in the world.

QUESTION No. 11. - Are there any Harbors on Lake Ontario which have sufficient water to accommodate Ocean-going vessels drawing 16 feet or over?

ANSWER.—Not to my knowledge.

LACHINE CANAL.

QUESTIONS No. 11 & 12.—Whether the lower entrance Lock from the Canal Basin is sufficient for the trade; and whether the former entrance of the Canal should be re-opened?

ANSWER.—All the Locks from Lake Erie to Montreal should correspond in size and have a uniform depth of water throughout; and there should be double Locks at the entrance of the Lachine Canal so that Passenger and other Steamers requiring quick despatch would not be detained, and in enlarging the present channel preparation should be made for eventually forming a double tier of Locks all the way to Lachine. The upper entrance to this Canal requires to be improved, and some rocks in the channel a short distance above removed, as vessels passing down loaded, owing to the crookedness of the Channel, often strike them.

St. Lawrence River & Rapids.

QUESTIONS No. 1 & 2.—As to the nature and locality of the obstructions which exist in the channel of the River St. Lawrence from Prescott to Montreal, for the downward passage of vessels independent of the Canal; and the best means of improving the navigation of the River itself, irrespective of Canals?

IN ANSWER, I would call attention to the Map and Report of this part of the St. Lawrence, made by Messrs. Mailifort & Raasloff, published in 1854, showing all the obstructions in the River, together with estimates and contracts for deepening the channel so that vessels could pass drawing 11 feet.

Samuel Keefer, Esq., C. E., while Deputy Commissioner of Public Works in 1861, also made a survey and report of the same (see Report Select Committee, appointed to enquire into the cause of the diversion of the trade of the West, published by order of the Legislative Council in 1861, page 5).

With regard to this improvement, the benefit to be derived therefrom is so fully set forth in the Reports above alluded to, that it is needless for me to enter into the subject, I would merely remark that if vessels could pass safely drawing 11 feet, a great saving in time would be made in the downward trip. The first Rapids below Brockville, viz.: Gallops, Rapide Plat, Farren's Point and Long Sault might be easily improved, but the Coteau, Cedars and Cascades (avoided by the Beauharnois Canal) and the Lachine Rapids being themost difficult to run when a vessel is loaded, I am doubtful if Insurance Companies would take the risk, unless at very high rates.

ST. LAWRENCE RIVER, from Montreal to Quebec.

With regard to this portion of the River St. Lawrence, I do not think the Government should be taxed for deepening the River below Montreal so that vessels drawing 24 feet could reach that city, as it is a matter in which the merchants there are alone interested, and its Corporation should make the improvements, for if the Locks on the Canals above are enlarged as proposed, the large Propellors and vessels now navigating Lake Erie would be enabled to deliver their cargo at tide water, say Three Rivers, Quebec, or any of the lower ports on the St. Lawrence, or at the Sea ports on the Bay of Fundy. say Amhurst, Truro, St. John, N. B., &c., (provided the Bay Verte Canal were finished) take in a return freight of molasses, sugar, or other West India products, or coal, or sea salt, at very small additional expense over her usual daily expenses; and no greater risk than when navigating the Lakes, as they would have a comparatively sheltered navigation all the way, not having to venture out into the open Atlantic.

To attract this trade, however below Quebec, the lower St. Lawrence must be well lighted, reliable charts, with printed sailing directions given to all vessels using this route, showing the description of light, bearing, distances, shoals, reefs, &c., to be avoided, the same as is now done on the Upper Lakes, the American Government having made a

thorough survey of the Upper Lakes, and distributed *gratis* over 5,000 charts and printed sailing directions within the last three years—and good River Pilots employed.

It may not be out of place here to suggest that a good School for Pilots might be established on one of the Government Steamers which are now employed to carry supplies to the Light-houses, and look after the Gulf Fisheries ; holding out inducements for a good class of young men to enter that service.

RIDEAU CANAL.

As the Locks on this Canal have been very well constructed, although on a small scale, I think the Government should keep it in repair, but do not consider necessary any great outlay on its enlargement. If, however, the Government could lease the Works to a private Company who would bind themselves to keep it in repair, I think they should do so, as under present management it is a serious tax on the resources of the Dominion.

SAULT ST. MARIE CANAL.

I should most decidedly advise the construction of a Canal on the Canadian side at this point, corresponding in size with that on the American ; so that Canadian vessels could pass without any fear of detention by the American Government, as occurred recently in the expedition to Red River. A Canal can be made on the Canada side much cheaper than the one already on the American, as the cut would only require to be about ¼ of a mile in length, with good entrances at either end, and if constructed the Locks should be 350 x 75 feet, with 14 feet water, to allow of the passage of the large side-wheel Steamers in the Lake Superior trade, they having greater breadth of beam than sailing vessels or Propellors

The present Locks on the Sault St. Marie are 350 x 75 feet, with a general average of 12½ feet on the upper and 12 feet on the lower mitre cill, and are the largest on this continent. Notwithstanding their size,

however, they are not able to accommodate the fast increasing trade of Lake Superior, and the present cut has already been widened and deepened, and the contract given out for the construction of new Locks of like dimensions, alongside the present ones, with 14 feet water on mitre cill.

The Toll Receipts for 1869 was $31,579,96.

Caughnawaga Canal.

The construction of this Canal on the same scale as that proposed for the St. Lawrence and Welland Canals, would have the effect of diverting the greater share of the American trade, which now reaches the Eastern Markets of Boston and New York *via* New York Central and New York & Erie Railways, Erie Canal, Oswego, Cape Vincent, Ogendesburg &c., during the season of navigation through our Canals, and the Tolls derived therefrom would be sufficient to pay the interest on the necessary outlay for enlargement, if not on the outlay already made; as the largest class of Propellers now navigating our inland waters would be enabled to take in a freight at any port on Lake Superior, Michigan, Huron, Erie or Ontario, and deliver it on Lake Champlain without transhipment, making the latter Lake the distributing point for the Eastern Markets, without being detrimental to the Trade of Montreal or Quebec. Another source of revenue which the Caughnawaga Canal would have over the others, would be the Lumber Trade of the Ottawa, which is already immense, and would be increased four-fold if the Locks on the Corrillon, Chute a Blondeau, and Grenville Canals should be enlarged to a corresponding size with the present Lock at St Anns, viz: (190 x 45 feet) and the depth of water increased to 8 *feet*, so that barges of 700 tons could be loaded at Ottawa and pass through to White Hall, at the foot of Lake Champlain, without transhipment.

OTTAWA CANAL.

The Construction of a Canal giving only 8 feet water from Lake Huron *via* French River, Lake Nippissing and the Ottawa River to Montreal, would only accommodate Steamers and barges drawing that depth of water, and would necessitate the construction of an en-

tirely new class of vessels to meet the capacity of the canal; the object to be kept in view should be to accommodate the class of vessels now navigating our inland waters. A thorough survey of this route was made under the superintendence of the Board of Works, (see Report of Public Works for 1859, page 137) by which it appears that the distance is 430 *miles*, of which 29½ miles would be canal and the remainder 400 miles river navigation, and the Lockage to be overcome 77 *feet* ascent to Lake Nippising, consisting of 7 *Locks* 250x45 *feet*, thence descending the Ottawa 665 *feet* by 56 *Locks* to Lake St. Louis, and a vessel passing would still have to traverse that Lake (13½ miles) and the Lachine Canal (8½ miles, with 5 Locks) before reaching Montreal. This, bear in mind, is only for a steamboat and barge navigation, no estimate being made for sailing vessels, which, if they used it would have to be towed by a tug, or tow-path for horses constructed, making the cost enormous, and completely nullifying any advantage gained in distance between Chicago and Montreal, (viz.:) 297 *miles* over the present route *via* Welland Canal. The total distance *via* Welland being 1,301 miles, (of which 1,232 miles is Lake and River, and 69 Canal,) and *via* the Ottawa 1,005 miles, (of which 575 miles is Lake, and 430 miles River and Canal), we may therefore say that no sailing vessel would take this route, either for cheapness or despatch, although no tolls were exacted; for, allowing that a vessel would make *three miles* an hour and only detained 20 minutes at each Lock, it would take seven days to reach Lake St. Louis, to which add another day for Lake St. Louis and Lachine Canal. Moreover, in the event of this work being undertaken, an artificial Reservoir must be made of Lake Nippising, by raising its present surface 23 feet to supply the summit level with water (see General Report Public Works for 1867, page 81). Neither would the construction of this Canal attract any great portion of the trade of the States of Iowa, Illinois, Wisconsin or Lake Superior region, as it does not open up to the merchants and forwarders of Chicago and Milwaukee their own ports of Lake Ontario, and lies so far north it would not be open in spring for at least 3 or 4 weeks after the opening of the Welland and Erie Canals.

The Question is asked, "What would be the saving in freights by this route?" I think any person can perceive that they would be *increased* instead of *diminished*, for the tolls on 430 *miles* of artificial navigaton would certainly be more than on 69 *miles*.

The question is also asked "Whether the construction of the proposed Ottawa Canal would in any way reduce the cost of floating or carrying timber from points on the Upper Ottawa?" In answer I should say not materially, but the Timber trade of the Ottawa will for some years be a great source of industry and wealth to the Dominion, and the

short Canals on the River below the City of Ottawa, viz: the Locks on the Carrolton, Chute-a-Blondeau and Grenville Canals should be enlarged to a corresponding size with the present Lock at St. Anns, (viz: 190 x 45 feet,) and the depth of water increased to a uniform depth of 8 feet if practicable, so that the class of steamers now used by the Royal Canadian Mail Line could reach the Capitol of the Dominion during the season of navigation, and barges of 700 or 800 tons loaded with lumber or timber at Ottawa enabled to deliver their cargoes at Montreal, Quebec or at White Hall at the foot of Lake Champlain without transhipment, as before stated when referring to the Caughnawaga Canal. This would enable our Canadian lumbermen to supply both the Canadian and American markets at the cheapest rates; and when the necessity arose, the same system of Canalling and Lockage could be continued further up the Ottawa. By reference to the General Report Public Works for 1867, page 47, it will be seen that the Locks on all the short Canals above mentioned vary in size, and the draft of water is only 6 feet.

That the *tolls* derived from the construction of a Canal from Lake Huron to Montreal would *not pay the interest*, is beyond a doubt, for the tolls derived from the Welland Canal (the only one that yields a revenue over and above cost of management, repairs, &c., &c.,) does not pay 3 *per cent.* on the outlay already made, and never will unless enlarged sufficiently to divert the trade of the West (now going to New York *via* Buffalo,) down the St. Lawrence.

Georgian Bay Canal.

The first question asked by the Commissioners is "What effect would the construction of this Canal have on the general trade of the Dominion?" In answer, I can only say that I cannot see any benefit the Dominion could possibly derive from its construction, either in a commercial or financial point of view, and if built, would benefit the Americans much more than Canadians. I would further state that by the Georgian Bay Canal it is proposed to connect Nottawasaga Bay on Lake Huron with Lake Ontario at Toronto. Numerous surveys and reports have been made of this route, and the estimate cost by Rowland Burr, Esq., 1857, was $20,051,000; and Kivas Tully, Esq., C. E., and Col. R. B. Mason, in 1858, on four different routes, varied from $22,170,750 to $41,032,000, the Lockage to be overcome

being 130 *feet ascent* from Lake Huron to Lake Simcoe, by 11 Locks 265 feet x 65 feet, with 12 feet water on mitre sill, thence *descending* to Lake Ontario 470 feet by 39 Locks of like dimensions - some of the cuttings being enormous - for instance, in one level it would require an artificial cut 10 *miles* in length, at one point 198 feet in depth, and at several other places over 60 feet; we may therefore safely infer that its cost would come up to if not exceed the largest estimate, viz.: $41,000,000. Supposing, also, that the Canal was constructed, it is very doubtful whether the supply of water at the summit would be sufficient, as it is well known the Grand River (which discharges a far greater body of water than any stream entering Lake Simcoe) was so inadequate for the supply of the Welland Canal, that the deepening of the level from Port Colborne to Allanburgh became necessary, so as to draw the supply of water direct from Lake Erie, and thus obviate the necessity for a *summit level* on either the Welland or St: Lawrence Canals.

This route certainly shortens the distance between Chicago and Montreal 246 *miles*, viz.: Chicago to Nottawasaga 595 miles, Canal to Toronto 100 *miles*, Toronto to Montreal 360 miles, in all 1,055 miles; whereas by the Welland it is 1,301 *miles*.

The question next to be considered is, how long does it take for a vessel to pass the Welland Canal, and at the same rate how long would she be in passing the proposed Georgian Bay Canal? From careful enquiries it has been ascertained that it takes from 18 to 20 *hours* for a Propellor, and 26 to 30 *hours* for a sailing vessel to pass through the Welland Canal, provided they meet with no detention; at the same rate it would take 3 *and a half days* for a sailing vessel to pass through the Georgian Bay Canal, and when we take into consideration the wear and tear to vessel in a long and tedious Canal navigation I think the majority of Masters of vessels would take the longest route, not only as being the cheapest, but in nine cases out of ten the quickest; for owing to the system of towage now employed on the Upper Lakes, sailing vessels are met by tug boats below Point Pelee on Lake Erie, 18 miles below the mouth of the Detroit River, and towed up to Lake Huron in less than 20 hours, and on her return by a tug sometimes 180 *miles* above Sarnia and left on Lake Erie, no matter what direction the wind may be from. This entirely does away with an objection often urged against the Welland Canal route, and the Channel over the St. Clair Flats having been straightened and deepened so that vessels now pass drawing 14 feet water at the expense of the American Government the time will be materially shortened, thus a vessel can now run from Sarnia to Port Colborne in less than 40 *hours*, say 26 *hours* for Welland Canal, and arrives on Lake Ontario in 2 *days and* 18 *hours*, having at

least *twenty hours* advantage over a vessel that left Collingwood at the same time to pass through the Georgian Bay Canal.

There is also a matter never taken into consideration by the advocates of both the Ottawa and Georgian Bay routes, but is a matter of some consequence, viz.: neither of them would accommodate the trades of the large and prosperous States of Michigan, Indiana or Ohio, or Western Peninsula of Canada, *the garden of the Dominion.*

That the *tolls* derived from the Georgian Bay Canal would *not pay the interest* on the cost of its construction is evident for reasons given heretofore, when referring to the Ottawa Canal, and if undertaken by a Chartered Company they will find this to be the case, even if its advocates should succeed in getting a free grant of *ten million acres of land*

Murray Bay Canal.

This Canal being a short cut across the Isthmus which separates the Bay of Quinte from what is sometimes called Wellers Bay, on Lake Ontario, and lies in the Township of Murray, County of Northumberland, is a matter for the consideration of the Ontario Legislature, or should be built by parties interested, as I cannot see what benefit it would be to the general trade of the Dominion.

Bay Verte Canal.

With respect to this Canal, I would simply call attention to the "Report on the Trade and Navigation of the Dominion of Canada, published by Wm. J. Patterson, Secretary, Board of Trade for City of Montreal in 1867, pages 28 to 33," for full particulars. A Map showing the route, &c., &c., accompanies the work alluded to, from an inspection of which it will be seen that a short Canal of only 15 *miles* in length, from Bay Verte, in the Straits of Northumberland (which separates Prince Edward Island from New Brunswick and Nova Scotia) to Cumberland Basin, at the head of the Bay of Fundy, would enable vessels employed in the Gulf fisheries and inland waters of the Dominion to reach St. John, N. B., and other ports on that Bay as explained when referring to the "St. Lawrence, from Montreal to

Quebec," at a saving in distance of from *five to six hundred miles*, and avoid being exposed to the gales and heavy weather often met with in the Atlantic off the Coast of Nova Scotia. A great many American fishing vessels from the sea ports of the State of Maine would also use this Canal provided they were allowed to do so, especially on their return voyage.

In conclusion, I think it will not be out of place to call the attention of the members of the Legislature to the fact that one great drawback to the St. Lawrence route, not being able to compete with the New York route for the Western carrying trade, is that *Ocean Freights* have always ruled higher from Montreal to Liverpool and other British European sea ports, than from New York, principally owing to the high rates of Insurance Companies, &c., &c., by the former route, and to the large subsidies paid by the British and American Governments to lines of Postal Steamers who now carry most of the passengers and light freights formerly carried by sailing packets, thus obliging those vessels to compete for the carrying of grain and produce, and keeping freights down to a very low figure at the latter port.

If, however, good Light-houses are erected on the Lower St. Lawrence, good Charts and sailing directions published and given to all Masters of vessels using this route, and careful Pilots ready to take them in charge (as alluded to before in my remarks respecting the River between Montreal and Quebec), the rates of Insurance will come down, the cry about the dangerous navigation of the Gulf heard no more, and the St. Lawrence route established as the shortest, safest and cheapest route for the trade of the West to take to reach the European Markets.

I have the honor to be, &c.,

Your Obedient Servant,

J. H. INGERSOLL.