

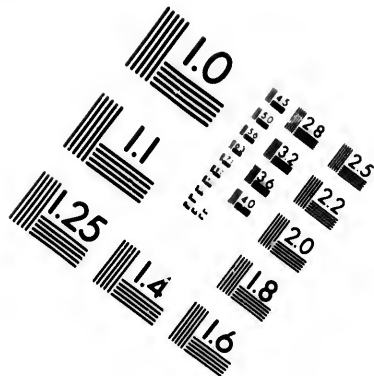
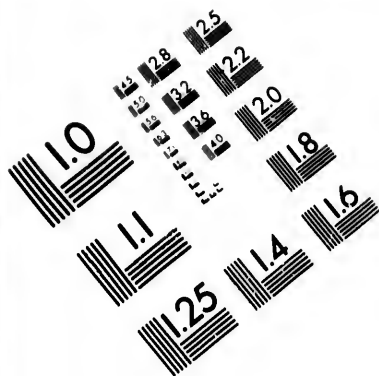
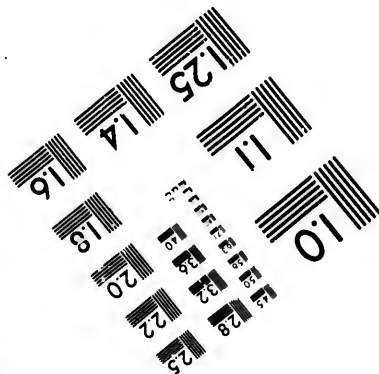
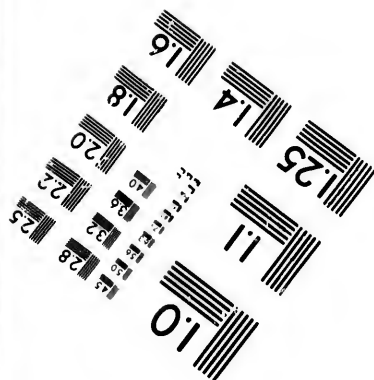
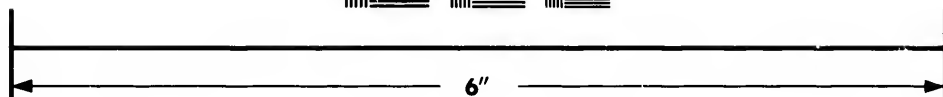
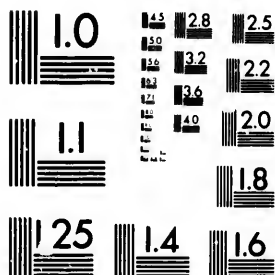


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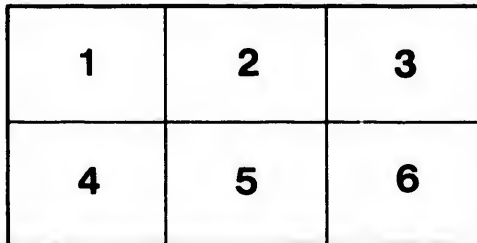
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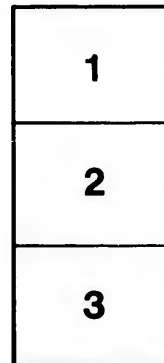
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PRINTED

REPORT

ON THE MOST ELIGIBLE ROUTE FOR

A CANAL BETWEEN

LAKE SIMCOE AND THE RICE LAKE, AND LAKE SIMCOE AND
GEORGIAN BAY, TO THE BAY OF QUINTE, BY THE
BACK WATERS OF THE NEW CASTLE
DISTRICT.

BY

N. H. BAIRD, CIVIL ENGINEER, M.I.C.E.L.

PRINTED BY ORDER OF THE COUNTY COUNCIL OF THE
COUNTY OF HASTINGS.

GEORGE BENJAMIN, ESQUIRE, WARDEN.

BELLEVILLE:

PRINTED BY M. BOWELL, "INTELLIGENCER" OFFICE, CORNER OF FRONT AND BRIDGE
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INTRODUCTION.

In requesting the Warden to publish Mr. BAIRD's Report, upon the Navigable waters of the Newcastle District, and connecting them with the Bay of Quinte, the Council requested that his remarks should be published with the Report, as a suitable Introduction. And the Warden desires to say that he prefers printing those remarks as they were made, instead of adding aught to them. He feels assured that the public of the County of Hastings and of the old Newcastle, Midland and Prince Edward Districts will see that their own interests are most immediately connected with the project, and that they will feel an effort is necessary to ensure success.

EXTRACT FROM WARDEN'S ADDRESS.

"GENTLEMEN:—I desire to call your attention to the serious consideration of a subject now agitating the Western and Eastern portions of the Province of Upper Canada. I do so at the present moment to enable you to consider its importance, and to afford you an opportunity to lay certain statistics before your Constituents; statistics upon which I shall base the consideration of the subject, so that you may hereafter, and that is, at no very distant period, be enabled to come to a due consideration of its importance, and be prepared to take active steps as well as to instruct your Representatives what steps they are to take in discussing the matter for your advantage, in Parliament.

"You have seen the project mooted, of uniting the waters of Lake Huron with the Toronto Harbour by means of a Canal. In discussing the feasibility of the project and its probable remunerative results, that portion of the Toronto Press, which advocates the measure advances these opinions. Of course you must allow some margin for their eagerness and desire to obtain the fulfilment of a project, by which the trade of many millions of people would be forced into the warehouses of the Toronto Merchants, but even allowing for this, I think you will agree with me, when I point out to you the fact, that Toronto is not to be reached as easily as the Bay of Quinte. Our neighbors too, on the other side of the line hesitate, not to say, that the St. Lawrence is the outlet for all their produce coming from the West, and if this be so, surely the nearer we debouche from the Canal into that River for the transit, and if the Lake navigation can be spared altogether, surely the enterprize must be greatly benefitted by such an avoidance. First, these able Toronto papers make the following very pertinent remarks as to the practicability and necessity of the work:—

"When we find cautious and calculating men of the highest commercial standing, boldly affirming, that all the facilities now afforded, or which can by any possibility be afforded, by the Erie and Welland Canals—even when enlarged to double their present capacities—added to all the means of transportation which the St. Lawrence and Champlain and Oswego routes can by possibility furnish; and throwing the suggested Ottawa and Lake Nipissing Canal, with the Northern and all the other railroads now undertaken or projected, into the scale—when we find such men stating emphatically, that in their belief the Georgian Canal will still be needed, at whatever cost; and that even then, there will be a perfect jam of commerce pushing its way by every possible outlet to the Atlantic Ocean—such statements must attract the attention of every man capable of reflection, or feeling the smallest interest in the future of Canada."

"If it is the opinion of such men that the Georgian Canal at any cost will be required, and when we consider that they only contemplate bringing it into the Toronto Harbor, how much more important the fact looms up, when we propose to bring it 120 miles further East and avoid 150 miles Lake navigation, and thereby an additional amount in the cost of the vessels to be engaged in the transportation of the goods, wares, and merchandize, as well as other heavy incidental expenses, but beyond all doubt when we take into consideration the rapid growth of the West, cost this Canal what it will, the settlers of the distant lands will find abundance of traffic to pass through its waters, through Canada to the seaboard for transshipment; and certainly if we use that energy which the importance of the case calls for, we shall dispute with our western friends, I mean those of Toronto, the key of the North-west country. And here I will again refer you to another portion of the opinion advanced by the Toronto press, as shewing the value and importance of the undertaking. The 'Colonist' remarks:—

"We are told, that over and above the tract of 50,000 square miles, which has in twenty odd years made Chicago what she now is—the chief primary grain port of the world—there is, on its west and north-west, a fertile and inviting territory equal to a dozen Ohios, just warming into life and productiveness, all of which must pay tribute either to Lake Michigan, Huron or Superior; and therefore to the Georgian Canal. This tract of land alone possesses greater grain producing capacity than all the older States put together. But what of the British American possessions north and north-west of the Upper Lakes? What of the Lake of the Woods and Lake Winnipeg? What of the tens of thousands of miles of unappropriated garden-lands on the Saskatchewan, and its northern and southern bounds? Might not these vast regions justify very large speculations respecting the trade that must pass Toronto on its way eastwards."

"Now I wish to know, why the advantages contemplated here, which are open to all may not be sought by us, if riches are to be acquired by means of connecting any portions of our waters with the waters of Huron, why should we not exert our energies to make that point of connection the Bay of Quinte, if the riches anticipated are really to be obtained as pointed out, if it is a matter for the consideration of Canada, why would it not pay our people and our County to

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undertake a preliminary survey, from Lake Simcoe to our own County, to the Trent, and thence to the Bay. I insist that we are bound to take a step in this direction, and I also insist that ours is the outlet which can be constructed at the least cost to the public, and with a greater degree of probable completion. And to use the words of our Toronto friends, I ask is not all Canada equally interested, what is wanting to complete the chain of Canadian Canals, but such a link between the Bay of Quinte and Lake Huron, as shall enable Montreal and Quebec to compete with New York, Buffalo and Oswego. And it must here be remarked that when in the Bay, with our Presqu' Isle Canal opened, as I trust it will be, by our exertions and influence, we are as near to Oswego as Kingston is, and much nearer than Toronto. You have no doubt read the remarks of our Toronto friends in which they calculate most assuredly upon the assistance of Oswego, its neighborhood and influences, and is not the reason obvious? If brought to our Bay, the works will be truly and really a Canadian work, for the probabilities are two to one, that what passes down the Bay and reaches Kingston, will go the length of the Canadian waters to the Atlantic, or at least be directed in proportions to Oswego and Ogdensburg. But the Oswego influences perceive, that should they succeed in getting the Canal into Toronto, then they could safely calculate upon at least three fourths of the traffic coming from the contemplated canal. If then the question is to be viewed in a national light, are not the general interests of Canada more immediately connected with the route which we advocate, than that which the Toronto and Oswego influences would carry out. And I am sure you will agree with me, that the Government cannot fail to fall back upon its own survey, with renewed estimates, and that we should be wanting in the discharge of our duties as Councillors, representing the influences of the County of Hastings, if we did not exert every nerve, to bring this project to a successful termination.

"There appears to be no doubt about reaching Lake Simcoe from the West, and having reached that point, I will now refer you to a report made by N. H. Baird, Esq. Civil Engineer, upon instructions sent to him by Sir John Colborne, "to examine the most eligible route for a Canal between Lake Simcoe and the Rice Lake, by a series of running levels." I have caused a copy of that Report to be drawn up, and now lay it on the table for your consideration and action:—

"Cost of construction from Rice Lake, to Peterboro' including the Bar at the mouth of the Otanabee, Dangersfield, Robinson's, and Yankee Bonnet Shallows, Whitlay's Rapids, &c.,	£ 4,246 19 0
"From Peterboro' to Clear Lake, including the nine mile Rapids, Katchiwannoe Lake and Young's Rapids,	66,524 14 1
"From Young's outlet of Clear Lake to Bobeaygean, including Clear and Stoney Lakes, Peninsula Falls, Burleigh Chutes, Buckhorn's Rapids, Buckhorn's Lake, Chemong and Pigeon Lakes,	21,102 2 6
"From Bobeaygean to Cameron's Falls and Balsam Lake Portage, including Sturgeon Lake, with Bobeaygean Rapids, Shallows above Rapids, Dams there, Dam at or below the mouth of Little Bobeaygean, Navigation of Sturgeon Lake, Cameron's Falls and Shallows, Cameron's Lake, Balsam Rapids, and Balsam Lake,	22,546 16 2

VI

" From Balsam Lake to Lake Simcoe, including Collateral Cuts to Talbot River, Locks thereon, Clearing of Flood Wood, and Piers at the mouth of the Talbot Harbour,.....				121,212	18	1
" Lock Master's Houses,.....				2,600	0	0
" Contingencies and Management, 10 per cent,.....				23,824	6	6
				£262,067	16	4

" I have merely drawn your attention to this portion of the estimate because it includes those portions to which the Toronto Press has not referred; and it will enable you together with the Estimates furnished by the Upper Sections of the Work, by our Toronto friends, to make an approximate calculation, of the difference in the Estimates made when Mr. Baird was surveying, and now when everything is at a much higher rate.

" I am sure, I do not mistake your feelings upon this all important subject, and I am equally sure that I can calculate upon your united co-operation to carry out the opinions I have just given you. Should you desire to give any special instructions, I should be most happy to receive them."

121,212	18	1
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REPORT.

TO HIS EXCELLENCY SIR JOHN COLBORNE, K. C. B., *Lieutenant Governor of the Province of Upper Canada, and Major General commanding His Majesty's Forces, &c. &c. &c., on the most eligible route for a Canal between Lake Simcoe and the Rice Lake, and on the practicability and probable expense of connecting these Lakes.*

BY N. H. BAIRD,

CIVIL ENGINEER,

& M. I. C. E. L.

MAY IT PLEASE YOUR EXCELLENCY,

THAT in accordance with your Excellency's commands, conveyed to me in Lieutenant Colonel Rowan's communications of the 29th May and 16th June last, and in the spirit of the particular instructions conveyed in the latter, in conformity with the Address of the House of Assembly of date 16th April last, viz :—"To examine the most eligible route for a " Canal between Lake Simcoe and the Rice Lake, by a series of running " levels, and to report to your Excellency, for the information of the House " at its next Session, respecting the practicability and expense of connecting " these Lakes."

I have, in consequence, the honor to state for your Excellency's information, that upon the 18th day of June last, having completed my preliminary arrangements, in providing proper assistance and canoes, in which I found more difficulty than I anticipated, and having engaged the services of Mr. F. P. Rubidge, Deputy Provincial Surveyor, for the surveying department, I proceeded to the inspection and examination of the country between Rice Lake and Lake Simcoe, conceiving it more in order to follow up the route from the Bay of Quinte, as detailed in my former report to your Excellency on the proposed improvements on the River Trent, in 1833, than to reverse, and commence from Lake Simcoe—the result of which inspection, levels, survey, &c., I shall endeavor, with as much perspicuity and brevity as the nature of the important subject will admit, to lay before your Excellency, assuming, although not expressed in my instructions, or in the Address from the House, the same scale of navigation as that reported on for the improvement of the Trent, viz :—for locks 134 x 33 x 5 feet water as the data upon which to proceed ;

accordingly commencing from Rice Lake, into which the navigation must be understood as made available by the requisite operations formerly reported and estimated, and for perspicuity and reference sake shall divide the whole route into five sections, commencing from the Rice Lake, thus :

Section 1st.	From Rice Lake to Peterborough,	— — — —	24 ²³ ₈₀
" 2nd.	" Peterborough to outlet of Clear Lake,	—	14 ²⁴ ₈₀
" 3rd.	" Outlet of Clear Lake to Bobcaygean lock and rapids,	— — — — —	31 ⁴⁰ ₈₀
" 4th.	" Bobcaygean to Balsam Lake Portage,	—	26 ²⁴ ₈₀
" 5th.	" Balsam Lake to Lake Simcoe,	— — —	16 ⁴⁰ ₈₀

Making in all, — — — — — 110 miles.

With reference to section No. 1, the first obstacle presenting itself is the bar at the outlet of the Otanabee River, over which, in some seasons, at lowest summer water, there is not more than eighteen inches: from this point of difficulty to within half a mile of Peterboro', or at Whitlaw's Rapids, a distance of twenty-one miles, the river presents a fine available stream for moderate sized stemmers, with the exception of three trifling obstructions, as shewn in the accompanying plan and section, viz:—Danger Field, Robinson's Island, and Yankee Bonnet Shoals, over which, at lowest summer water, 18 inches will be the utmost, and would not even have reached that but for the exertions made last summer, or summer before, in removing the round boulders from the channel, and placing them in heaps or piles, out of the fair way, by a grant (I understand) from the Provincial Parliament, laid out under Commissioners appointed for the purpose, and which in so far as such partial improvements go, appears to have been a benefit to the navigation. The next obstruction, in rotation, is the Whitlaw's Rapids, a pitch of about 2 feet 9 inches, (2—9:) at this point considerable expense has been incurred, in clearing the bottom from boulders and in forming buttresses therewith to contract and deepen the bed of the river, and which seems to have so far succeeded; but, at the same time, the benefit seems to have been counteracted on the other hand by the increase of current, when, as a matter of course, the contracting the channel has had the effect of creating, although not so great as to prevent the steamer *Northumberland*, a twin boat of particular construction, and drawing very little water (say 2—6,) laid on that route by individual enterprise, to surmount at a moderate pitch of water, when she readily gains the extent of the navigation of the Otanabee River in its present state, in the basin immediately below the town, and at the foot of the 9 mile rapids, having surmounted with ease a small ripple of a few inches difference of level, at the narrows between the Little Lake and Upper Bay. Thus terminating the first section of difficulties on the route, viz. the bar at the mouth of the river, Danger Field, Robinson's, and Yankee Bonnet Shoals, with Whitlaw's Rapid, and small rapid above, making in all, from Rice Lake to Peterboro', a difference of level of 4 feet 6 inches.

The next and most serious obstruction to the navigation of the Otanabee River, presents itself prominently in a series of uninterrupted

rapids and Chutes from Peterboro' Bay above Herriot's mill, in Douro, and into the now dead water of Katchiwamoo Lake, a distance of nine and a half miles, and rising no less than 147—6 feet odds, on which portion of section 2nd are situated, above Peterboro' bridge, Hall's mills, built for the use of the settlement by Government some years ago, taking the water from the river above the mill by a very long aqueduct, and by the construction of a dam across the river, as shewn upon the accompanying detailed plans, having a head and fall of 12—7 eight-tenths feet. This dam has the effect of sending the water as far back as point A on the plan—from thence to the tail water of Stevenson's saw mill, the river preserves its general character of rapids and swift water, and generally deep, say from 3 to 4 feet; above this point is situated Mr. Stevenson's mill dam, of rude construction, but it is presumed sufficient for all the purposes required, making a head and fall of 2—7 feet, and throwing the water as far back as point B on the plan—from which to the next artificial obstruction to the river, the same characteristic of rapid and chute prevail, until reaching Lee's mill dam and works, at which place a dam, on somewhat more substantial form and principle of construction, affords a command of 13—4 two-tenths feet of head and fall, and backs the water, with the exception of a slight current, as far as point C, at the foot of Mr. Reid's clearance; from the mill pond, it is worthy of remark, that the water has been conducted scientifically by the late Mr. Lees, along an expensive and well constructed canal to his mill, as shewn on the plan, and being somewhat through rock, must have cost a considerable amount—this work will be more particularly referred to when treating of the improvement;

From point C, on the plan, or from the head of Lee's mill pond, the river presents one continued series of rapids and chutes until reaching the dead water of Katchiwamoo Lake. The general character of the banks, high and rocky, and well belled, affording excellent materials for lockage, &c., being of a good compact limestone.

From the detailed plan accompanying, from actual survey, a more correct idea may be formed of the general character of the river, than any attempt at description could convey, while at the same time the longitudinal section shows the continued rise, with the general depths of water, as found at the time of inspection.

From the foot of Herriot's rapids (on which an excellent saw mill is in operation, and a grist mill in progress of being erected) 8 feet—10—3 of rise carries into the mill pond dead water, upheld at that level, say 142 ft—3—5 above Peterboro' Bay, by a short substantial dam, as shewn on the plan and section, and backing the water over the former rapids into Katchiwamoo Lake, at the lower extremity of which a shoal presents itself, an obstruction to the requisite navigable qualities, but of short duration. Next in order, and the only obstruction to the navigation on the 2nd section, is the rapids at and opposite Young's house and mill, and the artificial obstruction of a dam thrown roughly across the river by Mr. Young, for the use of a very complete common principled grist mill, made to drive two runs of stones, with a total head and fall of only 3 feet,

and during the particular period of my inspection, had only 24 inches, and affords an instance of what *properly* applied power may produce with a due regard to economy of water. By the accompanying plan it will be seen the enterprising proprietor has spared no pains in the construction of an aqueduct, &c., through a stony stratum to gain his end; as to the expediency or propriety of his throwing a dam across the river at the particular spot he has, will afterwards be considered in this report, although it would appear to have materially benefitted the navigation into the outlet of Clear Lake, by drowning the rapids thereon, and giving sufficiency of water over them, thus terminating the second general section of the route.

The next portion (forming the 3rd section) extends from Young's rapids to Bobcaygeon, a distance of thirty one and a half miles, rising 38—4 feet, and taking in its course, Clear and Stoney Lakes, Peninsula Falls, Deer Bay, and Burleigh Chutes, and Buckhorn's rapids or Hall's mill, with the navigation of Buckhorn and Pigeon Lakes, with their shallows, &c.

Then to resume at Young's mill rapid, the navigation, in consequence of the dam already constructed, is complete, with the exception of 3 in place of 5 feet water on the outlet of Clear Lake, until reaching the Peninsula Falls, through the rather intricate navigation of Clear Lake, among its rocky islands and sunken rocks, and along the splendid navigation of Stoney Lake, until reaching the head thereof, in the spacious basin into which the Falls disgorge themselves with boisterous rapidity from the several ragged and iron-bound outlets. To surmount the obstacle at this point (rise—25—8 three tenths) seemed at first, and even on mature reflection and inspection, to be a work of somewhat of a serious nature, from the particular quality of the obstructions in the several openings and outlets and ravines of which the mass of adamant obstruction is composed, when after much search, a small channel emitting the least quantity of water of the whole, afforded an opportunity of carrying the navigation over an ascent of 25—8—3, and into the water connecting with Deer Bay, and at which point the dreaded iron-bound nature of the rock turned out to be the finest *workable* granite—the only instance of the real granite, in any quantity, which has come within my observation in either of the Provinces, with the exception of Buckhorn rapids, where it also exists: by the general plan the position of the lockage can be seen—conceiving it unnecessary, so long as I had a correct section of the ravine, to have a detailed plan of the whole, particularly as such could not be properly done till winter, from the very intricate and insulated nature of the several islands, bluff points, &c. Having gained the waters of the Bay above, the next obstruction occurs at the outlet of Deer Bay, as shewn on the plan, where a rise of 2—2 six tenths presents itself in a smart wicked chute or jump, in a short distance, but affords an excellent opportunity for improvement in the well protected bay below, and advantageous ravine and low ground adjoining. Having overcome this obstacle, a small chute again interrupts the navigation, of 18 inches, as shewn on the longitudinal sections of the route, until reaching Buckhorn rapids, on which are situated Hall's mills, (and which point forms a particular feature in the line of communication, as com-

manding and regulating the whole surfaces of Buckhorn, Chemong, and Pigeon Lakes, up to Bobcaygeon, fifteen and a half miles,) at which place a difference of level occurs of $8\frac{2}{5}$ six tenths, to be overcome as afterwards described—and carrying the navigation to Bobcaygeon rapids and locks, thus terminating the 3rd sectional division of the route, from which to Balsam Lake Portage, a distance of twenty six and a quarter miles, and rising 34 feet, the 4th section extends, comprehending the rapids and works at Bobcaygeon, the shallows from thence to Sturgeon Lake, the works at Cameron's Falls and Balsam Rapids, and which present the following obstructions, namely—at Bobcaygeon a rise of 5 ft. 5 in. 4 pts. and a continuation of rapid of considerable extent, together with shallows, until reaching the outlet of Sturgeon Lake, and which has been attempted to be surmounted by the construction of a lock and a dam at considerable expense, by a Provincial grant, but which has not as yet been available, by some unaccountable oversight in three circumstances, from the *level* of the lower sill being equal to that of the lowest water in Pigeon Lake, in place of being the requisite Canal water depth below the same, say 3 feet for these purposes—from the dam above not being sufficient to retain a sufficient head of water over the shallows above, and lastly, from the loose and open nature of the cut from the above to the lock, not retaining the water for want of proper means being used in the construction, allowing the water to escape in the many crevices and open chasms which the nature of the ground presents, thereby rendering the works at this place entirely useless, without an adequate outlet to remedy the evil.

The next and most serious obstruction to the navigation on this section occurs at Cameron's Falls, up to which point, after overcoming the difficulties at and above Bobcaygeon, a most excellent line of navigation, in deep waters of Sturgeon Lake presents itself, when a rise of $24\frac{10}{100}$ two-tenths occurs, from the waters of the deep navigable inlet from Sturgeon Lake to the foot of Cameron's Falls, into into the still water of Cameron's Lake, rendering the adoption of two locks and guard lock at a most convenient site, as shown on the plan, necessary. None who have ever witnessed the scenery of Niagara Falls but must at once have the impression forced on their minds of a resemblance in miniature, in Cameron's Falls—the approach from Sturgeon Lake, between the high rocky banks, in their perpendicular grandeur, until instantaneously the Fall presents itself in the same horse-shoe form, with a curtain similarly arranged, affording behind it, from one shore to the other, a promenade. A commencement has been made by the enterprising proprietor, on an extensive scale, indicative of the rise and progress of a place of importance, and which, doubtless, its central situation must insure; in addition to a saw-mill, preparations are making for the erection of a grist and other mills. An inn of unusual extent and accommodation for a new country, has just been completed, together with the proprietor's own and several other houses, store, &c., forms quite a village in a wilderness.

Leaving Cameron's Falls, the route continues somewhat shallow up the river, (until reaching Cameron's Lake, which is in general very deep,)

but which, by the operations at Cameron's Falls, will be readily overcome, and thus carry the navigation over the shallows, foot of the Balsam Rapids, opposite the head of the Fork Island, and at which place the rapids may be *said* to commence, and although rising only 2 ft. 8 in. into Balsam Lake, present a very protracted and serious interruption, (compared to what the first impression did import,) as shewn in the detailed plan and section accompanying, and this accomplished, carries the navigation into Balsam Lake, 227 two-tenths feet, above the Rice Lake, and the summit level of the communication from the Bay of Quinte to Lakes Simcoe and Huron, 592 ft. above the Bay of Quinte, and 118 ft. 6 in. above Lake Simcoe. The surface of Balsam Lake I purpose holding permanently near high water mark, for the purpose of giving sufficient water over the bar at the outlet of the Lake, head of Balsam Rapids, as also to afford better access to the shore at the Portage, or the point where the cut of junction with the Talbot is intended to leave, besides saving many thousand pounds in excavation—thus terminating the 4th section, and commencing the 5th and last to Lake Simcoe—descending 118 ft. 5 three-tenths in, in a total distance to the Lake of sixteen and a half miles, or to the point of junction with the Talbot, discharging itself into Lake Simcoe, thirteen and three quarter miles.

In attempting a description of the obstructions on the section, I may commence by remarking generally that they are two-fold:—in the Talbot River, on the one hand, in its course holding out one line for consideration, in contrast thereto to carrying a continuous navigation over a most favorable country of three and a three quarter miles, until intersecting the Talbot River in its more developed character for navigation, within two and three quarter miles of Lake Simcoe, and in either affording sufficient scope for the duties of the Engineer.

The Talbot River in its southern branch, taking its rise in a swamp to the west of Balsam Lake, thence winds in a very tortuous and serpentine course for about three miles, until reaching the Forks of junction with the north branch, at which point the river assumes a respectable navigable appearance, for about six, or seven miles, but in a very serpentine course, until reaching the Long Portage, and head of the Lost Channel, and continuing on to Drybell's River, where the water finds its way under ground, and runs out "purling" again in a more rapid stream, from which the river continues for nearly a distance of eight miles, ending the Crooked or Wicked Rapids, of about half a mile in extent, through which we had great difficulty to clear the canoe, with the exception of provisions only, which brings the river into what may be called the commencement of the navigable portion, having at this point by the canoe's live impetus descended about 55 feet. From this point to the Long Portage, on the plains, or near the head of the next falls and the Lower St. Regis Falls, the river preserves a navigable channel, being from 70 to 100 feet in width, and from 4 to 5 feet in depth, with the exception of a small interruption about four and a half miles from the Portage, of rocks and gravel in form of a shoal and rapid, which might easily be overcome.

From this point (the Summer Portage) the rapids commence, and continue, interspersed with short stretches of still water and jams of flood wood, until reaching the termination of anything like serious interruption at point T, on the plan, from which, downwards, may be reckoned the really available portion of the Talbot River for improvement, and which, from the detailed plan accompanying, made out from actual survey, at much inconvenience to the party, will appear to be of a nature somewhat doubtful in its present state—the *radii* of the survey being such as to render the ready navigation by the description of craft intended to be used on this inland communication at least difficult, although the elbows may be materially relieved of their acuteness, from which point until reaching Lake Simcoe no material difficulty occurs, with the exception of flood wood, but what lockage will easily overcome.

Having reached the mouths of the river along 8, 10, 18, and 20 feet water for the last 3 or 4 miles, as shewn in the plan, the progress into the lake is impeded by the existence of a gravelly and sandy bar of considerable extent into the lake, as per plan and section, affording at low water not more than 2 feet 6 inches in the fair way, but which can be removed and permanently secured against filling up by the construction of piers properly thrown out.

Of the capabilities of the Talbot, from its confluence with Lake Simcoe to the commencement of the rapids, there can be but one opinion, although that is in some degree shackled from the very circuitous nature of its course, making, for instance, a distance by following the river, of 36 miles to Balsam Lake, whereas by a direct line from the present Indian landing, or rather from a more convenient basin, one-eighth of a mile above, the distance would be reduced to sixteen and a half miles, thereby not only avoiding many inconvenient turns, as shewn in the plan, but shortening the distance greatly, say thirteen and a half miles.

Having thus endeavored to lay before your Excellency the difficulties and obstructions to be overcome, in order to render what I conceive, after mature deliberation, the most eligible route for a water communication available to connect Lake Simcoe with Rice Lake; I shall, in order as they occur, suggest such operations as I consider will be required to accomplish the end in view.

But prior to entering into the details of the route proposed for adoption, it may not be out of place to remark, that in gaining the extremity of the 1st or lower section, viz. Peterboro' Bay, the attention was naturally called to look around for an outlet—appearances indicating that the navigable qualities at that point ceased. When my attention was naturally drawn towards the ultimate object of my search—the direction of the head waters—Chemong or Mud Lake naturally attracted attention; however forbidding its appearance in the present state at low water, through which a canoe can be paddled but with difficulty, and the general report as to its inadequacy to any thing like navigable purposes, nevertheless, I resolved on trial, and steering my course in that direction, following a

natural ravine and apparently low ground, leaving the bay at the convenient basin, as shewn on the plan, and passing through chiefly the unlocated town lots of Peterboro'—crossing the communication road at Mr. Dixon's gate, and thence bending northward in easy curvature through convenient ground, until reaching by easy ascent the height of land between Peterboro' and Chemong Lake, in the shortest feasible route between the two waters which afterwards, contrary to my expectation, on applying the level, I found not to exceed 50 feet above Chemong Lake, thereby offering a *probability* of the internal or cross-the-country line, being worthy of attention; still as the Otumabee, in its circuit, had to form the criterion of competition, I resolved not to abandon it without an examination, particularly as the land route did not hold out any very flattering inducements to at once adopt it; however, when on the ground, and as the country afforded and excellent opportunity of ascertaining the gross difference of level, and at the same time afforded data for a sectional view of the country for whatever purposes its capabilities afterwards might be deemed susceptible, I instituted a set of levels across from Chemong or Mud Lake to Peterboro' Bay, and found I had the quantity of 189 feet of difference of level or leakage to contend with, and of course to be encountered, in the several obstructions in the Otumabee, in its elbow course, a difference of level, which somewhat staggered my confidence, being led to believe that the difference (of level) was inconsiderable, as stated in my report on the Trent; but having soon thereafter an opportunity of proving those levels by a series from Chemong Lake, down through Buckhorn and Peninsula Falls, and down the long rapids of the Otumabee to Peterboro', putting the matter beyond all doubt, which led to the idea (taking into account the probability of a proportionate increase on the several remaining sections of the route from the original conjectures on the subject) of addressing the Interim Report, which I had the honor of handing your Excellency personally, and thereon receiving your Excellency's further instructions, which the importance and consideration of the subject required.

I would further remark, that in consequence of the tenor of my instructions, and from circumstances occurring since the issuing of the address, and in obedience to your Excellency's command, originating from such circumstances, viz:—"The reputed eligibility of a route existing to connect these waters by way of Stoney Lake, with Belmont, Ball, and Crow Lakes, and thence with the Rideau Canal head waters on the Crow River,"—

In consequence, and with the view of leaving no room to doubt as to the most eligible, I inspected the reputed route, in a most arduous and unsatisfactory exploration of that county, in its iron bound coasts and islands, continued rapids and vexatious portages, over hill and dale—occupying myself and part of my hands nine days, serving only fully to establish the impossibility of finding a practicable route in that direction for a canal communication.

From Crow Lake, which I reached by the several continuous rapids and blind portages described by way of Belmont and Ball Lakes, and finding

no prospect of reaching the head waters of the Rideau from either of those points, although from the cursory knowledge I have of the direction of the Rideau's head waters, I had all along been convinced of the probability of finding a choice of communication from thence to the upper lakes, although at much sacrifice of lockage, but not in the direction reported to your Excellency; I reached the Marmora Iron Works, and from thence descended the Crow River, and from thence by Heely's Falls, on the Trent—fixing beyond doubt, that the Ononabee was the most probable and in all likelihood, the *only* practicable route for the object in view.

Having thus described the endeavors to establish the most eligible route, I now come to lay before Your Excellency the operations required on the different sections, to render them available for navigation, commencing in routine, as formerly, from Rice Lake; and in the section 1, occur, the Bar at the mouth of the River, the Shallows of Dangersfield, Robinson's Island, and Yandee Point, and which I would propose surmounting by such additional height to the dam at Asphodel bridge, (proposed as necessary for the improvement of that portion of the Trent) as will maintain Rice Lake *permanently* at or near high water mark, and which from the slight difference of level from Rice Lake to Whitch's Rapids, (about 2 ft. 9 in.) can easily be done; at the same time, I would recommend the closing up the central channel of the mouth of the Chumbe, with the view of avoiding either of the others, in having a clear passage, and preventing the formation of an additional bar, which would be apt to form, if not artificially prevented, and which the formation of reefs will ensure.

In making the waters of Rice Lake a decided general advantage will arise to the surrounding country, in rendering the whole comparatively healthy, and insuring at a trifling expenditure, an available navigation to Peterboro', at all times, by the simple adoption of a dam and lock at Whitlaw's Rapids, which is the next obstruction on this section, thereby throwing back water over the Little Lake, sufficient to drown the rapids at the Narrows between the lake and bay, and throw sufficient water into No. 1 lock of the collateral cut from Entrance Bay; thus carrying the navigation from Asphodel Bridge to Peterboro', 40 miles, at an expense as per estimate 4,246 pounds 19 shillings, a very inconsiderable amount, indeed, when compared to the advantages to be derived, the enumeration of the whole of which I do not consider comes within the immediate sphere of this report.

Section 2nd—From Peterboro' to Clear Lake, fourteen and a half miles, and rising 147 feet, with a continuation of rapid for 9 miles, until reaching Herriot's mill pond in Katchewannoe Lake, and thereafter the rapids at Young's Mill, of short duration.

To overcome these, (the most serious obstruction on the whole route) there can be but one opinion, pointed out in the extreme facilities the river affords, in its universally high and well defined banks, and the convenience afforded for the construction of dams at suitable distances, to render the intermediate spaces available, the practicability of which system has been so *amply* tested on the Rideau communication, that leaves not a doubt

as to the applicability in the present instance, while the existence of tolerably sized dams at present, proves the facility with which such can be constructed where required. But although I should recommend the system as generally applicable to the nine mile rapids, yet, as will be seen by the accompanying detailed and minute plans, I propose leaving the river at the Little Bay, immediately continuous to the storehouse, and making part of the present marsh and Bay, a receiving basin, and carry the navigation inland through the town of Peterboro', as nearly parallel with the streets as now laid out as possible, along favorable low ground, and well suited to lockage—bounded by the natural mound or bank on the western side—bending its course round to the plain lots, until reaching the natural ravine at R, to which point the levels naturally lead, as shown on the accompanying plan and section, until reaching the River at S, and into the dead water from Hall's mill dam, and from the termination of the mound referred to, to carry on a continued navigation to the summit line of Leach's mill pond, for which the ground is favorable; and as this would appear in the meantime to be most eligible, it may be deemed sufficient to estimate on this line, leaving the collection as a matter of expediency hereafter, when the works may go into operation.

I would, therefore propose for the present, the continuation of the cut to Leach's mill pond, for which all the said operations will be left undisturbed, and the wheel chain or rapids avoided.

It has been said the mill pond by a collateral cut of two and a half miles, will do for a lift of 50 feet lift, and the necessary bridges, &c. for the accommodation of the public, the dam and lock system will come into good play, will resemble a number of Heriot's rapids—by the several locks, dams and excursions, as shown on the plan and section, from which a collateral cut of one and a half of a mile will be necessary to carry the line past the mill and rapid, and avoid interfering with the operations thereof, which are likely to become extensive, and secure a more convenient and ready mode of passing, and a saving of difficulty, than by following the river, and then by taking round through the present dam, a sufficiency of water can be backed up, with much convenience to the adjoining lands, to the foot of Young's rapid—carrying the small rapids at the outlet of Katchiwanne Lake, and through a sufficient weir into the lock of 3 ft. lift at Young's as shown on the plan and section—from which to the waters of Clear Lake, a short cut of 1 1/2 miles long, averaging 6 feet deep through a gravelly section, will carry the navigation and completing (section 2nd) from Peterboro' to Clear Lake, forms about a quarter miles, and rising 146—10 and 3/4 two fourths=150 ft. and at an estimated expense of sixty six thousand five hundred and twenty four pounds fourteen shillings and one penny.

Section 3rd—From Young's to Bobenysgan, including in its course, through Clear and Stony Lakes, the Peninsula Falls, Burleigh Chutes, Deer Bay, Buckhorn Rapids, and the navigation of Buckhorn and Pigeon Lakes.

Having gained the waters of Clear Lake, the only operation required to complete the navigation to Peninsula Falls will be a properly constructed dam, to raise the waters of Clear and Stoney Lakes, 2 feet above their present heights, so as to give sufficiency over the outlet of the lakes at lowest summer water, which cannot in any way interfere with adjoining lands, the general character of Clear and Stoney Lakes being rocky and barren shores, and in general very abrupt. The Peninsula Falls gross rise of 25—8 three tenths, I propose surmounting by three locks and extended wing walls, with the requisite guard lock at the head or summit to regulate the spring floods. From this point the navigation continues through Deer Bay, until reaching Buckleigh Rapids, a pitch of 2 ft. 2 in. at which place a most favorable opportunity presents itself to surmount, what otherwise would have been attended with trouble and expense, in the placing of a lock in the neck of a Peninsula as shown upon the general plan, with the necessary excavation, etc., which will carry the navigation by the construction of a dam in this place over the little chute to Buckleigh Rapids or Falls mill, at which important point considerable work will be necessary in the construction of a lock of 4 ft. 6 in. lift, and excavation across the point of 250 yds. in width, by 5 ft. in depth (the rage) in a mixture of large boulders and shales, and towards the Buckhorn Lake extensively of rock excavation, and also in the cutting of the cut out or the construction of an artificial dam, sufficient to grade the rapids and swift water above, and thereby make the additional head in Buckhorn, Chemung and Poloyogen Lakes, so as to raise the waters to high water mark, and thereby have a considerable head on Poloyogen rapids, where the falls as shown on the plan is a distance of a large one and a half miles, ascending 38 ft. 4 in. in a course of twenty-one thousand one hundred and two pounds, to a shilling and five pence.

Section 4th.—From Poloyogen to Rahma Portage (to Lake Simcoe) twenty six and a quarter miles.

Will require the reconstruction of the lock at Poloyogen, the lower sill being placed, as already stated, at least 3 ft. too high, besides the dimensions of the lock chamber being too contracted for the present contemplated scale, being only 28 ft. in the clear; the cut from the lock head to the bay above will require considerable enlargement and deepening, so as to admit of being properly secured by being cased to prevent the escape of the water through the open fissures of the loose rock, as provided for in detailed estimate; the reconstruction and increased height to the present dam, with the addition of a small race, between the upper island and main bank, as shown upon the plan, with the view of giving a sufficiency of wall over the long continued shallows in the river above to Sturgeon Lake—which gained, gives a splendid navigation for any sized craft to Cameron's Falls, and to the very foot thereof, where a most favorable opportunity occurs for lockage into Cameron's Lake, or rather the river leading to said lake, as shown on detailed plan and section of that place, surmounting the difference of level of 24 ft. two tenths, by two locks advantageously located on the brink of the rocky bank, with the addition

of a guard lock and excavation into the river or mill pond above—in a distance of only 265 yards, and averaging six feet cutting, passing between the hotel and saw-mill.

Before leaving the extended and fine navigable water of Sturgeon Lake, it may not be out of place to refer your Excellency simply to the fact of an extension of one of the most favorable opportunities ever presented to open up the same extent of country, by so very little assistance from art, as the waters of Sturgeon River and Lake afford, passing in their course from Sturgeon Lake, from the south-west angle of Foulon, through the whole of Ops (70 miles in extent, interrupted only by the rapids at Purdy's mill, touching on Mouva, watering the whole of the weight, and part of Reach, at the upper extremity of the lake and even extending its complicated contributions, here and there, partially available and which little local enterprise would be able to provide) into Modjeska, Brock and Whithy, and as a means of course not confining its spreading influence to these alone, but embracing the available community for being opened up from the safe and convenient Bay of Winlock (where it is now in contemplation to construct a wharf) by a rail road or a good navigable road, for the *present* time, which is the head of the extended navigation as to be distant only 10 miles, which is already the case on the particular report on that subject can be rendered available by the simple operation of one dam and lock below the present site of Purdy's mill, and at an expense not exceeding the cost of five hundred pounds, (under proper management)—the only adjoining line being not to those rapidly settling Districts—of the large outlay needed the through main channel of communication, a series of cuttings and dams affording a permanent local benefit to the communities immediately bordering on the Sturgeon River and Lake, and on the tributaries, the Non-cum and Okeva creeks.

To summarize, and description of the main line:—Having gained by the open country, the summit of Cameron's Lake, as the river above the dam, particularly at the outlet into Cameron's Lake, at low water, does not exceed 18 inches, it will be necessary that the dam now existing, now which is one of the most substantial and creditable pieces of workmanship ever seen in the Province, should be raised from 2 to 3 feet, to afford high enough sufficiency of water over the bar at the mouth of the river, where some rock excavation will also be necessary; but if the banks will bear it, and I have no doubt but they will, even a greater increase would be advantageous, not only in the saving of rock excavations at this point (under water) but in materially assisting operations at the foot of Balsam Rapids, which point the navigation reaches easily through the deep Cameron's Lake and up either of the channels of the river, communicating with Balsam Rapids and Lake, where operations of considerable magnitude compared to the trifling difference of level, will be requisite to connect with Balsam Lake, in the construction of a lock of 3 ft. lift—and a continuous excavation, chiefly through rock, for 450 yards to the river above, at point B, where a dam will also be required to throw sufficient water over the bar and into Portage Bay—on the summit level of the chain

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of communications, from the Bay of Quinte to Lakes Simcoe and Huron, making a distance of section 4th of twenty six and a quarter miles, and rising 34 ft. at an expenditure of 25,546*l.* 16*s.* 2*d.* Currency, being a total difference of level above Rice Lake, with the increased head on Balsam Lake of 227 ft.; above the Bay of Quinte, = 592 ft.—assuming Balsam Lake to be 3 ft. above July mark, and 118—6 ditto above Lake Simcoe, and assuming Lake Huron, as shewn on the map, 594 ft. above the sea, would seem to leave a difference of level between Lakes Simcoe and Huron of 110 ft. odd, say 110 ft. 6 in.

Next comes the last sectional division of the route No. 5, and one, as already stated, upon which there is sufficient scope for the Engineer's duties—not in point of any very untoward difficulties to be surmounted, but in the proper selection of the most eligible route from Balsam Lake to Lake Simcoe, between which there is a difference of level of 118—5—3 in the present state of the waters, an amount far beyond what was anticipated, and which, consequently, suggested the strictest investigation into the merits of the two probable routes already spoken of, viz. to follow as much as may be available, the course of the Talbot River from its source downwards—or to adopt an eligible line for a more continuous navigation from Balsam to Lake Simcoe, and for which latter the face of the country affords (with the exception of a trifling rise near Balsam Lake) an opportunity equalled only in one instance in the course of my observation in either Province, and in that for a more limited distance (viz. on the line for a continuous Canal from Lake St. Francis to Lake St. Louis, which runs through the Seigniory of Beauharnois, and which I estimated last year for the Hon Edward Ellice, in contra-distinction to the other side of the river—the expense being much less.) Still, how-much-soever I might be disposed to avail of such facility for continuous navigation by a cut to Lake Simcoe direct, yet there are circumstances sufficiently urgent to give the preference to a *mediam* between the two, and which, I have no doubt, will present the most eligible for adoption, as in tracing the Talbot River from its commencement in the great swamp near Balsam Lake to Lake Simcoe, in all its freaks of serpentine curvature, which I did in the month of June, when the water was very low, as well as in months of October and November—I fully came to the opinion that to follow the Talbot higher up (as for the sake of description I would beg leave to reverse the order and commence from Lake Simcoe) thus the commencement of the rapids, at McQuig's rapids or house, as marked Q on the accompanying detailed plan made from actual survey, with the view of ascertaining the real nature of the river, would not only be exposing the works to much tardiness of execution from the limited period in which operations could be carried on among a continuation of rapids, but at the same time, when done, would add much to the length of the communication—the direct line with the point of junction with Balsam Lake being only thirteen and three quarter miles in extent—and although I should certainly look forward ultimately to carry the navigation to this point, or into the Simcoe Portage reach—yet, in the mean time, I would suggest the propriety of leaving the Talbot either at the convenient and commodious basin, as shewn on the plan at D, one and three quarter

miles above the mouth, &c. or above the termination of the lately constructed road from Balsam Lake—and from the said basin, or point T, to carry an inland cut to Balsam Lake, as per line delineated *ms.* on the plan, with the necessary 12 locks of, in all, 116 feet lift, as thereon shown, or as may afterwards be found more convenient to locate; for which, as already stated, the section of the country is most favorable, with the exception of considerable rock excavation in bedded limestone on leaving Balsam Lake, which, however, will meet well the purposes of lock building, of which there will require to be built the inland cut 12 locks, (of little over feet lift each) besides on the Tallot River, between Lake Simcoe and Talbot basin, of nominal feet lift, with the requisite continuous excavation, culverts, bridges, &c. together with the necessary operations at the mouth of the river, in the removal of the bar and by the construction of piers, to prevent it again forming; thus overcoming the obstruction in this section, by an inland continuous cut from Balsam Lake to Talbot River at T, of thirteen and three quarter miles with 12 locks thrown at suitable distances, as shown on the plan and sections, by one lock on the Talbot River, if found necessary, and the construction of the necessary works at the mouth of the river, in all sixteen and a half miles; descending 121—1 three-tenths feet by lockage, or 118—5 7-10 is natural difference of level, at an expenditure of 121,212*l.* 18*s.* 1*d.* Currency.

For the sake of perspicuity, I beg leave to annex a recapitulation of the whole for your Excellency's information, which at one view will show the abstract of operations required, amounting in all to the sum of 262,067*l.* 16*s.* 4*d.* and for which I consider these works may be constructed in a permanent, substantial, and workmanlike manner, and under a similar specification as intended for the Trent works, viz:—"Of good substantial "hammer-dressed masonry, with ashler hollow quoins, corners, and "coping, wooden sills, &c. &c."—Thus opening up an *uninterrupted* water communication from the Bay of Quinte to Lake Simcoe, a distance of *about* 165 miles, and 706—4 feet of lockage, for the sum of 495,515*l.* *odd*, Currency, including the Trent estimate, which amounts to 233,447*l.* 6*s.* 11½*d.* Currency.

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RECAPITULATION.

Sec.	Description of Route,	Mls.	Rise,	Dns.	Loc.	Amount,		
No.						£	s.	d.
1	From Rice Lake to Peterborough, including the bar at the mouth of the Grandee, Dargers Field, Robinson's and Yankee Bonnet Shallows, Whitlaw's Rapid, &c.,	21 ³ / ₄	ft. in.	1	6	4,246	19	0
2	From Peterborough to Clear Lake, including the nine mile Rapids, Herriott's Rapids, Katchiwa Lake and Young's Rapids,	10 ³ / ₄	locks	6	11	66,524	11	1
3	From Young's outlet of Clear Lake to Bebeaygean, including Clear and Stoney Lakes, Peninsula Falls, Barleigh Chutes, Buckhorn's Falls, Buckhorn's Lake, Chemung and Pigeon Lake,	31 ³ / ₄		2	5	21,102	2	5
4	From Bebeaygean to Cameron's Falls and Balsam Lake Portage, including Sturgeon Lake, with Bebeaygean Rapids, Shallows above Rapids, Dams there—Dam at or below mouth of Little Bebeaygean, navigation of Sturgeon Lake, Cameron's Falls and Shallows, Cameron's Lake, Balsam Rapids and Balsam Lake,	20 ² / ₃		3	5	22,546	16	2
5	From Balsam Lake to Lake Simcoe, including collateral cut to Talbot River, Locks thereon, clearing of Flood Wood, and piers at the mouth of Talbot Harbor,	16	Fall of coll. cut	12		121,212	18	1
	Amounting to,					235,643	9	10
	Lock-Masters houses, &c.,					2,600	0	0
						£238,243	9	10
	To which add contingencies and mangement, &c., 10 per cent,					23,824	6	6
	Total amount of Estimate,					£262,067	16	4

N. H. BAIRD,

*Civil Engineer,**M. I. C. E. L.**December, 1835.*

Having now, for Your Excellency's information, submitted the result of my labours, and of a more protracted survey than I had anticipated, arising from circumstances which oftentimes gives rise to, and create more difficulties in the progress of the Engineer's operations than the real difficulties presented, namely, the different supposed routes which offer

themselves to consideration, as imagined eligible, through the different sections of country in which they occur, and pressed upon the attention as the best, or as in many instances, the *only* practicable route—thereby diverting the attention and occupying that time which would have been more advantageously directed to the natural course of the communication, but which from the circumstance of a doubt existing or possibility thereof, leaves no alternative but to follow out such, if in any way feasible; and under such impression, I was lead to make the tour of the back line of Lakes, Rapids and Portages, from Stoney to Crow Lake, which as already stated, serves but to confirm the prior opinion of improbability, as also in examining the lay of the country, through the different Townships of Eldon and Fenelon, as directed in your Excellency's detailed instructions, per Lieutenant Colonel Rowan's communication of date 16th June last, particularly the portions bordering on, and in the proximity rather of Lake Simcoe and Sturgeon Lake; but soon ascertaining that such a route must entail with it, not only a very material increase in distance, but at the same time an increase in lockage, and without any certain supply of water from a summit level, the country rising gradually towards that course from the Talbot Valley (certainly the lowest ground in that section of country) until again falling into the Seugog—and having followed that fine river and more expanded lake navigation to its head, and ascertaining geographically speaking, that that route, although apparently feasible towards Lake Simcoe, would be entirely too circuitous.

After due consideration of the matter in all its bearings, and weighing the merits of the junction with lake Simcoe, through the Seugog route, which must have been down the valley of Little Talbot to Beavertown, a stream by no means bearing comparison with its greater rival of the same name, independent of the want of accommodation for shipping, except at a very great outlay of money, and by the *Seugog Lake* route, following either the North Cross Creek route, 7 miles above Prady's mill, into the centre of Mariposa, where the height of land occur—or continuing up the Lake, take the Non-can River or Creek at the north-west angle of Cartwright, and crossing the south west angle of Mariposa, gain the height of land in Brock, and from thence descend into Lake Simcoe, down the Black River Valley, which holds out no particular inducement or accommodation for lake craft, which at times will be hard enough pressed to find shelter, all independent of the geographical objection in point of distance—not only in a local view from Sturgeon Lake to Lake Simcoe, but in following up the ulterior object of continuing the chain of communication with Lake Huron—all of which will be avoided, and the grand object of the most direct and least expensive mode of connecting these waters obtained by the Balsam Lake route; and the Talbot River, as now estimated, besides having the double advantage of bearing out the general character of the whole line as an *internal* communication, opening up a widely extended and valuable country, and one which promises ere long, to be second to no proportionate space of inland country in the Province, in point of capabilities of improvement, productions and opportunities for enterprise.

For the general line of communication and its connection with the

adjacent and surrounding country, and shewing that the line as now surveyed and estimated is not only the most direct that can be found, but the one most calculated to develop the resources of the fertile and valuable country through which it passes, I would beg to refer your Excellency to the accompanying general plan which I have had compiled (by Mr. F. P. Rubidge, D. P. S.) to shew the whole line at one view, with the different works proposed to render the whole navigable, by which it will be seen, that from the Bay of Quinte to Lake Huron, the general direction of the communication maintains a pretty straight course—that assuming the section from Lake Simcoe to Huron as practicable, and which I extremely regret was not in my power, on account of the advanced state of the season to have examined, as stated by your Excellency as desirable, when I last had the honor of an interview, and with which intention, I did proceed to the Narrows of Lake Simcoe, from the Talbot River, when the difficulty of procuring a proper canoe and crew, and accommodation proper for the excursion, (having left my canoe, &c. at the Talbot, to complete some measurements, under an assistant,) added to the apprehension, which afterwards turned out to be well founded, of being frozen up in some of my operations below, resolved me (then the 5th of November,) to abandon the task; but still I had the satisfaction of gleanings a considerable deal of information from the kindness of an individual in Orilla, who is much interested in the furtherance of the grand object—and in the perusal of a Report, drawn up by an Officer of Engineers, on the state of the Severn River, and which from the *general* description therein given, would appear to be not more sectionally objectionable for improvement, than what has been met with on the lower sections of the route—the difference of level, as already stated, being about 110 ft.

I would also state that I had, at the same time, an opportunity of gaining information as to the projected route (by a Mr. Boyde,) from Shingle Bay, but which from the general principle, as I understood the description, nearly double the lockage would have to be encountered, than by a gradual descent; besides judging from past observation and experience, and studying the course of nature in her multiplied arrangements, it ever appears that the lowest pass between any two sections of country is generally, if not always indicated by the greatest discharge of water—although, as a matter of course, and one in all cases not to be avoided, the route may be somewhat circuitous. I would, therefore be disposed to hazard the opinion, that either by the Severn or Nottawasaga Rivers must be the line of communication, unless the latter be intercepted from Lake Simcoe by a considerable height of land, which I have not had an opportunity of examining; in support of which hypothesis, and which I consider by no means problematical, I would refer, as an example, to the country lying between Peterboro' and Chemong Lake, around which the River Otanabee, the main outlet from these waters down the Trent, &c., make such a circuitous bend of no less than 23 miles—that having traversed the country between these points in all directions, for the purpose of endeavoring to find a practicable over-land route, and actually running levels of the most probable, I found the lowest ridge of land to be 49 feet 4 eight-tenths

above the waters of Chemong and Pigeon Lakes, diminishing proportionately on approaching the outlet, and *vice versa*. I might quote many other instances, which have come within my observation to strengthen the hypothesis, that the country between Lakes Simcoe and Huron may have a similar sectional character—unless some convulsion of nature may have interfered in the general arrangement.

Having thus attempted to lay before your Excellency the result of a very minute and detailed examination of the country lying between Rice Lake and Lake Simcoe, with lakes and waters thereon, and of a series of running and detache'd levels, as in terms of your Excellency's instructions, and in pointing out what I conceive to be the most eligible line for connecting those lakes, I should now proceed to point out the prospective benefits likely to arise from the adoption and execution of such a measure, but for which task I really do feel an inadequacy to do the subject the justice its importance demands, whether considered in a political or commercial point of view ; but as such is generally expected from, or to wind up, an Engineers Report—particularly if such should refer to operations proposed through any new (and scientifically unknown) country, as the route I have just had the honor to examine—I shall use my best endeavours to comply with the task.

As the great object of Internal Improvement through any country, is, to afford the means of cheap and expeditious transport for the resources thereof, and to afford the opportunity of connecting the most distant points of fertility and scenes of industry and enterprise with their respective marts, it follows that the shortest and most available route for such an object must be the *sine-qua-non-data* upon which to start—and which, with a due regard to the local interests at the same time through which such line of communication may pass, for the development of the resources of wealth and enterprise, in which every section abounds, have been the regulating principles in the selections made, and which I flatter myself will be found unequalled in any other, in a geographical point of view, viz. the affording a thorough communication for the produce of the Western countries bordering on Lakes Simcoe, Huron and Michigan—particularly Illinois, Indiana, Michigan, and Huron Territories, and partially Ohio—all rising rapidly into the first scale of commercial importance, in their rich productions now pouring down the rapids of Detroit and St. Clair, from and across those immense inland seas into Lakes Erie and Ontario, and by the famed speculation of the Erie Canal, which was at first, and for long, considered to be so chimerical an undertaking ; but now demanding, from the consequent development of those fertile regions, increased dimensions—still however, subject to the inconvenience of such very hazardous circumnavigation, as a single glance at the map of the Province and adjoining States will demonstrate, and which every season affords fresh instances of, the melancholy occurrences, in the many shipwrecks and loss of life and property in consequence, must point out as an ulterior object to be gained, that the tide of the Western trade, at least a great proportion thereof, would naturally find its way by the safer, more expeditious and certain route, the Georgian Bay, and from thence down through the now proposed

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line of communication, by Lake Simcoe, the waters of the Newcastle District, and the Bay of Quinte, thereby saving, as already observed, not only the very perilous circumnavigation of Lakes Huron, Erie and Ontario, but absolutely shortening the route the inconceivable distance of 261 miles.

Having reached the Bay of Quinte at the conflux of the splendid River Trent, so very susceptible of improvement, as shewn by the detailed Report I had the honor to address to your Excellency in 1833, the transit from thence to our own mart becomes a matter of ease and safety, either by the St. Lawrence or by the present available and certain navigation of the Rideau and Ottawa Canals, now in active operation, and, for our neighbors, affording an opportunity of transit and communication with New York market through the Upper Gap to Oswego—at which point the Erie Canal touches in its course—but as the St. Lawrence and Rideau must be allowed to be the natural outlet for Upper Canada, the proposed improvements, as a matter of course, should be contemplated in connection with these outlets, particularly the most practical and available for general purposes of commerce, although when the gigantic improvements on the St. Lawrence are completed, she must stand unrivalled in the annals of internal navigation in point of magnitude of construction—and which, of course, is intended to draw the Western trade in that channel, which the intended improvements from the Bay of Quinte to Lake Huron *must insure*.

To the local advantages which, from the extent of country traversed, may with propriety be called *national*, it would almost be presumptuous to set limits, and in which I conceive I am borne out in the retrospective glance of the rapid strides now making towards settlement and development—I may say from the Bay of Quinte to Lake Huron, under the most untoward and inconvenient circumstances a young country could expect to progress—and loaded with the worst of roads, where such exist, and equally so, with the present state of the river and lakes in their several insurmountable rapids, to any description of craft but the fragile bark canoe, and that only in descending—the improvement of which latter would unquestionably unfold the resources in a ratio I should be at a loss to name, was such an outlet afforded.

To agriculture, the great stand-by of any country, I would add the immense increase in the article of lumber, of all descriptions now carried on to a very limited extent (by a few of those enterprising, hardy speculators, with which the country so copiously abounds,) particularly in the article of staves, for which abundance of the finest oak exists, untouched and unvisited but by the Indian—affording, with an outlet, unlimited scope for individual enterprise throughout the whole line of communication, to say nothing of the vast importance in point of settlement of those fine districts, bordering on and adjacent to the several extensive lakes, and which have of late drawn the attention of wealth and enterprise to their shores.

Of the benefit to be derived from the opening of the Trent above, it may be conceived superfluous to again refer, having been discussed in my former report on that river and its tributaries—and would but briefly again refer to the importance of having an outlet for the wares of the Marmora

Iron Works, so much required in a new country, and which may be viewed in a political or national, as well as commercial light.

To sum up these cursory observations I would merely call your Excellency's attention to the different Townships through which the communication is intended to pass in its course through the Home and Midland Districts, in number no less than *nineteen*, immediately bordering on the waters of the communication, besides bringing into play as many more, with all their agricultural and commercial resources, with their respective already populous settlements, as sufficient guarantee, independent of the great *through* communication object, which, as a matter of course, must positively insure an ample return to the Province of the outlay required—really of secondary consideration to the object to be gained—and to the Home Government, in the ready settlement of those vast tracts of fine lands throughout the Province, now *inaccessible*, an ample return for any interest which the Mother Country might be induced to take in such a national undertaking—we cite it only with the limited view of enhancing the value of Crown Lands, but particularly, I should say, in rendering fully available the great outlays on the Ottawa and Rideau Canals, of which the contemplated communication may now be said to be a *continuation*.

I would further remark—and perhaps it may be presumptuous in me so doing, but I feel as if I owed it as a duty to the land of my adoption, as well as within the sphere of my instructions—that if we intend to maintain our commercial importance in the scale of nations and preserve for ourselves an *independent* port of entry for the Canadas something must be done, and that, immediately, to secure such; and nothing, in my belief, will tend so much towards such a desirable object, as an early commencement of this internal work which not only does more immediately interest all Upper Canada in promoting, by any means, and at all hazards, but not less interested is Lower Canada—which should consider the cause as intimately and more immediately connected with *her* existence, as the outlet not only for *all* our exports, but as a natural reciprocating consequence, the imports into these Provinces. On this subject our enterprising neighbors on the other side are wide awake and who make no hesitation in their different reports and remarks on their further proposed communications, which have of late engaged their attention—and about some of which they seem in good earnest, to make frequent allusions to the contemporary rival to all their projected lines to market—"The back waters of the Newcastle District and the River Trent." Showing distinctly the importance *they* attach to such a direct line from the *far west*—as likely to anticipate, if put in execution, their best exertions; but unless we be more active in the cause than we have hitherto shewn any disposition to be, I fear we shall be anticipated by their well known prompt and energetic measures, and that those natural facilities of communication may lay dormant, and the surrounding country and resources with it—and that the year now ensuing will go far to decide the question, I believe is generally admitted on all hands, "whether we give up the cream of our resources, the Carrying Trade, to a foreign power, thereby rendering

"all our immense expenditure, as well as the bonus of the Mother Country,
"more an injury than a benefit to the Province."

I would further remark, for your Excellency's information, that whilst on the importance of the most prompt and energetic measures being used to open up the great internal communication, so nearly and intimately connected with the vital interests of these Provinces, that as much of the intrinsic importance in the opening up such a communication, having so many rival competitors, however-so-much in embryo, will depend upon an *early* commencement (as an earnest of the intentions of the Provincial Government) and expeditious execution, for the reasons I have endeavored to assign, and which might be multiplied beyond the limits of this report the expediency of adopting such measures and system in execution, as would as early as possible secure the results contemplated, and on which subject I would beg to refer your Excellency to the interim report I had the honor of submitting some months ago, (30th September) suggesting the expediency, for reasons therein assigned, of in the first place, commencing with all expedition such works along the whole line of communication, as might at the smallest expense (as per estimate of respective sections which I have all along purposely kept detached) open up the greatest extent of navigation, or in other words, the least expensive sections along the line such as on the River Trent—the dam only at Widow Harris—the operations at Chisholm's rapids—the dam above Heeley's Falls, and works at Asphodel Bridge or Crooks' rapids—the effect of opening up the navigation from Widow Harris' (9 miles above the Bay of Quinte) to Percy Landing, 21 miles, and again from Heeley's Falls to Pe-e-bo-o', by the construction of the small dam and lock of 3 feet lift at Whitlaw's rapids, half a mile below Pe-e-bo-o', and again on the present section from Pe-e-bo-o' to Lake Simcoe, or more properly from Rice Lake to Lake Simcoe, by the construction of the dam at Buckhorn rapids, sufficient to maintain Chemong Lake at or about high water mark—by the water of the Holeygan, Cameron's Falls, and Balsam Rapids to Balsam Portage, with the proposed works on and at the mouth of the Talbot River—leaving the immediate more expensive, but short sections, from the mouth of the Trent to Widow Harris', 9 miles; from Percy's Landing to head of Heeley's Falls, 11 miles; again from Pe-e-bo-o' to Chemong Lake, 8 miles, in place of 30 miles as per river and lakes as stated; and lastly, from Balsam Lake Portage to the basin on the Talbot River—to be *railwayed in the meantime*, for which it is rather remarkable the whole of the ground of these intermediate sections affords the most favorable opportunity for construction that can be imagined or wished for, any decent, that is being in the proper direction, and easy of formation.

As an *expedient* only do I venture to suggest to your Excellency's consideration, the adoption; at the same time I am perfectly convinced that the plan will meet with some local opposition, in the apprehension of its practical utility, sap-seeding probably the necessity or (for some years) carrying the through water communication into operation which would better suit for the transport of heavy lumber; but which objection I

should be desirous of removing by the construction at the most difficult falls, of *slides*, which cost comparatively little and much *better* suit the purpose for heavy lumber, than lockage; the intermediate railroad system; (without transshipment) serving every purpose of the transport of staves down—and the requisite outfitting for lumber establishments upwards—and for a general carrying trade, equally answering every purpose, until its increase should be such as to warrant the putting the whole in full operation.

By this mode of adoption, the communication would be three years earlier opened up than in waiting for the completion of the whole—an immense saving in the *interest* of expenditure effected, such as would go far towards the formation of such expedients; and when the trade and traffic of the country should require or when it might be found necessary to carry the grand scheme into effect, I am satisfied from the experience I have had in conducting such heavy works in the interior of a *new* country, that the facilities which such means of transport of materials &c., would afford, would compensate for the execution, taking credit for the raw material, and when it might be deemed necessary (if ever) to remove them, particularly applicable to the inland sections; in consequence this latter argument would not bear so strong upon the 9 mile section of the Tiet.

With the view of doing away with the only, at least the chief objection to the expedient system—the idea of frequent transshipment, I would propose that long and substantial steamers, of particular construction, should regularly ply to and from, on the intermediate extensive water communication, viz:—

From Widow Harris' to Percy Landing,	21 miles,
From Heeley's Falls to Peterboro', about,	55 "
From Chemung Lake to Balsam Lake Portage,	40 "
From Talbot River to the Narrows or Kempenfeldt Pay, as the case may be,	22 "

And so arranged as to admit of the train of cars being transported at once, with their loadings, direct either for Lake Huron or Lake Simcoe, as the case may be and which I am satisfied can be done in such a way as to be practically useful, and serve well the present, and until such time as it may be deemed proper to put the lockage system in execution the prospective wants of the country; and for the purpose of enabling your Excellency to form an opinion on the merits of the plan I annex an approximate estimate of the opening up the whole route from the Bay of Quinte to Lake Simcoe and Lake Huron on the combined system by which it would appear the whole may be accomplished to the sum of 195 565/6 £ currency, somewhat more than I formerly have led to your Excellency in my interim report, and may be completed in two and a half years from date of commencement.

Having endeavored to set before your Excellency the advantages likely to arise to these Provinces and the Mother Country from the *early* opening up of the communications now under review, in a commercial and political point of view, in so far as consistent with the limits of this Report,

I should consider the task but half performed, did I not in some degree refer to the *incalculable* facilities which, in a military point of view, would as a natural consequence, follow the completion of such a work as connecting the Bay of Quinte with Lake Huron, or in reality, the Atlantic with the far West—completing the chain of communication (so generously commenced and so far completed and practically useful to the country) from the Atlantic to Michigan and Sault St. Marie by the works of the Carillon, Clute au Blondeau, and Grenville Canals on the Ottawa River, and thence by the Rideau to Lake Ontario, an internal navigation of immense extent say 1 214 miles—but by the present circumnavigation already referred to, 1,475—difference of 261 miles, in rounding the Upper Canada Peninsula by the River and Lake St. Clair, and by a lockage of apparently only 33 feet at Sault St. Marie, carry the navigation into Lake Superior and regions beyond, at little additional expense—thus admitting of the transport of stores to the most distant portions of the Province, with the greatest ease and certainty, an Expedition and in which point of view I would particularly call your Excellency's attention to the combined system *in point of despatch*—having not the smallest doubt but the passage from the Bay of Quinte to Penetanguishine could be accomplished, on the combined system, in 30 hours—or even less.

Having thus completed the result of the examination, levels, &c. of the country between Rice Lake and Lake Simcoe, as in terms of your Excellency's instructions, and in accordance with the spirit of the Address of the House of Assembly, of the important undertaking with which I have had the honor to be entrusted—I beg leave to submit the whole for your Excellency's information, trusting that I have fully complied with your Excellency's intentions, and that if in any instance I may have exceeded my limits, that such has been dictated from a sense of the particular predicament in which our common interest seems placed: demanding that some active measures be adopted to save our best interests from passing into other hands, and diverting the Trade of the far West from its natural outlet, and which a cursory view of the general map will amply demonstrate.

I have the honour to remain,

With much respect,

Your Excellency's

Most obedient, humble Servant,

N. H. BAIRD,

CIVIL ENGINEER,

& M. I. C. E. LONDON.

December, 1835.

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INTERIM REPORT

*To His Excellency Sir JOHN COLBORNE, K. C. B., &c., suggesting the
a Plan of a certain System of Communication from the Bay of
Quinte to Lake Huron.*

By N. H. BARRD, CIVIL ENGINEER.

30th Sept., 1835.

Colbory, 30th Sept., 1835.

To COLONEL ROWAN, *Civil Secretary:*

Sir,—At this stage of the survey of the water communication from Rice Lake to Lake Simcoe, in connection with the River Trent improvements, and looking forward to the ultimate end in view, viz.—a communication between the Bay of Quinte and Lake Huron, I feel myself called upon to lay before you the result of my labors up to this time in a condensed form in case the result thereof might lead to other arrangements which might be more conveniently carried on now than at a future period.

On running the levels from the Otonabee River at Peterboro' to the head waters in Chemung and Egeon Lakes, I found the difference to be much greater than was anticipated in my Report on the Trent improvements, as also the difference of level to Lake Simcoe equally so, and which, for perspicuity, I shall now enumerate in order, viz:

From Bay of Quinte to Rice Lake, 365ft. 0in. 0pts.
" Rice Lake to Peterboro', 4ft. 6in. 0pts.
" Otonabee River to head water

Chemung Lake	189	9	7
Brown's Rapids	6	6	0
Cannon's Falls	26	8	0
Brian's Rapids	2	4	7
To Lake Simcoe (descending)	118	5	3

Making a difference of levels from the Rice Lake to Lake Simcoe	348	3	7
Lake Simcoe to Lake Huron, assuming the Lake 594 feet above the sea,	110	0	0

Total lockage from the Bay of Quinte to Lake Huron, 823ft. 3in. 7pts.

Considering from the very great extent of lockage, the sum may be said to be necessary to accomplish such (on the most economical principle) and regarding the improvement now in progress and in agitation every where to canalize the course of the Western Territory, and divert it from its present course, (the former) it has occurred to me, and I am strongly impressed with the conviction that a species of communication might be adopted, with advantage, between the Bay of Quinte and Lake

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Huron, to answer every purpose required, in the mean time, with the advantage of increase of speed to a considerable extent, and would propose for the expensive sections of the Trent, and along the line of communication to Lake Simcoe, to substitute Rail Roads, viz:—

From the mouth of the Trent to Widow Harris' - - - - -	9 miles.
From Percy Landing to summit of Hecley's Falls, about, -	11 "
From Peterboro' to Chemung and Pigeon Lakes, - - - - -	8 "
And from Balsam Lake to Talbot River, - - - - -	13 $\frac{3}{4}$ "
Or Lake Simcoe, direct, - - - - -	16 $\frac{1}{2}$ "

Making in all, from the Bay of Quinte to Lake Simcoe, } 41 miles of
only, - - - - - } Rail Road.

The communication to Lake Huron from Kempenfeldt Bay, I am not in possession of sufficient data to say what proportion may be rail wayed, but from the lockage being so heavy, I am disposed to think the combined principle may be equally applicable on that section.

The whole expense of opening up a direct communication from the Bay of Quinte to Lake Simcoe, on the combined system, will not exceed the sum of 195 565*l.* 6*s.* 6*d.* and may be completed in three years.

By continuous lockage, 495 515*l.* 3*s.* 3 $\frac{1}{2}$ *d.*

In the one case the passage of goods from the Bay of Quinte to Lake Simcoe may be accomplished with ease in 24 hours, whilst by the other, three days would be required.

From the manner in which the arrangements can be effected, the waggonas will pass directly, with their loads, from Lake Simcoe to the Bay of Quinte, and vice versa unimpeded by sea locks constructed for the purpose, to ply on the intermediate waters.

Having laid this cursory view of the subject before you, for His Excellency's consideration, feeling it a duty I owe to the Country, as well as in accordance with the spirit of the instructions I have in command from His Excellency, I shall be glad to be informed whether His Excellency would approve of the estimate of such a communication being made out, to lay before the House in addition to the lockage estimate, or whether the latter should not be dispensed with in the mean time.

I must beg to be understood in recommending the combined system, that it cannot in any manner interfere with the through water communication, in any other than to materially lessen the expense when it might be carried into effect, in the construction of which a saving nearly equal to the expense of such intermediate rail roads would be effected.

Awaiting His Excellency's commands—

I have the honor to be,

Sir,

Your most obedient Servant,

N. H. BAIRD,

Chief Engineer.

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R E P O R T

On the overflowing of the Seneg River and Lake, and on the effect the removal of the Dam at Pardy's Mills would have upon the navigation of the Seneg River and Lake — by order of His Excellency Sir JOHN COLBORNE, K. C. B. &c. &c. &c.

N. H. BAIRD

Civil Engineer,

M. I. C. E. L.

Dunbar, 1835.

R E P O R T .

To His Excellency Sir JOHN COLBORNE K. C. B. Lieutenant Governor of the Province of Upper Canada, and Major General Commanding His Majesty's Forces therein &c. &c. &c. — on the overflows occasioned by the Dam at Pardy's Mill in the Township of Ops and the probable effect the removal of the Dam would have upon the Navigation of the Seneg River and Lake.

By N. H. BAIRD, CIVIL ENGINEER.

M. I. C. E. L.

MAY IT PLEASE YOUR EXCELLENCY :

That in obedience to Your Excellency's commands conferred to me in Lieut. Colonel Rowland's communication of the 16th June and in accordance with an address of the House of Assembly on the 15th of April last, to the following effect, viz — to inspect and survey the extent of overflows on the Seneg River and Lake in consequence of the erection of the dam at Pardy's Mill, (and in a subsequent use of said address) — to inspect "and survey the extent of such overflows and the probable effect the "erecting of the dam would have upon the navigation of the Senegog River and Lake." I have the honor to send you Your Excellency's information that in the month of October last, and between the 10th and 18th of said month I proceeded to the inspection of the aforesaid river and lake the best possible period for such inspection during which the overflows could be witnessed at their greatest extent, viz. the expiration of the Spring freshes in connection with which the head light was a recent precipitation the being 9.57 (nine inches) on the roof of Pardy's Mill dam, the result of which inspection with reference to the several points in view, I shall endeavor to submit for your Excellency's information, and

But As, since generally the extent of the following cause, to the rising of Pardy's dam (which accumulation it has now generally assumed,) it is upon a much more extended and better calculated scale than I may venture to state a precedent can be found from the construction of similar dimensions of dam at all places in these Provinces

to answer,

In my inspection of the Sengog River, with the views intended, I consider it necessary to commence the same from the foot of what is rapid in summer, and swift water in spring and fall, or at the foot of the "Portage", about three quarters of a mile below the dam, as shewn on the accompanying plan marked A.—having, as a matter of course, had an opportunity on my passage up and down the river, to and from Purdy's Mill, of making myself acquainted with the general character of the River on that Section which is in all a splendid stream, carrying with it for nine miles and a half up to a point, a quarter of a mile below the commencement of my sectional work sufficient depth and width for the largest class steamers, although in several places the course is very circuitous, as is in general the case with such sluggish streams, meandering through a low flat country, but the turns are all of such radii as to be perfectly capable of circumnavigation by steamers particularly—at point A, the River contracts from double the width into the dimensions as shown on the plan, carrying about the same width with it until reaching the dam, as shewn upon the accompanying plan from actual survey, at which point ceased any opportunity of knowing *personally* the original state of the river, a point on which much hinges, and one which I in end to approach with necessary caution, but from all the information I could collect, alike gleaned from the parties pro and con, the removal of the dam it would appear (and on which point I feel perfectly satisfied from the satisfactory evidence adduced in course of the investigation) that the River was, prior to the dam being erected, "navigable for small craft," inasmuch as several of the original settlers, as will afterwards be shewn, were in the practice of transporting their commodities to and from market by way of the River with ease at high water, but in low water (to use their own language) "had to coax the boat along," wading themselves in the water, that is at particular places, such as the Priests' Landing, Soney Point, &c., contracting however in capacity until reaching the outlet of Sengog Lake, but apparently on an average of not less than 40 ft. in width, in which I am glad in being borne out by more than hypothesis, from a plan of one property, taken in apparently a very correct manner, by the proprietor the col. at his own expense, (a Surveyor by profession) to which document I shall probably hereafter have to refer, the evidence need not call your Excellency's attention to extraneous matter; in the mean time suffice it to say that it appears evident that the Sengog River was, prior to the erection of Purdy's dam, navigable for steamers from Sengog Lake to a short distance below the dam, say three quarters of a mile for nine and a half miles, and from thence to Sengog Lake for a small craft at ordinary high water.

As to the character of the space now occupied by the Lake, the accounts were some what corroborative of its being anything but a clear navigable sheet of water, as it is now recorded, extending its arms into every creek and bay in the Townships of Cartwright, Rench, Brock and Manlyon and from all I could pick up on the subject, must have been very much assimilated to what the Canberry Lake and Marshes were on the line of the Rideau Canal, before the works being in a state, namely—at the two extremities a narrow belt of a so penine creek though which, with

difficulty, a bark canoe could be shoved at low water, while paddling raised so much eddies that left no room to doubt the existence of the cause of ague and lake fever, and in which conclusion I am supported by the evidence of several respectable individuals, who were intimately acquainted with the river prior to the raising of the waters and who were at the time interested in the state of the navigation, in the first settlement the cause and on whose minds the impression as to the then state of the waters has a chance of being more vivid.

Having briefly submitted for your Excellency's information, a description of the original state of the Sengog River and Lake, in the course of the former, from the outlet of the Sengog River and Marsh to its confluence with Saugeon Lake, as regards navigable qualifications, I shall now proceed to the immediate object of the examination and in the performance of which, from the nature of my instructions and the natural bearing of the subject shall class the matter under two distinct heads.

The extent of overflowing, occasioned by the raising the dam at Purdy's Mill, and the effect the removal thereof would have upon the navigation of the Sengog River and Lake and in laying before Your Excellency the result of my inspection I would beg to remark, that in considering the wording of the address, as well as Your Excellency's subsequent instructions I could discern that the cause was more intended to be arrived at than a mere description, viz.—a remedy for the evils complained of, though not expressed—under such impression I commenced the work.

The first question arising out of the subject would seem to be, has the dam been placed in the best possible situation for the general benefit of the townships contiguous—or has a due regard been paid to the public interest in the selection of the present site for the dam—or did the machinery required to be erected, by arrangement with Mr. Purdy, justify the placing the dam in the *present* site—and lastly, could the dam have been placed on any other site on Mr. Purdy's own property, to have secured to him and the public similar advantages as now enjoyed, without the concomitant evils complained of—and lastly, whether a less height of dam, and differently located, would not have insured the same or greater facilities, within the bounds of Mr. Purdy's own property?

As regards the proper location of the dam affecting the quantity of land overflowed I would briefly remark, that from the statement by Mr. Purdy and others, corroborating the site upon which the dam now rests was *considered* to be the only mill privilege on the lot, from the circumstance of the greatest rapid existing there, and consequently led to placing the dam at that point, although the section as now taken by me of the river, would seem to be at variance with such a statement: although I am disposed to give Mr. Purdy credit for having located the dam more to his own than the public advantage yet it would appear from conclusive evidence that there was no intention of overflowing so much or almost any land by the erection of the dam it being the general opinion of the country around, who assisted Mr. Purdy in his arduous undertaking in a back country, that "if he raised

it as high as a house he would do no damage," and it was not until the dam was completed, for the *first* time and the water in consequence rising over the flats and drowning the inhabitants out of their "shanties," that Mr. Purdy, or any one else, had the most distant idea of the ultimate result.— But before entering more fully into the merits of placing the dam in its present situation, I feel I would be better connecting the subject to first report on the extent of land overflowed.

On examination of the river, from the dam to its outlet from the Sengog Lake, a distance of nine miles, and keeping the lead constantly going, on my progress upwards, I found in the mill pond from 14 to 15 feet of water on the *original* bed of the river, and at the tail of the dam slope, and found this depth keep good, and in several instances exceeded, as far up as the Priest's Landing or Ford, marked upon the accompanying general plan, at which point I found from 12 to 13-3 in the bed of the river, on the former fording place, and in general 9 feet on the former banks or low ground adjoining the original bed of the river, and maintaining, with few exceptions the same depth, until reaching the outlet of Sengog Lake, to which point from the dam below, presents one continued scene of drowned lands and decayed timber, with, at intervals, the former residences of the settlers, shewing part of the roofs out of water, from which the inmates had to make their escape, and found the waters covering the former hay meadows and such portions as industry had cleared, and *in* crop, to the general depth of nine feet, until reaching the Lake, in which the overflowing assumes a very different appearance and character. But before leaving the river, I would beg to refer Your Excellency to the accompanying statement, in which form I conceived it better to arrange the quantities held and overflowed, attaching each individuals name, number of lot, &c., commencing from the Sengog Lake downwards, from which it appears that no less than 1,050 acres have been rendered worse than useless, and depriving the settlers of many advantages which the former (even imperfect) state of the river afforded.

In commencing to take accurate measurement of the lands overflowed, I found it likely to occupy myself and several Surveyors (if at all practicable at that season of the year) far beyond what could be anticipated by, or intended in the spirit of the address; and besides, winter being the only season in which an *actual* survey of the whole could be made, owing to the very wet and soft nature of the shores, rendered so by the rising of the water, I satisfied myself (until further instructions, if such should be deemed necessary, for an *actual* survey of the whole of the drowned lands, from Purdy's Mill to the head of the River and around the Lake shores, an undertaking, the expense of which would go far beyond what I should have considered myself justified in incurring, in the spirit of my instructions) with a *particular* examination of the several portions drowned, as detailed in the accompanying statement, and I have every reason to believe is a very near approximation to the truth—as in course of the several inspections on the spot the land marks were pretty distinct, from which it would appear, as already stated, there are 1,050 acres overflowed, in the river *alone*. But in the event of anything like a compensatory arrangement

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being male with the individuals along the river, who have had land drowned, and otherwise sustained, each in their sphere, severe loss, I would suggest, for Your Excellency's consideration, the practice adopting as to the lands overflowed along the line of the Rideau Canal, by which means a regular extended and expensive survey would be avoided, and the quantity ascertained on each lot overflowed or drowned, by a division of labor, as a regular survey of the whole would be attended with a heavy expenditure, compared to the other equally, if not more efficient mode.

STATEMENT

OF LANDS OVERFLOWED ON THE SCUGOG RIVER, &c. &c.

No.	NAMES.	DESC.	Acres	QUALITY, &c.
1	John Connell, sen.,....		3	1 25 Marsh and arable.
2	Jeremiah O'Keef,.....		4	1 25 do. do. and hay.
3	Demis Farley,.....		16	1 46 Arable on creek.
4	John Dempsey,.....	E. $\frac{1}{2}$	4	2 60 Marsh and arable.
5	Patrick Lee,.....		5	2 80 do. and meadow, per measurement.
6	Patrick O'Connell,.....		7	2 75 Marsh, meadow and cedar swamp.
7	William Lynch,.....	W. $\frac{1}{2}$	8	2 35 do. do. do.
8	Michael Farley,.....	S. $\frac{1}{2}$	11	2 5 Arable.
9	Cornelius Hogan,.....	W. $\frac{1}{2}$	6	3 60 Meadow, arable and dry cedar swamp.
10	Thomas Macnamara,...	W. $\frac{1}{2}$	7	3 85 do. and cedar swamp.
11	John Connell, jun.,...	E. $\frac{1}{2}$	7	3 15 Arable and swamp.
12	Thomas Miller,.....		9	3 150 do. do. or £100.
13	Daniel Hyde,.....	E. $\frac{1}{2}$	10	3 30 Arable and low ground.
14	Mr. O'Brian,.....	W. $\frac{1}{2}$	10	3 35 do. do.
15	John Hogan,.....	S. $\frac{1}{2}$	5	4 30 Arable and meadow, and low ground.
16	Martin Hogan,.....	N. $\frac{1}{2}$	5	4 30 do. do.
17	Patrick Burke,.....	S. $\frac{1}{2}$	7	4 20 do. do.
18	West } Oliver Burke, N. $\frac{1}{2}$	7	4	25 do. do.
19	Creek } Robt. Miller, W. $\frac{1}{2}$	8	4	20 Mill privilege, chief loss.
20	Patrick Hoyer, jun.,...	W. $\frac{1}{2}$	10	4 12 Arable and low ground.
21	Patrick Hanniban,...	E. $\frac{1}{2}$	10	4 12 Do. do.
22	Patrick Hoyer, sen.,...	S. $\frac{1}{2}$	11	4 15 Do. do.
23	Bryan Hoyer,.....	N. $\frac{1}{2}$	11	4 15 Do. do.
24	James Murray,.....	E. E.	7	5 25
25	James Connell,.....	S. $\frac{1}{2}$	12	5 10
26	John Ferris,.....	N. $\frac{1}{2}$	12	5 10
27	Roger MacHugh,.....		14	5 20
28	John Ambrose, sen.,...		16	5 20
29	Phillip Brady,.....	S. E. $\frac{1}{2}$	17	5 10
30	James MacLoney,.....	N. $\frac{1}{2}$	17	5 10
31	Edward Tulley,.....	S. E. $\frac{1}{2}$	18	5 10
32	Peter Tully,.....	N. $\frac{1}{2}$	18	5 10
33	John Loggie, Esq.,...	W. $\frac{1}{2}$	18	6 20

Total,.....1050 Acres overflowed.

Of the *total* quantity of overflowed or drowned lands along the shores of the lake, the same argument applies, as that cannot possibly be done but in winter, when the ice is good and to arrive at the delineation of the original boundary of the lake and *marshes*, will at best, be a difficult and uncertain work; at all event, without the not desirable alternative of running the *wharf* of the water off which of itself would take from three to four months, should such an expedient be resolved on; nor do I conceive that the lands bordering on the lake can have sustained a loss in any degree to be compared with those along the river's edge, seeing that before the waters were raised to their present certainly unwarrantable and unnecessary height, the most of those lands must have been completely land-locked from all market or even local intercourse, and I therefore consider, before the real extent of overflowing on Scugog Lake and Marshes be ascertained, the question as to the proper height the waters should be kept for the navigation of the river and lake should be ascertained (as it afterwards to be treated of) and from the regulating data, as it is evident if the waters can be lowered, say one half, that a very great proportion of now overflowed lands will be reclaimed, and the purposes of navigation completely served.

In passing along the lake there is not so much the appearance of devastation as I was led to believe, the banks being in general boldish, until passing Point Claire, when a very deep bay, leading into the Township of Mariposa, and north-east angle of Cartwright, presents a scene of overflowing in the index of dead standing timber, studded about; and again, after doubling the point of what *was* a peninsula, of 8 or 9 miles in length, now rendered a distinct large island by the overflowing of the extensive Tamarac and Cedar Swamp at the neck of the Peninsula, (also in Cartwright) a considerable quantity of drowned land also appears in rounding the island, as well as all along the shores the coast, particularly opposite the mouth of the Non-Con River or large Creek—about which place many extensive flooring islands, raised from their marshy beds, cover the fair way—along the western side of the island there appears a great deal of drowned land, but chiefly tamarac and cedar of stunted growth; but on reaching the head of the lake, above the present landing place for Whitby and surrounding country, the scene of drowned land referred to presents itself, cutting off the peninsula from the main land by an expanse of water of considerable width, having over it from 6 to 8 feet of water—to ascertain the correct extent of which the survey must be done in winter.

Before taking leave of the subject of overflowed lands along the Scugog River, I would submit to your Excellency's notice, the several privations which appear to have been sustained by the inhabitants whose lands have been overflowed to the extent reported in the accompanying statement.

On their first settlement along the banks of the Scugog, the land immediately adjoining the river naturally called for their first attention, and thereon planted their log shanties, cleared land, and put in their little crops, the river affording them in its natural state, abundance of the finest fish, which were readily caught when required—the loss of which, in consequence

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of the dam, seems matter of great regret (and loss.) Their road of communication has also been entirely cut off, and now many feet under water, depending entirely on the alternative of canoeing in getting to and from their houses to mill, market and church, and which at certain seasons is impracticable, if not dangerous; entailing with it many inconveniences to the farmer, who must needs have his horses, if not cattle, as a matter of course, and no road to employ them to advantage in the transport of his grain or commodities.

While on the subject of overflowed lands, it may not be out of place to mention the overflowings on the two Cross Creeks, so called from their entering the Sengog nearly opposite each other and at nearly right angles, at 7 miles above Purdy's dam, upon which there are several Settlers, as per statement, and on the North Creek particularly a *good Mill privilege* has been drowned on the property of Mr. Robert Miller, upon which that individual says he wishes to erect a mill.

Having discussed the merits of the overflowed land question, I trust in conformity with the spirit of the address, as well as in accordance with your Excellency's instructions, in so far as the same can at present be done without an actual survey on the ice; I come now to lay before your Excellency the result of my examination, levels and survey, as to the effect of the removal of the dam upon the navigation of the Sengog River and Lake, and under what the remaining heads of the subject come more immediately to be discussed.

In viewing this matter, as I am convinced it is intended it should be upon a liberal footing as regards equally Mr. Purdy's, and the public interest, and accommodation to the country at large, I have, of course, been under the necessity of assuming some data upon which to form the ground work of my opinion, viz.—the *proper* dimensions of navigation. In deciding this point it at once strikes the conviction that, one continuous scale of construction through any country must be the best and most convenient, where practicable; accordingly I have decided on the scale of dimensions as now estimating for the internal communication from the Bay of Quinte to Lake Simcoe, and it is presumed ultimately to Lake Huron, viz.—five feet draft of water as the most eligible.

In considering the subject, many regulating points present themselves, and among these the most prominent is the subject of *levels*; the all-deciding data in internal navigation. Accordingly, as no correct conclusion could be come to, in the absence of such as to the effect the removal of the dam would have upon the navigation of the River and Lake, further than the simple conclusion that it would thereby be reduced to its original state, I immediately ran a set of levels from the back water of Sturgeon Lake, or from point A, already referred to, to the summit level of Sengog Lake, making a total difference of level at present to be overcome of 13 feet 7 eight tenths ins as per section accompanying, including nine inches running over the dam.

In the projected scale of improvement of the Lakes and Rivers below, it will be necessary that Sturgeon Lake be raised 2 to 3 feet, for reasons assigned in the Report, &c., on the subject, and which, as a matter of course, must proportionately back the water in the Seugog River, and comparing the present relative medium height with the intended increase, the water must be backed by the dam at Bobcaygean to about point B. on the plan, or to the government bridge, and to within a few yards, or up to, the lower boundary of Mr. Purdy's property, crossing the Seugog, on 1—6—9 above the then height of water at said bridge, as per bench mark left on abutment on the western side, there being *that* difference from the assumed level of Sturgeon Lake, and which point may be considered the prominent *low* water mark, should the improvements in contemplation go on, and independent of such, to render the operations at Bobcaygean available in any shape, such an increase on Sturgeon Lake (and which can be productive of no injury) must be had recourse to, and assuming such as the lower level to start from, leaves at low water, deducting the overplus now running over Purdy's dam, (nine inches) a lockage to be overcome of 11—3—9, supposing the waters of the Seugog River and Lake to be maintained at their *present pitch* to overcome which, and render the river navigable, under present circumstances, two different modes suggest themselves, both of them equally expensive and inconvenient, viz.—either by a collateral cut from Purdy's mill pond, continuous to the river below the rapids, or to point B.—or by the construction of an additional dam at the Government Bridge, to back the water 4 feet on the tail water of the mill, and by the construction of a lock at each dam. On the other hand, assuming five feet as the requisite draft of water, to which the surface of the river and lake could easily be reduced, by lowering the whole 6, 7, or 8 feet, as might be deemed advisable, but say 7 feet, with the view of allowing a sufficiency of water over the Priests' Shallows and stoney bottom, say 5 feet, the object can be obtained by the construction of *one* dam and *one* lock, and at one-fourth part of the expense, by the removal of the present, and substituting another dam at or near the point where the dead water backed up from Sturgeon Lake ceases to give 5 feet, which, as per soundings and longitudinal section, on plan accompanying, would seem to be somewhere between the two bridges, thereby avoiding a very expensive collateral cut, and the saving of a dam and lock, besides affording an opportunity of securing a sufficiency of head and fall for the mill, which on either of the other plans would seem somewhat doubtful.

It would therefore follow, from the foregoing statement, founded on unquestionable data, that the effect of removing the present dam would be a decided advantage to the navigation of the river and lake, in the substitution of one farther down stream, at or near the lower or Government bridge, keeping always in view the raising of Sturgeon Lake for the reasons assigned as the sounding data inasmuch as 5 feet water is a sufficient depth to provide for the Seugog River and Lake, and that the same can be preserved by lowering the summit level from 5 to 8 feet.

It may probably be argued, and I am aware it has been argued by Mr. Purdy, that the mill will not work up with a less head of water than in reply to which it will only be necessary to remark, that the mill, as now in operation, particularly the grist mill, is upon the rudest possible principle, constructed without any regard to economy of water, and as much and wasting more than would drive six modern turbines, and I have no hesitation in saying that a mill, upon proper construction, and with every regard to economy in construction, can be made to do as much work, if not more than that mill can possibly do, with the same head and quantity of water she at present has, viz. 12—5—0—9 feet, and at the same time afford a more return than the present rude construction can make to the proprietor.—(In point of construction I mean to be understood as referring particularly to the *water-wheel*, the *description of water-wheel* used, and the manner of connecting the stones therewith, and not the arrangement of the other parts of the mill, which are tolerable good.)

To gain even the head which Mr. Purdy now considers absolutely necessary to insure the effective operation of the mill, he has had recourse to raising the surface of the mill pond, even above the natural surface of his own land, by the construction of the wing dams described in heights of 18 inches above the surface, and I understand, at low water has a cross-board which attaches to the top of the dam.

I would, therefore, in reviewing the matter, beg leave to submit for Your Excellency's consideration, my opinion in the following terms:—

That the *total* removal (if such was meant) of the dam at Purdy's Mill must ruin the navigation of the Sengog River and Lake, inasmuch as reducing it to its original state as described, merely payable for boats, and that at high water, lay the marshes in the lake entirely dry, which, by exposure to the sun's rays, must, as a matter of course, endanger and lake fever *malaria* to such a degree as would render the country most unhealthy; but that the total removal of the present, and substitution of another of less dimensions as to height, so as to afford 5 (say 4 or 6) feet water in place of 12, as at present over the shallows in the river and outlet of the lake, would *materially* benefit the navigation, inasmuch as one dam and lock at point C, on the plan, would carry the navigation from Sturgeon Lake into Sengog by a lift of only 5—0—9, in place of 12—0—9—that the said lift of 5—0—9 would be perfectly sufficient, with a mill on *proper* principles, such as for instance, has just been erected on the upper rapids of the Otanabee River, at the outlet of Clear Lake, of only 3 feet of head and fall to serve all and every purpose required—although I think 6 feet of clear head and fall may be obtained, in which case the purposes of the law mill will be equally served.

On the subject of lowering the water above the present dam I would remark, that if the same is done at the proper season, there is no fear that little apprehension need be entertained for the *navigation* nor the wood land, such as will be reclaimed in consequence thereof.

That by lowering the present dam to 5 feet water over the shallows, which would reduce the dam 7 feet, the same object may be attained, but must incur the adoption of another dam at lock C, or by the collateral cut from the mill pond to point C, which latter plan might probably interfere less with Mr. Purdy's arrangements, although his mill would in that case be as much subject to back waters, and have less head and fall, than if removed to a lower site, a transverse section of which is herewith annexed to show the capabilities of the banks for such.

In conclusion, I would remark, that by the removal of the present and construction of another dam at point C, with one lock of 5 feet lift, will perfectly and better serve all the purposes of the navigation.

Of the advantages likely to accrue in rendering the Seugog River navigable by improvements on the rapids at Purdy's mills, I would briefly remark, that from the extent of country overflowed, about 30 miles in extent, by a dam of only 14 feet in height, and from the circumstance of navigation being created for the largest sized steamers—where such never could have been contemplated—and viewing the whole as a branch of the grand contemplated scale of improvement for the waters of the Newcastle District, from the Bay of Quinte to Lakes Simcoe and Huron, and which may be rendered available by embracing, perhaps, one of the most favourable opportunities ever presented, to open up the same extent of country by so little assistance of art, as the waters of the Seugog River and Lake afford, passing in their course from Sturgeon Lake, from the south-west angle of Kenelon, through the whole of Ops, (an extent of upwards of 40 miles, interrupted only by the trifling rapids at Purdy's mill,) also touching on Manvers, watering the whole of Curwright, and part of Reach, at the upper extremity of the lake, and even extending its ramified contributory branches into Mariposa, Brock, and Wilby, now rendered partially available, and which very light local enterprises would render perfectly so—and of course not confining its spreading influence to those alone, but susceptible of enabling an available communication being opened up from the safe and convenient bay of *Huron*, (where it is in contemplation to construct a harbor) by a rail road, or good macadamized road *for the present*, from which point the head of the extended navigation seems to be distant only 18 miles, and which, as already shown, can be rendered available by the simple operation of one dam and lock below the present site of Purdy's dam, and at an expense not exceeding 25,000/ under proper management—thereby affording an immediate relief to those rapidly settling Districts, at a trifling outlay—until the through main channel of communication should be opened up; and thus affording a permanent local benefit to the townships immediately bordering on the Seugog River and Lake, and for which the contributaries of the Non-Con and Cross Creeks afford facilities.

These would seem to be a *few* of the prominent reasons for preserving the navigation of the Seugog River and Lake, not in their present extended but in an available state, as I have endeavoured to point out, and when viewed in connexion with the grand scale of internal improvement proposed.

calls loudly for protection, together with the general argument, that where either nature or art, by accident, may have contributed so much as in the case of the Scugog River and Lake, that no opportunity should be let slip of improving the advantages so offered, and which I do believe in this case stand unrivalled, as an instance of what may be accomplished at little expense.

Having thus endeavoured to lay before Your Excellency the result of the investigation with which I have had the honor to be entrusted, I trust that such has been done with a due regard to the spirit of my instructions, and where I may have come short of, or overstepped such, I shall feel much satisfaction in affording any requisite explanation.

I have the honor to be,

With much Respect,

Your Excellency's

Most obedient humble Servant,

J. N. H. BAIRD,

Civil Engineer. M. I. C. E. L.

31st December, 1835.

