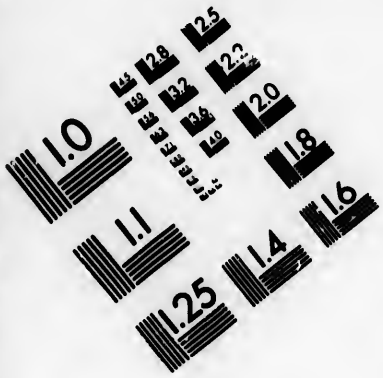



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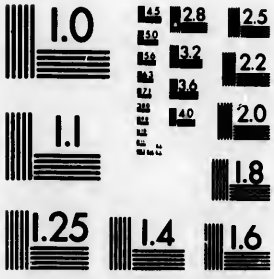


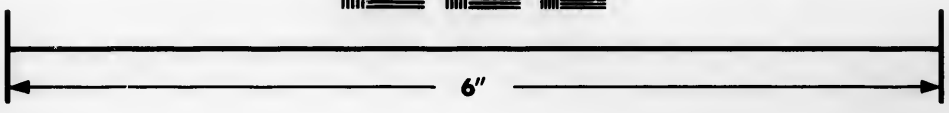



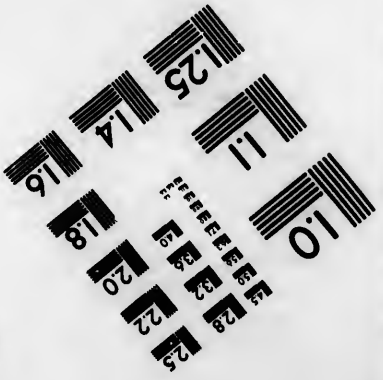


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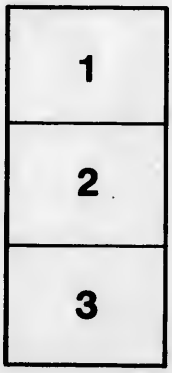


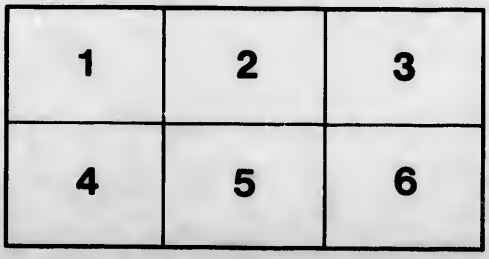


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# REPORT

ON THE

# *PROJECTED CANAL*

ACROSS THE ISTMUS

THAT DIVIDES

NOVA-SCOTIA AND NEW-BRUNSWICK,

EXPLORED AND LEVELLED IN THE AUTUMN OF

1819,

BY ORDER OF

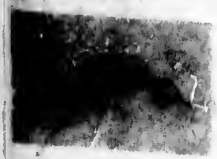
HIS EXCELLENCY MAJOR-GENERAL *GEORGE STRACEY SMYTH*,

LIEUTENANT-GOVERNOR OF THE PROVINCE

OF NEW-BRUNSWICK.

---

FREDERICTON:
PRINTED BY GEORGE K. LUGRIN, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY.
1820.



*Fredericton; 1819, Dec. 27.*

*Sir,*

*Agreeably to the Instructions addressed to me by your Excellency, bearing date, September 3, 1819; to explore the Istmus between the waters of the Bay of Fundy and the Gulf St. Lawrence; I have performed that duty: and the accompanying papers relating to the subject, are for your Excellency's information.*

*I am with great respect,*

*Sir, your Excellency's*

*Obedient humble Servant,*

A. LOCKWOOD, *Surveyor-General.*

*THE HOUSE of ASSEMBLY of NEW-BRUNSWICK having expressed a desire, to have Printed a few Copies, for their immediate use, of the Report on the practicability of Cutting a CANAL across the Istmus; His Excellency General SMYTH, in complying with this request, has directed a sheet of reference to be attached. The plan to which the letters refer, cannot be engraved in this Country.*

A, B, *Is sufficiently clear in the Report.*

a, *In the margin,----The waters of Au-lac and Tantamar Rivers unite at their confluence with those of Chignecto Bay, and the spot* a, *is near this common mouth.*

F, E, *Is the proposed line to avoid the evils that would attend vessels entering at Cumberland Creek, and to secure the advantages of the Au-lac entrance.*

H, *Shows the projected dry Docks combined with the second outlet.*

*Extract from the Journal of the House of Assembly, dated March 3rd 1819.*

" To His Excellency the LIEUTENANT-GOVERNOR, a sum not exceeding 150£, to be by him expended, in procuring a fit and suitable person to explore that part of the Isthmus between the waters of the Bay of Fundy, and those of the Gulf St. Lawrence, which is situate between the head of the Grand Marsh in Sackville, in the County of Westmorland, and the Gaspereau River, which empties into the Bay of Verte, and between the Missiguash and Tignish Rivers. And the person so to be employed, be instructed to take the difference of the height between the waters of the Bay of Fundy and the Gulf St. Lawrence, and that he report as to the possibility of a Canal being made across the above Isthmus, and the probable expense that would attend making the same."

First line, Grand Marsh to Gaspereau.

Second line, Missiguash to Tignish.

# REPORT.

## FIRST LINE.

*The Head of the Grand Marsh to the Gaspereau.*

THIS line is represented on the Plan as AB, commencing at Long Lake, situate about six and a half miles E.N.E. of Point Au-lac. Long Lake is a mile and a half in length; from twenty to forty chains wide; from five to twelve feet deep: it empties by a branch of the Au-lac, called La-coup. From this lake to the Bay of Fundy, there would be no difficulty in cutting a small canal, that would drain this and the neighboring lakes. The level is seven feet two inches at high water in the mouth of Au-lac, higher than the water in Long Lake. From the upper end of this lake, we took our course, E. 12 N. or N. 78 E. thro' a thicket of thorny, scrubby, deformed spruce trees. The ax men were fatigued in advancing one mile in six hours. The rise of the first mile was nine feet; the soil, cold white dry clay. The next seventy chains, we rose nine feet, with mixed timber: the soil poor, cold, but level, and no obstruction to the spade. The same soil continues to the third mile, to a hill eighteen feet in perpendicular height, on the surface of which large rocks lay scattered, but all moveable: the soil a red clay. This hill may

From Au-lac to Head of Sackville marsh, 6½ miles: no impediment.

Long Lake, 7 feet 2 inches lower than high water in the Bay, might be easily drained.

Three miles: cold white clay with a thicket of thorny spruce, difficult to clear.

Hill, 18 feet, rocky, would probably furnish stone for the canal uses.

may be avoided by the line bearing a few rods further north; altho' it would be swampy.

From this hill we descended twenty-one feet to Allen's brook, and thrice intersected this stream; thence ascending a hill seventeen feet ten inches high (the brook turned off to the northward) it hit the lower part of Gaspereau River. From the last hill to high water in Bay Verte, the depression was twenty-three feet seven inches. But the objections being very strong against the Gaspereau as an outlet to the Canal, our examination was not particular after leaving Allen's brook.

The line hit the lower part of Gaspereau.

Insurmountable obstacles present themselves at Gaspereau.

Thus the above line will appear
From Au-lac to the head of Long Lake, 497 chains, N. 30 E.

From Long Lake to Gaspereau River, 557 chains, N. 76 E.

consequently the whole line will run 962 chains N. 55 E.

Waters in Bay Verte highest by two feet one inch.

*Gaspereau River*

Incapacity not suited to the intended purpose.

being particularly mentioned in the Resolution of the House of Assembly, renders it of sufficient consequence to require a plan and description, otherways a single view exposed to us its incapacity. The distance

distance between the lands forming its entrance, is fifteen chains; the breadth of the river at high water, four chains; the channel is one chain wide. The confluence of its waters at low tide, with those of Bay Verte, lies S. 13 E. sixty-eight chains, from the land at its mouth. The river continues the same width, a hundred and ninety-seven chains up, to Otter creek, where it is three chains wide. The west bank is twenty feet high, formed of large loose shelly rocks, and red earth. The east bank is low, with earth of a reddish cast. The bed of the river is cheifly rock, except near the mouth, where it is mud.

Its bed and banks are mud.

At the entrance of the channel there is scarcely any water: indeed at times it is dry. In the river there is a spot of ten feet, but its average depth is five. Oyster beds choke the passage to this river, and may in low tides be seen bare. The tides flow six feet and a half at the highest.

Mouth of the Gaspereau choked.

On the south-west side of Gaspereau entrance, stands the ruin of an old French fort, now Fort Monkton; the trench is yet visible.

Gaspereau winds up, probably fourteen or sixteen miles; the water is almost still.

SECOND

## SECOND LINE.

*Missiguash to Tignish.*

Missiguash two miles from Au-lac.

Missiguash River lies about a mile and a half south of Fort Cumberland, and two miles south-eastward of Au-lac River. The ebb in common tides, drains the channel of its waters, and leaves the bed nearly dry; but in spring tides, quite so. When the waters are highest, there is twenty-seven feet depth, and the width may be one hundred and twenty feet. The bottom is composed of sand and mud: at, or rather outside the mouth, the flats are formed of rocks and sand.

Bed of the River, dry at low water.

Canal may, and ought to cross the river repeatedly.

A north-east line crosses the River in its various turnings and windings, (for it is exceedingly crooked) as far as the tide is allowed to ascend, about a mile and two-thirds, to the Aboid'eau opposite Mr. Roach's farm.

Swampy at the mouth of the Missiguash.

The western bank near the entrance, is charged with water, and full of holes and ponds.

The sluice of the lower Aboid'eau admits thro' it, the tide, which is again stopped at the bridge that forms part of the road from Westmorland to Amherst. The distance between the two Aboid'eaus is forty chains.

At the lower one, the River may be sixty feet wide and twenty-two deep: at the bridge, forty by twenty-six. Thence, its former bed courses from side to side of the meadow

meadow about three miles, where it branches, and sinks below the mossy surface. Most of the distance, the water is stagnant.

This I call the source of the Missiguash, as none of its brooks can be traced further.

About twenty chains above the trace of the brooks, a series of lakes, small, large, narrow, wide, alternately, extend to the E.N.E. and continue up, under the portage bridge, terminating about fifteen chains N.N.W. of it. The road crossing to Bay Verte from Westmorland, leads over it. These lakes are from five to seven feet deep, and their banks are a floating morass.

These all capable of being drained [illegible] bed, rich alluvial so[illegible]

Other bodies of water lie on the eastern side of Fort Lawrence marsh, five miles above the entrance of Missiguash.

Four miles from the Bay, the marsh is comparatively firm and dry, altho' very insufficiently drained, and its average width seven-eighths of a mile.

All above the fourth mile, is drowned land, which if drained, would be rich meadow.

The total length of Point de Bute marsh is nine miles ; five of which is a floating surface, with barely sufficient buoyancy to support men. A pole will pierce twelve or fourteen feet ; and a blueish, thin mud, adheres to it.

This surface would require draining for two years

After the fifth mile, the meadow widens to a long mile, and at the sixth, opens thro' to the Fort Lawrence marsh.

Apparently a continued plain, to La planche River.

Nine and a half miles, reached the wood lands ; the last half mile was a sunken bog, thro'

thro' which the party with difficulty waded.

Depression of the centre of the Istmus, is therefore 7 feet and 1 inch, below sea-level.

The depression of the first mile, was seventeen inches---the second, fifteen---the third, fifteen---the fourth, eight---the fifth, twelve---the sixth, eighteen---equal to seven feet, one inch.

Floating surface, moss and grass.

It was with difficulty any place could be found sufficiently solid to place the instrument. The chainbearers and ax men were wading to their middles. The legs of the instrument pierced the surface, and sunk to the horizontal circle. The whole beneath, appeared a floating mud.

This place might be avoided by cutting thro' more southerly.

To avoid the wood and keep the plain as long as possible, we inclined to the south-eastward, thro' a swamp on which grew a stunted scattered spruce. This continued a short mile, and about a quarter wide. Thence for a mile and a quarter, we rose twenty-two inches ; the bottom continuing swampy, with holes of stagnant water. Red earth here and there shewed itself beneath the moss and roots and brush.

Caribou plain composed of white and sand.

The tenth mile brought us to the plain, without a tree or shrub, but cover'd with deep cold moss: soil, a sandy white clay. The highest level of the plain, stands eight feet above the sea. Thence the land fell three feet, and rose again as we entered the woods. The line continued thro' the easy risings or inequalitys, the highest of which, between

between the Bay of Fundy and Tignish River, was thirty-one feet above the sea at high water. This hill appears the greatest obstruction, but is not a serious impediment.

The marsh, as before stated, continued

| | |
|---|---|
| Solid, | 4.5 miles. |
| Floating moss, | 5 miles. |
| Morass, | 0.5 miles. |
| Bog, | 0.6 miles. |
| Cariboo plain, | 0.8 miles. |
| Spruce plain, | 1 mile. |
| Hills, valleys, &c. | 3.6 miles. |

The whole distance run by the courses; offsets and zig-zags included, is sixteen miles. The nearest line will not exceed fourteen; and that of the proposed Canal, eleven hundred and sixty chains, or fourteen miles and a half.

ADDITION TO THE SECOND LINE.

On the East side, opposite the point that divides the Rivers Tantamar and Au-lac, an indent or bend appears, favorable for an entrance; and the ground is every way suited for the formation of Channels, Locks, and Docks. If the Point de Bute marsh should be determined on; one mile length, added to the Canal, would secure vessels from all the dangers and inconveniences pointed out in the next page. Marked a, on the plan. F—E, see plan

From this entrance it would take the course to Valiere Island: and rounding the foot of the mound on which stands Fort Cumberland, it will join the Second Line at E, and continue as before directed.

## OBJECTIONS AGAINST CUMBERLAND CREEK.

Cumberland Creek, first conceived to be the fittest place.

The Dyke and Aboid'eau have choked the bed of Cumberland Creek, both on the marsh and the slope of the Bay, and it now forms part of the solid marsh, or nearly so. The firmness of the meadow contiguous to the above gully, drew my attention, as best suited for the mouth or entrance of a Canal. Had not many obstacles afterwards presented themselves, no place on the whole meadow, could have been more favorable. Satisfied with these apparent advantages of Cumberland Creek, I proceeded to examine the channel of Chignecto, opposite both the last mentioned places.

In ascending the channel, the mud and quicksand flats, extending from Menudie, confine the deep water along the western shore, to the mouths of Au-lac and Tantemar: thence the channel turns to the South-east, and suddenly becomes foul and shallow.

Rocks and shallows, obstruct the channel leading to Missiguash & Cumberland creek.

Large rocks, and hard bottom, form the bed of the Bay, opposite the creek and the Missiguash. On these, a vessel drawing eight or nine feet, would bulge at low water spring tides.

Menudie flats, in the way.

Ships ascending the Bay with south-eastern winds, would be compelled to anchor: they could not fetch. Others bound down, would be delayed by W.S.W. and other winds, that might lead them down the Bay, if unobstructed by the elbow of Menudie flats,

flats. A difficulty would also present itself to vessels entering the Missiguash with strong winds; unless at the top of high water, when one or two might enter the mouth of this River; even then, there would be a great probability of their injuring themselves. Yet if the Government shall deem it right to open a communication with one of the places spoken of, it is perfectly practicable; and part of the obstacles and obstructions may be removed, but at a very considerable expense. The danger of waiting for entry, and the heavy winds, weigh seriously against the measure.

Great expense would remove these difficulties.

Most Canals are supplied with water from reservoirs or bodys collected above the bed of the Canal. The projected Canal will receive its accession from the Bay each tide, in any quantity. Its expense of fluid will be by leakage&while the vessels are passing in and out.

Advantage of tides in the Bay of Fundy, over places in common.

The outlet H may be used as a set of dry docks, by attaching two additional safety-gates. Indeed each cut on the Bay side, ought to have four pair of gates, made of the cheapest wood (hemlock.) They answer the purpose of safety-gates, and may be constructed to ship and unship easily, by the lower parts being delivered of water, and supplied by air or otherways. Thus inflated, they would buoy themselves off their hinges, or loaded with water, assume an erect posture, and be readily applied to the posts.

Docks and basins, and safety-gates, considered.

The

Size of the dock or basin.

The entrance or cut, communicating with the basin, must be twenty-six or thirty-two feet deep, to the entrance of the basin; thirty feet wide at the top, twenty-two at the bottom; and angling six degrees equal to four feet each side. The Basin, fourteen feet deep, and the length and width may be regulated by the strength of the funds and judgment of the Government or company: yet as the ground is so favorable near the Au-lac, a spacious Basin would have many advantages. The high winds that blow from the westward, would injure a wide body, by the heavy washing of the waves. A hundred and sixty feet wide at the top, and a hundred below: in length, from fifteen hundred feet or even more.

Basin of Au-lac should be 1500 feet in length.

Most suitable entrance for the new cut, being secure from winds and easy of access.

At the entrance of the two rivers, Au-lac and Tantemar, the depth at the lowest springs, is from nine to thirteen feet. A bar crosses at the lower end of Au-lac point. At the confluence of these Rivers, the depth is from twenty-four to thirty-five feet. In this hole, vessels of any size may safely lie afloat: thence up the Au-lac to the Aboid'-eau is five miles; the bed of the river, mostly a soft mud; except one bed of rocks, a mile below Hewson's, and occasional sand beds.

The tide ebbs out, to within a short mile of the mouth.

The banks of the River are 55 feet high.

Should a cut be made here, it will be fifty-five feet above low water mark at that place.

The bar is composed of sand, and after the first forty minutes flood, and before the fifth hour of ebb, vessels of any size may take shelter in Tantemar.

Vessels of 9, 10, and 12 feet draft may enter all times of tide.

The consideration alone, of vessels finding shelter in approaching the entrance of a canal, must in a great measure, govern those who select the line of this intended communication.

Twenty minutes before and after low water, the largest ship in the world might enter.

*Tignish River*

empty's into Bay Verte, by a winding channel, a mile and three quarters from the bridge. The depth varies from eight to fourteen feet at low tides. The bed and banks of the river, are composed of red clay and sand, and are easily removed or deepened, if necessary. Three-fourths of a mile below the bridge, and one mile from the river's mouth, a small brook called Smelt, issuing from between the hills, divides about ten acres of marsh, and joins the river. This is a convenient and eligible place for an outlet, furnishing a sufficient area for a bason and lock : and possessing the advantage of coursing the base of the highest land, and the cheif obstruction of the whole line, It might be worthy the deliberate consideration of the Legislature, how far it would be serviceable or otherways, turning the course of the Tignish. I merely glance at the expediency of such a step, feeling the necessity of a more minute examination of the neighborhood,

Depth 8 to 14 feet.

Smelt brook recommended as the fit site for the basin.

Course of the River, advised to alter.

*Estimate of the probable expense of cutting the proposed Canal, from the Head of the Bay of Fundy to the Gulf St. Lawrence.*

| | £ |
|---|---|
| Cuts to drain the lakes and swamps, in the line of the intended Canal, . . . . | 2,000 |
| A dock or basin will contain 4,500,000 cubic feet of earth to be displaced; which will require the labor of a hundred men, a hundred working days; admitting one man capable of excavating five hundred feet each day. | 2,500 |
| Second basin, . . . . . | 2,500 |
| Sixteen miles of canal, . . . . . | 24,000 |
| Clearing the obstructions, and effectually choking the channels of the rivers, . . | 8,000 |
| Animal strength; supporting ditto, &c. | 1,000 |
| Steam engine, . . . . . | 3,000 |
| Implements---carts, shovels, axes, picks, barrows, . . . . . | 1,500 |
| Gates, sluices, masonry for locks, &c. . | 5,000 |
| Engineer, four years' attendance, at 500£ per annum, . . . . . | 2,000 |
| Clerks and Overseers, five; at 200£ per annum: four years, . . . . . | 4,000 |
| Deepening the channel leading to Bay Verte, | 5,000 |
| Buildings for the people, overseers, with workshops, &c. . . . . | 3,000 |
| Total, ..... | 63,500 |

I have shewn in the plan, two directions for the Canal, both favorable to its execution; the one lying partly in New-Brunswick, and partly in Nova-Scotia; the other wholly in New-Brunswick. The labor and expense would be nearly the same: and there are natural advantages peculiar to each. The cheif of those in the Tignish, is the favorable outlet. But in the cut to Allen's creek, the large quantity of the choicest landsthat would by draining be recovered to this Province, is an object of consideration: the sale of these would refund most of the expense. I therefore venture to advise the Government's retaining the lands in the direction of the contemplated Canal, as a measure of good policy and of general benefit.

Two hundred laborers may be employed to advantage. The labor of the first year would be chiefly draining. Two-thirds of the men employed may be Emigrants, for whom I suggest a prospect of a grant in the neighboring vacant land, that may be a great stimulus, as they will in the course of the labor, grow familiar with that part of the country.

The expense of the first year might be limited to ten thousand pounds, unless it should be found expedient to employ artificers, in which case one half more would be necessary.

Two strong partys of ax men, may be employed to advantage in cutting a 60 or 80 feet opening, thro' from the head of the Great Marsh to Allen's brook. The timber so felled, might at the same time be squared, trimmed, and laid apart for the use of the Canal. The estimate of the work, if conducted on the scheme I have digested, is in round numbers, sixty-four thousand pounds. The time of completing four years. This estimate of time

and

and cash, must not be considered definite, as most of the line was thickly wooded, and part of it a floating surface: besides the fluctuation of the value of labor; and also obstacles that may present themselves, and cannot be anticipated. Yet I am disposed to believe that the actual expense would not be wide of the estimate.

I have the honor to be, with the highest respect,
Your Excellency's most obedient and very humble servant,

A. LOCKWOOD.
*Employed to explore the Istmus.*