

Surveyors of The Past

—BY CHARLES FAIRHALL—

John MacTaggart, John Burrows And the Rideau Canal

The history of the City of Ottawa is inextricably intertwined with that of the Rideau Canal; in fact, the former derives its "raison d'être" from the latter. The genesis of them both was the decision of the British Parliament to provide a secure inland water route between the junction of the Ottawa and Rideau Rivers and Kingston on Lake Ontario which could not be easily interrupted by an American invasion of Canada.

In 1826 Lt. Col. John By arrived at Quebec City to take charge of what was to become the most ambitious engineering project of its time in North America. Two men who were closely associated with Col. By were John MacTaggart, Clerk of the Works, and John Burrows, Provincial Land Surveyor.

Dr. Edwin Welch has edited the diaries of these two men, which outline two canoe trips in the summer of 1827 between Ottawa (formerly known as Bytown) and Kingston. The resulting publication, "Sights and Surveys", published by the Historical Society of Ottawa, is a fascinating eyewitness account by the two men who made the survey for the Rideau Canal.

The following excerpts are reproduced with the kind permission of Dr. Welch.

JOHN MacTAGGART

MacTaggart was born in Scotland about 1800 and joined the civil engineering firm of John Rennie at an early age. We know from his Canadian book that he worked on the Plymouth Breakwater. John Burrows may also have been employed on this massive venture to build a safe anchorage for the Royal Navy in south-west England. MacTaggart may also have worked on Rennie's canals in southern England. He also found time to publish a book which was described as containing "Sketches of Eccentric Characters and Curious Places, with explanations of Singular Words, Terms and Phrases; interspersed with Poems, Tales, Anecdotes, etc., and various other Strange Matters; the Whole illustrative of the Ways of the Peasantry and Manners of Caledonia."²

Most of MacTaggart's experience was gained under John Rennie's son, because Rennie died in 1821. It was this son, later Sir John Rennie, who recommended him to John By when a

clerk of the works was required for the Rideau Canal. MacTaggart did not confine his three years in Canada to the canal. He visited and made recommendations on the construction of Kingston Dockyard, the Welland Canal and a harbour at Burlington Bay. He travelled extensively in Canada collecting information about the country. He was sent home in 1828 suffering malaria and died in Scotland only two years later¹. His books suggest that he was a talented and inquisitive young man who died before making his mark on life.

MacTAGGART'S SECOND SURVEY AUGUST 1827

Smiths Falls

To the minds of people accustomed to canalling business, these Falls become as appalling an object as any that is to be met with: they fall over beds of hard bastard marble rock, 36 feet in less than one quarter of a mile. At this place, there are numbers of islands formed by snies winding round the Falls. Between one of these and the west bank of the river, we propose a dam of 23 feet; this dam is directly in the middle of the rapid, and nearly opposite to Rykert's Store: 96 feet at bottom. 200 at top. will be the length of the dam. This dam is proposed to check the water oozing through the fissures at the above rocky island, and to throw the water over the Falls, so that the still-water above may be deepened 2 feet 7 inches. and also that the snie immediately behind the island may be filled with water; for in this place we propose three locks of 11 feet 2 inches lift each, the dam forming the waste-weir to the same.

The width of the Rocky Island, from dam to snie, is 290 feet. and of height sufficient for the dam. The snie has low banks for 420 feet on its east side. which will require a stone embankment, so as to get above the rapid from wing-wall of upper lock, and save Ward's Farm from inundation. At the bottom of the snie, about 50 feet from the Rideau, the locks begin to be put in. At the bottom, the rock is of a shelving nature, doing away with the necessity of having inverted arches: indeed, few inverted arches seem to be necessary throughout the whole work. The first lock-pit will have to be excavated seven, the second

two feet; the bottom of the third is five feet above level. Considerable backing in and retaining wing-wall work are required about the Hornet's Snie — we denominate it so, from the trouble these insects gave us; while patiently measuring and surveying it we were severely stung, yet this snie could not be lost sight of: its average width is 60 feet, its banks, at lower end, are 20 feet, and width 86 feet. The Banks of the Rideau, opposite the mouth of the snie, are 86 feet, and the mouth is 220 feet, beneath a saw-mill. This mill is 150 feet beneath the end of the proposed dam, being nearly between Saw-mill Dam and the saw-mill. We are thus particular, as the dam to be built nearer the mill would destroy it, and if farther up the stream, the water would get out of the snie behind it. By the above means, therefore, we surmount the Falls without being obliged to cut three miles round them, through a rocky country averaging ten feet deep to canal bottom, with rock that defies the strength of gunpowder or crow-bars to remove it, and would weary the British treasury with expenses.

Behind Smith's Falls, about three miles on the west side of the river, there is a large swampy tract of country, a chain of extensive beaver meadows wind-in, and terminating somewhere nigh to Merrick's Mills, fifteen miles below. These swamps, from the river levels, must form something like an inclined plane having an elevation of nearly 100 feet. Now, to cut through these swamps for fifteen miles, and miss six miles of natural river navigation, and to construct ten locks in a swamp, and all apart from each other, the whole, too, remote from reservoirs which such works require, seems to me a preposterous idea. Yet it is advanced, and I must own it preferable to the one almost adopted, of cutting through the above-mentioned long ledges of Plutonic rock.

Earlier in his book MacTaggart gives more details of the hardships which he and his colleagues suffered in carrying out this survey during an Ottawa winter:

Having procured three faithful men to assist me to explore, as many axe-men, and two to carry provisions. we sailed out into the woods in the beginning of November 1826. The axe-men continually cutting down a line through the under-wood. we were enabled to take, what is called in surveying, a flying level, which is a rough guess to a foot, more or less, of the rise or fall of the country above any fixed data. Having continued at this fatiguing employment for three days, my assistants keeping in the neighbourhood, returning nightly and giving information respecting swamps, gullies, streams, mountains, etc. I at last came

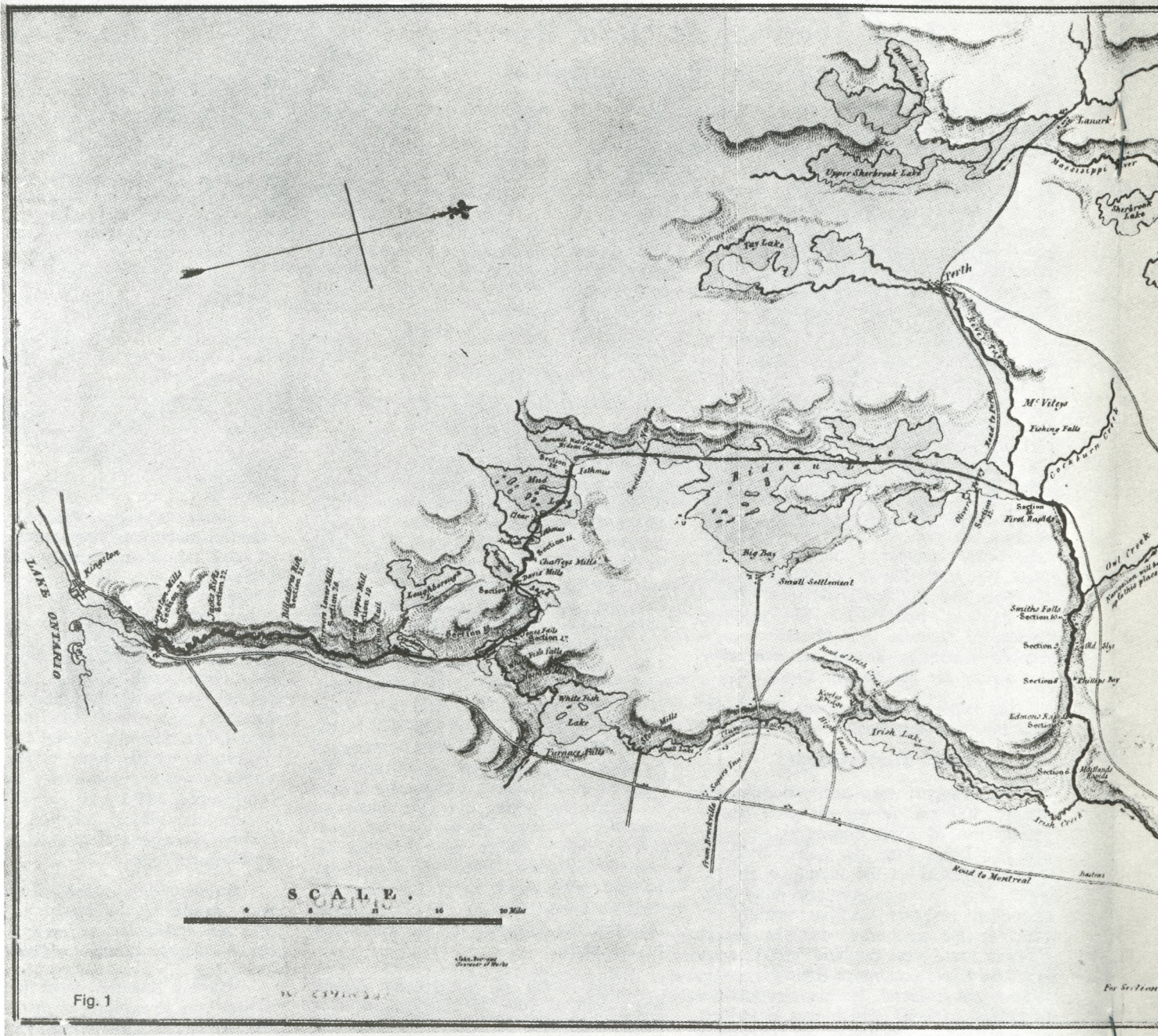
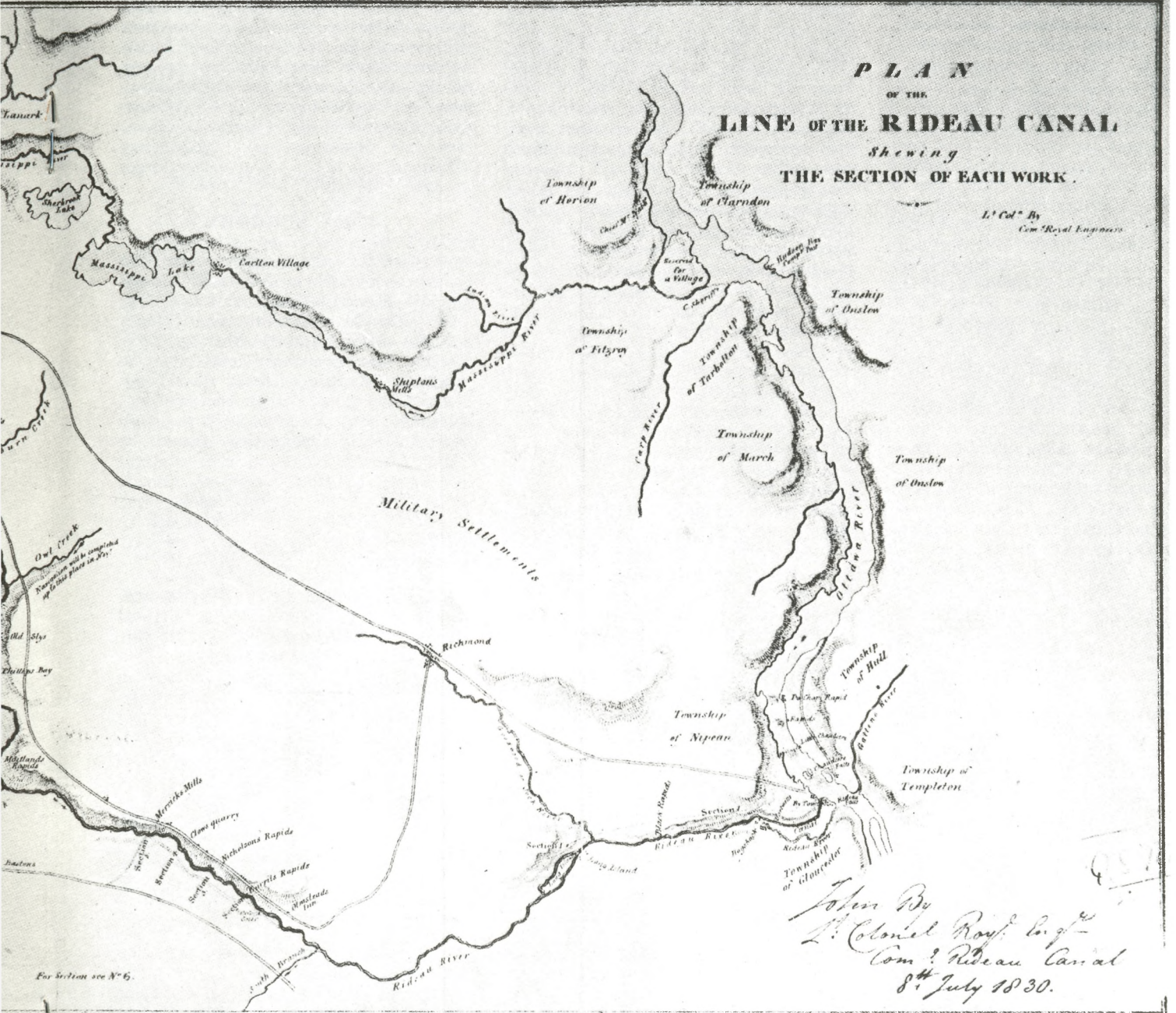


Fig. 1

Ordered by The House of Commons, Lake 1

Editor's Note — The Story of the Rideau Canal is told
 published by the Ontario Department of E
 from which the above



It is told in the book "History of the Rideau Waterway"
 Management of Energy and Resources Management
 The above map is taken

upon the famous Rideau, at a distance of between four and five miles from the above beautiful bay.

Taking a level of this extent in England would not have occupied more than a day; but in a dark dense wood the subject is quite altered, and a surveyor has to change his home system altogether: for instance, if we get upon a hill or other eminence in Britain, we may see the natural lead of the land; but in Canada, owing to the wilderness, you have to grope for this like blind men. On coming out on the river, I found it to be forty-five feet above the level of the Ottawa, and that if a cut were to be made from thence to the valley which descended into the bay, a rocky ridge would have to be broken through, nearly two miles long, and about sixty feet deep to the bottom level of the canal. To attempt such a work would have been madness: the thing is by no means impracticable, but it would devour an enormous sum of money. Finding this, we left behind our various scientific instruments, and ascended the river. Having penetrated about three miles, we came upon foaming rapids, where the river was narrow in width and the banks high. Here was the famous Hog's Back, and here we proposed to raise the river by a dam, so that the water might be brought on a level with the head of Entrance Valley above alluded to, which was eighty feet above the Ottawa. But the question arose again, if the river could be raised here to the required level, was it possible for us to retain that level through the wilderness, — a distance, as we supposed, of seven miles? To ascertain this, now became the object of research, and we set to work accordingly; but meeting with various gullies, and huge swamps, to get through which (they being full of water) became almost impossible, we waded, and were often obliged to crawl on our hands and knees under the brushwood, and this in water. Finding, therefore, we could make no good job of surveying them, until the swamps froze, we wended our weary way to the Ottawa as we best could, and there awaited the coming of the frost, which did not happen sufficiently for our purpose until the 20th of December, and then it was accomplished by a foot-depth of snow. No matter; we started again, cut holes through the thickets of these dismal swamps, directed a person to go about half a mile before, and wind a horn, keeping to one place, until those behind came up; so that by the compass and the sound, there being no sun, we might better grope out our course. For in the woods you have not only to keep to a course, but you have also to discover what that course is; not as on sea, where the course is known, before the ship

starts, that one port bears from another; but in the wilderness the relative position of places is not known, — a cause which improves the instinct of the Indian, making it so superior to that of a European. We had this matter to study deeply; and we had likewise to seek for that track where we could best preserve our level, in the shortest possible distance. This compelled us frequently to diverge from the direct course; a ridge of rocks or a deep swamp, the one much above, the other beneath, the required level, had necessarily to be shunned as much as possible.

I mention these things out of no vain boast, but as curiosities in science, and must own that the subject perplexed me not a little. Place in thick and dark snow-covered woods, where, unless the axe-men cut holes, a prospect of five yards could not be obtained; doubtful what kind of land lay on either side, or directly before; calculating at the same time, the nature of canal-making in such places, the depths to dig, or the banks to raise, so that the level might be kept from one sheet of water to another, the former eighty feet above the latter; while the weather was extremely cold, and the screws of the theodolite would scarcely move: these things all considered, were teasing enough to overcome, and required a little patience. When night drew on, two of the axe-men were sent off to rig the wigwam shanty by the side of a swamp. This was done for two reasons, or say three: first, because water could be had in the swamps to drink and cook with, if the ice were broken to get at it; secondly, the boughs of the hemlock grow more bushy in such places, and are so far more easily obtained to cover the shanty; and thirdly, there are generally dry cedar-trees found there, which make excellent firewood, and the bark of dry cedar is the best thing in the world for lighting a fire with. When the party got to the place, there was a very comfortable house set out, a blazing fire with a maple back log, ranging along for a length of twenty or thirty feet. There, on the bushy hemlock would we lie down; roast pork before the fire on wooden prongs, each man roasting for himself: while plenty of tea was thrown into a large kettle of boiling water, the tin mug was turned out, the only tea-cup, which being filled, went round until all had drunk: then it was filled again, and so on; while each with his bush-knife cut toasted pork on a shive of bread, ever using the thumb-piece to protect the thumb from being burned: a tot or two round of weak grog finished the feast, when some would fall asleep. — others to sleep and snore; and after having lain an hour or so on one side, some would cry Spoon! — the order to turn to the other — which was often an

agreeable order, if a spike of tree-root or such substance stuck up beneath the ribs. Reclining thus, like a parcel of spoons, our feet to the fire, we have found the hair of our heads often frozen to the place where we lay. For many days together did we lie in these wild places, before we could satisfy ourselves with a solution of the problem already represented. In Dow's great swamp, one of the most dismal places in the wilderness, did five Irishmen, two Englishmen, two Americans, one French Canadian, and one Scotsman, hold their merry Christmas of 1826, — or rather forgot to hold it at all.

JOHN BURROWS

There is some mystery about John Burrows' life. He is said to have been born in Plymouth, England, on 1st May 1789, the son of Christopher Honey and his wife, Elizabeth Burrows.² His parents were probably Methodists who attended Ebenezer Chapel there, but there is no record of John Burrows Honey either there or elsewhere in the city's records. This is surprising because he claimed to have been a civil engineer in Plymouth. After coming to Canada in 1817 he seems to have adopted the name of John Burrows, even though he continued to use his full name on legal documents.

In the summer of 1817 he, his wife Ann and his brother Henry migrated to Canada. They arrived at Quebec City on 22nd September, and by the beginning of 1818 he was buying land in Nepean Township in what is now downtown Ottawa.³ His brother Henry bought land in Gloucester Township in the district now known as New Edinburgh. John appears to have dealt in land rather than cultivated it. In 1821 he sold part of his Ottawa land to Nicholas Sparks who developed it after the canal was built.⁴ In 1820 he was appointed a provincial land surveyor and probably moved to Hull where he supervised the building of the first Anglican church.

It is clear from this diary and other sources that by this time Burrows had obtained a good knowledge of surveying and civil engineering. In 1826, for example, he accompanied John MacTaggart, Philemon Wright and others on a trip to the iron deposits in the Gatineau. This subsequently led to the foundation of the Hull Mining Company in which he was a shareholder.⁵ His knowledge was therefore most useful when John By arrived in the area to build the Rideau Canal.⁶ For the rest of his life he was employed by the Board of Ordnance on the Canal. John By also leased his Canadian lands to Burrows when he returned to England in 1832.

Burrows died on 27 July 1848. In his will he expressed a wish to be buried with his first wife, who had died in 1831. He left a widow, Maria Hoskin, five sons — Henry, George, John, Thomas and Alfred — and four daughters — Ann, Mary, Maria and Harriet. These children, together with a step-daughter, Mrs. Arminella Andrews, shared his property on Wellington, Sparks and Rideau Streets in Ottawa. He transferred his ownership of the Methodist Chapel on Rideau Street to the Methodist Society in Ottawa.¹

BURROWS' FIRST SURVEY MAY 11, 1827

Started at ten o'clock from Captain Wilson's in five canoes.¹ The appearance of the land is rather level on the left hand for about half a mile, and on the left bank it is about 20 feet, from which place the bank is about equal in height.² The width is about 180 feet at the foot of the Black Rapids. The river is about 400 feet wide and seven feet water at lowest tide. The line of canal enters the river by the side of an old tree:

The rapids is about 26 feet by Mr. Clowes' report. Flat rock. Limestone. Length of cutting 99 feet: about 12 feet Cutting. High banks on each side of river, but little fall above the dam. The banks appear to be 18 feet above the water at present pitch. The Dam of wood needs to be five feet which will carry the still water about six miles.

The land about three-quarter Miles above the Dam on the right hand sets back very low as far as the eye can reach. Quarter past eleven arrived at foot of Long Island saw mill — same built across river. On the banks of Long Island there is no appearance of rock. Clay loam. Banks low on the Island: about 20 feet on the mainland. The Channel on the right hand side of the Island (is) 15 feet. The growth of timber (principally green) warrants the idea that the soil is loam.

The little falls half a mile below the head of the Island seems very swift — say eight miles an hour. The land on the right hand banks is very high — say 60 feet — but not any distance up the river or bank. The banks of the island about 20 feet. The channel is about 85 feet wide in the swiftest part and 100 above. The land seems low above the head of Long Island.

Landed and dined at the head of the Island half past one o'clock. A distance from Captain Willson's of 10½ miles. Came up the north channel. One canoe came up the south channel, but lost about half an hour by taking that

channel, in which they had to carry twice.¹

Started quarter past two o'clock. The bank for three miles is very low; width of river on a medium 250 feet. Seven miles, large clearing on the right side. The land seems to be very low on both sides of the river. The width and beauty of the stream calls for the wonder and commendation of each in party.

Reached the south branch half an hour before sunset.² The country as far as the eye could reach seemed wet and swampy. The River Rideau at the place where the south branch enters (is) quarter mile broad. Nothing like a stimulus of rain to quicken the motion of the paddle or to awaken the vocal powers of the Canadian boatman. After ten hours of almost incessant, labour the shades of the evening sun seemed to break. 'Tis time to prepare for rest, but eight miles short of the intended stopping place (Captain Burrirts), and the forbidding aspect of the land on the banks of the river. Shantying speaks loud to proceed. Rum renewed the men and, singing, pulling and striving for the lead of canoes, on we went and arrived at the house of Mr. Hurd on the Rideau³ quarter past nine o'clock, where we took tea, and in a sympathising humour courted Morpheus between the blankets.

BURROWS' SECOND SURVEY THURSDAY, JULY 26, 1827

With the opening day preparing for proceeding, and started about sunrise. Before leaving this place inspected the state of our provisions and found them a little injured by the rain, and divided the wet from the dry bread, and used the injured first.

At this place Frazier distributed a leather sling to the Canadians to bind the luggage for portaging across.

Sound almost the whole of the distance from the head of Long Island with every degree of attention and care. Found many shoals, say 6, which it will be necessary to deepen by dredging or excavating. Found several places where good limestone may be found. The land seems generally good and fit for cultivation. The great bend as shown in the plan does not appear so large, nor does it appear necessary to cut through it.

Arrived at Mr. Hurd's about 9 o'clock. The Committee considered it best to let the baggage remain at Mr. Hurd's while they, with Mr. Mackay and Burrows in the larger canoe, should proceed up the river to explore. Under this impression proceeded sounding the channel in all directions and found no little difficulty in the way, both as it accords with the idea of entering the canal

through a cut near Mr. Burrirts, or damming back the river by a waste weir,¹ as the banks is generally low and the meadows cultivated for some distance from the banks. The depth of water varies from 3 to 6 feet. The bottom of the river appears to be a large rough sand and loose stones covering a limestone table land — very hard to deepen.

Mr. MacKay as usual sounded the river at almost every 10 feet. Just below the wooden bridge near Mr. Burrirt's house found the table rock covered with only 1.3 of water, which by report is almost dry at low water.

The 3 officers, Mr. MacTaggart and the rest landed here and took shelter in Mr. S. Burrirt's house from the pelting pitiless rain — where we found many of the neighbours and settlers was collected. From whom as usual information was endeavoured to be collected, but found the opinion of the settlers on the north side tending to the necessity of the canal being cut through their or each of their individual lands as being the best.

On looking over the river on the opposite side a gully or valley appeared to show itself running parrel² to the river. This appeared a tempting bait to the eye of Mr. MacTaggart. Still the storms continued. The officers thought it best to return to dinner and to remain for the night at Mr. Hurds.

Mr. MacTaggart and party continued to explore under the rain for we could not be more wet. We proceeded up the river and with a feeling of satisfaction found the mouth of the Ravine or Valley with dammed water from the Rideau nearly 2 feet deep laying in the bottom about 50 feet wide, and everything on a first transcendent view pointed out this valley for the line of a canal to avoid the shoals below Col. Burrirts and for a distance of three-quarters of a mile above. Though with wet and cold very uncomfortable, anxiety made us press on to see more of the river above. The land is generally low. There is good situations for locks. Indeed speaking generally things appeared well. At the foot of Merrick's Rapids a thunder storm drove us under the hospitable roof of a blacksmith, Mr. Kelly, where we feasted on fresh fish, being destitute of provisions either for ourselves or men. With patience waited nearly 3 hours, but not finding no prospect (sic) of the storm abating, returned down the river sounding the south side of the Islands. Found the same the best channel — up to the mouth of the gully. 9 o'clock arrived at Mr. Hurds and slept there for the night.

Ed Note: Our thanks to Marjorie Fairhall, who graciously gave up an afternoon to track down the map which accompanies this article.