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Canadian Canals to 1848

In the 1820s and 1830s canal fever struck Canada. The disease was not fatal, although it appeared to be at some stages; it left its victim weakened, scarred, deficient in strength to resist a similar disease soon to come—railroad fever. This paper will present a history of that canal fever, detailing the clinical symptoms, the probable source of contagion, the effects of the fever, and the aftereffects. In more typically historical terms, the causes of the canal building boom will be explored. Three important canals will be described in detail, including their route, construction difficulties and triumphs, the personnel involved, the financial practices used, the political machinations surrounding their progress, and the canals' effects. In the latter category, there are matters of fact, such as toll revenues, tonnage records, and changes in economic or demographic patterns; and there are matters of judgment, such as the effects of canals on capital investment in Canada, on Montreal's commercial prosperity, on political discontent in Upper Canada, and on *esprit de corps*. Passing mention will be made of several minor canal projects, aborted or completed.

The essay will present a summary of canal building to 1848. By that year, the St. Lawrence canal system was essentially finished, and the Rideau Waterway and Canal were operative. There was an adequate nine-foot waterway for steamers and sailboats from the lower St. Lawrence to the American locks at Sault Sainte Marie. Inland transportation costs had decreased and Montreal was expected to survive as a significant trading entrepôt for the West. Defense strategists could rest easy in the knowledge that Lakes Ontario and Erie could be reached by the Rideau without using a route bordering on the United States. And Canadians had access to cheap U.S. transport by means of the Chambly Canal to New York state. In the space of some thirty years, well over two million pounds were spent on Canadian waterways; endless time and energy was consumed in legislatures and along

the canal routes to accomplish unprecedented financial and engineering feats. Why?

Basically, two forces motivated the canal builders: economic competition and military security. Variations of these themes occurred; economic motives were both personal and impersonal, and some canal decisions were based on erroneous predictions of another war with the United States.¹ The earliest reason for building canals and improving natural waterways in Canada was to facilitate movement of furs, the basis of the trading economy. During the late eighteenth century, several small improvements were made along the St. Lawrence. But the real impetus came when the commercial interests of the St. Lawrence were threatened by two changes: the fur trade shifted from the St. Lawrence to Hudsons Bay with the demise of the Montreal-based Northwest Company in 1821, which forced Montreal commercial houses to turn to new commodities; secondly, in 1817, Americans started construction on the Erie Canal from Buffalo to the Hudson River, and Canadians realized they would have to take action if they were to capture any of the Great Lakes and midwest trade in grain, timber, potash, and flour. Unlike furs, those commodities required large-scale and cheap transportation. Canadian commercial interests recognized the threat posed by the Erie Canal project when it was in its earliest stages:

If that great and, we must confess, praiseworthy undertaking should succeed, without corresponding exertions on our part, the prospects of prosperity and grandeur traced out by nature for the inhabitants of the navigable parts of the St. Lawrence, will vanish, perhaps forever²

The "corresponding exertions on our part" meant canalization wherever the St. Lawrence was inadequate.

In addition to commerce, the increasing population of Upper Canada provided a reason for canal construction. The influx of Loyalists and Late Loyalists from the rebellious American colonies and the direct flow of newcomers from the mother country created a demand for better facilities, first to carry in the settlers and their goods, and then to bring in industrial products from England and send out agricultural surplus from the developing farms. It was sound reasoning which led men to view canals as an aid to the prosperity of the country; repeatedly, as canal projects provided an area with water transportation, that area experienced a rise in industry, commercial activity, and standard of living. This is not to say that the overall costs were justified by local growth or individual fortunes, but it explains why proposals to build canals and waterways were so popular in the region to be affected.

In the case of one particular Canadian canal system, the Rideau Waterway, motivation was essentially strategic. As the War of 1812 drew to a close, the British government learned that the Americans had intended to cut the St. Lawrence River to end communication between Montreal and the important British naval dockyard at Kingston.³ In order to avoid such a military disaster in future, the British government built a waterway that would be more remote from the U.S.: from Kingston to the Cataraqui River to Rideau Lake to the Rideau River to the Ottawa River to Montreal.

The Act of Union of 1841 joined the provinces and made possible a new, effective effort to pass legislation and get appropriations for canals. Heretofore, the great need for canals was felt in Upper Canada, while the French Canadians' assembly showed reluctance to make grants, questioning the value of such improvement for Lower Canada. Their seaports already received the revenue from incoming goods, and their agrarian interests were not aroused by schemes for commercial development. In 1841, the united legislature became representative of both the Upper Canadian population and the Montreal commercial lobby, and canal building accelerated noticeably.

The canal boom of the 1820's and 1830's, then, stemmed from the quest for commercial success and military security. It fed upon fears of losing trade to the Americans and upon hopes of bringing general prosperity to Upper Canada. Summarizing the expectations of canal boosters, Lord Durham wrote that, "all these advantages might be ours by the judicious application of not a large expenditure."⁴

Lachine Canal

On July 17, 1821, an assembly of local guests consumed roast ox and beer as they listened to a military band and dignitaries' speeches. This was the ground breaking for the Lachine Canal which would unblock the route of the St. Lawrence at Montreal's rapids. A canal commission of the Lower Canada legislature was in charge of its construction, having recently compensated stockholders and taken over the defunct Lachine Canal Company project. That Company was chartered by the Lower Canada legislature in 1819, charged with completing a canal in three years. It sold stock worth £89,000, much of it to government, and did little else. Now, in 1821, construction was begun in earnest under the commission chairman, John Richardson of Montreal, "the life and soul, the very De Witt Clinton of the Lachine Canal."⁵ The imperial government provided ten thousand pounds on condition that its vessels and stores would pay no tolls, and the Lower Canada legislature paid the remaining ninety-nine thousand pounds. The Lachine Canal, when completed in August, 1824, was a considerable achievement for

its age: it was just over eight miles long, five feet deep, and its six stone locks were 100 x 20 feet. This was to be Lower Canada's only major canal undertaking; the Assembly's disinterest and the imperial government's reluctance to fund improvements on a vulnerable section of the St. Lawrence resulted in a suspension of canal work in Lower Canada until after the Act of Union, 1841.

Welland Canal

Meanwhile, Upper Canadian waterways were making their siren call to settler and entrepreneur alike. In 1818, an ambitious Niagara Peninsula merchant and mill owner, William Hamilton Merritt, decided to insure that his mills on Twelve Mile Creek would have a steady water supply. He and his neighbors believed a ditch could be dug to connect Twelve Mile Creek to the nearby Welland River. In October, they presented a petition to the Upper Canada legislature, but their project had grown considerably:

Great benefits ... will derive from having a canal made between Lakes Erie and Ontario [This] can be effected at a trifling expense, from the accompanying plan.

Your petitioners therefore beg that you will appoint some scientific men to view the country ... and adopt such measures for carrying the above objects into effect as you in your wisdom may deem meet.⁶

Merritt had moved from wanting a ditch to proposing that the province consider constructing a canal.

The immediate response was positive, for this proposal came to the legislature during "a mania for canalling," as Merritt's son later recalled.⁷ But just then a Lower Canada political crisis arose, with the result that that legislature did not vote the usual division of customs revenue. Upper Canada thus lost its principal source of revenue; deficit mounted, and canal projects were shelved for two years.

Merritt's personal financial situation deteriorated to near bankruptcy in the depressed conditions of 1819-22, but upon recovering in 1823, he advanced a new plan for a canal company. In the interim, government surveys and a commission report had proposed a Niagara canal route from Burlington Bay to the Grand River, well away from the U.S. border—it would not come near Twelve Mile Creek. Merritt sought to forestall such a canal by building one on a route which would add value to his land. Local support was garnered, an engineer's report gave the proposal respectability, and Merritt obtained a charter for his company in 1824. Aitken has summarized the situation well:

It is no great exaggeration to say that in this period the Welland Canal Company was Hamilton Merritt, plus a charter, plus a handful of

family friends, plus a collection of rather ill-defined but uniformly optimistic expectations, and very little else.⁸

The 1824 Act of Incorporation proved inadequate in several respects and was replaced in 1825. The 1825 Act deserves attention. It increased the permitted capitalization of £200,000 and laid down a route which specified Merritt's property. It enlarged the canal's dimensions so that it would be eight feet deep rather than four. More importantly, the 1825 charter stipulated that each of the seven company directors had to be a resident of Upper Canada and own twenty shares of Company stock (£250 worth). Merritt sold that amount to only eight persons in Upper Canada.⁹ The Directors eventually included the following Family Compact figures:

John Beverly Robinson, Attorney-General of Upper Canada, Henry John Boulton, Solicitor-General, D'Arcy Boulton, judge of assize and father of the above, Colonel Joseph Wells, Legislative Council, William Allan, President of the Bank of Upper Canada and Legislative Council, John Henry Dunn, Receiver General (not Compact but close).

Merritt probably had two reasons for wanting the Family Compact on the Board of his Welland Canal Company.¹⁰ With their association he could expect greater success in getting Montreal and Quebec capital. When he began seeking the support of the York elite, he wrote, "My success in Lower Canada will wholly depend on the respectable countenance I may receive here."¹¹ In addition, it became obvious quite soon that building the canal would involve its promoters in political matters—localities, legislators, executives, and imperial officials all had criticisms and doubts and expectations. Directors who were members of the governing elite could protect the Company's interests. Finally, Merritt was ambitious, and winning the gentlemen of the Compact for his cause facilitated his rise from country storekeeper to, eventually, President of the Executive Council of Canada (1848-50).¹²

Merritt obtained the political support he needed at York, but financing the Welland Canal Company's efforts proved extremely difficult. Original estimates of costs were as low as £40,000, but as work went on and the scale of the project grew, the need for money skyrocketed. Repeatedly the Company faced bankruptcy when only a hurried loan or grant would stave off collapse. Hence it is of some interest to identify the sources of revenue¹³ for the Welland Canal Company:

Stock subscriptions	£250,840	
Upper Canada government		107,500
Lower Canada government		25,000
Upper Canada individuals		3,712
Lower Canada individuals		13,825
New Brunswick individuals		500

New York individuals		69,625
England individuals		30,137
Forfeited stock		540
Loans	£155,555	
Government of Upper Canada		100,000
Government of Great Britain		55,555
Miscellaneous	£ 45,133	
Tolls		
Rents		
Profits on foreign exchange		
Bank of U.O., loan account		
Donation, Catholic Bishop Quebec		
Welland Canal notes		

Most of the private stock was sold to American investors, and by far the most important individual stock subscriber was John B. Yates, an Albany, N.Y., lottery manager. He was deliberately shut out of direct control of the canal by the provisions of the 1825 Charter of Incorporation. Yates managed to exert considerable pressure, nonetheless, first by his close personal relationship with Merritt, and, after 1830, by using his nephew, Alexander Yates Macdonnell, or his friend, Captain Ogden Creighton, both of whom were in close touch with the company directors. Yates regularly allowed the Company to draw upon his credit for short term funds, he sold stock in New York and London, he appeared before Upper Canada legislature committees, and he buoyed up the Directors by his enthusiasm, confidence, and business acumen.¹⁴

Yates' ready money was extremely important to the Company, for the Bank of Upper Canada was never willing to involve itself in the Welland Canal. The Company could offer no security except its property and its often unmarketable shares, so the Bank extended only limited credit and required one of the Directors to give personal security for the loan.¹⁵

The financing of the Welland Canal project was perpetually on the brink of disaster from the ground breaking in 1824, through the opening in 1829, and until 1837, the year the government appointees became the majority of the Board of Directors. By then; the Company had spent a total of £516,219. The Company's repeated requests for government loans and favours brought it to the attention of the Reformers. Although initially, reformers had been well disposed to the project, their suspicion grew. William Lyon McKenzie's *Colonial Advocate* in 1827, 1828, and 1831, ran articles finding fault with the Company, its close ties with inner circles of government, its use of American engineers and contractors, or its consumption of funds better used for roads or St. Lawrence work.¹⁶ In 1834 there appeared

articles entitled, "Economy and the Welland Canal are as far apart as earth and heaven," and "The Welland Canal has been a hoax from first to last."¹⁷ In 1835, using inside information obtained when he was appointed to the Board of Directors by the Assembly, McKenzie launched a full scale attack on the company management, pointing to the questionable accounting practices, overlarge expenditures, land speculation, vagaries in lines of duty and responsibility, favouritism, and the like.¹⁸ Such accusations, and the burden of government loans of rescue led finally to action: in 1839, the Upper Canada government decided to buy out the private stockholders. By 1842, the deal was complete.

Despite all the wrangling surrounding the Welland Canal project, it must be counted a success in several ways. The region it passed through prospered because the canal existed. Water power attracted mills and industry, which concentrated along the canal line or its feeder lines.¹⁹ Then too, it did open lines of transport and communication for settlers west of Lake Ontario. Finally, it enabled Canadian shippers to maintain a share of the trade of the interior. Charts representing the number of vessels using the Welland or the volume of freight traffic (wheat, square timber, boards, flour, pork, whiskey) show a steady increase in the period under consideration.²⁰ Although it never came close to putting the Erie Canal out of business, the Welland did bring undeniable improvements in Canadian commerce.

The experiences, good and bad, provided by the Welland Canal project were instrumental to the remainder of Canada's canal building. The Welland had demonstrated that such internal improvement projects had to be undertaken by governments, as they were too vital and too capital-consuming to be done by private enterprise alone.²¹ Also, the Company had been the vehicle through which Upper Canada learned to enter the London capital market.²²

Once built, the Welland served as a stimulus to the completion of the rest of the St. Lawrence system. It was obvious to all that for any one link to realize its potential, the chain must be complete. The entrepreneur of the Welland became the promoter of the Cornwall Canal and the rest of the St. Lawrence system; Merritt's 1831 circular to the Upper Canada legislature put forth urgent and detailed arguments on this subject, which "was the most important measure of all for the future welfare and prosperity of the Canadas."²³

Rideau Canal

Most of the canals along the St. Lawrence route were built for commercial reasons. One canal system, the Rideau, is an outstanding exception, for its original justification was entirely military. As early as

the spring of 1816, an officer of the Royal Engineers, Lt. Joshua Jebb, was sent to explore the route from Kingston to Montreal using the Ottawa River and Rideau Lake. The Upper Canada legislature was well aware of the Rideau's potential. The Macaulay Commission's report in 1825²⁴ included a recommendation that:²⁵

It is necessary to perfect the water communication removed from the enemy's frontier and leading in truth from the ocean to Kingston, which is the key to Lake Ontario and the principal military station in the province.

In addition to its defensibility, the route was of interest because military settlements had been established in the area and they needed an efficient line of transport. In the end, the Upper Canada legislature refused to undertake this military project and concentrated on the St. Lawrence. So the imperial government went ahead.

One reason the imperial government went forward was that they had already made a considerable investment in Ottawa River canals. In 1819 the army began a canal at the Grenville rapids thirty miles from Montreal; this was to be followed by canals at the Carillon rapids and at Chute à Blondeau. The imperial parliament granted £10,000 annually from 1819 to 1827, and £15,000 from that year until these "ordnance canals," as they were called, were completed in 1833. The Ottawa River was thus being made navigable, and its use would expand if the Rideau River were similarly improved.²⁶

Lt. Col. John By of the Royal Engineers arrived in Canada in May, 1826, and began his assignment of improving the Rideau between Bytown (Ottawa), then a settlement at Hull, and Kingston. At Montreal, By placed notices in the local newspapers seeking contractors experienced in:

building and finishing locks of heavy masonry, excavating earth and clay, excavating rock and gravel, constructing heavy dams of rough rubble masonry, framing aqueducts and bridges of wood.²⁷

The notices explained that sixty soldiers would be stationed near each contractor's site, with surgeons, medicines, provisions, camp equipment, and spirits provided. Soon all the major contracts were arranged, with prices such as £20 per acre for chopping and clearing trees and grubbing the stumps, 4s per cubic yard for rock excavation, and 1s per cubic yard for earth excavation.²⁸ The Upper Canada legislature authorized By to purchase the land required and construction began in the summer of 1827.

The construction methods used on the Rideau and many of Canada's other canal projects deserve notice.²⁹ Every workman on excava-

tion contracts provided his own pick or shovel or wheelbarrow. Hand labour was the rule of the day. Rock was excavated by hand—a rock chisel and a sledge hammer moved downward at a rate of four to twelve feet a day. Holes were filled with gunpowder and blasted. An idea of the construction problems on the Rideau is conveyed by Clerk of the Works John MacTaggart's description:³⁰

Excavating in a wilderness is quite a different thing from doing that kind of labour in a cleared country. . . . Many of [the labourers] were blasted to pieces by their own shots, others killed by stones falling on them. I have seen heads, arms, and legs blown in all directions.

After the blasting, the resultant rock pieces were moved by wheelbarrows, hand hoists, or hand cranes. Lock gates were built by skilled carpenters using local timber. Iron castings for the gate and sluice fittings came from Lower Canadian foundries; flat iron came from England to local blacksmiths for working. At the Rideau, contractors used some two thousand Irish immigrants for the bulk of the labour, bringing some skilled workmen from Montreal or Quebec and using the few local settlers who offered. In more settled areas, canals were built by local farmers earning extra money in spare time. Workers often succumbed to "swamp fever," as they called it. This severe malaria, long a problem in the region around York and Kingston, was particularly bad in the summer of 1828 along the Rideau. At times it brought work to a halt.³¹

When the Rideau Canal and Waterway finally opened in May, 1832, it had cost the imperial government £803,774.³² It was 133 miles long, with forty-seven locks, each 134' x 33'. It included many miles of improved river, several lakes, and an engineering feat, Hog's Back Dam, higher than anything ever before attempted on such a fast flowing river. It had cut through rock gorges, and fetid swamps, and overcome a rise of 162 feet from the level of Lake Ontario at Kingston. The most impressive part, the eight locks forming a staircase from the Rideau Canal to the Ottawa River, contained ingenious construction techniques in the masonry between locks, techniques developed by Thomas McKay whose earlier experience with John Redpath on the Lachine Canal served him well here.³³

The Rideau Waterway never served the military purpose for which it had been built. Its blockhouses saw no action and no war occurred with the U.S. to justify the project. But the Rideau served other purposes. It was an important artery for the movement of farm goods. Perth farmers earned needed cash by working as teamsters while it was built, used the roads constructed to facilitate contractors' work, and then sent local surplus to market by the finished canal. Passengers

could travel from Ottawa to Kingston for four shillings, wheat for 3/4d per bushel, boards and planks (per thousand feet), 1/6 to 2/6.³⁴

Perhaps the most significant result of the construction of the Rideau waterway was that its presence delayed work on the St. Lawrence River. With the Rideau in operation, it seemed to many that additional expenditures on the St. Lawrence were unnecessary. The military advisers of the imperial government certainly thought this way.³⁵ The attitude was articulated in May, 1834, by the Toronto *Patriot*:

The Rideau Canal has at length asserted its pre-eminence over the St. Lawrence rapids and seems destined for some years to be the chosen route from Montreal to the Western regions.³⁶

It was not until Governor General Lord Durham instructed Lt. Col. Phillpotts of the Royal Engineers, chief engineer of the Cornwall Canal, to report on the inland navigation of the Canadas that a firm determination to proceed arose. Phillpotts made two reports in 1839, arguing that there must be

... an uninterrupted navigation for large freight steamers capable of carrying a cargo of at least 300 tons without transshipment before they arrive at Montreal or Quebec ... [if Canada is to have any] chance whatever of securing any great portion of that vast and important trade which must ere long be carried between the Western States and the Atlantic Ocean.³⁷

To assuage commercial and agricultural depression, Durham advocated the completion of the Cornwall Canal, begun in 1834, and construction of adequate canals at the several rapids along the St. Lawrence between Kingston and Montreal. But money to undertake these projects was unavailable. The legislature of Lower Canada was still largely uninterested in canals, and Upper Canada could not undertake such projects alone. The depression which began in 1837 and the rebellions of that year led capitalists to look askance at Canadians, private or provincial, seeking loans in London.³⁸ It was not until after the Union of 1841 that canal building became possible again.

Cornwall, Beauharnois, Williamsburg

With the Union, the Upper Canadian and Montreal interests which favoured canals could at last obtain legislative grants. The pace of canal building reflected this new infusion of funds. An imperial loan was used to construct new canals or enlarge earlier ones. The Board of Works opened the Cornwall Canal in 1843. The Beauharnois Canal to bypass the Cascades, Cedars, and Coteau rapids along the north shore just south of Montreal was completed in 1845.³⁹ The three Williamsburg Canals (Farram's Point, Rapide Plat, and Galops) were the last

to be built on the St. Lawrence, probably because steamers had been able to get past the bottleneck if their luck held. They were completed in 1847-48.

Also in the busy 1840s, the Lachine Canal was enlarged, an adequate lock was built at St. Anne's rapids by Isle Perrot, at the head of the island of Montreal, and the Welland was rebuilt and enlarged. By 1848, the whole of the St. Lawrence from Montreal to Kingston was navigable.

Chambly

One canal, not a part of the St. Lawrence system as such, was finally completed in 1843 by the Board of Works of the united Canada. The Chambly canal⁴⁰ ran from Sorel on the St. Lawrence southward to Lake Champlain, a distance of some twelve miles. It had been contemplated as early as 1787. Work was begun by a commission of the Lower Canada legislature in 1830 but there were many interruptions. The lock at St. Ours was opened in 1839, and the canal opened formally in 1843; it was soon overshadowed by a railway. The Chambly was not a commercial success, although it continued to be used for lumber destined for New York via the Champlain Canal and the Hudson River.

Burlington Bay, and Desjardins

Much smaller canal projects occurred in Canada during the era of canal fever—Burlington Bay, Desjardins, and Trent. The Burlington Bay Canal, a simple cut approximately one half mile in length, enabled vessels to enter Hamilton Harbour from Lake Ontario through a sand bar. The Upper Canada legislature appointed commissioners to build this link in 1823. Disputes with contractors made the work go along slowly, but it was completed in 1832 at a cost of £31,089.⁴¹

Joining the Burlington Bay Canal was the Desjardins Canal, brain-child of Peter Desjardins, whose company was incorporated in 1826 and finished its work in 1837. This tiny canal (three and one-half miles long, seven and one-half feet deep, thirty-three feet wide) extended from Burlington Bay to Dundas, Ont.⁴²

The Trent River navigation line, not completed until the twentieth century, preoccupied Upper Canadian transportation enthusiasts beginning in 1827. In that year, settlers in the Newcastle District petitioned the legislature to make a navigable waterway from Lake Simcoe to the Bay of Quinte on Lake Ontario, using the Trent River and several lakes. In 1833, commissioners undertook a short canal at Bobcaygeon, intended eventually to be part of a longer line which would be well made (stone locks, seventeen miles of canal) at a total

cost of £495,515.⁴³ Extensive survey work was done, the settlers nearby promoted it, and the legislature of Upper Canada passed Acts authorizing loans amounting to £97,507 by 1839. But hard times negated all of this; the commissioners appointed by the Lt. Gov. Sir John Colborn found repeatedly that earmarked money was in fact unavailable, and they finally instructed contractors to halt in early 1839, having spent £44,398. After the Union of 1841, the Board of Works changed the project; no longer was it to be a through line, for this would be too costly and uncompetitive. Instead, it would be finished as a local traffic route and have slides and booms to facilitate timber movement.⁴⁴

There remains the question of results. Did the canal building efforts of the 1830s and 1840s "pay off?" Overall, completion of the St. Lawrence waterway led to a sharp decrease in transportation costs.⁴⁵ After 1848, it cost half of the pre-1848 figure to ship a barrel of flour from Hamilton to Montreal. Traffic increased from 1832 onward, and as more of the St. Lawrence bottlenecks were canalized, more ships chose the route.⁴⁶ In addition, canals had provided a through route so necessary if the unity of the British provinces was to be preserved in the face of American influences.⁴⁷ In a general sense, the St. Lawrence system and the additional canal waterways did "overcome a great natural impediment to the prosperity of the better half of our country," as Chief Justice John Beverly Robinson had intended from the beginning.⁴⁸

Referring to the Welland Canal, Robinson faced the critical issue squarely: "As to its being a work that will pay, I never laid stress on that branch of the question."⁴⁹ It is just as well that canal projects went ahead without assurance that they would pay, for many did not.⁵⁰ The volume of traffic won by the St. Lawrence system was never as high as the Montreal merchants and local promoters had anticipated. Their "Commercial Empire," in Donald Creighton's terms, suffered "break-down" and "final collapse," as competition from railroads plus other factors kept the canals from being a glorious success.

Among these other factors which undermined Canada's canals was the adoption of free trade policies by the British government. As Canadian grain and flour ceased to be protected by preferential tariffs in British markets, Americans no longer needed to send their grain to Canada for milling or exporting. The canals were further hurt by the passage of the 1843 and 1847 Drawback Acts by the American Congress. Goods to or from Canada could be sent through U.S. territory in bond, paying no duty. Canadian merchants and shippers thereby lost much business to the Erie Canal-Hudson River route.⁵¹

In addition to these government moves, the Canadian water transportation network fell behind the American for geographic reasons. Although she had superior natural navigation, in itself cheaper and better than artificial waterways, Canada's ports at Montreal and Quebec were closed five months of the year by ice conditions, whereas New York City was open year round.

Canada's comparatively small population was another factor which drew freight away from the St. Lawrence. With such a small market for imports, Montreal never developed a sufficient import trade to balance its grain exports. Therefore, ocean freight rates were higher from Montreal and Quebec than from New York or Boston. New York City,

being the great commercial emporium of the Northern states, controls the bulk of the import trade; . . . vessels arriving . . . with cargo can afford to carry produce to Europe cheaper than those trading with Quebec or Montreal which, in great part, have to make the voyage here in ballast.⁵²

Inland transportation costs, like oceanic rates, were often lower in the United States. The American canals and railways reduced their tolls throughout the fifties, taking advantage of high volume and efficiency to underbid the Canadian competition for Great Lakes trade. In addition, New York City's credit facilities were far superior to those in Canada's port cities.⁵³

Another factor explaining Canada's second class status as a commercial entity was the inadequate size of the St. Lawrence works. The Welland canal was too narrow for a great many of the steam vessels which plied the upper lakes; one third of these could not pass through the Welland in 1861.⁵⁴ The St. Lawrence canals were also too shallow.⁵⁵ Lightening the loads of vessels cost about \$250 each in 1856, and could take as much as two days to accomplish.⁵⁶

The St. Lawrence lost out to the American waterways and railroads which, in the end, captured the bulk of the Western trade. But the canals did serve to real advantage in promoting economic development in Canada itself. They provided water power for grist mills, saw mills, and the like as the government leased surplus water in the canals and feeders to industries. The growth of Montreal industry depended greatly on the water power and cheap transport of the Lachine Canal, which hosted John Redpath's sugar refinery, the Victoria Iron Works supplying Canada's nails and spikes from 1859, and the Canada Marine Works, which launched ninety-four vessels between 1845 and 1862.⁵⁷

Finally, in less visible ways the canal boom was of inestimable value. Entrepreneurs such as W. H. Merritt and John Richardson had

learned the techniques of knitting together legislatures, contractors, and businessmen into a unit with which to effect change. Contractors such as John Redpath and Thomas McKay invented valuable business and construction techniques and acquired profits which they used to found important Canadian enterprises. The difficulties in coordinating and taking advantage of improvements on the St. Lawrence demonstrated how badly the British provinces needed a central authority; the Act of Union resulted partly from the frustrations of men involved in canal projects. The canals did not capture the bulk of the trade of the interior for the St. Lawrence route, but they did enable Canadian produce to reach world markets, and they enabled Canadian merchants to do business with both Britain and the United States. They provided vital communications links between Lakes Ontario and Erie, Quebec and Ontario, and Montreal and Kingston. Such linkage surely played a part in the perpetuation of the British colonies and their evolution into a unified nation.

Appendix I

Tonnage on Canadian Canals, 1848-63

(Total tonnage, up and down, vessels and property, in selected years, taken from William Kingsford, *Canadian Canals* (Toronto: Rollo and Adam, 1865), pp. 128-30.)

	St. Lawrence	Welland	Chambly	Rideau
1848	632,142	680,465	42,157	—
1853	1,181,000	1,969,140	223,754	—
1858	1,363,368	2,003,883	286,668	534,467
1863	1,931,442	2,471,217	525,947	736,189

An informative comparison can be made of the raw number of vessels using the Welland Canal and the Erie Canal for the years prior to the above tonnage totals:

	Welland	Erie
1832	415	18,601
1837	1,487	21,055
1840	2,733	26,987

These figures must be used with caution, for the Erie figures are for total lockages at Lock No. 26, whereas the Welland totals include only schooners, boats and scows. Other kinds of vessels passing the Welland route were not counted. But the overall impression of the Erie far outstripping the Welland is correct. (Source: H. G. Aitken, *The Welland Canal Company* [Cambridge, Mass.: Harvard University Press, 1954], pp. 143-45.)

Appendix II

Revenues of Canadian Canals

(Source: William Kingsford, *Canadian Canals* [Toronto: Rollo and Adam, 1865], pp. 122-26.)

Gross Revenue in selected years***

	St. Lawrence	Welland	Chambly	Rideau
1841	\$ 56,525.99	\$ 80,843.95	\$ 218.55*	n.a.
1855	74,791.60	225,839.93	10,121.25	\$13,938.55*
1863	119,416.22	240,899.95	25,263.51	7,685.16

Net Revenue in selected years

1841	36,800.00	74,063.30	218.55	n.a.
1855	-14,471.33**	94,257.83	2,375.37	13,838.55
1862	-52,665.27	136,918.79	-5,059.91	-25,102.56

Notes: *Where Gross Revenue and Net Revenue figures are the same, such as Chambly in 1841 and Rideau in 1855, it is because no figure is available for "Management and Repairs."

**The minus signs in the Net Revenue table indicate the amount by which annual costs exceeded Gross Revenue.

***Particular years were selected to reveal trends and depict typical revenues. Kingsford's tables include yearly figures for 1841-63 inclusive.

NOTES

1. This applies particularly to the Rideau Canal, built to avoid "enemy" proximity, and the Chambly Canal, nearly jettisoned because it facilitated "enemy" invasion. In both cases, the strategic implications proved to be irrelevant.
2. *Quebec Gazette*, 1811, quoted in G. P. deT. Glazebrook, *A History of Transportation in Canada*, Vol. 1, 2nd ed., (Toronto: McClelland and Stewart Ltd., 1964), p. 87.
3. C. P. Stacey, "An American Plan for a Canadian Campaign," *American Historical Review*, XLVI (1941), 348-58.
4. Glazebrook, p. 89, citing Canadian Archives, Durham papers, Durham to Glenelg, July 16, 1838.
5. These are William Lyon MacKenzie's words, quoted in Donald Creighton, *The Empire of the St. Lawrence* (Toronto: Macmillan Co. of Canada, 1956), p. 211. Sir John Richardson (1755-1831) was a leading fur trader in the Northwest Company, a member of the Lower Canada Legislative Assembly 1792-96 and 1804-08, on both the Executive and Legislative Councils (1804 and 1816 respectively.) He was a founder of the Bank of Montreal. (W. Stewart Wallace, *The Macmillan Dictionary of Canadian Biography* (Toronto: Macmillan, 1963), p. 627).
6. Upper Canada Assembly *Journals*, Nov. 4, 1818, quoted in Hugh G. J. Aitken, *The Welland Canal Company* (Cambridge, Mass.: Harvard University Press, 1954), p. 31.

7. J. P. Merritt, *Biography of the Hon. W. H. Merritt* (St. Catharines, 1875), p. 81 quoted by Gerald M. Craig, *Upper Canada: The Formative Years, 1784-1841* (Toronto: McClelland and Stewart Ltd., 1963) p. 158.
8. Aitken, *Welland*, p. 44.
9. Merritt would have welcomed additional purchasers, but none were forthcoming and he concentrated his salesmanship on a select few who were in the Family Compact. (Hugh G. J. Aitken, "The Family Compact and the Welland Canal Company," *Historical Essays on Upper Canada*, (ed.) J. K. Johnson (Toronto: McClelland and Stewart, 1975), p. 156.
10. *Ibid.*, pp. 153-70.
11. Aitken, *Welland*, p. 45, citing Can. Arch., U. C. Sundries, Merritt to Maitland, Feb. 21, 1824.
12. Merritt became an important man through the Welland Canal Company. He was the company's agent (general manager), often on the board of directors, and occasionally president. As agent, he carried out the directors' wishes and supervised Company employees. He wrote, "I have to attend to the whole line, keep a detail of the proceedings on each job, a copy of all accounts, decide on all plans and ... encourage and alternately censure each contractor." (Aitken, *Welland*, p. 112.) In fact, Merritt did nearly every task associated with the canal, from raising capital in London to defending the Company in the legislature. He had a seat there from 1832 to 1860. He was President of Baldwin-Lafontaine council and, later, commissioner of public works. In 1860, he was elected to the Legislative Council. He died in 1862, age sixty-nine. (*Macmillan DCB*, pp. 509-10.)
13. Aitken, *Welland*, pp. 147-48.
14. Aitken, *Welland*, pp. 93-94; Aitken, "Family Compact," pp. 158-59.
15. John Henry Dunn eventually resigned from the Company presidency because he objected to this personal liability. (Aitken, "Family Compact," p. 149; Aitken, *Welland*, p. 99.)
16. Craig, *Upper Canada*, pp. 159-60 citing issues of 11 Jan. and 3 May, 1827; 29 June, 1828; and 6 Jan., 1831. In 1830, McKenzie's select committee of the legislature recommended that a loan to the Company be refused; it was given. (Aitken, *Welland*, p. 91, citing *Upper Canada Assembly Journals*, 1830, Appendix, report.)
17. Glazebrook, *Transportation*, p. 83, citing *Colonial Advocate*, 18 Jan. and 30 June, 1834.
18. Aitken, "Family Compact," pp. 164ff.
19. J. W. Watson, "The Changing Industrial Pattern of the Niagara Peninsula," *Ontario Historical Society, Papers and Records*, XXXVII (1945), 53-55, cited by Craig, *Upper Canada*, p. 158.
20. Aitken, *Welland*, pp. 141-44. See Appendix I.
21. Aitken, *Welland*, p. 136.
22. *Ibid.*, p. 133.
23. John P. Heisler, *The Canals of Canada, Manuscript Report Number 64*, National Historic Sites Service, National and Historic Parks Branch, Dept. of Indian Affairs and Northern Development, December, 1971, p. 81 quoting circular as reprinted in *Montreal Gazette*, 29 March, 1831. The Grand River was improved by a joint stock company beginning in 1832, with grants from government and the Five Nations Reserve, for 60 miles, but Merritt's predictions of commercial success were quite wrong. (Shortt and Doughty, *Canada*, pp. 530-31.)
24. This Commission worked to determine the feasibility and cost of "the improvement of the internal navigation of the province" under the headship of the Hon. John Macaulay of Kingston from 1821 until its report was published in April, 1825. (Robert Leggett, *Rideau Waterway* (Toronto: University of Toronto Press, 1955), p. 28.
25. Leggett, *Rideau*, p. 29.
26. Heisler, *Canals*, pp. 130-31.
27. Leggett, *Rideau*, p. 41.
28. *Ibid.*, p. 42. All but four contracts were subsequently changed, for contractors were unable to complete their obligations on time, effectively, or at all—bankruptcy was endemic. An interesting four-man legal private partnership was set up to do some of this work. Its members, Thomas Phillips, Andrew White, Thomas McKay, and John Redpath, made large profits. Little is known about Phillips and White. Redpath, a Scottish immigrant who had been a contractor on the Lachine Canal, eventually became an entrepreneur in banking, railways, shipping, and coal mining. He sat on the Montreal City Council in the 1830s, and capped his career by founding the Redpath sugar refinery in 1854. (Leggett, *Rideau*, pp. 42-3, 116-18, 166-67.) See p. 16, n34 for McKay.
29. Leggett, *Rideau*, pp. 45-48; Aitken, *Welland*, Ch. III.
30. Leggett, p. 48.

31. Erie Canal contractors in New York faced the same problem in some areas. One Albany contractor, advertising for labourers, promised, "Whiskey every night if you get the shakes." (Lynwood Mark Rhodes, "How They Built the Erie Canal," *American Vistas*, (ed.) L. Dinnerstein and K. Jackson, 2nd ed. (Toronto: Oxford University Press, 1975), pp. 149-63.)
32. Heisler, *Canals*, p. 139 citing *Report*, 1867.
33. Born in Scotland, Thomas McKay (1792-1855) became one of Bytown's (Ottawa) leading men, buying 1100 acres, building Rideau Hall as his family home, and erecting the Court House in 1842 by contract. He also built important mills and brought the first railway to Ottawa. He sat in the Legislative Assembly of Upper Canada, 1834 to 1841, and the Legislative Council, 1841 to 1855. (Leggett, *Rideau*, pp. 195-96 and *Macmillan DCB*, p. 462.)
34. E. J. Barker, *Observations of the Rideau Canal* (Kingston, 1834), cited by Glazebrook, *Transportation*, p. 79.
35. Glazebrook, *Transportation*, pp. 79-80.
36. Quoted by *Ibid.*, p. 79.
37. Heisler, *Canals*, pp. 86-87 quoting PAC, Phillpotts *Report*, p. 77.
38. W. T. Easterbrook and Hugh G. J. Aitken, *Canadian Economic History* (Toronto: Macmillan Co. of Canada, Ltd., 1958), p. 268.
39. The Beauharnois Canal replaced smaller, earlier canals, and was itself replaced in 1899 by the Soulanges Canal. (Adam Shortt and Arthur G. Doughty, (eds.), *Canada and Its Provinces*, Vol. X, M. J. Paton, "Shipping and Canals," (Toronto: Publishers' Assoc. of Canada, Ltd., 1913), pp. 511-12.)
40. *Ibid.*, pp. 514-16 and Glazebrook, *Transportation*, pp. 84-5.
41. Heisler, *Canals*, p. 229, citing *Report*, 1867, Burlington Bay Canal.
42. Shortt and Doughty, *Canada*, X, 522.
43. Heisler, *Canals*, pp. 242-3.
44. *Ibid.*, pp. 240-49.
45. Glazebrook, *Transportation*, p. 93.
46. See Appendix I, Tonnages.
47. Heisler, *Canals*, p. 278.
48. Aitken, *Welland*, p. 121, quoting J. B. Robinson to Merritt, Dec. 13, 1833, as quoted in St. Catherines *Journal*, 25 Feb., 1836.
49. *Ibid.*
50. See Appendix II, Revenues.
51. Glazebrook, *Transportation*, pp. 91-2.
52. Heisler, *Canals*, p. 267, quoting Innis and Lower, *Select Documents in Canadian Economic History*, 1783-1885, p. 473.
53. Heisler, *Canals*, p. 270.
54. *Ibid.*, p. 269.
55. William Kingsford, *The Canadian Canals* (Toronto: Rollo and Adam, 1865), p. 15.
56. Heisler, *Canals*, p. 268.
57. *Ibid.*, pp. 271-5. The Welland had sixty-nine leases, the Beauharnois had fifteen, the Williamsburg Canals had twenty-two, the Rideau had nineteen.