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by

JUDITH TULLOCH

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THE RIDEAU CANAL: Defence, Transport and Recreation

History and Archaeology 50 by Judith Tulloch

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Mary Ann Stienberg of the Rideau Canal Office of Parks Canada, whose library holds these reports, generously offered to OCR (text scan) this manuscript report with the use of Katimavik students. Administration and supervision of the student scanning and proofing work was provided by Cheryl Gulseth. Mary Ann Stienberg was also instrumental in obtaining Parks Canada permission for Friends of the Rideau to make this digital document available to the general public.

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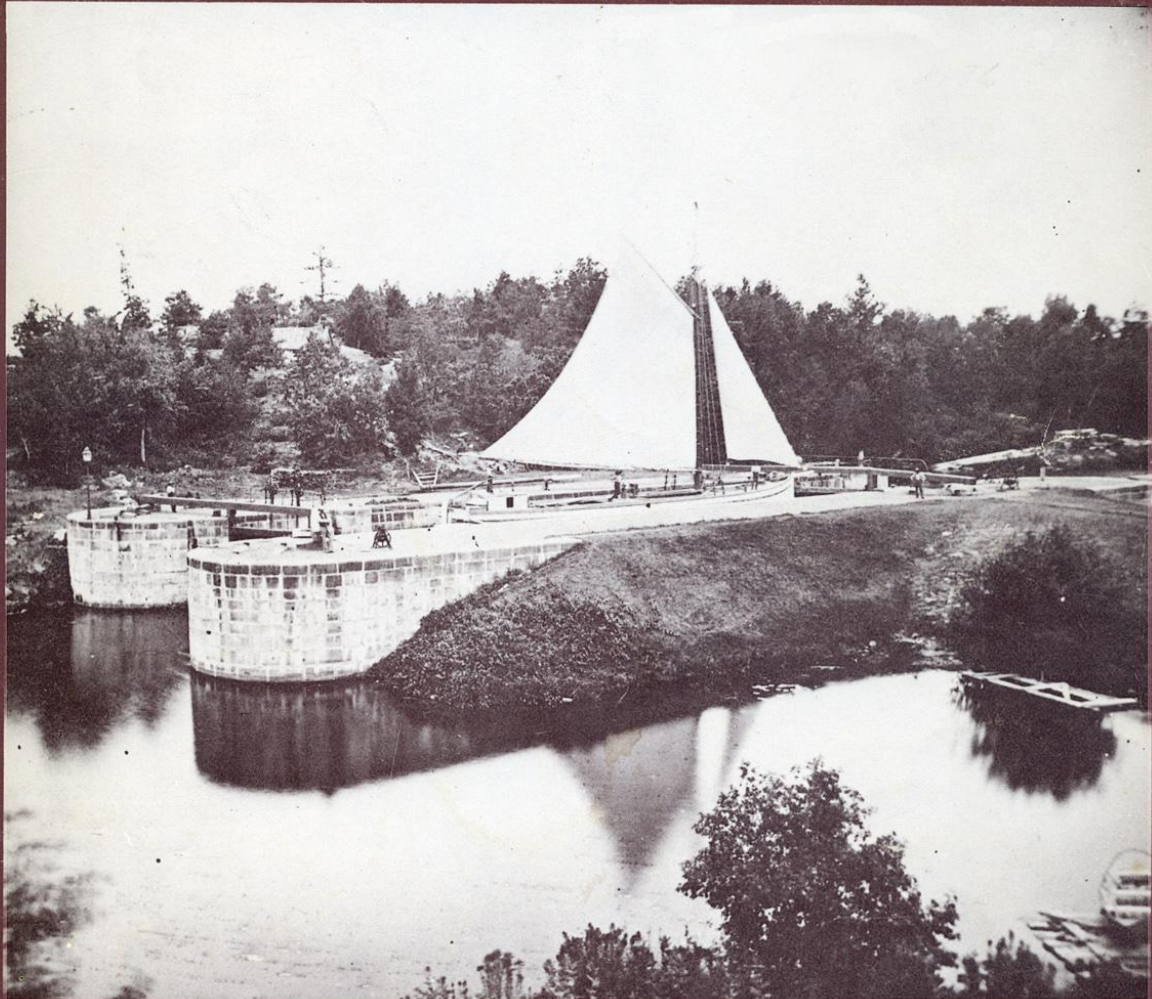
Shortly after Parks Canada took over the administration of the Rideau Canal in 1972 (previously under the jurisdiction of the Department of Transport) they tasked several of their high quality researchers and historians with detailing various historical/heritage aspects of the Rideau Canal. This resulted in a series of research reports on the Rideau Canal, produced from the mid-1970s through to the mid-1980s.

Intended mostly for internal use, these reports were produced in limited numbers with only a few receiving broader distribution through the History and Archaeology series of books published by the Ministry of Environment (National Historic Parks and Sites Branch of Parks Canada).

A few copies of the manuscript reports were also distributed to “various public repositories in Canada for use by interested individuals” – but today can generally only be found in the local Rideau region libraries of Parks Canada.

Judith Tulloch

The Rideau Canal Defence, Transport and Recreation



50 History and
Archaeology

Cover: Schooner in Foster's (Davis) lock, ca.1880 (Public Archives of Canada)

History and Archaeology

50

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by Judith Tulloch

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THE RIDEAU CANAL: DEFENCE, TRANSPORT AND RECREATION

Judith Tulloch

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ABSTRACT

This study includes a narrative description of the administrative development of the waterway from its completion in 1832 until 1914. As the region bordering the system became more settled during the 19th century, new issues arose to trouble canal officials. The two most prominent of these - the problem of ensuring adequate water reserves and local demands for branch canals connecting with the Rideau - merit more detailed consideration and form separate chapters. Alterations in the physical structure of the waterway have been treated in chronological fashion with each station discussed individually. Conditions of employment for the operating staff - lockmasters and labourers - also changed over the course of the 19th century, particularly after Confederation as the workers on the waterway were gradually integrated into the federal civil services. The chapter on employment on the Rideau considers such topics as the appointment of lockmasters and labourers, problems of insufficient pay, and conditions of life at the lock stations. Until 1903, tolls were charged on both ships and cargoes passing through the system. The commercial history of the waterway and its financial problems represent a complex issue which merits detailed study. The report therefore contains merely an appendix giving a brief summary of changes in the scales of tolls and indicating areas for future research.

Submitted for publication 1975, by Judith Tulloch, Atlantic Region, Parks Canada.

INTRODUCTION

Construction of the Rideau waterway between 1826 and 1832 had been motivated by the knowledge that an American attack could easily cut the vital transportation link between Upper and Lower Canada along the St. Lawrence River. Safely inland from the frontier and protected by British garrisons at such posts as Kingston and Prescott, the Rideau would ensure that even in time of war, troops and supplies could be provided for the defence of Upper Canada, so perilously exposed to American invasion, as the War of 1812 had demonstrated. This military imperative, however, was not the only factor that influenced Lieutenant-Colonel John By in his plans for the waterway. He maintained that it would serve as a valuable trading route leading to the fertile American west and urged that the Rideau locks be constructed on a large enough scale to admit lake steamers without the need to trans-ship cargoes at Kingston. By's recommendations were only partially accepted, however, and trade on the waterway never fulfilled his optimistic predictions of commercial success.

Despite its basic inadequacy as a transportation route, the Rideau did have a place in early trading patterns in Upper Canada. A recent study has demonstrated that until the completion of the St. Lawrence canals late in the 1840s, the Rideau system served as one side of a triangular trade route that saw shipping ascend to the Great Lakes through the Ottawa and Rideau canals, where the safety of the passage outweighed its slowness, and return to Montreal by shooting the rapids of the St. Lawrence.¹ After the St. Lawrence canals were completed to create a nine-foot-deep waterway from the lakes to Montreal, this triangular traffic declined and the Rideau - a circuitous route obstructed by numerous locks - was increasingly restricted to local trade. By the latter years of the 19th century with the depletion of timber and mineral resources in the Rideau hinterland, the waterway functioned almost entirely as a regional system.

Although the Rideau was never called upon to demonstrate its military value and failed to attract the carrying trade so optimistically foreseen by Colonel By, the waterway made an increasing contribution to the eastern Ontario area in a way never envisaged by its builders. In the latter decades of the 19th century, pleasure boats began to appear on the system in growing numbers. During the 20th century, the recreational value of the waterway and its shores was increasingly acknowledged by canal authorities and indeed was to become a major determinant of its development.

Constructed by the imperial government, the waterway has remained under the charge of government agencies throughout its history. In 1856 control of the canal passed from the British ordnance department, which had managed it since its construction, to the Board of Works of the united colonies of Upper and Lower Canada. Confederation brought the system under the charge of the federal government and it has remained a responsibility of various departments since that time. Despite these administrative shifts, the management of the Rideau changed little in the 19th and early 20th centuries. Indeed, by the first decades of the 20th century, the day-to-day routine of the operating staff at the stations had seen only minor alteration. Similarly the principal structures of the systems experienced few modifications in design, and this preservation of the early 19th-century work may, in fact, be attributed to the route's commercial failure. Since the Rideau was early acknowledged to be uneconomic, government authorities of all parties and eras were reluctant to incur large expenditures and therefore limited repairs to those necessary to preserve through navigation. Moreover, the colonial government had made substantial financial investment in the St. Lawrence route and was unwilling to provide similar assistance to a potential rival to this system. Hence no major alterations were undertaken and the appearance of the canal works was little changed in their first century of existence.

THE EARLY YEARS, 1832-67

Begun in 1826, the waterway was completed during the winter of 1831-32. Late in May 1832, Lieutenant-Colonel John By travelled with his family and some officers of the Royal Engineers from Kingston to Bytown on a five-day voyage which marked the formal opening of the route. The canal administration established in 1832 remained substantially unaltered for 30 years. Before its completion, the system had been placed under the control of the ordnance department since an important function was the passage of barges carrying military stores. The Royal Engineers retained responsibility for the repair and maintenance of the physical structures as well as authority over the lockmasters and labourers. Late in 1831, By had prepared a list of the establishment proposed for the canal. The majority of lockmasters suggested were veterans of the 7th and 15th Companies of the Royal Sappers and Miners, both of which had been engaged in construction of the Rideau. Many of the civilians mentioned had similarly been employed as artificers. The appointment of such men ensured a reserve of skilled workers able to deal with the problems of repair and maintenance along the canal.

At the two terminals of the waterway, Kingston Mills and Bytown, larger Royal Engineer establishments were provided. By advocated the appointment of Captain Daniel Bolton to superintend the complete system from Bytown.¹ Also to be stationed in Bytown was an overseer of works, John Burroughs, who would inspect stations from Bytown to First Rapids (now known as Poonamalie); a master carpenter, James Fitzgibbon, to inspect lock gates and woodwork and to superintend repairs; a master smith, William Tormay, to inspect the metal hardware; as well as a clerk of check (a type of accountant), William Clegg, who had occupied the post since the start of canal construction. A much smaller establishment was planned for Kingston Mills. The post was to be under the command of a lieutenant of the Royal Engineers who was to inspect the works as far north as The Narrows station between Upper Rideau and Big Rideau lakes. An overseer of works, Thomas Burrows, was also proposed as well as the regular complement of lockmaster and labourers.² With minor changes, By's suggestions formed the basis of the establishment during the years of imperial government control.

Although the Rideau was never required to demonstrate its military function in war, relationships between Britain and the United States remained strained during the middle

decades of the 19th century. Consequently, defence of the canal and its role in the event of war remained a matter of consideration to the authorities in Great Britain and British North America. During periods of increased international tensions and domestic crises, this concern was intensified. At the time of the rebellions in Lower and Upper Canada in 1837 and the subsequent threat from the so-called "Hunters' Lodges" based in the United States, military officials took precautions to protect the system from sabotage. The nature of the waterway, particularly at the Kingston end, rendered it especially open to attack. Military authorities were well aware that destruction of the dams at either Jones Falls or the outlet of White Fish Lake (the present-day village of Morton) could totally disrupt navigation. In June 1838, when the frontier was still troubled with threats of invasion from the United States, W.B. Jarvis of Bytown wrote to Lieutenant-Colonel Richard Bonnycastle, senior Royal Engineer at Kingston, expressing his concern at the Rideau's vulnerability.

There are reports in circulation that the disaffected intend doing some injury to the Canal and have chosen the *white fish dam*, as the scene of operation. I have often thought that some attempt would be made to injure the navigation by this route, which could be most easily effected by those vagabonds in a few hours.³

Daniel Bolton, senior Royal Engineer on the canal, also reported rumours of possible attacks and commented that there was great popular fear of such attempts.⁴

Although the commander of the Royal Engineers in Canada, Lieutenant-Colonel J.R. Wright, agreed that both Jones Falls and the White Fish Dam were vulnerable to injury, he suggested that men like Bill Johnston, so-called "Pirate of the Thousand Islands," and other similar raiders were primarily interested in plunder. They were therefore unlikely to take the risk of travelling into the interior past the garrisons at Gananoque, Brockville and Prescott to damage the waterway. Despite the improbability of any assaults, additional guardhouses were constructed at Jones Falls and White Fish Dam as well as at several other stations.⁵ Moreover, local militia men were called out in some regions to protect the waterway. The prominent Newboro merchant, Benjamin Tett, reported on 8 July 1838, that in response to orders from Colonel Dundas at Kingston, he had earlier ordered area residents to mount a guard at the locks between The Narrows and Jones Falls. This guard was still maintained since Tett had been informed that suspicious persons had recently been seen in the country.⁶

The defence of Jones Falls and the White Fish Dam remained subjects of particular concern to military officials, especially after the brief but disturbing Battle of the Windmill at Prescott in November 1838. Additional guards were posted along the southern end of the canal

during the autumn.⁷ The lockmaster at Jones Falls recorded that on 18 September 1838, a detachment of the 71st Regiment arrived at the station to relieve the militia stationed there and at the White Fish Dam. The following day, a group of the regulars were sent to garrison the latter spot. The detachment was replaced in mid-October by a militia company and the men of the 71st returned to Kingston on 17 October. Troops remained at Jones Falls, the White Fish Dam, and Kingston Mills until early in 1841.⁸ Even as late as September 1841, Bolton considered it necessary to issue a circular to the lockmasters detailing precautions for the security of the locks.

The utmost Vigilance is called for on the part of the Lockmasters and Labourers to frustrate Any attempt which designing individuals Might be induced to make to destroy the works of the Rideau Canal. Suspicious persons are to be carefully Watched and application to be made to the nearest Magistrate by the Lock-Master for there [sic] Apprehension Should Circumstances appear to call for Such a Step.⁹

The ease with which the canal could be attacked remained a primary consideration with the tensions created by the Oregon boundary dispute of the 1840s and the American Civil War during the early years of the 1860s. In 1862, the superintending engineer under the Board of Works, James Slater, emphasized the need to protect the canal should war with the United States break out. He suggested placing nine men at each lock station and twice that number at Kingston Mills, Jones Falls, Merrickville, Long Island and Ottawa.¹⁰

Financial problems continually plagued the canal. The unexpectedly high cost of construction had resulted in an investigation by the British Parliament. In later years, the tolls and rents received never met the expenses of maintaining the works of the canal and of paying for the required staff. Before his departure in the autumn of 1832, By had suggested tolls for the use of the canal and had expressed his belief that the costs of the system should be borne from its revenue. Although he admitted that at first the income might not be sufficient, he argued that with the opening of the canals along the Ottawa to create a through route between Kingston and Quebec, the rents and tolls would exceed the amount needed to maintain the canal and its staff.¹¹

By's sanguine expectations were never realized, however, largely as a result of the competition of the St. Lawrence route, competition which he had acknowledged even before the completion of the Rideau. In May 1832, he informed the Respective Officers in Quebec that the merchants of the St. Lawrence had lowered their rates of cartage to try to prevent trade being transferred to the Rideau-Ottawa system. The well-established St. Lawrence route was a formidable rival to the new canal which was not

only less direct but also slower because of the multiplicity of locks. The commissary-general in Canada, C.J. Routh, early realized that the Rideau would not divert trade from the older route. "The most favourable operation of the Rideau Canal will never have the effect of interrupting the direct Navigation of the St. Lawrence in time of Peace, and on this point I do not believe there is a dissentient opinion."¹² Moreover, he pointed out that the legislature of Upper Canada was eager to encourage navigation on the St. Lawrence and had voted £70,000 for its improvement. In the face of such competition, the Rideau was destined to remain primarily useful for local traffic and for the timber trade as the forests north and west of the canal were opened.

Although By had written optimistically of the possibility of the Rideau replacing the Erie Canal as the outlet for the produce of the American west, more realistic military authorities were aware that the merchants of both the St. Lawrence and the Erie would prevent any major shift in trading patterns.¹³ They understood that the Rideau system was at best only marginally viable as a trading route. The commander of the Royal Engineers in Canada, Colonel Oldfield, expressed this opinion when he stressed the necessity of keeping the canal in excellent navigable condition since "if the navigation were impeded, the traffic would be, in a great measure, diverted."¹⁴ Lieutenant-Colonel George Philpotts echoed this view in his thorough study of the Canadian canals in 1840. He pointed out that although the Rideau system would be invaluable in the event of war with the United States, it was too circuitous and impeded by locks to be able to handle the trade of the west. Moreover, since the locks were too small to admit the large lake steamers, all cargo had to be trans-shipped at Kingston resulting in delay and additional expense. Philpotts therefore concluded that the improvement of the St. Lawrence navigation was essential to prevent trade from the west being absorbed by the American canals.¹⁵

As revenue from tolls on the Rideau failed to increase to meet even the costs of maintenance, military authorities both in Canada and Great Britain began to consider methods of relieving the imperial government of at least part of these heavy expenses. As early as 1840, Seth Thomas, chief clerk under the Clerk of the Ordnance, prepared a lengthy memorandum for Richard Byham, ordnance secretary, in which he discussed the question of transferring the canals to the control of the provincial government in Canada. Thomas admitted that commercial interests were sometimes adversely affected by measures necessary to maintain the canal's primary function as a military communication. The need to preserve its military value ensured, however, that the system was kept in excellent repair and this in turn operated to the advantage of the shippers. Thomas feared that if the canals were transferred, their limited economic importance would result in an insufficient amount of money

being allocated for their repair and upkeep. In the event of attack, he argued, the security of the province would depend largely upon the efficiency and safety of the ordnance waterways. Consequently, adequate maintenance of the systems was essential, and as there would be no security on this point, if they were in the hands of the Provincial Legislature, particularly if the present state of party feeling continued - it remains for the Master-General's and Board's consideration whether the question, of the transfer of the Canals to the Colony, may not be regarded, as one, of *extremely doubtful and dangerous policy*.¹⁶

Thomas advocated one minor administrative change - he suggested that the parliamentary vote for the canals might be transferred to the ordnance estimates since, with this exception, management was already under the ordnance.

Despite Thomas's opinion on the dangers inherent in relinquishing control of the military canals, further suggestions were made during the 1840s concerning their transfer from British authorities. In 1847, as a result of a suggestion from the governor-general, the Respective Officers in Montreal (the commanding officer, Royal Artillery, the Commanding Royal Engineer, the ordnance storekeeper, and the commissary-general) were ordered to investigate the possibility of leasing the canals of the Rideau and Ottawa to private companies engaged in the trade of the area.¹⁷ Although no action was taken on this proposal, the imperial government re-introduced the subject of the transfer two years later. The Treasury Office was concerned with the great expense of maintaining the waterways, particularly in view of the expected decrease in tolls with the shift of traffic to the newly completed St. Lawrence route. Consequently, the governor-general of Canada, Lord Elgin, was ordered to discuss the transfer of the ordnance canals with the provincial government on the condition that they be preserved in an efficient condition.¹⁸ The provincial government, however, declined to enter negotiations largely because of the unsatisfactory financial condition of the canals. Over a decade later, they explained their position in a summary of the negotiations. "The state of the finances did not then warrant the Province in accepting the proposed transfer, as it was supposed that the cost of management and repairs of the works would exceed the revenue to be derived therefrom."¹⁹

The imperial government continued to advocate the transfer as a part of a policy of withdrawal of troops from British North America, a policy hastened by the outbreak of the Crimean War and the subsequent need for soldiers in Europe. Early in 1853, Sir Charles Trevelyan, assistant secretary to the Treasury Office, again expressed the desire to free the British government from the heavy expense of the ordnance canals. At this time, however, the treasury offered an incentive to tempt the Canadian government by

suggesting that the imperial government was now willing to consider transferring the ordnance land bordering the Rideau.²⁰ Moreover, the British government undertook to pay canal expenses until 30 September 1853.²¹ With these inducements, the colonial assembly looked with greater favour upon acquisition of the ordnance system. In May 1853, a committee of the executive council reported that in view of the great disparity between the expenditure and the revenue of the canals in the previous five years, a thorough investigation of their physical condition and necessary repairs as well as of the estimated value of water-power should be undertaken before making a final decision on their future. The committee also recommended that the views of the imperial government on the transfer of the ordnance reserve at Bytown and along the Rideau be obtained since these lands would be by far the most productive portion of the ordnance property and their acquisition might be an encouragement to the provincial government to maintain the canals in good repair.²²

Negotiations between the two governments continued for several years. Until final agreement could be reached, the provincial government passed an order-in-council on 13 May 1853 which assumed responsibility for the expenses of the canals from 1 October 1853. Thereafter, costs of maintenance and repairs were met quarterly by the provincial government.²³ Differences between officials of the ordnance and the provincial authorities over the terms of transfer prevented speedy agreement. The Board of Ordnance set forth five conditions: the canals were to be preserved in an efficient working state; their existing establishment was to be maintained or provision made for the retirement of current staff; troops and stores were to be allowed to pass free of charge; the provincial government was to accept all existing contracts; and lands deemed unnecessary for the canal service were to remain at the disposal of the ordnance and when not required for military purposes could be sold with the funds going toward defensive works in the colony.²⁴ The committee of the executive council in Canada took immediate objection to two of these conditions - the requirement that staff be retained or provided for and the reservation of ordnance land not used for canal purposes. British authorities were prepared to forego concern for their staff but insisted on their right to proceeds from the rent or sale of ordnance lands.²⁵ The provincial administration, however, clung to their demand for absolute control of the canals and reserve lands. The imperial government finally agreed to these conditions and on 25 January 1856 a provincial order-in-council accepted the transfer of the canals. This order was subsequently ratified by an act of the provincial parliament passed on 18 June 1856.²⁶ In the following spring, the canals were placed under the jurisdiction of the Board of Works for Upper and Lower Canada and remained with that department

until 1867 when they were transferred to the Department of Public Works of the new dominion.²⁷

Once the canals were under control of the provincial government, officials set about the difficult task of reducing the heavy expenditure. A committee of the executive council recommended that a land agent be appointed to deal with problems arising from the ordnance lands. This officer was also ordered to consult the departmental engineers and report on the state of the works along the Rideau and on the most profitable and efficient method of managing the canal. By the end of the year, the ordnance land agent, Major William F. Coffin, had produced a report for the provincial secretary which reviewed the current state of the Rideau and Ottawa canals and gave suggestions for severely reducing staff and expenditure. In place of the seven men employed under the ordnance to oversee the canals - a storekeeper, two clerks, a bailiff, an office keeper, a clerk of works and a messenger - Coffin proposed a staff of three - a resident engineer, a bailiff and an office keeper.²⁸ He further cut expenses by suggesting that the permanent lock labourers be discharged during the winter - a saving of 2s.6d. per diem per lock labourer - totalling £281 5s.0d. currency per annum. On a more positive note, he advocated more efficient exploitation of the water-power at the dams as a potential source of revenue from the sale of mill privileges.

Despite these economies, the new management of the Rideau continued to face yearly deficits and to search for ways to reduce them. Following Coffin's suggestion, the office staff was considerably less than that employed by the ordnance. The position of superintending engineer was at first filled by John S. Killaly, younger brother of H.H. Killaly, Assistant Commissioner of Public Works and later Chief Engineer of Public Works. In March 1858, however, he resigned and was succeeded by James D. Slater who occupied that office until 1872. The office establishment was composed of only four men - the superintending engineer, a clerk, a foreman and a messenger.²⁹ The provincial government continued to demand greater decreases in expenditure, however, which meant a reduction in the staff of the canals, in particular the lock labourers.³⁰

The amount expended on the canals was influenced by the need to maintain the works in a navigable state.³¹ Unless the Rideau were to be abandoned, expenses of both maintenance and major repairs had to be met. Moreover, provincial officials believed that the system had been ignored in the years immediately preceding its transfer and a greater amount of money was therefore needed to restore it to efficient operation.

[The] consequence was, that when handed over, the works were found to be in a very dilapidated state generally. Some of the most important structures, Locks, Dams, &c. were in different stages of decay - several of the walls of the former having bulged

in considerably; some of the chief dams required measures of precaution to be taken to maintain them... [The] present state of the canal, from the proper repairs having been neglected for years, is such, that a large expenditure must be incurred upon it, so soon as the finances will admit of.³²

Furthermore, provincial officials were reluctant to expend large sums of money on a system clearly uneconomic. In their report for 1863, the Department of Public Works admitted that because such small revenue was derived from traffic on the route, "the outlay has been confined to such works of maintenance as could not be dispensed with."³³ In an attempt to raise additional revenue, locations at which the fall of water might profitably be rented to milling or manufacturing concerns were surveyed and leases for the water privileges at Hogsback, Edmunds, Chaffey's and Lower Brewers were drawn up to be sold by public auction in Ottawa on 15 April 1861. Leases for Black Rapids, Clowes, Davis, Smiths Falls and Jones Falls were similarly available when there should be a sufficient public demand.³⁴

The structural difficulties of maintaining the canal's navigation were intensified by a growing shortage of water in the system. As the area forming the watershed was cleared of its heavy forest cover and drainage improved, the water supply produced by heavy spring rains and melting snow passed into the rivers at an earlier date causing more severe spring floods and a shortage of water later in the season. The summer of 1865 was particularly dry with no significant amount of rain falling at the summit level from May until late autumn. By September, navigation on the canal was seriously affected with insufficient water for some of the larger boats to pass through the route. In October, the superintending engineer, James Slater, reported to secretary Braun of the Board of Works that the long reach above Long Island was nearly two feet below the usual navigable height and the reach above Kingston Mills was one foot three inches below normal. Moreover, the severe drought had exhausted the reserve of water in the lakes.³⁵

The problems of the Rideau navigation were sufficient to warrant attention by the legislative assembly. In 1865, a select committee reported on the supply of water in the system and considered methods of regulating the water level by means of dams at the outlets of several chains of lakes flowing into the summit of the Rideau at Perth, at Westport and at Bedford Mills at the west end of Newboro Lake. With such dams, a greater part of the spring runoff could be retained and subsequently released to maintain the water at a navigable level. The committee concluded its report by emphasizing the importance of the Rideau and the consequent need to improve its navigation. Aside from its contribution to the prosperity of the communities along its banks, the canal still had a strategic value.

It is, besides, of the utmost importance that the Province should be in possession of an internal route of navigation, lying away from the frontier, and consequently less exposed, and that that route should be in such a state of efficiency as to be serviceable in the event of interruption of the St. Lawrence Canals, from any cause.³⁶

Construction of dams on the back waters of the Rideau began late in 1865, and in the decades following, the major lake systems in the watershed were brought under control. (For details on the dams see Reservoir Dams in the Watershed.)

During the middle decades of the 19th century, the Rideau waterway reached the peak of its importance as a transportation route. Before improvement of the St. Lawrence canals during the 1850s, the Rideau formed a link in the trade between Ottawa, the Great Lakes and Montreal. Moreover, during this period, the military considerations that had motivated construction of the waterway remained issues of concern to authorities both in Great Britain and British North America. By the time of Confederation, however, commercial traffic on the Rideau was increasingly limited to the carrying trade among the settlements along its banks. Nonetheless, the waterway continued to serve a vital function as the principal avenue for regional commerce until improvements in highway transport within the area during the first decades of the 20th century.

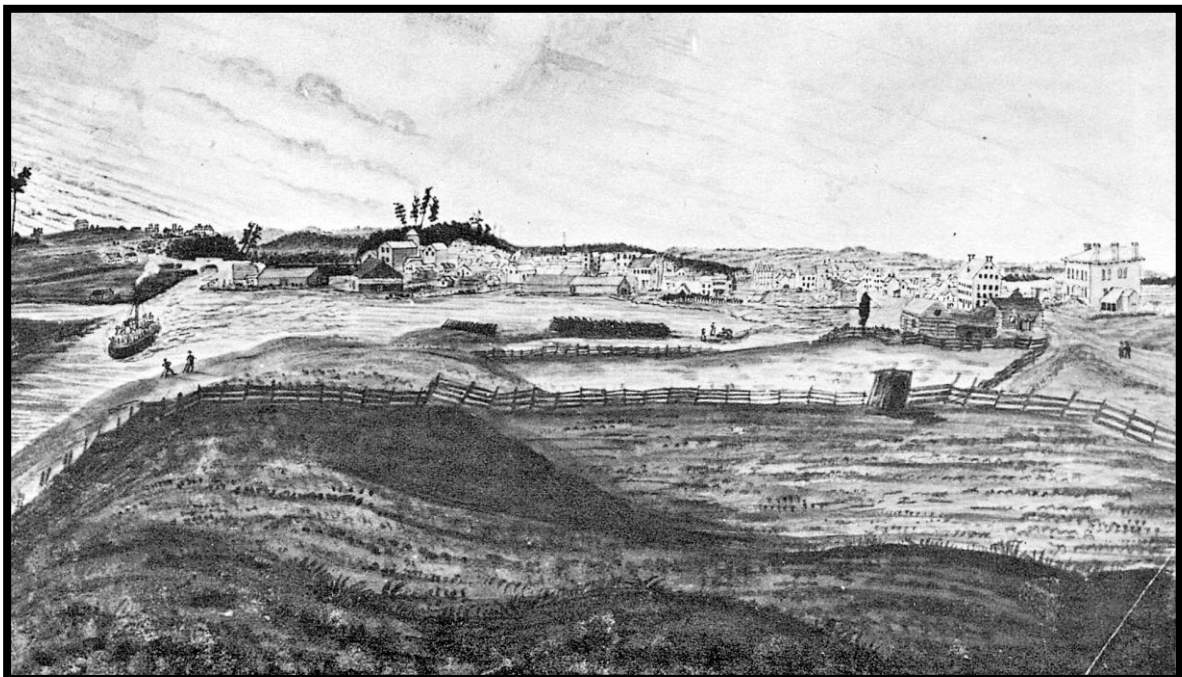


Figure 1. Lower Bytown, from the east bank of the channel, Rideau Canal, 1845, by Thomas Burrowes. (Ontario Archives.)



Figure 2. Opinincon Lake, looking northwest. Sketched by Thomas Burrowes in November 1840. (Ontario Archives.)

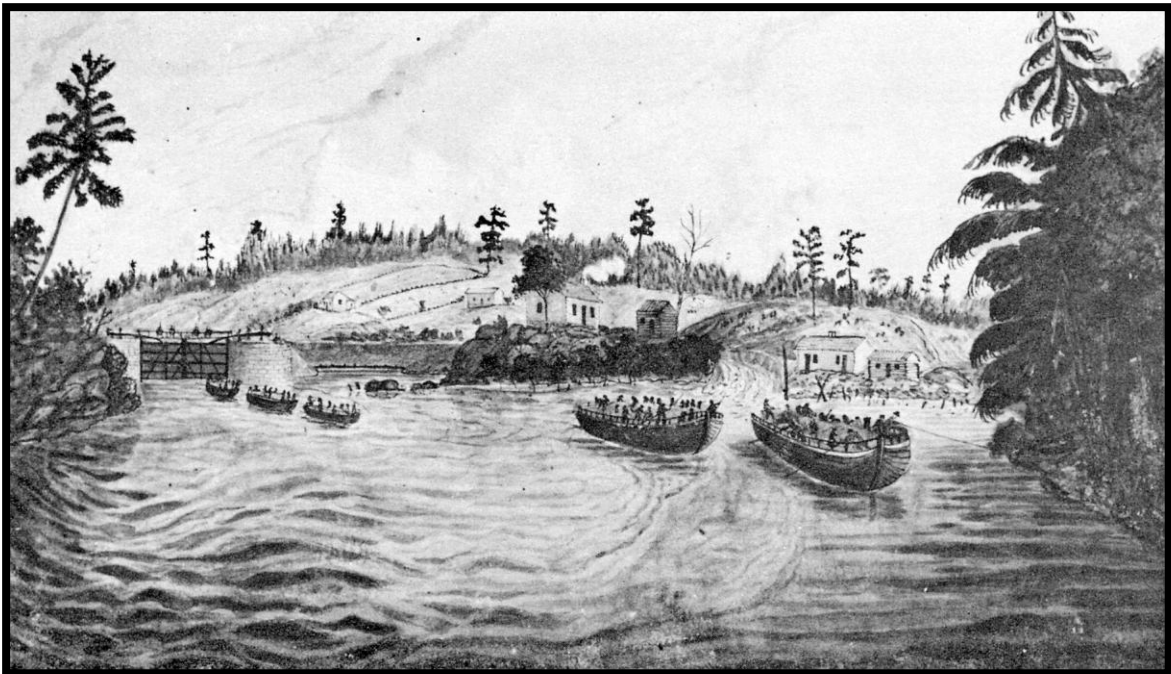


Figure 3. Davis lock and dam - barges passing from the lock to the steamboat Bytown. Sketched October 1840 and colored December 1840. (Ontario Archives.)

THE RIDEAU IN THE NEW DOMINION

Since their transfer from the imperial government in 1856, the ordnance canals along the Rideau and Ottawa rivers had formed part of the provincial canal system administered by the Board of Works. By the terms of the British North America Act in 1867, matters of shipping and navigation were allocated to the federal government. The canals in the new dominion, among them the Rideau, consequently passed to the care of the Department of Public Works, an omnibus department which also assumed responsibility for railways, harbours, bridges, lighthouses and public buildings. By 1879, however, the work of this department had substantially increased and in that year, a Department of Railways and Canals was created to administer the transportation systems. This department was not replaced until 1936 when the Department of Transport was established to assume the function of the earlier department. Within this administrative framework, the management of the Rideau Canal continued essentially unchanged. The superintending engineer retained his control of day-to-day management with the chief engineer of the department overseeing matters dealing with the physical structure of the canal and the departmental secretary providing a link with other areas of government.

Communication between the canal office in Ottawa and the lock stations along the route gradually became less difficult as the surrounding countryside was cleared and settled. For some years, the practice of sending orders by boat was continued. The lockmasters copied such circulars into record books at the station and then forwarded them, either by a passing vessel or by one of the labourers.¹ Improvements in this slow and cumbersome system were made in the later decades of the century. By 1889, a telegraph system extended the length of the canal with stations in Ottawa, Long Island, Merrickville, Smiths Falls, Newboro, Jones Falls, Brewers Mills, Washburn, Kingston Mills and Kingston. Orders could easily be forwarded by special messenger to any of the intervening stations.²

Canal officials remained eager to utilize more modern means of communication. In 1891, superintending engineer Frederick Wise advocated that telephone service be established from Ottawa to Hogsback and Black Rapids. He pointed out that these two stations contained important and vulnerable dams and communication with them was extremely difficult especially in spring - the most critical season of

the year.³ Despite Wise's recommendation, a telephone system was not installed until late in 1906 when Long Island, Black Rapids and Hogsback were connected with Ottawa on a private line. In addition to phones at each of these stations, they were also placed in the canal office in Ottawa and the home of the superintending engineer. Within ten years, most lock stations had been equipped with telephones and communication among canal officials along the waterway was greatly facilitated.⁴

The financial problems that had plagued canal officials before Confederation remained a troublesome issue. In the later years of the 19th century, revenue derived from the waterway continued to fall far below the expenditure required to maintain it. Moreover, there were increasing complaints about deterioration of the canal, particularly with respect to the water supply where shortages had first been experienced in the mid-1860s. In 1871, a group of mill owners, shippers and manufacturers forwarded a petition to the minister of Public Works, Hector Langevin, complaining that navigation on the Rideau had recently suffered from a lack of water. They urged that lakes in Frontenac County be utilized as a reservoir since, with a moderate expenditure for dams, these bodies could provide "an inexhaustible supply of water." The problem required urgent attention, they pointed out, since the already inadequate water reserve would continue to diminish as more country was cleared for settlement.⁵ Similar complaints were received well into the 20th century. As late as 1910, superintending engineer Arthur Phillips reported on a petition from the Kingston Board of Trade urging the improvement of the water supply on the Rideau. Phillips acknowledged the need for a greater reserve and stated that because of an unusually early spring freshet, the water in Rideau Lake had fallen so low that by 12 October there was less than five feet of water on the upper sill at Poonamalie. During the period before World War I, dams were constructed on a number of lakes feeding the Kingston end of the canal and extensive dredging was undertaken along the waterway to lessen complaints of navigational difficulties.⁶

Increasing problems with the navigation combined with large deficits lead to a questioning of the canal's continued value. In 1869, a senate resolution requested a detailed account of all expenditures on the Rideau since 1864 as well as a statement of appropriations for repairs and new works and the manner in which they had been expended during the same period.⁷ Several years later (1877) in a supply debate on a vote of \$6000 for the waterway, Liberal Prime Minister Alexander MacKenzie indicated that its future would soon require a complete investigation by Parliament since the system was no longer of practical value. "Its usefulness was now nearly at an end, the railways having taken away its traffic. It cost the country a considerable amount more than its revenue, and it was neither useful nor

ornamental."⁸ A year later, the Liberal member of Parliament from Addington, Schuyler Shibley, returned to the attack on the canal, arguing that the construction of the St. Lawrence canals and of several local railways had "so materially altered the state of affairs existing when the canal was undertaken, that the reasons which originally justified its being constructed, no longer existed." He pointed out that in the last two years, the canal had suffered a yearly deficit of \$40,000 with every prospect of such a loss continuing. Moreover, if the waterway were abandoned, he contended, a large area of arable land now flooded could be reclaimed, a suggestion more frequently advanced in the later years of the-century. The continued use of the canal was defended by Liberal-Conservative members from constituencies bordering the waterway. J.M. Currier of Ottawa pointed out that the imperial government had granted the canal to the Canadian government on the express understanding that it be kept in navigable condition. This statement was supported by Sir John A. Macdonald who, nonetheless, typically left himself room for future manoeuvring by adding that the government was bound to maintain the canal "until it was determined by Parliament to abandon it." Although Prime Minister MacKenzie refused to be drawn into the argument, he suggested that in the next few years a large expenditure would be necessary to maintain navigation, and at that time the question of the waterway's future could be more profitably discussed.⁹

Although active criticism of the Rideau in Parliament was infrequent, governments - both Liberal and Liberal-Conservative - endeavoured to increase canal revenue as much as possible. The Senate's resolution concerning the Rideau in 1869 had also included a request for information on the extent of unleased water-power as well as the amount of government land available for sale or lease. Slater's reply was not encouraging. He informed secretary Braun of the Department of Public Works that there was no appreciable amount of water-power unexploited and that before the provincial government had assumed control of the canal, the ordnance department had decided that no more should be leased. Slater concurred with this decision arguing that the mill owners constantly enlarged their works to the detriment of navigation. With respect to ordnance lands, Slater stated that he did not know how much land was available for sale since all the plans showing reserve lands at the stations had been transferred to the Department of the Secretary of State. He urged, however, that no land should be sold within 200 feet of cuts or works or within 66 feet of the water line of the lakes and river.¹⁰

After Confederation, the federal government continued the practice of selling ordnance lands. The disposal of the reserve, which had been used as an inducement for the provincial government to accept transfer of the waterway, remained a troublesome problem. Land required for canal purposes was in theory not available for purchase but

disagreements arose over the amount of land needed and in fact over the definition of the term "canal purposes." In 1870, Slater complained to Braun that part of the reserve at Newboro occupied by the lockmaster and labourer had been sold. Although he admitted that the land might not, in fact, be needed for the management of the canal, the superintending engineer pointed out that both lockmasters and labourers received very low pay and used reserve land for gardens and pastures. He concluded therefore that it seemed unnecessarily harsh to deprive the workers of their "little privileges" and suggested that no land should be sold until a plan had been submitted to the Department of Public Works and the proper reserve marked off.¹¹ Land sales continued during the 19th century, although late in the century reserve land at each lock station was specifically divided into two sections - that required for canal purposes, which was retained by the Department of Railways and Canals, and that available for sale by the Ordnance Lands Branch of the Department of the Interior.¹²

Such attempts to offset at least part of the Rideau's continuing deficit were matched by efforts on the part of canal officials to improve the waterway's efficiency and thereby increase traffic. During the last decades of the 19th century, a number of improvements to the Rideau navigation were undertaken. Dredging had always been vital to the system, especially in areas where the artificial channels required constant maintenance to prevent them from being filled with silt, rocks and driftwood. As the water supply became less reliable later in the century, the need for constant dredging became more acute. The cuts above Merrickville, Poonamalie, and Newboro and below Kingston Mills were especially difficult to maintain at navigation level during dry years. During the summers of 1895 and 1896, all these cuts except that at Poonamalie were deepened by between 18 and 24 inches.¹³

Public pressure was increasingly brought to bear on the canal administration for work on specific areas. The deepening of the river below Kingston Mills in 1896 seems to have been at least partially motivated by a threat from David Noonan, proprietor of the Rideau Lakes Navigation Company, to remove his ship, the *James Swift*, from the Portland to Kingston run unless the channel was cleared. Since the *Swift* was the only passenger vessel on that route, the loss would have been particularly severe.¹⁴

A more widespread campaign for improvements in the system was experienced in 1889 when a petition requesting enlargement of the locks and channels to permit the passage of larger vessels was circulated along the waterway. Canal records indicate that 16 petitions, all identical in wording, were received from many of the Rideau towns and villages, including Ottawa, Kingston, Brewers Mills, Newboro, Perth, Smiths Falls, Burritts Rapids, Kars, Manotick and Hogsback.¹⁵

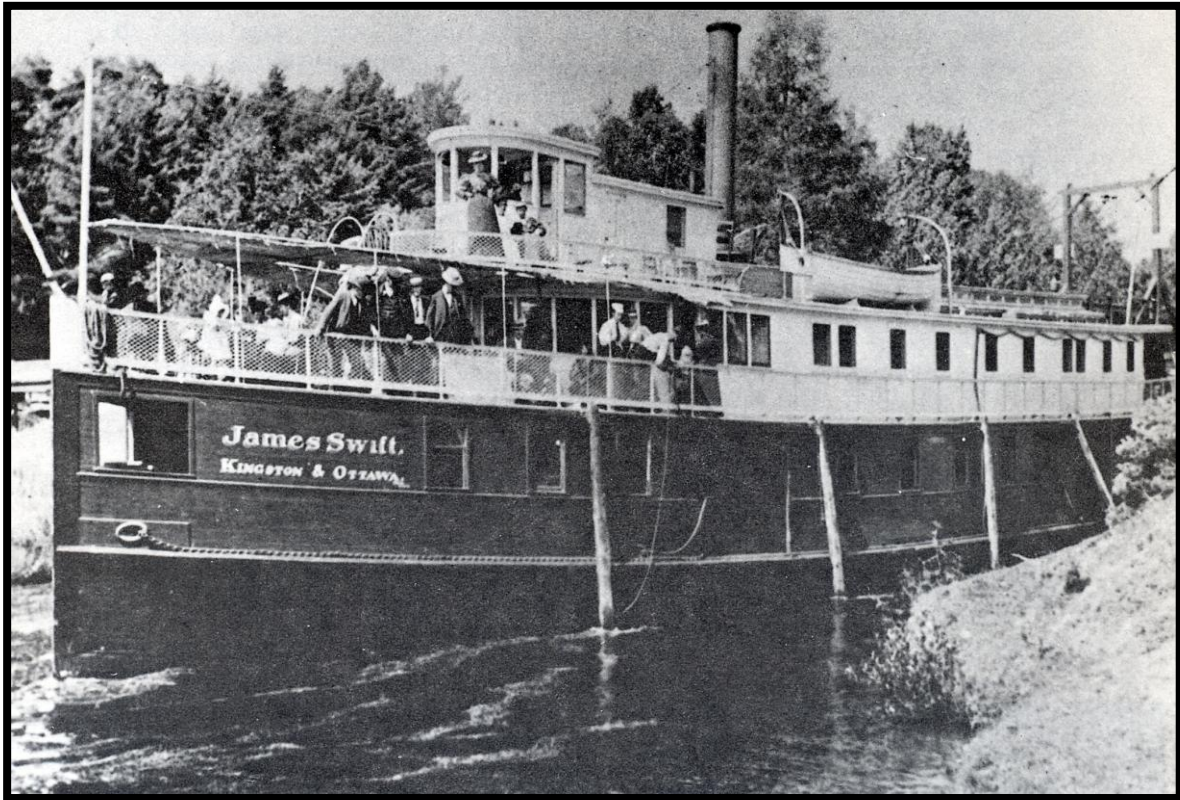


Figure 4. The *James Swift*. (Queen's University Archives.)

In later years, other requests were made for dredging certain areas of the canal. In 1909, a petition from the Rideau forwarders suggested deepening of the cuts at Brewers Mills, Chaffeys, Poonamalie, Edmunds, and Burritts Rapids as well as much of the canal within the city of Ottawa. Although no action was taken on the petition, since the superintending engineer argued that most of these areas did not warrant dredging, improvements of the channels continued. The most extensive alteration in the route by dredging occurred approximately two miles above Poonamalie where a 50-foot channel was dug across the drowned land at Sawlog Bay. Now known as the Mud Cut, the trench was begun in 1909 and was completed during the summer of 1911.¹⁶

Other steps to improve navigation on the Rideau were undertaken during the later years of the 19th century. Because of the nature of the canal with its long stretches of drowned lands, navigation through parts of the waterway was often difficult, particularly in areas where the channel was only 100 feet wide. For many years after the opening of the canal, trees drowned by the rise in the water level

remained above water and indicated the navigable channel. By late in the century, however, the dead trees had rotted at the water line and fallen, leaving the submerged stumps as a menace to safe passage. Consequently, during the 1890s, the Department of Railways and Canals began to lay buoys along the most hazardous sections of the waterway. By 1888, 15 markers were placed to designate the channel between Kingston Mills and Washburn - an area now bearing the ominous name the River Styx. The following year, Ogle Carss of Smiths Falls was hired to lay ten buoys through the drowned lands between Merrickville and Kilmarnock.¹⁷

These early markers were not of great value and, in fact, were almost a menace to navigation. Because the solid buoys were driven into the bottom of the river, they were easily torn up by the ice moving downstream in the spring. Consequently, they could not be relied upon to mark the channel accurately. As early as 1894, Wise ordered lockmaster Glenn of Washburn to remove all the displaced buoys in the drowned lands so that boat captains could not claim that they had been misled by the markers.¹⁸

Subsequently, the department delineated the channel above Kingston Mills with cedar bushes wired to poles and



Figure 5. The drowned land - Rideau Canal, 1862. Watercolour by George Seton. (Public Archives of Canada.)

driven into the mud. These bushes were both less expensive and more easily replaced than the solid buoys. In 1907, the Department of Marine and Fisheries began to mark the Rideau channels using the recognized navigational system of red and black buoys on alternate sides of the waterway.¹⁹ The 14-mile stretch between Merrickville and Smiths Falls was buoyed during the summer of 1907 and in January 1908, Phillips stated that he understood the section between Kingston and Washburn would be undertaken during the following summer. The superintending engineer suggested that the Department of Railways and Canals might attach small boards to the cedar bushes in the channel and paint one side black to mark the shoal and the other white for the navigable channel but concluded that because of the many turns in the route this differentiation might prove confusing.²⁰

Phillips was aware that since fewer qualified pilots were available to guide vessels through the system, the need for adequate marking of the channels had increased. Moreover, a growing number of pleasure boaters began to travel the route around the turn of the century and these amateur sailors required a reliable series of navigational aids.²¹ Despite these considerations, however, a uniform system of buoys was not installed until later in the 20th century and responsibility for marking the channels remained divided between the Department of Marine and the Department of Railways and Canals. The former continued to maintain regulation buoys in areas of the waterway where there were particular hazards to navigation while Railways and Canals annually contracted with private individuals to lay additional buoys along other parts of the channel.²²

These improvements represented attempts by the Department of Railways and Canals to increase the efficiency of the waterway and to maintain it as a functional transportation route. Within the city of Ottawa itself, a major improvement was made to the wharves at the canal basin with the installation of an electric light system in 1893. This change had been requested for a number of years. In 1888, for example, a petition from a group of merchants and forwarders had pointed out that the traffic at Ottawa had increased substantially and that a larger proportion of the work was carried on after dark. Since there had recently been a number of accidents around the basin during the night, the petitioners concluded that an electrical lighting system would both benefit the conduct of business and increase the safety of the area.²³

Early in 1892, superintending engineer Wise informed the departmental secretary that only one firm in Ottawa could supply suitable arc lamps for the basin. The Ottawa Electric Light Company was prepared to install and maintain ten arc lights at an annual rate of \$100 per light. This price was, Wise stated, the same as the government was paying for lights on Wellington Street and he concluded, "If the proposed plan of distribution of the 10 lights is

carried out, it will light up a space in the centre of the city which may now be said to be the only dark spot in it." The basin was subsequently provided with electric lights, although Wise's recommendation for ten lamps was not followed since on 3 March 1893 a Commons committee of supply authorized an expenditure of only \$375 for five arc lamps.²⁴

During the next decade, the arc lights were replaced by incandescent lamps. Because these did not supply enough light, Phillips requested in 1904 that the system be converted back to arc lighting. Eight arc lamps were consequently installed - three beside the locks and five around the basin between the railway station and the Laurier Avenue bridge. Since they required constant maintenance, the department employed a man to inspect the lamps twice each night until midnight to ensure that they were working properly.²⁵

As early as 1908, Phillips complained that the existing lamps did not provide sufficient light and he requested that an additional five be installed. No action was taken at this time and in 1912 he submitted a more detailed estimate of an improved lighting system. He suggested a series of tungsten lamps with five bulbs each of 100 watts and 80 candle-power mounted on iron poles, similar in design to those then illuminating Sparks Street. In order to have the area of the locks and basin adequately lighted, Phillips recommended four lamps be placed at each lock with 25 more erected between Sappers Bridge and the Laurier Avenue bridge. The total cost of the system, including installation of the lamps and purchase of 300 spare tungsten bulbs, was set at \$4000. Phillips' proposal was accepted with some minor changes since the annual report for 1914 described the new lamps as a cluster of four bulbs enclosed in clear glass globes with a canopy on top.²⁶

Despite these attempts to preserve the waterway as a viable transportation route for local trade, the later years of the 19th century witnessed increasing conflict over the Rideau's role and indeed over its continued existence. In the United States, the end of the so-called great canal era and the realization of the extent of public debt incurred by the construction of a network of canals resulted in attacks on locks and dams in several areas - notably New England and Indiana.²⁷ Little violence was experienced along the Rideau but the last decades of the century saw frequent complaints both from millers whose demands for water were often in direct contrast to the requirements of navigation and from local farmers whose claims for compensation for land eroded by the canal grew in number and intensity.

PROBLEMS AND CONFLICTS

During the later years of the 19th century, a number of groups with conflicting interests were concerned with the operation of the Rideau waterway. Shippers using the canal to transport goods wanted the route maintained in efficient working condition with adequate water supplies to ensure navigational depth throughout the season. In contrast, local farmers argued that when the water was retained to provide reserves, many of their fields could not drain sufficiently to allow crops to be planted. On the other hand, millers along the route required a constant supply of water to keep their works in operation. They protested vigorously against the actions of canal officials who were often forced to stop the flow through the weirs to preserve the water level for navigational purposes. Such divergent interests led inevitably to conflict over the role of the Rideau system.

The nature of the waterway - a series of levels maintained by dams - produced some amount of water-power at every lock station, varying from the almost negligible falls at Kilmarnock to the 60-foot drop at Jones Falls. Some of these stations had been the site of mills before the construction of the canal - notably Merrickville, Chaffeys and the two Brewers Mills. During the 19th century, mills of various sorts were established at 11 major locations - Long Island (Manotick), Burritts Rapids, Nicholsons (Andrewsville), Merrickville, Old Slys, Smiths Falls, Chaffeys, Davis, Brewers Mills, Washburn and Kingston Mills. The leases granted to the millers specified that they were entitled to the use of surplus water only - that not required for the purpose of navigation. Difficulties arose over the interpretation of this term, the millers arguing that so long as the water was at navigable height they were entitled to free use of the flow. In contrast, canal officials pointed out that to preserve navigation throughout the season, water had to be held substantially above navigation level during the spring and early summer. The problem was intensified as the amount of cleared land in the watershed area increased and the spring run-off passed into the lakes at an earlier date. Conflict with the milling interests was therefore inevitable. In 1881, superintending engineer Wise, optimistically foreseeing a rise in vessel traffic, emphasized the need to differentiate between the interests of the millers and those of the forwarders. He argued that to maintain the navigation throughout the season, less water should be used for milling purposes and

concluded, "As traffic increases the mill interest will have to be curtailed as there is not a sufficient supply for both."¹

The question of the use of water for mills was particularly important in the lakes descending from Newboro to Kingston because of the number of mills in this section and the constant difficulty in retaining sufficient water reserves. Canal officials were faced not only with complaints from the lessees of water-power at the Rideau locks but also with the demands of millers along the Gananoque River that more water be run through the dam at Morton (formerly the White Fish Dam). The Gananoque men claimed that before the construction of the Rideau waterway, Cranberry Marsh had formed the headwater of their river and that they were therefore entitled at the very least to an equal amount of water as were the mills along the Cataraqui.² In 1872, the civil engineer William Kingsford submitted a thorough report on the question of the right of the Gananoque millers to water from the Rideau and concluded that even in its unimproved state, Cranberry Marsh had not been the headwaters of the Gananoque. Instead, in time of high water, the bog had merely been an incidental source of supply for both the Gananoque and the Cataraqui. He therefore advised that the needs of the Rideau for sufficient water must always take precedence over any conflicting interests.³

Kingsford's recommendations formed the basis for the departmental policy on providing water for the millers. Although the superintending engineers endeavoured to keep some water running through the Morton Dam, they were primarily concerned with the preservation of water for the Rideau. In February 1895, for example, Phillips ordered lockmaster Flemming at Chaffeys to run surplus water from Newboro Lake to assist the millers along the Gananoque but cautioned him not to reduce the lake to a level that might affect the navigation the following summer.⁴ Water from the Rideau was supplied first to the millers along the waterway itself since they paid annual rental to the government and consequently had prior claim to any surplus. Only when there was sufficient water both to maintain navigation and to supply the Cataraqui mills was any released through Morton Dam.⁵

Disputes over the amount of water available for milling purposes were not the only aspect of the conflict between millers and canal officials. Arguments also arose over the control of water, both that passing through the weirs on the Rideau and that retained as reserves in the watershed. The most intense quarrel over control of wastewater took place at the Manotick weir where M.K. Dickinson maintained two mills. Superintending engineer Slater complained that these buildings obstructed free passage of the spring freshet, thereby causing severe flooding along the Long Reach. He further pointed out that because the mills required a constant head of water, stoplogs in the government dam could

not be removed during the winter to allow the level to be run down to lessen the risk of sudden flooding.⁶ The conflict between Dickinson and Slater was of long standing: as early as 1863, the mill owner had urged that Slater be dismissed for incompetence. In 1870, he again charged that flood damage to his mills was a result of Slater's carelessness and requested the superintending engineer's dismissal. Slater responded by reiterating his opinion that floods on the Long Reach were caused by the faulty position of the mills. He argued indeed that the great expenditure necessary to preserve the works at Long Island would not be needed were it not for the obstruction caused by the buildings. Proper execution of his duty, the superintending engineer concluded, required him to recommend removal of the mills.⁷

Although the conflict between Dickinson and Slater was the most violent clash, it was by no means unique. The foreman of works, Francis Abbott, reported in 1870 that floods had occurred at both Burritts Rapids and Old Slys because the mill owners had refused to remove their stoplogs and had consequently backed the water up over the government bulkheads. He recommended that steps be taken to compel the millers to open their dams every spring so that government officials could have full control of the runoff to prevent damage to the canal works. In later years, there were further instances of millers attempting to regulate the water solely for their own purpose. In 1910, for example, the miller at Brewers Mills, Frank Anglin, rebuilt his flume at the by-wash in cement with no opening to allow water to flow down into the lower level. Since this obstructed the government weir, superintending engineer Phillips ordered that part of the concrete side of the flume be removed so that water could pass freely even when the mill was not running.⁸

Control of water was also essential in the watershed area of the system and became particularly important as more dams were constructed to provide a greater reserve. Many of the dams on the Frontenac County lakes which form the main reservoirs for the canal had originally been constructed by millers who used them to raise the water level to float logs out to the Rideau in the spring and, to a lesser extent, to provide water-power for small mills. The millers consequently operated their dams with little concern for the needs of the Rideau navigation. When the level fell late in the summer, reserve water was often prevented from reaching the system by a private dam whose owner refused to remove the stoplogs. In 1868, water stored in Crow and Eagle lakes and required for the Rideau was held back by a dam built by John Korry at the outlet of Bobs Lake into the river Tay. Slater urged that if the dams recently constructed on the two upper lakes were to be of any use, government must have control of Korry's dam.⁹ A similar problem arose in 1911 at Wolfe Lake above Westport. The government dam at the foot of the lake could not serve as an effective

reservoir since a private dam of equal height existed at the outlet of Sand Lake (now known as Westport Lake) on the stream leading to Upper Rideau. Consequently when water was run through the government dam, the level of Sand Lake had to be raised above the private dam unless the millers voluntarily removed their stoplogs. Phillips argued that the only way government could exert effective control of the Wolfe Lake Dam was to buy the mill-dam. He repeatedly urged this course emphasizing that so long as the structure remained in private hands, the government dam might as well be abandoned.¹⁰ The issue of control of the water remained crucial for the management of the waterway.

In addition to conflict over the use of water, mills along the Rideau had a more direct influence on navigation. During the pre-Confederation era, the superintending engineer had frequently complained of obstructions caused by mill refuse dumped into the channel. In 1860, Slater reported that steamers sometimes stuck in the banks of sawdust in the mile-long stretch of waterway between Smiths Falls, with its numerous mills, and Old Slys.¹¹ Over the years, the material accumulated and presented an increasing hazard to navigation. The problem was particularly acute at Ottawa where a number of mills situated at the Chaudière Falls released sawdust, shavings, bark and logs. This waste drifted into the entrance bay at the locks and threatened to block the channel completely. In his annual report for 1860, Slater pointed out that the lumber refuse also drifted into the lower lock. Several years later, John Page, chief engineer for the Board of Works, advised that the owners of the mills be restricted in their dumping in order to preserve entry into the lower lock at Ottawa. Both he and Slater concurred in the need to dredge the entrance bay.¹²

By 1871, the problem had become so severe that it merited attention from the royal commission appointed in that year to investigate the obstruction of navigable waterways in Ontario and Quebec by mill refuse. The only part of the Rideau included in the inspection was the entrance to the Ottawa locks but the report represented a distressing picture of the conditions faced by vessel traffic. The commissioners reported that they had approached the locks by boat along the Ottawa River and "found the bay at the entrance to the Rideau Canal to be so fully obstructed and blocked up with logs, square timber, etc., that it was with very much difficulty and by pushing aside the booms and logs, that we could get to the lock."¹³

The following day, the committee took a series of soundings in the Ottawa on the line of the centre of the locks. With the level of the river approximately 2 feet above low summer level, there was 8 feet 3 inches of water at the stoplogs of the lock, 7 feet at the distance of 60 feet from the stoplogs, 6 feet 3 inches 140 feet out and 7 feet again 180 feet from the locks. With a drop of at least



Figure 6. Entrance to Rideau Canal, Ottawa, below Parliament Hill, n.d. (Public Archives of Canada.)

two feet in summer, many of these depths were barely able to meet the five-foot standard depth and one was substantially below it. Even more telling was the description of the material found on the river bottom. At 80 feet from the locks, the first mill refuse was encountered. By 120 feet, the commissioners bored through 6 feet of loose rubbish before the drill was stopped by slabs and logs. Forty feet farther out, the tests were unable to find the solid river bottom underneath layers of mill refuse.

In the shallowest places the upper 3 or 4 feet of the waste deposit was pretty loose, but from 6 to 8 feet down we found a very hard crust, difficult to force through but when pierced with the boring rod a great quantity of very bad smelling gas was forcibly ejected from below. We were informed that this gas occasionally makes its way up violently, so much so that when the water is frozen to a considerable depth over the bank of sawdust, it upheaves the material of the bank with the ice on top of it.¹⁴

The committee concluded their report with the recommendation that a federal act be passed to prohibit throwing any mill refuse, with the exception of sawdust, into lakes, rivers or streams.

Although the obstruction to navigation was undoubtedly most severe at the Ottawa entrance because of the size of the mill complex at the Chaudière, similar problems were encountered all along the Rideau waterway. In 1868, Slater complained that the reach between Smiths Falls and Old Slys was almost impassable even with the water level maintained at one foot above normal.¹⁵ The situation was ameliorated after the Department of Marine and Fisheries issued regulations enabling charges to be laid against mill owners who continued to pollute the stream. In September 1869, the department informed a number of millers on the Rideau that since fisheries investigators had stated that they were still discharging mill refuse, legal proceedings would be undertaken against them. The lockmasters and labourers at stations near the offending mills were ordered to be ready to give evidence against the proprietors, owners, tenants or workmen of the mills and as an added inducement were promised payment for their appearance in court as well as a share of the fines if their information was definite and reliable.¹⁶

Although the regulations undoubtedly contributed to an improvement in the channels, one record of legal proceedings against millers indicates that convictions were not easy to secure. On 27 November 1874, lockmaster Matthew Johnson of Merrickville gave evidence against Hiram Easton, owner of a shingle mill in the village. Although Johnston stated that he had seen sawdust dumped into the river and had informed the millers of government regulations prohibiting such action, the magistrates dismissed the case on the grounds that it ought to have been brought against the occupants of the mill rather than the owner.¹⁷ Particularly in the smaller villages, charges against prominent manufacturers were understandably difficult to sustain.

As the smaller mills in the outlying areas declined in importance later in the century, fewer complaints about mill refuse were made. At Ottawa, however, the problem remained acute. In October 1901, Phillips reiterated his complaints about the condition of the approach to the locks. Earlier in the autumn, the water had been so low that the sawdust deposit was within one foot of the surface. On 23 September, in fact, four vessels had been stuck in the refuse at the same time and even with a rise in the water level, "boats forcing their way through it in trying to reach the locks actually plough the sawdust up above water as they go through it." Although the mill owners were frequently forced to pay the costs of dredging a channel to the locks, the continuing release of refuse from the mills meant that the entrance bay remained obstructed.¹⁸

This conflict of interest between millers and canal officials represented one aspect of a growing dissatisfaction with the role of the Rideau waterway. Late in the 19th century, an increasing number of claims for compensation for drowned lands were presented to government and much of the discussion concerning these claims

questioned the continued value of the canal. The drowned lands claims arose both along the shores of the system and on the lakes that formed its watershed. These latter claims resulted from dams constructed to increase the size of the water reserve for the canal and can therefore be more profitably discussed in connection with this topic.

Along the Rideau itself, two main areas gave rise to a long series of claims for compensation - the Kingston Mills to Washburn reach and the area of Irish Creek between Kilmarnock and Merrickville. At Kingston Mills, drowned lands claims were accompanied by requests to have the water level lowered to reclaim the large area of land submerged by construction of the waterway. In 1884, the Department of Railways and Canals received the first of several petitions from residents of the area urging a survey of the Kingston Mills reach with a view to reclaiming the drowned land. A second petition followed in June 1885, from inhabitants of Storrington and Pittsburgh townships, two of the Frontenac County municipalities bordering the waterway. In response to the first petition, superintending engineer Wise had concluded that the expense of a survey would greatly outweigh any possible benefit. The second memorial required more detailed consideration since its authors put forward a concrete plan which included removal of the upper lock at Kingston Mills and construction of a new lock at the foot of the cut leading to Washburn. The level of the reach could thereby be dropped by the amount of the lift of the upper lock at Kingston Mills. Wise pointed out that the lands drowned by construction of the dam at Kingston Mills had been purchased by the Board of Ordnance and thus belonged to government which was entitled to keep them submerged if desired. Moreover, he reiterated his opinion that the amount realized from their reclamation and sale would never approach the expense of changing the lock system.¹⁹

Agitation for lowering the level of the reach continued. In 1886, Wise made a preliminary survey of both shores to determine the amount of land that could be reclaimed. Two alternative plans had been suggested in the petitions. The water level could be lowered 11 feet by removal of the upper lock at Kingston Mills to the entrance of the cut leading to Washburn. The change would involve excavation of 500,000 cubic yards of material and construction of a new lock and waste weir. Wise estimated the cost at \$200,000 and pointed out that even with a drop of 11 feet, only a small part of the submerged lands would be reclaimed. Much of the area would still be covered by from one to six feet of water and would therefore form a marshy swamp, increasing evaporation and rendering navigation constantly uncertain. To reclaim all the drowned lands, the water level must be lowered 18 feet by removal of two locks from Kingston Mills to the cut at Washburn. A new channel would then be excavated between the stations. With a cost of at least \$700,000, the project was clearly impractical. Moreover, Wise suggested that the amount of

rock exposed along the shores indicated that much of the land proposed for reclamation was probably unsuitable for agriculture.²⁰

Wise's unfavourable report on the value of lowering the water level did not end local demands for the alterations. Minutes of a meeting of the municipal council of Pittsburgh township indicate the arguments presented by advocates of the proposal. The council contended that the township annually lost revenue because of the amount of untaxable drowned land. Moreover, small streams enlarged by the higher water level required bridges where culverts would have been sufficient before construction of the waterway.

As well, fluctuations in the water level in spring caused great damage to township roads and bridges and an additional expense to local ratepayers.²¹ George Kirkpatrick, Liberal-Conservative member of Parliament for Frontenac, exerted more direct pressure on Prime Minister Macdonald, who as the representative for Kingston was also sensitive to local dissatisfaction. In 1890, Kirkpatrick informed Macdonald that the residents of the area would be satisfied with nothing less than a complete survey of the drowned lands, preferably by persons not connected with the canal since they believed that government officials were hostile to their requests.²²

The continued agitation proved successful. In 1890, Parliament voted \$1500 for a survey above Kingston Mills and after consultation with Kirkpatrick, Wise decided to use the money to ascertain the amount of land reclaimed if the water level were lowered 11 feet.²³ Work began early in September 1890, with civil engineer Robert Rowan of Kingston employed on the west side of the river and Arthur Phillips of the Rideau canal staff on the east shore. Soundings were taken to establish the shoreline if the water level were lowered seven feet and with two feet allowed for drainage, a contour line at a depth of five feet was run to designate land rendered suitable for cultivation. Markers were driven to indicate the levels and after the river had frozen, the area was surveyed to establish correct contour lines.²⁴

Wise's report on the survey findings clearly indicated the impracticality of the scheme and apparently squelched local support for the changes. He concluded that the amount of land permanently reclaimed would be a mere 1420 acres. To obtain this land, a lock with 10-foot lift, a dam and a waste weir had to be built below Washburn. Approaches to the lock as well as the lockpit itself had to be excavated and a 6 1/2-mile channel at least 80 feet wide dredged through the reclaimed land. At Kingston Mills, a granite ridge at the entrance to the locks would require removal, most of the upper lock would be rebuilt and new gates with a greater height would be installed. In all, he estimated the cost at nearly \$210,000. Moreover, Wise set forth several problems meriting consideration. From the condition of the shore, he concluded that the channel might run through rock, increasing the cost of excavation. Even were this not so,

the bottom would certainly be covered with stumps and these would be difficult and expensive to remove. He also suggested that the land might, in fact, prove to be of little value for agriculture since the stakes had demonstrated the existence of a large amount of heavy blue clay. Lastly, he emphasized the health hazard that would result from laying bare such a large amount of land submerged for so many years. His final statement was unequivocally hostile to the change.

The undersigned is therefore of the opinion, that the lowering of the water as proposed, would be of a very doubtful benefit either to the people along the borders of the Drowned lands or to navigation, and its ultimate cost out of all proportion to the value of the lands to be reclaimed, and other results expected from it.²⁵

Although the question of lowering the water level on the reach ceased to trouble canal officials, they continued to receive claims for compensation for lands drowned by an alleged rise in the water level. Petitions urging reclamation of lands had complained that areas previously dry were now flooded - caused, they contended, by the water being retained at a higher level at the Kingston Mills dams. Wise consistently denied this allegation, pointing out that the depth of water on the sill at Kingston Mills was still between six feet eight inches and six feet ten inches, as it had been for decades.²⁶ He concluded that the fact that more land was affected by flooding resulted from the clearance of land and indeed from the farmers' own actions.

What was once a forest of stumps is now an open lake. The owners of the land have further cut up the drift wood which acted as a Breakwater, and consequently the land is now exposed to the full force of the wind which piles up the water more or less on the shores.²⁷

Wise argued that not only were claims for compensation exaggerated but they arose from causes outside departmental control. Since water was not kept at a higher level, government had no responsibility for the alleged flooding. Political expediency, however, outweighed the matter of technical responsibility and in 1892, the government arbitrator, A.F. Wood, awarded financial settlements for damage claims along the east side of the drowned lands in Frontenac County.²⁸ In addition to claims from individual landholders, the municipal council of Pittsburgh Township presented a request for money to repair roads and bridges allegedly damaged by a rise in the canal level. The superintending engineer argued vigorously against accepting such claims since canal records proved that the water was not maintained at a higher level than formerly. Moreover, he pointed out that if they were paid, government would be faced with similar demands from every township along the waterway. Despite Wise's objections, compensation for land damages on the Kingston Mills level continued to be paid during the 1890s.²⁹

Like those at Kingston Mills, drowned lands claims on the Kilmarnock-Merrickville reach involved both requests for compensation and demands that the water level be lowered. Although complaints about flooding in the Irish Creek area had been received by the department as early as 1869, not until 20 years later did a more organized campaign begin. In 1890, residents of Kitley and Wolford townships on either side of Irish Creek petitioned government asking that the level between Kilmarnock and Merrickville be lowered since parts of their farm lands were now too wet for cultivation. In his report on the memorial, Wise contended that the floods were caused by obstructions in Irish Creek which prevented easy passage of spring runoff. He suggested that if the bed of the stream were cleaned out, the land would drain properly and complaints would cease. Furthermore, he stated that it was impractical to lower the reach by two feet because of the high cost of deepening the channel by removal of several rock shoals as well as excavation required in the cut above Merrickville.³⁰

Claims for compensation for land damages in the Irish Creek area seem not to have been so vigorously presented as those on the Kingston Mills level, perhaps at least partially because of less influential backing. The complaints of 1890 were not acted upon and not until the first decade of the 20th century did the superintending engineer again discuss the claims extensively. In 1906, Phillips blamed recent allegations of high water on the farmers' personal animosity toward lockmaster Johnston of Merrickville. Moreover, he declared that the charges were absurd since all areas along the canal had been flooded because of the unusually damp summer and suggested that if the farmers thought themselves aggrieved, they could take the matter to court to obtain a final settlement.³¹

Unlike Wise, Phillips was prepared to admit that the flashboards on the dam at Merrickville were at least partially responsible for the additional area flooded. Because of the clearing of land and improved drainage, the freshet ran off more quickly and it was therefore necessary to retain the water at Merrickville earlier than in the past. Consequently low-lying land did not dry out until later in the spring and could not be cultivated.³²

Phillips suggested that the issue of compensation for drowned lands revolved around the legal question of the department's right to retain water for a longer period by the use of flashboards. At the time of the construction of the canal, the Royal Engineers had paid for all land drowned by the dam at Merrickville up to a small mill-dam at the site of the village of Jasper. This private dam flooded a considerable area in the township of Kitley in Leeds County. Because these lands had been affected by the mill-dam rather than by the Rideau canal works, no compensation for damages had been paid above Jasper. Furthermore, Phillips stated that he was unable to find any records in the canal office to indicate that the right to flood land above the private

dam had ever been transferred to the Royal Engineers or their successors. He therefore concluded that if, in fact, no compensation had been paid and if no transfer of mill rights had been made to the Royal Engineers, then the department might be held liable for claims arising from lands currently drowned by the dam at Merrickville.³³

The much disputed question of compensation for land damages was not easily solved. Early in 1914, Phillips reported that he had received a petition of right from Howard Olmstead, one of the claimants for damages on Irish Creek. In view of the fact that the conflict dated from 1869, the superintending engineer advised that a fiat be issued by government allowing the farmers to take their case to court. He concluded that only by decision of the Court of the Exchequer could the subject be permanently settled.³⁴

The increased number of claims for drowned lands in the later years of the 19th century illustrated a growing tendency to regard the Rideau as an outmoded transportation system with only local value - "neither useful nor ornamental," as Prime Minister Mackenzie had pronounced in 1877.³⁵ In the years before World War I, however, the only definite suggestion for drastic alterations came from the Canadian Pacific Railway. In May 1910, the vice-president of the railway, D.W. McNicoll, forwarded a proposal to the minister of Railways and Canals for a change in the routes of railway lines within the city of Ottawa. This plan required closure of the waterway from Gladstone Street northward so that a line of track could be laid on the canal bed. McNicoll argued that the small volume of business on the system did not justify its retention.

I think that an analysis of business passing through the canal other than from and to Ottawa, if made, will show that there is more advantage in the proposition I am now making than there would be gained by retaining the canal as it at present exists.³⁶

This suggestion met with vigorous resistance from a variety of interests in the communities along the canal. They united in condemning the proposed closure and pointed out that it would benefit only the railway to the detriment of the district through which the waterway passed. A resolution of the Kingston city council expressed the opinion that the change would be "very injurious to the interests of this Municipality and of the other Municipalities along the Rideau Canal as well as to the general marine interests of Canada." Moreover, supporters of the Rideau emphasized that the system still had an important role as part of the inland waterways, particularly in view of increasing tourist traffic. The Kingston Board of Trade summarized their views in an official resolution stating

that a large number of vessels use the Canal, that a passenger line makes four trips a week each way between Kingston and Ottawa, that the tonnage

carried increased very substantially last season, that tourist and yacht traffic is continually increasing and that for this latter class of traffic the Canal forms a part of a triangular water-way between Ottawa, Montreal and Kingston, which is at present unbroken and is becoming constantly more and more popular.³⁷

The arguments in favour of the retention of the Rideau were also set forth in a memorial presented to government by a deputation of merchants, manufacturers, vessel owners and representatives of municipal corporations and boards of trade from the Rideau area. They contended that the canal

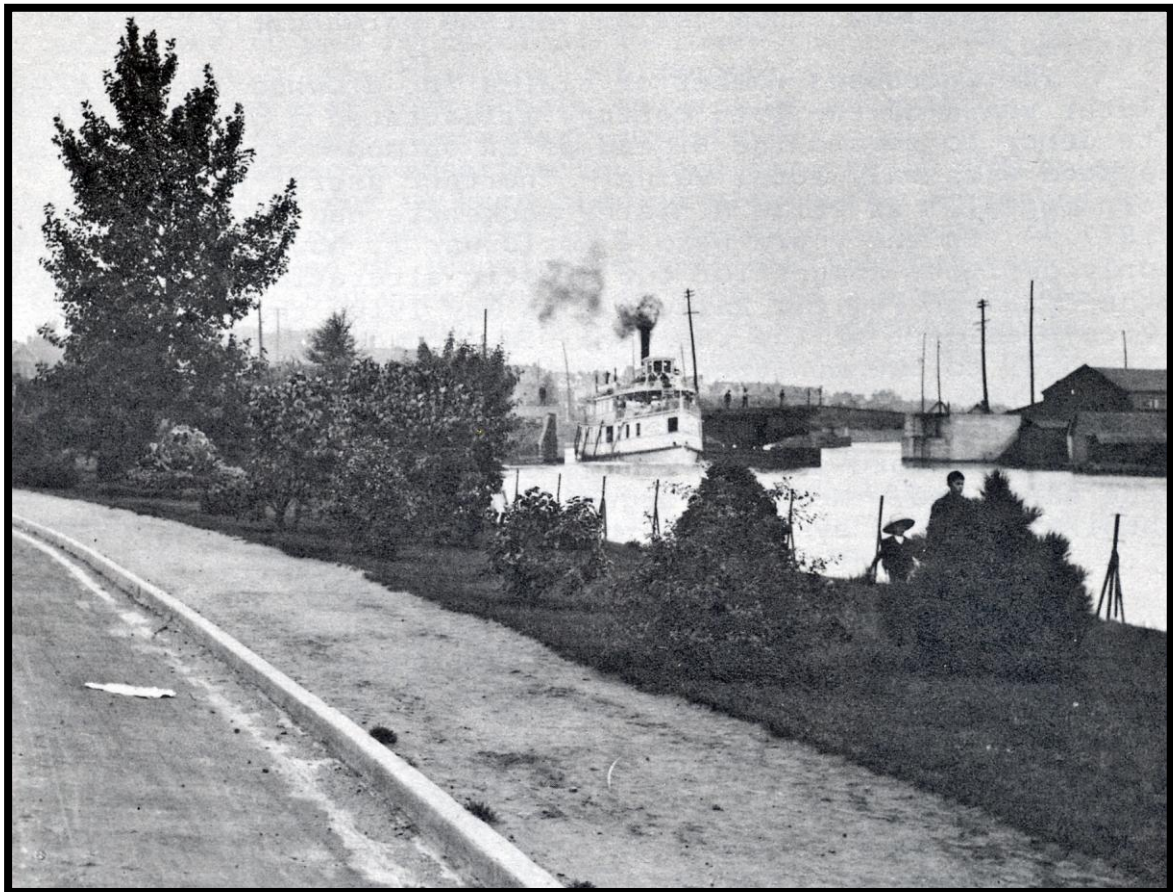


Figure 7. The *Rideau Queen* passing the Grand Trunk Railway bridge at Ottawa, ca. 1911. Ottawa East swing bridge in background. (Public Archives of Canada.)

provided competition to the railways and was thus a factor in the control of freight rates. The waterway also provided a vital transportation and communication service for its immediate area. Moreover, they suggested that the link between the Great Lakes and the Ottawa River afforded by the Rideau would be valuable in development of the northern area

of the province, especially with construction of the long-discussed Ottawa-Georgian Bay ship canal. The memorialists concluded that the company's proposal to end through traffic on the waterway was "utterly preposterous, incapable of support on any fair or reasonable ground, and contrary to every principle of public policy."³⁸ They argued, in fact, that rather than accede to the railway's request, government should deepen the channel of the Rideau and improve the water supply on the Kingston descent to render the system more suitable for increased traffic by larger vessels. The CPR proposal was never accepted by the federal government although vice-president McNicoll did take the opportunity of the change in government following Borden's victory in 1911 to present the plan to the new minister of Railways and Canals, Frank Cochrane.³⁹

This attempt to end through navigation on the grounds that the system was not profitable was not unique. Late in 1914, the city of Ottawa suggested that the minimum headroom of bridges over the canal within the city be reduced from 29 feet 6 inches to 12 feet. This alteration to decrease the city's cost of bridge construction would also have effectively stopped through traffic by business vessels. Superintending engineer Phillips opposed such a step, arguing that continuance of trade on the Rideau was necessary to keep railway freight rates down. As evidence, he stated that rates always rose after the close of navigation in the autumn. Furthermore, he pointed out that the proposed change would involve great expense for the Department of Railways and Canals since the canal basin would have to be maintained for the use of boats coming up from the Ottawa River while new docking facilities would have to be constructed at Dows Lake for vessels on the Rideau. Rideau forwarders would also suffer financial loss by having their terminal situated far from the centre of the city with poor streetcar service and a long haul for freight. Although he admitted it was not a business argument, Phillips also suggested that city authorities should remember that Ottawa owed its very existence to the Rideau canal and that the waterway had, in fact, been granted to the Canadian government on condition that it be perpetually maintained.⁴⁰ The city's proposal, like that of the railway company, was not adopted and the system remained intact.

The attempts to limit traffic on the Ottawa end of the Rideau reflected one aspect of dissatisfaction with the role of the waterway. Similarly, conflicts with the millers and the protracted discussions concerning land claims indicated that to many people the benefits offered by the canal were outweighed by its inconveniences. At the same time as its commercial importance was increasingly questioned, however, use of the waterway for recreational purposes became more common and, in fact, presaged a growing trend in the 20th century.

NEW DIRECTIONS FOR THE WATERWAY

Although commercial traffic on the Rideau declined through the later years of the 19th century, an increasing number of pleasure boats began to appear on the waterway. These included yachts passing through the system as one leg of the triangular route between the Great Lakes, Ottawa and Montreal, as well as vessels owned by residents of the Rideau communities who were beginning to regard the waterway as a source of recreation. The growth of pleasure boating created new problems for canal officials. The complexity of the navigation caused by the extent of drowned land on the route meant that experienced pilots were needed to guide vessels, especially since there were no charts available. In 1898, for example, the superintending engineer advised an American planning a cruise on the Rideau to contact Captain Noonan of Chaffeys or Captain Donnelly of Kingston for information on where a pilot could be obtained as well as the usual daily rate for such service.¹

The earliest public map showing the channel was produced in 1905 when Phillips ordered 150 black and white photographic prints of the departmental sketch map of the canal for distribution to people seeking navigational information. The map proved to be very successful and in 1906, Phillips recommended that more copies be made available.² A privately produced boating guide to the Rideau was also issued early in the 20th century by Dr. Elmer J. Lake of Kingston. His pamphlet, *A Chart of the Rideau Lakes Route*, was first published in 1907 and was sold by the author for \$1.50.³

Growing recreational use of the canal by amateur sailors required both adoption of safety precautions and changes in ordinary canal regulations. In 1908, a speed limit of six miles per hour was established on the artificial channel between Hogsback and Ottawa with a fine of \$20 for every infraction.⁴ The restriction proved difficult to enforce without a regular patrol and in 1910, Phillips requested that the officer employed by the Ottawa Improvement Commission to regulate speed on the scenic driveways along the canal be empowered to report breaches of the limit on the waterway. The superintending engineer warned that with the increase in pleasure boats, an effective means of enforcing regulations was needed to prevent dangerous accidents. "As there are so many skiffs and canoes, containing ladies and children, on the Canal in summer time, it is absolutely necessary to restrict the speed of motor boats...to avoid accidents which may perhaps

terminate fatally." Equipped with his bicycle and stopwatch, Constable Maloney of the Ottawa Improvement Commission supplied evidence against offenders that resulted in warnings and fines.⁵

Two other safety measures were adopted in response to increased recreational boating. In 1911, the department ordered 88 circular cork lifebuoys for placement at the locks. The lifebuoys were constructed of whole cork covered in heavy canvas with "Rideau Canal" painted on the side. They were required to be able to float on the surface of the water for 24 hours with 32 pounds of iron suspended from them.⁶ The description indicates that the lifebuoys were essentially similar to those still in use on the canal. Another valuable innovation came in 1914 when smoking in the locks was prohibited. Phillips pointed out that on holidays, many motor boats were passed in each lockage and a fire after the water had been let out of the lock could present a serious hazard to life. The superintending engineer added that there had already been two fires but since both had broken out when the water was still up, the occupants had easily escaped. To prevent a more serious fire, Phillips asked that he be authorized to prohibit smoking in the locks and to turn away any vessel if its occupants refused to comply. He suggested a fine of between \$10 and \$50. Moreover, he advocated that steam yachts, especially those using wood for fuel, should not be allowed in the locks with motor boats since a spark from the steamers might ignite the volatile gasoline fuel.⁷

In addition to these new regulations motivated by safety considerations, other problems arose from the use of the canal for recreation. Vessels navigating the waterway were required to purchase a let-pass at the first lock they passed. Many of the pleasure boats, however, particularly in Ottawa, remained only on one level and thus did not buy passes, although they did require opening of the swing bridges. Within the city, both the canal employees who operated the two road bridges and the railway men on the rail crossings were put to extra work while government received no revenue from the boats. In 1902, Phillips requested a ruling to clarify the department's obligation to pleasure boaters, pointing out that frequently small vessels spent entire afternoons running back and forth between Hartwells and the canal basin - passing through the four swing bridges several times in a day. No action was taken on the superintending engineer's request and in 1912, he again complained of the additional work caused by passage of small vessels through the swing bridges and suggested that the department decide whether a vessel had the right to have a bridge opened unless the owner had acquired a regular let-pass.⁸

Another problem that arose as more pleasure boats used the canal was that of the demands of small vessels to be locked through at any time during the night or day. Because the smaller boats required more water to fill the lock,

several lockages could waste a substantial amount of water. Consequently, large commercial vessels were often obliged to discontinue their service as the water fell below navigation height late in the season. Phillips was concerned that the forwarding companies thus suffered as a result of increasing pleasure usage. In 1907, he suggested that certain hours be established for the lockage of small boats. In this way, several vessels could be passed at once with less waste of water.⁹ Although not immediately accepted, these restricted hours of locking were subsequently adopted at the eight locks in Ottawa where the problem of wasting water was enhanced by considerations of the labour necessary to lock a boat down the flight.



Figure 8. The *Rideau Queen*. (Queen's University Archives.)

Acknowledgement of the growing importance of the recreational use of the waterway came in 1914 when the regulations governing Sunday closing were altered. In 1871, the canal, which had been open 24 hours a day, was closed to traffic from midnight Saturday until midnight Sunday, except during the last weeks of the season.¹⁰ By 1908, this restriction had been relaxed to permit the canal to remain open until 6 A.M. and to reopen at 9 P.M. These hours were not designed for pleasure boating, however, since to reach Long Island before six, a vessel had to leave Ottawa several hours earlier. Furthermore, since no boats could pass a lock until after nine, passengers were very late returning to their homes. As well, Phillips emphasized the danger of accidents when so many small boats tried to lock through after dark. Early in 1914, the superintending engineer



Figure 9. The *Rideau King* in the locks. (Queen's University Archives.)

received representations from a group of pleasure boaters, the Ottawa Motor Boat Association, asking that the hours of locking be extended to 9 A.M. and 6 P.M. Since the bulk of pleasure vessel traffic was concentrated at Ottawa and above Smiths Falls, only the stations at Hartwell, Hogsback, Black Rapids, Long Island, Smiths Falls detached and Poonamalie, and the bridges at Ottawa East, Bronson Avenue and Olivers Ferry (now Rideau Ferry) were affected. Phillips estimated that the desired change could be made for an additional annual expense of \$450 and he recommended that the hours be extended. The department acceded to the request early in the summer.¹¹ Subsequently, residents of Perth asked for a similar extension of hours on the Tay branch and Phillips suggested that it would be beneficial to make the additional hours apply to all lock stations since the added cost, exclusive of the stations already authorized, would be approximately \$1200 per year.¹² The extension, however, was apparently not granted until after the 1914 navigation season.

Increasing recreational use of the waterway also affected the land area along its banks. The growing number of tourists brought a greater need for accommodation facilities. Two of the well-known hotels on the waterway - the Kenney at Jones Falls and the Opinicon at Chaffey's - were constructed late in the century in response to an increased number of visitors from the United States. In 1895 an application was made, but subsequently withdrawn, for a lease on part of the reserve west of the locks at Jones Falls for a hotel.¹³ Local promoters emphasized the recreational aspects of the waterway - in particular, of the Rideau Lakes area - and concentrated their efforts on attracting visitors by rail from the northern United States. In 1900, the Rideau Lakes Navigation-Company conducted officials of the New York Central Railroad on a tour of the lakes and made arrangements to have information on the area included in the railroad's advertising material. The company requested a map of the route from the Department of Railways and Canals so that it could be reproduced with the advertisement and pointed out that the expense would be more than repaid by the large tourist trade that would develop.¹⁴

The growth of tourism was not the only influence on the Rideau. Especially in the larger towns and villages, the waterway and its adjacent lands were increasingly seen to provide not only commercial benefits but also an attractive area of public park. In Perth, Smiths Falls, Merrickville and Ottawa itself, civic improvement societies worked with canal officials to beautify parts of the canal reserve. The earliest formal effort occurred at Smiths Falls where in 1897, the Horticultural Society applied to lease a section of the reserve on the south side of the basin for use as a park. Phillips recommended granting permission to landscape the area from the road across the combined locks to the end of the reserve at the detached lock. He suggested, however, that the improvements should be subject to certain conditions - principally that government should incur no expense, that the area be patrolled by people supplied by the society, and that persons navigating the canal should retain access to the shores. The superintending engineer advocated that the land be granted to the Horticultural Society until it was needed for the use of the canal and a lease was forwarded to the organization early in October 1897.¹⁵

Similar efforts were made in other towns on the Rideau. In Perth, the local horticultural society created a small park in the centre of the town by beautifying the shores of the turning basin. The canal's annual report for 1908 stated, "The appearance of the basin in the town has been greatly improved by the Perth Horticultural Society, who, assisted by our bridge keepers, had put in flower beds and seeded and graded up the banks." Improvement of the canal reserve at Merrickville was prompted by the local Women's

Institute. During the summer of 1913, the Department of Railways and Canals placed benches along the shore and made a walk along the river-side of the cut leading to the locks. The following year, Phillips ordered 15 to 20 small trees for the station.¹⁶

The most extensive program of improvement to the area around the waterway was undertaken at Ottawa, primarily because the city was the national capital. In 1899, Parliament created the Ottawa Improvement Commission which was charged not only with the purchase of land for streets and parks but with the "improvement and beautifying of said city or vicinity thereof."¹⁷ The commission leased ordinance land from government to construct a scenic driveway along the west side of the waterway from Laurier Avenue to the Experimental Farm. A small park was created around Patterson's Creek, which flowed into the canal on the line of Clemow Avenue. Here the shores of the waterway were graded and a dry-stone wall erected from the canal westward to O'Connor Street. On an artificial island in the stream, a small summer house in a heavily decorated pseudo-oriental design was erected and the island was joined to the mainland by two bridges similarly embellished.

The ornate and artificial style employed in this summer pavilion and others along the driveway as well as in numerous bridges was in direct contrast with the proposals of the American landscape architect Frederick Todd. His report to the Improvement Commission in 1903 had recommended that landscaping of parks and driveways should be designed to enhance the natural appearance of the terrain.

Real landscape art is nothing if it is not conservative of natural beauty, and does not consist alone in building rustic bridges, or in arranging plants or trees, but is rather the fitting of landscape for human use and enjoyment in such a manner as will be most appropriate and beautiful.¹⁸

The early work of the Improvement Commission was also criticized by architect Colborne Meredith, appointed to the commission in 1910, as well as by the Ontario Association of Architects and the Royal Architectural Institute of Canada. These professional groups were particularly concerned that the commission had not adopted Todd's recommendation for improvement along an orderly and comprehensive plan and urged that all future work be undertaken with a view to the overall development of the city.¹⁹ Although controversial, the efforts of the Ottawa Improvement Commission laid the pattern for the gradual integration of the canal and its adjacent lands into the general growth of the city - a pattern followed by its successors, the Federal District Commission and the National Capital Commission.

By the outbreak of World War I, it was clear that the Rideau would continue to be of minimal importance as a commercial waterway. Depletion of timber and mineral resources of the watershed area in the later decades of the

19th century put an end to the small export trade and confirmed the system's role as an avenue of local traffic. Increasingly, however, the waterway came to serve as a recreational area. Pleasure boats appeared on the route in greater numbers and the development of tourist facilities in the region reflected growing travel by both water and rail. Within larger settlements, the recreational aspect of the



Figure 10. Boathouses, Rideau Canal at Bank Street, n.d. (Public Archives of Canada.)

Rideau was increasingly appreciated. As early as 1876, for example, a public skating rink was opened on the basin in Ottawa and private boathouses were permitted along the banks of the canal within the city until 1912.²⁰ For much of the period, the waterway served as a public swimming area, although the superintending engineer's complaints of "men & boys bathing without trunks...& indecently exposing their persons"²¹ indicate that such use was not always well received. During the 20th century, the value of the waterway for recreation was to increase and become a primary determinant of its future development.

RESERVOIR DAMS IN THE WATERSHED

The problem of ensuring an adequate supply of water to maintain navigation on the Rideau plagued canal officials throughout the last decades of the 19th century. During the early years of the waterway's existence, the water flowing naturally from the surrounding lakes was sufficient to preserve navigable levels since the heavy forest cover caused the snow to melt slowly and percolate gradually into the water courses. As the amount of cleared land in the watershed increased, the spring runoff became more violent and shorter in length. Consequently, not only were the canal works subjected to much greater stress in the spring but the water supply often reached its peak before the beginning of navigation and steadily declined during the season. By the later decades of the 19th century, the summit levels frequently fell below navigation height late in the summer and canal officials increasingly sought new reserves of water for the Rideau.

Most of the lakes forming reservoirs for the waterway rise in Frontenac County. The Bobs-Crow-Eagle lakes system enters Big Rideau Lake through the Tay River and forms the major reserve for the northern end of the canal. Wolfe Lake, site of a dam built during construction of the waterway, feeds Upper Rideau Lake and thus its water can be sent either north or south. The descending levels to Kingston are supplied by a number of smaller systems. Devil and Desert lakes flow into the upper end of Newboro Lake at Bedford Mills while Buck Lake enters through Mississagua Creek. The Rock Lake system and Hart Lake empty into the upper end of Lake Opinicon above Davis lock. In addition, a number of smaller lakes feed the waterway although they are too small to provide a useful supply of water. In 1911, a survey indicated that although Bass and Black lakes, flowing into Big Rideau, could be utilized as reservoirs, the amount of water they would retain did not justify the great expense required for dams, sluices and compensation for drowned lands.¹

In the mid-1860s, the shortage of water in the Rideau system caused so much concern that a select committee of the legislative assembly conducted an investigation of the problem and suggested more efficient management of the lakes flowing into the waterway. Canal officials began work on the improvement of the water supply in the autumn of 1865. In October, the superintending engineer, James Slater, made a survey of the group of lakes which rise in Frontenac County and enter the Rideau by the Tay River - Eagle Lake,

Long Lake, Elbow Lake, Crow Lake and Bobs Lake. By July 1866, a dam had been constructed at the foot of Eagle Lake and the dam on Crow Lake had been repaired to raise the water level by 20 feet. In addition, the dam at the Ottawa end of Big Rideau Lake at the Poonamalie lock station had been raised and strengthened to retain more water in this lake, which forms the chief reservoir for the north end of the canal.² In his annual report at the end of June 1866, Slater reviewed the steps already taken to improve the navigation and suggested another dam at the outlet of Bobs Lake.³ These structures were of only limited value, however, since a private dam maintained by John Korry at the foot of Bobs Lake (into which both Eagle and Crow lakes flow) prevented the reserves from reaching the Tay. To make effective use of the water, Slater recommended in 1868 that government obtain control of Korry's dam. The dam was apparently purchased late in 1869 or early the following year since in May 1870 the department received petitions protesting against an increase in its height.⁴

The problem of compensation for lands damaged by government reservoir dams was experienced on all the lakes in the last decades of the 19th century. On the Bobs Lake system, the dam at the foot of Eagle Lake caused the most widespread flooding. In 1873, Wise informed secretary Braun of the Department of Public Works that some claims for damages had already been paid and pointed out that since the Kingston and Pembroke railway was building a line past the foot of the lake, land values in the area would soon rise. He therefore advocated that all admissible claims should be settled as quickly as possible.⁵ Compensation for damaged land, however, was very slowly obtained. Government officials frequently considered that both the extent of damage and the value of the land was exaggerated. Consequently, demands for payment often stretched over a number of years while the dissatisfaction of the claimants increased. By August 1875, the problem of drowned land claims on Eagle Lake had become acute and the residents were reported to be threatening to take the law into their own hands. Wise reported that the dam keeper had informed him that "ineffectual attempts have been made to blow it [the dam] up this summer and more recently to burn it down, with more success."⁶ The superintending engineer urged that a final settlement be reached on all claims. Less than a week later, however, he informed Braun that the dam at Eagle Lake had been burned to within four feet of its foundations.⁷ The structure was subsequently rebuilt and after the payment of lands claims, remained unmolested.⁸ By 1895, however, it had fallen into disrepair. Since the water drained into Bobs Lake where the main government dam was situated, the Department of Railways and Canals decided that the upper dam could be abandoned without detriment to the Rideau.⁹

The Eagle Lake Dam was not the only one of the Bobs Lake group to be damaged as a result of unsatisfied land

claims. The dam at the foot of Crow Lake, rebuilt by government in 1866, was also destroyed sometime in the last quarter of the century.¹⁰ Because the site of the structure was so remote, it was not rebuilt since it could not be guarded effectively. By 1914, a number of summer cottages had been constructed on the lake and to keep the level high enough for pleasure boating, the residents erected a small dam in the creek leading into Bobs Lake. Consequently, reserve water in the upper lake could not be passed down to the Rideau. Late in 1914, in fact, the water level on the Tay fell so low that electrical lighting, generated by the small power plant in Perth, could only be provided from 5 P.M. until midnight. Although Phillips did not recommend the reconstruction of the government dam, he argued that control of the water in Crow Lake should not be in private hands and early in 1915 the owners of the small dam were informed that they would be required to sign a deed of license recognizing the government's title.¹¹

The largest reservoir for the southern end of the waterway - the Devil Lake system - was the cause of similar claims for compensation for damaged land. This system had been used by Benjamin Tett and John Chaffey to run timber to their mills at Bedford Mills. Besides the main dam at their works, they also maintained a smaller one on the creek between Mud and Devil lakes. This latter structure, known as Chaffey's Dominion Dam, was the cause of substantial flooding in Bedford Township. In 1871, however, Chaffey and Tett abandoned the dam because there was no longer enough timber in the area to warrant maintenance. The following year, the federal government rebuilt the structure to make use of the water it retained in Mud Lake.¹²

Compensation for land damages had previously been paid by the millers. Government now suggested, however, that it was not liable for damages incurred before assumption of control. Moreover, Wise disputed the department's legal responsibility to pay claims to persons who had bought land since the construction of the dam and had consequently been aware of the damage. He advised that the area be surveyed to ascertain the amount of land harmed and that the owners then submit their claims.¹³

Faced with increasing demands for compensation following a complete survey in 1874, government leaders questioned the need for continued maintenance of the Devil Lake Dam. The minister of public works, Liberal Prime Minister Alexander Mackenzie, concluded late in 1875 that it should be abandoned and no further payments for damages made.¹⁴ Not surprisingly, the decision met with opposition from the Tetts at Bedford Mills who pointed out that the structure was needed to provide a reservoir for the Rideau navigation. Moreover, they contended that if it were torn down, the settlers would have no means of bringing out logs cut during the winter and would thus lose a valuable source of cash income. The millers also argued that removal of the dam would expose long-submerged land with a

consequent health hazard from fevers and ague.¹⁵

Superintending engineer Wise also protested against the decision not to maintain the dam. He pointed out that it controlled an area of 37 square miles, of which 7 square miles were lakes, and that this water formed a valuable reserve for the Rideau. Wise suggested that if the sluice were left open for a season, the claimants might find that the dam's removal would not make a substantial change in the condition of their lands and would, in fact, deprive them of income from lumbering¹⁶ During the early months of 1876, Wise frequently reiterated his arguments, expressing his belief that the claims could be settled for less than \$3000 and concluding that the best method of achieving a fair evaluation of damages would be by a three-man committee representative of settlers, millers and government.¹⁷

Before an agreement could be reached, however, the residents of the area, like those of Eagle Lake, effectively solved the problem of the Devil Lake Dam. On 26 July, a group of disguised farmers destroyed the structure. Wise informed Braun that "it is stated that there were from 12 to 15 men engaged in the work. There [sic] faces were blackened in order that they might not be identified - one person however saw them at work and he thinks, if necessary he could name three of them."¹⁸ Although no action was taken to apprehend the culprits, the incident reached the House of Commons in an exchange between D. Ford Jones, Conservative representative of South Leeds, who described the farmers as a "band of armed ruffians" and Schuyler Shibley, Reform member of Parliament for Addington, who considered them instead "aggrieved respectable citizens seeking their rights."¹⁹ No investigation was ever undertaken and the dam was not rebuilt although Wise recommended reconstruction in 1880. By 1885, the superintending engineer admitted that Tett's mill-dam at the foot of Devil Lake served as a partial control for the system. He stated, however, that he had been informed that those who had destroyed the government dam now regretted their action and suggested that the structure might be rebuilt.²⁰ The government was apparently unwilling to reopen the controversial issue since Wise's suggestion was not acted upon.

The need for a dependable reserve of water for the Kingston descent led canal officials to investigate other lakes. In 1884, a petition from citizens of Kingston advocated development of the Buck and Rock lake systems. Buck Lake entered Newboro Lake through Mississagua Creek and had previously been controlled by a dam built by John Chaffey. Similarly, the Rock Lake system, which feeds Lake Opinicon, had been contained by a sawmill dam owned by James Hunter. Wise concluded that since both of these dams were no longer functional, their rights to regulate the water level should be purchased by the government and the structures rebuilt.²¹

Late in 1885, the superintending engineer began negotiations with Hunter and with the Tett family who owned Chaffey's dam on Mississagua Creek. The former was prepared to sell his rights to the control of Rock Lake for \$500 and on 24 March 1886, the contract was signed at Newboro. Tett set a price of \$2000 for his two dams on Mississagua Creek. This sale seems to have been completed early in 1886.²²

The Buck Lake Dam apparently survived for a number of years since there is no record of its destruction. The Rock Lake Dam, however, suffered the same fate as had those at Devil and Crow lakes. Less than three months after its reconstruction in March 1889, it was torn away to the foundations and the stone filling removed from the channel.²³

Unlike the two earlier incidents, the destruction of the Rock Lake Dam was investigated by the government which employed a private detective to secure convictions. To prevent flooding during the spring runoff, the stoplogs had been left out of the structure since government was considering claims by a local family, the Teeple, that their lands would be damaged by the water retained behind the dam. Lockmaster Alfred Forster of Davis reported that despite this concession, the Teeple brothers had expressed their intention to tear down the structure and had later boasted of their act. He suggested that the department prosecute both the Teeples and another local farmer, T. O'Brien.²⁴ Despite Forster's assurance, the government was unable to win its case against the men. Wise later admitted that the investigation had been undertaken months after the act and acknowledged the problems of trying to obtain evidence in a small community against persons accused of so acceptable a crime. "[The] parties implicated had plenty of warning, & it was difficult to get any direct evidence, especially in the back country where all are neighbours."²⁵ Not only was the government's case withdrawn for lack of evidence, but the detective employed by the Department of Justice on the case was sued for false arrest by O'Brien, one of the suspects. Government bore the costs of his successful defence.²⁶ Because the dam was too isolated to be effectively guarded, it was never rebuilt, although as late as 1910 Phillips advised that its reconstruction would provide a needed reserve of water and would also lessen the pressure on canal works during the spring freshet.²⁷

A government dam at the foot of Hart Lake, which flows into Lake Opinicon, met a similar fate. Constructed in 1872, it had been rebuilt in 1889²⁸ and like the dam at Rock Lake, was imperilled by its isolation which made effective protection impossible. After the structure at Rock Lake had been destroyed, both lockmaster Forster and superintending engineer Wise expressed fears for the safety of that at Hart Lake, warning that unless those responsible for the vandalism were prosecuted, the latter dam would also be torn down.²⁹ Wise's apprehension was well-founded

since the dam was destroyed well before 1910, probably very soon after the attack on the Rock Lake structure.³⁰

The last major potential reservoir to be utilized for the Rideau was Wolfe Lake, which empties into Upper Rideau Lake at Westport. The ordnance department had built a dam at its outlet during construction of the waterway but the structure had been allowed to deteriorate and late in the 19th century, was in ruins. Because of the extremely low water in the system during the previous season, Wise investigated Wolfe Lake in 1889 and concluded that it would form a valuable reservoir. Since the shores were steep and rocky, the water level could be raised five feet with very few claims for damages.³¹ During the spring of 1889, E.G. Adams of Westport built a dam consisting of 12 cribs 24 feet long, 10 feet wide and 6 feet high across the creek leading to Upper Rideau Lake. The sill of the sluice was excavated two feet lower than formerly, allowing an additional amount of water to be drawn off.³² This dam did not face the same dangers as did those in the more isolated areas and it survived as a valuable part of the water control system of the Rideau.³³

The development of a series of reservoirs for the Rideau represented an attempt on the part of canal officials to ensure that the waterway remained physically able to carry the trade of the area. With the increase in settlement and the growth of alternative means of transport, some residents, in particular those not living directly on the route, increasingly viewed the Rideau as an ineffective system whose needs were in conflict with local interests. The hostile reaction to the inland waterways in parts of the United States which Waggoner documents in *The Long Haul West* was matched on the Rideau by the destruction of dams in the watershed by disgruntled settlers who saw the canal not as a means of transporting their produce to market but rather as a hindrance to the development of their lands.

PROPOSED BRANCH CANALS

In the years before Confederation, it had become clear that the Rideau's value as a transportation route was primarily limited to local traffic. Nonetheless, in the last decades of the century, the waterway played a viable role in the trade among the river settlements. Moreover, local trade was sufficient to motivate periodic agitation for branch canals connecting with the Rideau. Of these, the Tay branch, begun in 1883, was the only one to be completed.

The arguments advanced for construction of branches emphasized the economic benefits that would result from easier access to the main waterway. A petition from a group of mill owners, merchants and farmers advocating the improvements of the Gananoque River argued that a connection with the Rideau would

open up a section of country now cut off from direct communication with markets – afford comfortable homes for industrious immigrants, greatly increase motive power at several points much needed, and add greatly to the population of this section, with corresponding increase in various industries.¹

A later memorial in support of the Tay branch was even more specific in enumerating commercial gains that would accrue from construction of the canal. The merchants emphasized that the area served by the Tay already exported valuable amounts of timber, iron ore and lime phosphate and optimistically suggested that expenditure of \$60,000 would result in an annual trade of \$10,000 and a substantial increase in Rideau revenues.² Based on such economic arguments, local agitation resulted in creation of a link between the Tay and the Rideau as well as complete surveys of a proposed extension into the Devil Lake system above Bedford Mills on Newboro Lake and of the improvement of the Gananoque and its connection to the Rideau through a lock at the Morton Dam.

The development of the Gananoque had long been advocated. As early as 1836, a charter had been issued to the Gananoque and Wiltsie Navigation Company to begin works that would render the river navigable. A promised grant of money had never been given, however, because of the political disturbances culminating in the rebellion of 1837.³ Agitation for improvement of the river flared again in 1861, and in 1872 a more vigorous and sustained campaign began. Demands to make the river navigable were

interwoven with the desire of millers along the route to obtain more water through the Morton Dam. Indeed, in his 1872 report on the merits of the proposal, civil engineer William Kingsford argued that the petitioners were more concerned with increasing the water supply to their mills than with creating a navigable channel. As proof, he evinced the fact that no plans had been prepared for works to connect the river with the St. Lawrence and that there was, in fact, no generally accepted design for the overall improvement of the route. Kingsford estimated the cost of making the river navigable from the Upper Falls at Gananoque 23 miles upstream to Lyndhurst at nearly \$10,000.⁴

Requests for improvement of the Gananoque were renewed in 1883 with a petition from residents of the section of Leeds County bordering the St. Lawrence. During the summer, canal officials undertook a complete survey of the route. An investigation was also made of the Devil Lake system since the proponents of the Gananoque scheme had suggested that the additional water necessary could be obtained by using the upper series of lakes as a reservoir. The superintending engineer's report on the Gananoque River navigation divided the works into two main sections - those below Lyndhurst which could use water from Charleston Lake as a reservoir and those between Lyndhurst and Morton which would depend on the Rideau for water and thus could not be constructed without utilization of the Devil Lake system. Wise estimated the cost of the former section at \$95,000. Much of the river could be made navigable by dredging and blasting out rock shoals but two locks were required - one at Charleston Lake to raise the water level four feet to provide an adequate reservoir and one at Marble Rock where there was a drop of ten feet in the river.

Although this section of the proposed waterway was more than twice the length of the stretch from Morton to Lyndhurst, the latter segment was estimated to cost \$132,000 - nearly \$40,000 more than the cost of the section nearer Gananoque. The difference was explained by the fact that four locks were necessary - two at Morton to overcome the 20-foot drop from Whitefish Lake and two at Lyndhurst. Moreover, 1500 feet of artificial canal would have to be excavated at the latter village. Since these works were dependent upon an increase in the water supply by the construction of storage dams on Devil Lake, Wise suggested they could be postponed and the lower section opened since he acknowledged that the works would provide a means of bringing produce from back settlements of the country.⁵

During the summer of 1885, the Conservative government proposed a grant of \$20,000 to increase the supply of water to the Rideau canal and the Gananoque River. Although opposition members argued that the expenditure would benefit the Gananoque mill owners most directly and claimed that it represented a misuse of public funds, Prime Minister Macdonald contended that the money was needed primarily to maintain navigation level on the Rideau. So long as the

waterway remained open, he pointed out, it had to be supplied with water. Although construction of both the St. Lawrence canals and the railways had diminished its usefulness, the system could not be disregarded.

People are settled along its banks. Government cannot close it up without great injury to that whole country, where the people have been in the habit of using it as their means of transportation for two generations.⁶

Following passage of the vote, the Gananoque Water Power Company applied for financial assistance to increase the amount of water descending to Gananoque. They proposed to raise the level of Charleston Lake by four feet creating a reservoir that could also be used to supply the lower levels if government should subsequently decide to make the river navigable.⁷ Wise recommended that a sum of \$8000 be paid only upon certain stringent conditions. The company was to undertake all surveys and settle all claims from the rise in water level. It was also required to excavate a rock shoal in the river bed below the outlet of Charleston Lake, thereby giving a minimum depth of six feet from Charleston Lake to Marble Rock. If the federal government subsequently developed the river as a waterway, the company was to assign its rights to hold the water at a higher level and also give a right-of-way for works necessary to make the route navigable.⁸ These conditions were accepted by the Gananoque promoters and by 1887, they had completed the dam at Charleston Lake and had purchased the drowned lands above it. Since the part of the contract that remained incomplete - removal of the shoal - would cost only \$1000, Wise recommended that \$7000 be paid the company as a progress payment.⁹

No other work was undertaken to complete the development of the Gananoque system. The scheme, however, was not entirely forgotten. Early in 1911, residents of inland townships of Leeds County again petitioned for construction of a lock at Morton. Superintending engineer Phillips reviewed the previous surveys of the area and stated that in 1884, it had been decided that the large expenditure would not be warranted by the service provided by the extension. This consideration was, he argued, even more valid now that the Brockville and Westport Railway had been constructed through the area with a station at Delta. Moreover, the shortage of water in the Rideau was so severe that no water could be spared to run through Morton. Phillips set the current cost of locks connecting the Rideau and the Gananoque at approximately \$115,000 with an additional annual appropriation for maintenance and salaries of five men. Lastly he pointed out that extension of navigation to Lyndhurst would require construction of wharfage facilities at that village as well as purchase of the existing dam with compensation to two sawmills, two gristmills and a carding mill. Moreover, since dams would be needed in the back districts to create a reserve water

supply, government would be required to pay claims for drowned lands. With these additional expenses, Phillips suggested that the extension to Lyndhurst would cost around \$200,000.¹⁰ His pessimistic evaluation of the expected cost compared with its probable benefits could not fail to be impressive and the issue again dropped from public concern.

The campaign for the improvement of the Gananoque in 1883 had been connected with a proposal to construct a branch canal from Newboro Lake through the Devil Lake system to Knowlton Lake in Frontenac County. Promoters of the scheme argued that it would both increase the water supply for the Rideau and open a large area of the country for agricultural development. The proposed extension would add 86 miles to the Rideau navigation - from Bedford Mills on Newboro Lake through Devil, Birch, Desert and Little Mud lakes to Knowlton Lake with branches to Otter and Canoe lakes.¹¹

During the summer of 1883, Wise made a complete survey of the suggested route and concluded that the cost of the works necessary to make it navigable would be over \$170,000. Two locks were necessary at Bedford Mills to overcome the 29-foot rise to Devil Lake. Another lock with a lift of 14 feet would be needed on the stream between Devil Lake and Big Mud Lake (now Kingsford Lake). This level could then be carried back to the head of Knowlton Lake by extensive dredging. Wise also suggested two smaller branches - one to Otter Lake connecting with Little Mud Lake (now Holleford Lake) and the other to Canoe Lake at the head of Desert Lake. Although he admitted that the waterway would be of great benefit to the area through which it passed, he maintained that the cost was out of all proportion to anticipated returns, especially since water reserves could be obtained from the system at much less expense. Wise contended that an expenditure of \$15,000 would be sufficient to build two small control dams and to deepen the streams to enable a large amount of water to be drawn off to supply the Rideau. Since water was increasingly required on the Kingston descent as private mill-dams fell into disrepair, the superintending engineer urged development of the Devil Lake system as a reservoir.¹²

Although a series of meetings was held in the interior townships of Frontenac County to urge construction of the Devil Lake branch, the project was not undertaken, seemingly because of its great cost.¹³ Nearly 20 years later, the campaign for the extension to Knowlton Lake was renewed. At this time, superintending engineer Phillips estimated construction expenses at approximately \$210,000 as a result of the increased cost of labour and materials. Moreover, in 1883, Wise had not considered the inevitable costs of drowned land claims and of compensation to the Tett brothers for their mill at Bedford Mills. With this additional expense, Phillips concluded that the total cost of the extension would be \$250,000.¹⁴ Although Parliament

voted a grant of \$50,000 to begin construction of the branch in 1904,¹⁵ no money was expended and the Devil Lake extension, like the Gananoque proposal, ceased to be advocated.

Several other branches leading to the Rideau were proposed during the years before World War I. In 1883, the department received a petition from residents of Leeds, Lanark and Addington counties requesting that a navigable channel be constructed to connect Bobs Lake with Upper Rideau Lake. Wise pointed out that since the lake currently provided an essential water supply for the north end of the Rideau through the Tay River, it should not be diverted to flow south to Kingston. He urged—therefore that the petition be dismissed.¹⁶ A more practical suggestion was put forth in 1908 when the Department of Railways and Canals drew up plans for the construction of a basin with wharfage facilities in the town of Kemptville. Kemptville Creek (also known as the South Branch of the Rideau River) had previously been dredged to within 500 feet of the business centre of the town. To enable boats to discharge and load cargo, Phillips proposed that a basin be excavated and enclosed with concrete retaining walls and wooden landing stages. He estimated the cost at \$20,000.¹⁷ Because of the expense of the improvement, the work was not undertaken and in 1913 Phillips indicated that it was no longer considered.¹⁸

In contrast to the failure that met the promoters of the Devil Lake and Gananoque branches, the campaign for construction of a canal to the town of Perth proved successful, possibly because the proposed work was, in fact, a reconstruction of an earlier waterway. During the construction of the Rideau canal, a private firm, the Tay Navigation Company, had built five locks in the Tay River from Perth to Port Elmsley on Lower Rideau Lake. Although this canal was used by vessels only until 1849, the dams were maintained to provide water to float timber out to the Rideau. In 1865, several of the locks were destroyed by logs and the entire system was abandoned.¹⁹ Water still provided the most efficient means of transporting material from Lanark County, however, and in 1880 a group of merchants and residents sent a petition urging a connection with the Rideau to John Haggart, Liberal-Conservative member of Parliament for South Lanark and a former mayor of Perth. The merchants emphasized the increasing economic importance of the area with its timber and mineral exports and pointed out that increased trade would augment the revenue received from Rideau tolls." Although superintending engineer Wise reported in a preliminary survey that he did not believe the trade of the area would justify the expense of the canal, he was authorized to make a complete investigation late in 1881²¹

Submitted in February 1882, Wise's report discussed two routes for the proposed canal - one following the Tay River on the line of the original canal and the other a new

cutting from Beveridge Bay on Rideau Lake across a swamp to join the Tay above the locks of the former canal. Two locks, each with a 13-foot lift, would be constructed in an excavated channel 60 feet wide and a flat dam with waste weirs would be built across the Tay below the juncture of the new cut to maintain a navigable level back to Perth. Both routes required extensive dredging of the riverbed. The estimated costs were almost identical but Wise believed the Beveridge Bay line to be more practical.²² Despite a petition from the ratepayers of Elmsley township pointing out that the village of Port Elmsley, with its mills and woollen factory, should not be bypassed and urging that the canal be reconstructed through the village,²³ the Beveridge Bay route was chosen. An order-in-council of 2 June 1883 authorized a contract with A.H. Manning & Macdonald Company for construction of the Tay canal at a cost of over \$180,000 and on 20 June 1883 Wise reported that the contractors, with a work force of 30 men, were at work at Beveridge Bay. More labourers were being hired daily.²⁴

No detailed account of the construction of the Tay canal is available aside from the summaries of work printed in the annual reports of the Department of Railways and Canals. The locks were apparently built during 1885 and 1886. A rough diary of the job indicates that by May 1885, the walls of the upper lock were being pointed while foundations of the lower were still not completed. Six months later, masons were reported to be building the chamber walls of the lower lock.²⁵ Late in September 1886, Wise commented that work on both locks was well advanced. A year later, both locks, the artificial cut across Beveridge swamp and the main retaining dam on the Tay were completed and the government dredge was deepening the channel to Perth.²⁶ The excavation of the canal from Craig Street to the old basin in the town - a distance of 2100 feet - was contracted to William Davis & Sons early in 1888. In June 1889, Wise reported that the company had excavated the old basin and had built wharves around it. The only work remaining was dredging of the river from Craig Street to the basin.²⁷

Construction of the Tay, like that of the Rideau itself, was plagued with problems with contractors and unanticipated increases in expenditure. As early as December 1884, additional funds were granted to Manning & Macdonald because of unforeseen conditions that had increased costs. Formation of the entrance in Rideau Lake proved to be more difficult than expected and deepening of the river required excavation inside longitudinal darns rather than simple dredging. This increase in payment was recommended by both the chief engineer of the department, John Page, and Wise.²⁸ Subsequent requests were met not only with greater resistance from government but also with complaints about conduct of the work. In July 1887, Wise informed the contractors that there were still many

obstructions in the channel as a result of their failure to pile dredged material away from the banks and stated that he would not accept the canal until this work was completed.²⁹

Finances continued to be a source of conflict between the canals branch and the contractors on the Tay. After a protracted dispute, the Department of Railways and Canals submitted Manning's claims for extra payment to arbitration in December 1887, although their final payment was not made until the fiscal year 1888-89.³⁰ Relations between government and the other Tay contractor were equally strained. When the contract with Davis & Son expired on 1 November 1889, the job had not been completed and the government itself dredged the remainder of the basin. The contractors disputed their payment and in September 1891, refused the government's offer of \$53,614.62 as final settlement.³¹

Davis's claims were reviewed by the civil engineer, Walter Shanly, in July 1892. His detailed report provides a useful illustration of the difficulties encountered in the construction contracts. Shanly stated that he had inspected all relevant documents, had examined the work done and had met with Wise, William Davis and the resident engineer on the Tay. After an investigation of each disputed item, Shanly found that there were four general areas of conflict - certain work had been omitted from the final estimate; measurements of some parts of the excavation and dredging were alleged to have been taken incorrectly; the price of some work had not been specified in the contract, and disagreement had arisen over interpretation of the contract specifications. Shanly concluded that the dispute could not be resolved except by sworn testimony and a formal judgement and advocated that it be referred either to the Exchequer Court or to a specially appointed arbitrator.³² The final settlement of Davis's claim was not made until the fiscal year 1896-97 when he was paid \$10,720.50.³³

Although the turning basin in Perth was situated in the business centre of the town and was more than adequate for the commerce of the area, government officials for a time considered a further extension 1000 feet upstream past Gore Street. Wise explained that residents of the town had suggested that as business increased, further wharf space would be needed. Moreover, the upper section of the river was used as a dumping area by mills and dredging would remove refuse that otherwise would be washed down into the basin by the spring freshet.³⁴ The town of Perth contributed \$4000 toward the cost of a swing bridge for Gore Street and late in November 1890 Wise was authorized to call for tenders for the extension.³⁵ Despite complaints from the town council of Perth that they had raised local taxes to pay for the bridge on the express understanding that the canal would be extended,³⁶ the work was never undertaken, probably because of the realization that since the existing basin was capable of handling trade, the expense was unjustifiable.

Demands for branch canals were motivated by local considerations. The success of the Tay promoters may reflect both the fact that the work was a reconstruction and that the structures were less complex and thus less costly than those required to render either the Gananoque or the Devil Lake system navigable. Political influence may also have had some impact on the government decision to build the Tay and ignore the other two proposals. Petitions for the construction of the Tay were sent to John Haggart, veteran Liberal-Conservative member of Parliament for South Lanark, postmaster-general from 1888 to 1892, and minister of railways and canals from 1892 to 1896. On the other hand, South Leeds was represented by an equally staunch Liberal-Conservative, George Taylor, who was elected in 1882 and held the seat until he resigned in 1911.³⁷ The decisive factor would seem to be the exceedingly heavy costs of construction required for the Gananoque and Devil Lake branches. Local demands for extension of the Rideau waterway indicate, however, that although the system had no viable role in the national economy, it remained a valuable and appreciated means of transportation and communication for the settlements along its banks.

STRUCTURAL CHANGES, 1832-1914

The major structures of the Rideau waterway - locks, dams and weirs - underwent few significant alterations in the 19th and early 20th centuries. Maintenance, however, was a constant problem. The harsh Canadian climate aggravated the natural erosion of stonework and by the later years of the 19th century, the effects of age and a half century of use had increased the annual costs of repairs. Moreover, the nature of the Rideau itself rendered the dams and weirs particularly vulnerable to injury, especially during the spring freshets when the masonry was damaged by the force of ice, driftwood and flood water running down from the watershed. Furthermore, the runoff became more severe in the later years of the century as moisture drained rapidly from the greater area of cleared land rather than percolating slowly into the system as it had when the watershed was still heavily forested. Consequently, at a time when the canal works were beginning to show the natural decay of age, they were required to withstand increased stress.

Although the nature of the waterway predisposed it to injury, the numerous dams and substantial area of drowned land that characterized the system meant that it could not be allowed to deteriorate to the extent where the failure of a dam might cause flooding. Each year therefore saw an extensive program of maintenance repairs. By mid-century, government officials realized that the system was destined to be economically unprofitable and were understandably reluctant to incur expenditures other than those absolutely necessary to preserve it in navigable condition.

Consequently only minimal repairs were authorized and the major structural changes necessitated by demands of efficiency that were experienced on more successful routes were never advocated for the Rideau. This government indifference meant, however, that the waterway survived into the 20th century essentially unaltered, with the early 19th-century works retaining much of their original appearance.

Ottawa - First Eight Locks

No changes in design were made in the flight of eight locks at this station before 1914. They are protected from

floods by the works at Hogsback and thus have not been damaged as frequently as more exposed stations. Regular maintenance of masonry and machinery and periodic renewal of woodwork represented the bulk of expenditure on the locks themselves. In 1833, the year following completion of the waterway, provision was made in the estimates for pointing and grouting the masonry of the lock walls since the stone blocks had not been laid in cement¹. No major repairs to the stonework were undertaken until late in the century. In his annual report for 1898-99, superintending engineer Arthur Phillips commented that all the masonry required extensive work and a substantial expenditure would shortly be necessary. In a subsequent report, he explained that because the original stone was of poor quality, it frequently needed replacement by sandstone brought from the government quarry near Elgin, Ontario.² The coping of the locks and the mitre sills were particularly vulnerable to damage from vessels and were thus the most often repaired section of masonry.

The only substantial change in the machinery of the locks during the period occurred in 1894-95 when the sluices on the upper gates of the flight were fitted with sliding vertical flanges operated by means of a rack and pinion set in steel frames. Formerly the flow of water into the upper lock had been controlled by hinged flanges opened by chains and crabs. This change was required because so much debris was washed into the old flanges that a diver had frequently been needed to keep them clear and functional.³

In the years preceding World War I, much of the artificial section of the canal through Ottawa was substantially altered as the city expanded southward. The turning basin above the locks occupied the area between Albert and Slater streets and from Besserer Street in the east to Elgin in the west. From its northeast end, a small drain flowed down along York and Dalhousie streets and King Edward Avenue to empty into the Rideau River just above the falls at the Ottawa, following the course of a stream from the beaver meadow formerly on the site of the basin. As the city grew, however, civic authorities viewed the open drain as a menace to public health and in the years preceding Confederation frequently complained of it to the Board of Works.⁴ Government officials agreed that the ditch presented a health hazard and in 1872, the minister of Public Works, Hector Langevin, permitted the city to close in the bywash from Cumberland to St. Paul (now Besserer) streets on the condition that it be kept free of obstructions so that water from the canal could be released through it.⁵ As the city improved its municipal services, the basin was emptied through a drain connecting with the main sewer completed late in 1876. The bywash was no longer of use and in 1877 the section between St. Paul and Rideau streets was filled in with material dredged from the basin.⁶ In 1891, the old wooden lock at the head of the drain in the basin was converted into a dry dock for ship repairs.⁷

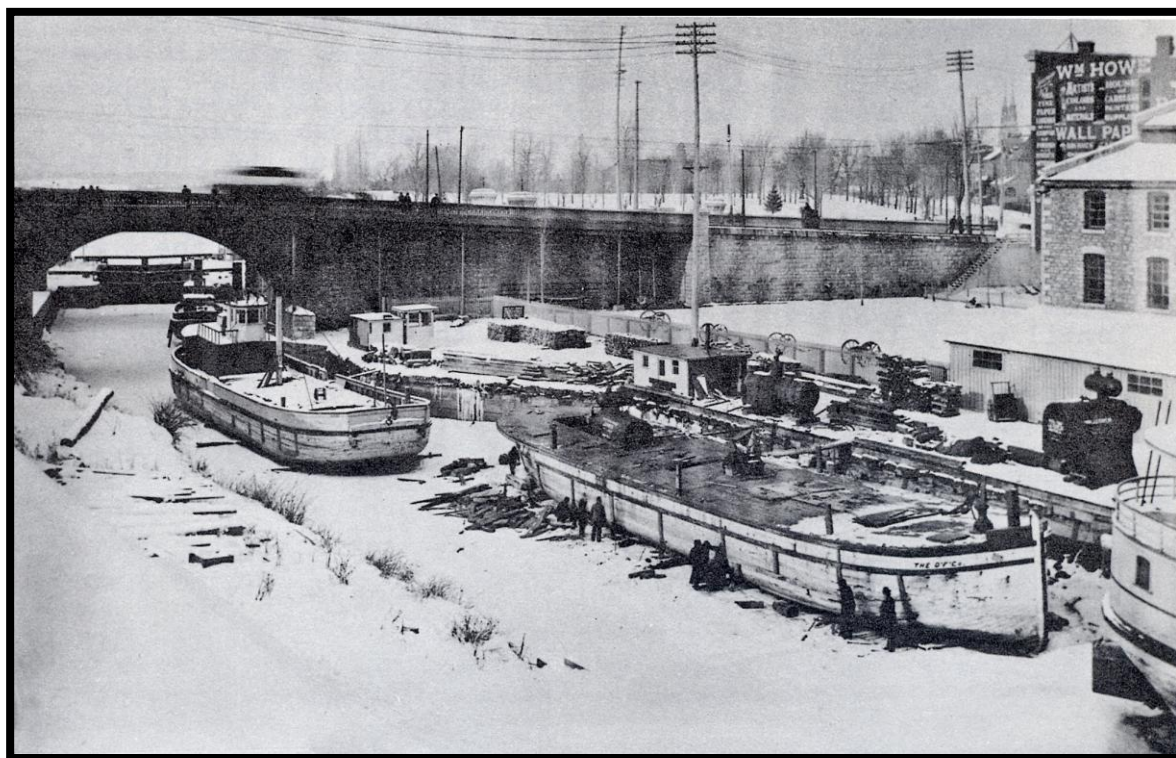


Figure 11. Site of the new Canada Atlantic Railway station at Sappers Bridge, Ottawa, 1896. The ships are wintering in the canal. (Public Archives of Canada.)

The basin itself was substantially improved during the last years of the 19th century. In 1890, the east side was dredged and in the following year, the west end was similarly deepened to a uniform depth of six feet. In 1889, the rock bottom of the cut from the head of the locks had been lowered by nearly 18 inches so that boats could come fully loaded to the wharves in the basin.⁸ Alternative means of transportation, however, soon brought changes to the Rideau system. In 1895, the eastern end of the basin was leased to the Ottawa, Arnprior and Parry Sound Railway Company which laid their tracks to the new station across it. Wharves were built at the railway's expense in the west half of the basin as compensation.⁹ Subsequently, the railway companies attempted to close the basin entirely but these attempts failed and the west end was not filled in until 1927.

Improvements were also made to the banks of the canal between the basin and Dows Lake. In 1893, heavy August rains caused landslides along the banks of the Deep Cut. To prevent further erosion, Wise suggested the construction of two rows of sheet-piling with clay packed in the interval.¹⁰ This work was undertaken in 1894 by John

Ask with of Ottawa who drove a wall of sheet-piling with timbers 10 inches by 10 inches by 24 feet long along the west bank of the cut from the Maria Street bridge (now Laurier Avenue) to Nevilles Creek (approximately Waverley Street). The following year, John R. Booth was employed to construct a similar wall along the east side of the cut from Waverley Street northward for 1200 feet.¹¹ The sheet-piling on the west side of the canal was replaced late in 1914 by a concrete retaining wall extending from the Laurier bridge to the head of the Deep Cut.¹² The banks from the cut southward remained as sloping earth shores until early in the 20th century when the Ottawa Improvement Commission began to construct scenic driveways along the waterway. The first of these was completed by 1907 extending along the west bank from Laurier Avenue to the Experimental Farm with an embankment across Dows Lake. A cribwork retaining wall was built to support the banks along the city side of the canal.¹³ The southern banks remained unchanged, although in 1914 Phillips reported that the commission intended to improve the section between Bank Street and Dows Lake when funds became available.¹⁴

The expansion of the city also brought changes around the locks at Ottawa. In 1872, the Dufferin bridge was



Figure 12. The canal basin and Grand Trunk yards, Ottawa ca. 1911. (Public Archives of Canada.)

constructed to connect Wellington and Rideau streets but the most striking change came in July 1912 when the venerable Sappers Bridge connecting Rideau and Sparks streets was demolished to make room for the triangular plaza known as Confederation Square. Cribwork was constructed under the bridge and the filling removed leaving only the arch standing. Seven hours of blasting were required to destroy the sturdy structure which finally collapsed at 1 A.M. on 23 July. Some of the massive stones broke through the protective support to fall into the canal which was closed for several days while the contractors cleared the channel.¹⁵

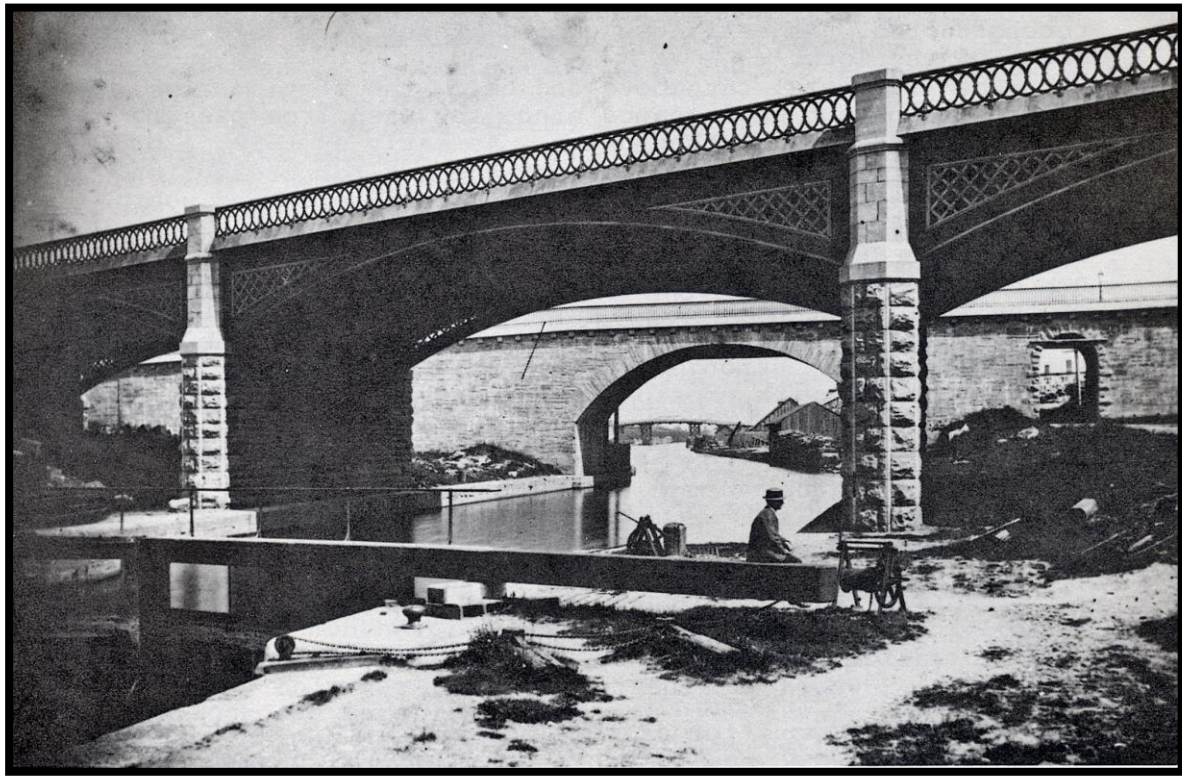


Figure 13. Dufferin and Sappers bridges, Ottawa, n.d. Maria Street (now Laurier Avenue) bridge in background (Public Archives of Canada.)

Hartwell

The two locks at Hartwell remained structurally unchanged during the period before World War I. Like those at Ottawa, they were grouted and pointed in 1833 after one

year of use. Later in the century, the stonework of the locks required extensive replacement largely as a result of advancing age and erosion from water and ice. In 1903, Phillips reported that the masonry was beginning to show signs of failure and that part of the upper lock and waste weir were to be reconstructed during the winter. The annual report for 1903-4 detailed the repairs stating that all of the old stone waste weir and the upper wing walls on the east side of the upper lock as far as the hollow quoin had been taken down and rebuilt. At this time, the waste weir was altered to consist of two masonry abutments fitted with 12-foot stoplogs.¹⁶ In later years, other sections of the stonework required extensive repairs: in 1911, the lower wing wall on the east side of the lower lock was rebuilt and the following year the wing wall on the west side was also reconstructed. As well, new coping stones were laid on both sides of the lock.¹⁷

The artificial cut above and below the station also required constant maintenance since the wash from passing vessels eroded its earthen banks. As early as 1899, a dry stone wall was built along part of the cut for protection. In later years, the wall was extended both north and south on both sides of the cut and in 1914, approximately 2000 feet of the dry stone walling was cemented into place by a new process in which cement was forced into the interstices of the wall under high pressure. Although the result was messy since the cement remained on the rock face, the wall was substantially stronger than the old dry stone.¹⁸ A similar problem with erosion was experienced in the cut below the waste weir, which was not covered in at this time. To alleviate the difficulty, about 80 feet of cribwork was built on the north side of the bywash in 1895 and in 1907 approximately 150 feet of dry wall was constructed to support the banks.¹⁹

Hogsback

Hogsback's position as the last station on the Rideau River has subjected the works to considerable strain, especially at the time of spring floods. The works at this station, in particular the dam and waste weir, have been extensively rebuilt, largely as a result of heavy spring runoff. During the construction of the canal, two successive dams were swept away in the floods of 1828 and 1829. In later years, the dam and waste weir suffered frequent damage. In 1841, the woodwork at the east end of the dam was undermined by floods and had to be promptly repaired with stone-filled cribwork to prevent the entire dam from collapsing.²⁰ Serious flooding was also experienced in 1862. Slater informed Toussaint Trudeau, secretary of the Board of Works, that it was the "greatest

flood ever known on the Rideau" and that all the dams and works were endangered.²¹ At Hogsback, the floods washed out the waste weir and seriously eroded the shore at the end of the dam. In a detailed report on the damages, Slater stated that the break in the dam was 200 feet wide and 32 feet deep. Large stones and small trees had been shoved into the breach to prevent further erosion but the total cost of repairs was estimated at between 5000 and £6000. Moreover, the superintending engineer emphasized that provision must be made to pass such floods in future without similar damage to the works especially since, with no sluices or bywash at the station, there was no way to control high water except runoff over the top of the waste weir which in this instance had been washed out. Cribwork filled with stone and gravel obtained from nearby public quarries was specified for the repair and by an order-in-council of 27 May 1862, \$30,000 was authorized as the cost of the work.²²

One of the major problems during the spring flood was the amount of ice and floodwood brought downriver by the high water, jamming the sluices, injuring the dams, and causing greater strain on the works. In 1864, the bulkhead at Hogsback was damaged by ice and floodwood and after repairs were made, a sloping apron of timber was constructed below the stoplogs to deflect ice and wood passing over the logs and prevent them from striking the floor and sides of the dam.²³ In subsequent years, a retaining boom was built at the head of the bay above the locks to catch driftwood and prevent it from obstructing the dam and sluices.²⁴

Like most of the locks on the Rideau, those at Hogsback began to show signs of age in the last decades of the 19th century. In May 1868, Slater reported that the west wall of the lock had bulged inward and threatened to collapse at any moment. Forwarders had been informed that they used the lock at their own risk and Slater advocated navigation be stopped for a month while the wall was rebuilt. In keeping with the government's unstated but consistent policy of undertaking only the most urgent repairs, however, the wall of the lock was merely secured with iron straps and rods attached to long timbers driven into the earth behind the wall.²⁵ Although makeshift, the work proved durable and not until 1900 did the need for more permanent repairs arise. In his report for the year, Phillips stated that test pits had indicated that the timbers to which the iron rods were fastened had decayed. In the following year, the west wall of the chamber was rebuilt using many of the old stones as well as new headers. Subsequently, more of the stonework was replaced with the lower west wing wall rebuilt in 1904-5 and some stones in the lower sill that had been forced out by the weight of water in the lock reset in 1906.²⁶

Major problems at Hogsback continued to be experienced with the waste weir. After the severe breach of 1862, a new

bulkhead consisting of six openings each 20 feet wide had been constructed. The water had been controlled by stoplogs fitted into the bents of the bulkhead, and in spring ice and debris brought down by the freshet passed through the openings, often damaging the wooden structure. By 1870, Slater reported that the bulkhead was no longer capable of passing the spring floods safely and should be rebuilt.



Figure 14. Waste weir at Hogsback, April 1892. (Public Archives of Canada.)

Although Slater and his successor, Frederick Wise, urged the reconstruction of the bulkhead almost annually, it was not until 1876 that work was begun at an estimated expenditure of \$4000.²⁷ In his report for the year ending 30 June 1877, Wise stated that the new bulkhead with five 20-foot openings had been constructed without interruption of navigation since it had been built immediately downstream of the old structure which had thus acted as a coffer-dam. After the close of navigation, the water was lowered and a wooden apron built to connect the two sets of bents.²⁸

The bulkhead at Hogsback continued to be a major source of concern to canal officials since the structure was regularly weakened by the spring floods. In 1885, a heavy runoff resulting from a long and severe winter caused particularly serious damage. Wise reported that on the morning of 23 April, a field of heavy ice about ten acres in area struck the dam and carried away three of the stoplog bents. The wooden apron below the bulkhead was entirely

undermined and a channel between 30 and 70 feet wide was excavated in its soft rock foundation.²⁹ As a result of the flood damage both here and at Long Island, navigation did not open between Long Island and Ottawa until 23 June when the temporary flat dams at these stations were completed. More permanent repairs were made during the summer and fall when the wooden apron below the bulkhead was rebuilt and enlarged.³⁰ Although Wise advocated increasing the area of discharge through the bulkhead by deepening the waste-water channel, no structural changes were made.

The alterations proposed by Wise in 1885 were finally undertaken early in the 1890s following another substantial break in the dam during the spring freshet of 1891. The leak was first noticed by lockmaster Read on 23 March and was not staunched until the twenty-ninth. Although the main dam was in no danger of collapse, a thorough investigation of the steps taken by the canal officials to stop the leakage was held. The inquiry was apparently motivated largely by the concern expressed by residents of downstream communities. The people of Billings Bridge, for example, learned of the break from the brother of lock labourer Nevins of Hogsback and feared a repetition of the flood of 1862 when bridges had been washed out and lowlying areas covered.³¹ Although the investigation attached no blame to Wise or his staff for their handling of the break, it indicated the weaknesses of the bulkhead as constructed in 1862 and gave support to Wise's recommendations for altered design.

The inquiry concluded that the leak had occurred by water finding its way through the cribwork core of the embankment, accumulating behind the frozen surface and finally breaking through below the frost line. Because the soil above the leak was frozen, it did not fall in to fill the breach and in fact hampered repairs since it had to be chopped away with an axe. Moreover, the fact that the frozen soil did not subside kept the leak from being noticed until it burst through to the face of the dam. The unfrozen soil was then rapidly washed away.³²

In a series of reports on the break, superintending engineer Wise pointed out that the weakest section of the embankment was at the connection between the bulkhead and the cribwork core built in 1862 to repair the large breach. Moreover, a strong current on the west end of the bulkhead helped to erode the clay on the back of the dam. Wise therefore advocated that a protection pier be built projecting upstream from the western end of the bulkhead. By deflecting the current away from the slope of the dam, the pier would prevent erosion. Wise also pointed out that the westernmost bent in the bulkhead had been permanently closed during the reconstruction in 1876 thus decreasing the area of discharge for excess water. He suggested excavation of a rock channel 40 feet wide, with a depth of 10 feet below the sill of the lock, on the east side of the works at

the waste-water channel. This channel and a new stoplog bulkhead proposed for the flat dam at the east end of the works would draw the current to that end of the structure and would send ice and floodwood over the flat dam rather than through the bulkhead. Moreover, the depth of the rock excavation would permit the water to be drawn off below the sill of the lock so that the foundations of the works could be examined and more easily repaired. Wise admitted that the cost of these works would be substantial but declared that the protection pier was essential. He estimated the cost of the modifications at \$24,900 of which \$9400 was necessary for the construction of the crib pier 100 feet long by 25 feet wide with 8000 cubic yards of fill placed on the embankment behind the pier.³³

A contract for these alterations was let to Frederick Toms of Ottawa who began work after the close of navigation in 1891. The document called for the excavation of a channel through the rock on the east side of the old bulkhead and the construction of a new bulkhead containing seven openings each 20 feet wide and 6 feet deep with one centre opening 21 feet wide and 17 feet deep.³⁴ The reconstruction was apparently finished by mid-1893 since the annual report for the year ending 30 June 1893 stated that wooden aprons had been placed between the bents of the new bulkhead and a connection built between the old and new bulkheads so that traffic could cross the river. In all, Toms was paid \$19,650.36 for his contract work.³⁵

Although the reconstructed bulkhead improved the passage of ice and floodwood, the works at Hogsback continued to require frequent repairs. The west bulkhead was rebuilt in 1898 and again in 1910 and the east one (that built in 1892) in 1903.³⁶ To protect the foundations of the bulkheads from erosion, the wooden apron covering the soft shale rock below was enlarged during the winter of 1907-8. The new apron was 172 feet long by 111 feet wide and varied in depth from 4 to 16 feet. Two wings 24 feet by 12 feet ran the full length of the apron. Built of cribwork filled with stone and planked with oak, the new apron was constructed with a much steeper slope so that ice and water slid off without causing damage to the easily eroded stone.³⁷ Even this massive structure did not offer sufficient protection and in 1910 Phillips commented that although the apron had already been extended 70 feet downstream, further extension was still required to prevent erosion of the foundations of the bulkhead. Ice breaker cribs constructed above the bulkhead and heavy wooden booms across the channel helped to break up the ice and in 1914 a new experiment was tried when the ice between the boom and the weirs was blasted out before the freshet began so that it could pass easily through the openings in the dam.³⁸

The weakness of the join between the western end of the bulkhead and the main retaining darn was emphasized in 1910 when a leak developed at this spot in mid-May. Because of the difficulty in getting men and materials to the site, the

leak caused a large cave-in on the road along the embankment. Phillips reported that when he left Hogsback on the night of the break, a hole approximately 50 feet long, 30 feet wide and 12 feet deep had been formed. The water level was immediately lowered six feet and a timber crib filled with stone was constructed at the weak spot and covered with earth and gravel. The canal dredge, brought from Smiths Falls, spent a month dumping clay along the back of the dam. In his annual report, Phillips stated that the navigation had been interrupted for only nine days and that the dam was now tighter than it had been since its construction with practically all leakage stopped.³⁹

Black Rapids

The major problems faced by canal officials at this station were presented by the long dam which was repeatedly injured by ice and floodwood during the spring runoff. The superintending engineer commented in 1906 that because the Jock River entered the Rideau between Black Rapids and Long Island, the water level could rise suddenly when the ice in the Jock broke up in the spring. Consequently the dam and weirs at Black Rapids were subjected to abrupt changes and great pressure.⁴⁰ Until a complete reconstruction in 1909, the dam at this station was a flat wooden structure filled with stones and sheeted with thick plank. Between the western end of the dam and the lock were two waste weir bulkheads and an earthen retaining dam.⁴¹ Because the flat dam was made of wood, it was particularly vulnerable to damage from ice and floodwood as well as the ordinary decay of age. Consequently renewal of the woodwork of the dam and waste weirs represented the most frequent item of repair at this station.

In the spring of 1847, after an extremely long and severe-winter, serious floods damaged the works between Smiths Falls and Black Rapids. At the latter station, the high water caused ice and floodwood to collect against the works resulting in the destruction of part of the wall of the waste weir and damage to the embankments and apron of the dam. Both the wall and the dam were repaired without changes in design although the official report on the work commented that it was now clear that the lock and waste weir should have been constructed parallel to the course of the stream since the oblique orientation of the masonry caused the current to strike it with greater force.⁴² With these repairs the dam remained substantially unchanged until 1862 when serious floods again washed out several of its sections. At this time, both Slater and Page agreed on the need to build a flat pressure dam at Black Rapids downstream of the stone dam. Page estimated that since there was stone available at the site, the dam would cost approximately

\$3300 and in the annual report for 1862 the expense was listed as \$5143.27.⁴³

Despite this extensive work, the dam continued to require frequent repairs. In 1887-88, for example, a wooden apron filled with stones and sheeted with nine-inch timber was built to strengthen the long flat dam. After a severe spring freshet in 1896, the wooden dam was rebuilt using 10-inch by 12-inch timbers, and three years later heavy ice broke the central check piece of the west waste weir stopping navigation for several days until repairs were completed. As a result of ice damage in 1899, a new stoplog bent was constructed at the end of the flat dam, shortening its length by approximately 50 feet.- At the same time, the two other weirs at the western end of the dam were rebuilt.⁴⁴ By 1905, the dam was in such poor condition that it was extensively rebuilt in February 1906, with the front being re-sheeted and the entire back renewed.⁴⁵ These repairs proved to be only temporary, however, since in the spring of 1908, a severe flood that caused great damage to many stations destroyed the whole of the downstream side of the Black Rapids Dam.

Navigation was maintained with temporary repairs and at the close of the season, more permanent work was begun, and, in fact, a new dam was built just below the old.⁴⁶ The sills were bolted to the rock foundation upon which was built a wooden cribwork filled with stones and sheeted with two-inch elm planks. The width of the dam was increased and the downstream side was curved to carry the overflow away from the foot of the structure and thus prevent driftwood and ice from damaging the woodwork. The new dam also had abutments constructed at either end with a central pier to enable a bridge to be built across it in future.⁴⁷ Although government had provided the foundations for a bridge, and the counties of Carleton and Russell had agreed to pay for its construction, the proposed crossing was never built.⁴⁸

The strength of the dam was soon tested since the spring floods of 1909 were the greatest ever recorded. The main dam was not injured but the high water washed out the sandy bank at the east end of the structure for a distance of 200 feet destroying over one and one-half acres of land.⁴⁹ To restore the navigation, a 375-foot-long coffer-dam was constructed diagonally upstream from the end of the main dam. Because of the continued high water, the banks and river bottom continued to erode and leakage was overcome only with great difficulty. An ingenious method was adopted whereby large canvas tarpaulins measuring 200 feet by 40 feet were nailed to the top of the sheeting of the cribs, held out in the water by ropes, and then gradually allowed to be drawn down against the cribs by the suction of the water. Clay and sand were piled against the canvas and the leakage was checked enough to permit repairs. The eastern end of the main dam was extended 100 feet and wing dams were constructed up- and downstream as well as

into a gully in the banks.⁵⁰ The new cribs were filled with stone taken from the government quarry at Black Rapids. To give additional strength to the works, steel plates 1/4 inch thick, 4 feet wide and over 35 feet long were installed on the main dam.⁵¹ Although the new dams withstood the spring runoff of 1910 with no damage, the leakage under the wing crib was not finally stopped until a row of 10-inch by 12-inch pine piles were driven into the hardpan of the river bed and bolted to the sheeting of the crib. Clay was then dumped in front of the piling and the leakage was almost entirely staunched.⁵²

In comparison with the difficulties of the long dam, the other works at Black Rapids underwent little change. The earth embankment between the lock and the dam was easily eroded along its downstream side by eddies created by the water passing through the waste weirs, but cribwork constructed along the base of the slope prevented serious problems. The aging masonry of the lock was periodically renewed with the most thorough repairs being the rebuilding of the upper sill in 1859, of the lower sill in 1873, and of the east upper wing wall in 1913.⁵³

Long Island

This station has been one of the most troublesome on the canal. The waste weir that permits the passage of excess water has repeatedly been washed away during heavy spring floods, primarily because of its poor foundations. Lieutenant-Colonel By's report of the work necessary in 1833 stated that no bedrock had been found in the vicinity of the weir. He made several suggestions for changes in the system: the possibility of diverting the flow into the Jock River downstream of the locks, forming a new waste weir below the bridge in Mud Creek, or filling the excavation of the present weir with stones and placing a wooden platform over the cribwork built in the waste channel.

By 1835, the inadequacy of the waste weir was clearly recognized. Captain Daniel Bolton of the Royal Engineers proposed a new weir, part of which would be formed of stoplogs that could be removed to permit unimpeded passage of the spring floods. Moreover, he stated that unless changes were made in the weir, it could not survive another spring runoff.⁵⁴ Bolton's concern was not exaggerated. In the spring of 1836, the river rose until it stood nearly three feet higher than ever previously known. Early in May, the stone covering the apron behind the masonry piers of the weir was washed away and the clay foundation of the dam began to erode. Despite efforts to replace the clay, erosion continued with unusually heavy rain, and on 8 June the entire weir collapsed. Bolton immediately constructed a temporary dam to maintain the water level in the 25-mile reach back to Burritts Rapids. Gustavus Nicolls,



Figure 15. Repairing the waste weir dam at Long Island in February 1845 - the Mud Creek waste weir is in the right background. Sketched by Thomas Burrowes. (Ontario Archives.)

Commanding, Royal Engineer, informed the inspector-general of fortifications, Sir Frederick Mulcaster, that the only section of the canal left entirely dry was the upper lock at Long Island. In the five miles above the station, there was enough water to permit the passage of loaded *batteaux* and the rest of the distance to Burritts Rapids, the navigation was unimpaired.⁵⁵ By the first week of August, traffic was passing as usual through the locks.⁵⁶ Bolton's new weir consisted of a wooden crib filled with stones from Black Rapids and fitted with stoplogs to control the spring floods. The total expense of the work, including labour, came to £3670 17s. 0d., sterling, in excess of Bolton's first rough estimate of £3000.⁵⁷

The waste weir in Mud Creek continued to be a major source of problems for the Royal Engineers. The long open stretch of water above Long Island rendered the station particularly vulnerable. In 25 miles of river, there were no means of regulating the flow of water. Moreover, a number of small streams subject to flooding entered the Rideau between Burritts Rapids and Long Island. In the summer of 1841, floods severely damaged several of the stations at the north end of the canal. At Long Island, a 50-foot stretch of the dam in Mud Creek was washed away. Bolton was able to prevent total disruption of the

navigation with boats drawing three feet six inches of water still able to pass down the Long Reach.⁵⁸

Not unexpectedly, the great floods of 1847 caused extensive damages to the works at Long Island. Although the water level was more than one foot above the previously known height and flowed over the lock gates to a depth of four inches, the injury was caused primarily by a sudden rise in the water level and by large ice floes striking the works. In his report, Bolton stated that a large sheet of ice had broken the floating boom protecting the weir as well as several of the bents of the dam. Subsequently other ice floes destroyed the remainder of the structure. A temporary dam was constructed to keep the water at a navigable height until the floods had subsided enough to permit major repairs to the dam and weir. New pine stoplogs were installed and the damaged woodwork of the dam such as the bents and the sheeting of the apron was renewed. The floating boom was also replaced by a 160-foot-long boom of hemlock timbers. Total cost of repairs to the dam and the weir as well as construction of the new boom was £941 1s. 9-3/4d., the largest single expenditure at any of the stations damaged by the floods in 1847.⁵⁹

In 1858, floods again washed out the dam and weir at Long Island. Heavy rains and high waters destroyed the dam entirely and the clay cut in which the dam had been constructed was badly eroded by the force of the river. Consideration of the poor foundations upon which the old dam had been built led the engineers of the Board of Works to suggest major changes in the waste weir system. John Page, chief engineer of the department, concluded that the most efficient plan was to build a cribwork dam between the north end of Long Island and the bank of Nicolls Island at the north end of the main dam across the Rideau. The navigable level of the south branch of the river would be maintained by two large sluice gates in the waste weir dam. The north channel of the river could then be used as a safety valve with excess water regulated by stoplogs in a bulkhead constructed near the head of Long Island. Continued heavy rains delayed the completion of the new dams and high water in fact forced the cribwork dam in the south channel of the river 25 feet downstream. By 25 August, navigation at Long Island was completely restored.⁶⁰

In succeeding years, the works at Long Island received less serious injuries principally as a result of ice floes.⁶¹ In February 1861, anticipating severe flooding, Slater proposed that two wooden cribs be built 40 feet apart in the river at the White Horse shoal, approximately a mile above the locks. On each side a small dam connecting the crib to the shore would give more control over the water, permitting excess water to be forced down the back channel. With this new work to be begun immediately and at an estimated cost of £70, Slater hoped to prevent greater damage to the works. His foresight was rewarded when, despite very serious floods, no major damage

was experienced at Long Island.⁶² Moreover, in the great floods of 1862, the destruction of the centre pier of the dam at the White Horse shoal was the only major damage at Long Island, and this was in fact, a result of a large ice field striking the dam.⁶³

In contrast with this record of difficulties, the works at Long Island caused far fewer problems in the last decades of the century, primarily as a result of improved means of flood control at the station. The major reconstruction and re-location of the waste weir in 1858 proved to be successful and only two serious breaks were experienced in the half-century following Confederation. Both of these breaches resulted from severe spring-floods which washed out the earth bank of the waste weir between Nicolls Island and Long Island itself. In 1870, a section of the clay bank on the northern end of the cut was destroyed during the spring freshet. The break was closed with new cribwork filled with stones and the bulkhead openings were enlarged to permit easier passage of water. The contractor for the job was William Davis whose men had been employed repairing the bulkhead at Manotick at the time of the break near the locks.⁶⁴

Fifteen years later, a more severe breach occurred in approximately the same area of the waste weir dam. A long winter with unusually deep snow produced a particularly heavy freshet which damaged the bulkheads at both Hogsback and Long Island. At the latter station, the water followed a line of old cribwork through the earth below the frost line. In 24 hours, a breach 60 feet wide and 30 feet deep was excavated in the embankment.⁶⁵ Moreover, high water prevented the start of repairs for several days. On 23 May, a crib 73 feet by 56 feet by 16 feet was sunk in the gap and filled with stones. A 13-foot-high flat dam was built on top of the crib and navigation was reopened on 23 June. These temporary repairs were sufficient to maintain navigation for the season but Wise recommended that the flat dam be replaced with a bulkhead during the winter. With the area of discharge doubled to 600 square feet, the bulkhead would permit the spring freshet to pass through the works with less damage.⁶⁶ The enlargement was completed during the winter and even though the runoff was as high as the previous year, the works at Long Island suffered no serious damage, confirmation of Wise's judgement.⁶⁷

The waste weir bulkhead at the head of the locks was one of three water control structures at Long Island which presented problems for canal officials. In 1861, a stoplog coffer-dam had been constructed at the White Horse shoal, nearly a mile above the locks on the east branch of the river. This structure was used primarily to control the flow of floodwood and ice during the spring runoff and to prevent extensive damage to the main works at the station. On the other side of the island, near the village of Manotick, another bulkhead with stoplogs had been constructed in 1858 to maintain the water in the east branch

of the river at navigable height. M.K. Dickinson utilized the water-power at this dam to operate two mills. These works narrowed the area of the bulkhead available for the passage of spring runoff and were therefore a constant source of friction between Dickinson and superintending engineer Slater. To lessen flooding upstream along the Long Reach, Slater recommended that government purchase Dickinson's mill at the east end of the bulkhead and build a flat dam over which floodwood and ice could pass freely.⁶⁸ Because of the constricted opening in the bulkhead and because the water level had to be maintained to feed the mills and could not be run down during the winter as previously done, spring floods in the area were more severe, and in 1870 complaints about flooding were received from the municipal council of North Gower and from the member of Parliament for the area.⁶⁹

Although strong booms were stretched across the channel at the end of the island to deflect the wood and ice, all three structures associated with Long Island required constant and extensive maintenance as a result of damage. During the winter of 1903-4, both the bulkhead at the head of the locks and that at Manotick were rebuilt.⁷⁰ The Manotick structure, exposed to the full force of the freshet, was particularly vulnerable and in May 1908 one of the stoplog bents collapsed suddenly after being injured by spring ice and water. Several sets of stoplogs were washed out opening a breach 40 feet wide and 12 feet deep. Two days were required to bring the flow of water under control and a new bent was then installed. All but one of the stoplogs that had been washed downstream were recovered and put back into the new structure.⁷¹

The main bulkhead at the head of the locks underwent similar maintenance work. The wooden apron placed on the downstream side of the structure to prevent erosion from water and ice required constant repairs and in 1904 was entirely replanked after damage from heavy ice the previous spring. To prevent the clay filling of the dam from washing out, a row of sheet piling 10 inches by 12 inches by 24 feet was driven across the front of the weir late in the 1890s and the work was extended across the north pier of the structure in 1907-8.⁷²

The locks at Long Island underwent the usual repairs as the stones deteriorated from long usage and harsh weather. In his annual report for 1863, Slater advised that new centre sills were required at a cost of approximately \$2600. More thorough repairs were needed in 1896-97 when a new coping course on the lower sill of the middle lock burst upward under the pressure of the water. The stones were bolted down with oak straps and 1 1/2-inch rock bolts. Four years later, the wing walls of the upper lock were rebuilt as far as the gate recesses with stone from the government quarry at Elgin. The upper lock was, in fact, almost entirely rebuilt during the winter of 1913-14. Both chamber walls had gradually slanted inward so that each side

overhung the bottom by 14 inches. Phillips attributed this fault to the fact that the foundation of the walls had been built with a plumb rather than battered face. The upper 19 feet of the wall had been constructed with a batter and thus, with no support outward, the wall had gradually slanted inward above the angle formed where the straight face met the batter.⁷³

Burritts Rapids

In the period before World War I, the works at this station underwent no significant structural change. Maintenance repairs to the gates and machinery formed the bulk of expenses incurred; however, heavy ice resulting from the severe flood of April 1847 washed out the dam and waste weir in the north channel of the river. A temporary dam was required to preserve navigation while the dam was repaired and a new weir constructed at its end. The work was estimated to be completed by the end of August. The dam consisted of cribwork sheeted with hemlock and filled with stones while the stoplogs were pine timbers. In addition, a floating boom of hemlock timber was constructed above the dam to send floodwood and ice over the structure rather than through the weir. The total cost for dam, waste weir and boom was £752 12s. 11-3/4d.⁷⁴

Later in the century, the masonry of the lock as well as the timber dam required extensive repairs largely as a result of age. The cribwork dam at the head of the island was renewed in 1887-88 and planked with new timber in 1906. After additional planking had been completed the following year, Phillips reported that the structure was tighter than it had been for many years. In 1914, the dam was improved with the installation of flashboards which enabled the water to be maintained at a higher level longer in the spring.⁷⁵ The waste weir at the station was similarly rebuilt a number of times during the half century after Confederation. The annual reports for 1886-87 and 1896-97 both list the rebuilding of the weir among the repairs here. In 1914, the timber waste weir was again rebuilt, the masonry of the stone weir was repaired and a protection dam was built for a distance of 450 feet along the bank below the weir to prevent erosion. At the same time, a crib 160 feet long was built at the head of the island to prevent erosion in that area. To alleviate the effects of the wash from steamers in the narrow cut above the locks, a dry stone wall was built along the north side of the cut in 1911 and 1912.⁷⁶

The masonry of the lock suffered from similar deterioration. In 1897-98, the top five courses of one of the upper wing walls were relaid and during the winter of 1909-10, the south chamber wall and both upper wing walls

were taken down and rebuilt after the lock had been sealed with coffer-dams both above and below.⁷⁷

Nicholsons

Although this station underwent no major alterations, most of the works required extensive repairs by the end of the 19th century. In 1910, the upper wing walls, upper sill and gate recesses of the upper lock were rebuilt in new stone and two years later, the upper wing wall, piers and sill of the lower lock were also reconstructed. The timber bulkhead of the weir, frequently damaged by ice and floodwood, was finally rebuilt in masonry in 1910. Similarly, large numbers of stones from the retaining darn washed out by ice during the winter of 1902-3 were replaced at a cost of \$300. In 1914, a core wall of concrete was built across the face of the dam to staunch leakage through the structure.⁷⁸

The artificial cut in which the two locks were built presented problems to canal officials because of leakage through its banks. Although a dry stone wall had been built along the cut before 1867, the leakage continued. In 1906, Phillips pointed out that the only way to stop the loss of water was to face the stone wall with concrete or to excavate a trench behind the wall and puddle it with clay. He estimated the cost of a concrete wall at \$7700 and the cost of a puddled trench at just over \$2700. The work was not undertaken until late 1910, however, when the wall on the north side of the cut from the bywash to the head of the lower lock was rebuilt in Portland cement. Two years later, a section of the wall on the south side of the cut just above the lower lock was also rebuilt in cement and a larger section was repaired using dry stone.⁷⁹ By these means, the loss of water from the cut back into the river was reduced.

Although not a government work, a small dam crossed the river just below the main retaining dam at Nicholsons. This structure, the ruins of which are still visible, was maintained by A.A. Bowen of the Kemptville Milling Company and generated electrical power for the town of Kemptville. In 1908, Phillips described it as a "very poor class of structure,...formed of badly built concrete piers with stoplogs and plank between each." The dam was still used to provide power for Kemptville as late as 1917.⁸⁰

Clowes

In the years before World War I, the works at Clowes were extensively repaired to remedy the damage resulting

from 80 years of use. In the severe floods of 1847, some of the coping stones of the masonry dam were carried away by ice and driftwood. They were replaced by limestone blocks approximately three feet long, two feet wide and one foot high. The cost of these repairs was £54 8s. 3/4d.⁸¹ Early in the 20th century, sections of the masonry of the lock, the overflow dam and waste weir were rebuilt. Work on the upper lock at Nicholson's late in 1910 required that the river be run down between the station and Clowes. When the base of the Clowes dam was exposed, the arch of the structure was found to have been pushed downstream by the force of the water. The strength of the key was therefore nearly destroyed and Phillips recommended immediate repairs since the dam was pushed farther forward every year. He suggested that a concrete face be built across the dam for a distance of 350 feet at an estimated cost of \$7500. The work was scheduled to begin during the summer of 1912 and cut stone was brought from a departmental quarry, apparently that at Elgin. Continued high water all summer made it too dangerous to cut through the dam, however, and the operation was postponed until the following year since the structure had survived the spring runoff without greater deterioration. In 1913, a 160-foot-long section of the dam was taken down and relaid in cement along its original line.⁸²

The waste weir at Clowes required similar extensive work. The centre bent was particularly vulnerable to damage during the spring runoff and in 1901, after it had been washed out, Phillips decided to alter the weir to hold one set of 30-foot logs rather than two shorter sets. The masonry of the weir itself had gradually deteriorated since the canal's construction, and in 1907 the structure was taken down and rebuilt with new stone. Because of the difficulty in constructing a coffer-dam so near the lock, the area was finally unwatered by allowing the water to run through the lock chamber and erecting the coffer-dam on a foundation of bags of cement mortar sunk around the weir.⁸³

Because the waste weir had been built at an angle to the lock, the embankment was particularly vulnerable to erosion from the currents created around the structure. The spring runoff of 1902, for example, washed away the protective stone rip-rapping along the face of the slope. The slope itself was then undermined. The following winter, cribwork was built along the foot of the slope and subsequently, the stoplogs were left in the weir during the runoff so that ice and driftwood passed over the top of the retaining dam rather than through the weir.⁸⁴

The masonry of the lock required the usual maintenance repairs such as grouting and replacement of deteriorating stone; however, several sections of the lock were extensively rebuilt. In May 1887, approximately 20 feet of the east wing wall collapsed, apparently because it had not been properly bonded to the recess walls. Wise reported

that the lock could be operated without repairs until the close of the navigation season. Ashlar masonry blocks were prepared during the summer and installed early in the winter. During the summer of 1904, a section of the masonry of the lower gate recess and hollow quoin on the south side of the lock gave way below water level. Although the lock was again kept in use during the navigation season, the entire south wing wall and recess had to be rebuilt. The work was finished late in November.⁸⁵

Merrickville

The series of locks and basins at Merrickville have required continual maintenance to keep the masonry in good condition and prevent leakage through the basin walls. Pointing, grouting and replacement of sections of stonework formed the bulk of these repairs. In 1890-91, for example, the upper basin wall was completely rebuilt with the addition of a culvert through which the basin could be drained. Ten years later in 1900, another section of the south wall of the upper basin fell inward and the entire wall was reconstructed the following year. Subsequently, other parts of the masonry were rebuilt: the south side of the lower basin in 1902-3, the lower wing walls of the middle lock in 1903-4, and the sill of the upper lock and the north wall of the lower lock in 1905-6. In 1913, extensive repairs were undertaken on the middle lock with the reconstruction of the upper sill, upper wing walls and upper and lower recesses and piers on the north side. In addition, the chamber walls were grouted and pointed and the lower sill concreted and planked. Leakage through the north side of the lower basin was staunched by the construction of a concrete wall inside the old stone wall and the rebuilding of the upper wing walls, recesses and gate piers of the lower lock.⁸⁶

The long cut above the locks at Merrickville caused problems since leakage through its walls often led to the water level falling below navigable level. In 1874, Wise reported that the cut should be coffer-dammed to remove the stones that had fallen in from the sides. He estimated the cost at \$400. The work was completed by 30 June of that year. Difficulties with the shallow passage continued until 1896 when the rock bottom of the cut was blasted out from the head of the locks to the river, a distance of 1350 feet. The cut was deepened from 18 to 24 inches.⁸⁷

The design of dams and waste weirs at the station was not significantly changed until the 20th century. The main dam was almost totally destroyed in the floods in 1841 and had to be immediately rebuilt to maintain the navigation. Late in April 1847, severe flooding again threatened the structure and the inhabitants of the village, led by the

mill owner, Aaron Merrick, worked for several hours in the late evening of 25 April and early morning of 26 April filling in a small break to prevent more extensive injury. The official report stated, "Had it not been for this timely assistance of the Inhabitants, amongst whom prevailed the greatest excitement, to secure the Canal works, most serious damage would have been done." As it was, the dam suffered only a small break which was repaired with local stone while the entire structure was strengthened with additional stone and rubble at a total cost of £88 15s. 8-1/4d. It was again injured in the severe flood of 1862 and Slater reported that extensive repairs were needed.⁸⁸

In 1912, however, a major alteration of the dam was proposed and Phillips submitted an estimate of nearly \$50,000 for the construction of a concrete retaining dam with a 30-foot bridge across the river. Construction did not begin until 1914 when a contract was let to John O'Toole of Ottawa for construction of a dam from the head of the upper lock to the north bank of the river, in place of the existing dam. A new waste weir was situated at about the centre of the main channel of the river with a 30-foot bridge crossing the opening. The swing bridge over the locks and the snye bridge over the old weir were not altered.⁸⁹

In July 1914, Phillips reported that the new dam could not raise the water to navigable level without causing considerable flooding in the village. He therefore suggested that it be continued along the north bank of the river for 200 feet at an estimated cost of \$18,500. Since the acting minister of Railways and Canals, J.D. Reid, had stated that this additional expense could be added to O'Toole's present contract, Phillips requested that an order-in-council be passed authorizing the change. The estimate was subsequently reduced when Phillips decided that since the dam would be practically buried in the bank through which it would run, the structure did not have to be as substantial as originally planned. The revised estimate was set at \$16,500. On the suggestion of the acting minister, the extension was later narrowed to act as a wing dam, running north from the end of the main dam. The decrease in size reduced the estimate of construction to less than \$7400 with an additional \$3250 to cover the cost of land flooded by the dam.⁹⁰ The final arrangement of the works at Merrickville consisted of a 300-foot-long wall extending from the north end of the dam west along the river bank. The wing dam was constructed along the line of Mill Street on land purchased by the government. At the base of the rear wall, a tile pipe drain was laid to carry off any leakage. Completion of the work was delayed by the installation of machinery at the new weir by the power company in Merrickville, but on 1 April 1915, Phillips reported that he expected the department's work to be finished by the end of that month.⁹¹

The swing bridge over the locks at Merrickville had originally passed over the upper lock. This location caused

considerable delay to road travel since the bridge had to be swung for any vessel passing. In 1892, the bridge was moved farther downstream just below the lower gates of the upper lock. A new steel swing bridge was installed by the Canadian Bridge and Iron Company which also constructed a steel fixed bridge across the bywash.⁹² The greater distance between the swing bridge and the water level eliminated some of the delay to vehicle traffic by making it possible for smaller boats to pass underneath the bridge when closed. The high level CPR bridge crossing the river just below Merrickville was constructed in 1906 after Phillips had decided that its design would not interfere with steamboat traffic.⁹³

Kilmarnock (Maitlands Rapids)

The original name of this peaceful station is that of the owner, James Maitland, who was given the appointment as first lockmaster partly as compensation for land taken for the use of the canal. It was called Maitlands fairly consistently throughout the 19th century with the occasional reference to it as Kilmarnock.⁹⁴ The annual reports of the Department of Public Works for 1866 and 1867 are the first to use the name Kilmarnock with no reference to the earlier title. The lock at this station has the least lift of any on the canal - barely two feet.

The masonry and machinery here have required only the customary maintenance repairs. Even in the floods of 1847, the only damage sustained was the loss of some stoplogs from the dam which had been taken out to prevent greater injury to the works. They were swept away by the high water and were replaced by 12-foot-long pine beams one foot square. The old post and brace wooden retaining dam was replaced with a stoplog dam in 1873-74, and in 1891 the bulkhead was repaired and the discharge area increased by two openings. Later in the decade, the old timber structure was widened to permit the township road to pass over it. Previously the road had run over a dilapidated corduroy bridge parallel to the bulkhead. After the piers were widened and the flat dams at both ends converted into abutments, the road was laid out along the top of the bulkhead over the four 20-foot stoplog bays in the centre of the structure. Construction began after the close of navigation in 1898 and was completed by the following spring.⁹⁵

The greatest problem at Kilmarnock during the period was the maintenance of the water level in the marshy reach upstream to Edmunds. Leakage through the back dam on the south side of the island created a hazard to navigation since vessels frequently struck on the rock bottom of the cut above the locks. The problem was aggravated by local residents who considered the dam a hindrance to the development of nearby land. In 1865, Slater complained that

the inhabitants of the area broke the government dams to drain the land for use as pastures and meadows. More than 30 years later, in 1898, Phillips made similar accusations when he reported that the back dam, which was in fact little more than a heap of stones, was annually damaged by local fishermen who broke channels through the structure to permit them to take their boats from one level to the other. Phillips suggested that the bottom of the upper cut be deepened by two feet to end the problem of insufficient water.⁹⁶

This work was finally undertaken during the winter of 1899-1900 when a stoplog bulkhead was built across the head of the upper cut, thereby enabling the bottom to be laid dry. Timothy Delaney of Ottawa contracted to deepen the cut by blasting out the rock to an additional depth of two feet. Although heavy rainfall during the winter hampered the work by keeping the water unusually high, all but a very small area near the locks was completed by the opening of navigation in 1900.⁹⁷

The back dam, however, continued to be inadequate. By 1910, Phillips had concluded that the structure could not be made watertight within a reasonable expenditure. He recommended that a new dam be built upstream and planned to investigate alternate sites during the summer of 1910.⁹⁸ His suggestion was not implemented. During the winter of 1913-14, extensive repairs were made to the existing dam. New timbers were placed in the structure and 600 cubic yards of stone were dumped behind it. Both ends of the dam were extended upward to higher ground to prevent leakage. After the completion of the work, Phillips reported that the dam was in better condition than ever previously.⁹⁹

Edmunds

The major repairs at this station have consisted of replacement of aging masonry in the locks, weir and retaining dam. The retaining dam stretches the full width of the river and is thus susceptible to damage from spring floods. In 1897, for example, a number of oak blocks were put into the dam to replace stones washed out in the runoff. These blocks were not apparently removed until 1914 when new stones were laid in cement to replace the temporary repairs. At the same time, the top of the dam was concreted to hold flashboards that would retain the water at a higher level.¹⁰⁰

Other masonry works at the station required similar repairs as a result of age and flood damage. During the winter of 1906-7, the weir was reconstructed. Like the rebuilding of the weir at Clowes in the same year, the job proved to be extremely difficult. Because of the position of the weir and deep water above it, the coffer-dam alone

was insufficient to unwater the area around the weir. The problem was solved, as it had been at Clowes, by letting the water run through the lock. Phillips reported that the structure should need no further repairs for years.¹⁰¹ Several sections of the lock were also completely rebuilt. In 1841, one of the side walls that had bulged inward badly was entirely reconstructed. When the frost came out in the spring of 1905, the north upper wing wall appeared to be in danger of collapsing. It was secured for the season with chains anchored to the bank, and, after the close of navigation, both upper wings were rebuilt with new stone. Subsequently the lower wing walls, piers and gate recesses were rebuilt in 1911-12.¹⁰²

Old Slys

The only major structural change at this station has been the construction of the high railway bridge immediately below the lower lock. In 1858, the Brockville and Ottawa Railway applied to take advantage of the disrupted navigation (as a result of the major repairs at Long Island) by having the locks at Old Slys closed to traffic for a fortnight to enable the foundations of the piers of the bridge to be laid. Although Slater protested that navigation at this distance from Long Island was not affected and that closing the locks at Old Slys would damage the local trade he was overruled by the Department of Public Works.¹⁰³ Aside from this work, maintenance of the locks and machinery has continued as usual. The dam was damaged slightly by floods in 1862, and during the winter of 1867-68 the floor of the upper lock was badly eroded by water passing under the eastern wall. The breach was filled with cribwork and stone and a new timber floor laid across the lock. This wooden covering was later replaced by a concrete floor which proved more effective in preventing leakage. The masonry of the locks also required periodic replacement. The piers and gate recesses between the two locks, for example, were rebuilt in new stone during the winter of 1907-8. In 1911-12, the entire upper part of the upper lock was reconstructed and a new masonry sill laid at an estimated cost of \$10,000.¹⁰⁴

Smiths Falls

Aside from the usual maintenance repairs to the various areas of the station,¹⁰⁵ the major problem at Smiths Falls was the difficulty experienced in retaining water in the basin at navigation height since the rock walls were

honeycombed with seams and fissures. In By's outline of the work to be done at this station in 1833, he stated that the natural rock between the two sets of locks was filled with small caverns and cracks making it difficult to maintain the water level. He suggested that as many as possible of the openings should be filled and if necessary, a 600-foot-long embankment be built on the river bank by the waste weir just above the combined locks. Such an embankment, it was hoped, would stabilize the water system in the basin. Various methods of filling the crevices were employed during the period; for example, the inside of the basin was sheeted in 1875. In addition, the department dumped wood shavings into the basin so that they would sink and be drawn by the current into the seams of the rock. In striking contrast to the usual prohibition against releasing refuse into the waterway, a shingle factory established at the upper end of the basin in 1879 was given permission to discharge shavings into the water to stem the leaks.¹⁰⁶

In later years, much of the interior of the basin was sheeted with planks. The departmental annual report for 1896-97 recorded that the south side had been covered with two rows of inch-wide boards while the back of the dam was replanked with three-inch pine plank. This area was, in fact, one of the more difficult to deal with since water easily leaked through the seamy rock to the marshy land along what is now Lombardy Street.¹⁰⁷ Moreover, the south end of the basin was then substantially larger although the additional area was too shallow for navigational purposes. In 1905 and 1906, Phillips reported that the south side was gradually being filled with waste from the nearby iron foundries. In this way, less water was necessary to bring the basin to navigation level and some of the leakage was stopped.¹⁰⁸

A major program of improving the basin at Smiths Falls was undertaken in 1912. During the previous year, Phillips had surveyed the cut below the detached lock to investigate the possibility of building a concrete wall extending from the lock 1000 feet eastward. In July 1912, he submitted specifications to the department. The wall was designed to be 900 feet long, 8 feet high, 4 feet wide at the base and 2 feet wide at the top with a 4-foot 6-inch-wide concrete sidewalk and a railing of iron pipe constructed along the top. The foundations of the wall were formed by driving iron rods five feet long into the rock for a distance of two feet leaving the remainder to project into the concrete to anchor it firmly. The contract was let to James Bogue of Peterborough and construction began in the autumn of 1912. The wall was completed before the opening of navigation in 1914.¹⁰⁹

The north side of the basin contained the main retaining dam in the old channel of the river and the weirs, below which a number of mills had been erected. The mills were powered by water that leaked through the walls as well as by that which passed over the weirs. Conflict with mill

owners over the department's intention to lessen leakage from the basin was therefore inevitable. In 1909, Phillips pointed out that some of the largest fissures existed on the north side near the main stone retaining dam. The water that passed through these crevices operated J.L. Gould's foundry in the channel below the dam. When superintending engineer Wise had earlier attempted to close the leaks, Gould had been able to stop the work on the grounds that his lease gave him the right to all surplus water passing over or through the dam. To meet this claim, Phillips argued that the work was now essential to preserve the navigation and Gould's lease specifically reserved authority in this area to the government. Although Phillips expected resistance from the mill owners and cautioned the lockmaster to pay no attention to any protests against the closing, the work was begun early in February 1909, with the fissures filled with large sacks containing concrete.¹¹⁰

The growth of the town around the basin created a need for bridges across both navigation and waste-water channels.

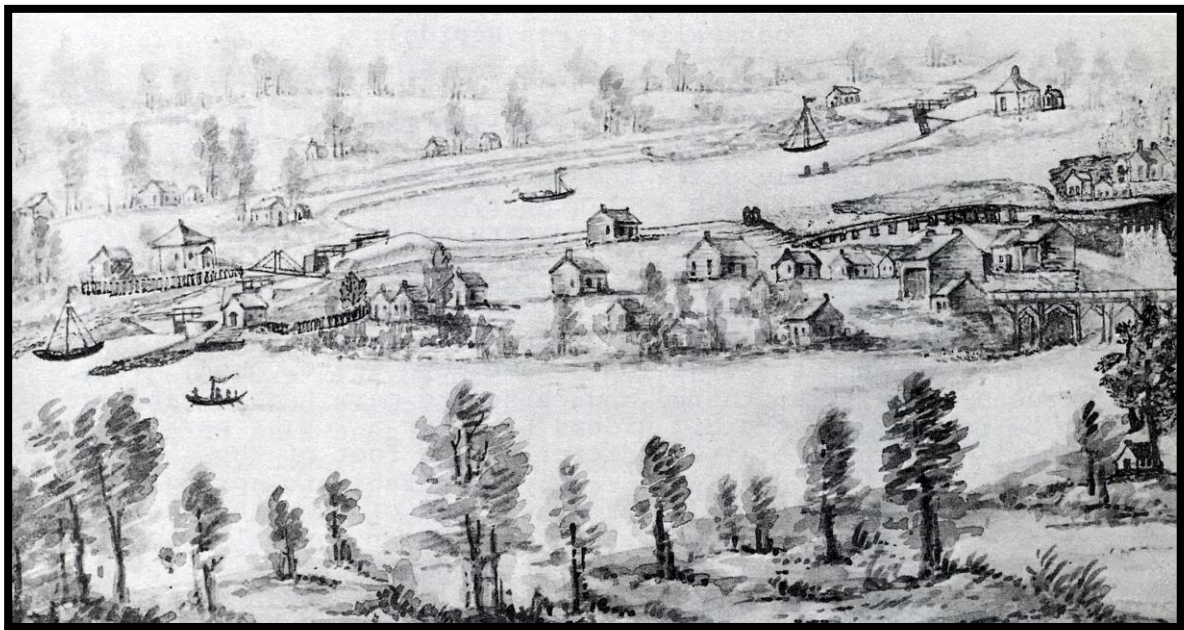


Figure 16. Smiths Falls, 1827 to 1832. Station No. 13, 61 1/2 miles from Bytown. Wash drawing by William Clegg. (Public Archives of Canada.)

The main crossing was by a swing bridge over the middle lock of the combined series with a fixed bridge over the waste weir channel. In 1883, however, the Lanark county engineer recommended that the swing bridge be moved to cross the

upper lock in line with Beckwith Street. Superintending engineer Wise opposed the change, arguing that the new bridge would have to be elevated to clear the stonework of the lock and would require steep approach grades which would be difficult for heavily loaded teams to ascend in winter. Moreover, a new bridge would necessitate building a centre pier for the pivot as well as wooden guard and rest piers for the bridge when closed, in addition to extension of the lock wing walls. Although Wise considered the work unnecessary, construction of the new bridge over the upper lock began in 1889.¹¹¹ In the mid-1890s, the first crossing of the detached lock was completed when the steel bridge was opened in 1897. The Canadian National Railway bridge which crosses the channel above the detached lock was originally designed to pass along the dam and directly over the lock. In 1910, however, the line was moved 400 feet upstream to avoid interference with navigation and frequent interruption of rail traffic by vessels requiring the bridge to be raised.¹¹²

Poonamalie (First Rapids)

The original name of this station reflects its position as the first rapids on the Rideau River. The two names were used interchangeably until the late 1850s when Poonamalie became more common. The lock itself, with a lift of only five feet, has required only ordinary maintenance repairs. The dam at the station, however, is of particular importance because it retains the waters of the Rideau Lakes and thus controls the water supply for the northern end of the canal. In the 1860s, as the problem of maintaining adequate reserves to ensure navigation became more acute, the structure was strengthened and raised to permit more water to be retained in the Big Rideau Lake for a longer period of time.¹¹³ Because of its position at the foot of the Rideau Lakes, the dam is extremely vulnerable to spring floods. In May 1869, a 150-foot stretch of the embankment at the head of the cut was washed out by an unusually heavy freshet and low-lying lands as far as Smiths Falls were flooded. Slater reported that the mills at the town were endangered by the break but local residents had helped to construct a coffer-dam above the breach to stop the water. Navigation was opened on 12 May.¹¹⁴

A more serious breach in the main dam occurred on 11 April 1904 when a sheet of ice 300 feet long by nearly 70 feet wide struck against the wooden flat dam causing a breach approximately 75 feet wide. During the following three days, the ice washed out more of the dam until the opening was about 150 feet wide. The water was not brought under control until 18 April and the break itself was not closed until 23 April. Phillips expected to have temporary repairs completed by early May so that the opening of

navigation would not be delayed. In his investigation of the accident, Phillips concluded that it had been caused by the exceptional lowness of water in the lake during the winter. Very heavy ice was thus formed with stumps, logs and roots frozen into a compact mass. Consequently when the water level rose abruptly after two days of rain the ice broke away in large sheets carrying the debris with it. Since there was little water passing over the flat dam, the ice and timber struck against the back of the dam rather than floating over it.¹¹⁵

Since 150 feet had been washed out of the 200-foot-long dam, Phillips concluded that an entirely new dam would have to be constructed after the navigation season. He recommended a concrete structure that would initially be more expensive but would be more durable. The cost was estimated at \$10,500 while that of a cribwork timber dam was set at just over \$5000.¹¹⁶ The concrete dam was built below the old timber structure which served as a coffer-dam during construction. It was later torn down by a private contractor who received the wood as payment for the job. The break in the dam in 1904 had caused minor damage to roads and bridges at Smiths Falls and as far downriver as Merrickville. A total of \$18,491 was later submitted in claims for damages although only \$12,132 was recommended for payment.¹¹⁷

The narrow rock cut above the lock presented the same problem to navigation as did those at Merrickville and Kilmarnock. It has frequently been obstructed with drift timber brought down from the Rideau Lakes and has repeatedly needed dredging.¹¹⁸ Later in the century, as low water became an increasing problem, vessels frequently struck on the rocky bottom. In February 1909, Matthew Ryan of Smiths Falls contracted to remove a particularly troublesome shoal just above the lock. An area of rock 90 feet long and 32 feet wide was blasted out to a depth of 18 inches and the loose rock then removed from the cut. The work was completed at a cost of \$600.¹¹⁹ Problems of low water continued, however, and after the hot, dry summer of 1910, the water level in the cut fell to four feet six inches, below the standard depth of five feet. Phillips acknowledged that part of the difficulty arose from an unusually early runoff and great evaporation because of the heat, but argued that the electric light companies in Smiths Falls also used more water than they were entitled to, thus running down the upper levels. To counteract this, Phillips planned to regulate their use of water more closely and during the winter of 1910-11 ensured a reserve of water by placing steel brackets for flashboards on the Poonamalie D. With the flashboards, an additional six to eight inches of water could be held in the lake for a longer period of time. As well, the embankment on the north side of the cut was raised to retain more water and a cement and stone wall was built to cut down leakage on the north side of the cut from the locks several hundred feet westward.¹²⁰

Like the other Rideau locks, that at Poonamalie required substantial repairs after 70 years of use. In 1903, the south upper wing wall was rebuilt because the sandstone of two of the submerged courses was water-soaked and partially crushed. More extensive repairs were necessary during the winter of 1907-8 when the lock was pumped dry and both lower wing walls and gate recesses as well as the upper gate recesses were taken down and reconstructed. The work was completed by mid-April. In 1913, the bottom of the lock was concreted to stop further erosion since the force of water through the sluices had already washed out the foundation below the upper mitre sill.¹²¹

The Narrows

This lock, the first descending on the Ottawa side of summit level, was constructed in an artificial embankment designed by Lieutenant-Colonel John By to raise the water level of Upper Rideau Lake and thus lessen the extent of excavation at The Isthmus, the Kingston outlet of the lake. The single lock has undergone few major repairs. The annual report for 1863 authorized the rebuilding of an unstable wing wall and during 1885-86 both upper wing walls and recesses were rebuilt to stop leakage. In 1908, the lock was pumped out and both walls relaid after Phillips had reported that all the masonry was in very poor condition.¹²² Apart from these specific repairs, renewal of woodwork and of the lock machinery as well as reinforcing the embankment continued to be annual items of expenditure.

Newboro (The Isthmus)

The original, self-explanatory name of this station was used until early in the 1860s when it was replaced by Newboro. The lock was constructed at the foot of an artificial channel cut through the isthmus between Upper Rideau and Newboro (formerly Mud) lakes. The cut has frequently required dredging to maintain it at a navigable depth. In 1846, a report on the Rideau commented that the cut was too narrow to allow vessels to pass and suggested that it be straightened out and a lay-by constructed in it. Moreover, since the earth banks were liable to be washed away by steamers' wakes, the report advocated that they should either be made steeper or revetted with stone. In 1864, Slater again recommended cleaning and deepening the

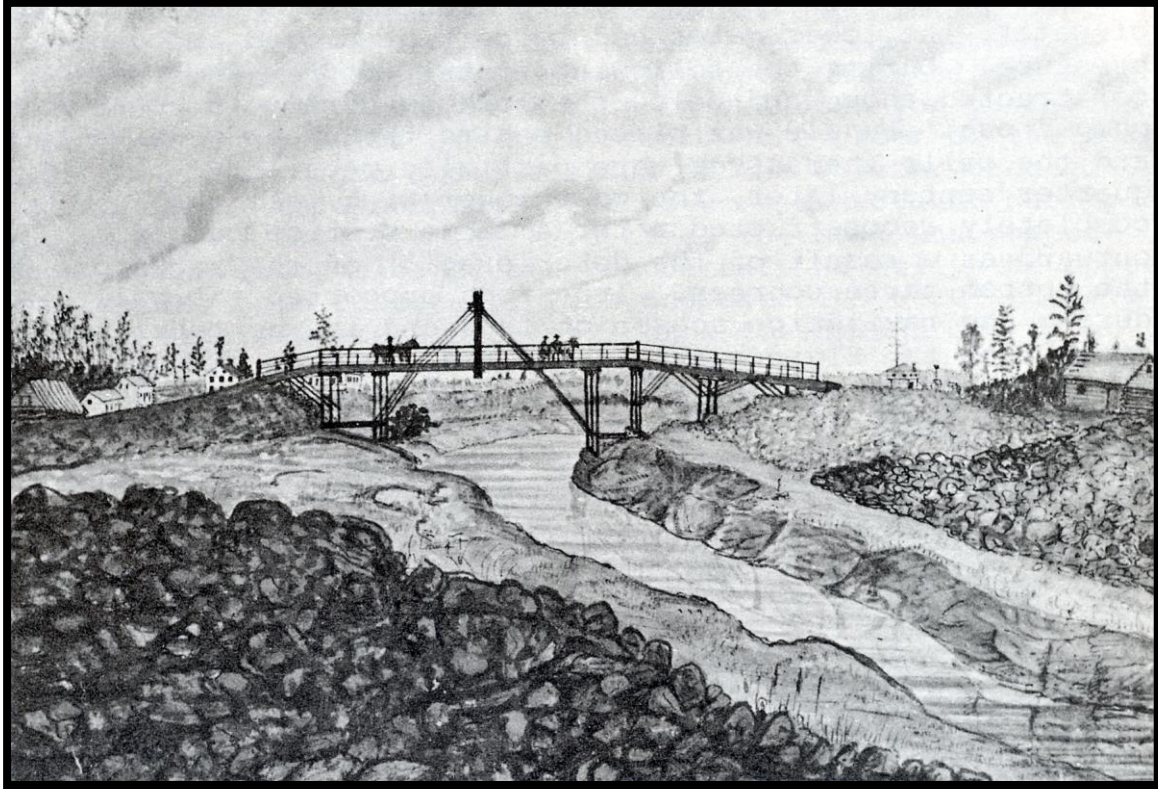


Figure 17. Southern view of the channel cut at the isthmus to join Rideau Lake and the waters falling into Lake Ontario. Sketched in 1841 by Thomas Burrowes. (Ontario Archives.)

cut at Newboro.¹²³ In later years, the maintenance of the water level in the cut became a matter of increasing concern to canal officials since in dry seasons the water level fell below navigation level and effectively ended traffic through the lock early in the fall. In 1887, for example, the water on the Kingston descent fell below navigable level at Newboro during the first week of September and continued to fall until there were only four feet six inches on the upper sill at the close of the season. Effective action to deepen the cut was not undertaken until the mid-1890s when a permanent bulkhead was constructed at the head of the cut and the rock bottom blasted out to a depth of 18 to 24 inches for a distance of 2200 feet. The bottom of the remainder of the cut was blue clay and was deepened by the departmental dredge during the summer of 1896.¹²⁴

In addition to this work on the artificial cut, the station experienced the typical maintenance repairs, including extensive rebuilding of masonry. Because the lock was the first on the Kingston descent from summit level, it was extremely important to keep the masonry in excellent condition to prevent waste of the water reserve. In 1877, Wise reported that leakage through the upper wing walls was

sufficient to fill the lock in 20 minutes, To prevent waste of water, the lower gates had to be kept closed and under pressure. During the following winter, coffer-dams were constructed above and below the lock to permit it to be pumped out. Puddle was placed behind the upper wing walls and the walls themselves were partially rebuilt.¹²⁵ A quarter century later, the west lower wing wall was completely reconstructed after a large section bulged outward as a result of the deterioration of the sandstone of the bottom three courses. Iron rods supported the wall during the navigation season of 1900 and it was rebuilt with stone from the Elgin quarry after the close of shipping.

The most extensive repairs to the lock occurred in 1909-10 when both upper wing walls and gate recesses, as well as parts of the chamber walls, were rebuilt and both mitre sills re-bolted, concreted and planked.¹²⁶

Chaffey's

Throughout the years preceding World War I, this station was one of the least troublesome on the waterway although regular maintenance repairs to masonry, woodwork and hardware have been necessary. In 1891, for example, the masonry of the waste weir gave way at the water line, releasing the stoplogs and allowing the water level above to drop slightly. The foreman of works was immediately sent from Ottawa and rebuilding was begun with a temporary dam above the weir to maintain navigation. The only other repair of any magnitude was the rebuilding in 1902-3 of the upper wing walls with stone from the quarry at Elgin.¹²⁷

Davis (Fosters Lock)

This charming station remained substantially unchanged during the period before 1914. The masonry of the lock underwent the most extensive repairs. In 1837, Bolton reported that the breastwork had been forced outward by the pressure of the water during the preceding season. The wall was secured by iron straps bolted to the sill as well as additional grouting of the sill with cement. This masonry work and a new floor for the lock authorized in the estimates for 1843-44 represented the only major repairs at the station until late in the century.¹²⁸

In 1886-87, the lock was pumped out and parts of the lower wall and lower sill rebuilt. Two years later the lower sill was entirely replaced. Between 1895 and 1898, most of the upper part of the lock was reconstructed with

the upper sill rebuilt in 1895-96 and the upper wing walls and piers in 1897-98. A decade later, Phillips reported that extensive repairs had recently been completed and the lock was in better condition than it had been for years. Both lower wing walls had been relaid, the floor of the lock made more watertight and the sides of the chamber grouted and pointed. More complete repairs were undertaken during the winter of 1914-15. At this time, the lock was pumped dry and the floor cleaned and concreted. As well, the upper wing walls, gate recesses, piers and manholes were entirely rebuilt with new stone brought from a government quarry at Westport.¹²⁹

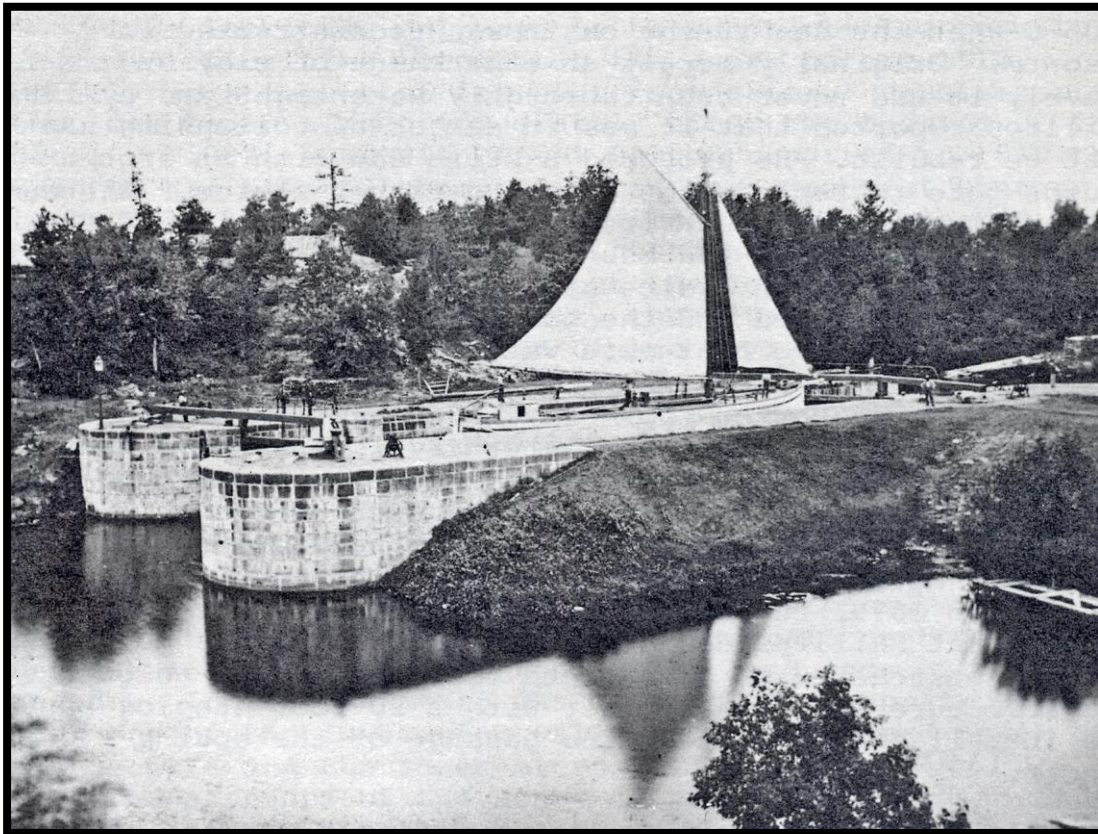


Figure 18. Schooner in Foster's (Davis) lock, ca. 1880. (Public Archives of Canada.)

Jones Falls

Despite the complexity and size of this station, it was remarkably free from major structural change. In 1834, the Commanding Royal Engineer in Canada, Gustavus Nicolls, recommended that the sluices in the locks here be changed because the current arrangement created great turbulence in

the lock and had caused a number of accidents.¹³⁰

Nicolls did not specify the changes he proposed but since no further alterations in the sluices were recommended, they seem to have been successful. The masonry of the locks and dams as well as the woodwork of the gates and bridges were periodically renewed. In 1863, the annual report stated that the wall of the basin near the head of the combined locks was overhanging and should be rebuilt. The wall, however, was not immediately repaired and by 1866, a section nearly 70 feet long had collapsed. Since its foundations were under more than 6 feet of water and could not be reached without great expense and disruption of navigation, 400 yards of stone were placed along the breach to prevent further erosion.¹³¹

The most substantial change to the works occurred in 1905-6 when the dam in the basin was reconstructed in masonry. Originally merely an embankment of clay and gravel, it had never been thoroughly watertight and by 1904 Phillips reported that it was in danger of collapsing and must be rebuilt. He proposed a stone dam with an iron sluice gate to replace the existing timber sluice. The dam was built of stone taken from the two middle sills of the combined locks which had been reconstructed two years previously. An iron sluice gate of the wheel and thread design was installed and the bottom of the sluice was lowered two feet so that more water could be drawn from the basin.¹³²

The dam at Morton (formerly White Fish) was vitally important in maintaining the water level descending from Cranberry Lake. The dam was originally little more than a pile of stones blocking the outlet where, before construction of the waterway, a stream had fallen from Cranberry Marsh to join the headwaters of the Gananoque River. In 1895, the structure was so weakened by spring floods that Phillips decided a new timber dam was necessary. It was constructed on a concrete foundation just below the old structure and a waste weir with a 20-foot stoplog bent was installed to assist in the passage of the spring runoff.¹³³

Brewers Mills (Brewers Upper Mills)

The original name of this station was necessary to distinguish it from Brewers Lower Mills, now Washburn, nearly two miles downstream on the Cataraqui River. The station underwent only the usual maintenance of the masonry, woodwork and machinery. Like the masonry at many of the Rideau locks, that at Brewers Mills required extensive renewal by the late 19th century after decades of use. In 1861, an 80-foot-long coffer-dam was built in the cut above the lock to enable the chamber to be pumped out while the

lower sill was repaired, and 12 years later, in 1873, a new bottom was laid in the locks to prevent water leaking through the floor. More extensive repairs were needed in 1910-11 when the upper part of the upper lock and the north chamber wall of the lower lock were completely rebuilt in new stone. At the same time, the bywash was reconstructed in heavy cut stone and the stoplog opening increased by three feet six inches to facilitate the spring runoff.¹³⁴

Washburn (Brewers Lower Mills)

This lock, the only one to be substantially rebuilt, caused difficulties throughout the years before 1914, chiefly as a result of its poor foundation. Problems with the lock began almost immediately after the opening of the canal in 1832. Captain Daniel Bolton reported in 1840 that when he had assumed command it had been doubtful whether the lock could be made serviceable since the walls leaked very badly. Careful grouting and pointing had decreased the loss but Bolton suggested that to put the lock in excellent condition, it should be totally rebuilt. In view of the great expense and disruption of the navigation this course of action would entail, however, he advised that if the walls were frequently grouted, complete reconstruction might be avoided.¹³⁵

By 1853, the masonry of the lock had deteriorated further. In his report on the state of the Rideau, H.H. Killaly, Assistant Commissioner of Public Works, reported that the eastern wall should be immediately taken down and rebuilt. The repairs continued to be postponed, however, and in 1858 James Slater commented that although the walls would have to be rebuilt, they would last through another season. In 1860, a start was made on the reconstruction when one of the lower wing walls of the lock was taken down and rebuilt and the lower mitre sill repaired.¹³⁶

The attempts of the Board of Works to economize on the expenses of the Rideau were forcibly halted in 1861 when the east wall of the lock required complete reconstruction. The wall, which had bulged inward many years earlier, had been supported by iron straps bolted to posts driven into the earth embankment. Early in August, the entire wall the full length of the chamber settled badly along with the wing wall and the embankment. Slater reported that apparently only the gate of the lock prevented a total collapse and the gate itself had been damaged. Moreover, water from the chamber had forced its way under the lower mitre sill and had emerged muddy, indicating that the foundation of the lock had been washed away. In view of the history of weakness in the lock, Slater proposed that serious consideration be given to rebuilding it on more stable foundations. He

reported that Thomas Burrowes, who had supervised the construction here, had informed him that an excellent rock foundation existed merely the width of the lock westward. Since the area had been very unhealthy because of the nearby swamps, however, the lock had been built as quickly as possible and this haste had resulted in constant problems of maintenance.¹³⁷

The progress of the repairs was carefully recorded in Slater's letters to the Board of Works. Early in September, he reported that coffer-dams had been built at the head and foot of the lock to enable it to be pumped out and that the masonry of the wall was being dismantled. A week later the debris had been cleared away and the superintending engineer concluded that the cause of the damage was that the wall had not been built on rock but on earth which had slowly washed away. In his reconstruction, Slater intended to strengthen the walls by laying some of the stones as headers to connect the front and back sections of the lock wall. By late September, a trench three feet deep had been excavated along the side of the lock for the concrete foundation of the new wall, but poor weather delayed the repairs and the masonry was not completed until early November. The floor of the lock was also renewed with a double sheeting of plank and the west wall, which had bulged slightly, was braced by piles driven into the rock foundation nearly ten feet below.¹³⁸

Although the actual repairs had been completed early in November, the lock was not put back into operation that year since the engineers of the Board of Works decided to let the grout and mortar harden fully before subjecting the works to the strain of the water. The navigation was maintained by coffer-dams at both ends of the lock which enabled ships to sail up to the dams and then trans-ship their cargoes. Slater reported that this additional labour had caused an increase in the price of some goods at Kingston. The final cost of the repairs at Washburn was approximately \$7000.¹³⁹

Difficulties with the Washburn lock continued even after this major reconstruction. As early as 1872, Slater commented that the west chamber wall (sometimes referred to as the north wall, its orientation being northwest) showed signs of failure. Two years later, leakage through the wall had increased and a trench excavated behind it found that its backing had separated from the face. Consequently the wall was rebuilt with a new layer of puddle behind it.¹⁴⁰

These repairs proved to be effective and not until 1904 did the west side of the lock again cause concern. In his annual report for 1904-5, Phillips stated that large plates of cement had been washed out through the openings at the bottom of the lock and that the wall itself had bulged inward.¹⁴¹ During the winter of 1905-6, the lock was pumped dry and the west wall was entirely rebuilt. Early in June 1906, however, leakage through the lower sill was so

severe that the lockmen found it difficult to open the upper gates because of the current created in the lock. A diver was despatched to the station to caulk the leaks with concrete and the lock was closed to traffic for three days to allow it to set. When navigation was resumed, the entire sill immediately heaved upward approximately four feet. Phillips concluded that the clay base under the timber foundation of the sill had been washed away. Caulking the leaks had increased the water pressure on the sill forcing the entire structure up. Phillips himself supervised the repairs. A coffer-dam was formed above the lock with the stoplogs lowered across the entrance, sheeted and then caulked. Below the lock, the dam consisted of two stone-filled cribs with stringers extending to the shore. Three-inch plank was then driven into the riverbed and spiked to the stringers. This wall was sheeted with inch boards. The canal dredge piled clay in front of the dam and within three days the lock had been pumped dry. After the old sill had been blasted away, a new one was built of 14-inch by 16-inch Douglas fir. The frame was filled with concrete and bolted to the bottom timbers of the lock. The sill was completed within a week and an additional seven days was allowed to enable the concrete to set properly. When the lock was put back into operation on 9 July, Phillips declared it was in better shape than ever before since the chamber walls and gate recesses had been filled with cement so that no water could percolate through to the sill. In his review of the work, the superintending engineer left no doubt that he considered the weakness of the lock to be a result of its initial faulty construction: "This lock has always given trouble, as it is located in the wrong place, and is built on cross timbers bedded into a very poor foundation of soft clay and sand."¹⁴²

Apart from the usual items of maintenance, the other major difficulty at Washburn was the depth of the channel between the station and Kingston Mills. In 1835, Bolton discussed the question of deepening the cut to improve the navigation and lessen the water pressure on the works but made no firm recommendations. Nearly 30 years later, Slater reported that since the cut was both shallow and narrow, it easily became obstructed with driftwood and he recommended that it should be dredged.¹⁴³

Kingston Mills

Aside from the usual maintenance work, this station underwent little major repair. In 1833, new sluices were installed in the gates and repairs made to the floor of the lower lock which had been washed out by the turbulence of the water from the sluices. By 1837, the ashlar masonry of the lower breastwork had begun to bulge and the stone sills to lift when under pressure. Iron bars were therefore

bolted to the wall and sill to prevent further collapse and the masonry was again grouted with cement. The most extensive replacement of the masonry of the locks was required in 1872 when the collapse of the area around the lower sill of the bottom lock interrupted navigation for more than a month. Late in June, Slater reported that the leakage under the lower gates was so severe that the level of water in the lock was lowered at a rate of one foot per minute. The shipping companies had been informed that they used the lock at their own risk and Slater recommended that navigation be stopped for a week while repairs were made.¹⁴⁴

The lock was closed to traffic on 25 June, a coffer-dam built below the sill and the chamber pumped dry. The break in the sill proved to be more serious than expected with one side of the platform above the sill having sunk approximately one foot. Since the wall on the eastern side of the gate recess had been partially built on the platform, the collapse had left it without a solid foundation. The empty space below the wall was consequently filled with timber and the level of the platform was restored by building a new wooden one on top of the old. On 9 July, Slater reported that if the platform had settled to a solid foundation, the repairs would be successful, but that if it continued to sink, the entire section of the lock would have to be rebuilt to a depth of six feet below the sill.¹⁴⁵

Navigation opened again on 10 July but leakage through the lower sill increased. On 13 July, lockmaster Joseph Deane sent a telegram to Slater informing him of the deteriorating condition of the lock. "Leakage in lower sill increased, leaks 28 inches to two Minutes, sluices down. East half gate sunk 3 inches, hangs heavy on Collar. Sinking gradually." The lock was again closed on 15 July and extensive repairs were begun. Slater found that the foundation of the recess platform had been eroded to a depth of between six and eight feet below the level of the mitre sill. The bottom course of the masonry on the east side of the recess had dropped a foot and the wall itself was in danger of falling. The superintending engineer concluded that the whole of the substructure would have to be taken up and rebuilt. The hole - between 2 and 10 feet deep with an area of 30 by 40 feet - was filled with masonry and concrete strengthened with rows of sheet-piling. Although nearly 55 men were employed on the job, navigation was not resumed until 12 August. In all the work cost \$8633.57.¹⁴⁶ Like those at Washburn, these extensive repairs resulted from the erosion of the foundations of the lock. Lockmaster Deane summarized this opinion in the canal records for the station.

The lower lock from about 25 feet of the Sill is built on Clay, with timber laid about four feet apart and planked across. The foundation under the east side of wing wall fell in, and also the foundation of the apron Sill....The foundation

under the planking wore away caused by the water leaking through.¹⁴⁷

In later years, smaller sections of the masonry of the locks required renewal. In 1899-1900, for example, the upper wing walls of the upper lock were rebuilt and several new stones were laid in the hollow quoins and on the coping of the other locks. Two years later, the masonry waste weir in the stone dam was entirely reconstructed to staunch leakage through its walls. The circular wall along the south bank of the turning basin was also rebuilt in concrete during 1914.¹⁴⁸

The auxiliary structures at Kingston Mills also required replacement and alteration. In 1909, the long wooden bridge across the bywash was replaced by a steel structure set on concrete piers. The old bridge/ over 220 feet long, had become increasingly dangerous because of its dilapidated condition. The steel span was only 100 feet long and consequently an earth embankment was necessary to close the gap. The work was completed by March 1910.¹⁴⁹

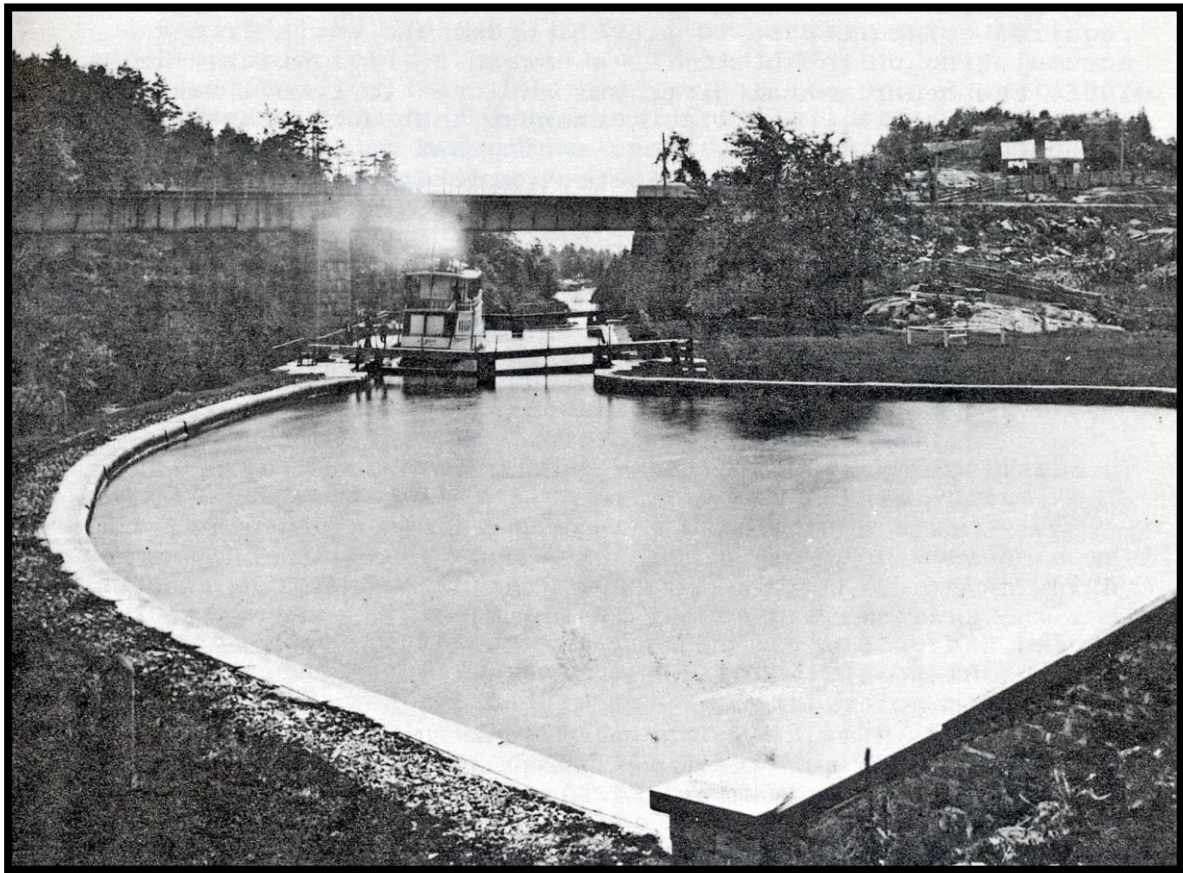


Figure 19. Canal basin, Kingston Mills, ca. 1880. D.C. West, Kingston, in lock. (Public Archives of Canada.)

Tay Branch

After the Tay branch was officially opened to traffic in 1891, it became an integral part of the Rideau system. The station comprised two locks and the artificial cut leading to the Tay River, as well as the basin and series of bridges in the town of Perth. Repairs needed in the first quarter century of the Tay's use were minor. In June 1899, the face of the retaining dam in the Tay River below the entrance to the Beveridge Bay cut was accidentally burned by a campfire. Navigation was not affected and new timber was installed the following winter. The bulkhead of the retaining dam was rebuilt in 1904-5 after the spring ice broke its centre pier. Navigation was maintained during the season by temporary repairs. Within the town of Perth, the wharves around the basin were maintained in serviceable condition and between 1909 and 1911, 1600 feet of dry stone wall were constructed along the banks of the canal to prevent damage from the wakes of passing steamers.¹⁵⁰

Both the artificial cut and the channel of the river required constant care to prevent rocks and earth from accumulating on the bottom as a hazard to navigation. In 1906, the departmental diver was employed to remove boulders and other debris. Phillips commented that such material was washed into the waterway every spring and had to be removed, since the channel was only 50 feet wide and could easily be obstructed. More extensive improvement to the channel was also undertaken. In 1914, for example, rock shoals between Perth and Dowsen's (about two miles from the town) were blasted out. The debris was then removed by the canal dredge *Rideau*. The work was completed during the summer of 1915.¹⁵¹

EMPLOYMENT ON THE RIDEAU, 1832-1914

After the completion of the Rideau canal in 1832, the permanent establishment of the system was composed of the office staff of both the Royal Engineers and the storekeepers' departments as well as- the men employed at each lock: lockmasters and permanent labourers. During the navigation season, additional labourers were hired on a temporary basis. The lockmasters were responsible not only for the operation of the locks at their station but also for minor repairs and maintenance, collection of any rents for ordnance lands in the area of the station, and keeping of daily journals.¹ Moreover, under the system of tolls adopted in 1842, they collected some duties and acted almost as sub-accountants to the ordnance storekeeper in Bytown.

Early in 1842, J.S. Elliott, headquarters ordnance storekeeper in Canada, submitted suggestions on qualifications for future lockmasters to the secretary of the ordnance board of England. Elliott believed that possible candidates should be able to read, write legibly, understand simple arithmetic and possess sufficient knowledge on accounting methods to keep an account book.

The potential lockmaster should be under 50 years of age and in good health with no infirmity that might affect his physical or mental powers. Lastly, he should have a steady and sober moral character.² Seth Thomas of the ordnance department expressed his agreement with these criteria and recommended that the brigade-major of the Royal Sappers and Miners be ordered to report periodically on the number of men eligible for this employment. In a subsequent memo on the subject, he suggested that married men with families would be the most suitable candidates since they would become valuable settlers along the canal.³ He also advised that such men should retain any pension they held as further insurance of their loyalty.

At the time of the transfer to the provincial government, many of the lockmasters on the Rideau had held their positions for many years.⁴ With the change in administration, responsibility for appointing lockmasters passed to provincial authorities. In July 1856, Peter Monsell, the ordnance storekeeper in Bytown, wrote to the Respective Officers suggesting that six or eight persons should be nominated by provincial officials so that they might be appointed as vacancies occurred. Monsell recommended that civilian nominees should be under 40 years of age and should possess mechanical knowledge to enable them to superintend repairs to the locks.⁵

The lockmasters were divided into three classes depending on the importance of the post. Because of its position as one of the terminals of the system and because of its distance from headquarters in Bytown, Kingston Mills was classified as the only first-class station in 1842 and its lockmaster was paid 4s. 6d. currency per diem. The second class consisted of six locations - Bytown, Long Island, Merrickville, Smiths Falls, Jones Falls and Brewers Upper Mills. These lockmasters were paid a daily rate of 4s. currency. All other stations were classified as third class with lockmasters earning 3s.6d. currency per diem. A statement of the establishment of the canal in 1857 retained the three classes of lockmasters with some changes in classification. At Bytown and Kingston, the lockmasters were paid 90 cents per diem. Long Island, Merrickville, Smiths Falls combined, Jones Falls and Brewers Upper Mills were second-class stations with the lockmasters earning 80 cents while the remainder of the lockmasters were paid 70 cents.⁶

The majority of the lockmasters were provided with defensible houses which thus served as additional security for the works. They were also permitted to cultivate a small kitchen garden provided it did not interfere with their public duties. In 1861, the annual report for the canal commented that provision of lockmasters' houses and adjacent land

renders the station more private and enables us to get a good class of men at this low rate [70 cents per diem], so that it would not be good economy to sell the Lands that are now attached to the Lock premises but to leave a reasonable allowance of Ground for the use of the Lock Master and his family.⁷

The Lockmasters were also issued uniforms which served to emphasize their position and gave them more authority over boatmen using the Rideau.⁸ The ordnance department supplied each lockmaster with a blue greatcoat with scarlet collar and ordnance buttons as well as a blue cloth shell jacket decorated with scarlet collar and cuffs and an embroidered crown on the right arm. The men also received grey cloth trousers and a blue forage cap with a scarlet band. The cap, trousers and jacket were supplied annually, the greatcoat biennially.⁹ According to the chief clerk at the principal storekeeper's office, these articles of clothing had a total value of £2 19s. 8d. After they were issued early in 1847, the uniforms were compulsory and in 1848, Captain Charles Ford, the senior Royal Engineer at Bytown, informed the lockmasters that failure to appear properly dressed would be penalized.¹⁰

In addition to the lockmaster, each station on the Rideau was manned by both permanent and temporary labourers. In Colonel John By's list of the proposed establishment, the majority of the men suggested as labourers were veterans of the 7th and 15th companies of the

Royal Sappers and Miners. Many of these were skilled workers representing such trades as wheelwright, cooper, stone cutter, carpenter and painter.¹¹ During the early years of operation, 30 permanent labourers were employed with approximately 40 temporary labourers hired during the navigation season. The labourers earned 3s. per diem during the first years after the canal opened, but in 1834 the rate of pay was reduced to 2s. 6d. per diem.¹² In 1841, a petition from the permanent lock labourers requesting a return to the higher rate resulted in a thorough review of the conditions of work and payment. In their memorial, the labourers stated that because of increased traffic on the canal, they were now liable to be called upon to work the locks at any time during the day or night. Moreover, the standard rate of pay for labour in Canada was between 3s. and 3s.9d. per diem compared with their rate of 2s.6d.¹³

The request elicited a variety of conflicting opinions. The chief clerk of the Clerk of Ordnance, Seth Thomas Sr., maintained that because their employment was steady, the permanent labourers were, in fact, much better off at a lower rate of pay than civilian workers who earned a higher rate at casual labour. He pointed out that there was no difficulty in hiring temporary labourers at this low rate since they had the prospect of obtaining a permanent position as vacancies occurred; he concluded his memo to the Master-General and Board of Ordnance by suggesting that since the canal would probably experience a large deficit, an increase in the rate of pay could hardly be considered expedient. Essentially the same opinion was expressed by Richard Eaton, one of the ordnance commissioners in Canada who had recently reported on the canals in the colony.

Eaton argued that in his investigation of the canals, he had found no reason to suppose that the labourers were dissatisfied or that there was any difficulty in obtaining workers at the present terms. He did, however, suggest that the canal service might be benefited if, after a period of employment, the labourers were granted an increase individually on the recommendation of the officer in charge. This would act as an incentive to steady conduct on the part of the workers.¹⁴

In contrast, the ordnance storekeeper in Canada and Eaton's partner in the investigation of the canals, J.S. Elliott, advocated a major revision of the employment policy for labourers. He argued that the low rate of pay tended to result in hiring of inferior workers with a consequent loss of efficiency in the canal service. Moreover, the conditions of work were difficult with long hours and exposure to the weather as well as "those attacks of Fever and Ague peculiar to the neighbourhood of the Canal."¹⁵ These factors, Elliott argued, made it difficult to obtain the best workers when the usual rate of pay in the country was from 6d. to 1s. per diem higher. Since, for the good of the service, only the most intelligent and active men should be employed, Elliott concluded that the daily rate of pay

should be increased to 3s. He opposed Eaton's suggestion of an increase after five years on the grounds that it might cause good workers without the required years of service to resign. Elliott's chief proposal was that only 17 labourers be maintained on the system during the winter. This saving in wages would nearly offset the increase resulting from a higher pay scale. Temporary labourers could be hired during the navigation season to assist in working the locks and to perform small day-to-day repairs at the stations.¹⁶ The Board of Ordnance consequently authorized an increase of 6d. per diem during the navigation season on the condition that the number of permanent labourers be pared to 17. The Respective Officers at Bytown were also ordered to report if any further reductions were practicable and to retain the most deserving labourers at the close of navigation.¹⁷

In later years, as revenue from the canal fell, reductions continued to be made in the number of both permanent and temporary labourers. In the return for 1857, which listed salaries of the staff on the system, 53 temporary labourers were employed at a rate of 60 cents per diem during the navigation season with seven permanent labourers paid 60 cents per diem during the navigation season and 50 cents per diem during the winter.¹⁸ In November 1858, Slater retained only three permanent labourers for the winter - one at Ottawa, one at Jones Falls and one at Kingston Mills. A statement of the canal staff in 1861 indicates that these positions were filled by Peter Curren at Ottawa, John Dennison at Jones Falls and John Sargent at Kingston Mills. The number of temporary labourers had been further reduced to 36.¹⁹

Clear instructions on employment of temporary labourers indicate the type of man sought by the Respective Officers at Bytown. The lockmasters were authorized to hire temporary labourers who were hard-working, intelligent, good-tempered and sober. The lockmasters were also ordered to maintain strict obedience and discipline on the locks.²⁰ Both temporary and permanent labourers were expected to give complete obedience to the service. In 1849, Seth Thomas Jr., ordnance storekeeper in Bytown, and Captain Charles Ford, senior Royal Engineer on the canal, criticized the "want of zeal and Attention on the part of some of the Permanent Locklabourers who seem to think their appointments are for life." The Respective Officers at Bytown cautioned the lockmasters

to explain to the Permanent Labourers under their charge that the Respective Officers expect the Strictest Attention, earnest zeal, and entire devotion to the interest of the Service, and any man disinclined to render such to the Ordnance had better resign their Situations, as the Respective Officers are determined to visit with immediate dismissal any want of zeal Attention or devotion to the Service.²¹

The lockmasters were ordered to report any evasion or dereliction of duty promptly.

Drunkenness seems to have been the most serious breach of discipline. In 1840, lockmaster Broad of Black Rapids was dismissed for "intemperance" and in 1849, permanent labourer William Milliken and temporary labourer Robert McCloy, also of Black Rapids, were reported to have been drunk while they were transporting Lieutenant Charles Pasley to Long Island. Pasley complained that McCloy had been too drunk to row and that Milliken had used disrespectful language "interspersed with oaths with Reference to the officers [sic] of the Royal Engineers." McCloy was dismissed and Milliken was reduced to the status of a temporary labourer. The extent to which alcohol was available on the canal is indicated by the fact that in 1841 the senior Royal Engineers officer had considered it necessary to issue an order prohibiting the sale of beer by the labourers on the penalty of dismissal.²² The labourers on the Rideau canal seemingly shared the habits of their civilian counterparts.

Confederation in 1867 brought the operating staff of the Rideau into the federal civil service and in subsequent years both lockmasters and labourers were increasingly influenced by a growing number of regulations affecting government employment. The first superannuation act providing pensions for permanent civil servants was passed in 1870 and an order-in-council of 1 December 1870 stipulated a retirement age of 65, except in cases where the employee was still capable of working efficiently. On the Rideau, nine lockmasters were over the retirement age and all were retired by mid-1871.²³ Lockmasters in poor health but under 65 were now permitted to retire on pension with the submission of medical certificate.²⁴

Despite these developments, many of the characteristics of employment on the Rideau remained unchanged. Retirement at age 65 was not compulsory and many lockmasters continued in their positions until their mid-seventies. Since many had been appointed to succeed their fathers at comparatively early ages, it was possible for lockmasters to serve 25 or 30 years. The lockmaster at Hartwells, Henry Pilson, retired in 1898 at the age of 59 after 30 years of service, and lockmaster Pearson of Poonamalie retired in 1911, also at age 59, after 40 years of work. The longest serving lockmaster was William Newsome of Kilmarnock who had succeeded his father in 1871. Newsome did not retire until 1921 at age 73 after a full half century of tending his small lock once described by superintending engineer Phillips as "one of the best looked after Lock Stations on the Rideau Canal."²⁵

During much of the 19th century, most lockmasters had, on retirement or death, been succeeded by their sons. In the later decades of the century, however, government gradually enforced a policy of not permitting the positions to be transferred in this manner. Between 1867 and 1871, nine lockmasterships were filled by the son of the previous holder. From 1871 until 1914, only three appointments were



Figure 20. Arthur S. Jones, lockmaster at Smiths Falls, Ontario. (Public Archives of Canada.)

made from lockmasters' sons. In discussing one of these - the replacement of John McGillivray of Washburn by his son Henry - Wise stated that the custom did not always benefit the canal service. "[As] a rule I think it is not in the interests of the canal that lockmasters should descend from Father to Son which seems hitherto to have been the custom."²⁶ Only on one occasion during this period did the superintending engineer of the Rideau recommend that a son receive his father's position. This occurred at Washburn in 1903 when Arthur Phillips suggested that because the lockmaster's widow had been left destitute with a large family to support, the oldest son might be appointed to the vacancy. By this time, however, patronage played an important role in appointments to the civil service and the lockmaster's son did not receive the position.²⁷

The superintending engineers were eager to appoint competent experienced men to lockmasterships. In 1870,

Slater suggested that the canal service would benefit if "able Mechanicks could be made Lock Masters, with suitable wages, with a distinct understanding that they should assist actively in the repairs going on in their Neighbourhood at all times." Nearly 25 years later, Slater's successor, Frederick Wise, set forth similar qualifications for new lockmasters. Wise suggested that those appointed should be middle-aged men, "physically able to perform the work round the station, as if otherwise (when extra work has to be done) additional help has to be called in, thus involving unnecessary expense." ²⁸

With this desire for experienced workmen in mind, the superintending engineers consistently advocated that vacant lockmasterships be filled by lock labourers. Moreover, the possibility of promotion would serve as an added inducement to the poorly paid labourers who tended to leave the canal service whenever a more remunerative job arose. In 1891, Wise enunciated an opinion shared by both Slater and Phillips. He advocated that government examine the qualifications of the lock labourers when finding a successor to the deceased lockmaster at Washburn. "I would respectfully suggest in filling the appointment, consideration should be given to Lock lb^{rs}, who are capable of filling the position, and have by length of service entitled them to promotion."²⁹ In later years, Arthur Phillips frequently recommended the more experienced labourers for vacancies and in 1910, went so far as to write to G.F. McKimm of Smiths Falls, holder of Liberal patronage for the area, asking that the position of lockmaster at Poonamalie be given to lock labourer Alfred Best "who has served faithfully for many years, and who is well qualified to undertake the responsibility of the position."³⁰

Despite the superintending engineers' consistent advocacy of the labourers' claims for promotion, there were more pressing influences on the nomination of lockmasters. Although the final power of appointment lay with the minister of Railways and Canals, by the late years of the 19th century names were suggested on the basis of local political patronage.³¹ During the years of Conservative government, patronage was wielded by the Conservative members of Parliament for the several ridings through which the waterway ran. Since these constituencies remained overwhelmingly Conservative even during the 15 years of Liberal government, Liberal patronage was dispensed by the few Liberal representatives, defeated Liberal candidates and prominent members of the riding associations.³² As early as 1883, superintending engineer Wise referred to the wish of George Taylor, Conservative member for South Leeds, to nominate Hugh Fleming for the post of lockmaster at Chaffeys when the current lockmaster retired. In later years, the superintending engineer wrote directly to patronage brokers asking for nominations for vacancies. Moreover, canal officials were very cautious not to infringe on the prerogatives of the local politicians. In 1903,

Phillips acknowledged his reluctance to interfere in the appointment of lockmasters admitting "patronage is a matter with which I have absolutely nothing to do, and it is a matter of exceeding delicacy for me to make suggestions to the persons who have the patronage as to who shall get vacant positions."³³

Perhaps because of the technical knowledge required of lockmasters, there were few instances of dismissals as a result of change in government. When Laurier defeated the Conservatives in 1896, five lockmasters, apparently those not on the superannuation list, were released early in December. Of these, all but one, J.K. Read of Hogsback, were reinstated at the opening of navigation in 1897.³⁴

More changes were experienced after the Conservative victory in 1911. On 5 June 1912, lockmasters John Merrifield of Burritts and George Johnston of Nicholsons were dismissed and less than a year later, James Brennan of Clowes was also fired, as a result, wrote departmental secretary Louis Jones, of "active political partisanship."³⁵ In general, however, since the political appointees were local men aware of the problems of the Rideau navigation, the canal service seems not to have suffered greatly from the exercise of patronage.³⁶

As it had been before Confederation, the major complaint of the lockmasters was their low pay. Until 1873, they remained at the rate granted them in 1857 with a substantial variation from station to station. In a review of the salaries of the operating staff in 1873, Wise reported that the lockmaster at Ottawa received \$1.25 per diem, six lockmasters received 80 cents per diem, thirteen 70 cents and one 90 cents. The lockmasters at Smiths Falls combined and Kingston Mills earned \$300 per annum although part of their salaries was paid by the Department of Inland Revenue because both acted as customs collectors.³⁷ The superintending engineer suggested that salaries should be ranked both by the importance of the station and by the amount of work required, and above all should be sufficient to retain men competent to deal with the complex waterway. He proposed one first-class station - Ottawa - at \$1.25 per diem, 12 second-class stations at one dollar and ten third-class at 90 cents.³⁸ The increase was badly needed, Wise contended, since rates of pay were so low that he could not understand why the lockmasters remained at their jobs. "The only explanation is that most of them and their fathers before them have been brought up on the Canal and having purchased land in the Vicinity of their respective Stations are more or less tied down by property and Old Associations." The increase was authorized by an order-in-council of 2 July 1873.³⁹

Despite this raise in pay, complaints were still received. As early as 1874, seven lockmasters of third-class stations petitioned the department to increase their wages to one dollar per diem. Wise argued, however, that their smaller stations had fewer lockages than those

where the lockmasters earned higher wages. Any increase, he suggested, should apply to all lockmasters.⁴⁰ Despite this recommendation, increases were subsequently granted to individual lockmasters. William G. Addison of Ottawa, for example, argued that he was put at a disadvantage because of the high cost of living in the city and in November 1874, he received a raise of 25 cents per diem.⁴¹ Similarly, the lockmasters at Hartwells and Black Rapids applied for an increase claiming that they too suffered because of the cost of living near Ottawa. In both of these cases, Wise supported the request although to avoid complaints from other lockmasters, he suggested that the raise be explained as compensation for the extra work required at these two stations. The superintending engineer used similar reasoning in 1881 to support a claim from Robert Bolton of Jones Falls. "Mr. Bolton," he stated, "is one of our most reliable lockmasters, and the Station one of the most important on the line of the navigation requiring his whole attention, and he should be paid as high as other Lockmasters who have their pay supplemented by acting as collectors of Tolls also."⁴² He suggested that Bolton, who was receiving one dollar per diem and 40 dollars per annum for operating the Morton Dam should instead receive \$1.50 per diem and 18 dollars per annum for his extra duties. With this increase, he would be on a par with the lockmasters at Smiths Falls combined and Kingston Mills who received additional revenue from the customs department.

These piecemeal increases did not provide a satisfactory solution to the low rates of pay on the Rideau. In 1883, Wise reported on an application from lockmaster Alfred Forster of Davis for a raise, stating that he believed that the lockmasters on the Rideau should receive no less than did the lockmasters on other government canals - 38 dollars per month. Because of the complex nature of the Rideau with its tendency toward sudden flooding, Wise argued that the waterway required more competent workers - "more intelligence and judgement being required to regulate the water than on the ordinary canals." The superintending engineer continued to urge that the Rideau lockmasters be placed on an equal footing with other lockmasters employed by the federal government and on 18 November 1886, an order-in-council authorized a raise in pay to \$1.25 per diem - the equivalent of 38 dollars per month.⁴³

This rate of pay remained unchanged until 1903 when all lockmasters except those at Ottawa and Jones Falls were granted \$1.50 per diem. The two latter men received \$1.75. By 1911, however, Phillips was again recommending an increase for all workers on the waterway. He pointed out that private contractors working for government were required to pay their workmen 15 cents per hour which, in a ten-hour working day, meant a wage of \$1.50 - the same as that received by the Rideau employees. Unlike the private workmen, the lockmasters and labourers of the Rideau were required to pass vessels at any hour of the day or night and

thus had no unbroken period of rest. On other government canals night and day shifts had been established but on the Rideau all the men worked full-time. Phillips therefore suggested that the lockmasters' request for a raise in pay to \$2 per diem be granted. The recommendation apparently met with approval from department officials since canal records for Jones Falls indicate that in August 1911 the lockmaster's salary was raised to 60 dollars per month.⁴⁴

After Confederation, the lock labourers, who assisted the lockmaster with the passage of boats, were hired annually and were released at the close of the navigation season. In practice, many of the men were employed year after year, particularly at the smaller, more isolated stations. Some labourers seem, in fact, to have regarded their positions as personal property to be disposed of at will. In 1896, for example, lock labourer Burchell of Nicholsons sold his position to Samuel Boyd, a resident of the nearby village of Andrewsville. Superintending engineer Wise informed Boyd that Burchell had no control over the job since all appointments were made by the minister of Railways and Canals. Boyd was, however, awarded the position.⁴⁵

The lockmasters were at first responsible for employing labourers. In 1891, Wise stated that since the lockmaster and his helpers must work together in harmony, he did not interfere in appointments so long as "the man is physically capable of working and is of good moral character." The lockmasters' control meant, however, that they frequently hired their own sons - an understandable action in view of the low pay of both lockmasters and labourers. During the last decades of the century, such appointments met with increasing disfavour from government officials in Ottawa who sought greater centralization of authority. In 1894, the lockmasters were ordered to refer all vacancies to the canal office rather than appoint workers on their own responsibility.⁴⁶ As with the lockmasters, the appointment of labourers represented a valuable means of political patronage. In fact, since the labourers were hired for the navigation season only, local politicians could dispense the jobs to different supporters annually.⁴⁷

Like the lockmasters, the labourers' chief complaint was their meagre pay. In 1870, Slater reported that the labourers at Kingston Mills and Ottawa had left their stations because they could not support themselves on 60 cents per diem. To get the workers back, he had been forced to raise their wages to 80 cents per diem at Ottawa and 75 cents per diem from Jones Falls to Kingston. Nevertheless, the bulk of the workers remained at inadequate wages, and a year later Slater warned that almost all the labourers had informed him of their intention to leave the canal unless their pay was raised. He was particularly concerned that if the labourers ceased their work, crews of vessels might operate the locks themselves, creating the risk of serious

accidents. On the recommendation of the minister of public works, Hector Langevin, wages were raised by approximately one-fourth in July 1871.⁴⁸

Even these increases did not bring the labourers to an adequate wage level. In his thorough review of salaries in 1873, Wise expressed his amazement that the labourers, even more than the lockmasters, remained on the canal since they were so poorly paid. He suggested that since it was impossible to get good workers for less than one dollar per diem, the old graduated wage scale should be abolished and all labourers paid one dollar. This level was set by the order-in-council of 2 July 1873 which also raised the lockmasters' salaries.⁴⁹ The increase prompted a reminder from Wise that only able-bodied and active men were to be hired. Moreover, when not working the locks, the labourers were required to do jobs around the station, such as repairs and maintenance of the grounds.⁵⁰

Superintending engineer Wise continued to urge that the Rideau workers be granted a more reasonable wage - one similar to the staff on other government canals. In 1884, when he advocated that lockmasters receive \$38 per month, he suggested that the labourers be raised to \$1.25 per diem or \$1.50 near towns as were other canal labourers. His recommendation was heeded. As a result of an order-in-council of 18 November 1886, an increase to \$1.25 came into effect when the labourers were hired at the opening of navigation in 1887. Sixteen years later, their pay was again raised slightly to \$1.50 per diem. In August 1911, the labourers, like the lockmasters, were changed to monthly salaries. Their pay was increased approximately ten dollars to \$55 per month.⁵¹

Conditions of daily life for both lockmasters and labourers remained substantially unchanged in the years following Confederation. In 1895, Phillips outlined the duties of lockmasters in answer to a query from the auditor-general on why the men were employed throughout the year. The superintending engineer stated that even when the navigation was closed, lockmasters were required to watch their stations, regulate the discharge of water - particularly vital during the spring runoff - and take charge of all government stores and property. Moreover, several were in charge of reservoir dams and protection booms which needed frequent visits all during the year.⁵²

In general, the lockmasters appear to have fulfilled their duties competently. There were, however, a number of instances when they were reprimanded for breaches of regulations. In 1875, for example, Wise wrote to lockmaster Archibald Boyd of Long Island criticizing him for his failure to regulate the water in the Long Reach. He had, in fact, lowered it drastically without warning stations below him to pass the additional water. The superintending engineer condemned Boyd's action as "the act of a man who does not know that he is doing, [showing] the grossest

incapacity" and concluded that reports of his drunkenness must be true. He warned that if in future he heard that the lockmaster were incapacitated from drinking, he would be immediately suspended from duty.⁵³

Intemperance seems in fact to have remained the most striking problem affecting the discipline of the canal staff, although in any age of heavy alcohol usage, it was probably no worse than in the general population. In 1887, for example, Wise suspended two of the Ottawa lock labourers for repeated drunkenness and disobedience to the lockmaster's orders.⁵⁴ The most glaring case of alcoholism was that of William McCann, lockmaster at Old Slys. In April 1881, Wise suspended McCann on the grounds that he had been absent from his station without permission for a week. During this time, several young men, among them his son, had held a drinking spree in the lock house where they had destroyed government property and "otherwise behaved in a most scandalous manner." The superintending engineer reported that he had frequently reprimanded McCann for his neglect of duty by habitually leaving his station and going up to the Village of Smiths Falls drinking about the Taverns....When I visited the station on Thursday morning last it was quite evident that he had just come off a drinking spree, and on my charging him with it acknowledge that he had.⁵⁵

Although Wise suggested that McCann be transferred to Davis which was "isolated entirely the nearest Village being eight miles distant," the lockmaster was reinstated at Old Slys in June. By December, however, his mental condition had deteriorated and he was committed to Rockwood asylum in Kingston. Wise reported that having shown signs of temporary insanity [he] has had to be removed by his friends to a place of safe keeping. They ask that he may be granted three months leave, to enable him to be relieved from all duty which they trust will be the means of restoring his health.⁵⁶

The lock labourer was put in charge of the station in McCann's absence. In mid-February 1882, the medical superintendent of Rockwood reported that the lockmaster's case was not a "hopeful one" and rather than extend leave of absence indefinitely, the department superannuated McCann on 28 February.⁵⁷

Relationships between lockmaster and labourers were in general harmonious, perhaps not surprisingly in view of the frequent family ties between them: yet such ties could produce ill-feeling between labourers and lockmaster. In 1914, for example, the labourers at Jones Falls complained to superintending engineer Phillips about the conduct of lockmaster Stuart. After an investigation, Phillips concluded that although Stuart did not get on well with his labourers, the fault lay primarily with the latter who were reluctant to do any of the regular maintenance work of the

station. In a subsequent letter, he disclosed that the problem was exacerbated by the fact that the lockmaster's daughter was married to one of the labourers who habitually mistreated her. Bad feeling between the two men was therefore inevitable and was heightened by the labourer's abusive and insolent language toward his father-in-law. Phillips concluded that since Stuart was a conscientious employee, it would benefit both the canal service and peace of the station if Ephraim Virtue, the lock labourer, were not re-hired.⁵⁸

Other instances of conflict between the lockmasters and their helpers arose principally from the labourers' disobedience to orders. Lockmasters were usually authorized to suspend the offender temporarily while referring the case to the superintending engineer in Ottawa. In instances where there had been a number of complaints from the lockmaster, the labourer was usually dismissed from his post. Some ill-feeling was inevitable since younger men were frequently appointed lockmaster over older and more experienced labourers. This appears to have been the case at Merrickville in 1875 where the young lockmaster, Matthew Johnston, complained that lock labourer O'Hara, who had served under Johnston's father, had both disobeyed his orders and used insulting and impudent language to him. Moreover, another lock labourer, Gorman, was frequently absent from duty. Although authorized to dismiss the labourers, Johnston decided to retain them, making it clear that they would be fired if their conduct did not improve. Several months later, he reported to Wise that the men were obeying his orders and all was well at the station.⁵⁹

Similar disagreements were experienced at most of the stations. In 1873, Alfred Forster of Davis was ordered to discharge his labourer for his persistent refusal to obey orders. Lock labourer Robert Sargent of Kingston Mills was later reprimanded for disobedience by Wise who wrote "Obedience to the orders of your superior officer is the first duty of every subordinate." Sargent was, however, permitted to return to work on the locks.⁶⁰ Not all of the fault for conflict lay with the lock labourers. In 1894, Wise intervened in a quarrel between lockmaster Patrick Deane of Brewers Mills and his labourer, Charles Milne. Although the lockmaster lived in his own home near the locks, he had refused to let Milne move into the vacant lock house. Wise ordered him either to give the house to the labourer or occupy it himself and he indicated his dissatisfaction with the dissension between the two men.

I cannot interfere in any petty personal quarrel between you & your labourer who has been 23 years in Govt Service & as far as I know has been a faithful servant, & I will not see him forced to resign for want of a dwelling house as long as there is one belonging to the Govt. standing vacant.

Deane promptly moved into the lock house and Milne was left

to occupy the canal storehouse during the navigation season.⁶¹

Conflict was also experienced between the lockmasters and their neighbours. Since the canal men were almost invariably local residents, the inevitable family and personal animosities experienced in a small community were heightened by the lockmasters' position as government employees. Controversy was particularly likely in areas where the waterway caused flooding. During the campaign to have the Kingston Mills reach lowered early in the 1890s, member of Parliament George Kirkpatrick requested Macdonald to transfer lockmaster Joseph Deane of Kingston Mills to another station because of the many complaints about him. To emphasize his concern, he enclosed a letter from a local farmer who blamed the destruction of his crops on "that pet [Deane] he [Wise] has at Kingston Mills who when he gets drunk swears he will drive the bass up to the people's doors."⁶² Despite this vehement sentiment against the lockmaster, Wise concluded that he should not be moved since there was no station available where he would receive similar remuneration. Moreover, the superintending engineer suggested that the conflict between the lockmaster and his neighbours arose from Deane's determination to serve the interests of the waterway.

The trouble as far as I can make out is a personal one altogether between a few of his neighbours who try and interfere with him about the Water Levels. He is an impetuous Irishman, and tells them, perhaps in too forcible language, to mind their own business, that he has his instructions from the Superintendent and knows no other person in the matter.⁶³

The superintending engineer's opinion had influence and Deane was not removed from his post.

During the half century before World War I, canal officials in Ottawa investigated a number of complaints against Rideau lockmasters. The most common accusation brought was that of the misuse of government property. Since the lockmasters were in charge of supplies at their stations and were responsible for the completion of minor repairs, they were vulnerable to such charges brought, sometimes without foundation, by jealous neighbours. Only once did allegations result in disciplinary action against a lockmaster. In August 1874, Chester Stewart at Elgin accused lockmaster Henry Layng of Jones Falls of breaches of regulations and misuse of government property. The specific charges included allowing sawlogs to pass without a permit, using wood cut on government land for his own purposes, using government timber for the construction of a private boathouse and selling one barrel of cement.⁶⁴ After a thorough inquiry at which both Stewart and the lockmaster were present, superintending engineer Wise decided that none of the charges could be conclusively proved against Layng. Sawlogs had previously been permitted to pass free of charge and although this practice had now been altered, Layng had

never received the countermanding order and could not be reprimanded. On the question of the misuse of government goods, Layng had admitted cutting timber on ordnance land but stated that most of it had not been standing and that none had been sold. Furthermore, he had admitted selling some lumber but argued that it had not been supplied by government but had come off passing ships, apparently as driftwood. Although the charges could not be substantiated, Wise suggested that the dissention between Layng and local residents was detrimental to good management of the waterway. "I find a very bad feeling exists between the Lock-master and his neighbours and should he remain in the service I think it would be to the interests of all, that he should be removed to some other station."⁶⁵ In response to this recommendation, Robert Bolton, lockmaster at The Narrows, was transferred to Jones Falls. Although Layng was at first informed that he was to exchange with Bolton, he was instead dismissed.⁶⁶

Much of the conflict between the lockmasters and local residents seems to have been motivated by personal animosities. In 1912, for example, the minister of customs, Dr. J.D. Reid, received an anonymous letter accusing lockmaster Henry Hutton of Edmunds of several breaches of regulations including being absent from his station for threshing, building a stable without permission and wrongfully disposing of canal lumber. Superintending engineer Phillips ordered Hutton to give a complete explanation of these charges. The lockmaster's defence was clearly satisfactory. In a subsequent letter, Phillips stated that, as he had suspected, the accusations were without foundation and sprang from personal malice. He warned Hutton, however, to avoid actions that gossiping neighbours could misrepresent since many of them were obviously watching his every move. In the rural communities which bordered the waterway, private quarrels could easily be transferred to criticism of the lockmaster's manner of fulfilling his public role as a government employee.⁶⁷

The degree of permanency involved in the lockmasters' employment meant that for all practical purposes, the lockstations were regarded as permanent homes. Many of the men took great pride in their stations and spent considerable time and effort in beautifying them. In 1897, lockmaster William Richey of Smiths Falls was reported to have spent over \$800 of his own money in making an ornamental garden near his home at the locks. Similarly, lockmaster Hutton was later commended by Phillips for having found Edmunds a "wilderness" and transforming it into a garden.⁶⁸

Indeed, lockmasters who did not maintain their stations were severely reprimanded. In 1890, Wise informed lockmaster Jones of the detached lock at Smiths Falls that the station was "the most slovenly kept on the whole canal." He ordered Jones to remove an old picket fence, to clear the walks of weeds and thistles and in general to make the

station "look as if there was some person in charge." If this were not done, the lockmaster would be suspended and the case reported to the department.⁶⁹

All lockmasters except those at Ottawa and Merrickville were supplied with government housing at the locks and these two received a special allowance for rent. Some accommodation was also available for the lock labourers on the basis of seniority.⁷⁰ At larger stations with a number of labourers, those without separate accommodation were housed in storehouses or other temporary quarters. At Kingston Mills, for example, each storey of the blockhouse was occupied by a labourer and his family while the other men spent the navigation season in a wooden structure on the east side of the locks referred to as the "Lodge."⁷¹

For many years, the lock labourers whose length of service ensured them accommodation lived in the government houses throughout the year, paying rent only during the time they were actually employed. In an apparent attempt to lessen the annual loss on the Rideau, government officials decided in 1912 to collect rent throughout the year. Superintending engineer Phillips protested that since many of the stations were isolated, it was hard for the labourers to obtain alternative work during the winter and it therefore seemed unfair to charge them when they were not earning money. Moreover, if the dwellings were left vacant during the winter, lack of heat could cause substantial damage.⁷² Phillips's protest went unheeded and thereafter the labourers and bridgemen, like the lockmasters, paid rent of \$4 per month throughout the year.

During the years when the ordnance had controlled the waterway, the lockmasters had been provided with full uniform, a practice ended after the transfer to the provincial government. The first reference to provision of a uniform by the federal government occurred in 1903 when superintending engineer Phillips ordered ten dozen straw hats for the Rideau staff. Of these, three dozen were to display the word "lockmaster" in gold letters, five dozen the word "lockman" in silver and two dozen "bridgeman," also in silver lettering. In subsequent years, Phillips provided the captain and crew of the canal tug *Loretta* with caps in both blue cloth and white duck - the captain's lettered in gold and the crew's in silver.⁷³ The superintending engineer also maintained that all the operating staff should be issued with complete uniforms. In response to a query from the departmental purchasing agent, Louis Lavoie, Phillips suggested that the appearance of the stations would be improved by this addition. Clothing for 24 lockmasters, 46 labourers and 11 bridge tenders was required. As well, the captain and steward of the *Loretta* should be issued with uniforms in both blue and white.⁷⁴ No action was apparently taken on Phillips's recommendation until after 1914.

Upon retirement, many lockmasters and labourers were awarded the Imperial Service medal by the British

government. Established in 1902 by Edward VII, this order rewarded long and faithful service by members of the civil service in all parts of the empire. The usual qualification was 25 years' continuous and excellent service.⁷⁵ The first Imperial Service medal to be awarded to the Rideau staff was given to James Todd, who retired as lockmaster at Burritts Rapids in 1905 after 25 years. The award was presented at a formal meeting organized by Phillips at the town hall in Merrickville on 5 March 1906. Platform guests included Senator T.F. Frost of Smiths Falls, the reeve of Merrickville, T.A. Kidd, a prominent Liberal businessman from Burritts Rapids, and Phillips himself. The superintending engineer's account of the presentation indicates the seriousness surrounding this first award. He reported that his own speech on presenting the medal had been printed verbatim in a local newspaper and went on to describe the conclusion of the meeting.

After I had presented the Medal, Senator Frost called upon Mr. Putnam, who represented the Corporation of Merrickville; and also on Mr. T.A. Kidd of Burritt's Rapids who represented that town; for some remarks; and each delivered a short speech which was listened to with much attention and interest; after which I thanked those gentlemen who had come to assist in the ceremony, in the name of the Department of Railways and Canals; and also the Corporation of Merrickville for their courtesy in placing the Town Hall at our disposal; and the meeting after three cheers for the King, and the singing of the National Anthem, broke up.⁷⁶

The formality of this presentation clearly sprang from the fact that it was the first to be made to Rideau Canal staff. In subsequent years, medals were apparently presented without ceremony. In 1907, for example, Phillips sent the medal awarded to labourer Crawford Virtue, who had died before it could be presented, to lockmaster Stuart of Jones Falls instructing him to give it to Virtue's son Emphraim. Most lockmasters on the waterway eligible for the award received it on their retirement. In December 1907, Phillips reported that he had presented medals to John Newman, William Newman and Matthew Johnston and a year later, he suggested that since Robert McCreary had performed his duties as lockmaster at Old Slys with "diligence and fidelity," he should be recommended to the imperial authorities for the honour.⁷⁷

In addition to the operating staff of lockmasters and labourers, the Rideau waterway employed a variety of other workers. For most of the half century following Confederation, the office staff consisted of the superintending engineer, a bookkeeper and paymaster, a clerk and the foreman of works.⁷⁸ These positions remained unchanged until 1906 when Anne McKeown was hired as a typist and stenographer, apparently in response to Phillips's complaints that unlike superintending engineers on other

government canals, he had no clerical or professional assistance. McKeown, however, did not devote her full time to the Rideau but also served as clerical staff for the superintendent of the Trent canal. Her salary was paid from both budgets.⁷⁹

Other Rideau staff included tenders for the swing bridges across the waterway and crews of dredges and tugs. For several decades after Confederation, only five swing bridges crossed the canal other than those at lock stations, which were operated by the lockmen. Of the five bridge tenders, only one - that at Burritts - was employed throughout the year. The remaining four men - at Bank Street in Ottawa, Manotick, Becketts Landing and Olivers Ferry (now Rideau Ferry) - were dismissed at the end of the navigation season although in 1877 Wise had recommended that wear and tear on the bridges would be lessened if the men were kept on all winter. As more highway crossings were constructed along the route, additional bridge tenders were hired. By 1910, there were 11 swing bridges requiring separate operators. In Ottawa, new bridges had been built at Concession Street (now Bronson Avenue) and in Ottawa East on the line of Argyle Street. A swing bridge had also been constructed at Wellington (now Kars), and at Brass Point above Brewers Mills on the Kingston descent. As well, completion of the canal basin in Perth early in the 1890s had necessitated two swing bridges on Beckwith and Drummond streets.⁸⁰ Only the three Ottawa bridge tenders and one of those at Perth were employed throughout the year.⁸¹

Because of the extent of artificial canal and of rock shoals, the waterway required constant dredging to maintain it in navigable condition. During the years that the Rideau was administered by the Department of Public Works, this work was done by the departmental dredges, and for several years after the creation of the Department of Railways and Canals, canal authorities continued to rent dredges from the older department. By 1888, however, the superintending engineer was advocating the acquisition of a dredging plant entirely for the use of the Rideau, since the work of deepening cuts and removing shoals was sufficient to occupy it on a full-time basis. The departmental annual report for the year ending June 1891 was the first to make specific reference to the dredge *Rideau*, which remained in use until after 1914. Her crew, who lived on the vessel during the navigation season, consisted of an engineer who also served as captain, a cranesman, a fireman, two deckhands and a cook.⁸²

The *Rideau* was not able to handle all of the dredging chores on the canal, however, especially since she was required not only to clear out channels but also to strengthen many of the dams by depositing clay on them. At first, the department continued to rent additional dredges from the Department of Public Works, but these were not always available when needed. In October 1911, Phillips submitted an estimate of \$25,000 for a new dredging plant

consisting of a boom dredge similar to the *Rideau*, a tug, two side-dumping scows and a coal scow. A supplementary vote of \$4000 was required to complete construction when Phillips reported that increased costs of labour and materials had resulted in the lowest tender being above the original estimate. The new dredge was put to work cleaning out the canal basin in Ottawa in October 1913.⁸³ Christened the *Tay*, she carried a crew of seven - engineer, cranesman, fireman, scowman, cook and two deckhands. They received the same wages as those earned by the crew of the older dredge with the captain paid \$85 per month, the cranesman \$65, the fireman \$50, the cook \$45 and the deckhands and scow man \$40. Like the *Rideau*, the *Tay* worked with a small tug, the *Agnes*. She was manned by a crew of three - a captain earning \$85 per month, an engineer at \$75 and a deckhand at \$40. Crew members on all Rideau vessels also received \$15 per month for board.⁸⁴

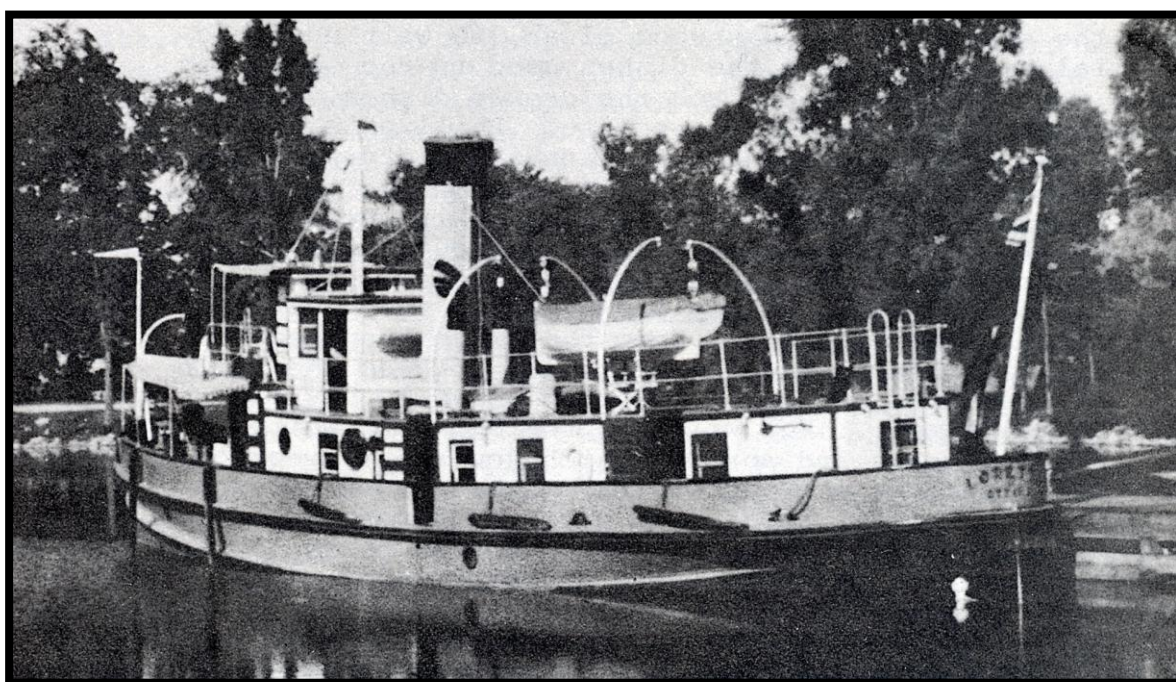


Figure 21. The *Loretta*, a canal steam tug. (Original photograph owned by Fred Flemming, Newboro, Ont.)

The pride of the Rideau fleet was undoubtedly the tug *Loretta*, which worked with the *Rideau* and was also available for inspection work. She had been built in 1906 to replace the aging steam tug, *Shanly*, in use on the waterway since 1889. The *Loretta* was constructed by the Polson Iron Works of Toronto and began her career on the

Rideau in August 1907.⁸⁵ She carried a crew of five - Captain Frank Nevins, engineer Victor Riel, deckhands S. Hayden and J.M. Taggart and cook Joseph Cowan.⁸⁶

Because the *Loretta* was intended for inspection purposes as well as general tug duties, she was equipped with a well-appointed stateroom reserved for the use of the superintending engineer or senior departmental officials. For several years, the ship's cook was responsible for the care of this special cabin and also served as a steward when Phillips was aboard. He was required to ensure that the stateroom was ready to occupy at a moment's notice and that the furnishings were kept in perfect condition.

The bedding, linen, glass, cutlery &c, is under your charge; and is to be kept clean and polished; and you are to see that the linen goes to the laundry when necessary; and to check the laundry accounts when they are sent in.⁸⁷

In 1911, the cook was relieved of his dual role by the appointment of Harry Schelleter of Ottawa as steward and deckhand. When the *Loretta* was on an inspection cruise with the superintending engineer, Schelleter was required to keep the stateroom and washroom clean, to wait upon the official party, to wash the dishes used in the stateroom which were kept separate from the crew's dishes, and to help the vessel's cook in his spare time. Phillips's instructions to the new steward provide a fascinating picture of the superintending engineer's style of life on the tug.

When the "Loretta" is being used on inspection, you are to carry the meals from the kitchen to the cabin and wait on table, make the beds, clean the glass, silver and cutlery, sweep out the cabin after each meal, keep the linen supplied for the beds, table and washroom, and to keep the whole of the after cabin and washroom scrupulously clean at all times....You will be provided with white uniform coats and aprons, which you are to wear on all occasions when attending on the cabin; and you must be careful about your personal appearance.⁸⁸

When the superintending engineer was not on board, Schelleter served as an ordinary deckhand under the captain's orders.

Although lockmasters and labourers assisted in repairs to their stations, the canal office also employed a seasonal staff of carpenters, masons, stonecutters and labourers. These men travelled from station to station repairing stonework and doing such specialized carpentry work as the construction of lock gates. Because the men were hired annually, they were particularly vulnerable to considerations of political patronage, although the specialized nature of much of the work, especially the carpentry, meant that experienced men were rehired year after year. When new carpenters were needed, they were hired on the recommendations of local members of the government party. Other skilled workers were hired on the

same basis. The superintending engineers frequently pointed out that the nature of much of the work done on the Rideau required training and experience, but they acknowledged the importance of claims of patronage. In 1906, Phillips wrote to Liberal Senator Frost of Smiths Falls asking whether he had any objection to the employment of skilled derrick men sent from Ottawa to Edmunds and pointing out the importance of using competent workers.

In lifting heavy stones such as our lock walls are built of, the safety of the men in the pit depends ends largely on the derrickmen; and as it takes time to train men in this work; I think it would be in the interest of the work to keep our derrickmen who have been trained in the work; but I have informed them that I cannot bring them from their own district unless I first obtain the consent of yourself.⁸⁹

The unskilled casual labourers were those most affected by patronage. In 1897, Phillips made a typical expression of his policy toward hiring these workers in a letter to David Rogers, Liberal representative for Frontenac. He stated that he had ordered the foreman of the repairs being done at Kingston Mills "to employ none but men who can furnish a written recommendation from you." After the change of government in 1911, power of appointment returned to the hands of Conservative members of Parliament and on several occasions, Phillips reprimanded the lockmasters for continuing to hire the same workmen and teams "as was recommended for employment under the late Government."⁹⁰ He ordered them instead to ensure that all persons hired were acceptable to the local member.

The general pattern of life for the operating staff of the Rideau remained essentially unchanged in the decades following Confederation. Although improvements in communications brought the workers under closer control from Ottawa, their daily lives continued to be focussed on the lockstations and the neighbouring rural communities. Pensionable retirement and stricter regulations concerning employment began to make canal positions less like private inheritances handed down from father to son. In addition, the use of political patronage brought new workers into the service. The tasks performed by lockmasters and labourers, however, varied little from those of earlier years and the men were plagued with the same problems of low pay and long hours. Despite superficial changes, conditions of life for the Rideau workers continued in their well-established mould into the 20th century.

APPENDIX A. LOCKMASTERS, 1832-1914

First 8 Locks, Ottawa

William Addison, sergeant, 7th Company, Royal Sappers and Miners, was appointed at the opening of the canal and retired on 27 June 1871. He was succeeded by his son, William G. Addison, former lockmaster at Long Island, who died 31 January 1890. On 14 April 1890, N.W. Clarke, who had served as a labourer at both Davis and Jones Falls, was appointed lockmaster. He died 18 July 1907 and was succeeded on 1 August by W.H. Bishop who did not retire until 1 April 1921.

Hartwell

William Clyma (?), corporal, 15th Company, Royal Sappers and Miners, was proposed by Colonel By in 1831. In a return for 1845, Henry Bullen was listed as lockmaster for the past 12 years (the length of service as lockmaster listed in this return does not seem to mean that all these years were spent at the same station but rather includes all years of employment in the canal service). In September 1847, Bullen was too sick for duty and was brought to Bytown for a medical board. James Pilson was appointed in his place and remained there until his retirement on 4 February 1868. He was succeeded on 19 March by his son Henry, who was superannuated on 1 May 1898 at age 59 because of ill health. Thomas Foran of Billings Bridge was appointed lockmaster. He retired 30 November 1911 and was succeeded by Robert Slack of Merivale who was still at the station in December 1933.

Hogsback

Thomas Jenkins, corporal, 15th Company, Royal Sappers and Miners, was proposed by Colonel By in 1831. In 1845, William Michell was listed as lockmaster for 14 years. He had been transferred from Merrickville during 1836. This may be the same Michell proposed for Burritts Rapids by By.

He was succeeded by Michael Gleeson who was probably appointed in 1857 and did not retire until 23 October 1882. He died around June 1890. Gleeson's successor, J.K. Read, was one of five lockmasters discharged early in December 1896, apparently as a result of the Liberal election victory. Unlike the other lockmasters, Read was not rehired in the spring. On 1 May 1897, Timothy Bayne was appointed lockmaster. He resigned 31 October 1911 and was succeeded by Alexander Montgomery of Manotick who retired 1 July 1924.

Black Rapids

William Newman was proposed by Colonel By in 1831. He had lost a hand while employed on the canal. In 1840, the lockmaster was William Broad, who was discharged in November of that year for drunkenness (see also Brewers Upper Mills). Thomas Newman was appointed to succeed him and served at the station until April 1843 when he exchanged with lockmaster Buck of Clowes. Buck seems to have resigned almost immediately since in May James Mackay, formerly acting sergeant-major, Royal Artillery, was proposed to replace him. Mackay, however, was not appointed and the new lockmaster, James Pilsen, formerly of the Royal Artillery, arrived in 1844. He was transferred to Hartwell effective 1 March 1847 and was replaced by a Sergeant R. Thynne. In 1861, the lockmaster was James Davy who had been appointed in April 1857. In October 1866, he was succeeded by Robert Hardy who retired in 1907 at age 73. He was succeeded by Allan P. McDonell who died 18 November 1911 at age 61. George Armstrong of Ottawa was appointed 1 December to succeed McDonell. Armstrong resigned in 1918.

Long Island

By proposed no one for this station in 1832. In 1837, mention was made of lockmaster Houston of Long Island. In the return of 1845, John Rogers, formerly of the Royal Sappers and Miners, was listed as lockmaster for the past nine years. He died on 11 May 1856 and was succeeded by David Forster who remained there until November 1862 when he was transferred to Newboro. William G. Addison, lockmaster at Newboro, was transferred to Long Island at the same time. In June 1871, he was transferred to Ottawa to replace his father. George Acres was appointed to succeed him but after he visited the station and saw the amount of work involved, he immediately resigned. Lockmaster Hardy of Black Rapids took temporary charge on 19 July and on 2 August Archibald

M. Boyd was appointed. Boyd died 6 March 1882 and was succeeded by George Clark. Clark applied to be superannuated on 10 April 1906 but since he was only 55 years old and in good health, his application was refused. He remained at the station until after 1914.

Burritts Rapids

William Michell, corporal, 15th Company, Royal Sappers and Miners, was recommended by Colonel By in 1832 (see Hogsback). In 1835, a man by the name of White was lockmaster. He resigned in April 1836 and was replaced by John Newman, formerly of the Royal Sappers and Miners. In November 1847, he was transferred to Nicholsons and was replaced at Burritts by George Shepherd, the supernumerary lockmaster at Bytown. A former colour sergeant with the Royal Sappers and Miners, Shepherd was lockmaster until his retirement on 16 January 1880. He was succeeded by James Todd of Kemptville who retired late in May or early in June 1905. A former lock labourer at the station, John Merrifield, was appointed as his successor. Merrifield was dismissed 6 May 1912, probably as a result of the change of government, and was immediately replaced by Robert H. Ferguson of Burritts Rapids who was still at the station in December 1933.

Nicholsons

Richard Frayne, master mason, was suggested by Colonel By in 1831. He resigned in April 1836 and was replaced by Thomas Jenkins of the Royal Sappers and Miners. Jenkins died suddenly in an apoplectic fit in September 1847 and was replaced in November by John Newman of Burritts Rapids who remained at Nicholsons until his retirement on 28 June 1871. He was replaced by his son William who was superannuated 30 April 1907 at age 67. He was succeeded by George E. Johnston who was discharged 6 May 1912, probably on patronage grounds. Luke Depencier of Burritts Rapids was appointed to succeed him. Depencier retired 1 May 1924.

Clowes

Daniel Buck, a carpenter, was proposed by Colonel By. He left Clowes in April 1843 and later served at both Black Rapids and Old Slys. In 1845, Thomas Newman, formerly of

the Royal Sappers and Miners, had been lockmaster for five years and remained at the station until 1871 when he was retired as a result of the order-in-council of 1 December 1870, setting retirement age at 65. Newman was then 67. His son John J. succeeded him and did not retire until 30 April 1907. He was replaced by James Francis Brennan who was dismissed 18 April 1913 for political involvement. He was succeeded by Thomas Jones of Smiths Falls who resigned on 1 May 1920.

Merrickville

Thomas Buck, carpenter, was recommended by Colonel By. William Michell (probably the William Michell who was at Hogsback after 1837) was lockmaster until mid- or late 1836. He was succeeded by John Johnstone, formerly a sergeant in the Royal Sappers and Miners. Johnstone remained lockmaster until his death on 24 August 1869 when he was succeeded by his son Matthew Henry who had served as lock labourer since 15 April 1864. Johnstone was not superannuated until 30 April 1907 at age 65. He was succeeded by a shopkeeper in Merrickville, John Cranstoun, who died 7 December 1917.

Kilmarnock (Maitlands Rapids)

James Maitland, formerly a sergeant in the 90th Regiment, was proposed by Colonel By. He had been the proprietor of land taken for the canal and had made no claim for compensation. He was lockmaster until at least 1846 when the Respective Officers at Montreal suggested he be given a retirement allowance. He was succeeded on 1 March 1847 by the supernumerary lockmaster at Bytown, George Newman (or Newsome). In 1861, the lockmaster was George Newsome who seems to be the same man. He retired on 27 June 1871 to be replaced by his son William. William Newsome was not superannuated until 1921 - his half century of service is the longest of any lockmaster on the Rideau.

Edmunds

Edward Mills was proposed in By's list. In 1845, he was listed as having been lockmaster for 14 years although he was "not efficient." He did not retire until April 1867 at age 69. His son William W. succeeded him and served until his death early in November 1897 when he was thrown

from a buggy. He was succeeded by Henry W. Hutton of Smiths Falls who retired on 30 April 1921.

Old Slys

John Jones, corporal, 15th Company, Royal Sappers and Miners, was recommended by Colonel By and was at the station in 1835. In the return of 1845, Alexander Kinninmouth was listed as lockmaster for seven years. Lockmaster Hilliard was mentioned in 1847. In that year, he was replaced by Daniel Buck (see both Black Rapids and Clowes) who remained there until 27 June 1871 when William McCann was appointed. He was superannuated on grounds of insanity on 28 February 1882, and on 20 May, Robert McCreary was officially appointed. McCreary was superannuated on 31 May 1908 and was succeeded by John Nichol of Smiths Falls who retired in 1921.

Smiths Falls Combined

John White, private, 15th Company, Royal Sappers and Miners, was recommended by Colonel By. In 1845, Alexander Matheson, formerly of the 13th Regiment, was listed as the lockmaster for the previous 13 years. Matheson died in February 1866 and was succeeded by James (sometimes known as Josiah) Richey, a former land surveyor. Richey was appointed in April 1866 and retired in March 1871, to be succeeded by his son William. He was superannuated 1 June 1902 at age 72. John H. Foster of Smiths Falls was appointed lockmaster and he served until 1924.

Detached

Alexander Kinninmouth was recommended by Colonel By (see Old Slys). In the return of 1845, Thomas Jones was listed as lockmaster for the previous 14 years. In the return of 1861, John Jones was listed as the lockmaster and he did not retire until 27 June 1871 when he was replaced by James G. Jones, possibly his son. He was superannuated 1 May 1913. The labourer at the station, and probably a relative, Arthur S. Jones, succeeded him. He retired in 1931 at age 72.

Poonamalie (First Rapids)

James Rutley, a former overseer of works, was proposed in By's list of 1831. In 1837 Thomas Richey was mentioned as the lockmaster. According to a letter from the Respective Officers in Bytown to their counterparts in Montreal in 1846, Richey was transferred to Brewers Lower Mills in January 1844 and Daniel Buck (see Old Slys) was appointed in his place. Buck left First Rapids in October 1847 and was succeeded by William Chalmers, the supernumerary lockmaster at Bytown. By 1849, Abraham Pearson was listed as lockmaster. He was succeeded by his son William O. on 1 July 1871. In June 1910, William Pearson applied to be superannuated because of ill health. His application was refused but a year later on 27 June 1911 he resigned on the same grounds and his resignation was accepted effective 1 January 1912. He was succeeded by his labourer, Alfred Best, who was officially appointed 1 February 1912 and was still serving in December 1933.

The Narrows

Archibald Sands, corporal, 15th Company, Royal Sappers and Miners, was proposed by Colonel By. He retired late in 1856 and was succeeded by Michael Mooney, who retired as lockmaster in June 1871 at age 71. He was succeeded by Robert Bolton who was transferred to Jones Falls on 30 November 1874. Lock labourer Michael Mooney (probably a son of the previous lockmaster) was appointed in his place. He died 22 December 1894 and was succeeded by his son Michael E. Mooney. Mooney was one of the lockmasters discharged in December 1896, but he was reinstated at the beginning of the navigation season of 1897 and was still at The Narrows in 1933.

Newboro (The Isthmus)

Daniel McDonald, corporal, 7th Company, Royal Sappers and Miners, was proposed by Colonel By, and like Archibald Sands, retired late in 1856. He was succeeded by William G. Addison who in 1862 exchanged stations with David Forster of Long Island. Forster died in May 1864 and was succeeded by his 16-year-old son Alfred, who remained at this station until 27 June 1871, when he exchanged with John Johnston of Davis. Johnston retired from Newboro on 30 March 1887 when he was 70 years old. He was succeeded by William G.

Dargavel who was officially appointed 1 June 1887 and did not retire until 1921.

Chaffey's

William Flemming, corporal, 7th Company, Royal Sappers and Miners, was proposed by Colonel By and served as lockmaster until the late 1850s. He was succeeded by James Simmons who retired 18 April 1894 when Hugh Fleming, a son of his half brother, was appointed. Like Mooney, Fleming was dismissed in December 1896 and rehired in the spring of 1897. He retired on 1 November 1929.

Davis

G. Monin (Morin?) was suggested for this station by Colonel By. In the return of 1845, however, John Purcell was listed as lockmaster for the past 14 years although he had also served for a period of three months between December 1835 and March 1836 at Brewers Upper Mills. Purcell retired in March 1857, and was succeeded by John Johnston, formerly a lock labourer at Smiths Falls. Johnston remained at Davis until 27 June 1871, when he exchanged with Alfred Forster of Newboro. Forster was moved to Jones Falls on 1 April 1897 and was succeeded by P.S. Alford of Elgin. He died 8 April 1901 and was succeeded by his son Ealy on 2 May 1901. Ealy Alford was still lockmaster in December 1933.

Jones Falls

According to By's list, the lockmaster at this station was already appointed. This was apparently Peter Sweeney, since in the 1845 return he was listed as having been lockmaster for 14 years. Sweeney continued to hold his post until 27 June 1871 when Henry Layng was appointed. He was fired effective 30 November 1874. Robert Bolton, formerly lockmaster at The Narrows (and before that labourer at Newboro) was appointed 1 December 1874. He retired at age 61 because of ill health on 31 March 1897. Alfred Forster of Davis succeeded him and was superannuated, also because of ill health, on 1 July 1901 at age 52. He was succeeded by Samuel G. Stuart of Newboro who retired 1 July 1924.

Brewers Upper Mills

Again By's recommendations indicate that the lockmaster was already appointed. The identity of this man is impossible to ascertain and in December 1835 the position was occupied by John Purcell who transferred at that time from Davis. On 24 March 1836, William Broad, who had replaced Purcell at Davis, was moved to Brewers Upper Mills. He was suspended for drunkenness in August 1840, one of the few instances where such severe disciplinary action was taken on these grounds. The station was put under temporary charge of the lock labourer, William Muchmore, and in October 1840, Broad was transferred to Black Rapids in exchange for Phillip Clogg. Clogg remained at Brewers Upper Mills until late 1856, although in 1847 he wanted to move to Hartwell because of the unhealthiness of the area of Brewers Upper Mills. On his retirement, he was succeeded by Patrick Deane who occupied the post until his death on 15 March 1898. He was succeeded by Thomas Todd of Joyceville who was appointed officially on 1 April 1898. He did not retire until 1 September 1918.

Washburn (Brewers Lower Mills)

By suggested Thomas Green, corporal, 7th Company, Royal Sappers and Miners, for the post of lockmaster. Thomas Richey, formerly of First Rapids, was lockmaster from January 1844 to mid-1846 when he was dismissed from the canal service. He was succeeded by Richard Carey, who was in turn replaced in May 1851 by M. (or W.) Beal. In March 1855, William Robinson was appointed lockmaster and served until his transfer to Kingston Mills late in 1856. John McGillivray succeeded him and was superannuated on 1 August 1882. He was succeeded by his son Henry who died on 14 October 1891. William Glenn, lock labourer at the station, was appointed lockmaster. Glenn was among the lockmasters discharged in December 1896, but he was reinstated at the opening of navigation season in 1897 and served until his death on 31 December 1902. Although Phillips suggested that Glenn's son be appointed to the vacancy to support his widowed mother, Henry McBroom, probably part of the family who operated the mills at Washburn, was temporarily appointed 29 January 1903 on the recommendation of a prominent local Liberal, Dr. W.W. Sands. The appointment was confirmed 14 April 1903 and McBroom did not retire until 1 March 1933.

Kingston Mills

George Hay, corporal, 7th Company, Royal Sappers and Miners, was proposed in By's list. By the return of 1845, however, the lockmaster for the preceding 13 years was Thomas (or John) Brady. He retired late in 1856 or early in 1857 and was succeeded by William Robinson who remained at this station until his death on 9 September 1867. The lock labourer, Joseph Deane, was appointed in his place. He died on 28 March 1892 and was succeeded by Robert Anglin, probably part of the Anglin family which operated mills at Brewers Mills. Anglin was dismissed early in December 1896, but was reinstated at the beginning of navigation in 1897. He did not retire until after 1917.

Tay Branch

John Cox was appointed to be lockmaster on the Tay on 14 January 1887. He died 19 May 1897 and was succeeded by James King who died 22 December 1902. Lock labourer Daniel Buchanan was put in temporary charge of the station and was subsequently confirmed as lockmaster. He was retired in May 1924.

Superintending Engineers, 1832-1914

Royal Engineers

Captain Daniel Bolton, 1832-43
Lieutenant-Colonel Fraser Ringler Thomson, 1843-47
Captain Charles E. Ford, 1847-52
Captain John Chayter, 1852-56

Board of Works of Upper and Lower Canada

John S. Killaly, 1856-58
James D. Slater, 1858-67

Department of Public Works

James D. Slater, 1867-72
Frederick A. Wise, 1872-79

Department of Railways and Canals

Frederick A. Wise, 1879-94
Arthur T. Phillips (acting 1894-97), 1894-1934

Chief Engineers

John Page, 1867-90
Toussaint Trudeau, 1890-92
Collingwood Schreiber, 1892-1905
Matthew J. Butler, 1905-10

William A. Bowden, 1910-24

Secretary of the Department

Board of Works

Thomas A. Begley, 1841-58

Toussaint Trudeau, 1859-64

Frederick A. Braun, 1864-67

Department of Public Works

Frederick A. Braun, 1867-79

Department of Railways and Canals

Frederick A. Braun, 1879-82

Alexander P. Bradley, 1882-93

Louis Kossuth Jones, 1893-1920 (chief clerk, 1893-97)

Political Heads

Department of Public Works

William McDougall (Cons.) 1867-69

Hector Langevin (Cons.) 1869-73

Alexander MacKenzie (Lib.) 1873-78

Charles Tupper (Cons.) 1878-79

Department of Railways and Canals

Charles Tupper (Cons.) 1879-84

John H. Pope (Cons.) 1885-89

John A. Macdonald (Cons.) 1889-91

John G. Haggart (Cons.) 1891-96

A.G. Blair (Lib.) 1896-1903

H.R. Emmerson (Lib.) 1904-7

George P. Graham (Lib.) 1907-11

Francis Cochrane (Cons.) 1911-14

APPENDIX B. BUILDINGS

Introduction

The strategic nature of the Rideau waterway made it imperative that the system be guarded against any attack that might prevent its use in the event of an emergency. Consequently during construction of the canal, recommendations were made for defensive works at each lock station and in 1828 Colonel By was advised to build houses that could also serve as protection for the locks.¹ By envisioned heavier fortifications, however, and argued for construction of blockhouses at all Rideau lock sites. These structures could fulfil the dual role of defence and accommodation for the lockmen. The proposed design was essentially similar to that later adopted at Newboro, The Narrows, Kingston Mills and Merrickville.

The lower part of these blockhouses I propose building with stone, there being a sufficient quantity remaining at each station from the rock excavation to enable that part to be built of masonry, with walls four feet thick, at the same price as timber. These walls would support strong flooring beams, with a layer of masonry, to render the lower stories fire-proof and nearly bomb-proof, as shown by the Section. The roofs and timber-work I propose covering with tin, which will render these buildings very durable and difficult to destroy by fire, as tin remains free from rust in this climate upwards of sixty years.²

By's proposed fortifications were considered to be both too expensive and unsuitable as residences. Instead senior Royal Engineer officers advocated construction of smaller lock houses or purchase of the wooden dwellings built by the contractors during work on the lock stations.³ This latter course was followed at Black Rapids, Long Island and Kingston Mills where the contractors shared the expense of constructing the house with the government and later transferred the building to canal use.⁴

Since these dwellings were not defensible, the security of the waterway continued to be a matter of concern for military officials. Colonel By had remained convinced of the need for stronger defensive works and in 1831 ordered construction of blockhouses at Burritts Rapids, Merrickville, The Narrows, The Isthmus (Newboro) and Kingston Mills.⁵ Other stations remained unprotected

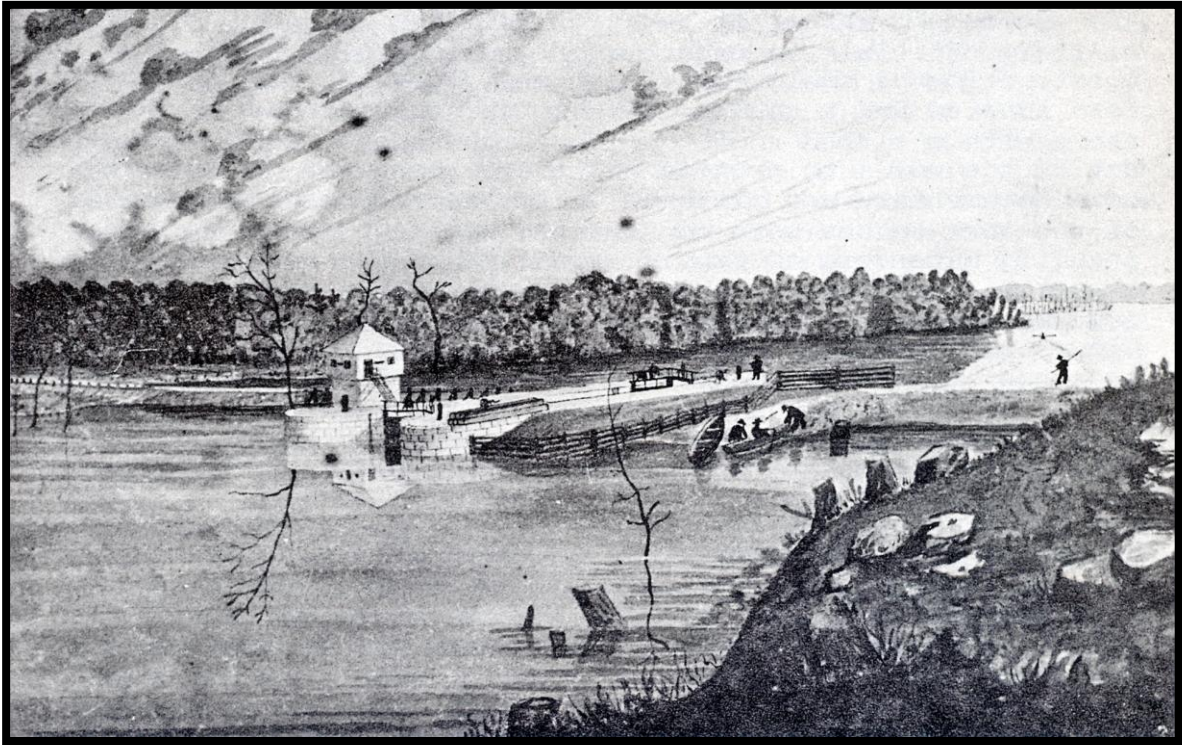


Figure 22. Lock, dam and blockhouse at The Narrows, Rideau Lake, looking towards Kingston, by Thomas Burrowes. (Ontario Archives.)

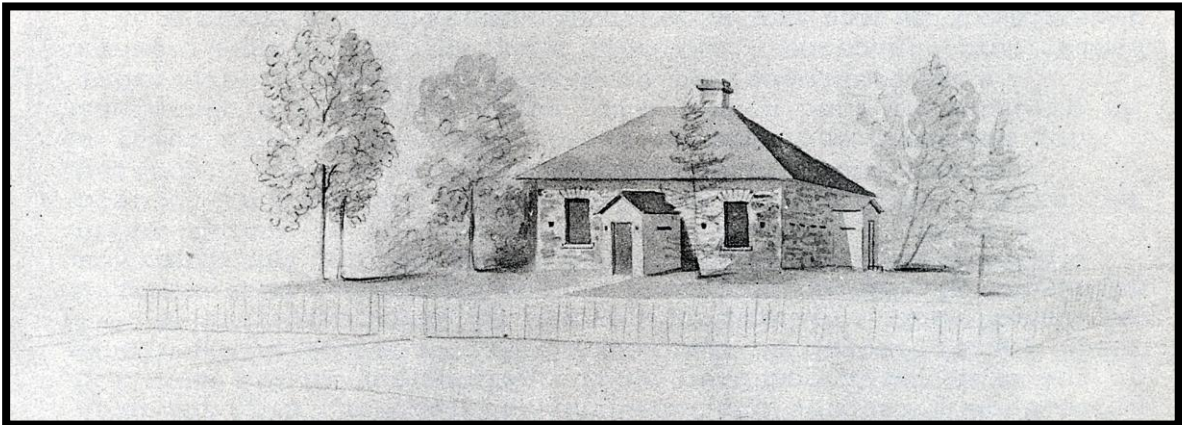


Figure 23. Rideau Canal - Lock No. 32. Watercolour on pencil by Edwin Whitefield. (Public Archives of Canada.)

until later in the decade when renewed fear of American attack again prompted consideration of the canal's defences.

The rebellions in Upper and Lower Canada in 1837 and the subsequent threat of invasion from the United States led military officials to embark upon a second period of construction of small fortifications along the Rideau. The form adopted was a square, one-storey structure built of stone with a tinned roof. In some instances, loopholes were cut in the walls to provide additional means of defence and both documentary and pictorial evidence indicates that some of the lock houses were constructed with two stone porches enabling defenders to employ crossfire in the event of attack.⁶ Buildings of this type seem to have been erected between 1838, when work was begun at Nicholsons, Clowes and Old Slys, and 1849 when permission was requested to tender for the lock house at Ottawa. Although accurate dating is often impossible because of the lack of unequivocal evidence, all the lock houses of this design were in existence at the time of a canal inspector's report of 1852.

During the last half of the 19th century, construction of buildings at the lock stations reflected the change in emphasis from defensive considerations to the commercial needs of the waterway. This period saw erection of a variety of wooden structures, among them storehouses and dwellings for the lockmen. No plans or specifications for these structures have been found and the similarity of the buildings from station to station suggests that they represented a standard design constructed, most probably, by canal carpenters assisted by the lockmen. Structures illustrative of several of these designs may still be found at many Rideau sites. Photographs of the waterway late in the 19th century indicate, for example, that the 1 1/2- storey storehouse made its appearance around the time of Confederation and is as typical of this era of the canal's development as are the stone lock houses of the earlier years.

Ottawa

As befitted its position as a terminal of the Rideau waterway, Bytown was selected as the location for a major defensive work. Lieutenant-Colonel By had envisioned a large fortification on the rocky cliff overlooking the locks on the site later occupied by the Parliament Buildings.⁷ Plans show a redoubt protected on the landward side by an earth ditch which could be flooded to provide a moat.⁸ Reluctance to incur additional expenditure meant that this structure was not built.

During construction of the waterway, a number of buildings were erected in the immediate area of the locks, among them an ordnance office, storehouse, commissariat and barracks. The ordnance office remained in use during the

period of British administration and in 1857 was altered to make it suitable as a dwelling and office for the provincial government's ordnance land agent, Colonel W.F. Coffin, who later bought the house from the government in 1868.⁹ Situated near the foot of the locks, the building was described in 1879 as three storeys high with a kitchen, bedroom, furnace room and two offices on the first floor. The second storey contained a large hall and six other rooms while the third had seven rooms, presumably bedrooms.¹⁰

The house had been built close to the eastern side of the gorge, and construction of the railway from Ottawa to Hull by way of the interprovincial bridge around the turn of the century resulted in destruction of part of its upper floors. The remainder of the building was taken down early in the 20th century.¹¹

The lockmaster at the eight locks at first lived in a log house, probably built during work on the waterway. In 1852, an ordnance inspection report referred to a log structure "formerly occupied by the Lockmaster." The report also mentioned a lockmaster's house "built of rough masonry and roofed with Tin."¹² Loopholes in the walls made the structure defensible in the event of an attack. Later photographs of this house, which stood near the site of the Chateau Laurier Hotel, indicate that it was similar in appearance to other stone lockmasters' houses constructed along the Rideau during the decade after 1838.¹³ The dwelling had apparently been built late in 1849 or early in 1850 since in July 1849 the Respective Officers in Montreal requested permission from the military secretary to issue tenders for a house for the lockmaster at Bytown.¹⁴ The expansion of the city later in the century brought changes around the locks at Ottawa. In 1872, construction of a new bridge to connect Wellington and Rideau streets (the Dufferin bridge) necessitated removal of the old stone house inhabited by the lock labourer. Moreover, the lockmaster's house had proved to be inadequate as a comfortable residence since "the center part is occupied by a large mass of masonry...built by the late Ordnance for defence." The superintending engineer, James Slater, planned to tear out the masonry and make alterations to the upper storey so that it could be occupied.¹⁵ In 1876, however, the area of Major's Hill was made into a public park and the lockmaster's house was torn down. Since there was no suitable building site available near the locks, lockmaster Addison was given an extra allowance of 50 cents per diem for house rent.¹⁶ Some form of accommodation near the locks was needed, however, since the waterway was open to traffic 24 hours a day. Moreover, the collector of canal tolls at Ottawa required office space at the station. In 1879, Wise advocated that the government buy back the former ordnance office and convert its three floors into offices.¹⁷ Although authorization was given for the purchase by an order-in-council of 17 February 1879, additional space was still required and in 1884 the stone

building standing at the head of the locks was constructed for use as offices for the lockmaster and the toll collector.¹⁸

Hartwell

Colonel By's report of May 1832 suggested that a small blockhouse be constructed to guard the locks at this station. Like many other recommendations of the report, this proposal was ignored, and not until 1852 was there mention of a substantial building at Hartwell. The canal inspection report of that year described the lockmaster's house as similar to that at Bytown: "built of rough masonry & roofed with Tin." The structure was shown on a sketch of the site drawn in 1845 and like most of the stone lock houses, was probably constructed in the preceding decade.¹⁹ A photograph taken late in the 19th century shows a loophole in the stone entrance porch but none are visible in the walls of the dwelling.²⁰

In the years before World War I, several of the old stone lock houses were torn down and replaced by frame structures. Others were substantially altered, among them the dwelling at Hartwell. In May 1904, Phillips estimated the cost of placing an upper storey on the buildings, as had been done with others of the cottages, at \$1000. In his annual report for the year, Phillips reviewed the state of the dwelling, adding that his remarks applied equally to that at Hogsback. He commented that despite repairs the houses remained unsatisfactory.

These cottages are all of the same pattern, being square stone structures of one story only, and although everything has been done to keep them dry that can be suggested, yet they appear to be still damp and unhealthy; and repairs to them only seem to be a waste of money, as they are over 70 years old.²¹

In response to another certificate on the unsanitary state of the house received early in 1905, Phillips suggested that the problem of dampness might be corrected by furring, lathing and plastering the interior walls, a procedure that had proved effective in several other stone lock houses. Since the exterior had already been sheeted and clapboarded, improvements to the interior walls might be sufficient to render the house habitable.²² The extent to which these recommendations were implemented is difficult to determine. In the annual report for 1907, Phillips stated that a new house had been constructed for the lockmaster since the old one had fallen into ruin and "been condemned as unsanitary by the health officials."²³ Since the present square two-storey lock house at Hartwell has stone walls on the ground level, it would seem that the

rebuilding was in fact limited to construction of a frame second storey and alterations to the interior walls.

Hogsback

A small blockhouse was originally planned at Hogsback. As at Hartwell, however, the structure was never built and the inspection report of 1852 indicates the existence of the square lock house typical of the Rideau at this period. As with many of these structures, the date of construction is difficult to determine. An abstract of expenditures for 1843 included provision for painting the exterior of the lock house at Hogsback.²⁴ The amount required was identical to that specified for Nicholsons and Old Slys where stone lock houses had been built in 1838. The item would therefore seem to indicate a similar structure at Hogsback and to place its construction within the five years preceding the estimate.

At the turn of the 19th century, the house retained such of its original appearance. Photographs taken in 1898 show a one-storey stone structure with loopholes apparently filled with timber. A wooden kitchen had been added by the Department of Railways and Canals and the lockmaster, J.K. Read, had constructed a small summer kitchen. The house was damp and badly finished on the interior, however, and in 1907 the departmental annual report stated that the lock house at Hogsback had been rebuilt since it had been in the same poor condition as that at Hartwell.²⁵ A brief description of the new structure in 1930 stated that the



Figure 24. Lockmaster's house, Hogsback, 1898. (Original photograph owned by MRs. Avis Walton, Victoria, B.C., Public Archives of Canada)

square frame building was situated on a masonry foundation, possibly the remains of the original building.²⁶

Black Rapids

The lockmaster's house at this station was built by the contractors Phillips and White to serve as a residence during construction of the lock. The dwelling was completed by 1832 and was not defensible.²⁷ In 1852, it was described as "Rough stone covered with shingles, an ordinary two story House." At that time, it housed the lockmaster and lock labourer. A sketch done in 1830 indicates that the structure was rectangular with a central door and a chimney at each end.²⁸ The dwelling seems to have remained substantially unchanged until 1914 when it was torn down because of its dilapidated condition. A frame house was built on the old foundation walls.²⁹

Long Island

The lock house at Long Island during the 19th century was similar to that at Black Rapids. It had been built by the contractors during construction of the works at the station and was completed by 1832.³⁰ The 1852 inspectional report described the house as the same as at Black Rapids," indicating that it was not defensible. Sketches and photographs show a rectangular structure apparently identical to the house at Black Rapids.³¹

The Long Island dwelling seems to have deteriorated at the same rate as its northern neighbour and in 1914 it too was replaced by a frame two-storey house.³²

Burritts Rapids

The lock house at Burritts Rapids was originally designed as a blockhouse, apparently similar to those at The Narrows, Newboro and Kingston Mills. Colonel By's report of 1832 stated that a small blockhouse was under construction at the station. Work on the building must have ceased almost immediately, however, since a traveller through the waterway in 1834 reported "when the stone work was finished it was abandoned, and it remains doubtful, whether or not it will ever be completed."³³ In that year, estimates were submitted to compare the cost of completing the structure as a blockhouse or building a new log house. The log house could be erected for the sum of E4 currency but Gustavus

Nicolls, the Commanding Royal Engineer, advocated expenditure of £80 to install a roof on the existing stone walls. This plan would satisfy current housing and defence requirements and if it were found necessary in future, a second storey could be added.³⁴ Nicolls's proposal seems to have been accepted since a canal order issued in June 1836 referred to a contractor who was completing the lock house.³⁵

The building remained a one-storey structure throughout the 19th century. The canal inspectional report in 1852 stated that doors and windows had been cut in the stone walls and a shingle roof had been constructed. At this time, the house was reported to be in good condition but since it did not provide sufficient accommodation for the lockmaster and his family, an additional room was to be constructed. More space was apparently also required later in the century when canal estimates for 1883 requested an addition to the lock house.³⁶ 'his repair seems not to have been undertaken.

The lock house was still in use in 1914 when Phillips described it as an 'old stone Block House...in very bad condition.' He went on to state that the stone walls were beyond repair and that the usual practice was to replace the masonry dwellings with frame structures built at least partly on the old foundations. This reconstruction was undertaken at Burritts during 1914-15.³⁷ Photographs of canal buildings taken in 1930 indicate that the lock house was rebuilt as a frame two-storey structure.

Nicholsons

Although By's report of 1832 proposed a small blockhouse at this site, no defensible building was erected until 1838 following the rebellions of the previous year. The lockmaster's journal indicates that the contractor began accumulating stone for the structure on 9 February 1838 and late the following month lockmaster Jenkins received an order from Bytown to begin excavation for the cellar.

You are to warn the Lock Laborers at Clowes and Burritts, with your own and Commence digging the Foundation and Celler of the Lock House at your Station immediately it is to be 6 feet below the Beams and will require a drain to Carry out the water git it done as soon as possible as the Masons will be up Shortly.³⁸

Assisted by the labourers from the two neighbouring stations, the men started work on 28 March and completed the excavations on 26 April. The canal masons, however, did not begin construction of the walls until 11 May. They finished their work on 31 May, and on 28 June Jenkins reported that he had received the keys to the new lock house from the

carpenters who had been responsible for the wooden detailing of doors and windows.³⁹

The inspection report of 1852 described the structure as "Rough masonry, covered with shingles, but not looped." In 1851 its dimensions had been given as 27 feet 8 inches long, 27 feet 7 inches wide and 9 feet high.⁴⁰ The building probably retained its one-storey form throughout the 19th century. In 1914, the superintending engineer, A.T. Phillips, described the house as "extremely cold and damp" because the plaster had been laid directly on the stone walls. He advised that the dwelling be furred, lathed and replastered to make it more habitable.⁴¹ Photographs taken in 1930 show the present frame second storey which may, in fact, have been added as a result of Phillips's recommendation for repairs.

Although this house is the only early structure extant here, a return of government structures made in 1851 indicates that there were then nine buildings at this spot. In addition to the lock house, buildings at Nicholsons included the one-storey frame house occupied by the permanent labourer, a vacant frame house, an old stone house also vacant, a wooden storehouse in which both ordnance stores and the temporary labourer were housed, a vacant log house, a stable, a small wash house and a log cookhouse.⁴² Sketches of the station earlier in the 19th century show a number of frame buildings along the eastern bank of the waterway at both the upper and lower lock.⁴³ Some of these structures were undoubtedly built during construction of the canal and may be among those listed in 1851. In that year, the lockmasters were ordered to have any surplus buildings at their stations demolished and in the inspection report of 1852, only two buildings were listed at Nicholsons – the masonry lockmaster's house and the lockmaster's old house, then in use as a store and reportedly in poor condition.⁴⁴

Clowes

Like that at Nicholsons, the lock house at this station was built in 1838. Construction seems to have begun early in August since on 9 August the lockmaster at Nicholsons recorded that his workmen had gone to Clowes to dig the foundations for the new lockhouse there. The men continued at this work until late in the month.⁴⁵ Although no further construction details are available, the structure seems to have been essentially similar to the house at Nicholsons. The inspection report of 1852, in fact, described it as "same as at Nicholsons," indicating that it was not looped.

The structure apparently remained in better condition than many of its counterparts at other Rideau stations. In 1895, lockmaster Newman unsuccessfully requested that it be

enlarged by the construction of a second storey to provide additional sleeping area. In 1914, the house, like that at Nicholson, required furring, lathing and replastering since the plaster had been laid on the bare stone walls and the dwelling was consequently damp and cold."⁴⁶

Merrickville

The large blockhouse here was under construction at the time of By's report in May 1832, with only the painting of doors and windows remaining. A progress report dated early in that year estimated that the building would be finished by 31 August 1833.⁴⁷ The lockmaster's journals indicate that the work on the interior continued into 1835 since in June at that year, a carpenter was reported to be constructing a room in the building⁴⁸

In 1846, the lockhouse was described as 50 feet square with the basement and ground floor of stone and the upper storey of wood covered, with tin to serve as protection against fire. Thirty-six men could be accommodated within the structure.⁴⁹ According to the inspection report of 1852, the building was in good condition although the basement floor had not been completed.

For many years, the blockhouse was used as a residence by the lockmaster, although several also maintained dwellings in the village.⁵⁰ Because of its size and age, the building did not provide comfortable accommodation, as lockmaster Matthew Johnston's description in 1873 made clear. In a complete report on the state of the structure, he wrote,

Roof is in a very leaky condition. The tin thereon is loose through high winds. The building generally is minus of its original evenness, in consequence of the failing condition of oak blocks at the base, supporting its principal posts. The capacity of the roof is just now undergoing a test. There is a space of about ten inches between the roof and the leading posts, which originally supported the former. There is however yet a sort of union existing between them, effected by a miniature post, with braces, extending from the apex of the roof to a beam into which it is placed and secured, said beam having connection with the main posts. It is therefore self-evident that as the building settles the strain upon the roof is increased. The almost hourly cracking of the whole frame-work convinces the reporter that the edifice is in a dangerous state.⁵¹

Apparently in response to Johnston's criticism of the building, repairs were made to the timber supports of the structure during the following summer.

The size of the blockhouse also made it extremely difficult to heat. In 1876, Johnston complained that he annually spent approximately \$50 of his salary for fuel since the plastered rooms had to be heated to prevent damage from frost. Moreover, the lockmaster pointed out that his predecessors had been able to collect driftwood for use as firewood but in recent years very little wood came down. The blockhouse, he argued, "has always been in an incomplete state, and its failing condition would not now justify completion." Since the amount of wood required to heat the structure would supply three smaller lock houses, Johnston requested that the government give him assistance in purchasing fuel.⁵²

The inadequacies of the blockhouse were clearly recognized by canal officials. Superintending engineer Wise stated in 1888 that the building would have to be demolished within a few years and a new house constructed for the lockmaster. The location proposed was opposite the blockhouse on the site of the present United Church of Canada. Repairs continued to be made on the blockhouse, however, and in 1906 Phillips argued against the application of the militia department to store ammunition in the upper storey on the grounds that the building was still used by the lockmaster. Although the current lockmaster lived in his own house in the village, the top storey was occupied during the navigation season while the bottom floor served as a storehouse and workshop.⁵³ By 1909, however, the building had deteriorated to such an extent that the second storey was torn out since its old concrete floor had fallen in dangerously. The rooms in the upper part were not rebuilt because only the lower storey was still used as a storehouse. With no government housing available, the lockmaster at the station was granted a housing allowance.⁵⁴ Although Phillips submitted estimates for rebuilding the interior, the work was not authorized before 1914.⁵⁵

Kilmarnock

The inspection report of 1852 stated that the lock house at this station was 27 feet 6 inches square and was built of masonry covered with tin. Although used as a residence by the lockmaster, the structure's defensive role was indicated by loopholes on its sides. No precise date can be given for its construction. A requisition dated 11 November 1842 requested ladders for the lock house and it seems probable that the building had been constructed in the preceding five years which had witnessed greater concern for the safety of the waterway.⁵⁶

The masonry upper storey seems to have been added early in the 20th century since the 1930 survey of buildings on

the Rideau showed the building with the upper storey and stated that it had been remodelled in 1928-29. The loopholes may have been filled with masonry at the same time.

Edmunds

The 1852 inspection report described the lock house at this station as a “Defensible building as at Maitlands.” No precise date of construction can be given although the 1842 requisition for ladders from the lock house at Maitland also requested them for Edmunds.⁵⁷ In view of the proximity of the stations, it is probable that the two dwellings were built around the same time.

Like several others on the northern end of the waterway, the lock house at Edmunds was in extremely poor condition by the early years of the 20th century. The annual report for 1905 stated that the old stone dwelling had been torn down because the back wall had partially collapsed. It was replaced by a two-storey frame house. The original appearance of this structure is indicated in an order from the superintending engineer to have the building painted the slate grey of the lockgates with the window frames, sashes, corner boards and all other trimmings in white.⁵⁸

Old Slys

The stone lock house here was built during the spring of 1838. The progress of construction seems, in fact, to have been almost identical to that at Nicholsons since on 9 May 1838 Major Daniel Bolton ordered the lockmasters at both these stations to inspect the lock houses at least three times daily to ensure that the contractors' work was suitable and their materials of good quality.⁵⁹

In 1852, the lock house was described as similar to the house at Nicholsons and was therefore not loopholed. The structure retained its original single-storey design during the 19th century although a kitchen was added in 1867. In 1908, the cellar was repaved with three-inch field tile laid four inches apart and draining toward one corner of the basement. The tile was covered with a granolithic paving of crushed granite and cement.⁶⁰

Smiths Falls

Early sketches and maps of this station indicate a number of frame buildings in the area around the combined locks. The structures may have been erected during work on the locks and remained in use during the first years of the canal's operation. The date for construction of the stone lock houses is difficult to determine. The 1842 requisition for ladders for several Rideau lock houses included those at both the combined and detached locks and may indicate that these buildings had been recently constructed.⁶¹ Nevertheless, the stone houses were indisputably in existence by 1852 when the inspection report described them as "shingled & loopholed the same as at Maitland's."

Both of these lock houses were badly deteriorated by the last years of the 19th century. Although Phillips repeatedly urged that the building at the combined locks be replaced, it remained in existence, altered by the addition of a frame second storey and kitchen wing.⁶² The lock house at the detached lock was less fortunate. In 1894, lockmaster Jones complained that the foundations of his dwelling had given way, the walls had burst outward, and the entire structure appeared liable to collapse at any time. He urged either extensive repairs to the old house or construction of a new one. Jones's request was granted and in 1895-96, the stone house was pulled down and replaced with a two-storey brick cottage.⁶³

Poonamalie

As at other Rideau sites, there were several frame buildings constructed at Poonamalie during work on the waterway.⁶⁴ The defensible stone lock house was first referred to specifically in the 1852 inspection report when it was described as covered with tin and loopholed. An earlier reference in 1842 requesting ladders for a lock house indicate that the structure is similar in age to its neighbours at Smiths Falls, Edmunds and Kilmarnock and that all five had been recently completed.⁶⁵

The only recorded repairs to the Poonamalie lock house in the years before World War I occurred in 1893 when it was shingled and the interior plastered.⁶⁶ A frame second storey has also been added.

The Narrows

The blockhouse at The Narrows was reported to be under construction in By's report of May 1832. Like the similar

structure at Newboro, it was built on contract by William H. Tett. The contracts had been signed on 26 December 1831 and had specified a price of £104 for each blockhouse as well as completion by 31 March 1832. As late as 12 November of that year, the buildings were not finished.⁶⁷

Construction seems to have been completed early in 1833, however, since on 29 May Richard Byham of the ordnance department approved payment of £48 9s. 5-1/2d. currency to Tett for construction of two blockhouses.⁶⁸ Later that year, Byham also approved an expenditure of £25 2s. 4-3/4d. for shingling and clapboarding the structures.⁶⁹

Work continued on The Narrows blockhouse for several years. In 1835, a stone and brick chimney was constructed and the roof repaired.⁷⁰ In entries in his journal during both 1836 and 1837, the lockmaster reported that the labourers were filling in the area around the blockhouse with stone and sand.⁷¹ In mid-1838, further improvements were made to the building when its interior was painted.⁷²

The blockhouse remained essentially unchanged until the later decades of the 19th century. The canal inspectional report of 1852 stated that the structure had been designed to accommodate 20 men but was currently serving as the residence for the lockmaster and labourers. As the need for defence of the locks became of less concern later in the century, the blockhouse was extensively altered to make it more suitable as a home. In 1889, Wise included rebuilding the lock house in his estimates of repairs along the canal.⁷³ This item may refer to construction of the two-storey frame addition which is shown on photographs of the lock house taken in 1930. These wings were removed during the 1960s.

Newboro

The blockhouse at Newboro seems to have been constructed at the same time as that at The Narrows and was probably completed late in 1833. In 1834, Edward Barker described the fortification at Newboro as a

substantial Block House, capable of garrisoning a company of infantry...; its basement story is square and built of stone, surmounted with a heavy frame upper story, much in the shape, though not so large, as the ordinary Block Houses in Kingston and other parts of the province.⁷⁴

The structure served as a dwelling for the lockmaster.

During much of the 19th century, the lock house retained its original form, but in 1888 it was extensively altered to make it more suitable as a residence. Charles McGonigal of Newboro received the contract for the work, which appears to have comprised both interior renovations

and construction of an addition to the building. Begun late in August, the changes were completed early in November at a cost of \$775.⁷⁵ Photographs of the structure in 1930 show the blockhouse almost obscured by a two-storey frame addition even larger than the similar wing on the house at The Narrows. Like those at the latter station, these accretions were removed during the 1960s.⁷⁶

Other frame buildings existed in the area of the lock station during the 19th century. During construction of the canal, the Royal Engineers officer in charge of the work, Captain Cole, lived in a small log cottage on the north shore of the isthmus. Later in the century, the lock

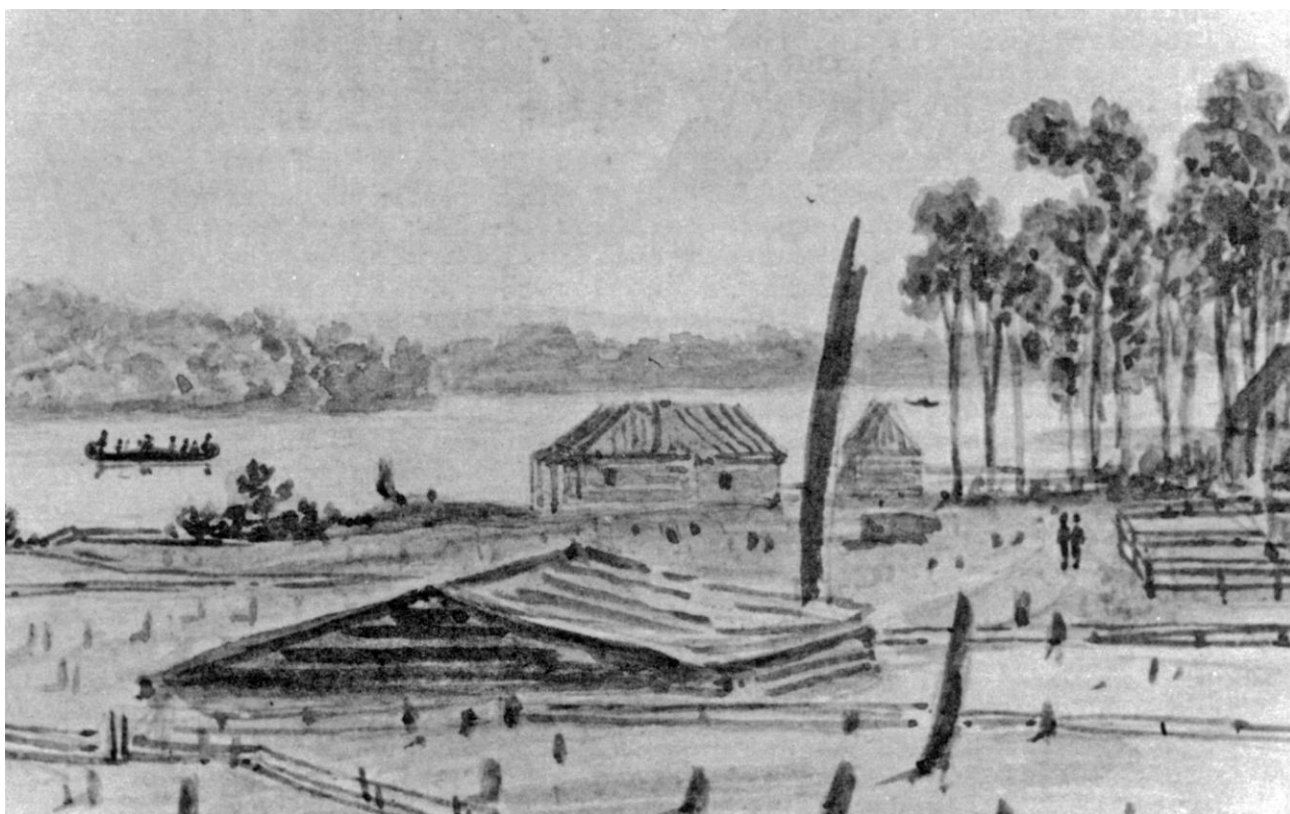


Figure 25. Captain Cole's House, the Isthmus, Rideau Lakes. Watercolour by J.P. Cockburn. (Royal Ontario Museum.)

labourers were reported to be building houses for themselves near the locks. Some of these structures remained in use for several decades. In 1873, the lock labourer requested permission to build a new house since the dwelling he occupied was almost uninhabitable. In a letter to the minister of public works, he described the structure. "[It] is an old log building that has been erected the time

the Canal was first made and the old logs has rotted away which leaves it in a dilapidated unhealthy state to dwell in at present."⁷⁷ The house was situated on the west bank of the canal. Early sketches also show a square single-storey building with loopholes in the walls on the west side of the lock.⁷⁸ Although no references to its construction have been located, it may have been built late in the 1830s during the period of increased concern for the safety of the waterway.

Chaffeys

Colonel By's plans for the defence of the Rideau waterway called for a small blockhouse to be constructed here. This structure was not built, however, and until 1844 the lockmaster lived in a dwelling erected during work on the lock.⁷⁹ In July 1844, the Respective Officers at Montreal requested permission to advertise for tenders for a lockmaster's house at Chaffeys. Work seems to have started almost immediately, since by November an inspection party from the canal offices in Bytown included the new lock house at the station on their tour.⁸⁰ In 1852, the dwelling was described as "Stone, tinned & loopholed, same as at First Rapids." A frame second storey was added to the building later in the century after complaints from the lockmaster of the damp and unhealthy condition of the building. This change may have been made in 1894-95 since the annual report for that year recorded that the lockmaster's house at the station had been rebuilt.⁸¹

Davis

Early travel accounts and sketches indicate that as at most other Rideau sites, a number of frame buildings dating from the construction period remained in use at Davis for several years after the opening of the waterway. In 1834, Barker reported in his account of a trip on the Rideau that there were only three houses at Davis - two occupied by the lockmaster and his assistants and one by a farmer.⁸² Sketches of the site early in the 1840s show a rectangular house on the knoll later occupied by the stone defensible lock house with a small hip-roofed building on the west side of the lock.⁸³ The inspection report indicates, however, that by 1852 the stone lock house was in existence, probably built during the previous decade. The structure has remained in its original single-storey form. The only recorded alterations in the half century following Confederation were the clapboarding of the kitchen in 1890-91 and the addition of a small summer kitchen in 1898-99.⁸⁴



Figure 26. Davies Mills, Lake Opinicon, Rideau Lakes. Watercolour over pencil by J.P. Cockburn. (Royal Ontario Museum.)

Jones Falls

With its massive dam which provided the water supply for much of the southern end of the waterway, Jones Falls presented particular problems for defence. Accordingly, Colonel By advised construction of a large blockhouse at this important site. This recommendation was not accepted, however, and for the first years of the canal's operation the only buildings at the station were those constructed during the building of the waterway. In 1834, a traveller noted that the lockmaster and labourers lived in "the substantial dwelling houses erected for the accommodation of the principal workmen."⁸⁵

These structures remained sufficient until the threat of attack following the rebellions of 1837. Small detachments of both militia and regular troops were stationed at Jones Falls and at the Whitefish Dam (now Morton) which maintained the water level through Cranberry Lake. Late in 1838, work was begun on two wooden guardhouses (often referred to as blockhouses) at these sites. On 13 October, the lockmaster recorded that the lockmen were clearing the foundations for the structure at Jones Falls. This work continued during the remainder of the month and early in November, the lockmaster and men began similar preparations at the Whitefish Dam. Some

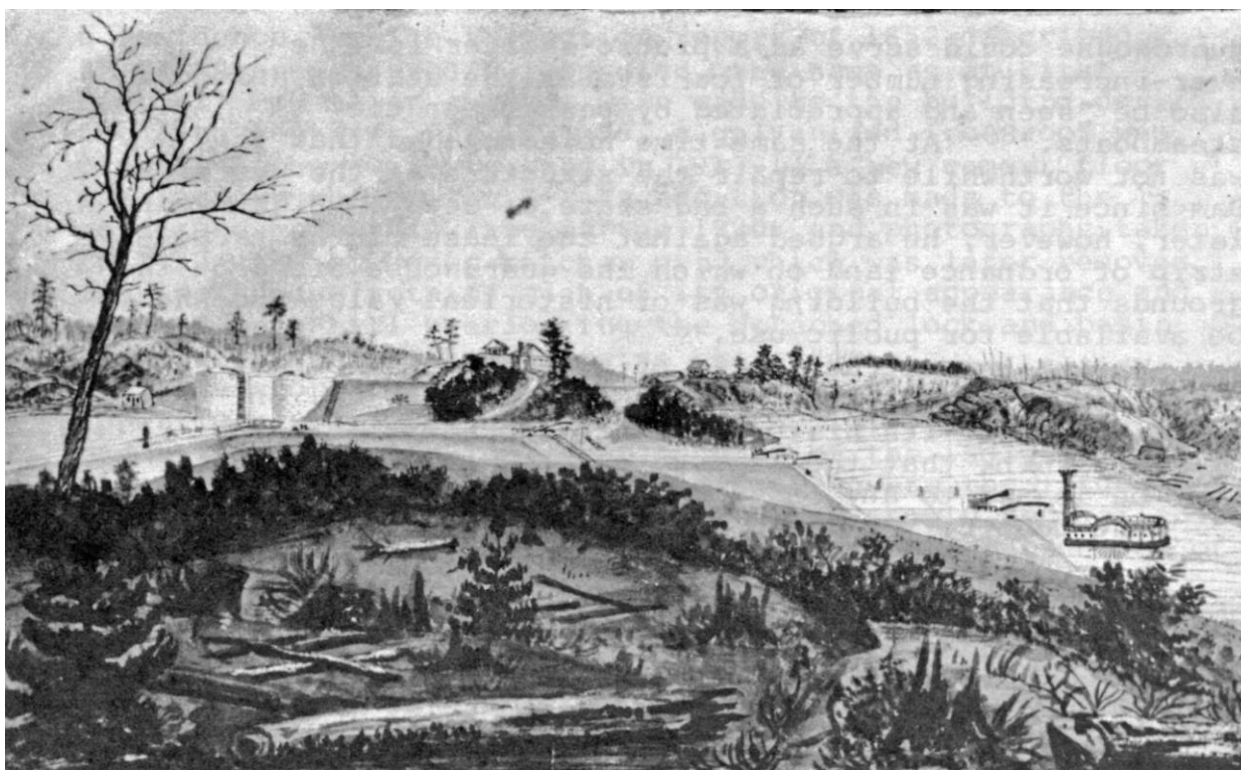


Figure 27. Jones Falls viewed from the rocky hills southwest of the locks, by Thomas Burrowes. (Ontario Archives.)

details of the construction of the guardhouse at the latter site were recorded by the lockmaster. On 7 December 1838, for example, he noted that the labourers were helping to point the structure, and later in the month they helped to install the flooring. Shutters for the windows were installed early in January, and on 9 January the structure was declared finished. Three days later, the guardhouse at Jones Falls was also completed. On 30 April, both buildings were inspected by the barrackmaster from Kingston and were given over to the charge of the sergeants commanding the posts.⁸⁶

The guardhouses continued to be inhabited and maintained in good repair for much of the 19th century. In March 1844, for example, repairs were made to the plaster and laths on the interior walls of both buildings.⁸⁷ A pencilled note in the lockmaster's journal indicates that the Whitefish guardhouse was still occupied early in 1859, and as late as 1871 the new lockmaster at Jones Falls, Henry Layng, was ordered to live in the guardhouse until 1 May 1872, when his predecessor, Peter Sweeney, would vacate the lock house.⁸⁸

By the end of the century, both structures had been abandoned because of their dilapidated condition. Phillips suggested in 1901 that if repaired, the Jones Falls

guardhouse could serve as a picnic shelter for the ever-increasing number of tourists at the station and could also be “seen and appreciated by persons on the steamboats.”⁸⁹ At the same time he concluded that it was not worthwhile to repair the structure at the Whitefish Dam since it was in such a bad state of decay. Eight years later, however, he argued against the lease of the narrow strip of ordnance land on which the guardhouse stood on the grounds that the building was of historical value and should be available for public use.

Whilst this structure is of no use to the Canal, yet it is a favorite resort for tourists &c, on account of its historical interest, so that I do not think that the land upon which it stands should be leased to any individual, to the exclusion of the public.⁹⁰



Figure 28. Wooden dam at Whitefish Falls and the blockhouse to protect it, by Thomas Burrowes. (Ontario Archives.)

Like the wooden guardhouses, the stone lockmaster's house at Jones Falls was constructed in response to the concern for defence engendered by the rebellions and invasion threats of the late 1830s. It was built by a contractor named Millar who began work on 18 May 1840 and completed the structure in mid-August. Lockmaster Peter Sweeney moved into his new home early in September, and

throughout the 19th century the dwelling remained in use as a residence.⁹¹ The inspection report of 1852 described it as "Stone, tinned & loopholed, the same as at First Rapids." Few major changes were made to the building during the 19th century. In 1894-95, a galvanized iron roof was placed on the dwelling, and in 1913-14 a new cement floor was laid in the cellar.⁹² An addition was made to the structure, probably late in the 1920s and photographs taken in 1930 show a wooden kitchen wing which was later removed. The lock house retains much of its original appearance and perched on a hill overlooking the detached lock and basin aptly illustrates its defensive character.

The stone forge building that still stands beside the upper lock was also built early in the 1840s. In 1842, an ordnance official argued that because of the isolation of the area and the fact that the lockgates were the largest on the waterway, means to undertake repairs should be available at the station itself. He therefore advised construction of a blacksmith's shop.⁹³ The arguments proved successful and on 13 August 1843, a contractor and his men arrived from Bytown to begin work. The structure was finished on 15 November.⁹⁴ In 1852, it was described as "a Stone Building tinned 28' x 22 feet." It has remained essentially unchanged in appearance.

Brewers Mills

A number of wooden buildings was constructed at Brewers Mills between 1826 and 1831, and these served as residences for the lockmaster and labourers throughout the 1830s.⁹⁵ The stone lockmaster's house was probably constructed shortly after 1842 since the estimates for that year included a sum of nearly £300 for "renewal of the Lockmaster's and Laborers House."⁹⁶ Although this reference is ambiguous, it probably refers to the construction of the stone lock house since the amount required is substantial. Moreover, it is unlikely that if the dwelling had been built earlier it would have been allowed to deteriorate to such an extent, particularly at a time of increased concern for the defence of the waterway. The reference would therefore seem to indicate construction of the present building.

The structure was similar in appearance to other stone lock houses and was defensible by means of loopholes subsequently filled in with stone. Throughout the 19th century it was used as a dwelling for the lockmasters, although late in the century Patrick Dane constructed a private home on the west side of the locks. After Deane's death in 1898, the lock house, which had been unoccupied, was renovated for his successor and a kitchen and stable built. The distance between the lock house and the locks

caused considerable inconvenience, however, especially at a time when the locks were operated 24 hours a day. Consequently, in 1903-4, a small office was constructed at the head of the upper lock.⁹⁷

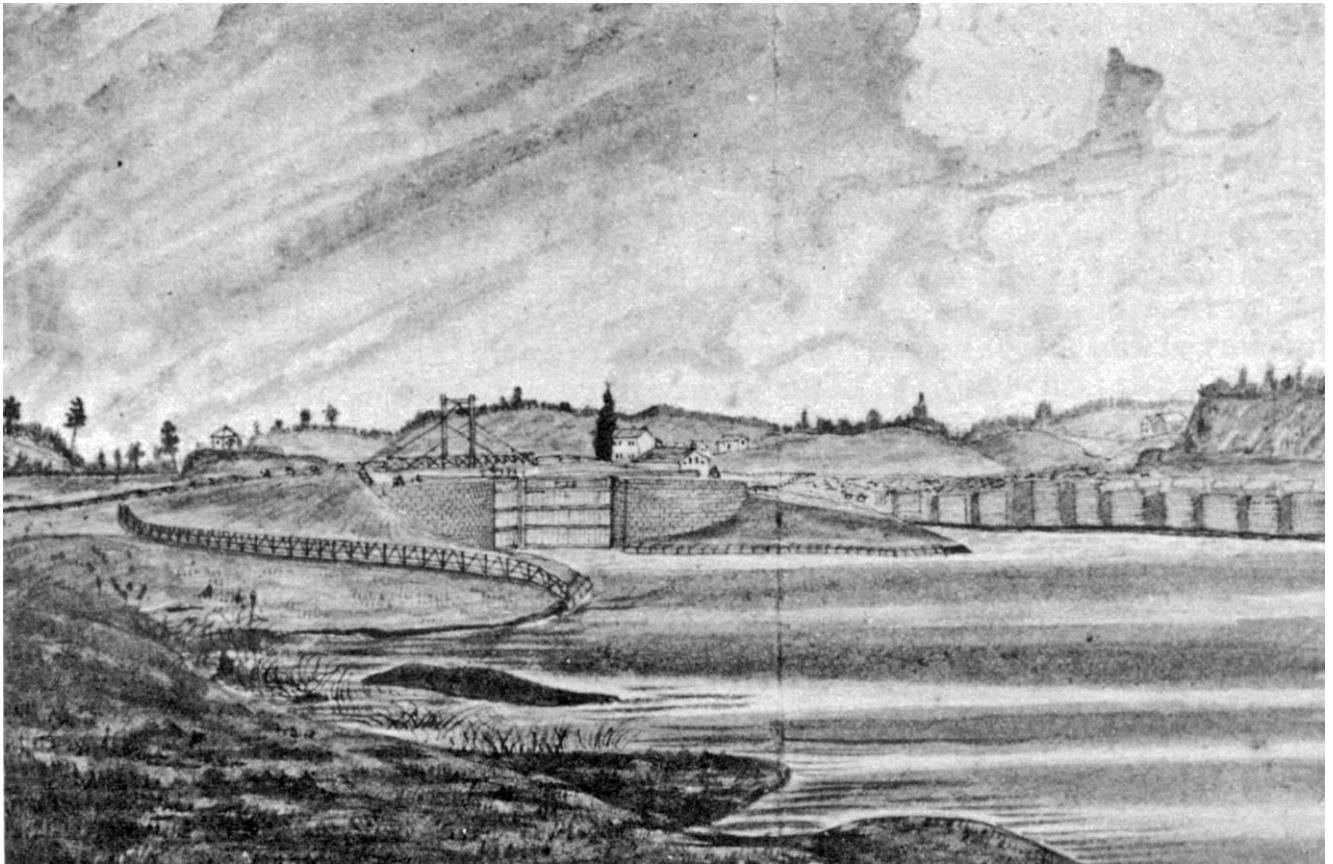


Figure 29. Another View of Brewer's Upper, by Thomas Burrowes. (Ontario Archives.)

Washburn

The stone lock house at this station was probably constructed early in the 1840s as part of the improvement of defences for the waterway. The first definite reference to the structure occurred in 1852 when the canal inspection report described it as a defensible building similar to that at Kilmarnock and several other Rideau sites. Like others of its type, it served as the lockmaster's dwelling during the 19th century. By the end of the century, it was badly deteriorated. In 1898, Dr. Bowen of Gananoque declared that he had attended the former lockmaster, Henry McGillivray, and considered that McGillivray's death in 1891 had been hastened by the unhealthy condition of the house. Phillips pointed out that the floor of the building was level with the ground and the cellar was thus about six feet below water level. Moreover, the plaster had been applied

directly on the stone walls and the dwelling was damp and cold. He suggested that the roof could be raised and the walls properly replastered with furring and lathing.⁹⁸ During the following winter, the roof was lifted and a nine-foot second storey divided into four rooms was built at an estimated cost of \$500. A hardwood floor was laid in the kitchen of the lockhouse in 1914-15.⁹⁹

Kingston Mills

The strategic importance of this station as the southernmost end of the canal was reflected in the construction of a blockhouse similar in size to those at The Narrows and Newboro. This structure was in progress at the time of Colonel By's report in May 1832 and was probably completed within the following few years. Increased concern for the security of the locks late in 1837 resulted in a refitting of the blockhouse to accommodate militia who were stationed at that location during the winter of 1837-38.¹⁰⁰ In more peaceful times, the blockhouse served as a residence for the lock labourers at the station. In 1896, for example, the building was occupied by the two married labourers and their families.¹⁰¹ During this period, changes were made to the structure to make it more suitable as a dwelling, although the blockhouse at Kingston Mills was never altered so extensively as those at Newboro and The Narrows where the original form was almost submerged in additions. At least one wing had been constructed at Kingston Mills before 1909, since in that year it was partly taken down and enlarged by the Fallon Brothers of Cornwall, the contractors engaged to build the concrete abutments for the new steel bridge. A galvanized iron roof was placed on this new section in 1913-14.¹⁰² The wing was removed late in the 1960s.

For many years, the lockmaster at Kingston Mills occupied a wooden dwelling constructed during the building of the canal. It was situated facing the locks on the edge of a small bay to the west of the upper lock. In 1860, canal officials proposed construction of a new house since the old one was in such a poor state of repair.

The Lock House at Kingston Mills is becoming uninhabitable. This is a wooden house, built by the contractor for his own use, and as it was in tolerable repair when the Lock Houses were built, no Lock House was built at this station. The present house is approached by a bridge about 150 feet long. This bridge is now decayed; a new house ought to be built. There is a good site for one at the road side, near the Swing Bridge.¹⁰³

The sum of \$1600 was proposed for the new building. As a result of this proposal, new accommodation was

provided for the lockmaster. The few details of the house available indicate that it was poorly constructed and may, in fact, have been an amalgam of surplus buildings at this station. In 1902, the superintending engineer, A.T. Phillips, advised replacement of the structure and indicated that it was, in fact, composed of three sections. One of the sections was built on a stone foundation but the others were merely laid on timbers on the ground and were tied to the middle section. Since the timbers had rotted, the two wings had settled badly, causing damage to the walls and ceilings of all three sections.¹⁰⁴ Lockmaster Anglin had earlier described the structure as "frame clabboarded and plastered with no other lining" and had argued that the unhealthy condition of the house had affected his family's health.¹⁰⁵ This unsatisfactory structure was replaced in 1904 by the large wooden house situated on the west side of the locks.¹⁰⁶ The new house seems to have been completed late in the summer since on 30 August Anglin reported that the contractor was painting the building.¹⁰⁷

Other wooden buildings dating from the construction of the locks were occupied by the lock labourers during the 19th century. The inspection report of 1852 referred to a dwelling designated as a lock house but inhabited by the lock labourers since the lockmaster resided in the house constructed for the clerk of works. Later in the century, the lockmaster recorded that an old log house occupied by the lock labourer, John Redmond, had been destroyed by a fire.¹⁰⁸ At the same time, labourers who were employed only during the navigation season were housed in government quarters known as the Lodge. This building, which provided sleeping and cooking facilities, was constructed on contract by William Sommers in November 1881.¹⁰⁹ It was situated in the triangle of land between the locks and the Cataraqui River.

APPENDIX C. RIDEAU CANAL TOLLS

The first scale of tolls for the Rideau was based upon proposals of Lieutenant-Colonel John By and proclaimed on 26 April 1832. These tolls were immediately judged to be unrealistically high in view of the sparse settlement in the area, and on 4 June 1832 a new proclamation was issued with substantial reductions in the tolls. The route was divided into two sections with the mid-point at Olivers Ferry (now Rideau Ferry) and with a few exceptions, half fare was charged for journeys within either section.¹ By May 1835, Seth Thomas, Sr., of the ordnance department in London was commenting on the deficit between receipts from tolls and rents and expenditures which for the past two years had averaged over £4000.² During the next seven years, authorities in England and Upper Canada studied the problem of the Rideau's deficit and concluded that the route was essentially unable ever to compete successfully with the St. Lawrence, particularly on the downward journey.³

These considerations prompted creation of a new scale of tolls which was proclaimed by Governor-General Sir Charles Bagot in April 1842 and came into force with the opening of the navigation season in 1843. The new tolls were similar to those of 1832 but introduced a charge on the vessels themselves in addition to the charge for cargo. The canal was again divided into a number of sections - the chief division point being First Rapids (Poonamalie).⁴

Concern for the detrimental effect of the new tolls on the carrying trade of the Rideau was expressed both by a number of the forwarding companies and by public meetings in several of the towns along the waterway. The minutes of a meeting at Merrickville were typical of local response to the new tolls. The townsmen argued that increases would result in the canal losing both the transit trade with the west and the local carrying trade between the towns of the Rideau and emphasized the folly of the introduction of new tolls at a time when "the country [is] in a state of commercial depression hitherto without parallel."⁵

The new tolls failed to produce the additional revenue expected and within a few years, military authorities were again considering changes in the system. In September 1845, the Respective Officers in Montreal proposed a scale of duties that would be uniform on all ordnance canals in Canada and was based upon a charge according to the number of locks passed.⁶ Despite the protests of a committee of the executive council that the schedule was too heavy and would seriously damage the trade of the Rideau area, the ordnance introduced the tolls in March 1846. The new scale

made substantial increases in tolls on timber of various kinds, including barrel staves and shingles. The regulations also limited the size of rafts passing through the canals to 100 feet by 26 feet and ordered that all craft not self-propelled must be towed and not poled through the system. The penalty for disregarding these conditions was exclusion from the canals.⁷

The new tolls did not, however, materially improve the financial condition of the ordnance waterways. In 1851, Seth Thomas, Sr. and J.S. Elliott, both of the ordnance department, concluded there would be no favourable change in their revenue so long as they remained more expensive to use than the provincial canals. They therefore recommended that the Rideau-Ottawa route adopt the same tariff as that on the St. Lawrence canals.⁸ A proclamation of 15 August 1851 established the new tolls which set forth eight classes of cargo, some of which were charged less for the downward journey than for the upward trip. The line of the Rideau and Ottawa canals was divided into three sections comprising the Carillon and Grenville locks, Bytown to Smiths Falls, and Smiths Falls to Kingston Mills.⁹ These tolls were substantially less than those of 1846, a reduction reflected in the drop in the canal's revenue.¹⁰

The transfer of the ordnance canals to the provincial government made little difference in their financial condition. In 1858, superintending engineer Slater reviewed the system of tolls on the former ordnance canals, pointing out that assimilation of tolls to those on the provincial canals had not improved their position. He suggested that since trade on the Rideau was purely local, tolls might reasonably be raised to a level that would pay for operation of the canal. The scale of tolls he proposed, however, was a close equivalent in decimal currency of the old sterling rate. The only exception was the charges proposed for square timber, all varieties of sawed lumber, and shingles, all of which were considerably increased.¹¹

After transfer of the canals to the provincial government, their financial administration came under the office of the inspector-general. The Rideau and Ottawa canals now formed part of the provincial canal system which included the St. Lawrence and Welland canals as well as a number of smaller ones. In 1860, the provincial government attempted to encourage more of the western traffic to use the Canadian canals by removing the charges from the St. Lawrence and Rideau and Ottawa canals and authorizing a 90 per cent rebate of the tolls paid on the Welland Canal provided the ship concerned used the St. Lawrence canals.¹² An order-in-council of 19 May 1860 authorized this reduction and on 31 July 1860 Slater informed the Rideau lockmasters of the abolition of tolls and ordered them to refund any money collected since passage of the order-in-council.¹³ On 15 April 1863, charges were reintroduced on the provincial canals and in that year tolls collected on the Rideau amounted to \$8242.38.¹⁴ The

amount collected from tolls and rents, however, never approached the expenditure required to maintain the system in operating condition as the yearly deficits continued.

The years before Confederation had conclusively demonstrated that revenue derived from Rideau tolls was insufficient to meet the ever-increasing costs of repairs and maintenance. Moreover, the financial position of the waterway did not improve materially in the last third of the century. A new scale of tolls with substantial reductions was introduced by an order-in-council of 25 April 1873 and this scale remained unchanged until all tolls were abolished on 27 April 1903. In 1890, the Tay branch was brought under the same scale as the Rideau by an order-in-council of 27 September.

Revenue from tolls continued, however, to average little more than \$5000 per year. In the 30 years between the imposition of new tolls and abolition in 1903, the highest amount of tolls collected on the Rideau was only \$6980.91 in 1889.¹⁵ Trade on the waterway continued to be primarily limited to local movement of goods, and for the Rideau, abolition of canal tolls in 1903 served merely to emphasize its economic losses.

Rates and dues proposed to be levied on the Rideau in 1832 - Lieutenant-Colonel John By (PAC, W044, Vol. 20, fols. 62-64).

Number 1

Cabin passengers from Kingston to Bytown	at 5/-
Cabin passengers from Kingston to Olivers Ferry	at 2/6
Cabin passengers from Olivers Ferry to Bytown	at 2/6
Deck passengers to be charged half fare	
Cattle and horses from Kingston to Bytown	at 5/-
Cattle and horses from Kingston to Olivers Ferry	at 2/6
Cattle and horses from Olivers Ferry to Bytown	at 2/6
Sheep, pigs and calves from Kingston to Bytown	at 1/3
Sheep, pigs and calves from Kingston to Olivers Ferry	at 7 1/2d
Sheep, pigs and calves from Olivers Ferry to Bytown	at 7 1/2d

Number 2

Dry goods, wines and spirituous liquors	at 10/- per ton
All kinds of grain and potatoes	at 2d per bushel
Salt, salt fish, sea coal and iron of every description	at 10/- per ton
Potash	at 10/- per ton
Flour	at per barrel
Pine, elm and all softwood	at 1d per cubic foot
Oak	at 2d per cubic foot
Staves	at 6/8 per ton
Poultry and game	at 1d per head

Proclamation of tolls on the Rideau, 26 April 1832 (PAC, W044, Vol. 22, fols. 24-25).

Cabin passengers from Kingston to Bytown	at 5/-
Cabin passengers from Kingston to Olivers Ferry	at 2/6
Cabin passengers from Olivers Ferry to Bytown	at 2/6
Deck passengers to be charged half fare	
Cattle and horses from Kingston to Bytown	at 5/-
Cattle and horses from Kingston to Olivers Ferry	at 2/6
Cattle and horses from Olivers Ferry to Bytown	at 2/6
Sheep, pigs and calves from Kingston to Bytown	at 1/3
Sheep, pigs and calves from Kingston to Olivers Ferry	at 7 1/2d
Sheep, pigs and calves from Olivers Ferry to Bytown	at 7 1/2d
Dry goods, wines and spirituous liquors	at 10/- per ton
All kinds of grains and potatoes	at 2d per bushel
Salt, salt fish, sea coal and iron of every description	at 10/- per ton
Potash Flour	at 10/- per ton
Pine, elm and all softwood	at 1/2d per cubic foot
Oak	at 1d per cubic foot
Staves	at 6/8 per ton

Revised tolls as proclaimed on 4 June 1832 (PAC, W044, Vol. 22, fols. 24-25).

Cabin passengers	at 4/-
Children under 12	at 2/-
Neat cattle and horses	at 4/-
Sheep, pigs and calves	at 6d
Dry goods, wines and spirituous liquors	at 7/6 per ton
Iron and salted fish	at 3/9 per ton
Salt and sea coal	at 1/10 per ton
Wheat	at 3/4d per bushel
Other kinds of grain and potatoes	at 1/4d per bushel
Rye and buckwheat flour and corn meal	at 1/2d per bushel
Flour	at 1 1/2d per barrel
Beef and pork	at 3 1/2d per barrel
Potash and pearl ash	at 2/3 per ton
Oak, in boats and scows (per foot)	at 1/2d
Oak, in rafts (per foot)	at 2d
Pine, elm and all soft timber in rafts (per foot)	at 1d
Pine, elm and all soft timber in boats and scows (per foot)	at 1/4d
Standard staves in rafts (per thousand)	at 10/-
Standard staves in boats or scows (per thousand)	at 5/-
Headings (per thousand)	at 1/3
West India staves in rafts (per thousand)	at 3/4
West India staves in boats or scows (per thousand)	at 1/8
Deals in rafts (per thousand feet)	at 2/6
Deals in boats or scows (per thousand feet)	at 1/6

Boards and planks in rafts (per thousand feet)	at 2/6
Boards and planks in boats or scows (per thousand feet)	at 1/6
Shingles (per thousand)	at 3d
Laths, sawed or split (per thousand)	at 3d
Tanner's bark in rafts	at 1/- per cord
Tanner's bark in boats or scows	at 4d per cord
Lard, butter, tallow, bees' wax, honey in barrels	at 4d per barrel
Lard, butter, tallow, bees' wax, honey in kegs	at 2d per keg
Firewood in rafts	at 1/- per cord
Firewood in boats or scows	at 4d per cord
Apples	at 3d per barrel
Tobacco	at 8d per hogshead
Stone from quarries	6d per toise
Sand and lime	at 1d per barrique
Coaches, carriages and wagons	at 1/3
Caleches, gigs and carts	at 7 1/2d
Cheese	at 2d per cwt.
Beer and cider	at 3 1/2d per barrel
All other merchandise	at 7/6 per ton

Half fare for half journeys - Olivers Ferry, the mid-point.

Tolls proclaimed by Governor-General Sir Charles Bagot (*Canada Gazette Extraordinary*, 20 April 1842 [PAC, W044, Vol. 25, fols. 283-84]).

Cabin passengers	at 4/-
Children under 12	at 2/-
Neat cattle and horses	at 4/-
Sheep, pigs and calves	at 6d
Dry goods, wines and spirituous liquors	at 7/6 per ton
Iron and salted fish	at 3/9 per ton
Salt and sea coal	at 1/10 per ton
Wheat	at 3/4d per bushel
Other kinds of grain and potatoes	at 1/4d per bushel
Rye and buckwheat flour and corn meal	at 1/2d per bushel
Hay	at 2/6 per ton
Flour	at 2 1/2d per barrel
Beef and pork	at 3 1/2d per barrel
Potash	at 2/3 per ton
Pearl ash	at 2/3 per ton
Oak in boats or scows	at 1/2d per foot
Pine, elm and all soft timber in boats or scows	at 1/4d per foot
Oak in rafts	at 1d per cubic foot
Pine in rafts	at 1/4d per cubic foot
Standard staves in rafts, (per thousand)	at 20/-
Standard staves in boats or scows (per thousand)	at 10/-

West India staves in rafts, (per thousand)	at 3/4
West India staves in boats or scows (per thousand)	at 1/8
Headings (per thousand)	at 1/3
Deals in rafts (per thousand)	at 2/6
Deals in boats or scows (per thousand)	at 1/6
Boards and planks in rafts (per thousand)	at 2/6
Boards and planks in boats or scows (per thousand)	at 1/6
Shingles (per thousand)	at 3d
Laths sawed or split (per thousand)	at 3d
Sawlogs passing from 1-3 locks	at 1d per lock
Sawlogs passing from 4-6 locks	at 2d per lock
Sawlogs passing more than 6 locks	at 3d per lock
Ash oars	at 2 1/2d pair
Tanner's bark in rafts	at 1/- per core
Tanner's bark in boats or scows	at 4d per cord
Lard, butter, tallow, bees' wax, and honey in barrels	at 4d per barrel
Lard, butter, tallow, bees' wax, and honey in kegs	at 2d per keg
Firewood in rafts passing from 1-3 locks	at 1d per cord
Firewood in rafts passing from 4-6 locks	at 2d per cord
Firewood in rafts passing more than 6 locks	at 3d per cord
Firewood in scows or boats passing 1-3 locks with no extra charge for scow or boat	at 2d per cord
Firewood in scows or boats passing 4-6 locks with no extra charge for scow or boat	at 4d per cord
Firewood in scows or boats passing more than 6 locks with no extra charge for scow or boat	at 6d per cord
Charcoal	at 1/4d per bus
Cedar logs for fencing	at 1/4d each
Bricks (per thousand)	at 2/-
Floats (per hundred)	at 7/6
Traverses (per hundred)	at 3/9
Apples	at 3d per barrel
Tobacco	at 8d per hogshead
Stone from quarries	at 6d per toise
Sand and lime	at 1d per barrel
Coaches, carriages and wagons	at 1/3 each
Calashes, gigs and carts	at 7 1/2d each
Cheese	at 2d cwt.
Beer and cider	at 3 1/2d per I
All other merchandise	at 7/6 per ton
Steam boats, Kingston to Bytown	at 10/-
Steam boats, Bytown to Kingston	at 20/-
Steam boats from Perth to either end, or Kingston to Perth	at 5/-
Steam boats from Bytown to Perth	at 10/-
Kingston to Bytown (carrying passengers in addition to merchandise or Produce)-	

	- barge	at 5/-
	- Durham boat	at 3/6
	- large batteaux	at 2/6
	- small batteaux	at 1/6
Bytown to Kingston	- barge	at 10/-
	- Durham boat	at 7/-
	- large batteaux	at 5/-
	- small batteaux	at 3/-
Bytown to Kingston (in addition to merchandise or produce)		
boats and canoes		at 6d 1st lock and 1d for each successive lock
Reduced fares for part journeys.		

Scale of tolls on ordnance canals, 12 March, 1846 (PAC, W044, Vol. 16, fol 537).

Steam vessels, however propelled	at 6d per lock
Barges of every description	at 4d per lock
Passengers, cabin at 1d per lock	
Passengers, steerage or on barges	at 1/4d per lock
Merchandise of every description not enumerated hereafter (per ton)	at 1 1/2d per lock
Salt and sea coal, British produce	free
Salt and sea coal, foreign produce (per ton) at 1 1/2d per lock	
Iron and fish (per ton) at 3/4d per lock	
Ashes, pot and pearl (per barrel)	at 1/4d per lock
Beef, pork, beer and cider (per barrel)	at 1/4d per lock
Flour, biscuits and apples (per barrel)	at 1/6d per lock
Wheat and other grains (per quarter)	at 1/4d per lock
Bricks (per thousand) at 1/2d per lock	
Lime, charcoal, sand and clay (per ton)	at 1d per lock
Stone (per cord) at 3/4d per lock	
Wagons, carriages and carts	at 1d per lock
Horses and horned cattle	at 1d per lock
Sheep, pigs and calves at 1/4d per lock	
Oak, pine, elm, ash etc. in rafts, each lock full	at 5/- per lock
Oak, pine, elm, ash etc. in vessel per hundred cubic feet	at 3d per lock
Standard, West India and headings staves in rafts, each lock full	at 5/- per lock
Standard staves in vessels (per thousand)	at 9d per lock
West Indian staves in vessels (per thousand)	at 3d per lock
Headings staves in vessels (per thousand)	at 1/2d per lock
Deals, planks or boards in rafts, each lock full	at 5/- per lock
Deals, planks or boards in vessels (per thousand feet)	at 1/4d per lock
Shingles and laths, sawed or split (per thousand)	at 1/4d per lock
Logs, saw or cedar, each lock full	at 2/6 per lock
Logs, saw or cedar, each	at 1d per bywash

Cordwood in vessels or rafts	free
Tanner's bark in vessels (per cord)	at 1/2d per lock
Tanner's bark in rafts (per cord)	at 1/4d per lock
Floats (per hundred)	at 2d per lock
Traverses (per hundred)	at 1/2d per lock

Tolls on ordnance canals, 1851 (PAC, W044, Vol. 16, fols. 541-42, memo of S. Thomas, Clerk of Ordnance, and J.S. Elliott, ordnance storekeeper, 29 May 1851).

Class 1	Vessels	at 1d up	1/2d down
Class 2:	Passengers 21 years and over	at 5 1/2d up	2 1/2d down
	under 21 years old	at 2 1/2d up	1d down
Class 3 :	bricks, lime, sand, slate, or stone, gypsum, cement, clay and manures, marble, salt, coal, manganese, bark, hemp, unmanufactured, tobacco, ores, potatoes, apples and onions, rosin (per ton)	at 10d up	10d down
Class 4 :	bran and ship stuff, barley, rye, oats, Indian corn, meal, clover seed, flax seed and flax, pressed hay and pressed broom corn, raw cotton, oil cake and oil meal, cattle, sheep and hogs, horn, hoofs and bones, broken castings, pig and scrap iron (per ton)	at 1/3 up	1/3 down
Class 5 :	pork and beef, bacon ad ham, lard, bees wax, fish, whiskey, stoneware, earthenware and glassware horses, furniture and baggage, carts, wagons, sleighs, ploughs and tools, railroad iron (per ton)	at 2/-up	1/7 1/2 down
Class 6 :	ashes, flour, butter, cheese, biscuit, tallow, beer, cider and vinegar, wheat, other agricultural produce not enumerated, sugar, molasses, coffee, stoves and other castings, nails, spikes and other iron not elsewhere described, steel, windowglass, raw hides and skins,		

	wool, rags, junk, manilla, charcoal and copperas (per ton)	at 2/9 up	1/7 ½ down
Class 7 :	all other goods and merchandise not enumerated (per ton)	at 4/9 up	1/7 ½ down
Class 8:	Square timber etc. in rafts (per thousand cubic feet)	at 3/9 up	3/9 down
	Square timber etc. in rafts (per thousand cubic feet)	at 8/9 up	8/9 down
	round or flatted timber under 12 in. by 12 in. in boats (per 50 feet)	at 3/1 ½ up	3/1 ½ down
	round or flatted timber under 12 in, by 12 in. in rafts (per 50 feet)	at 6/10 ½ up	6/10 ½ down
	boards, planks, scantling, sawed lumber in boats (per thousand feet inch measure)	at 7d up	4d down
	boards, planks, scantling, sawed lumber in rafts (per thousand feet inc measure)	at 6/10 ½ up	6/10 ½ down
	pipe staves and headings (per thousand)	at 7/6 up	7/6 down
	West India staves (per thousand)	at 3/1 ½ up	3/1 ½ down
	barrel staves (per thousand)	at 1/8 ¼ up	1/8 ¼ down
	shingles (per thousand)	at 2d up	2d down
	firewood (per cord)	at 1/1 ½ up	1/1 ½ down
	sawlogs at 12 feet each	at 2d up	2d down
	mahogany (except veneering) (per hundred feet)	at 3/9 up	3/9 down
	sawed lath (except vennering) (per hundred feet), hop and hoop poles, oars, hanspikes, spokes, hubs, felloes, boat knees, plane stocks, treenails, fence pickets, chair and bedstead stuff, broom, brush, axe and plough handles, brush and looking glass backs, gun stocks, lasts, turned woodenware, door, sash and		

blind sawed stuff, split posts and rails for fencing, (per ton measurement of 40 cubic feet)	at 2/- up	2/- down
empty barrels, each	at 1d up	1d down

Tolls set by provincial government, September 1858 (PAC, RG 11, Series II, Vol. 384, p. 75, J.D. Slater to T.A. Begly, 17 September 1858).

Class 1	(as 1851 description)	at 6 cents
Class 2	(as 1851 description)	at 10 cents
Class 3	(as 1851 description)	at 20 cents
Class 4	(as 1851 description)	at 30 cents
Class 5	(as 1851 description)	at 40 cents
Class 6	(as 1851 description)	at 60 cents
Class 7	(as 1851 description)	at \$1.00
Class 8	square timber in boats (per thousand cubic feet)	at \$2.00
	square timber in rafts (per thousand cubic feet)	at \$4.00
	round or flatted timber under 12 in. by 12 in. in boats (per thousand cubic feet)	at \$2.00
	round or flatted timber under 12 in. by 12 in. in rafts (per thousand cubic feet)	at \$3.50
	boards, planks, scantling, sawed lumber in boats (per thousand feet inch measure)	at 80 cents
	boards, planks, scantling, sawed lumber in rafts (per thousand feet inch measure)	at \$1.00
	pipe staves and headings (per thousand feet)	at \$2.00
	West India staves (per thousand feet)	at \$1.00
	barrel staves (per thousand feet)	at 32 cents
	shingles (per thousand)	at 10 cents
	firewood (per cord)	at 25 cents
	sawlogs of 12 feet, each	at 6 cents
	mahogany (except veneering), (per thousand feet)	at 75 cents
	hop and hoop poles, handspikes, spokes, hubs, felloes, boat knees, plane stocks, treenails, fence pickets, chair and bedstead stuff, broom, brush, axe and plough handles, brush and looking glass backs, gun stocks, lasts, turned woodenware,	

door, sash and blind sawed stuff, split posts for fencing, (per ton measurement of 40 cubic feet)	at 80 cents
empty barrels each	at 4 cents
floats each	at 4 cents
traverses each	at 1 cent
sawed or split laths (per thousand)	at 20 cents
oars (per hundred)	at \$1.00
split rails for fencing (per hundred)	at 16 cents
iron ore	at 5 cents
railroad iron	at 16 cents

1860 Tolls on Rideau, Carillon and Grenville canals (PAC, RG43, B4[a], Vol. 40).

Class 1	vessels per ton measurement	at 6 cents
Class 2	passengers 21 years and over	at 10 cents
	under 21 years	at 8 cents
Class 3	apples, bark, bricks, cement, clay, coal, corn, gypsum, hemp, ice, iron (pig, scrap, railroad, bloom and broken castings), lime, manganese, manures, marble, ores other than iron, onions, potatoes, salt, sand, slate, stones wrought or unwrought, and unmanufactured tobacco (per ton weight)	at 30 cents
Class 4	ashes (pot or pearl), bacon, barley, beer, bran and ships stuff, broom corn, butter, cider, bones, cattle, cotton (raw), flax, flour, hay (pressed), hogs, hoops, horns, junk, lard, lard oil, meals (barley, corn, oats and rye), nails, oils (all kinds in barrels), oil cake, oil meal, pork, rags, rye, seed of flax and clover, sheep, spikes, stove and other iron castings and all other iron not otherwise described, tallow, vinegar, wheat, window glass, and all other agricultural products not enumerated and not being merchandise (per ton weight)	at 40 cents
Class 5	beef, bees' wax, biscuit, carts, chalk, charcoal, cheese, coffee,	

	copperas, crockery, dye and dye stuffs, earthenware, fish, furniture, baggage of settlers, glassware, hams, hides and skins (raw), iron safes, leather, mahogany, manilla, mechanics' tools, molasses, oakum, paints, pitch, ploughs and all other agricultural implements, rosin, ships stores, sleighs, soda ash, steel, stoneware, sugar, tar, tin, manufactured tobacco, turpentine, wagons, whiskey, white lead, whiting, wool (per ton weight)	at 50 cents
Class 6	all goods and merchandise not enumerated (per ton weight)	at \$1.00
Class 7	empty barrels	at 2 cents
	barrel hoops (per thousand)	at 3 cents
	boards, planks, scantling and other sawed timber reduced to inch measure in vessels (per thousand superficial feet)	at 24 cents
	siding, lath and other sawed stuff, less than one inch thick (per thousand superficial feet)	at 24 cents
	siding, lath and other sawed stuff, less than one inch thick in rafts (per thousand superficial feet)	at 32 cents
	boat knees, each	at 2 cents
	firewood in rafts or vessels (per cord)	at 28 cents
	floats for each lock passed (per hundred)	at 1 cent
	sawlogs 12 feet long, if longer, increased in proportion, entering the canal, each	at 5 cents
	sawlogs 12 feet long, if longer, increased in proportion, leaving the canal, each	at 5 cents
	shingles (per thousand)	at 6 cents
	split posts and fence rail in vessels (per thousand)	at \$1.20
	split posts and fence rail in rafts (per thousand)	at \$1.60
	staves and headings (barrel) (per thousand)	at 20 cents
	staves and headings (pipe) (per thousand)	at \$1.50
	staves and headings (West India) (per thousand)	at 64 cents
	timber (oak, pine or other square or round above 12 in.	

by 12 in.) in vessels (per thousand cubic feet)	at 84 cents
timber (oak, pine or other square or round above 12 in. by 12 in.) in rafts (per thousand cubic feet)	at \$1.76
timber (oak, pine or other square or round under 12 in. by 12 in., round or flatted under 12 in. by 12 in.), railroad ties in vessels (per thousand lineal feet)	at \$1.00
timber (oak, pine, or other round or flatted under 12 in. by 12 in.), railroad ties in rafts (per thousand lineal feet)	at \$1.40
traverses for each lock passed (per hundred)	at 1 cent
axe handles, bedstead and blind stuff, broom and brush handles, brush backs, chair stuff, door stuff, felloes, fence pickets, gun stocks, handspikes, hoop and hop poles, hubs, lasts, looking-glass backs, oars, plane stocks, plough handles, sash stuff, spokes, treenails and turned wooden ware (per ton measurement of 40 cubic feet)	at 60 cents
vessels wintering in canal-steamers	at \$8.00
all other	at \$4.00
mahogany, except veneering (per hundred feet)	at \$1.00

Canal sections: navigation divided into four sections: Carillon and Grenville, Ottawa, Smiths Falls and Kingston Mills. Vessels passing one section to be charged 1/4, two sections 1/2, etc. Portion on any one section passed to be charged as a whole section, also any fraction of a ton freight to be charged as one ton, etc.

Tolls established by order-in-council, 25 April 1873 (Canada. Department of Railways and Canals, *Canal Statistics for the season of navigation 1886* [Ottawa, 1887], pp. 85-86).

Class 1	vessels, steam (per ton measurement)	at 1 1/2 cents
	sail and other (per ton)	at 2 1/4 cents
Class 2	passengers, 21 years old and over	at 8 cents

Class 3	under 21 years	at 4 cents
	bricks, cements, water lime, clay, lime and sand, brimstone, corn, flour, iron (railway, pig, all other, including steel), plaster, gypsum, salt, salt meats or fish in barrels or otherwise, agricultural products (vegetable) not enumerated, agricultural products (animal) not enumerated	
Class 4	stone for cutting, wheat (per ton)	at 7 cents
	all other articles not enumerated (per ton)	at 26 cents
Class 5	salt meats or fish in barrels or otherwise, agricultural products (vegetable) not enumerated, agricultural products (animal) not enumerated, stone for cutting, wheat (per ton)	at 7 cents
	bark	at 7 cents per ton
	barrels (empty), each	at 2 cents
	boat knees, each	at 2 cents
	floats (per thousand lineal feet)	at \$1.05
	firewood in vessels	at 15 cents
	firewood in rafts	at 19 cents
	hoops	at 15 cents
	masts, spars, telegraph poles in vessels (per thousand ton of 40 cubic feet)	at 8 cents
	masts, spars, telegraph poles in rafts (per ton of 40 cubic feet)	at 15 cents
	railway ties in vessels, each	at 3/4 cents
	railway ties in rafts, each	at 2 cents
	sawed stuff, boards, plank, scantling and sawed timber in vessels (per thousand feet, board measure)	at 11 1/4 cents
	sawed stuff, boards, plank, scantling and sawed timber in rafts (per thousand feet, board measure)	at 19 cents
	square timber in vessels (per thousand cubic feet)	at 56 cents
	square timber in rafts (per thousand cubic feet)	at \$1.12
	wagon stuff, woodenware and wood, partly manufactured, (per ton of 40 cubic feet)	at 30 cents

	shingles (per thousand)	at 4 1/2 cents
	split posts and fence rails in vessels (per thousand)	at 23 cents
	split posts and fence rails in rafts (per thousand)	at 38 cents
	sawlogs, each standard log	at 6 cents
	barrel staves and headings (per thousand)	at 15 cents
	pipe staves and headings (per thousand)	at 75 cents
	West India staves and headings (per thousand)	at 45 cents
	salt barrel staves and headings, sawn or cut (per thousand)	at 3 cents
	traverses (per hundred pieces)	at 38 cents
	hop poles (per thousand pieces)	at \$1.50
Special class	crude gypsum	free
	Coal	at 8 cents per ton
	stone, unwrought, corded	at 28 cents per cord
	and not suitable for cutting	at 5 cents per ton
	iron ore, kryolite or chemical ore	
	ice	free

Rideau Canal Statistics, 1867-1914

Year	Vessels											
	Canadian						American					
	Sail		Steam		Tons	Tolls	Sail		Steam		Tons	Tolls
	Tons	Tolls	Tons	Tolls			Tons	Tolls	Tons	Tolls		
											Passengers Number Tolls	Merchandise Tons Tolls
1867 ¹	574,614	4,558.40									2 ² 63.33	470,242 11,568.24
1868	604,237	5,044.07									2,222 60.98	520,563 13,477.54
1869	605,088	4,818.16									2,102 54.33	502,835 12,387.47
1870	672,674	5,260.80									1,959 49.34	620,565 15,117.81
1871	623,676	5,614.85									1,307 33.35	599,435 21,003.15
1872	386,154	5,394.28									1,450 38.35	517,953 32,584.51
1873	221,461	3,074.45	37,525	551.52	16,863	410.86	-	-			1,526 37.08	351,501 23,671.15
1874	140,176	1,283.86	39,549	540.32	8,583	69.44	12	.50			874 21.24	180,885 5,189.78
1875	129,421	1,090.35	49,447	583.70	6,953	58.05	12	.50			2,057 53.71	59,996 3,998.45
1876	125,124	1,097.68	32,197	422.17	6,173	56.05	104	1.50			1,758 43.56	35,652 3,650.37
1877	158,375	1,544.47									2,458 60.91	127,173 3,340.86
1878	103,447	966.57	43,274	400.27	6,445	53.92	138	1.08			4,266 101.57	108,269 3,171.13
1879	113,823	1,053.17	46,659	455.95	3,276	27.22	50	.50			5,223 122.11	108,623 3,202.69
1880	161,216	1,641.30									5,371 123.84	108,699 3,417.73
1881	163,103	1,790.41									3,784 95.69	114,015 3,737.77
1882	180,174	1,889.31									5,069 144.48	99,527 3,738.03
1883	87,564	1,028.37	63,387	660.14	7,114	78.25	182	7.00			3,057 96.81	91,307 3,444.04
1884	78,809	878.64	38,446	371.82	7,358	74.27	208	6.75			1,015 26.41	75,067 2,668.20
1885	69,527	829.44	40,596	429.74	10,198	171.99	172	6.00			2,181 55.39	86,453 3,444.59
1886	81,401	1,120.63	49,105	503.85	10,826	129.92	320	10.61			2,973 96.76	84,785 4,287.15
1887	94,425	1,093.24	53,359	576.08	7,810	82.16	563	16.26			2,944 116.92	87,161 3,522.55
1888	96,106	1,105.11	70,360	715.96	18,083	216.45	514	12.61			4,193 115.56	109,991 4,401.17
1889	82,630	986.81	62,377	665.25	18,703	272.83	714	18.87			2,910 73.38	110,057 4,963.99
1890	72,734	1,009.32	62,150	591.52	4,737	58.54	1,057	17.51			3,921 111.34	84,076 4,992.86
1891	68,965	766.05	78,137	762.11	16,644	225.76	711	16.83			5,423 130.86	89,576 3,102.63
1892	87,077	857.90	102,431	783.97	6,070	163.99	878	14.84			7,442 169.83	90,286 3,102.63
1893	65,142	717.56	94,684	687.25	14,533	271.35	956	20.55			6,119 137.66	101,409 3,984.62
1894	637	16.25	107,414	750.56	8,768	111.61	2,424	76.98			5,544 127.44	93,382 4,001.17
1895	54,798	656.38	98,262	704.32	13,206	265.73	2,586	25.59			5,305 87.00	72,851 3,516.92
1896	38,813	594.82	104,408	695.68	5,842	169.44	1,827	19.20			3,239 72.87	77,143 4,526.61
1897	33,259	492.73	105,680	739.58	11,838	252.29	646	12.41			4,908 94.29	54,846 3,286.42
1898	29,657	440.35	114,429	776.32	8,308	232.17	692	10.38			4,830 111.10	69,363 4,025.81
1899	29,645	490.35	117,489	794.53	12,749	113.61	899	15.08			5,510 126.12	74,172 4,239.20
1900	37,391	548.68	141,065	885.62	12,205	144.06	854	14.89			7,447 158.19	56,226 2,551.81
1901	32,329	454.36	124,767	821.26	6,276	155.66	877	12.25			6,199 161.15	47,779 2,162.53
1902	35,400	427.29	127,939	887.67	6,048	125.16	1,182	19.60			9,294 226.00	60,782 2,883.09
1903 ³	37,508	604.48	122,697	960.07	8,019	120.79	1,355	22.86			15,501 373.61	54,528 2,621.28
1904	24,191	526.91	138,271	1,097.37	6,077	117.03	1,106	36.95			17,253 411.37	59,864 2,911.17
1905	29,462	574.94	149,342	1,273.92	6,122	58.78	1,633	24.15			24,394 671.66	82,369 3,313.56
1906	33,763	641.55	167,539	1,588.84	5,235		992	19.74			27,917 760.44	89,640
1907	29,750	460.05	154,305	2,007.21	3,365		576				22,445 613.03	91,774
1908	42,472		143,546		3,300		622				22,640	134,881
1909	32,154		122,113		2,041		13				19,498	172,227
1910	51,385		125,062		6,777		18				26,040	160,133
1911	53,853		168,709		3,004		34				25,298	171,223
1912	61,844		146,845		887		-				20,534	151,739
1913	72,311		128,587		2,088		-				19,653	
1914	43,478		133,426		2,039		572				19,730	

1 - Statistics for all categories - vessels, passengers and merchandise - between 1867 and 1872 refer to both the Rideau and Ottawa canals. Between 1867 and 1872 and in 1877 and 1880-82, figures shown as "Canadian sail" are in fact totals including all other categories of vessels.

2 -Incomplete statistics available from the annual report of the Department of Public Works – passenger figures for 1867 were shown as totals for all Canadian canals.

3 -By an order-in-council of 27 April 1903, the tolls on Canadian canals were abolished. The statistics continued to show revenue as if the tolls had been collected until 1908 when only the tonnages were listed.

ENDNOTES

Introduction

- 1 V. A. George, "The Rideau Corridor 1832-1898," M.A. thesis, Queen's University, 1972 (seen in draft form), pp. 192-96.

The Early Years, 1832-67

- 1 Inspection of the canal works was for many years a complicated procedure. In 1845, the CRE in Canada complained that since an inspecting officer had to travel by commercial steamer, his time at each station was severely limited and he could not inspect the works outside the main channel. Holloway suggested construction of a small, shallow-draught iron steamboat which could be used for inspection, transportation of troops and such maintenance work as the removal of drift timber. Public Archives of Canada (hereafter cited as PAC), RG8, Series C, Vol. 455, pp. 217-21, Holloway and Elliott to Respective Officers, 27 May 1845. For reiteration of reasons for purchase of steamer, see PAC, W055, Vol. 881, fols. 383-88, Holloway to inspector-general of fortifications, 22 February 1847.
- 2 PAC, W044, Vol. 20, fols. 65-73, By's suggested establishment for the Rideau, n.d. [1831].
- 3 Jarvis to Bonnycastle, 6 June 1838, Sir George Arthur, *The Arthur Papers. Being the Canadian Papers Mainly Confidential, Private, and Demi-Official of Sir George Arthur, K.C.H. Last Lieutenant-Governor of Upper Canada*, ed. Charles R. Sanderson (Toronto: Toronto Public Libraries and University of Toronto Press, 1957-59) (hereafter cited as *Arthur Papers*), Vol. 1, p. 193.
- 4 PAC, RG8, Series C, Vol. 59, pp. 192-94, Bolton to Wright, CRE, Canada, 2 July 1838, and same to Rowan, military secretary, 6 July 1838. Citizens of villages along the Rideau shared this concern for the safety of the area. In March 1838, J.L. Read and T. Smythe, justices of the peace at Merrickville, wrote to Bolton thanking him for allowing lockmaster Johnstone of Merrickville, formerly a sergeant in the Royal Sappers and Miners, "to drill us at this most momentous crisis when our beloved country is involved in the calamities of war and when our duty towards our lawful Sovereign is most required." They were grateful for having thus been able to receive a knowledge of military exercise.

Public Archives of Ontario, Henry Moulton scrapbook No. 62, "Ottawa, Smiths' Falls, and Rideau Canal history," Read and Smythe to Bolton, 22 March 1838.

- 5 PAC, RG8, Series C, Vol. 59, pp. 195-99, Lt.-Col. J.R. Wright to Colonel Rowan, 11 August 1838; Sir John Colborne to Sir George Arthur, 16 August 1838, Sir George Arthur, Arthur Papers, Vol. 1, pp. 256-58. The guardhouse at Jones Falls was begun in mid-October 1838, and finished by mid-January of the following year. Construction at the Whitefish Dam was begun in mid-November and the structure was also completed in mid-January. PAC, RG43, B4(a), Vol. 142, canal records - Jones Falls.
- 6 Queen's University Archives, Tett Papers, Vol. 1, Tett to Majors Young (Prescott) and Bolton (Bytown), 8 July 1838.
- 7 A company of militia had been-stationed on the canal in July 1838. PAC, RG8, Series C, Vol. 1274, p. 34, Arthur to Rowan, 12 July 1838. The posts were ordered to be strengthened on 14 November 1838. Domville to Officer Commanding, Kingston (Henry Dundas), 14 November 1838, Sir George Arthur, Arthur Papers, Vol. 1, p. 368.
- 8 PAC, RG43, B4(a), Vol. 142, canal records – Jones Falls. Lockmaster Sweeney lost four rooms of his home to men of the 71st who moved in on 4 October and stayed until their departure from the station. PAC, RG8, C series, Vol. 59, pp. 320-22, Lt.-Col. J. Oldfield, CRE, to Military Secretary, 21 December 1840, requesting forage allowance for Captain Jessup stationed at Gananoque to enable him to visit his detachment at Jones Falls and Whitefish Dam. Enclosed is a written opinion from Major Daniel Bolton that these parties and that at Kingston Mills were no longer necessary.
- 9 PAC, RG43, B4(a), Vol. 37, canal orders, 27 September 1841.
- 10 In 1846, for example, the CRE in Canada, Colonel Holloway, wrote a long memorandum to the inspector-general of fortifications detailing the way in which the security of the Rideau could be ensured in the event of an American invasion across the St. Lawrence. He concluded that should the defending forces be required to retreat inland toward the waterway, they could destroy the roads behind them, thereby hindering an American advance and possible capture of the canal. PAC, W055, Vol. 880, fols. 328-38, Holloway to Burgoyne, 25 February 1846. PAC, RG11, Series III, Vol. 35, p. 56,780, Slater to Trudeau, secretary, Board of Works, 2 January 1862.
11. PAC, W044, Vol. 20, fol. 11, By to Nicolls, CRE, 13 August 1832.
12. PAC, RG8, Series C, Vol. 54, pp. 167-69, By to Respective Officers, Quebec, 14 May 1832; *ibid.*, Vol. 56, p. 81, Routh to the Hon. James Stewart, 23 February 1833.

- 13 PAC, W044, Vol. 22, fols. 148-52, Respective Officers to Byham, ordnance department, 11 September 1835.
- 14 PAC, WO55, Vol. 876, fol. 359, Oldfield to inspector-general of fortifications, 17 April 1841.
- 15 Lt.-Col. George Philpotts, "Report on the Canal Navigation of the Canadas," Papers on Subjects connected with the Duties of the Corps of Royal Engineers (London: J. Weale, 1842), Vol. 5, pp. 157-58. In 1850, an English traveller commented on the limited usefulness of the Rideau. He wrote, "A great part of the traffic between Montreal and the upper country was expected to pass through these works; but this route has been neglected since the St. Lawrence Canal has been finished; the latter being the shorter and more economical line of transport. The Rideau Canal will be of little use, except during war." John J. Bigsby, *The Shoe and Canoe or Pictures of Travel in the Canadas*. (London: Chapman and Hall, 1850), Vol. 1, pp. 142-43.
- 16 PAC, W044, Vol. 16, fols. 257-58, Thomas to Byham, 10 April 1840. In 1842, the ordnance storekeeper in Canada, J.S. Elliott, advocated the same change. He pointed out that by far the greatest part of the lockmasters' and labourers' work consisted of operating the locks with repairs a very minor concern. Consequently, their pay could more logically come under the storekeeper's estimates rather than the engineers'. PAC, W044, Vol. 16, fol. 409, Elliott to Byham, 7 April 1842.
- 17 PAC, RG8, Series C, Vol. 459, pp. 16-18, Byham to the commanding officer of the Royal Artillery, the CRE and the ordnance storekeeper, 1 March 1847.
- 18 PAC, W01, Vol. 561, fols. 296-97, Trevelyan to Herman Merivale (Colonial Office), 14 February 1849. Elgin was written to on 20 February 1849.
- 19 Canada (Province). Department of Public Works, *Annual Report of the Commissioners of Public Works for the Year Ending 30th June, 1867* (Ottawa, 1868), p. 51. Hereafter, annual reports are referred to as Annual Report....
- 20 PAC, WO1, Vol. 567, fols. 156-57, Trevelyan to Merivale, 28 February 1853.
- 21 PAC, RG8, Series C, Vol. 61, pp. 264-66, Butler (for Byham) to Respective Officers, Montreal, 17 March 1853.
- 22 Extract from report to committee of executive council, 13 May 1853, printed in Canada (Province). *Legislative Assembly, Journals of the House of Assembly*, 4 June 1853.
- 23 PAC, RG8, Series C, Vol. 61, pp. 302-05, Elliott to Respective Officers, 19 June 1854.
- 24 PAC, WO1, Vol. 567, fols. 109-10, Butler to Merivale, 23 June 1853.
- 25 *Ibid.*, fols. 267-68, Butler to Trevelyan, 28 October 1853.

- 26 The provincial government was also given some of the machinery used in maintaining the canals. The War Office granted them the machine frames for raising sluices, the valves for the sluices, the wheels for the gates and the rack wheels for machinery. Other stores at Bytown were either sold or returned to Kingston or Montreal. PAC, RG8, Series C, Vol. 62, pp. 138-39, Respective Officers to military secretary, 27 March 1857.
- 27 The ordnance canals were placed under the Board of Works by an order-in-council, 3 March 1857. Canada. Department of Public Works, Annual Report 1867 (Ottawa, 1868), p. 51.
- 28 PAC, RG8, Series C, Vol. 470, pp. 151-52, copy of report of committee of executive council, 10 September 1856; PAC, RG12, A1, Vol. 463, pp. 4250-59, Coffin to provincial secretary, 30 December 1856. Coffin thus cut the yearly expense for salaries from £1,710 13s. 8d. currency to £435 3s. 4d. currency. The proposed salary for the superintending engineer was only £300 - £11 less than the salary of the clerk of the works under the ordnance and only £57 more than the former first clerk's salary.
- 29 In 1857, these officials were listed as receiving, respectively, \$1600, \$1000, \$730 and \$365. PAC, RG11, Series II, Vol. 384, p. 75, statement of establishment on the Rideau with expenses of stations and lockages, etc., for the year 1857. In 1861, the position of clerk was filled by Martin Carmen, that of foreman by Francis Abbott and that of messenger by Paul Cooper. PAC, RG11, Series III, Vol. 35, p. 51,898, Slater to Begly, secretary, Board of Works, 2 March 1861.
- 30 For illustrations of the board's determination to reduce expenditures by releasing labourers see PAC, RG11, Series II, Vol. 287, p. 27,844, Harper (for Begly) to Slater, 13 April 1859 and PAC, MG24, E2, Vol. 3, Slater to Johnstone, lockmaster at Davis, 5 May 1859.
- 31 Priorities were sometimes difficult to determine. In a letter of 27 October 1858, Begly pointed out to Slater that while the works must be kept in an efficient state of repair, public officials must bear in mind the necessity of spending as little public money as possible. PAC, RG11, Series II, Vol. 286, p. 26095, Begly to Slater, 27 October 1858.
- 32 Canada (Province). Department of Public Works, Annual Report 1858 (Toronto, 1859), pp. 12-13.
- 33 Ibid., Annual Report 1863 (Quebec, 1864), p. 24.
- 34 Ibid., Annual Report 1860 (Quebec, 1861), p. 21.
- 35 PAC, RG11, Series III, Vol. 36, p. 77284, Slater to Braun, 11 October 1865.
- 36 Canada (Province). Legislative Assembly, Report of Select Committee on Water in the Rideau (Quebec, 1865), p. 2. This concern for navigation on the Rideau was

shared by a group of citizens of Kingston. In 1866, they sent a petition to John A. Macdonald dealing with the problem of low water and the lack of adequate management of the water resources. They emphasized that failure to maintain navigation might have serious consequences and urged that measures be taken to ensure that the canal retain its value as a military communication. PAC, RG11, Series III, Vol. 36, p. 79,926, petition to Macdonald, 27 January 1866.

The Rideau in the New Dominion

- 1 See, for example, a circular on water control from superintending engineer Wise, 18 May 1873, in the record book kept by lockmaster Alfred Forster at Davis, PAC, MG24, E2, Vol. 3. More complete lock records may be found in PAC, RG43, B4(a), Vol. 1-204.
- 2 Ibid., Vol. 210, Wise to Bradley, departmental secretary, Department of Railways and Canals, 7 March 1889
- 3 Ibid., Vol. 211, Wise to Bradley, 8 July 1891.
- 4 Ibid., Vol. 217, Phillips to Butler, chief engineer and deputy minister, Department of Railways and Canals, 17 November 1905, recommending that the item be inserted in the estimates for next year. In 1911 this separate system was connected with the city exchange to provide better service. A telephone was also installed at Hartwell at this time. PAC, RG43 B4(a), Vol. 225, Phillips to McPherson, manager, Bell Telephone, Ottawa, 3 May 1911. A public pay telephone was installed at Chaffeys by the Elgin and Chaffey's Locks Telephone Company in 1908. PAC, RG43, B4(a), Vol. 221, Phillips to Jones, departmental secretary, 30 October 1908. The Leeds and Frontenac Rural Telephone Company installed a phone at Brewers Mills in 1910. PAC, RG43, B4(a), Vol. 223, Phillips to Bowden, chief engineer, 15 July 1910. Early in 1912, a phone was needed at the Smiths Falls office. PAC, RG43, B4(a), Vol. 225, Phillips to Lavoie, departmental purchasing agent, 6 December 1911.
- 5 PAC, RG11, Series III, Vol. 38, p. 19,870, memorial of mill owners, forwarders and manufacturers to the minister of public works (Hector Langevin), received 13 December 1871.
- 6 PAC, RG43, B4(a), Vol. 224, Phillips to Bowden, 30 November 1910. For a more complete discussion of the dams built in the watershed see Reservoir Dams in the Watershed, following.
- 7 Ibid., Vol. 206, resolution to the Senate, 14 June 1869.
- 8 Canada. Parliament. House of Commons, Debates (Ottawa, 1876), 1 April, p. 1003.
- 9 Ibid., 12 March 1877, pp. 623-28.
- 10 PAC, RG43, B4(a), Vol. 206, resolution of the Senate, 14 June 1869; Slater to Braun, departmental secretary,

20 October 1869.

- 11 PAC, RG11, Series III, Vol. 241, p. 10,499, Slater to Braun, 16 April 1870.
- 12 PAC, RG43, B4(a), Vol. 219, Phillips to Jones, 18 September 1907.
- 13 For Merrickville and Newboro see Canada. Department of Railways and Canals, Annual Report of the Minister of Railways and Canals for the past Fiscal Year from 1st July, 1895 to 30th June, 1896 (Ottawa, 1897), pp. 18-19. For the work at Kingston Mills see *ibid.*, Annual Report 1897 (Ottawa 1898), pp. 145-46.
- 14 PAC, RG43, B1(a), Vol. 243, p. 15,5017, Hall & Hall, Barristers and Solicitors, to Haggart, minister of Railways and Canals, 24 June 1895.
- 15 The petitions, dated during January, February and March of 1889, were both printed and handwritten. See PAC, RG43, B1(a), Vols. 235 and 236.
- 16 *Ibid.*, B4(a), Vol. 221, Phillips to Butler, 13 January 1909; Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 276; *ibid.*, Annual Report 1912 (Ottawa, 1912), p. 262.
- 17 PAC, RG43, B4(a), Vol. 210, Wise to William Bayes, Kingston, 20 January 1888. The work was done by Captain Scott of Kingston at a price of \$15 per buoy. *Ibid.*, Vol. 210, Wise to Carss, 7 February 1889. For an early description of the drowned lands see William H.G. Kingston, *Western Wanderings or A Pleasure Tour in the Canadas* (London: Chapman and Hall, 1856), Vol. 2, pp. 61-62.
- 18 PAC, RG43, B4(a), Vol. 212, Wise to Glenn, 1 June 1894.
- 19 Elmer J. Lake, *Chart of the Rideau Lakes Route between Kingston and Ottawa* (Kingston: E.J. Lake, 1911), 2nd ed., p. 14.
- 20 PAC, RG43, B4(a), Vol. 220, Phillips to Butler, 13 January 1908. The Department of Marine and Fisheries installed 40 small post lights through the drowned lands between Burritts Rapids and Smiths Falls. PAC, RG43, B4(a), Vol. 219, Phillips to Colonel F. Gordeau, deputy minister, Department of Marine and Fisheries, 23 May 1907; *ibid.*, Vol. 220, Phillips to Butler, 18 January 1908.
- 21 *Ibid.*, Vol. 220, Phillips to Butler, 9 April 1908. See *ibid.*, Vol. 230, Phillips to Jones, 3 August 1914, for discussion of complaints from two Montreal men - Piers Davison and William M. Birks - that because the buoys were not in place, they had run aground on an island between Burritts and Long Island and damaged their yachts. Phillips stated that the Department of Marine had contracted with a private individual to maintain the buoys in this area and should therefore be informed of the negligence of their contractor.
- 22 For installation of buoys in the Kingston Mills area by Captain Daniel Noonan of the Rideau Lakes Navigation Company see PAC, RG43, B4(a), Vol. 220, Phillips to

- Lt.-Col. W.P. Anderson, chief engineer, Department of Marine, 22 June 1908. See also *ibid.*, Vol. 223, Phillips to Peter Cavanagh, Perth, 16 May 1910, authorizing him to install 10 buoys between Perth and Beveridge as he had done the previous year.
- 23 PAC, RG43, B1(a), Vol. 234, p. 119,600, petition of forwarders, merchants et al., doing business at the canal basin, Ottawa, to the minister of Railways and Canals, 4 April 1888.
 - 24 *Ibid.*, Vol. 240, p. 138693, Wise to chief engineer [Toussaint Trudeau], 10 March 1892. The lights had an intensity of 2000 candle-power each. On an accompanying map, Wise indicated where the lamps would be placed - four beside the locks and six around the basin. Canada. Parliament. House of Commons, Debates (Ottawa, 1893), 3 March 1893, p. 1723.
 - 25 PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, chief engineer, 15 July 1904; same to same, 1 February, 1905. The charge for nightly patrolling and replacing the carbons in the lamps twice weekly was \$5 per week.
 - 26 *Ibid.*, Vol. 221, Phillips to Jones, 2 December 1908; *ibid.*, Vol. 226, Phillips to Campbell, deputy minister of Railways and Canals, 13 March 1912; Canada. Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 331.
 - 27 For discussion of the destruction of canals in the United States see Madeline Sadler Waggoner, *The Long Haul West. The Great Canal Era, 1817-1850* (New York: Putnam, [1958]), pp. 289ff.

Problems and Conflicts

- 1 Canada. Department of Railways and Canals, Annual Report 1881 (Ottawa, 1882), p. 125
- 2 PAC, RG11, Series III, Vol. 38, p. 22,598, petition from mill owners, merchants and farmers residing in the valley of the Gananoque River, received 3 May 1872. The conflict over the passage of water through the Morton Dam formed part of the demand to have the Gananoque River made navigable with a connection to the Rideau at Morton. For further discussion of the issue see Proposed Branch Canals, following.
- 3 PAC, RG11, Series III, Vol. 38, p. 25,042, report of William Kingsford on petition of millers et al. on the Gananoque, 5 September 1872.
- 4 PAC, RG43, B4(a), Vol. 213, Phillips to Fleming, 21 February 1895.
- 5 *Ibid.*, Vol. 216, Phillips to R.T. Walkem, K.C., Kingston, 3 December 1902. The water-power on the Cataraqui was leased at Brewers Mills, Washburn and Kingston Mills.
- 6 *Ibid.*, Vol. 206, Slater to Braun, 14 January 1870. For further discussion of the Manotick bulkhead see Structural Changes, 1832-1914, following.

- 7 See PAC, RG11, Series III, Vol. 238, p. 63,583, M.K. Dickinson and William McNaughton to chief commissioner of Public Works, 17 March 1863, with two enclosed letters from Dickinson to J.J.C. Abbott, MLA, specifying charges of Slater's incompetence. PAC, RG11, Series III, Vol. 37, p. 10,560, Slater to Braun, 21 April 1870. Although Dickinson's request for Slater's dismissal seems not to have been acted upon, the superintending engineer retired in 1872 before the normal age of retirement on the grounds of "failing health and energy." PAC, RG43, B4(a), Vol. 206, Slater to Braun, 12 September 1872.
- 8 PAC, RG11, Series III, Vol. 37, p. 10,628, Abbott to Slater, 25 April 1870; PAC, RG43, 84(a), Vol. 224, Phillips to Anglin, 28 December 1910.
- 9 PAC, RG11, Series III, Vol. 26, p. 4847, Slater to Braun, 6 October 1868. For further discussion of reservoirs in the watershed see Reservoir Dams in the Watershed, following.
- 10 PAC, RG43, 84(a), Vol. 225, Phillips to Jones, 21 July 1911; *ibid.*, Vol. 228, Phillips to White, minister of Finance, 12 September 1913. See also Phillips to Bowden, 5 February 1914 and *ibid.*, Vol. 229, same to same, 21 March 1914.
- 11 PAC, RG11, Series III, Vol. 35, p. 51,158, annual report, Rideau canal, 1860. He repeated his complaint of the navigational hazards presented by sawdust three years later; *ibid.*, Vol. 36, p. 67,873, annual report, Rideau Canal, 1863.
- 12 *Ibid.*, Vol. 35, p. 51,158, annual report, Rideau Canal, 1860; *ibid.*, Series VI, Vol. 10, pp. 270-71, Page to Braun, 11 October 1864; *ibid.*, Series III, Vol. 36, p. 71,558, Slater to Braun, 26 September 1864, and p. 71,917, Page to Braun, 11 October 1864.
- 13 Canada. Department of Public Works, General Report, 1867-1882 (Ottawa, 1883), App. 18, p. 595. "Report of the Commission appointed by Order-in-Council Dated 6th November 1871, To enquire into and report on the alleged obstruction of navigable streams and rivers in the province of Quebec and Ontario, by deals, edgings, sawdust and other refuse from saw mills; together with the Act 36 Vic., Chap. 65, entitled An Act for the better protection of Navigable Streams and Rivers."
- 14 *Ibid.*, p. 597.
- 15 PAC, RG11, Series III, Vol. 36, p. 4515, Slater to Braun, 31 August 1868. In contrast, he pointed out that although the mills at Brewers Mills did extensive business, no problem was created because the waste material was carted away and burned.
- 16 *Ibid.*, Vol. 37, p. 8136, Whitcher (Department of Marine and Fisheries) to Trudeau, 29 September 1869, with enclosed letters to mill owners and lockmasters. Letters were sent to Hiram Easton and a Mr. Erritt of Merrickville, Hezekiel Andrews of Nicholsons, Richard

Guest and Hugh Conn of Burritts, John and William Ward of Smiths Falls and M.K. Dickinson of Manotick.

- 17 PAC, RG43, B4(a), Vol. 278, canal records, Merrickville, 27 November 1874.
- 18 Ibid., Vol. 216, Phillips to Schreiber, 16 October 1901. In 1896, Phillips recommended that a channel be dredged at the millers' expense, as had been done in 1889; *ibid.*, Vol. 214, Phillips to Schreiber, 8 September 1896.
- 19 Ibid., Vol. 209, Wise to Bradley, 19 September 1884; Vol. 210, same to same, 19 June 1885.
- 20 Ibid., Vol. 210, Wise to Bradley, 11 May 1886.
- 21 Ibid., B1(a), Vol. 234, p. 119,272, minutes of meeting of the municipal council of Pittsburgh Township, 20 April 1888.
- 22 Ibid., Vol. 237, p. 127,992, Kirkpatrick to Macdonald, 28 January 1890, and p. 127,669, same to same, 17 February 1890.
- 23 Ibid., B4(a), Vol. 211, Wise to Kirkpatrick, 14 July 1890; *ibid.*, Wise to Bradley, 12 August 1890, and same to same, 16 August 1890.
- 24 Ibid., Vol. 211, Wise to Bradley, 9 December 1890.
- 25 Ibid., Wise to Bradley, 21 September 1891. Wise gave an itemized estimate of the costs:

500,000 cubic yards dredging	\$125,000
8,000 cubic yards dredging lockpit	2,000
12,000 cubic yards dredging open cut	3,000
1 lock complete	45,000
taking down and rebuilding lock	
Kingston Mills	10,000
granite rock excavation entrance to	
lock - Kingston Mills, 1,000 cubic yards	2,500
waste weir at cut	<u>2,000</u>
	\$189,500.
10% contingencies	<u>18,950</u>
	\$208,450
- 26 PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 19 June 1885, and same to same, 4 January 1886. In 1891, Wise had a search undertaken at the Dominion Archives to prove that By had intended the upper lock at Kingston Mills to have seven feet of water on the sill; *ibid.*, B1(a), Vol. 239, p. 136,413, information from Dominion Archives obtained by Charles Costin, August 1891.
- 27 Ibid., B4(a), Vol. 210, Wise to Bradley, 21 March 1889.
- 28 Ibid., Vol. 211, Wise to Wood, 21 March 1892. Wood was also Liberal-Conservative MPP for North Hastings.
- 29 Ibid., Wise to Schreiber, 12 January 1893 and Vol. 212, same to same, 21 February 1893. For sums paid out for drowned lands claims see Canada. Auditor General's Office, Annual Reports, 1886-98.
- 30 Ibid., Wise to Bradley, 30 April 1890.

- 31 Ibid., Vol.218, Phillips to George Taylor, MP, 23 July 1906
- 32 Ibid., Vol. 224, Phillips to Bowden, 25 January 1911.
- 33 Ibid., Vol 225, Phillips to Bowden, 8 September 1911.
- 34 Ibid., Vol. 229, Phillips to Jones, 16 March 1914. A "Petition of Right" is a legal device for seeking restitution of either real or personal property from the Crown. The document sets forth the rights that the petitioner claims controvert the rights of the Crown.
- 35 Canada. Parliament. House of Commons, Debates, 1 April 1876, p. 1003.
- 36 PAC, RG43, B2(a), Vol. 312, p. 8702, McNicoll to Graham, minister of Railways and Canals, 2 May 1910. McNicoll suggested that the flight of eight locks at Ottawa could be retained and a small amount of water allowed to flow over it to form "a very attractive water fall."
- 37 Ibid., Sands, city clerk, to minister of Railways and Canals, 27 May 1910; secretary, Kingston Board of Trade, to minister of Railways and Canals, 18 May 1910.
- 38 Ibid., memorial of deputation attending on Ottawa on the 8th day of December, 1910, in the interests of the Rideau Canal.
- 39 Ibid., McNicoll to Cochrane, 20 October 1911. McNicoll stated that the previous minister, G.P. Graham, had thought that the proposal had merit but believed that there would be considerable opposition to any change.
- 40 PAC, RG43, B4(a), Vol. 230, Phillips to Bowden, 21 December 1914.

New Directions for the Waterway

- 1 PAC, RG43, B4(a), Vol. 215, Phillips to Calvin Vary, Newark, New York, 11 February 1898. Phillips explained that this was the usual practice of American boat owners. Daniel Noonan was the president of the Rideau Lakes Navigation Company. The Kingston city directory for 1898 listed two Captain Donnellys - Captain John Donnelly, president of the Donnelly Salvage and Wrecking Company, and Captain Thomas Donnelly, a dominion steamboat inspector and examiner of masters and mates.
- 2 Ibid., Vol. 218, Phillips to Jones, 14 June 1906.
- 3 Ibid., Vol. 225, Phillips to G.C.W. Brundage, New York City, 30 June 1911. Lake's book went into a second edition in 1911 and a third in 1920.
- 4 Ibid., Vol. 222, Phillips to W.A. Anderson, 26 July 1909, informing him of the regulation since he was reported to have operated his motor boat at speeds of more than six miles per hour. See similar letters to Edgar Dey and C.E. McCuaig, both of Ottawa, 26 July 1909.
- 5 Ibid., Vol. 223, Phillips to Jones, 25 February 1910; Phillips to Edgar Dey, 24 June 1910, fining him \$20 for

exceeding the speed limit and informing him that if he does not pay, his boat will be seized until the fine is paid. See similar letters to John Sutherland, Jr., and W. Kenney, 24 June 1910. The Rideau Lakes Navigation Company and the Ottawa Forwarding Company were warned that if their vessels did not stop exceeding the six mile per hour speed limit, they too would be fined. Ibid., Vol. 223, Phillips to Noonan, Rideau Lakes Navigation Company, and to the Ottawa Forwarding Company, 28 June 1910.

- 6 Ibid., Vol. 225, specifications for lifebuoys, 3 June 1911. See also Phillips to Lavoie, 26 June 1911, and Phillips to Canadian Cork Cutting Company of Montreal, 12 December 1911. The lifebuoys were installed along the canal in 1912.
- 7 Ibid., Vol. 229, Phillips to Jones, 15 June 1914.
- 8 Ibid., Vol. 216, Phillips to Schreiber, 31 July 1902; Vol. 227, Phillips to Jones, 2 September 1912. Although all tolls had been abolished on the Rideau in 1903, let-passes were still issued for statistical purposes.
- 9 Ibid., Vol. 219, Phillips to Jones, 19 September 1907.
- 10 In May 1871, a number of lockmasters were threatened with arrest by local magistrates for operating the locks on Sunday. Lockmaster Johnston and his labourers at Merrickville were, in fact, fined one dollar each and told they would face heavier fines if they continued to work on Sunday. Ibid., Vol. 206, Slater to Braun, 16 May 1871. Slater issued a general order on 24 June 1871, closing the locks on Sundays except for passage of the mail and works of charity; PAC, MG24, E2, Vol. 3.
- 11 Canada. Department of Railways and Canals, Annual Report 1908 (Ottawa, 1909), p. 178; PAC, RG43, B4(a), Vol. 229, Phillips to Reid, acting minister of Railways and Canals, 25 April 1914; Vol. 230, Phillips to Thomas V. Lyons, Ottawa, 15 July 1914.
- 12 Ibid., Vol. 230, Phillips to Yates, secretary to the minister of Railways and Canals, 5 August 1914.
- 13 Ibid., Vol. 213, Phillips to Schreiber, 11 October 1895. In 1886, lockmaster Forster of Davis was reported to be building a boarding house for tourists; *ibid.*, Vol. 210, Wise to Forster, 14 June 1886.
- 14 Ibid., B1(a), Vol. 248, p. 179,541, George E. Kidd, barrister, to Schreiber, 12 September 1900. In 1914, Phillips predicted that completion of the Canadian Northern Railway station at Chaffeys would result in a greater influx of tourists. Canada. Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 335.
- 15 PAC, RG43, B4(a), Vol. 214, Phillips to Schreiber, 2 June 1897, and Phillips to Richey, lockmaster at Smiths Falls, 5 October 1897, transmitting lease for the Horticultural Society.

- 16 Canada. Department of Railways and Canals, Annual Report 1908 (Ottawa, 1909), p. 176; PAC, RG43, B4(a), Vol. 229, Phillips to Reid, acting minister of Railways and Canals, 4 May 1914, and Phillips to Cranstoun, lockmaster at Merrickville, 6 May 1914.
- 17 Ottawa Improvement Commission, Special Report of the Ottawa Improvement Commission from its inception in 1899 to March 31st, 1912 (Ottawa: n.p., 1914), p. 7.
- 18 Frederick G. Todd, "Preliminary Report to the Ottawa Improvement Commission" in Ottawa Improvement Commission, Report and Correspondence of the Ottawa Improvement Commission relating to the Improvement and Beautifying of Ottawa (Ottawa: King's Printer, 1912), p. 31.
- 19 Meredith to Borden, 7 February 1912, in *ibid.*, pp. 38-39.
- 20 PAC, RG43, B4(a), Vol. 208, Wise to Braun, 11 December 1876; Vol. 227, Phillips to Jones, 8 February 1913.
- 21 *Ibid.*, Vol. 212, Wise to Head, county constable, 20 June 1893. See also Wise to the mayor of Ottawa, 20 June 1893, urging him to place a plain-clothes patrolman on duty along the banks to prevent nude bathing.

Reservoir Dams in the Watershed

- 1 Canada. Department of Railways and Canals, Annual Report 1912 (Ottawa, 1912), p. 256.
- 2 PAC, RG11, Series III, Vol. 36, p. 81,543, Slater to Braun, 28 July 1866.
- 3 *Ibid.*, p. 84,296, annual report, Rideau Canal, 1866.
- 4 *Ibid.*, p. 4748, Slater to Braun, 6 October 1868; Vol. 37, p. 11,035, municipal council of Bedford Township to the minister of public works, 17 May 1870. Korry was employed by the government to regulate the flow of water through the dam.
- 5 *Ibid.*, Vol. 243, p. 35,838, Wise to Braun, 21 October 1873.
- 6 *Ibid.*, Vol. 333, p. 52,466, Wise to Braun, 4 August 1875.
- 7 PAC, RG43, B4(a), Vol. 207, Wise to Braun, 9 August 1875.
- 8 *Ibid.*, Wise to Korry, 4 November 1875, authorizing him to repair Eagle Lake Dam at a cost of not more than \$250.
- 9 *Ibid.*, Vol. 213, Phillips to Schreiber, 27 June 1895.
- 10 In 1914, Phillips stated that he had been unable to discover when the dam had been destroyed but "it has not been in existence for the last thirty-five or forty years;" *ibid.*, Vol. 230, Phillips to Bowden, 26 October 1914.
- 11 *Ibid.*, Phillips to Jones, 19 November 1914; Phillips to Shannon, 9 January 1915.

- 12 PAC, RG11, Series III, Vol. 333, p. 58,231, Tett to Jones, 22 March 1876, enclosed in Jones to MacKenzie, 24 March 1876.
- 13 Ibid., Vol. 243, p. 35,838, Wise to Braun, 21 October 1873.
- 14 Ibid., Vol. 722, p. 32,990, Braun to Wise, 29 November 1875.
- 15 Ibid., Vol. 333, p. 58,231, Tett to Jones, 22 March 1876, enclosed in Jones to MacKenzie, 24 March 1876. The Tett reiterated these arguments in a letter to secretary Braun, adding that removal of the dam would also injure the Gananoque millers by reducing the supply of water to the Rideau. Ibid., Vol. 333, p. 58,464, J.P. Tett & Bros. to Braun, 3 April 1876.
- 16 Ibid., p. 56,575, Wise to Braun, 17 January 1876.
- 17 Ibid., p. 58,462, Wise to Braun, 5 April 1876; Vol. 334, 60,755, same to same, 18 July 1876.
- 18 PAC, RG43, B4(a), Vol. 208, Wise to Braun, 14 August 1876. An anonymous letter in the Tett papers indicates the extent of local feeling against reconstruction of the Devil Lake Dam. Postmarked in August 1876, the letter stated "M Tate [sic] you need not put a damb [sic] there we will tare [sic] it away if glycerene [sic] quicksilver powder axes or saws etc will do for we are the boys that fears no noise." Queen's University Archives, Tett Papers, T.C. 15, anonymous letter to Tett.
- 19 Canada. Parliament. House of Commons, Debates, 12 March 1877, pp. 624-27.
- 20 PAC, RG43, B1(a), Vol. 227, p. 86,497, Wise to Braun, 5 January 1880; PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 21 December 1885.
- 21 PAC, RG43, B4(a), Vol. 209, Wise to Bradley, 19 September 1884.
- 22 Ibid., Vol. 210, Wise to Hunter, 31 October 1885; Tett to Wise, 10 February 1886; Wise to Bradley, 29 March 1886.
- 23 Ibid., Vol. 210, Wise to Bradley, 9 May 1889.
- 24 Ibid., Forster to Wise, 5 May 1889 enclosed in Wise to Bradley, 9 May 1889.
- 25 Ibid., Vol. 211, Wise to Bradley, 15 July 1890.
- 26 Ibid., Wise to Bradley, 16 September 1890. O'Brien had sued for \$2000 damages for false arrest.
- 27 Ibid., Vol. 224, Phillips to Bowden, 30 November 1910.
- 28 Ibid., Vol. 206, Slater to Braun, 11 November 1872; Canada. Department of Railways and Canals, Annual Report 1889 (Ottawa, 1890), p. 116.
- 29 PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 9 May 1889; Forster to Wise, 5 May 1889.
- 30 In 1910, Phillips stated merely that the dam at Hart Lake, like those at Devil and Rock lakes, had been destroyed because it had caused extensive flooding. He urged the reconstruction of all three structures. Ibid., Vol. 224, Phillips to Bowden, 30 November 1910.

- 31 Ibid., Vol. 21U, Wise to Bradley, 13 February 1889.
- 32 Ibid., Wise to Adams, 1 March 1889. The cost of the dam was \$1500. PAC, RG43, B4(a), Vol. 210, same to same, 5 March 1889.
- 33 There appear to have been some threats against even this dam, since in 1902 Phillips reported that because of attempts to destroy the structure, he had placed a local resident in charge of it. Canada. Department of Railways and Canals, Annual Report 1902 (Ottawa, 1903), p. 174. After 1910, conflict arose between the department and H.A. Derbyshire, owner of a small mill dam below the government structure, over his right to withhold water when the government wished it run down to the Rideau. See preceding Problems and Conflicts.

Proposed Branch Canals

- 1 PAC, RG11, Series III, Vol. 38, p. 22,598, petition from mill owners, merchants and farmers residing in the valley of the Gananoque River, received by Department of Public Works, 3 May 1872.
- 2 PAC, RG43, B1(a), Vol. 227, p. 87,214, petition of 26 merchants and residents of Perth and Lanark County to John Haggart, MP, 27 March 1880.
- 3 PAC, RG11, Series III, Vol. 38, p. 22,598, petition from Gananoque mill owners et al., received 3 May 1872.
- 4 Ibid., p. 25,042, report of William Kingsford, 5 September 1872. This figure included a lock leading into Charleston Lake for a further 16 miles of navigable waterway. For conflict with the Gananoque millers see Problems and Conflicts.
- 5 PAC, RG43, B4(a), Vol. 209, Wise to Bradley, 11 February 1884.
- 6 Canada. Parliament. House of Commons, Debates, 11 July 1885, pp. 3312-13.
- 7 PAC, RG43, B4(a), Vol. 210, Byers, president, Gananoque Water-Power Company, to Pope, acting minister of Railways and Canals, 15 August 1885.
- 8 Ibid., Wise to Bradley, 7 December 1885.
- 9 Ibid., Wise to Bradley, 12 January 1887.
- 10 Ibid., Vol. 224, Phillips to Bowden, 24 February 1911.
- 11 Ibid., Vol. 209, Wise to Bradley, 19 April 1883.
- 12 Ibid., Wise to Bradley, February [no day given] 1884.
- 13 For petition and newspaper accounts of meetings in Kingston and Desert Lake during 1884 see PAC, RG43, B1(a), Vol. 231, p. 106,751, mayor of Kingston to Pope, 13 March 1885.
- 14 Ibid., B4(a), Vol. 217, Phillips to Schreiber, 31 August 1903. For itemization of this cost see also same to same, 12 September 1903.
- 15 Ibid., Phillips to Schreiber, 5 December 1904.
- 16 Ibid., Vol. 209, Wise to Bradley, 26 February 1883.
- 17 Ibid., Vol. 220, Phillips to Butler, 19 February 1908.

- 18 Ibid., Vol. 228, Phillips to Jones, 30 August 1913.
- 19 Ibid., B1(a), Vol. 243, p. 156,213, Wood, government valuator, to Haggart, minister of Railways and Canals, 14 September 1895. For a description of the earlier Tay canal see Canada. Department of Railways and Canals, Annual Report 1882 (Ottawa, 1883), p. 119ff.
- 20 PAC, RG43, B1(a), Vol. 227, p. 87,294, petition of 26 merchants and residents of Perth and Lanark County to Haggart, 27 March 1880.
- 21 Ibid., Vol. 228, p. 92,544, Wise to Braun, 6 September 1881. For Wise's report on the preliminary survey see *ibid.*, B2(a), Vol. 303, p. 8318, same to same, 6 October 1880.
- 22 The Beveridge Bay route was estimated at \$132,660 and the Tay route at \$132,450. Although more dredging was required on the Beveridge Bay line, reconstruction of locks on the Tay would necessitate the purchase of mills at all four lock sites. PAC, RG43, B4(a), Vol. 209, Wise to Braun, 3 February 1882.
- 23 Ibid., 81(a), Vol. 228, p. 96,098, petition of ratepayers of Elmsley Township to Charles Tupper, minister of Railways and Canals, 2 September 1882.
- 24 Ibid., Vol. 229, p. 99,832, Wise to Bradley, 20 June 1883.
- 25 Ibid., B4(a), Vol. 280, diary of work on Tay branch.
- 26 Ibid., Vol. 210, Wise to Bradley, 27 September 1886; Canada. Department of Railways and Canals, Annual Report 1887 (Ottawa, 1888), p. 127.
- 27 Canada. Department of Railways and Canals, Annual Report 1889 (Ottawa, 1890), p. 119.
- 28 PAC, RG43, B4(a), Vol. 210, copy of report of committee of privy council, 24 December 1884.
- 29 Ibid., Vol. 213, Wise to Manning & Co., 12 July 1887.
- 30 Ibid., 81(a), Vol. 233, p. 117,917, Page to Pope, minister of Railways and Canals, 8 December 1887, announcing arbitration to begin 13 December. According to the Public Accounts for the years 1884-89, A.F. Manning & Co. was paid a total of \$297,662 for work done on contract on the Tay.
- 31 Ibid., Vol. 239, p. 136,399, William Davis & Sons to Trudeau, 30 September 1891.
- 32 Ibid., Vol. 241, p. 140,768, Shanly to Trudeau, 27 July 1892.
- 33 Canada. Auditor General's Office, Annual Report 1897 (Ottawa, 1898), p. R-12. The auditor general's reports for 1889 and 1890 indicate that Davis had previously been paid \$51,412 for contract work.
- 34 PAC, RG43, B1(a), Vol. 239, p. 135,667, Wise to Mackenzie Bowell, acting minister of Railways and Canals, 10 August 1891.
- 35 Ibid., Vol. 238, p. 131,707, Wise to Bradley, 10 November 1890, with covering authorization from deputy minister Toussaint Trudeau. The extension was estimated to cost \$21,700.

- 36 Ibid., Vol. 239, p. 135,011, resolution of town council of Perth, 23 June 1891.
- 37 Haggart was first elected in 1872 and won every election thereafter until his death in 1913. Taylor resigned to permit the minister of Finance, William T. White, to enter the commons as MP for Leeds. Taylor was subsequently rewarded with a senate appointment.

Structural Changes, 1832-1914

- 1 All succeeding references to repairs in 1833 come from PAC, W044, Vol. 21, fols. 114-39, "Report and Estimates of the Works and Repairs Proposed to be carried on in the Royal Engineers Department, at the Rideau Canal, in the year 1833."
- 2 Canada. Department of Railways and Canals, Annual Report 1899 (Ottawa, 1900), p. 214; *ibid.*, Annual Report 1902 (Ottawa, 1903), p. 170. The government quarry at Elgin was also known as "Stanton's" quarry. In 1899, superintending engineer Phillips commented that it had provided the stone of which the locks from The Narrows to Jones Falls had originally been built. PAC, RG43, B4(a), Vol. 215, Phillips to Fredenburg, 27 May 1899. About 1908, canal officials began to use stone from a quarry near Westport after the Elgin quarry had been exhausted. Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 275.
- 3 Canada. Department of Railways and Canals, Annual Report 1895 (Ottawa, 1896), p. 150.
- 4 See, for example, PAC, RG11, Series III, Vol. 26, p. 71,887, petition of inhabitants of Ottawa, 3 October 1864; p. 76,552, petition of same to commissioner of Crown lands, 23 August 1865; and p. 79,231, petition of a committee representing citizens of Ottawa to the commissioner of public works, 1 March 1866.
- 5 Ibid., Vol. 718, p. 17,049, memo of Langevin to the privy council, 6 November 1872.
- 6 PAC, RG43, B4(a), Vol. 208, Wise to Braun, 4 September 1876; Wise to Braun, 9 October 1877.
- 7 Canada. Department of Railways and Canals, Annual Report 1892 (Ottawa, 1893), p. 138. The dry dock had first been suggested in 1862 by the miller M.K. Dickinson. See PAC, RG11, Series III, Vol. 35, p. 62,387, Dickinson to Slater, 29 November 1862, and Slater to Trudeau, 24 December 1862. In the annual report for the year ending 30 June 1893, Wise stated that there was a constant demand for the dry dock and since the opening of navigation it had been occupied 56 times. Canada. Department of Railways and Canals, Annual Report 1893 (Ottawa, 1894), p. 163.
- 8 PAC, RG43, B4(a), Vol. 211, Wise to Bradley, November 1890; Canada. Department of Railways and

- Canals, Annual Report 1892 (Ottawa, 1893), p. 138; *ibid.*, Annual Report 1890 (Ottawa, 1891), p. 118.
- 9 Canada. Department of Railways and Canals, Annual Report 1896 (Ottawa, 1897), p. 116. In 1899, Phillips advocated that the east end be filled in since it was no longer navigable and the stagnant water created by the railway embankment across it constituted a hazard to public health. PAC, RG43, B4(a), Vol. 215, Phillips to Schreiber, 5 September 1899.
 - 10 PAC, RG43, B4(a), Vol. 212, Wise to Schreiber, 31 October 1893.
 - 11 Canada. Department of Railways and Canals, Annual Report 1894 (Ottawa, 1895), p. 154; *ibid.*, Annual Report 1895 (Ottawa, 1896), p. 150.
 - 12 *Ibid.*, Annual Report 1915 (Ottawa, 1916), p. 322.
 - 13 Ottawa Improvement Commission, Special Report of the Ottawa Improvement Commission from its inception in 1899 to March 31st, 1912 (Ottawa: n.p., 1914), pp. 10-11.
 - 14 PAC, RG43, B4(a), Vol. 229, Phillips to Yates, secretary to the minister of Railways and Canals, 18 April 1914.
 - 15 Ottawa Journal, 23 July 1912, p. 1; PAC, RG43, B4(a), Vol. 226, Phillips to Bowden, 24 July 1912.
 - 16 Canada. Department of Railways and Canals, Annual Report 1903 (Ottawa, 1904), p. 182. In a letter to Schreiber, Phillips explained that when the frost had come out in the spring of 1903, the upper wing walls overhung so badly that they had to be rebuilt before the new coping stones could be set. PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 4 December 1903; Canada. Department of Railways and Canals, Annual Report 1904 (Ottawa, 1905), p. 208.
 - 17 Canada. Department of Railways and Canals, Annual Report 1912 (Ottawa, 1912), p. 258; *ibid.*, Annual Report 1913 (Ottawa, 1914), p. 307.
 - 18 *Ibid.*, Annual Report 1899 (Ottawa, 1900), p. 214; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 331.
 - 19 *Ibid.*, Annual Report 1895 (Ottawa, 1896), p. 150; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 173.
 - 20 PAC, W044, Vol. 16, ff. 291-93, Lt.-Col. John Oldfield, CRE, Canada, to the inspector-general of fortifications, 1 August 1841.
 - 21 PAC, RG11, Series III, Vol. 35, p. 58,355, Slater to Trudeau, 19 April 1862.
 - 22 *Ibid.*, p. 58,534, Slater to Trudeau, 28 April 1862; p. 58,826, Page to Trudeau, 16 May 1862. See also p. 59,067 for specifications for repairs ordering that the work be done by 25 July 1862 and p. 58,965, order-in-council authorizing work, 27 May 1862.
 - 23 *Ibid.*, Vol. 36, p. 71,557, Slater to Braun, 27 September 1864. The total cost of this repair was slightly over \$400.

- 24 Ibid., p. 75,924, annual report, Board of Works, 1865.
- 25 PAC, RG43, B4(a), Vol. 206, Slater to Braun, 2 May 1868; same to same, 7 October 1868.
- 26 Canada. Department of Railways and Canals, Annual Report 1901 (Ottawa, 1902), p. 239; PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 14 October 1901. The estimated cost of reconstruction was \$1500. Canada. Department of Railways and Canals, Annual Report 1905 (Ottawa, 1906), p. 202; PAC, RG43, B4(a), Vol. 216, Phillips to Butler, 12 September 1906. The estimated cost of rebuilding the sill was \$1000.
- 27 Ibid., Vol. 206, Slater to Braun, 19 July 1870; Vol. 208, Wise to Braun, 10 July 1876. See also Vol. 206, Slater to Braun, 11 November 1872, advocating a new design for the bulkhead to enable spring runoff to be passed more easily, and Vol. 207, Wise to Braun, 10 July 1873, pointing out that the bulkhead was in a dangerous condition and in need of rebuilding.
- 28 Ibid., Vol. 208, Wise to Braun, 9 October 1877.
- 29 Ibid., Vol. 210, Wise to Bradley, 23 April 1885. He estimated the cost of repairs at between \$3000 and \$4000. Canada. Department of Railways and Canals, Annual Report 1885 (Ottawa, 1886), p. 131.
- 30 PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 24 June 1885; same to same, 20 September 1886. By January 1886, the repairs at Hogsback had cost \$6194.88 with an expenditure of \$2015 for the dimension timber required at both Hogsback and Long Island. Wise estimated that a further expenditure of \$2376.57 would be needed to complete the repairs at the two stations. Neither of these latter figures indicated the cost at the individual stations. PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 26 January 1886.
- 31 Ibid., B1(a), Vol. 238, p. 134,125 report of R.C. Douglas on break at Hogsback, 22 April 1891.
- 32 Ibid., B4(a), Vol. 211, Wise to Bradley, 14 April 1891.
- 33 Ibid., Vol. 211, Wise to Bradley, 15 April 1891. The proposed rock excavation was estimated at \$13,500 and the construction of a bulkhead in the flat dam at \$2000.
- 34 Canada. Department of Railways and Canals, Annual Report 1892 (Ottawa, 1893), p. 138. To save money, the width of the channel excavated in the rock was decreased from 40 to 20 feet, saving approximately 4000 cubic yards of excavation and nearly \$5000. PAC, RG43, B4(a), Vol. 211, Wise to Bradley, 29 June 1891.
- 35 Canada. Department of Railways and Canals, Annual Report 1893 (Ottawa, 1894), p. 162. This new crossing was urgently needed since none existed between Billings Bridge and Manotick, a distance of more than ten miles. In July 1891, a group of ratepayers of Carleton County, made up of the MPP, the warden of the county and 14 others, had petitioned for a means of crossing the bywash at Hogsback. PAC, RG43, B1(a), Vol. 239,

- p.135,428, memorial of ratepayers of Carleton County to minister of Railways and Canals, received 21 July 1891. See Canada. Auditor General's Office, Annual Reports, 1892-94, for payment of \$15,999.20 (1892, p. C-110), \$2220.75 (1893, p. C-134), \$1430.41 (1894, p. Q-25).
- 36 Canada. Department of Railways and Canals, Annual Report 1898 (Ottawa, 1899), p. 146; *ibid.*, Annual Report 1910 (Ottawa, 1910), p. 270; *ibid.*, Annual Report 1903 (Ottawa, 1904), p. 182.
 - 37 *Ibid.*, Annual Report 1908 (Ottawa, 1909), p. 174; PAC, RG43, B4(a), Vol. 219, Phillips to Jones, 17 September 1907. Phillips estimated that the apron would cost \$16,000 but stated that the structure would last for many years.
 - 38 *Ibid.*, Annual Report 1910 (Ottawa, 1910), p. 270; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 332.
 - 39 PAC, RG43, B4(a), Vol. 223, Phillips to Bowden, 16 May 1910; Canada. Department of Railways and Canals, Annual Report 1911 (Ottawa, 1911), p. 30.
 - 40 Canada. Department of Railways and Canals, Annual Report 1906 (Ottawa, 1906), p. 186.
 - 41 PAC, RG43, B4(a), Vol. 209, Wise to Bradley, 27 December 1884, with sketch of station showing 350-footlong flat dam.
 - 42 PAC, W044, Vol. 16, ff. 312-17, repairs for floods 1847. The total cost of the repairs at Black Rapids was £369 1/2s. 1/2d.
 - 43 PAC, RG11, Series III, Vol. 35, p. 59,487, Page to Trudeau, 30 June 1862; p. 62,582, annual report, Rideau Canal, 1862.
 - 44 Canada. Department of Railways and Canals, Annual Report 1888 (Ottawa, 1889), p. 141; *ibid.*, Annual Report 1897 (Ottawa, 1898), p. 143; *ibid.*, Annual Report 1899 (Ottawa, 1900), p. 215; *ibid.*, Annual Report 1900 (Ottawa, 1901), p. 206. In 1907, Phillips stated that the flat dam was 300 feet long. PAC, RG43, B4(a), Vol. 219, Phillips to Bowden, 23 November 1907.
 - 45 Canada. Department of Railways and Canals, Annual Report 1906 (Ottawa, 1906), p. 186. See Black Rapids record book, PAC, RG43, B4(a), Vol. 8, for checklist of man-days spent in February 1906 for work on the dam. Seventeen men were employed throughout the month.
 - 46 PAC, RG43, B4(a), Vol. 221, Phillips to Jones, 2 October 1908. Phillips estimated the cost of partial rebuilding at \$12,500.
 - 47 *Ibid.*, Phillips to Butler, 12 January 1909. See also same to same, 15 February 1909 stating that the planking should be completed by the end of the month. Canada. Department of Railways and Canals Annual Report 1909 (Ottawa, 1909), p. 259. In 1907, when Russell and Carleton counties had petitioned for a bridge across the Black Rapids Dam, Phillips had reported that the structure was not suitable since it was under from three to five feet of water every spring

- and had not been constructed strongly enough to support the weight of a bridge. PAC, RG43, B4(a), Vol. 219, Phillips to Butler, 23 November 1907.
- 48 Ibid., Vol. 222, Phillips to the Reverend G.F. Bousfie¹⁰, 28 April 1909.
- 49 Ibid., Vol. 222, Phillips to Jones, 11 June 1909.
- 50 Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 271. Even with the breach only temporarily repaired, navigation did not resume until 18 June. PAC, RG43, 134(a), Vol. 222, Phillips to Butler, 18 June 1909.
- 51 PAC, RG43, B4(a), Vol. 222, Phillips to Bruley, 12 August 1909; Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 271. The plates - 102 in number - were bought from Drummond, McCall & Co. of Montreal and installed by the International Marine Signal Company of Ottawa.
- 52 Canada. Department of Railways and Canals, Annual Report 1911 (Ottawa, 1911), p. 30. For description of cribwork constructed to prevent erosion, see *ibid.*, Annual Report 1895 (Ottawa, 1896), p. 151 and *ibid.*, Annual Report 1896 (Ottawa, 1897), p. 117.
- 53 PAC, RG11, Series II, Vol. 287, p. 28736, Harper, (Board of Works) to Slater, 1 August 1859. See also PAC, RG11, Series III, Vol. 698, p. 29,616, Harper to James Goodwin, contractor, 31 October 1859 for payment of \$544 for rebuilding the mitre sill at Black Rapids, and Vol. 699, p. 32,685, Trudeau to Goodwin, 23 June 1860 for payment of \$866.58 for work on the sill at that station. PAC, RG43, B4(a), Vol. 207, Wise to Braun, 10 July 1873; Canada. Department of Railways and Canals, Annual Report 1913 (Ottawa, 1914), p. 307.
- 54 PAC, W055, Vol. 872, ff. 196-97, Nicolls to inspector- general of fortifications, 20 November 1835 and Bolton's report enclosed, in which he suggested that it would prove to be more expensive to repair than to build a new weir, particularly since a more suitable site was available. The weir was to be built of hemlock timber with white oak for the posts, sills and stoplogs. The dam was to be floored with hemlock and pine planking and filled with clay gravel.
- 55 PAC, W044, Vol. 16, ff. 54-55, Bolton to Nicolls, 30 June 1836; ff. 51-53, Nicolls to inspector-general of fortifications, 11 July 1836.
- 56 Ibid., fol. 56, Nicolls to inspector-general of fortifications, 22 August 1836.
- 57 Ibid., fol. 57, Nicolls to inspector-general of fortifications, 29 August 1836. The excess expenditure resulted from the inability to obtain stone locally. See *ibid.*, Vol. 16, ff. 59-65, Bolton's itemized expenditure. In an article on the work submitted to the publication, *Papers on Subjects Connected with the Duties of the Corps of Royal Engineers*, Bolton stated that the labour force on the project had included 6

- carpenters, 90 axe-men, 180 labourers, 2 double horse teams, 26 single horse carts and 22 yoke of oxen. Daniel Bolton, "Account of the Dam constructed across the Waste Channel at Long Island, on the Rideau Canal in 1836," in Great Britain. Army. Corps of Royal Engineers, Papers on Subjects Connected with the Duties of the Corps of Royal Engineers, Vol. 4 (1840), p. 134.
- 58 PAC, RG8, C Series, Vol. 59, pp. 372-73, Lieutenant- Colonel John Oldfield, CRE Canada, to Captain Brook Taylor, military secretary, 14 July 1841. See also PAC, W044, Vol. 16, ff. 291-93, Oldfield to inspector-general of fortifications, 1 August 1841.
 - 59 For itemization of costs see PAC, W044, Vol. 16, ff. 318-26, repairs for floods, 1847. In 1858, when the weir was again rebuilt, Slater described the damage in 1847 as eight openings each 15 feet wide. PAC, RG11, Series II, Vol. 384, p. 75, Slater to Begly, secretary, Board of Works, 16 June 1858.
 - 60 PAC, RG11, Series II, Vol. 384, p. 75, Page to Begly, 2 August 1858; Slater to Begly, 25 August 1858. The cost of these repairs was undoubtedly very high. One contractor received \$6636.70 for supplying the earth work and stone filling for the break. Ibid., Vol. 286, p. 26,391, Harper to Alexander MacIntosh, contractor, 22 November 1858.
 - 61 Ibid., Vol. 455, p. 40,422, Slater to Commissioners of Public Works, 22 March 1859. The stoplogs in the bulkhead were damaged by ice. Slater suggested that new piers and ice breakers be constructed before the next season to prevent damage in future years.
 - 62 Ibid., Series III, Vol. 35, p. 51,524, Slater to Trudeau, 2 February 1861; expenditure authorized, p. 51,630, Page to Trudeau, 6 February 1861; p. 53,127, Slater to Trudeau, 13 May 1861. He stated that above Long Island, the water level was five feet above normal.
 - 63 Ibid., Vol. 35, p. 58,419, Slater to Trudeau, 22 April 1862. The estimated cost for the replacement of the pier was \$1000. Ibid., Vol. 35, p. 59,487, Page to Trudeau, 30 June 1862.
 - 64 PAC, RG43, B4(a), Vol. 206, Slater to Braun, 13 July 1870. Davis was paid a total of \$797.90 for his work at the Long Island bulkhead and \$7345.46 for the repairs at Manotick. Ibid., Vol. 206, Slater to Braun, 25 July 1870.
 - 65 Ibid., Vol. 210, Wise to Bradley, 21 May 1885.
 - 66 Canada. Department of Railways and Canals, Annual Report 1885 (Ottawa, 1886), pp. 131-32. The exact cost of the repairs at Long Island is difficult to determine since the payroll accounts for the work at both Hogsback and Long Island were combined. In all, the pay lists for May and June totalled \$4364.79. PAC, RG43, B4(a), Vol. 210, Wise to Page, 6 July 1885. John Henry of Ottawa was paid \$1548.70 for earth and stone

- fill to close the break. Ibid., Vol. 210, Wise to Bradley, 26 January 1886.
- 67 Ibid., Wise to Bradley, 20 September 1886.
- 68 Ibid., Vol. 206, Slater to Braun, 9 December 1869. For conflict between Dickinson and Slater see preceding Problems and Conflicts.
- 69 PAC, RG43, B4(a), Vol. 206, Slater to Braun, 14 January 1870.
- 70 Canada. Department of Railways and Canals, Annual Report 1904 (Ottawa, 1905), p. 208. Rebuilding the bulkhead at the head of the locks was estimated to cost \$2200 while the Manotick structure was estimated at \$2500. PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 7 October 1902.
- 71 Canada. Department of Railways and Canals, Annual Report 1909 (Ottawa, 1909), p. 259. The repairs had cost approximately \$1500. PAC, RG43, B4(a), Vol. 221, Phillips to Jones, 10 October 1908.
- 72 Ibid., Vol. 217, Phillips to Schreiber, 5 December 1904; Canada. Department of Railways and Canals, Annual Report 1898 (Ottawa, 1899), p. 146; *ibid.*, Annual Report 1899 (Ottawa, 1900), p. 215; *ibid.*, Annual Report 1907 (Ottawa, 1907), p. 167; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 174.
- 73 PAC, RG11, Series III, Vol. 36, p. 67,873, annual report, Rideau Canal, 1863; Canada. Department of Railways and Canals, Annual Report 1897 (Ottawa, 1898), p. 143; *ibid.*, Annual Report 1901 (Ottawa, 1902), p. 239; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 332.
- 74 PAC, W044, Vol. 16, ff. 327-34, repairs for floods, 1847.
- 75 Canada. Department of Railways and Canals, Annual Report 1888 (Ottawa, 1889), p. 141; *ibid.*, Annual Report 1906 (Ottawa, 1906), p. 186; PAC, RG43, B4(a), Vol. 220, Phillips to Jones, 3 July 1908; Canada Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 332.
- 76 Canada. Department of Railways and Canals, Annual Report 1887 (Ottawa, 1888), p. 126; *ibid.*, Annual Report 1897 (Ottawa, 1898), p. 143; *ibid.*, Annual Report 1914 (Ottawa 1915), p. 332; *ibid.*, Annual Report 1911 (Ottawa, 1911), p. 30; *ibid.*, Annual Report 1912 (Ottawa, 1912), p. 258.
- 77 Ibid., Annual Report 1898 (Ottawa, 1899), p. 146; *ibid.*, Annual Report 1910 (Ottawa, 1910), p. 272.
- 78 Ibid., Annual Report 1910 (Ottawa, 1910), p. 272; *ibid.*, Annual Report 1913 (Ottawa, 1914), p. 308; *ibid.*, Annual Report 1910 (Ottawa, 1910), p. 272; PAC, RG43, B4(a), Vol. 207, Phillips to Schreiber, 4 December 1903; Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 323.
- 79 PAC, RG43, B4(a), Vol. 218, Phillips to Butler, 27 October 1906; Canada. Department of Railways and

- Canals, Annual Report 1911 (Ottawa, 1911), p. 31; *ibid.*, Annual Report 1913 (Ottawa, 1914), p. 308.
- 80 PAC, RG43, B2(a), Vol. 128, p. 6354, Phillips to Butler, 14 January 1908; p. 6354, Phillips to Campbell, minister of Railways and Canals, 28 September 1917.
- 81 PAC, WO44, Vol. 16, fols. 334-38, repairs for floods, 1847.
- 82 PAC, RG43, B4(a), Vol. 224, Phillips to Bowden, 21 December 1910; Canada. Department of Railways and Canals, Annual Report 1913 (Ottawa, 1914), p. 308; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 333.
- 83 *Ibid.*, Annual Report 1901 (Ottawa, 1902), p. 240; *ibid.*, Annual Report 1907 (Ottawa, 1907), p. 168. Phillips estimated the cost of rebuilding at nearly \$3500. PAC, RG43, B4(a), Vol. 217, Phillips to Butler, 22 November 1905.
- 84 Canada. Department of Railways and Canals, Annual Report 1902 (Ottawa, 1903), p. 172; *ibid.*, Annual Report 1903 (Ottawa, 1904), p. 183; *ibid.*, Annual Report 1904 (Ottawa, 1905), p. 209.
- 85 PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 23 May 1887; Canada. Department of Railways and Canals, Annual Report 1888 (Ottawa, 1889), p. 140; PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 5 December 1904. The repairs cost \$1500.
- 86 Canada. Department of Railways and Canals. Annual Report 1891 (Ottawa, 1892), p. 136; *ibid.*, Annual Report 1900 (Ottawa, 1901), p. 206; *ibid.*, Annual Report 1901 (Ottawa, 1902), p. 240; *ibid.*, Annual Report 1903 (Ottawa, 1904), p. 183; *ibid.*, Annual Report 1904 (Ottawa, 1905), p. 209; *ibid.*, Annual Report 1906 (Ottawa, 1906), p. 186; *ibid.*, Annual Report 1913 (Ottawa, 1914), pp. 308-9.
- 87 PAC, RG11, Series III, Vol. 39, p. 37,541, Wise to Braun, 2 January 1874; PAC, RG43, B4(a), Vol. 207, same to same, 8 July 1974; Canada. Department of Railways and Canals, Annual Report 1896 (Ottawa, 1897), p. 118. A sum of \$8000 had been voted by Parliament for deepening the cuts at Merrickville and Newboro. This proved to be insufficient and Phillips requested an additional \$3500 to complete the job. PAC, RG43, B4(a), Vol. 214, Phillips to Schreiber, 29 February 1896.
- 88 PAC, WO44, Vol. 16, fols. 291-93, Lt.-Col. John Oldfield inspector-general of fortifications, 1 August 1841; *ibid.*, Vol. 16, fols. 336-38, repairs for floods, 1847; PAC, RG11, Series III, Vol. 35, p. 62,582, annual report, Rideau Canal, 1862.
- 89 PAC, RG43, B4(a), Vol. 225, Phillips to Yates, secretary to minister of Railways and Canals, 3 January 1912; Canada. Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 333; PAC, RG43, B4(a), Vol. 229, Phillips to Cranstoun (lockmaster), 6 February 1914.

- 90 Ibid., Vol. 230, Phillips to Bowden, 28 July 1914; same to same, 1 August 1914; same to same, 6 August 1914.
- 91 Ibid., Vol. 230, Phillips to Meighen, resident engineer at Merrickville, 14 August 1914; Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 323.
- 92 Ibid., Annual Report 1983 (Ottawa, 1894), p. 162.
- 93 PAC, RG43, B4(a), Vol. 218, Phillips to Jones, 14 June 1906.
- 94 The first reference to the later name occurred in 1836 when George Adams, the government arbitrator for land claims, referred to "Maitlands rapids or Kilmarnock." PAC, WO44, Vol. 23, fol. 118, Adams to Bolton, 31 December 1836.
- 95 Ibid., Vol. 16, fols. 338-39, repairs for floods, 1847. The repairs to the station totalled £24 13s. 3d. PAC, RG43, B4(a), Vol. 207, Wise to Braun, 8 July 1874 with enclosed annual report; Canada. Department of Railways and Canals, Annual Report 1892 (Ottawa, 1893), p. 137; PAC, RG43, B4(a), Vol. 214, memo re. Kilmarnock bulkhead, 6 October 1897. Phillips estimated the cost at \$1000. Canada. Department of Railways and Canals, Annual Report 1899 (Ottawa, 1900), p. 216.
- 96 PAC, RG11, Series III, Vol. 36, p. 75,924, annual report, Rideau Canal, 1865; Canada. Department of Railways and Canals Annual Report 1898 (Ottawa, 1899), p. 147.
- 97 Ibid., Annual Report 1900 (Ottawa, 1901), p. 206.
- 98 Ibid., Annual Report 1910 (Ottawa, 1910), p. 273.
- 99 Ibid., Annual Report 1914 (Ottawa, 1915), p. 333.
- 100 Ibid., Annual Report 1897 (Ottawa, 1898), p. 144; Ibid., Annual Report 1914 (Ottawa, 1915), p. 333.
- 101 Ibid., Annual Report 1907 (Ottawa, 1907), p. 168.
- 102 PAC, WO44, Vol. 16, fols. 291-93, Lt.-Col. John Oldfield to inspector-general of fortifications, 1 August 1841; PAC, RG43, B4(a), Vol. 217, Phillips to Butler, 7 November 1905; Canada. Department of Railways and Canals, Annual Report 1906 (Ottawa, 1906), p. 187; *ibid.*, Annual Report 1912 (Ottawa, 1912), p. 259.
- 103 PAC, RG11, Series II, Vol. 254, p. 37,791, Robert Watson of the Brockville and Ottawa Railway Company to George Crawford, 22 July 1858, and Vol. 384, p. 75, Slater to Begly, 27 July 1858.
- 104 Ibid., Series III, Vol. 35, p. 62,582, annual report, Rideau Canal, 1862; PAC, RG43, B4(a), Vol. 206, Slater to Braun, 16 April 1868; Canada. Department of Railways and Canals, Annual Report 1893 (Ottawa, 1894), p. 162; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 175; PAC, RG43, B4(a), Vol. 224, repair estimates for 1911-12, 30 September 1910; Canada. Department of Railways and Canals, Annual Report 1912 (Ottawa, 1912), p. 259.

- 105 In 1895, the upper retaining dam was raised ten inches **to** eliminate the problems of steamers striking on the rock cut below Poonamalie. PAC, RG43, B4(a), Vol. 213, Phillips to Schreiber, 3 October 1895. The only large repairs to the masonry occurred in 1905 when the upper wing walls, hollow quoins and gate recesses which were badly overhung were rebuilt with stone from the government quarry at Elgin. Ibid., Vol. 217, Phillips to Schreiber, 5 December 1904; Canada. Department of Railways and Canals, Annual Report 1904 (Ottawa, 1905), p. 210.
- 106 PAC, RG43, B4(a), Vol. 207, Wise to Braun, 15 July 1875; Vol. 208, Wise to Witchin, commissioner of Fisheries, Ottawa, 12 November 1879. Canal officials undertook to ensure that no shavings escaped into the river below.
- 107 Canada. Department of Railways and Canals, Annual Report 1897 (Ottawa, 1898), p. 144. In 1894-95, an embankment 720 feet long had been constructed along the north side of Lombardy Road to prevent it from being flooded during the spring runoff. Ibid., Annual Report 1895 (Ottawa, 1896), p. 152.
- 108 Ibid., Annual Report 1906 (Ottawa, 1906), p. 187; *ibid.*, Annual Report 1907 (Ottawa, 1907), p. 168. The work was still continuing in 1910. Ibid., Annual Report 1910 (Ottawa, 1910), p. 273.
- 109 Ibid., Annual Report 1912 (Ottawa, 1912), p. 260; PAC, RG43, B4(a), Vol. 226, Phillips to Bowden, 10 July 1912; Canada. Department of Railways and Canals, Annual Report 1913 (Ottawa, 1914), p. 334.
- 110 PAC, RG43, B4(a), Vol. 221, Phillips to Butler, 15 January 1909; Phillips to lockmaster Foster, 28 January 1909.
- 111 Canada. Department of Railways and Canals, Annual Report 1889 (Ottawa, 1890), p. 117. The superintending engineer estimated the total cost of \$10,000. PAC, RG43, B4(a), Vol. 209, Wise to Bradley, 22 November 1883.
- 112 Canada. Department of Railways and Canals, Annual Report 1897 (Ottawa, 1898), p. 144. The old wooden swing bridge across the middle lock was not removed until 1897 when the bridge at the detached lock was opened for traffic. Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 273.
- 113 PAC, RG11, Series III, Vol. 36, p. 81,543, Slater to Braun, 28 July 1866. For further discussion of the problem of water supply see Reservoir Dams in the Watershed. The annual report for 1865 stated that the entrance to the canal from Big Rideau Lake had been dredged and that in an emergency, a foot of water could be drawn from the entire surface of the lake to improve the navigation downstream. PAC, RG11, Series III, Vol. 36, p. 75,924, annual report, Rideau Canal, 1865.

- 114 Ibid., Vol. 37, p. 6549, Slater to Braun, 1 May 1869; p. 6649, same to same (telegram), 11 May 1869; PAC, RG43, B4(a), Vol. 206, same to same, 1 July 1869. The break was repaired by William Richey at a cost of \$624.93. PAC, RG11, Series III, Vol. 37, p. 6759, Slater to Braun, 19 May 1869.
- 115 PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 19 April 1904.
- 116 Ibid., Phillips to Schreiber, 20 April 1904.
- 117 Canada. Department of Railways and Canals, Annual Report 1906 (Ottawa, 1906), p. 187; PAC, RG43, B4(a), Vol. 218, Phillips to Butler, 21 September 1906.
- 118 For necessity of dredging see PAC, WO55, Vol. 880, fols. 385-91, report on the Rideau Canal to the inspector-general of fortifications, 25 March 1846, and RG11, Series III, Vol. 36, p. 71,558, Slater to Braun, 26 September 1864.
- 119 PAC, RG43, B4(a), Vol. 221, Phillips to Butler, 1 February 1909; Phillips to Ryan, 3 February 1909. The stoplog bulkhead across the head of the cut enabled the water to be withdrawn to facilitate the blasting.
- 120 Canada. Department of Railways and Canals, Annual Report 1911 (Ottawa, 1911), p. 322; *ibid.*, Annual Report 1912 (Ottawa, 1912), p. 260; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 334.
- 121 *Ibid.*, Annual Report 1902 (Ottawa, 1903), p. 173; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 176; *ibid.*, Annual Report 1913 (Ottawa, 1914), p. 310.
- 122 PAC, RG11, Series III, Vol. 36, p. 67,873, annual report, Rideau Canal, 1863; PAC, RG43, B4(a), Vol. 210, Wise to Bradley, 20 September 1886; Canada. Department of Railways and Canals, Annual Report 1908 (Ottawa, 1909), p. 176.
- 123 PAC, WO55, Vol. 880, fols. 385-91, report on the Rideau to the inspector-general of fortifications, 25 March 1846; PAC, RG11, Series III, Vol. 36, p. 72,724, Slater to Braun, 7 December 1864. In the repairs required in 1866, cleaning out the cut (a total of 400 working days) was again recommended so it is possible that the work was not done until that year. PAC, RG11, Series III, Vol. 36, p. 78,992, repairs for 1866, 15 February 1866.
- 124 Canada. Department of Railways and Canals, Annual Report 1888 (Ottawa, 1889), p. 139; *ibid.*, Annual Report 1896 (Ottawa, 1897), p. 119.
- 125 PAC, RG43, B4(a), Vol. 208, Wise to Braun, 9 October 1877; same to same, 21 November 1877. Wise estimated the cost at around \$1500, provided the walls below the water line proved to be sound.
- 126 PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 30 October 1900; Canada. Department of Railways and Canals, Annual Report 1901 (Ottawa, 1902), p. 241; *ibid.*, Annual Report 1910 (Ottawa, 1910), p. 274. In the estimates for the year, Phillips had set the cost

- of rebuilding the walls at \$6000. PAC, RG43, B4(a), Vol. 222, Phillips to Jones, 31 May 1909.
- 127 Ibid., Vol. 211, Wise to Bradley, 18 September 1891; Canada. Department of Railways and Canals, Annual Report 1903 (Ottawa, 1904), p. 184.
 - 128 PAC, W055, Vol. 876, fols. 197-200, report and estimate for repairs on the Rideau, 2 February 1837; PAC, W044, Vol. 16, fols. 294-99, estimates for canal service, 1843-44, enclosed in inspector-general of fortifications to Byham, 4 November 1842. The cost of re-flooring the lock was £229 2s. 9-1/4d.
 - 129 Canada. Department of Railways and Canals, Annual Report 1887 (Ottawa, 1888), p. 126; *ibid.*, Annual Report 1889 (Ottawa, 1890), p. 117; *ibid.*, Annual Report 1896 (Ottawa, 1897), p. 119; *ibid.*, Annual Report 1898 (Ottawa, 1899), p. 148; *ibid.*, Annual Report 1907 (Ottawa, 1907), p. 169; *ibid.*, Annual Report 1915 (Ottawa, 1916), p. 325.
 - 130 PAC, W044, Vol. 15, fols. 408-12, Nicolls to inspector-general of fortifications, 11 September 1834.
 - 131 PAC, RG11, Series III, Vol. 36, p. 67,873, annual report, Rideau Canal, 1863; p. 84,296, annual report, Rideau Canal, 1866.
 - 132 PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 5 December 1904. He estimated the cost at \$600. In 1899, an attempt had been made to stop the leakage through the basin weir by sheeting the structure with pine planks. Canada. Department of Railways and Canals, Annual Report 1899 (Ottawa, 1900), p. 207; *ibid.*, Annual Report 1906 (Ottawa, 1906), p. 188.
 - 133 *Ibid.*, Annual Report 1896 (Ottawa, 1897), p. 119; *ibid.*, Annual Report 1898 (Ottawa, 1899), p. 148.
 - 134 PAC, RG11, Series III, Vol. 35, p. 51,158, annual report, Rideau Canal, 1860; PAC, RG43, B4(a), Vol. 207, Wise to Braun, 10 July 1873; Canada. Department of Railways and Canals, Annual Report 1911 (Ottawa, 1911), p. 33.
 - 135 PAC, W055, Vol. 875, fols. 377-78, Bolton to Oldfield, 9 June 1840.
 - 136 PAC, RG11, Series II, Vol. 384, p. 75, report of H.H. Killaly, 12 November 1853. Killaly estimated that the reconstruction would cost £2500 and would stop navigation for two months. PAC, RG11, Series II, Vol. 384, p. 75, Slater to Begly, 28 August 1858. Expenditure at Brewers Lower Mills in 1858 was confined to repairs to the lower sill of the lock. PAC, RG11, Series III, Vol. 35, p. 51,158, annual report, Rideau Canal, 1860. The cost of the work was \$2305. See also *ibid.*, Vol. 699, p. 31,414, Trudeau to Slater, 28 March 1860, in which the secretary ordered that unless absolutely necessary, the other walls were not to be rebuilt since the repairs to the wing wall would be sufficient to enable the lock to be worked.

- 137 Ibid., Vol. 35, p. 54,404, Slater to Trudeau, 6 August 1861.
- 138 Ibid., Series II, Vol. 384, p. 54,812, Slater to Trudeau, 2 September 1861; p. 54,955, same to same, 10 September 1861; p. 55,173, same to same, 24 September 1861.
- 139 Ibid., Series III, Vol. 35, p. 57,043, annual report, Rideau Canal, 1861.
- 140 PAC, RG43, B4(a), Vol. 206, Slater to Braun, 11 November 1872; Vol. 207, Wise to Braun, 8 July 1874.
- 141 Canada. Department of Railways and Canals, Annual Report 1905 (Ottawa, 1906), p. 205.
- 142 Ibid., Annual Report 1906 (Ottawa, 1906), pp. 188-89.
- 143 PAC, W055, Vol. 872, fols. 157-59, Nicolls to inspector-general of fortifications, 12 May 1835; PAC, RG11, Series III, Vol. 36, p. 71,558, Slater to Braun, 26 September 1864. Expenditure recommended on p. 71,917, Page to Braun, 11 October 1864. In 1862, the millers, Chaffey & Bros., had complained that the poor condition of the cut presented a hindrance to navigation. PAC, RG11, Series III, Vol. 703, p. 41,300, Trudeau to Slater, 13 June 1862.
- 144 PAC, W055, Vol. 870, fols. 125-26, Bolton to Nicolls, 18 July 1833; Vol. 876, fols. 197-200, report and estimate for repairs on Rideau Canal, 4 February 1837; PAC, RG43, B4(a), Vol. 206, Slater to Braun, 21 June 1872.
- 145 PAC, RG11, Series III, Vol. 38, p. 24,092, Slater to Braun, 9 July 1872.
- 146 PAC, RG43, B4(a), Vol. 178, Deane to Slater (telegram), 13 July 1872; Vol. 206, Slater to Braun, 26 July 1872; PAC, RG11, Series III, Vol. 38, p. 24,668, same to same, 12 August 1872; PAC, RG43, B4(a), Vol. 206, same to same, 11 November 1872. One contractor alone, William Davis, was paid \$3075.91. PAC, RG43, B4(a), Vol. 206, Slater to Braun, 12 September 1872.
- 147 Ibid., Vol. 178, memo by Joseph Deane, ca. 12 August 1872.
- 148 Canada. Department of Railways and Canals, Annual Report 1900 (Ottawa 1901), p. 208; *ibid.*, Annual Report 1902 (Ottawa, 1903), p. 175. Phillips had estimated the cost of this work at \$3000. PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 30 October 1900; Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 325.
- 149 PAC, RG43, B4(a), Vol. 221, Phillips to Jones, 2 October 1908. The cost was estimated at \$7500. Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 275.
- 150 Ibid., Annual Report 1899 (Ottawa, 1900), p. 217; *ibid.*, Annual Report 1904 (Ottawa, 1905), p. 210; *ibid.*, Annual Report 1910 (Ottawa, 1910), p. 274; *ibid.*, Annual Report 1911 (Ottawa, 1911), p. 32.

- 151 PAC, RG43, B4(a), Vol. 218, Phillips to Butler, 12 September 1906; Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 324.

Employment on the Rideau, 1832-1914

- 1 A canal order for 1845 informed the lockmasters that "As soon as the snow is gone and the frost will Permit the Locks and Works must be cleaned and dressed, the slope [?] made good – Dams repaired Gravel levelled and grass edged - the state of the works is a sure criterion of the Zeal and attention of the Lockmasters." PAC, RG43, B4(a), Vol. 28, Thomson to lockmasters, 17 March 1845.
- 2 PAC, W044, Vol. 16, fol. 415, memorandum on the qualifications of lockmasters enclosed in Elliott to Byham, 9 April 1842. A report on the Canadian canals submitted in 1840 had suggested that to get competent lockmasters, appointments should be made from England, ideally to "praiseworthy and confidential Non Commiss officers of the Royal Artillery or Sappers & Miners, who with families were desirous of settling in Canada." PAC, W044, Vol. 16, fol. 393, extract from report of commissioners on Canadian canals, 9 November 1840.
- 3 Ibid., fol. 417, memorandum of Seth Thomas Sr., 28 September 1842.
- 4 In fact, a report on the state of the canal in 1856 bears the marginal notation, "Most of [the lockmasters] utterly incapable from physical weakness and age." PAC, RG12, A1, Vol. 463, pp. 4250- 59, Coffin to provincial secretary, 30 December 1856.
- 5 PAC, RG8, C series, Vol. 62, pp. 84-86, Monsell to Respective Officers, 24 July 1856.
6 PAC, W044, Vol. 16, fol. 415, memorandum on qualifications of lockmasters enclosed in Elliott to Byham, 9 April 1842; PAC, RG11, Series II, Vol. 384, p. 75, statement of the establishment on the Rideau with expenses of stations and lockages, etc., for the year 1857.
- 7 Ibid., Series III, Vol. 35, p. 57,043, annual report, Rideau canal, 1861.
- 8 PAC, W044, Vol. 16, fols. 426-29, Respective Officers, Montreal, to Byham, 11 August 1846. A canal order of 11 September 1844 indicates that the lockmasters met with frequent verbal abuse. They were ordered to report such conduct with names of witnesses, and as well were cautioned to observe a "conciliatory manner in their intercourse with parties using the navigation, and to carefully abstain from speaking more than is absolutely necessary on such occasions or generally when in the execution of their duty." PAC, RG43, B4(a), Vol. 28.
- 9 PAC, W044, Vol. 16, fols. 438-39, Respective Officers, Montreal, to Byham, 22 December 1846. In 1856, a British traveller described the lockmasters as "old artillerymen, who come out in their undress uniforms to

open and shut the gates." W.H.G. Kingston, *Western Wanderings, Or, A Pleasure Tour in the Canadas* (London: Chapman and Hall, 1856), Vol. 2, p. 64.

- 10 The greatcoat cost about £1 6s. 3d., the cloth shell jacket £1, grey trousers 9s. 6d. and forage cap 3s. 8d. PAC, W044, Vol.16, fol. 439, Porrett to Byham, 16 March 1847. PAC, RG43, B4(a), Vol. 28, Ford to all lockmasters, 12 October 1848.
- 11 PAC, W044, Vol. 20, fols. 73-79, proposed establishment, Lt.-Col. John By [1831].
- 12 A statement of the labourers and traffic on the Rideau in 1841 stated that there were 31 permanent labourers and 39 temporary labourers employed that year. Of the permanent labourers, Bytown, Jones Falls and Kingston Mills had four each. All other stations, except Smiths Falls detached, had one permanent labourer. Five temporary labourers were employed at Long Island, four each at Bytown, Jones Falls and Kingston Mills, three each at Merrickville and Smiths Falls combined, two at Nicholsons and one each at all other stations except for Black Rapids and Edmunds where there were no labourers. Ibid., Vol. 16, fol. 411; Vol. 15, fols. 408-12, Nicolls to inspector-general of fortifications, 11 September 1834.
- 13 Ibid., fols. 395-96, petition of lock labourers, 6 July 1841. The accompanying letter from the CRE, Lt.-Col. John Oldfield, recommended the petition for favourable consideration. Ibid., fol. 394, Oldfield to inspector-general of fortifications, 10 August 1841.
- 14 Ibid., fols. 397-99, Thomas to master-general and Board of Ordnance, n.d.; fols. 401-2, Eaton to Byham, 22 November 1841.
- 15 Ibid., fol. 404, Elliott to Byham, 7 April 1842. Elliott suggested that two permanent labourers be stationed at Bytown, two to do duty at Hartwells, Hogsback and Black Rapids, one at Long Island, one at Burritts and Nicolson's, one at Clowes and Merrickville, one at Old Slys, Maitland, and Edmunds, two at Smiths Falls and First Rapids, one at The Narrows and The Isthmus, one at Chaffeys and Davis, two at Jones Falls, one at Brewers Upper Mills and Brewers Lower Mills and two at Kingston Mills.
- 16 Ibid., fols. 403-10, Elliott to Byham, 7 April 1842.
- 17 PAC, W055, Vol. 877, fols. 284-85, Butler (for Byham) to inspector-general of fortifications, 26 August 1842. Bolton's order of 21 November 1842 gave 30 November as the day upon which the temporary labourers and the surplus permanent labourers were to be discharged.

PAC, RG43, B4(a), Vol. 37.
- 18 See PAC, MG24, E2, Vol. 3, for canal orders issued 7 April 1852 which specified approximately 15 temporary labourers to be discharged. PAC, RG11, Series II, Vol. 384, p. 75, statement of establishment for 1857. Jones Falls and Kingston Mills had six temporary labourers

each, Bytown had five, Long Island, Nicholsons, Merrickville, and Smiths Falls combined had three each, Black Rapids, Burritts Rapids, Maitland, Edmunds, Old Slys, Davis and Brewers Upper and Lower Mills had two temporary labourers each. The remainder had only one each. The labourers now earned 4s. per diem. Because of the high cost of provisions, the executive council of the colony authorized the increase on 6 June 1854. On the need for the increase, see PAC, RG8, C series, Vol. 61, pp. 288-89, Monsell to Respective Officers, Montreal, 29 May 1854 and for the order informing the labourers of the increase, 20 June 1854, PAC, MG24, E2, Vol. 3.

- 19 PAC, RG43, B4(a), Vol. 42, canal orders, 18 November 1858; PAC, RG11, Series III, Vol. 35, p. 51,898, Slater to Begly, 2 March 1861. Bytown and Kingston Mills had four temporary labourers each, Merrickville and Jones Falls each had three, Long Island, Nicholsons and Smiths Falls combined had two each with the remainder of the stations manned by only one temporary labourer.
- 20 PAC, RG43, B4(a), Vol. 1, order re. employment, 5 December 1848. Permanent lock labourers were also required to be able to read and write. In 1847, John Sargent, who was illiterate, was appointed permanent labourer at Kingston Mills as a result of the favourable references he had received from lockmasters for whom he had worked. Canal officials made clear, however, that this was a special case since ordinarily the permanent labourers must be at least semi-educated. PAC, RG43, B4(a), Vol. 98, lockmaster's journal, canal order from Seth Thomas, Jr., Bytown, 15 November 1847.
- 21 Ibid., Vol. 1, canal orders, Respective Officers, Bytown, to lockmasters, 23 March 1849.
- 22 Broad was first suspended from his duties on 28 August 1840 and dismissed on 10 November 1840. Ibid., Vol. 98, lockmasters journal, canal orders to all lockmasters from Bolton. PAC, MG24, E2, Vol. 3, canal orders, 25 May 1849. Pasley subsequently intervened on Milliken's behalf and the labourer was notified that if lockmaster Thynne submitted a favourable report concerning him at the end of the season, he would be reinstated as the permanent labourer. PAC, RG43, B4(a), Vol. 1, notice from Respective Officers, Bytown, 30 June 1849. Ibid., Vol. 37, canal orders, 3 July 1841.
- 23 For list of lockmasters affected see PAC, RG11, Series III, Vol. 717, p. 11039, Braun to Slater, 3 July 1871. For confirmation of retirements see PAC, RG43, B4(a), Vol. 206, Slater to Braun, 21 July 1871.
- 24 Ibid., Vol. 208, Wise to Shepherd (lockmaster, Burritts Rapids), 22 December 1879, informing him that he must get a medical certificate to obtain his superannuation.

- 25 Ibid., Vol. 225, Phillips to Jones, 18 August 1911. Phillips described Newsome and his brother, who served as his labourer, as "diligent and attentive to their duties: - always on hand when required, and...both in the best of physical health."
- 26 Ibid., Vol. 209, Wise to Braun, 13 January 1882.
- 27 Ibid., Vol. 216, Phillips to R.T. Walkem, Kingston, 26 January 1903, and Phillips to C.E. Britton, Gananoque, 4 February 1903.
- 28 Ibid., Vol. 206, Slater to Braun, 24 January 1870; Vol. 212, Wise to Schreiber, 12 March 1894.
- 29 Ibid., Vol. 211, Wise to Trudeau, 16 October 1891.
- 30 Ibid., Vol. 223, Phillips to McKimm, 9 June 1910. Best was subsequently appointed on Pearson's recommendation in January 1912. For other recommendations of labourers see *ibid.*, Vol. 219, Phillips to Jones, 12 April 1907. In fact, none of Phillips' recommendations were accepted. The three men appointed had not previously been in the canal service.
- 31 For example, in 1887, William Dargavel was appointed to succeed John Johnston as lockmaster at Newboro on the recommendation of George Taylor, Conservative MP for South Leeds. F.T. Frost of Smiths Falls, Liberal MP from 1896 to 1900 and later a senator, was responsible for the appointments of Henry Hutton after the death of lockmaster Mills of Edmunds in 1897 and of John Foster after the retirement of William Richey of Smiths Falls combined in 1902. In 1901, Samuel Stuart succeeded Forster at Jones Falls on the recommendation of W.A. Lewis, defeated Liberal candidate for South Leeds.
- 32 Of the six main ridings bordering the waterway, one - South Lanark - remained Conservative throughout the period and South Leeds voted Liberal only once - between 1872 and 1874. Two others - Leeds-Grenville North and Frontenac - returned Conservative members except from 1896 to 1900 and Kingston voted Liberal from 1878 to 1887 and during Laurier's years in power. Ottawa City voted Conservative in times of Conservative government and split its vote between 1896 and 1911.
- 33 Ibid., Vol. 209, Wise to Bradley, 1 May 1883. Simmons did not, in fact, retire until 1894 when he was succeeded by Fleming. Ibid., Vol. 214, Phillips to W.H. Fredenburgh, Westport, 26 February 1897, asking for nominations to replace lockmaster Forster of Davis who was to be transferred to Jones Falls; *ibid.*, Vol. 216, Phillips to R.T. Walkem, Kingston, 26 January 1903.
- 34 The other four lockmasters temporarily laid off were Michael Mooney of The Narrows, Hugh Fleming of Chaffeys, William Glenn of Washburn and Robert Anglin of Kingston Mills.
- 35 Ibid., Vol. 243, p. 8791, Jones to Phillips, 17 April 1913.

- 36 For example, Samuel Stuart, appointed lockmaster of Jones Falls in 1901, had operated a tug-boat on the waterway and Henry McBroom, appointed to Washburn in 1903, was connected with the millers at that station.
- 37 For an unexplained reason, the pay of lockmaster Thomas Newman of Clowes was raised to 90 cents per diem in October 1872. PAC, RG11, Series III, Vol. 718, p. 16711, Braun to Slater, 11 October 1872. The two lockmasters had been awarded the higher salary as of 1 October 1872. Ibid., p. 16,391, Braun to Slater, 19 September 1872.
- 38 The second-class stations were Hogsback, Long Island, Merrickville, Smiths Falls combined, Newboro, Narrows, Chaffeys, Davis, Jones Falls, Brewers Mills, Washburn and Kingston Mills. With the exception of Ottawa, all others were third class. PAC, RG43, B4(a), Vol. 207, Braun to Wise, 12 August 1873.
- 39 Ibid., Wise to Braun, 2 July 1873; PAC, RG11, Series III, Vol. 719, p. 21,107, Braun to Wise, 12 August 1873. Since the lock labourers' wages were raised to one dollar per diem by the same order-in-council, the ten lockmasters of the third-class stations were, in fact, paid 10 cents less per diem than their labourers.
- 40 PAC, RG43, B4(a), Vol. 207, Wise to Braun, 27 August 1874.
- 41 Ibid., Wise to Braun, 18 September 1874, reporting favourably on Addison's petition. The raise was granted by order-in-council. PAC, RG11, Series III, Vol. 721, p. 27,931, Braun to Wise, 21 November 1874.
- 42 PAC, RG43, B4(a), Vol. 207, Wise to Braun, 1 April 1875, reporting on Pilson's (Hartwells) application and Vol. 208, same to same, 18 June 1877 on Hardy's request. The lockmaster at Hartwells had to tend the booms and sluices in Dows Lake while the lockmaster at Black Rapids had to manage the two bywashes at his station which required constant attention. Ibid., Vol. 209, Wise to Braun, 31 October 1881.
- 43 Ibid., memo by Wise, 28 February 1883. See also Wise to Bradley, 10 March 1884, asking that pay be increased to \$38 per month. Ibid., Vol. 56, circular from Wise to all lockmasters, 7 December 1886.
- 44 Ibid., Vol. 224, Phillips to Jones, 2 February 1911; Vol. 159, canal records, Jones Falls, August 1911.
- 45 Ibid., Vol. 214, Phillips to Boyd, 13 April 1896 and same to same, 2 May 1896.
- 46 Ibid., Vol. 211, Wise to Bolton (lockmaster, Jones Falls), 10 April 1891; Vol. 213, Wise to all lockmasters, April 1894. The change in regulations seems to have resulted from letters received by the Department of Railways and Canals and by George Taylor, MP, complaining of the appointment, by lockmaster Bolton of Jones Falls, of his son. Although Wise protested that the practice was not objectionable at

- locks where there was a number of labourers and emphasized the difficulties in getting good workers, he was overruled and reluctantly asked Bolton's son to resign. *Ibid.*, Vol. 211, Wise to Bradley, 22 April 1891 and Wise to Bolton, 1 May 1891.
- 47 See *ibid.*, Vol. 213, Phillips to Dr. C.F. Ferguson, MP, Kemptville, 2 April 1895, asking him for nominations for vacancies for lock labourers at Burritts and Nicholsons. See also *ibid.*, B3(e), Vol. 37, Schreiber to Real, Merrickville, 5 March 1895 requesting that an applicant for the position of labourer at Nicholsons secure a recommendation from Dr. Ferguson.
 - 48 PAC, RG43, B4(a), Vol. 206, Slater to Braun, June 1870; same to same, 26 May 1871; PAC, RG11, Series III, Vol. 717, p. 11,271, memo of Langevin to privy council, 19 July 1871. Those earning 80 cents per diem received one dollar, those at 75 cents were raised to 94 cents and those at 60 cents to 75 cents. See also PAC, RG11, Series III, Vol. 717, p. 11,523, Braun to Slater, 3 August 1871 announcing that the raise was to be effective 1 July 1871.
 - 49 PAC, RG43, B4(a), Vol. 207, Wise to Braun, 2 July 1873. Because of the high cost of living in Ottawa and the fact that the labourers at the first 8 locks were not provided with housing, they were granted an additional 20 cents per diem in 1874. PAC, RG11, Series III, Vol. 720, p. 23,878, Braun to Wise, 14 February 1874.
 - 50 PAC, MG24, E2, Vol. 3, general order, Wise to all lockmasters, 3 March 1874.
 - 51 PAC, RG43, B4(a), Vol. 209, Wise to Bradley, 10 March 1884; Vol. 56, Wise to all lockmasters, 7 December 1886; Vol. 159, canal records, Jones Falls, May 1903; Vol. 159, canal records, Jones Falls, August 1911.
 - 52 *Ibid.*, Vol. 213, Phillips to Schreiber, 11 April 1895. The lockmaster at Jones Falls, for example, had to make weekly visits to the Morton Dam and the lockmaster at Long Island had to keep a constant check on the flow of water through the Manotick weir.
 - 53 *Ibid.*, Vol. 207, Wise to Boyd, 10 March 1875.
 - 54 *Ibid.*, Vol. 210, Wise to Bradley, 31 August 1887.
 - 55 *Ibid.*, Vol. 209, Wise to McCann, 20 April 1881; Wise to Braun, 23 April 1881.
 - 56 *Ibid.*, Vol. 209, Wise to Braun, 7 June 1881; Wise to McCann, 21 June 1881; Wise to Braun, 12 December 1881.
 - 57 *Ibid.*, Vol. 209, Wise to Braun, 18 February 1882; same to same, 23 February 1882.
 - 58 *Ibid.*, Vol. 230, Phillips to Senator George Taylor, Gananoque, 8 October 1914; same to same, 15 October 1914.
 - 59 *Ibid.*, Vol. 278, memo on employment of lock labourers at Merrickville, 15 April 1875; Johnston to Wise, 3 June 1875.

- 60 Ibid., Vol. 207, Wise to Forster, 6 November 1873 and same to same, 13 November 1873; Vol. 208, Wise to Sargent, 15 June 1880.
- 61 Ibid., Vol. 212, Wise to Deane, 18 April 1894; Wise to Forrester, Kingston, 26 April 1894. Milne himself had a home not far from the locks.
- 62 Ibid., B1(a), Vol. 237, p. 127,669, Christopher Langsmith to Kirkpatrick, 1 February 1890, enclosed in Kirkpatrick to J.A. Macdonald, 17 February 1890.
- 63 Ibid., B4(a), Vol. 211, Wise to Bradley, 5 March 1890. Deane had been in the canal service as lockmaster and labourer for 33 years when he died in 1892.
- 64 PAC, RG11, Series III, Vol. 39, p. 43,902, Stewart to MacKenzie, minister of Public Works, 28 August 1874.
- 65 PAC, RG43, B4(a), Vol. 207, Wise to Stewart, 10 September 1874 and Wise to Layng, 18 September 1874, ordering them to appear at McLaughlin's Inn at Jones Falls; Vol. 207, Wise to Braun, 2 October 1874.
- 66 Ibid., Wise to Layng, 30 November 1874. Layng was notified of his dismissal late in November 1874. PAC, RG11, Series III, Vol. 721, p. 27,930, Braun to Layng, 21 November 1874.
- 67 PAC, RG43, B4(a), Vol. 227, Phillips to Hutton, 16 November 1912; same to same, 27 November 1912. In 1890, similar accusations of wrongful sale of government material had been made against one of the lockmasters at Smiths Falls by John Coulin. Coulin was requested to submit his charges in writing so that Wise could investigate them thoroughly, but nothing further was heard of the matter. Like those against Hutton, these accusations seem motivated by personal animosity. Ibid., Vol. 211, Wise to Coulin, 15 May 1890.
- 68 Ibid., Vol. 214, Phillips to Schreiber, 2 June 1897; Vol. 227, Phillips to Hutton, 27 November 1912.
- 69 Ibid., Vol. 211, Wise to Jones, 12 August 1890.
- 70 A return of Rideau employees in 1910 indicated that ten of the labourers were provided with year-round government housing - William Gillespie (Hartwell), W. Simmons (Smiths Falls combined), Alfred Best (Poonamalie), J. Regan (Chaffeys), J.J. Kenney (Davis), P.P. Milne (Brewers Mills) and P. Hogan, G. Graham, Edward Bradden and J. Ahern (Kingston Mills). Phillips reported that most of the labourers lived in the upper stories of the storehouses at the locks during the navigation season. Ibid., Vol. 223, Phillips to Bowden, 13 June 1910.
- 71 Ibid., Vol. 217, Phillips to Dr. W.W. Sands, Kingston, 31 July 1903.
- 72 Ibid., Vol. 225, Phillips to Bowden, 3 February 1912. See also Phillips to Little, accountant, Department of Railways and Canals, 5 February 1912, transmitting 12 dollars for three months rental from W.C. Simmons, labourer at Smiths Falls combined.

- 73 Ibid., Vol. 216, Phillips to Messrs. T. Lindsay & Company, 12 March 1903; Vol. 219, same to same, 3 April 1907, and Vol. 220, same to same, 7 May 1908. In 1907, only the captain, fireman and engineer of the Loretta were provided with regulation hats. The following year, the entire crew was outfitted.
- 74 Ibid., Vol. 225, Phillips to Lavoie, 29 May 1911.
- 75 Robert Werlich, *Orders and Decorations of all Nations: Ancient and Modern, Civil and Military* (Washington, D.C.: Quaker Press: ca. 1965), p. 153.
- 76 PAC, RG43, B4(a), Vol. 217, Phillips to Frost, 23 February 1906; Phillips to Jones, 12 March 1906.
- 77 Ibid., Vol. 219, Phillips to Stuart, 31 August 1907; Vol. 220, Phillips to Jones, 14 December 1907. William Newman had been lockmaster at Nicholsons since 1871, John Newman had been lockmaster at Clowes for the same period and Johnston had served at Merrickville since 1869. Ibid., Vol. 220, Phillips to Jones, 3 August 1908. McCreary had been appointed lockmaster to succeed the insane William McCann in May 1882. He retired on 30 May 1908 at the age of 72.
- 78 In 1867, the staff consisted of Slater, bookkeeper Martin Carmen, messenger Paul Cooper and foreman of works Francis Abbott. By 1883, only one new position had been created - that of wharfinger and clerk, held by Robert W. Cooper. Abbott had been promoted to bookkeeper and paymaster and James Carroll appointed foreman of works.
- 79 Ibid., Vol. 217, Phillips to Schreiber, 9 March 1905. Phillips complained that when he was away from the office on canal business, all the clerical work piled up until his return. Ibid., Vol. 219, Phillips to Butler, 22 November 1907.
- 80 Ibid., Vol. 208, Wise to Braun, 5 January 1877. The Department of Railways and Canals had assumed control of the Lorne bridge at Wellington in 1894. At that time, Phillips had recommended that the old timber structure be extensively repaired and a new steel superstructure erected. Ibid., Vol. 213, Phillips to Schreiber, 7 August 1894. The question of the various high-level and swing bridges across the canal merits more detailed study and therefore has been considered in a cursory fashion in the present report.
- 81 Ibid., Vol. 223, Phillips to Jones, 25 August 1910.
- 82 Canada. Department of Railways and Canals, *Annual Report 1888* (Ottawa, 1889), p. 139. The Rideau had spent the working season of 1891 cutting a shorter channel through the Tay River. Canada. Department of Railways and Canals, *Annual Report 1891* (Ottawa, 1892), p. 137. In 1910, the crew consisted of engineer James Yelland, cranesman R.F. James, fireman D. McCarey, cook R.H. Smith, and deckhands James Rowe and James Steele. PAC, RG43, B4(a), Vol. 223, Phillips to Jones, 25 August 1910.

- 83 Ibid., Vol. 225, Phillips to Bowden, 3 October 1911; Vol. 226, same to same, 30 August 1912; Canada. Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 336.
- 84 PAC, RG43, B4(a), Vol. 227, Phillips to Jones, 27 December 1912. These rates of pay had been established effective 1 April 1911. Ibid., Vol. 225, Phillips to Yelland, captain of the Rideau, 29 August 1911.
- 85 Ibid., Vol. 217, Phillips to Schreiber, 5 December 1904; Canada. Department of Railways and Canals, Annual Report 1907 (Ottawa, 1907), p. 170; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 178. For plans of the Loretta, see PAC, RG43, B2(a), Vol. 169, p. 10482. She was sold by Crown Assets early in the 1960s.
- 86 Ibid., B4(a), Vol. 223, Phillips to Jones, 25 August 1910. Riel had the distinction of being the only French Canadian of the 89 canal employees. Ibid., Vol. 215, Phillips to Jones, 19 March 1900.
- 87 Ibid., Vol. 220, Phillips to Cowan, 1 May 1908.
- 88 Ibid., Vol. 225, instructions to steward on tug Loretta, 5 June 1911.
- 89 Ibid., Vol. 215, Phillips to Frost, 25 November 1898; Vol. 217, same to same, 13 January 1906. A similar problem arose in 1910 when the Frontenac County Reform Association protested against the employment of an outsider - Victor Riel, engineer of the Loretta - to run the centrifugal pumping plant needed for repairs to Brewers Mills. Phillips informed the local Liberal MP, William Harty, that if the association insisted on the employment of local but less qualified men, he would be forced to deny any responsibility for damages to the pump or other machinery when inexperienced men were in charge. Ibid., Vol. 224, Phillips to Harty, 13 December 1910.
- 90 Ibid., Vol. 214, Phillips to Rogers, 15 January 1897; Vol. 225, Phillips to Hutton (lockmaster, Edmunds) 28 November 1911. See also Phillips to lockmaster Merrifield of Burritts, 2 December 1911.

Appendix B. Buildings

- 1 PAC, W044, Vol. 19, fol. 371, copy of a letter from the Committee appointed to assemble in Canada, upon Matters relating to the Rideau Canal to Lt.-Col. John By, 28 June 1828.
- 2 By to General Mann, 15 March 1830, in Great Britain. Parliament. House of Commons, Canada Canal Communication. Return of an Address to His Majesty, dated 4 February, 1831;-for, Copies of the Correspondence between The Treasury, The Secretary of State for the Colonies, and the Ordnance, on the Canal Communication in Canada (London: House of Commons, 1831), No. 123.

- 3 Colonel Durnford to Colonel Mann, 24 April 1830, in *ibid.*, No. 126.
- 4 PAC, W044, Vol. 20, fol. 428, By to Durnford, 14 January 1832.
- 5 *Ibid.*, By to Durnford, 14 January 1832, fol. 428 for Merrickville; fol. 467 for The Narrows; fol. 472 for Newboro; fol. 507 for Kingston Mills. The blockhouse at Burritts was subsequently converted to a one-storey lock house.
- 6 The existence of two porches at the lock house in Ottawa is confirmed by two photographs in the Picture Division at the Public Archives of Canada, C 610 and C 2562. For Nicholsons see PAC, RG43, B4(a), Vol. 137, lockmaster's journal, 16 May 1838, construction of the porches; 12 June 1839, repairs; and 7 July 1840, plastering of the south porch. See also Vol. 42, lockmaster's journal, 11 December 1867 for repairs to the sills of both porches. For Poonamalie see PAC, Pic-Lure Division, C 13299, Edwin Whitefield, Rideau Canal - lock No. 32, n.d.
- 7 All succeeding references to buildings proposed in 1832 come from PAC, W044, Vol. 20, fol. 127, profile of canal with buildings at locks, signed by Gustavus Nicolls and John By, 26 May 1832 enclosed in Captain P. Coles to Nicolls, 24 June 1832.
- 8 *Ibid.*, Vol. 21, fol. 151, plan of proposed works, dated 17 October 1832, enclosed in "Barracks etc. Report and Estimate of Works and Repairs Proposed to be carried on in the Royal Engineers Department at the Rideau Canal in the Year 1833."
- 9 PAC, RG11, Series III, Vol. 244, p. 45,370, Coffin to MacKenzie, 23 October 1874.
- 10 *Ibid.*, Vol. 335, p. 78,951, Wise to Braun, 22 January 1879. For sketch of this building see PAC, Picture Division, C 25665, Bytown ca. 1828 by E.C. Frome.
- 11 PAC, Picture Division, PA 8508, Rideau Canal Locks.
- 12 PAC, RG8, Series C, Vol. 1635, "Report of the present state of the Fortifications, Storehouses, Casemated Barracks & Hospitals, Cisterns, Aqueducts, & Buildings of every description, also the Canals in charge of Her Majesty's Ordnance at the stations, expressing how the Public Works now in progress are advanced, as well as what further repairs additions & improvements are essentially necessary according to inspections made on the 22d, 23d, 24th, 25th, 26th, 27th, 28th, Feb^y and also on the 2d, 3d, 4th, 5th, 6th, 19th, 20th, 21st, 22nd June 1852." All succeeding references to the inspection report of 1852 are drawn from this document. The estimates for repairs to the canal in 1833 included lime for pointing and whitewashing as well as shingles for the roof. PAC, W044, Vol. 21, fol. 115, report and repairs...in the year 1833.
- 13 PAC, Picture Division, C 610, view from Parliament Hill, ca. 1860-63; also C 2562, view of the first 8

- locks, n.d.
- 14 PAC, RG8, Series C, Vol. 61, pp. 197-98, Respective Officers, Montreal, to military secretary, 4 July 1849.
 - 15 PAC, RG11, Series III, Vol. 38, p. 22,548, Slater to Braun, 29 April 1872.
 - 16 Ibid., Vol. 334, p. 64,352, Wise to Braun, 12 January 1877. The lockmaster at Ottawa was still receiving this extra 50 cents per day in 1907 when Phillips pointed out that house rent in the city was well over \$15 per month and advocated that the current lockmaster receive an increase in pay. PAC, RG43, B4(a), Vol. 219, Phillips to Butler, 23 February 1907. A return of canal employees in 1910 indicates that at that time lockmaster Bishop was receiving a rent allowance of \$242.50 per annum. Ibid., Vol. 223, Phillips to Bowden, 13 June 1910.
 - 17 PAC, RG11, Series III, Vol. 335, p. 78,951, Wise to Braun, 22 January 1879.
 - 18 Canada. Department of Railways and Canals, Annual Report 1884 (Ottawa, 1885), p. 125.
 - 19 PAC, W055, Vol. 881, fol. 406, Sketches to accompany Major Thomson's Report of the Mill Sites on the Rideau Canal, 30 October 1845, enclosed in Holloway to inspector-general of fortifications, 24 February 1847, report on mill sites on the Rideau.
 - 20 PAC, Picture Division, PA 12816, Hartwell, n.d.
 - 21 PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 27 May 1904; Canada. Department of Railways and Canals, Annual Report 1904 (Ottawa, 1905), p. 208.
 - 22 PAC, RG43, B4(a), Vol. 217, Phillips to Schreiber, 14 March 1905.
 - 23 Canada. Department of Railways and Canals, Annual Report 1907 (Ottawa, 1907), p. 166.
 - 24 PAC, W044, Vol. 16, fol. 298, requisition for 1843, enclosed in inspector-general of fortifications to Byham, 4 November 1842. The estimates for work on the Rideau in 1832 referred to repairs required on the lockmaster's house - probably one of the buildings erected during construction work on the site. Ibid., Vol. 21, fol. 117, report and estimates...1833.
 - 25 PAC, Picture Division, C 48914, lockmaster's house, Hogsback; Canada. Department of Railways and Canals, Annual Report 1907 (Ottawa, 1907), p. 167.
 - 26 National Historic Parks and Sites Branch, Research Division, picture files, information about canal houses, survey done by Department of Transport, 1930. Other references to canal buildings in 1930 are drawn from this survey.
 - 27 PAC, W044, Vol. 20, fol. 127, profile of canal with buildings at locks, signed by Gustavus Nicolls and John By, 26 May 1832 enclosed in Captain P. Coles to Nicolls, 24 June 1832.

- 28 Public Archives of Ontario, Burrowes sketch No. 17, Lock, Dam, &c at Black Rapids; PAC, Picture Division, C 1204, Black Rapids 1827 to 1832, by William Clegg.
- 29 Canada. Department of Railways and Canals, Annual Report 1914 (Ottawa, 1915), p. 332. A new roof had been placed on the house in 1890. PAC, RG43, B4(a), Vol. 211, Wise to Bradley, 9 December 1889.
- 30 PAC, W044, Vol. 20, fol. 127, profile of canal with buildings at locks, signed by Gustavus Nicolls and John By, 26 May 1832 enclosed in Captain P. Coles to Nicolls, 24 June 1832.
- 31 PAC, Picture Division, C 1205, Long Island 1828 to 1832; William Clegg. For picture of lockhouse in 1908 see National Historic Parks and Sites Branch, Research Division, picture files, R4--005-B-0022, Long Island, 1908 (Collection N.A. Patterson).
- 32 Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 322. See also PAC, RG43, B4(a), Vol. 229, Phillips to MacPherson, manager, Bell Telephone Company, Ottawa, 5 June 1914 asking him to remove the telephone from the lock house before it was torn down. The lockmaster was allowed to install a hot air furnace on the condition that he pay 25 per cent of the cost. Ibid., Vol. 230, Phillips to Clarke, 20 July 1914.
- 33 Edward John Barker, *Observations on the Rideau Canal* (Kingston: British Whig, 1834), p. 42.
- 34 PAC, W044, Vol. 15, fol. 411, annual ordnance estimates for 1835, enclosed in Nicolls to inspector-general of fortifications, 11 September 1834. Completion of the structure as a blockhouse was estimated at £208.
- 35 PAC, RG43, B4(a), Vol. 63, canal order, 23 June 1836.
- 36 Ibid., Vol. 209, Wise to Braun, 12 December 1881.
- 37 Ibid., Vol. 229, Phillips to Reid, acting minister of Railways and Canals, 11 May 1914; Canada. Department of Railways and Canals, Annual Report 1915 (Ottawa, 1916), p. 323.
- 38 PAC, RG43, B4(a), Vol. 37, Fitzgibbons, overseer of works, to Jenkins, 20 March 1838.
- 39 Ibid., lockmaster's journal, 28 March 1838-28 June 1838.
- 40 Ibid., Vol. 40, dimensions of buildings, 12 July 1851, canal orders.
- 41 Ibid., Vol. 229, Phillips to Reid, 11 May 1914.
- 42 Ibid., Vol. 40, dimensions of old government buildings at Nicholsons, 12 July 1851.
- 43 PAC, Picture Division, C 11163, Nicholsons Rapids, by John Burrows, 1832, shows frame buildings on the eastern side of the canal as does C 1207, Nicholsons, 1828 to 1832, by William Clegg.
- 44 PAC, RG43, B4(a), Vol. 40, Respective Officers to lockmasters, 12 July 1851. A return of government buildings at Nicholsons in 1847 also listed these buildings and gave a brief description of their

- condition. Ibid., return of buildings, 23 November 1847.
- 45 Vol. 37, lockmaster's journal, 9 August 1838.
- 46 Ibid., Vol. 213, Phillips to Schreiber, 10 January 1895 and Phillips to Newman, 16 February 1895. The cost of the improvement was estimated at \$550. Ibid., Vol. 229, Phillips to Reid, 11 May 1914.
- 47 PAC, W044, Vol. 20, fol. 431, By to Durnford, 14 January 1832; Vol. 21, fol. 122, report and estimates...1833.
- 48 PAC, RG43, B4(a), Vol. 63, lockmaster's journal, 27 June 1835. Work was completed by 10 July 1835.
- 49 PAC, W055, Vol. 880, fol. 387, report on the Rideau canal enclosed in Holloway to inspector-general of fortifications, 25 March 1846. The ground floor of the building had gun slits cut for defence.
- 50 Lieutenant Edward Charles Frome, "Account of the Causes which led to the Construction of the Rideau Canal, connecting the Waters of Lake Ontario and the Ottawa; the Nature of the Communication Prior to 1827; and a Description of the Works by means of which it is converted into a Steam-boat Navigation," Papers on Subjects connected with the Duties of the Corps of Royal Engineers, Vol. 1, (1844), p. 86. See also PAC, RG8, C series, Vol. 1635, inspectional report - canal district, 1853-54.
- 51 PAC, RG43, B4(a), Vol. 278, report on the condition of blockhouse, 8 December 1873.
- 52 Ibid., vol. 70, Johnston to Wise, 30 August 1876.
- 53 Ibid., Vol. 210, Wise to Bradley, 16 January 1888. In 1902-3, for example, the building was reshingled, glazed and painted. Canada. Department of Railways and Canals, Annual Report 1903 (Ottawa, 1904), p. 183; PAC, RG43, B4(a), Vol. 218, Phillips to Butler, 27 October 1906. Phillips was concerned about the danger of a fire in the building if ammunition were stored in it. The militia department, however, decided that the blockhouse was not suitable for storage and the difficulty was solved. Ibid., Vol. 218, Phillips to Butler, 5 December 1906.
- 54 Canada. Department of Railways and Canals, Annual Report 1909 (Ottawa, 1909), p. 260; PAC, RG43, B4(a), Vol. 223, Phillips to Bowden, 13 June 1910. The lockmaster received \$80 per annum as an allowance for house rent.
- 55 Ibid., Vol. 221, Phillips to Jones, 2 October 1908, listing estimate of \$1000 for rebuilding the interior of the blockhouse; Vol. 222, same to same, 31 May 1909, with identical estimate; and Vol. 225, Phillips to Bowden, 4 November 1911, with figure of \$2500 for rebuilding interior as a residence for the lockmaster.
- 56 PAC, W044, Vol. 16, fol. 298, requisition for 1843, enclosed in inspector-general of fortifications to R. Byham, 4 November 1842.

- 57 Ibid.
- 58 Canada. Department of Railways and Canals, Annual Report 1905 (Ottawa, 1906), p. 203; PAC, RG43, B4(a), Vol. 218, Phillips to Hutton, 4 September 1906.
- 59 Ibid., Vol. 37, Bolton to lockmasters at Nicholsons and Old Slys, 9 May 1838.
- 60 Canada. Department of Railways and Canals, Annual Report 1887 (Ottawa, 1888), p. 126; PAC, RG43, B4(a), Vol. 220, Phillips to Matthew Ryan (contractor), 10 August 1908.
- 61 PAC, W044, Vol. 16, fol. 298, requisition for 1843, enclosed in inspector-general of fortifications to R. Byham, 4 November 1842. A map of Smiths Falls drawn in 1833 shows a lockmaster's house on the east side of the middle of the combined locks and one on the east side of the detached lock at approximately the midpoint. In the latter case, the stone lock house is known to have been on the west side of the lock and in this case, the map clearly refers to the frame structures built during construction. The lockmaster's house at the combined locks is also most probably an earlier frame structure. PAC, W044, Vol. 15, fol. 214, map enclosed in Respective Officers, Quebec, to Byham, 7 January 1833.
- 62 Canada. Department of Railways and Canals, Annual Report 1907 (Ottawa, 1907), p. 168; *ibid.*, Annual Report 1908 (Ottawa, 1909), p. 176.
- 63 PAC, RG43, B1(a), Vol. 242, p. 151,523, Jones to Haggart, minister of Railways and Canals, 1 October 1894. The new dwelling cost \$1150. Canada. Department of Railways and Canals, Annual Report 1896 (Ottawa, 1897), p. 118. For location of the house see sketch enclosed in PAC, RG43, B1(a), Vol. 243, p. 152,999, Ryan to Haggart, 16 January 1895.
- 64 PAC, Picture Division, C 11169, First Rapids, 1832, by John Burrows.
- 65 PAC, W044, Vol. 16, fol. 298, requisition for 1843, enclosed in inspector-general of fortifications to Byham, 4 November 1842. An undated sketch of the lock house confirms the 1852 description. PAC, Picture Division, C 13299, Rideau Canal-Lock No. 32, by Edwin Whitefield.
- 66 Canada. Department of Railways and Canals, Annual Report 1893 (Ottawa, 1894), p. 161.
- 67 PAC, RG8, Series C, Vol. 54, p. 57, report on contracts for canal not yet complete signed by Gustavus Nicolls, CRE, Canada, and Daniel Bolton, RE, 12 November 1832.
- 68 PAC, W055, Vol. 870, fol. 59, Byham to inspector-general of fortifications, 29 May 1833.
- 69 *Ibid.*, fol. 159, Byham to inspector-general of fortifications, 1 November 1833.
- 70 PAC, RG43, B4(a), Vol. 99, lockmaster's journal, June-July 1835.
- 71 *Ibid.*, Vol. 97, lockmaster's journal, May 1836-August 1837.

- 72 Ibid., lockmaster's journal, 19, 20, 21 June 1838. See also 6 and 7 August 1838.
- 73 Ibid., Vol. 211, Wise to Bradley, 9 December 1889.
- 74 PAC, W055, Vol. 870, fol. 159, Byham to inspector-general of fortifications, 1 November 1833; Edward John Barker, *Observations on the Rideau Canal* (Kingston: British Whig, 1834), p. 29. Barker described the blockhouse at The Narrows as "not quite finished, [and] of the same form and dimensions as the one at the Isthmus," p. 31.
- 75 Canada. Department of Railways and Canals, *Annual Report 1889* (Ottawa, 1890), p. 117; PAC, RG43, B4(a), Vol. 210, Wise to McGonigal, 25 August 1888.
- 76 Ibid., Vol. 115, lockmaster's journal, 5-11 May 1840.
- 77 PAC, RG11, Series III, Vol. 39, Johnston to minister of public works, 31 October 1873.
- 78 Ontario. Public Archives, Thomas Burrowes sketch No. 36, Lock at the Isthmus, 1841, and Burrowes sketch No. 38, Isthmus (now called Newboro) n.d. Cole's house is shown in Thomas Burrowes sketch No. 35, Residence of Capt. Cole, Royal Engineers, 1830, as well as in J.P. Cockburn, 942.48.8, Captain Coles House, the Isthmus, Royal Ontario Museum.
- 79 PAC, W044, Vol. 21, fol. 130, report and estimates...1833 included minor repairs to the lockmaster's house at this station.
- 80 PAC, RG8, Series C, Vol. 60, p. 199, Respective Officers to military secretary, 24 July 1844; PAC, RG43, B4(a), Vol. 28, Thomson to lockmasters, 13 November 1844.
- 81 Canada. Department of Railways and Canals, *Annual Report 1895* (Ottawa, 1896), p. 153.
- 82 Edward John Barker, *Observations on the Rideau Canal* (Kingston: British Whig, 1834), p. 27.
- 83 PAC, Picture Division, C 1218, Davis 1829-32, William Clegg and Ontario Public Archives, Burrowes sketch No. 48, Davis Mill, Lock &c (1840) and No. 49. Another view of Davis Mill lock &c (undated), shows the hip-roofed building without loopholes. Burrowes' sketch No. 51 Lock &c at Davis Mill (winter, 1843-44) shows it with loopholes.
- 84 Canada. Department of Railways and Canals, *Annual Report 1891* (Ottawa, 1892), p. 135; *ibid.*, *Annual Report 1899* (Ottawa, 1900), p. 207.
- 85 Edward John Barker, *Observations on the Rideau Canal* (Kingston: British Whig, 1834), p. 26.
- 86 PAC, RG43, B4(a), Vol. 142, lockmaster's journal. Although the guardhouse at the Whitefish Dam had been completed in January, the wooden gallery at its door was not installed until March, presumably in more clement weather. The total cost of construction of the Whitefish Dam guardhouse seems to have been slightly in excess of £5. PAC, RG8, Series C, Vol. 447, pp. 344-45, Bolton to Colonel Rowan, 30 March 1839.

- 87 PAC, RG43, B4(a), Vol. 145, contractor's journal, 11 March 1844.
- 88 Ibid., Vol. 148, pencilled note on front page, 19 February 1859; PAC, RG11, Series III, Vol. 717, p. 11, 186, Braun to Slater, 13 July 1871.
- 89 PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 17 July 1901.
- 90 Ibid., Vol. 222, Phillips to Jones, 4 June 1909.
- 91 Ibid., Vol. 142, lockmaster's journal, 18 May 1841. Material had been received for the new building in November of the preceding year. Ibid., Vol. 142, lockmaster's journal, 4 November 1840. Ibid., Vol. 140, private journal, 4 September 1841.
- 92 Canada. Department of Railways and Canals, Annual Report 1895 (Ottawa, 1896), p. 153; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 335.
- 93 PAC, WO44, Vol. 16, fols. 300-302, Thomas to Byham, 30 November 1842. The sum of £106 5s. 6d. was included in the ordnance estimates for 1843. Ibid., fol. 299, estimates included in inspector-general to master-general of ordnance (Byham), 4 November 1842.
- 94 PAC, RG43, B4(a), Vol. 142, lockmaster's journal, 13 August 1843. Late in October, the carpenters began roofing the building. Ibid., 27 October 1843. A private journal kept by the lockmaster gives 15 November as the completion date. Ibid., Vol. 140, 15 November 1843.
- 95 PAC, WO44, Vol. 21, fol. 133, report and estimates...1833 refers to repairs to the lockmaster's house at Brewers Mills.
- 96 Ibid., Vol. 16, fol. 274, estimates for 1842-43 enclosed in inspector-general of fortifications to Byham, 3 January 1842.
- 97 Canada. Department of Railways and Canals, Annual Report 1899 (Ottawa, 1900), p. 207; *ibid.*, Annual Report 1904 (Ottawa, 1905), p. 211.
- 98 PAC, RG43, B4(a), Vol. 215, Phillips to Schreiber, 10 June 1898. For original of health certificate see PAC, RG43, B1(a), Vol. 246, p. 169, 879, D.D. Rogers, MP, to Blair, minister of railways and canals, 1 June 1898.
- 99 Ibid., Phillips to Schreiber, 25 July 1898; Canada. Department of Railways and Canals, Annual Report 1899 (Ottawa, 1900), p. 218; *ibid.*, Annual Report 1915 (Ottawa, 1916), p. 325.
- 100 PAC, RG8, Series C, Vol. 749, p. 155, Lt.-Col. Thomas Cubitt, RA Commanding Upper Canada, to Captain Goldie, ADC, 12 July 1838.
- 101 PAC, RG43, B4(a), Vol. 214, Phillips to Schreiber, 16 April 1896. The blockhouse seems to have been used primarily as quarters for married labourers. In 1905, three single workers at the station requested permission to move into the blockhouse but promised to move out if the building were required for a married

- man. Ibid., Vol. 182, Anglin to Phillips, 8 April 1905.
- 102 Ibid., Vol. 222, Phillips to Messrs. Fallon Bros., 24 August 1909; Canada. Department of Railways and Canals, Annual Report 1910 (Ottawa, 1910), p. 275; *ibid.*, Annual Report 1914 (Ottawa, 1915), p. 335.
 - 103 Canada. Province. Department of Public Works, Annual Report of the Commissioner of Public Works, for the Year Ending 31st December 1860 (Quebec, 1861), p. 68.
 - 104 PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 15 September 1902. The cost of replacement was estimated at \$1500.
 - 105 Ibid., Vol. 182, Anglin to Phillips, 3 January 1901. In 1894, Anglin stated that the old house had been built by Deane. Ibid., Vol. 178, lockmaster's journal, 28 May 1894.
 - 106 Canada. Department of Railways and Canals, Annual Report 1904 (Ottawa, 1905), p. 212. The sum of \$1800 had been estimated as the cost of building a house for the lockmaster. PAC, RG43, B4(a), Vol. 216, Phillips to Schreiber, 7 October 1902.
 - 107 Ibid., Vol. 182, Anglin to Phillips, 30 August 1904.
 - 108 Ibid., Vol. 178, lockmaster's journal, 9 April 1888.
 - 109 Ibid., Vol. 214, Phillips to Schreiber, 16 April 1896. Three labourers occupied the building that year. Ibid., Vol. 178, lockmaster's journal, Record of Gates, Bridges &c when renewed and also other damages done to station and other information.

Appendix C. Rideau Canal Tolls

- 1 PAC, W044, Vol. 20, fols. 62-64, Lt.-Col. John By, rates and dues proposed to be levied on the Rideau in 1832; *ibid.*, Vol. 22, fols. 22-25, proclamation of tolls, 26 April 1832, revised 4 June 1832.
- 2 Ibid., fols. 171-74, Thomas to Byham, 11 May 1835.
- 3 In 1835, the Respective Officers, Quebec, expressed their belief that revenue from tolls would never much exceed the amount received at present since the greatest part of the revenue was derived from timber and would thus decrease as good trees became scarcer in the canal area. Moreover, completion of the St. Lawrence canals would divert some of the merchandise and passenger traffic from the Rideau. Ibid., fols. 148-52, Respective Officers, Quebec, to Byham, 11 September 1835. Daniel Bolton at Bytown expressed a similarly pessimistic view of the Rideau's financial future pointing out that the natural advantages of the St. Lawrence with its faster and more direct route could never be overcome. Ibid., fols. 61-60, Bolton to Respective Officers, Quebec, 20 February 1836.
- 4 Ibid., Vol. 25, fols. 283-84, Canada Gazette Extraordinary, 20 April 1842.

- 5 PAC, W055, Vol. 878, fols. 216-17, minutes of meeting at Merrickville, 21 January 1843.
- 6 PAC, RG8, Series C, Vol. 60, pp. 292-93, Respective Officers, Montreal, to military secretary, 13 September 1845.
- 7 PAC, W044, Vol. 16, fol. 537, scale of tolls on ordnance canals, 12 March 1846. For report of the committee of the executive council see PAC, RG8, Series C, Vol. 60, pp. 323-27.
- 8 PAC, W044, Vol. 16, fols. 541-42, memo of Thomas and Elliott, 29 May 1851. Several months earlier, the Respective Officers at Montreal had informed secretary Byham that they considered assimilation of tolls on the ordnance canals to those of the provincial canals unreasonable since there were only 27 locks on the St. Lawrence route between Kingston and Montreal and 64 on the Ottawa-Rideau route for the same trip. PAC, W044, Vol. 16, fols. 530-31, Respective Officers to Byham, 4 March 1851. This difference in the number of locks clearly indicates one of the major reasons for the failure of the Ottawa-Rideau route to compete successfully with the St. Lawrence.
- 9 Ibid., fols. 541-42, memo of Thomas and Elliott, 29 May 1851.
- 10 PAC, RG11, Series II, Vol. 384, p. 75, statement of Peter Monsell, 1 November 1853, enclosed in Begly to inspector-general, 30 March 1858.
- 11 Slater pointed out that the tolls on these items should be reconsidered since a considerable trade in them had recently developed between Ottawa and Albany and Troy. Ibid., Slater to Begly, 17 September 1858.
- 12 William Kingsford, *The Canadian Canals: Their History and Cost, with An Inquiry into the Policy necessary to Advance the Well-being of the Province* (Toronto: Rollo & Adam, 1865), p. 132.
- 13 PAC, RG43, B4(a), Vol. 42, canal orders, 31 July 1860.
- 14 Canada. Department of Public Works, *Annual Report 1863* (Quebec, 1864), p. 90.
- 15 For complete information on the amount of tolls collected and the quantity and type of goods transported see the publication *Canal Statistics*, issued annually during the period by the Department of Public Works and the Department of Railways and Canals. This series contains valuable material for a detailed study of the financial and commercial history of the waterway. This subject, in fact, merits specific consideration and the present discussion is therefore intended to serve primarily as a summary and an indication for further research.

BIBLIOGRAPHY

- Alexander, Sir James Edward. 1849. *L'Acadie: or Seven Years' Explorations in British America*. H. Colburn, London. 2 vols.
- , 1833. *Transatlantic Sketches, Comprising Visits to the most Interesting Scenes in North and South America, and the West Indies*. R. Bentley, London. 2 vols.
- Andrist, Ralph K. 1964. *The Erie Canal*. American Heritage Publishing Company, New York.
- Arthur, Sir George. 1957-59. *The Arthur Papers. Being the Canadian Papers Mainly Confidential, Private, and Demi-Official of Sir George Arthur, K.C.H. Last Lieutenant-Governor of Upper Canada*. Ed. Charles R. Sanderson. Toronto Public Libraries and University of Toronto Press, Toronto. 3 vols.
- Barker, Edward John. 1834. *Observations on the Rideau Canal*. British Whig, Kingston.
- [Belden, H. & Company]. 1971. *Illustrated Historical Atlas of the County of Carleton (Including City of Ottawa)*. N.p., Toronto. Reprint of 1879 ed., H. Belden & Co., Toronto.
- , [1881.] *Historical Sketch of the County of Lanark*. H. Belden & Co., Toronto.
- Bigsby, John Jeremiah. 1850. *The Shoe and Canoe, or Pictures of Travel in the Canadas. Illustrative of their Scenery and of Colonial Life; with Facts and Opinions on Emigration, State Policy, and other Points of Public Interest*. Chapman and Hall, London. 2 vols.
- Bolton, Daniel. 1840. "Account of the Dam constructed across the Waste Channel at Long Island, on the Rideau Canal in 1836," in Great Britain. Army. Corps of Royal Engineers, *Papers on Subjects Connected with the Duties of the Corps of Royal Engineers*, Vol. 4, pp. 131-35. J. Weale, London.
- Bonnycastle, Sir Richard Henry. 1969. *Canada and the Canadians, in 1846*. Reprint of 1849 ed., H. Colburn, London. 2 vols.

-----, 1968. *The Canadas in 1841*. N.p., Toronto. Reprint of 1841 ed., H. Colburn, London. 2 vols.

Canada. Auditor General's Office. *Annual Report*. 1886-1914. Ottawa.

Canada. *Canal Statistics*. 1873-76, 1878-79, 1883-1914. Ottawa.

-----, 1880. *Report of the Chief Engineer of Canals*. Ottawa.

Canada. Department of Finance. *Public Accounts*. 1867-81. Ottawa.

Canada. Department of Public Works. *Annual Report*. 1867-1914. Ottawa.

-----, 1883. *General Report, 1867-1882*. Ottawa.

Canada. Department of Railways and Canals. *Annual Report*. 1879-1914. Ottawa.

Canada. Parliament. House of Commons. *Debates*. 1867-1914. Ottawa.

-----, *Sessional Papers*, No. 54, 1871. (Report of the Royal Commission on Canals.)

-----, *Sessional Papers*, No. 19a, 1906. (Report of the Royal Commission on the Transportation of Canadian Products to the Markets of the World Through and by Canadian Ports.)

Canada (Province). 1857-67. Department of Public Works. *General Report of the Commissioner of Public Works*. Toronto, Quebec, Ottawa.

-----, 1865. Legislative Assembly. Select Committee on the Supply of Water in the Rideau Canal. *Report*. Hunter, Rose & Company, Quebec.

Canada. Public Archives. Manuscript Division.

MG24, E2, Rideau Canal, 1818-1875; Survey notes, 1818-1849; field-notes for construction of bridge at Jones Falls, 1821; Lockmasters' records, 1849-1875 MG29, B6, Andrew Drummond Papers

RG8, Military Papers, Canada, "C" series, Vols. 53-62,

442-73, 1552, 1552A, 1553, 1563-1/2, 1564, 1627, 1635 Letters, memoranda, etc. Royal Artillery, 1832-1855, Vols. 748-53.

Letterbooks, Military Secretary's Office, 1837-1849, Vols. 1271-75

RG11, Department of Public Works, Series II, Vols. 251-56, 284-87, 384

- Series III, Correspondence and Documents, Vols. 1-2, 35-39, 196, 238-44, 284, 332-335, 445, 455, 530-31, 698-723
- Series VI, Letterbook, Chief Engineer, 1862-67, Vol. 10 RG12, (Department of Transport), A1, Vol. 463, Canals, Construction, Maintenance and Repairs
- RG43, Department of Railways and Canals
- BI(a), Canal Correspondence, Vols. 227-48, 312, 384-85 BI(c), Vol. 518, Services of Staff
- B2(a), Canal Correspondence, Vols. 96, 105, 109, 114, 121, 124, 128, 136, 144-46, 164-65, 169-71, 184, 187, 192, 196, 202, 210, 217, 223-24, 243-47, 252, 255, 274, 278, 295-96, 298-99, 301, 303-05, 307, 309-10, 312-13, 320, 323, 325, 339, 341, 344-47, 352, 355, 360, 363, 367-68, 370, 376, 390-91
- B3(a, b, c), Vols. 1-11, Chief Engineer's Office B3(e), Vols. 27-46 Letterbooks, Collingwood Schreiber, Chief Engineer, 1893-96
- B4(a), Canals Branch, Rideau Canal, 1832-1957, Vols. 1-230, 277-79, 280-82, 287
- W01, Secretary at War, In-Letters, Canada, Vols. 561, 567
- W044, Department of Ordnance, In-Letters, Canada, Vols. 15-16, 20-25
- W055, War Office, Ordnance Miscellanea, Engineer Papers, Vols. 287, 869-87
- Centennial Committee of Newboro. 1967. *The Isthmus. A Historical Sketch of Newboro*. N.p., Smiths Falls.
- Dawson, Robert MacGregor. 1929. *The Civil Service of Canada*. Oxford University Press, London.
- Drummond, Andrew Thomas. "Some Notes on the Rideau Canal, the Source of its Water Supply, and its Early History." *The Canadian Record of Science*, Vol. 5, No. 8 (October 1923), pp. 459-71. Montreal.
- Frome, Edward Charles. 1844. "Account of the Causes which led to the Construction of the Rideau Canal, connecting the Waters of Lake Ontario and the Ottawa; the Nature of the Communication Prior to 1827; and a Description of the Works by means of which it is converted into a Steamboat Navigation," in Great Britain. Army. Corps of Royal Engineers, *Papers on Subjects connected with the Duties of the Corps of Royal Engineers*, Vol. 1, 2nd ed. pp. 69-98. J. Weale, London.
- George, V.A. 1972. *"The Rideau Corridor 1832-1898."* M.A. thesis, Queen's University, Kingston.
- Grey, Charles. 1964. *Crisis in the Canadas: 1838-1839. The Grey Journals and Letters*. Ed. William Ormsby. MacMillan, Toronto.

- Guillet, Edwin C. 1966. *Pioneer Travel in Upper Canada*. N.p., Toronto, Reprint of 1933 ed., Ontario Publishing Company, Toronto.
- Hodgetts, John Edwin. 1955. *Pioneer Public Service: An Administrative History of the United Canadas, 1841-1867*. University of Toronto Press, Toronto.
- Keefer, Thomas Coltrin. 1850. *The Canals of Canada: Their Prospects and Influence*. Gazette Printing Company, Toronto.
- Kingsford, William. 1865. *The Canadian Canals: Their History and Cost, with An Inquiry into the Policy Necessary to Advance the Well-being of the Province*. Rollo & Adam, Toronto.
- Kingston, William Henry Giles. 1856. *Western Wanderings, Or, A Pleasure Tour in the Canadas*. Chapman and Hall, London. 2 vols.
- Lake, Elmer J. 1911. *Chart of the Rideau Lakes Route between Kingston and Ottawa*. 2nd ed. E.J. Lake, Kingston.
- Leavitt, Thaddeus William Henry. 1879. *History of Leeds and Grenville, Ontario, from 1749 to 1879, with Illustrations and Biographical Sketches of some of its Prominent Men and Pioneers*. Recorder Press, Brockville.
- Legget, Robert. 1966. *Rideau Waterway*. N.p., Toronto, Reprint of 1955 ed., University of Toronto Press, Toronto.
- Mackenzie, Ruth. 1967. *Leeds and Grenville: Their First Two Hundred Years*. McClelland and-Stewart, Toronto.
- Meacham, J.H. & Company. 1878. *Illustrated Historical Atlas of the Counties of Frontenac, Lennox and Addington, Ontario*. J.H. Meacham & Co., Toronto.
- Morgan, H.R. 1933. "The First Tay Canal. An Abortive Upper Canadian Transportation Enterprise of a Century Ago." Ontario Historical Society, Papers and Records (now Ontario History), Vol. 29, pp. 103-16. Toronto.
- Ontario. Public Archives.
Henry Moulton scrapbook No. 62, "Ottawa, Smiths' Falls, and Rideau canal history."
- Ottawa Improvement Commission. 1912. *Report and Correspondence of the Ottawa Improvement Commission relating to the Improvement and Beautifying of Ottawa*. King's Printer, Ottawa.

- , 1914. *Special Report of the Ottawa Improvement Commission from its inception in 1899 to March 31st, 1912*. N.p., Ottawa.
- Ottawa Journal*. 23 July 1912.
- Ottawa River Navigation Company. 1901. *Snap Shots on the Ottawa River and Rideau Lakes*. Desbarats & Co., Montreal.
- Philpotts, George. 1842. "Report on the Canal Navigation of the Canadas," in Great Britain. Army. Corps of Royal Engineers, *Papers on Subjects connected with the Duties of the Corps of Royal Engineers*, Vol. 5, pp. 140-93. J. Weale, London.
- Preston, Richard Arthur. 1954. "The History of the Port of Kingston." *Ontario History*, Vol. 46, No. 4 (autumn), pp. 210-11. Toronto.
- Queen's University, Kingston. Archives. *Benjamin Tett Papers*. Ledgers, letterbooks and correspondence.
- Ross, Alexander Herbert Douglas. 1927. *Ottawa Past and Present*. Thorburn & Abbott, Ottawa.
- Schurman, Donald M. 1960-61. "Benjamin Tett of Newboro, 1820-1843." *Historic Kingston*, No. 10, pp. 3-14. Kingston.
- Shanly, Walter and Francis Shanly. 1957. *Daylight Through the Mountain. Letters and Labours of Civil Engineers Walter and Francis Shanly*. Ed. Frank Norman Walker. Engineering Institute of Canada, Montreal.
- Shaw, Ronald E. [1966.] *Erie Water West, A History of the . Erie Canal 1792-1854*. University of Kentucky Press, Lexington.
- Shortt, Edward, ed. 1967. *Perth Remembered*. N.p.
- Waggoner, Madeline Sadler. [1958.] *The Long Haul West. The Great Canal Era, 1817-1850*. Putnam, New York.
- Werlich, Robert. [1965]. *Orders and Decorations of all Nations: Ancient and Modern, Civil and Military*. Quaker Press, Washington, D.C.