

The Fife and Drum

Newsletter of The Friends of Fort York and Garrison Common

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Fort York's brick masonry restored

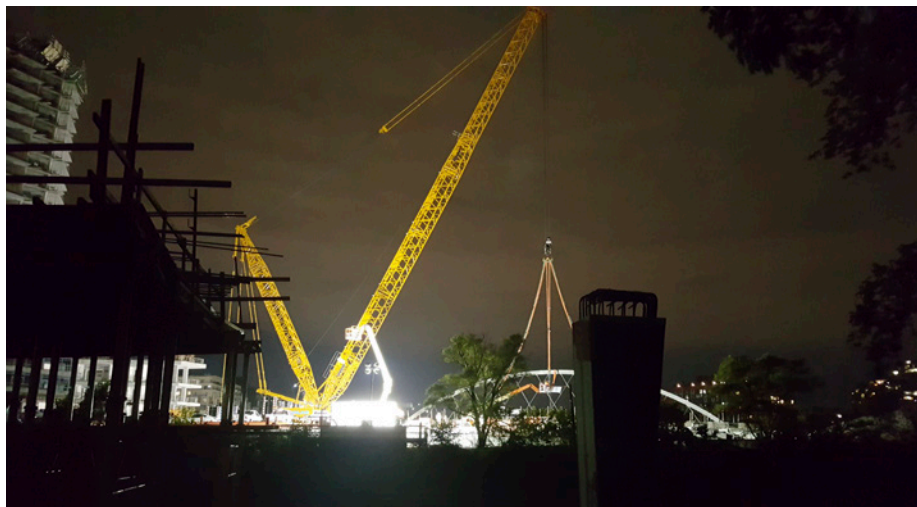
by Gordon Lok

Conserving national history for future generations is an important responsibility that requires a thorough understanding of the historic materials being preserved and a carefully thought-out plan. As well, it's essential in such projects to have a team of knowledgeable consultants and skilled contractors, all experienced in historic restoration. All of these factors came together for the recently completed brick masonry restoration project at Fort York National Historic Site, which was managed by Capital Assets, Museums & Heritage Services of the City of Toronto.

The project centred on restoration of the four surviving brick masonry buildings: the North Soldiers' Barracks, the South Soldiers' Barracks, the Officers' Mess and the Brick Magazine. These buildings were put up when the fort was rebuilt in the years right after the War of 1812 (circa 1814 to 1816) and contain some of the oldest brickwork in Toronto.

Over the last 200 years, these buildings have been subjected to many restoration projects that did not understand or respect the heritage fabric and that used inappropriate replacement materials. This led to deterioration and the loss of original brick and mortar. To avoid making the same mistakes, we needed to understand the deterioration mechanisms and the characteristics of the materials.

The walls were originally built with bricks handmade from clay moulded in wood forms and laid up with soft lime-based mortar. Because of the cost of importing bricks, they were most likely made locally. The source of the clay may have been the banks of nearby Garrison Creek, where the soldiers were no doubt used as



The north span of Garrison Crossing is lowered into place over the Kitchener rail corridor just before midnight on July 27, 2018. When a second span across the Lakeshore corridor is added, the stainless-steel pedestrian bridge will join Garrison Common and the Ordnance Triangle to an expanding Stanley Park. Designed by Pedalta and DTAH, it is being built for the City by Dufferin. In the dark foreground is the south span's approach ramp at the northern edge of Garrison Common. Photo: Andrew Stewart

These buildings were put up when the fort was rebuilt in the years right after the War of 1812

a workforce to extract the mud and mould the bricks.

While clay bricks can normally be expected to last for hundreds of years, mortar is only expected to last up to 100 years before re-pointing is required. As re-pointing proceeded during the 20th century, a hard and dense Portland cement-based mortar came to be used because it was readily available. This dense Portland cement mortar is not as permeable as the historic brick and it caused water vapour from within the buildings to be trapped inside the brick, leading to deterioration from freeze-thaw cycles in winter and early spring. A common result is the first 5 to 10 mm of the face of the brick spalling off, leaving the harder mortar intact.

Having worked out the mechanism of deterioration, the next step was to determine the material properties of the brick and mortar in order to develop a suitable restoration strategy. We engaged the services of Stevens Burgess Architects Ltd. (SBA) and their sub-consultant ArconTEST Incorporated (ARC) to determine



Badly deteriorated original bricks showing spalling on the front face. In the centre is an example of one the mason would hope to flip; note also the missing mortar. Photo: Sheldon Kennedy, SBA



Samples of mortar and sacrificed brick prepared for testing in the lab. The cubic, circular and rectangular shapes are required by the standards of the American Society for Testing and Materials (ASTM). Photo: Sheldon Kennedy, SBA

these properties. Both SBA and ARC are knowledgeable heritage consultants with decades of experience and based in Toronto. Samples of original brick and mortar were extracted from the south wall of the South Soldiers' Barracks and sacrificed for analysis and laboratory testing. The testing included compressive strength, porosity and water-vapour transmission.

The objective was to develop a mortar that closely matched the original in terms of strength, composition, colour and texture, while also being as permeable as the original masonry in order to preserve the bricks.

Historic bricks and mortar

The dimensions of the bricks are close to the 1776 British Statute of 8.5" x 4" x 2.5" (216mm x 102mm x 63mm), which is appropriate for a 1793 British fort. Ours are slightly shorter at 2" (50 mm) and made without frogs (that is, without an indentation on the main surface). As they were made by hand, there is some variation in the dimensions and shape. The compressive strength tests yielded a result of 16 MPa dry and 10 MPa wet. The vapour transmission permeability was found to be very similar to that of a natural hydraulic lime or NHL-2 mortar.

Both the re-pointing mortar and bedding mortar were analyzed. The re-pointing mortar was found to be extremely dense and impermeable and most likely made from Portland cement. The bedding mortar was deemed to be original and made of lime and sand. It was found to be very close in strength and vapour permeability to the original bricks.

Specifications

When restoring masonry, our guideline is to retain sound original masonry, to repair deteriorated masonry where possible, and to only replace unsalvageable masonry with new matching masonry. Ideally, 100% re-pointing would be done, as this would ensure that all the hard mortar is replaced with a proper soft, lime-based mortar and would provide a uniform colour and texture. Unfortunately, this would be a highly expensive undertaking: it

was estimated that entirely re-pointing all four buildings would cost in the neighbourhood of \$1 million.

With a more limited budget (included in the 2017 Economic Development and Culture Capital Plan) it was not possible to include all the work we might have. The goal of this project was to optimize the budget by targeting the most heavily deteriorated areas. SBA conducted a thorough review of the walls and focused on identifying the locations of cracked or deteriorated brick and/or deficient or missing mortar that would lead to water

ingress, which would in turn lead to further deterioration of the wall. With this approach SBA was able to define a scope of work which fit within our budget and they developed specifications and drawings on that basis. The east elevation of the Brick Magazine was found to be

so deteriorated that it warranted 100% re-pointing and brick restoration.

We aim to use materials and techniques that are as close to the original as possible when restoring historic materials. Therefore, the specified replacement bricks had to be clay, handmade and solid (no frogs), 10 MPa (wet) to 16 MPa (dry) and with the same dimensions as the samples from the wall. Colour was an important and tricky issue to resolve. In addition to the variation in colour of the original bricks, we had to consider the differently coloured bricks from all of the restoration projects over the years. In the end, we determined that a colour in the salmon red range, based on the original historic bricks, would be appropriate. Samples within this colour range were reviewed with SBA and we jointly agreed upon the best one. There are only a handful of brick suppliers that can produce quality handmade bricks; we ended up specifying a product from H.G. Matthews, a third-generation family operated brickworks in Buckinghamshire, England, established in 1923.

To protect the bricks, the replacement mortar needed to have the same basic characteristics as the original lime mortar and also have a maximum compressive strength of 10 MPa. The

we needed to understand the deterioration mechanisms and the characteristics of the bricks and mortar

specifications called for 5 MPa at 120 days and an assumed final strength of 7.5 MPa. The vapour transmission was also to be equal to or greater than that of the bricks. To achieve this, we specified a formulation of one part NHL-2 feebly hydraulic lime, one part fine soft granitic aggregate and one part crushed limestone. Air entrainment was also added to this mix to help protect the mortar from freeze-thaw action (the air entrainment creates air voids in the mortar matrix which allows freezing water to expand into the voids, thus mitigating the effects of the freeze-thaw action). This mortar mix was pre-bagged and supplied by Skycon Building Products of North York.

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Restoration

We tendered the project to our roster of pre-qualified heritage contractors and Colonial Building Restoration Inc. of Toronto and Ottawa was awarded the work. Colonial has decades of experience in the restoration of historic masonry, including Fort York's stone gate at Fleet St. and (at the other end of the scale) the Parliament buildings in Ottawa. The contract required Colonial to carry a masonry conservator as part of their team. While we trusted Colonial's skill and experience, we felt Fort York National Historic Site was important enough to warrant the extra level of quality control a conservator would provide. The conservator's role was to review the work at every stage to ensure the correct materials and procedures were being used.

The first order of business was for Colonial to perform a mock-up restoration on a section of one of the walls. This mock-up involved reviewing every step of the process from brick and mortar removal to mixing of the mortar to restoration of the wall. Of particular concern was the ability of the masons to remove deficient mortar without damaging any of the original sound bricks that were to remain. We allowed handheld electric tools only on the horizontal bed joints; most of the careful removals were done with a hammer and chisel.

colour was an important and tricky issue

We also finalized the colour of the mortar during this stage. Colonial installed several samples of mortar with different amounts of pigment and the one that most closely matched the original bedding was selected. After much consultation with the masonry conservator and review by SBA, the techniques and procedures used in the mock-up were fine-tuned and approved. The restoration work could then proceed in earnest.

Serious heritage restoration requires saving as much original material as possible, and so we tried to "flip" original bricks whenever that was feasible. This means taking a brick and turning it around so the previously buried face becomes the exposed

face. This is rather hard to do and depends on the degree of deterioration, the skill of the mason and the strength of the mortar. Only original bricks were considered for this effort; later replacement bricks that had badly deteriorated were replaced outright. Of the 1,700 original bricks identified for replacement, 300 (about 18%) were salvaged by flipping them – a much better proportion than we expected.

Given the hot summer we experienced this year, we were worried the mortar would be subject to cracking from drying shrinkage. To avoid this we asked Colonial to cure the mortar for a minimum of two weeks with moist burlap. While there were a few cracks, the new mortar generally survived the summer. We also imposed a deadline of July 31 to complete the work. Since our mortar is so relatively weak, we wanted it to cure for at least three months and develop some strength before the first frost to ensure its long-term durability. Happily, Colonial was able to meet this deadline.

We tendered the east elevation of the Brick Magazine as a separate price item because we were not sure we had enough funds to perform a complete restoration of this wall. Colonial smartly submitted an economical price and were able to include this wall in the contract. The final result – with 100% re-pointing, flipping where feasible and our specified replacement brick – is



Mortar has been removed through the centre of the joint with an electric saw, the mason being careful not to damage any bricks. Remaining mortar is removed with hand tools. Photos: Ezekiel Schladen, ARC



*The eastern elevation of the Brick Magazine on August 27, 2018, fully restored by the team assembled by Museums & Heritage Services.
Photo: Sheldon Kennedy, SBA*

an example of what a fully restored Fort York masonry wall looks like. The consistent colour and texture of the mortar ties the whole wall together, avoiding the mish-mash found on other walls created by their many less-than-perfect repairs. Our replacement brick, with the salmon colour we chose, blends beautifully with the existing masonry.

Conclusion

The success of this project was the result of the careful planning and testing done by our dedicated team of heritage professionals – architects, conservators, contractors and City staff alike. We were

able to design a mortar mixture that we believe is durable and will survive Toronto's harsh winters while being weak enough to protect the historic bricks. We also determined a colour for both the bricks and the mortar that is suitable to Fort York. This now is the standard to meet in all future masonry restoration projects.

Gordon Lok, M.A.Sc., P.Eng., is a Senior Project Co-Ordinator for Capital Assets at Museums & Heritage Services of the City of Toronto. He has been restoring masonry as an engineer and heritage professional for the past 20 years. The other big job on his mind is the conservation of Casa Loma.

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Fort York**



Membership in The Friends includes a subscription to *The Fife and Drum* newsletter and its updates about what's going on at the fort and around its walls. Your membership strengthens advocacy with donors, developers, politicians and others with influence over the birthplace of urban Toronto. Members also enjoy free admission to Fort York, discounts at the Museum Store & Canteen, and invitations to exclusive events.

Join us today! <http://www.fortyork.ca/join-us>

Assault on Fort Erie



The forces of King George on August 14, 1814, launched a full-scale night assault on Fort Erie, then occupied by Americans pursuing another fruitless attempt to seize Upper Canada. This counter-attack failed when a powder magazine blew up. Through August and September, the effort to eject the US Army cost the lives of nearly 500 combatants of all sides. The original fort was finally destroyed by retreating US units in November. Our own Fort York Guard was part of the assaulting force of re-enactors this year who mustered in mid August to recall the chaotic battle. And, appearances to the contrary, nobody at all was killed – and most of the Americans were tourists. Photos: Sid Calzavara



After the War of 1812: the strategy and cost of defending British North America

by Tony Partington

This article will outline British and Canadian strategy, developed in the decade following the War of 1812, to deter and defend against any American invasion of the northern colonies. It is also a story of the Board of Ordnance, little known in Canada but the agency then responsible for Imperial military policy and fortification – including the defence of British North America.

Tremendous cost overruns in defence spending and debates about industrial and economic spin-offs are nothing new. While the scale and repercussions of what became a vast defence program are little remembered today, those parts of it that were built are now among our finest tourist attractions – to Canadians and Americans alike!

The War of 1812 revealed three inherent weaknesses in the Canadian position. First was the geographical vulnerability of Upper Canada: the St. Lawrence River was the lifeline of the province. Along the great river came food, manufactures and, in time of war, troops and materiel. The Americans needed only to choose where to cross, to cut the route, and thereby isolate Upper Canada. Second, there would never be enough regular troops to cover the entire frontier. Finally, the population was too small, especially in Upper Canada, to provide economic support and a strong militia.

For the British, the strategic conditions of war were clear enough. British North America's population and resources were grossly inferior to those of the United States. On land, the Americans could easily invade and occupy large areas of Canada for short periods of time, but could they capture the strongholds? Their logistics were little better than those of the British and neither found it possible for an army to subsist on the produce of Upper Canada. On the high seas, American privateers, fashioned out of the second largest merchant marine in the world, had successfully raided the British merchant trade with Canada and the West Indies (even while Maritime privateers preyed on American trade).

All of this emphasized the importance of communications. Britain had the naval strength to ultimately protect its maritime trade, blockade the enemy and harass his coastal cities. But even Great Britain could not conquer the United States. There was also Britain's growing trade with America, which it did not want to lose. Since the end of the War of Independence, British policy had balanced political responsibilities to the Canadian colonies with the economic opportunities offered by the neighbouring republic.

The Americans began improving their access to the Great Lakes in 1817 by building the Erie Canal to Buffalo. Side branches to Lake Champlain in 1819 and to Oswego in 1828 shifted

the trade and military balance of the region toward the United States. The British, with the world's mightiest empire, could not abandon their colonies to this upstart nation. What could they do to defend them?

The Smyth Report

An appreciation of the lessons learned in the war – and an outline of what to do about them – was drafted by Lieutenant-Colonel Sir John Harvey and given to the Governor General and Commander of Forces, the Duke of Richmond, in 1819. Lt.-Col. Harvey had distinguished himself at the Battle of Stony Creek in 1813 and knew well the problems of the campaign. The Duke of Richmond also had excellent military credentials and was a trusted friend of the Duke of Wellington, who was now the Master General of the Ordnance,

responsible for the permanent defences of the Empire.

The Duke of Richmond inspected the provinces personally. He sent his appreciation to Wellington in 1819, generally approving of Harvey's work. Wellington replied with encouraging comments to Lord Dalhousie, the new Governor General. Little was done. But a new war scare in 1824 led Wellington to instruct Sir James Carmichael Smyth, his Chief Engineer during the late war and now a major-general, to recommend the fortifications and manpower – and to estimate the cost – needed to put a plan for Canadian defence into effect.

The preliminary Smyth Report was dated September 9, 1825, and followed by a more detailed report in February that projected a total cost of £1,646,218. Wellington approved. "I do not entertain the smallest doubt," he wrote to Lord Bathurst, Secretary of War and the Colonies, "that if the communications and works proposed...are carried into execution, His majesty's dominions in North America ought to be, and would be, effectually defended and secured against any attempt to be made upon them hereafter by the United States, however formidable their power."

Wellington (who became Prime Minister in 1828) and his successors at the Board of Ordnance tried hard for the next 25 years to implement Smyth's plan despite declining military spending and major budget overruns. Financial trouble at the Ordnance, mainly in the Canadas, led to its complete reorganization within the new War Office in 1848. Expenditures in British North America for barracks, fortifications and communications had by then amounted to £2,769,005, a 68% cost overrun. This was three quarters of the sum spent across the entire Empire!

And there were two further costs: the funds expended by the Colonial Office for roads, canals and legal expenses, including settlements for related land disputes; and those of

Operations on the frontier must be defensive and designed to resist, dissipate and defeat an invasion

the Commissariat branch, which provided the food, clothing, interim lodging and transportation for military personnel in Canada. This was an additional £100,000 to £150,000 per year.

Wellington knew that the forces given to Canadian defence could not – in a context of growing austerity – be greater than the maximum effort of the previous war: 13,500 troops. Even so, he thought this would be enough to hold up a numerically superior force until reinforcements arrived.

Wellington would not get nearly that many soldiers. Instead of two trained corps of 5,000 men each in the field and a total garrison of 13,500 men in the two Canadas, there were on the eve of the rebellions in 1837 only about 5,000 soldiers in all of British North America. Instead of an organized and trained force of 40,000 militia, there was a vast paper army of nearly 250,000 Sedentary Militia, essentially all the men between 18 and 60 years of age. Although several county battalions were raised and trained hard for more than a year in the wake of the rebellions – and were housed in new barracks at the crumbling Fort York and on Bathurst Street, at Queen – these units were soon stood down. What remained was referred to as the Active Militia, men up to the age of 40 required to muster once a year.

A strategic balance

While implementation advanced slowly as funds permitted, and never came close to Smyth's entire plan, those fortifications, roads and canals that were built did greatly improve the military potential of the colonies. There was also a consensus on the general strategy.

Operations on the frontier must be defensive and designed to resist, dissipate and defeat an invasion. Forts and posts would hold off or delay the enemy on his principal lines of attack, the defenders falling back if necessary upon the bastions protecting the communications with Britain. The main effort would therefore be the defence of five fortresses: Halifax, Quebec, Montreal,

Kingston and Niagara. With regular troops holding these, and with raiding militia harassing their flanks and rear, the Americans would not be able to consolidate their grip on the provinces. The British could look forward to large reinforcements in the spring when ships could once more reach Quebec.

Timing was important. Winter would probably help the Americans because it was shorter for them and prevented reinforcement by the British. But it would also prevent any lengthy siege operations against the planned fortresses. The best chance for the Americans, therefore, would be an attack in late winter or early spring, completing their campaign before British help could arrive.

Communication and reinforcement in British North America relied on water transportation. There was no road to Lower Canada from the Maritimes and the only one between Quebec and Amherstburg (at the west end of Lake Erie) was 700 miles long and most useful in winter. During spring and summer, the British position was much better. The comparative invulnerability of Halifax – by way of a presumed naval superiority and the impracticability of a major land attack through the woodlands of Maine and New Brunswick – ensured British command of the St. Lawrence to Quebec. But no farther.

A more secure line of communication was needed from Montreal to Kingston and the upper lakes. While the British dreamed of arming civilian steamboats to create an ad-hoc navy, the Americans had the same ideas and controlled three quarters of Great Lakes shipping. The Royal Navy eventually conceded that it could not gain naval supremacy upstream of Montreal.

This depressing situation for the British was matched by a similar but different situation for the Americans; a situation that, for a time, balanced the vulnerability of the Canadas.

The War of 1812 showed clearly the exposure of American coastal cities to heavy raids by the Royal Navy. Baltimore and New Orleans had escaped destruction, but Washington had



not, and Smyth thought New York should share its fate in the next war. This the Americans well knew, and an official report in 1840 reminded them that their great cities also held their main naval depots and harbours. The fire of 1835 in New York City suggested the probable result of a rain of incendiary shells.

As a consequence, the Americans spent vast sums building fortifications along their Atlantic seaboard and the Gulf Coast. Yet the forts were described as “incomplete, unfinished, and unarmed” as early as 1837, when all required extensive and costly repairs. Nor were there troops to man them. The US Army boasted only 6,000 regulars in 1821, and only 4,000 by 1835 (and few of them faced north). America’s latent strength was in its state militias, whereas Canada’s strength was still in its British regulars.

Executing the plan

In the Maritimes, the budget developed by Smyth generally held. Halifax was the cornerstone of Canadian security and British defence policy in the North Atlantic. The Citadel was

to be rebuilt at a cost of £160,000 together with subsidiary forts and batteries intended to protect the naval dockyard. Forts at Annapolis and Windsor would prevent a land-based attack on Halifax from the Bay of Fundy. The tidal port of Saint John was to be protected by a new battery on its approaches.

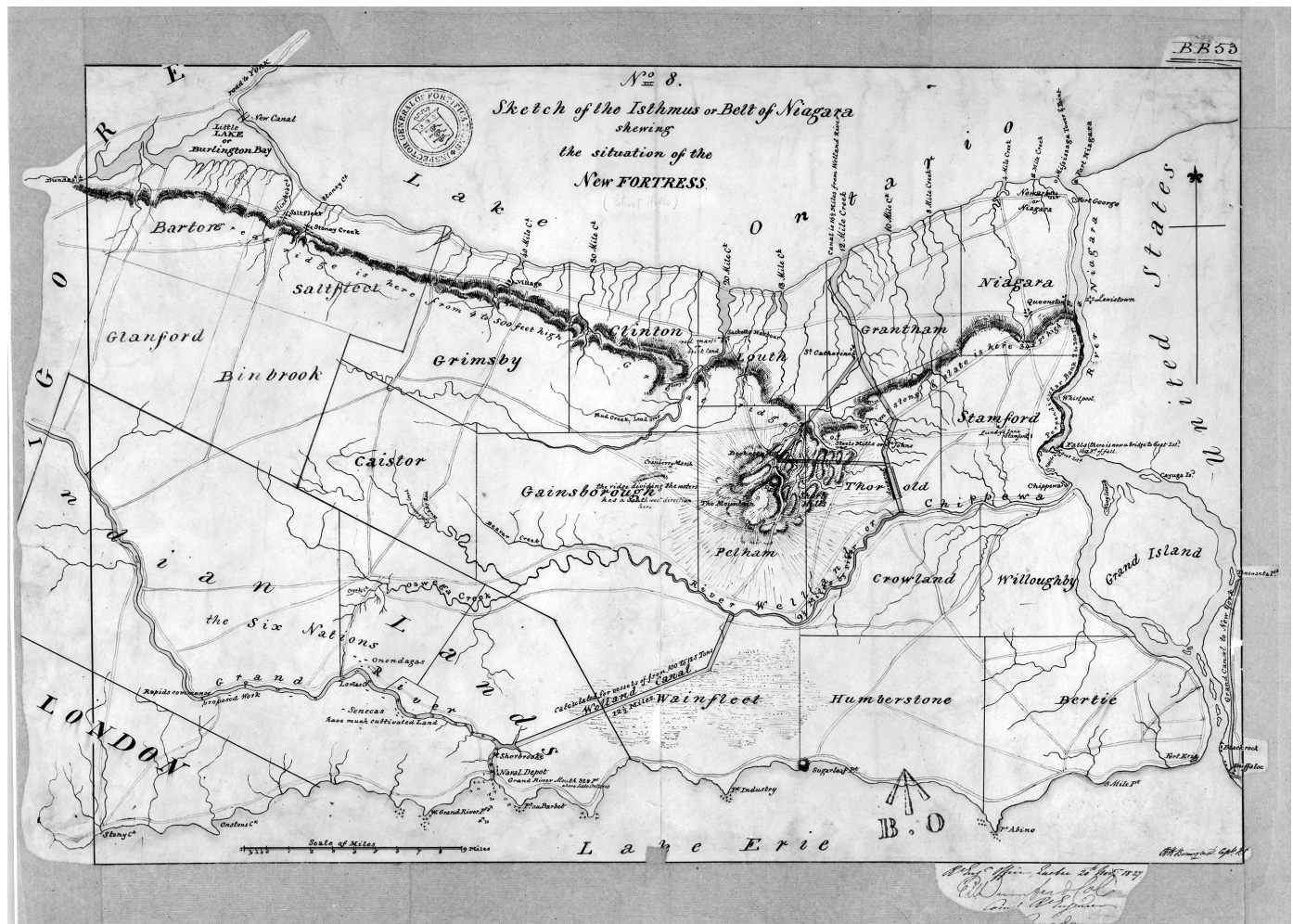
Smyth had recommended two roads to connect the Maritimes with Quebec to allow reinforcements to arrive before the spring breakup in the St. Lawrence. One went from Quebec to Fredericton and Saint John, a distance of 447 miles, by way of Lake Temiscouata and the Saint

John River. Large parts of the road existed but it ran along the American border, easily cut in war; £40,000 were nevertheless committed to complete the missing sections. By the 1840s the route was in regular use and it is now part of the Trans-Canada Highway. The second route – from Quebec to Moncton to Halifax, more secure but 1000 miles through largely unsurveyed land – was left to provincial legislatures and the march of time.

In Lower Canada, indecision around how to best repel an attack down the Richelieu River is reflected in the cost over-

Americans spent vast sums building fortifications along their Atlantic seaboard and the Gulf Coast

Wellington’s Niagara Fortress was planned for the high ground called Short Hills, where it would overlook the Welland Canal to the south and east. In 1831, 200 acres were bought for £628 but nothing was built. The site today is occupied by the Look-Out Point golf course, in Fonthill – which boasts of “absolutely the most breathtaking view of the Niagara Region.” This 1827 map is credited to Colonel E.W. Durnford, Royal Engineers. Source: LAC NMC 0021588



runs. Against original estimates of £180,000, total costs in the province ballooned to £980,209.

The Quebec Citadel was upgraded to withstand almost any conceivable siege. A planned Montreal citadel, on the other hand, faced no end of opposition. The walls of Montreal had been demolished in 1817 to allow the city to expand. A fortress was originally proposed for Place des Armes, but citizens objected to the demolition of a newly rebuilt city centre. The top of Mount Royal was then proposed. The problem there was that the city and the communication route would be in front of the fortress, subject to capture and use in a siege.

Consequently, a plan evolved to build small forts or batteries on the likely launch sites for an attack on the island of Montreal. These places were Cascades, Chateauguay, La Prairie, Longueuil and Bout d'Isle.

The forts along the Richelieu start six miles north of the border with Fort Lennox at Isle-aux-Noix. Smyth planned minor improvements to the existing works but Wellington insisted on more; by 1829 (and £86,727 later) Lennox had been rebuilt. The fort at St. Jean, where substantial improvements were also made, protected the place where an attacking force declared whether it was after Montreal or Quebec. The closest portage to Montreal, it was also the terminus of Canada's first railway in 1836 and it protected the naval depot of the Lake Champlain and Richelieu River flotillas. St. Jean is still an important military base. Chambly, farther downstream, was also to be rebuilt but (thankfully for us) little was done and

the French stone fort, built in 1711, was preserved. Some of the money probably went into the Chambly Canal, which by 1840 connected Chambly and St. Jean.

Canals

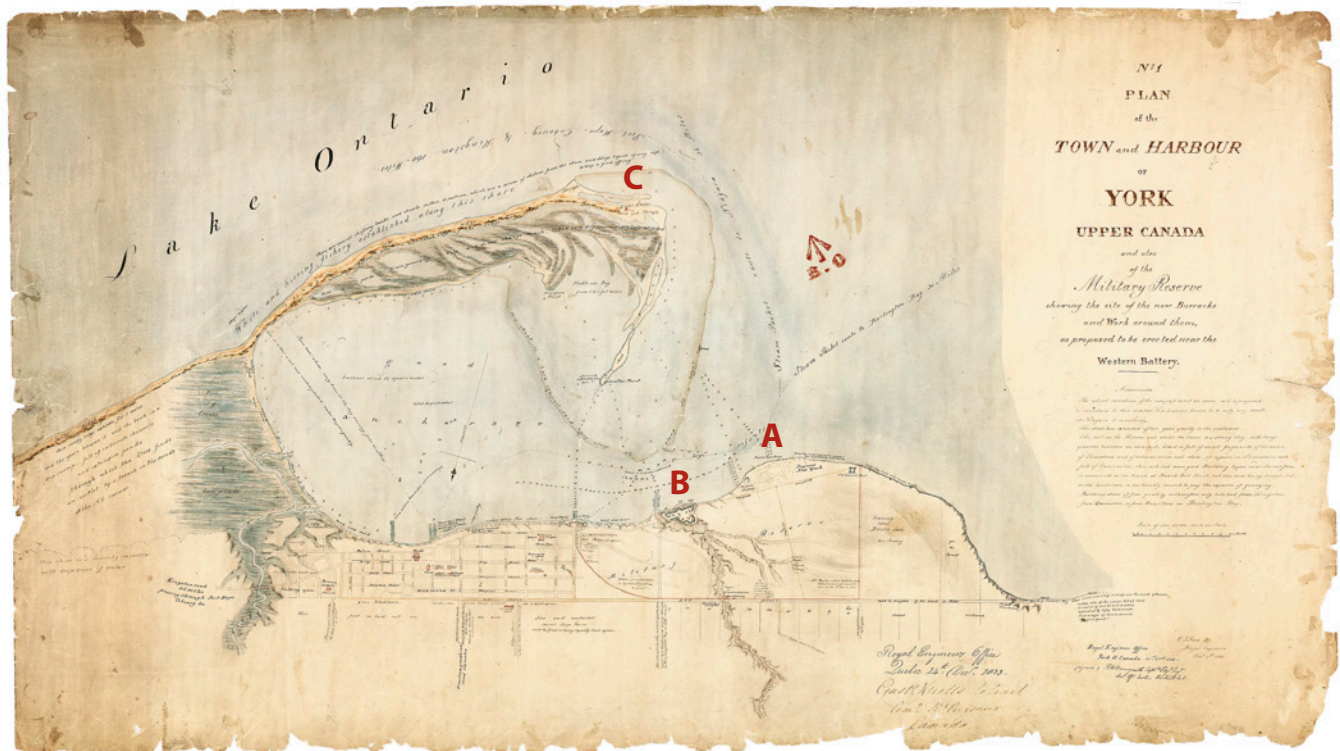
Before the railways, and when roads were few and muddy, it was lakes, rivers and canals that connected the population centres and military outposts of British North America. Two important aspects of the canal system, however, should be noted.

First was the complexity of its administration, owing to the fact that its various components were governed by different jurisdictions. The Lachine canal was controlled by Montreal, the Vaudreuil lock by a private company, the St. Anne's lock by Lower Canada, and the Carillon, Chute-a-Blondeau, Grenville and Rideau military canals by the Ordnance from London. The Welland Canal was a private enterprise taken over by Upper Canada in 1841.

Second, the objectives of these canals were as varied as their owners. Building standards and dimensions varied and were never harmonized, and so much of the expenditure and effort was futile. By the mid 1840s, even the new Rideau Canal (finished in 1832) was obsolete for Great Lakes shipping.

The Niagara peninsula in the 1820s was still sparsely settled away from the river. It's easy to imagine local competition for the route of a Niagara canal, for growth along it would be assured. Smyth thought the Welland Canal was too close to the border

Smyth thought the Welland Canal was too close to the border and, like Wellington, believed a fortress would be essential



No.1 Plan of the Town and Harbour of York is dated 31 October 1833, 25 years before storms made the great sandbars into islands. Colborne's location for "the new Barracks and Work around them" is at A, the old fort is at B, and the lighthouse (still standing today) at C. The egg shape in the centre of the map is a firm sandbar, giving the new fort a perfect command of the narrow harbour entrance. Captain Bonnycastle signed the map. Source: LAC NMC 16818

and, like Wellington, believed a fortress would be essential to its security in war. The Royal Navy wanted the canal to start in Hamilton and terminate in the Grand River at its revised depot at Caledonia. However, the Welland Canal Company, having obtained its financing from New York faster than its competitors, had already started work.

There were also various studies of a canal connecting the Ottawa River to Georgian Bay and the naval depot at Penetanguishene, a route that would avoid the vulnerability of those closer to the border. This was a pet project of the Duke of Wellington from 1819 into the 1830s and the Royal Engineers tried their hardest to please the great man. Survey parties were dispatched to find a route – some of them plotted through what is now Algonquin Park – but the idea went nowhere.

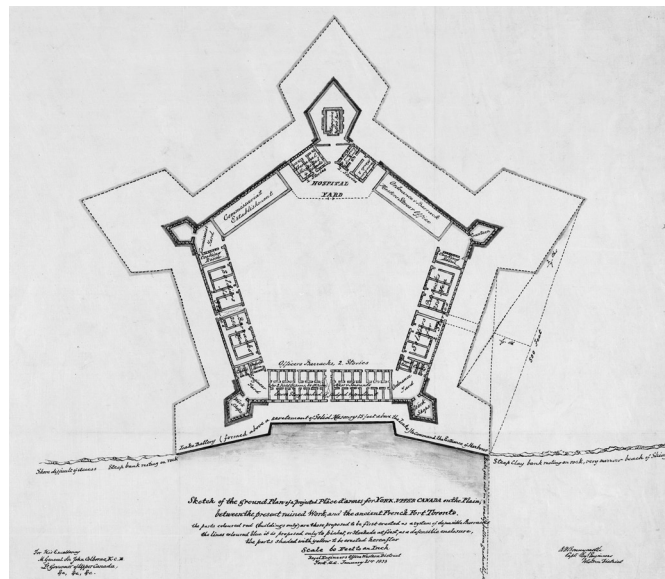
Revising the plan

For two decades after the opening of the Rideau Canal, Wellington's views dominated military thinking on the defence of Upper Canada. However, during the Oregon Crisis of 1845–46, the Ordnance concluded that Kingston could not be defended against a combined land and sea assault unless a large field army covered the land approaches, as Smyth had recommended. To deal with the naval threat, Martello towers were erected to protect the dockyard from bombardment by steam warships, which could venture closer to shore than sailing vessels.

The British government was still in no mood to provide the money for the 13,000 troops that the Ordnance always considered necessary. Canada, it believed, should provide the money and troops for its own protection, not the British taxpayer. As for all the military canals, originally estimated to cost £279,000, the Ordnance in the 1840s stopped tracking the overruns – Parliament was threatening to shut down the Ordnance because of them – when £1,241,813 had already been spent!

By 1832, the Ordnance was already in trouble with Parliament for unapproved spending, especially on the Rideau Canal, and economies became necessary. Sales of the Ordnance's extensive properties were used to finance what little construction was immediately required. The legislature and most towns hesitated to buy Ordnance land, however, wanting it to be donated instead, asserting that the funding of fortifications was a British responsibility.

The projects in Upper Canada, scheduled later in the plan, consequently suffered or were sacrificed in order to fund the



Ground plan for a projected Plâce d'armes at York, drawn up by Captain Richard Bonnycastle, Western District's energetic new engineering officer, and dated January 21, 1833. He calls it "a system of defensible barracks" with room for 500 troops. The outer perimeter would be a stockade and later (perhaps) an earth and stone fortification. By October – when a hopeful Sir John Colborne sent a cluster of maps and plans up the chain of command – this Plâce d'armes had evolved into the loose assembly of stone buildings that was built seven years later. Source: LAC NMC 0005369

would need defending for as long as it remained the seat of government. First proposed in 1827 by the Royal Engineer office at Quebec was a five-sided stone citadel bristling with guns but with barracks for only 200 men. The existing fort would be demolished and this fortress built over a buried Garrison Creek. Nothing was done.

The next proposal was from Sir John Colborne, the Lieutenant Governor at York, who proposed to London in January 1833 the sale of military lands east of Garrison Creek to allow the town's expansion and to pay for new fortifications. A sketch completed by his engineer only three days earlier (above) shows "defensible barracks" for 500 men that, wrote Colborne, could be built for £10,000. By October a new map (p. 9) and a set of plans had been drawn up for stone buildings and a battery a mile west of the old fort, where they could better command the entrance to the harbour. The barracks would be protected by artillery-proof earthworks.

The lands were sold but the new fort was delayed and delayed until rebellion in 1837 instead forced immediate improvements to "the present ruined Work." Construction finally began in 1840 in the context of domestic unrest. The result, at Colborne's chosen site, was an assembly of stout stone buildings of Queenston limestone arrayed around a parade square and surrounded by a wooden stockade. It could house about 350 officers and men. Renamed the Stanley Barracks in 1893, all that remains is the officers' quarters.

With the failure of a secure northern canal route, the naval depots and harbours on the upper Great Lakes had to be protected from siege. The likely inability of the Royal Navy to move vessels in wartime from point to point in the Canadas forced it to maintain three inland naval squadrons and four naval depots on



Fort Henry, Kingston, almost finished in 1836. A heavy mortar is seen on the parade ground. This watercolour is by Captain George Whitmore, one of the Royal Engineers involved. Five years later, Whitmore supervised construction of the fort's Advanced Battery and the Commissariat Stores building, finishing them £2,000 under budget. Source: Peter Winkworth Collection, LAC R9266-5-0-E

the Richelieu River, Lakes Ontario and Erie, and Georgian Bay. Penetanguishene was to be the major naval base for the upper lakes, backstopping Amherstburg and Chatham. Although the town site was moved at great cost to accommodate it, the new naval station was never built.

The balance tips

The Trent incident in November 1861 and the expanding Civil War led to another major review of British North American defences. The success of Union amphibious campaigns on the Mississippi, along with the Union's ironclads blockading the South, showed that the Royal Navy would have little chance now of mounting coastal raids. The 1862 Defence Review also determined that US forces were able to land along the north shore of Lake Erie, from Lake Huron at Goderich or Owen Sound, and to cross the border at Detroit as well as in Niagara, at Kingston and up the Richelieu. Complicated schemes were made for the Royal Navy to relocate its inland bases, develop prefabricated ironclads and build new coaling stations – even knowing that coal on the Great Lakes was only available from Pennsylvania!

The cost of upgrading was put at no less than £1,611,000 (about \$300,000,000 today) and the idea was that Canadians would finance and man the new fortifications. The cost of a northern canal through Lake Nipissing and the French River – supposedly a commercially viable route for grain from the

American midwest – was estimated to be another £2,400,000.

Further reviews of defence were done by Lt.-Col. William Jervois, another Royal Engineer dispatched from England. His first report, released in February 1864, showed that without naval control of the Great Lakes, British territory west of the Ottawa River was indefensible. This was politically unacceptable.

A second version was presented in November that included Canada West and brought forth an offer: the provinces would spend \$500,000 on more fortifications for Montreal and \$1 million on the militia. By this time, talks to unite the provinces of

British North America had begun. The offer lapsed.

The influence of the Smyth Report of 1825 on the development of Canada has been little acknowledged. The amount spent on fortifications, roads, canals, troops and their supplies was enormous and hugely influential in the nascent colonial economy.

The legislature of Upper Canada and many municipalities viewed the Board of Ordnance's actions as arbitrary and high-handed. Perversely, they often obstructed the board's works and ways of financing them, since they were seen as detrimental to local development and profit. Local magistrates often sided with plaintiffs against the board and hefty settlements were awarded that were paid out of Colonial Office funds. City councils wanted the military reserves on their borders for expansion or private use. Military expenditure was a way of funding development

The expanding Civil War led to another major review of British North American defences

even then, but the profits of that development were denied to the Ordnance, preventing self-financing of later portions of the strategy.

Canadian defence was a troublesome responsibility to all Imperial authorities, especially to a department under constant assault from reforming elements in the House of Commons; elements who saw the Ordnance as dysfunctional, and who viewed colonies as burdens to be shed, ultimately by granting self-government. Under these circumstances, the officers responsible for Canadian defence, from the Governor General down to the Royal Engineer officers responsible for particular projects, were driven to extract funds from a reluctant Parliament by methods bordering on fraud.

Yet the plan succeeded. The legacy of the Smyth Report of 1825 on the defence of British North America could be said to be the creation of the Dominion of Canada itself. And as a bonus to this, we have an inheritance today of charming and valuable tourist attractions, each telling a part of this story while delighting visitors from around the world – including from all corners of the United States.

Tony Partington is a Civil Engineer who spent his career in construction and property management in Canada, the US and Great Britain. Although commissioned in the Royal Canadian Engineers, most of his militia service was in the infantry. Brought up in St. Catharines immersed in the history of the Niagara Frontier, he attended Queen's a mere cannon shot from Old Fort Henry and the Rideau Canal.

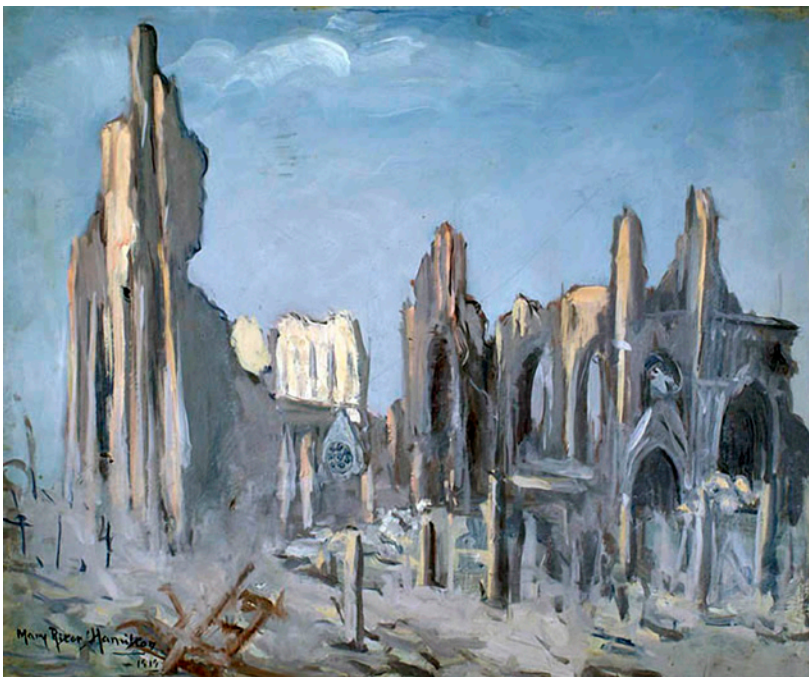
Sources & Further Reading

The main archival resources are the Library & Archives Canada RG8 Series 2 archives on the Smyth reports of 1825, 1826 and 1828; and the Jervois reports of 1864. For insight into the formulation of strategy, see *The Despatches, Correspondence and Memoranda of Field Marshal, Arthur, Duke of Wellington* (5 vols, London, 1867-1870). Accurate costs are hard to know because of the shell games played at the time, but the Army Estimates published yearly in *Hansard* are indispensable. Smyth's opinion of York and Colborne's letter on land sales are reprinted in Edith Firth's collection *The Town of York, 1815-1834*, which also has a large and legible fold-out copy of Plan No.1.

Kenneth Bourne's *Britain and the Balance of Power in North America 1815-1908* (Longmans, 1967) provided the historical narrative. The standard work on canal building is G.K. Raudzens, *The British Ordnance Department and Canada's Canals, 1815-1855* (Waterloo, 1979).

For the story of Canadian defence after Confederation, see Richard Preston's *Defence of the undefended border: Planning for War in North America* (McGill Queen's, 1977). Carl Benn traces the origin of Toronto's new fort with generous illustrations in *Historic Fort York, 1793-1993*, and Aldona Sendzikas has since written the comprehensive *Stanley Barracks: Toronto's Military Legacy* (both are in the Canteen). For an entertaining read on the pursuit of a canal across the Canadian Shield, see Roderick Mackay, *Algonquin Park: A place like no other* (Friends of Algonquin Park, 2018) pp 33-42.

Mary Riter Hamilton



After the Great War, the intrepid Mary Riter Hamilton went to Europe to record the places where Canadians had fought. On her own initiative and raising most of the cost herself, the independent painter from the West Coast was determined to memorialize the fallen even as other Canadians began to move on. Images of her work were part of "Parallels," a small display that visited Fort York in September from the Canadian Centre for the Great War, a private museum in Montreal. Their display also included sculptor Frances Loring and photographer Elsie Holloway. Seen here is Mary Hamilton's Ypres Cathedral, of 1919, painted with an optimistic flash of sunlight (LAC C101327). For a new biography of this brave painter, see *No Man's Land: The Life and Art of Mary Riter Hamilton*, by Kathryn Young and Sarah McKinnon (UMP 2017).

An anthology sampler

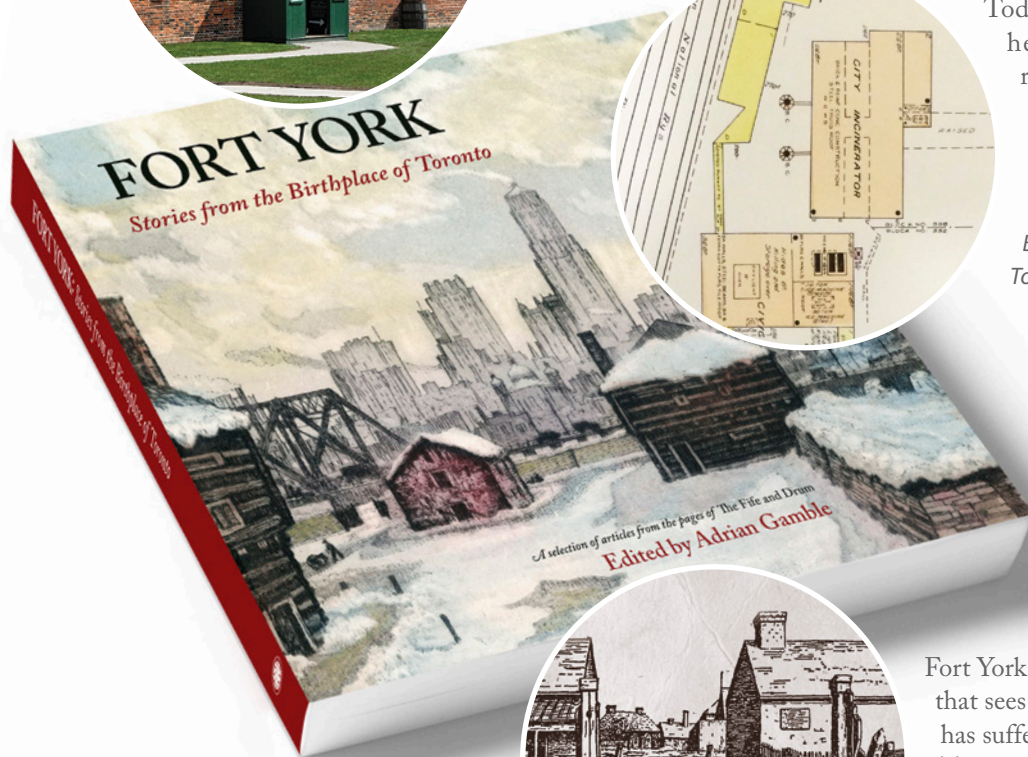
More than 20 years in the making, the new *Fife and Drum* anthology *FORT YORK: Stories from the Birthplace of Toronto* leads from the delightful to the unexpected, from the learned to the insightful, and from the eighteenth century to the present. Its elegant design and breadth of inquiry combine to make it an ideal gift on the nature of Toronto. Find one in the Canteen when you come down for the Frost Fair in early December.



Few North American cities can boast, as can Toronto, the remarkable fact that seven of its eight oldest buildings dating to shortly after its founding stand today close to the downtown.... Remarkable also is that the descendants of the men who helped build them still live prominently among us. *Stephen Otto, "The Thomsons: Early Builders at Fort York" (Photo: Andrew Stewart)*



Today Fort York finds itself in the heart of a densely populated residential neighbourhood with the accompanying transit lines, services, and amenities – just about perfect for an urban heritage landmark. *Christopher Moore, "Fort York Is Better for the Bicentennial" (Map: Toronto Public Library 912.13681 I56)*



Fort York itself, almost ruined by a city that sees it as an obstacle to progress, has suffered worse indignities from Torontonians than its enemies. *Christopher Hume, "Toronto's Big Bang" (Sketch: Jean Geeson in The Globe, July 4, 1903)*



Prostitution (euphemistically labelled 'disorderly conduct') was by far the most common offence of the period.... In 1840 Charles Daly, clerk of the peace for Toronto, reported that 317 cases of "disorderly conduct (whores, rogues and vagabonds)" were tried in the Mayor's Court. *Victor Russell, "More To Be Pitied than Censured: Prostitution and the Toronto Garrison" (Painting Detail: Anne S.K. Brown Military Collection, Brown University)*

At the Birthplace of Toronto **Notes from the Staff**

Manager's Report

by David O'Hara, Site Manager

Another successful summer has come to an end at Fort York and it was certainly a busy one for the men and women of the Fort York Guard. While the weather was far from ideal in 2018, the Guard can be proud of their accomplishments. Once again they distinguished themselves at Fort George during the annual Soldiers Field Days, coming in a close second just behind the Grenadiers of the Fort George Guard. They were also part of two Bentway-related events, the Toronto Summer Music Festival's "Reflections of Wartime" concert in July and the opening of the Strachan Gate in August (watch the Fife & Drum Corps on CityTV's coverage of the opening here: <https://www.bttoronto.ca/videos/stella-is-live-at-the-bentway-3-of-4/>).

Moving into September, and on the heels of several big third-party events on Garrison Common, we held our own Canada's Hundred Days: A Great War Living History Weekend. Almost 300 students joined our educational programs on September 21 and many more visitors came down to the fort over the weekend to commemorate the Canadian contribution to the closing days of the First World War.

During the weekend, visitors could browse displays of the uniforms, weapons and equipment of both sides. In a series of tents was a comprehensive display of Canadian medical services. There were demonstrations of weapons, tactics, and communications as well as numerous Great War Foodways presentations. A huge thank you goes out to all the fort's staff, particularly Kevin Hebib, Colin Sedgwick-Pinn, Bridget Wranich and Melissa Beynon for leading the charge, and to our many partners, including the Canadian Centre for the Great War, the Canadian Military Heritage Society (PPCLI & CAMC), Soldiers of the Kaiser, the 11th Swiss Rifles Association, Parks Canada, the Great War Flying Museum, the Hamilton Vintage Signals Team and Gary Blakeley, Alison Norman and Scott Woodland.

We were also pleased to have our new book *Recipes for*

Victory: Great War Food from the Front and Kitchens Back Home in Canada on hand for Canada's Hundred Days. Just released by Whitecap Books, this lavishly illustrated cookbook was created by staff and volunteers at Fort York. It features kitchen-tested recipes from a century ago that will continue to support the award-winning Historic Foodways Program here at the fort. Whitecap is distributing the book internationally and you can pick up a copy in our well-stocked Canteen.

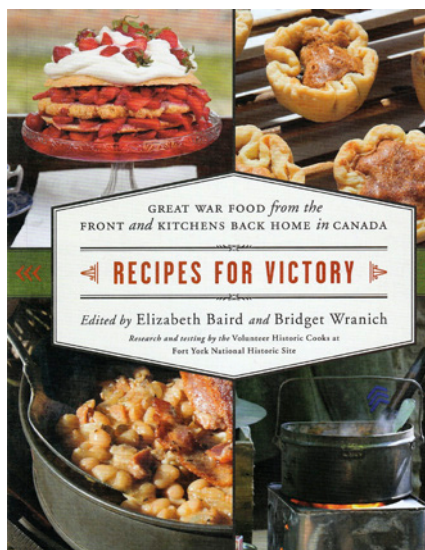
Also early this October we were pleased to see the Talking Treaties Spectacle return to the grounds of Fort York. Talking Treaties is an outdoor pageant, rooted in oral history and community collaboration, that explores the treaty history of the Toronto area through words, song, movement and spectacle. Inspired by the historical research of Victoria Freeman and others, director Ange Loft led professional and community performers through vignettes of the Dish With One Spoon, the Toronto Purchase, the Treaty of Niagara and more. A huge thank you to all involved, particularly our partners at Jumbles Theatre.

If you're visiting Fort York before the end of November, our site partners at the Bentway have a new exhibit called "If, But, What If?" which includes art works from Michael Awad (Toronto), Steven Beckly (Toronto), Wally Dion (upstate New York), Mani and Sanaz Mazinani (Toronto and San Francisco), Alex McLeod (Toronto), Sans

façon (Calgary) and Jon Sasaki (Toronto). The signature work WATERLICHT, by Dutch artist Daan Roosegaarde, was a large-scale light installation at Fort York in mid October. Visit <http://www.thebentway.ca> for more about all of this.

Sunday morning, November 11, we will once again, in co-operation with the Toronto chapter of the IODE, present our evocative Remembrance Day service. At 10:45 a solemn procession of period-uniformed staff and standard bearers will leave the fort's west gate and make their way to the Strachan Avenue Military Cemetery at the west end of Garrison Common. There, a public service will honour all members of the Toronto Garrison who have fallen during the past 220 years in defence of Canadian ideals and freedom.

The last big event of 2018 will be the annual Frost Fair, this year promising to be bigger and better than ever. On the first



day of December you and the whole family can enjoy musical and military demonstrations while the kids are entertained with drill workshops, dress-up fun, games and crafts. You'll be able to shop for unique gifts by local artisans, gifts ranging from jewellery to historical reproductions to holiday greenery. Our talented Volunteer Historic Cooks will have their Heritage Café open for lunch. Check our Upcoming Events listings at the end of this issue for ways to keep the children busy in the kitchen over the coming holiday season.

We're pleased to see the end to much of the construction around our site. The first phase of the Bentway is now largely

complete. The second span of Garrison Crossing, the pedestrian and bicycle bridge spanning the rail corridor north of the fort, was scheduled to be lifted into place on October 13. Work on the underside of the Bathurst Street bridge was completed in September. That means work on Lower Garrison Creek Park, part of Fort York National Historic Site on the east side of Bathurst, can begin in the spring. Final trail connections along the north side of the fort between Garrison Crossing and the new park will be completed at the same time; see the designer's own description of the park in the April 2018 *Fife and Drum*.



A happily wounded soldier of the 75th Battalion CEF is attended by three Nursing Sisters of the Canadian Army Medical Corps sometime in the autumn of 1918. These re-enactors were part of the Great War Weekend inside Fort York in late September. The occasion was the 100th anniversary of Canada's greatest military achievement: leading the costly assaults that finally ended the First World War. Crowds absorbed tactical demonstrations, extraordinary equipment displays, period recipes, wartime songs and an entire Casualty Clearing Station – complete with its own ambulance – contributed by the Canadian Military Heritage Society. Below, a small section led by a lieutenant waits to assault a German machine-gun post dug in near one of the blockhouses. Photos: Sid Calzavara



Visit our website at: www.fortyork.ca. Learn more about Fort York, subscribe to the [free newsletter](#), become a [member](#), [donate](#) or browse our [historical image gallery](#).



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The Fife and Drum is a quarterly publication of The Friends of Fort York and Garrison Common.

2018 | Upcoming Events Historic Fort York

Compiled by Richard Haynes

OCTOBER

Canada's Table: A Celebration of Cookbooks Saturday, October 13, 7:30 am to 5 pm – Ticketed Event

Celebrate the history and influence cookbooks and great Canadian authors past and present with a full day of panels, demos and workshops. Keynote speaker is Bonnie Stern; guest speakers include Mairlyn Smith and Anna Olson; workshops by David Wolfman, Claire Tansey, Tara O'Brady, Matt Basile, Afrim Pristine, Pat Crocker, Emily Richards and Elizabeth Baird. Presented by Fort York NHS. Advance tickets \$125 + tax are required. See <https://fortyork.streamintickets.com/purchaseProductSP.aro?sum=Canadas+Table>

Toronto Soup Festival Garrison Common Saturday, Oct 20, 12 to 8 pm, Sunday, Oct 21, 12 to 6 pm Ticketed Event

A two-day outdoor festival serving up the best soups in the city, all in support of Second Harvest. This inaugural food festival will feature local restaurants and artisans who will be selling their custom creations or tried-and-tested trues. You'll be able to vote for your favourite soup to crown the People's Choice. Bring the family down to sip and savour sample-sized helpings and enjoy myriad flavours from around the world. You'll also find music and an autumn campfire. #SoupFestivalTO www.soupfestival.ca

Please note: This is a third-party event. Fort York will be open from 10 am to 5 pm; regular admission applies.

Fort York After Dark: Lantern Tours October 23, 24, 25, 26, 27 – 7:30 pm to 9:30 pm Ticketed Event

Hear chilling tales on a lantern tour of Fort York and its spooky historic surroundings. Learn about the haunted lighthouse, the bloody Battle of York and even more eerie history as we explore nearby military burial grounds. This is not recommended for children under 8 years of age (it's that good). Complimentary refreshments included. Advance tickets \$13.27 + tax are required.

See <http://fortyork.streamintickets.com>

Remembrance Day Strachan Avenue Military Cemetery (west end of Garrison Common) Sunday, November 11, 10:45 am

Fort York National Historic Site and the IODE (Imperial Order Daughters of the Empire) are proud to present one of the city's most evocative Remembrance Day services. Commencing at 10:45 from the west gate of Fort York, a procession led by period uniformed military staff and standard bearers of the IODE will make its way to the Strachan Avenue Military Cemetery, where the public is gathered. There, at the eleventh hour, all soldiers of the Toronto Garrison who fell in the War of 1812 and all of Canada's wars since will be remembered and honoured.

Admission is free.

DECEMBER

Frost Fair Saturday, December 1, 10 am to 5 pm

Have some holiday fun with the whole family at historic Fort York. Shop for unique gifts made by local artisans, including jewellery, heritage-inspired reproductions and holiday greenery. Enjoy military and musical demonstrations alongside children's drill sessions, games, crafts and dress-up. Print your own Frost Fair souvenir on a Mackenzie House press. Visit our Volunteer Historic Cooks to sample period recipes and stop by the Heritage Café for lunch.

Admission is free.

The Cook's Apprentice Saturday, December 8, 1 pm to 3:30 pm – Ticketed Event

Kids aged 8 to 12 learn to bake traditional cakes, biscuits and confections in the historic kitchen of the officers' mess. Recipes include iced Queen Cakes, Gingerbread, Peppermint Drops and a delicious breakfast griddle cake for the holidays. There will be a recipe package and samples to take home. Advance tickets \$30 + tax required.

See <http://fortyork.streamintickets.com>.

Fort York remains open; regular admission applies.

Gingerbread Make & Bake December 27 to 31, 11 am and 2 pm

In this hands-on workshop, kids (aged 4 and up) will use period cooking utensils and tools to sift flour, crush cinnamon, cloves or allspice, pound sugar, and grate nutmeg and ginger as they prepare an 1800s gingerbread recipe. Samples can be taken home – if they last that long! Each workshop is limited to 15 children. Sign up in the Museum Store when you arrive.

The only cost is regular admission to Fort York.



No batteries are needed for all the toys and books in the fort's Canteen. We have wooden toys, delightful Georgian-era games, foam swords, model soldiers and musical instruments. Let history fire the youngest imagination with challenging colouring books and excellent graphic novels. Photo: Birgitte Nielsen