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The Birth of a Bridge. The Building of the Victoria Bridge in Montreal, 1853- 1859

Anh-Dao Bui Tran

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le : 22 décembre 2023

**The Birth of a Bridge.
The Building of the Victoria Bridge in Montreal, 1853-
1859**

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The Birth of a Bridge.
The Building of the Victoria Bridge in Montreal, 1853-1859.

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Note on vocabulary:

I use British North America to define the British colonies after the independence of the United States. I use the term Canada to refer to the United Province of Canada (i.e. Upper and Lower Canada after 1840, when they were united by the British to form the largest colony in British North America). In our time period, Canada West corresponds to former Upper Canada, and Canada East to former Lower Canada.

I use the word ‘Canadian’ to refer to locals in Canada (Upper and Lower Canada), both anglophone and francophone, but I exclude Indigenous people who are called ‘Indigenous people’. I use French Canadians to refer more specifically to francophones. When necessary, I use English, Scottish, Irish, etc. to refer to the origin of the Canadians. In that case, I make no distinction between the different waves of migration. Of course, the terms British, English, Scottish, Irish also refer to the nationalities of individuals.

The title of this dissertation, *The Birth of a Bridge*, is borrowed from Maylis de Kerangal’s novel *Naissance d’un pont* (2010).

Introduction

On the 25th August 1860, the Prince of Wales was welcomed in the harbour of Montreal by the mayor and social elites of the city. The reason for his much awaited visit that newspapers celebrated and lengthily described was the opening of the Victoria Bridge, the first bridge to cross the St Lawrence (fig. 1).



Fig. 1 *Victoria Bridge Montreal*, William Notman, McCord Museum (Montreal), N-0000.193.183, 1859-1860

View of the Victoria Bridge, the first bridge to cross the St Lawrence. It was called a tubular bridge because of the beam, called tube, through which trains drove.

Completed two years ahead of schedule in 1859, this three-kilometre bridge of tubular design was regarded by contemporaries as a ‘monumental engineering achievement (...) for its

unsurpassed magnitude and boldness of conception, and for the feat of its construction under extremely difficult conditions.’¹

The directors of the Grand Trunk Company, for which the famous partnership of British contractors Samuel M. Peto, Thomas Brassey, Edward L. Betts and William Jackson had built the bridge, welcomed the prince with a speech, and James Hodges, the British engineer in charge of the construction of the bridge, handed him a wooden mallet and silver trowel.² The prince levelled the mortar previously spread for him and the last stone of the bridge was lowered in its position. The prince then moved to the centre of the bridge and drove in the last rivet (fig. 2), thus effectively completing the connection between Canada East and Canada West that the Grand Trunk Railway project had ambitioned. *The Illustrated London News* described with a perceptible satisfaction the cheers and ‘popular fêtes’ that accompanied the Prince in a trip defined as ‘an experiment in reference to the loyalty of the people of those districts’, suggesting that royal tours of the empire were a novelty.³

¹ Robert Passfield, ‘Construction of the Victoria Tubular Bridge’, *Canal History and Technology Proceedings*, 2001, 5.

² Conrad Graham, ‘L’inauguration / The Celebration’, in Triggs et al., *Le Pont Victoria. Un lien vital. Victoria Bridge, The Vital Link*, Montreal: Musée McCord d’histoire canadienne, 1992, 85.

³ *Illustrated London News*, 25 August 1860, Library and Archives Canada (LAC), Box 1939-197 R257-02 C003904, File 5, Item 104, 25 August 1860, 167, 168, 169.

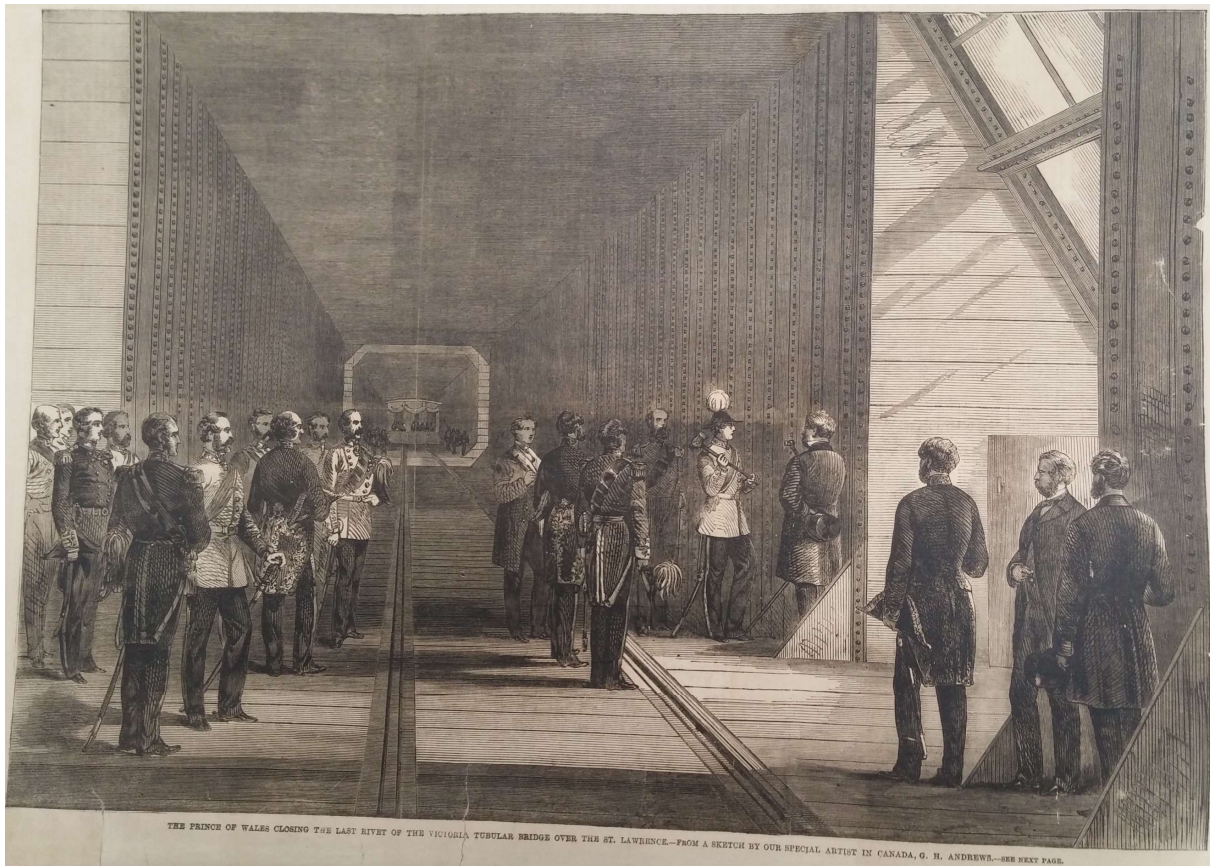


Fig. 2 The Prince of Wales Closing the Last Rivet of the Victoria Tubular Bridge of the St. Lawrence. – From a sketch by our special artist in Canada, G. H. Andrews, *The Illustrated London News*, 6 Oct. 1860, LAC, Box 1939-197 R257-02 C003904, File 6: 6 Oct. 1860-13 Oct. 1860, nos. 127-143.

The Prince of Wales driving in a silver rivet. The prince and his suite are standing inside the completed tube.

Another *Illustrated London News* article thus described the prince driving in the last rivet:

Four rivets had been left unfinished, and these were closed with iron bolts by two workmen. The last, a silver rivet, was clinched by the Prince himself. The ceremony was nothing to describe, though it would make a fine picture. The two workmen wielding their tremendous hammers with a din that was awful, the rich uniforms of the Prince and suite, half hidden in the gloom, and softened down by the wreaths of thick wood smoke which curled from the funnel of the engine in the background (...) all made a striking subject for a picture. The Prince turned a look of humorous inquiry on the Duke of Newcastle as he saw the process of riveting going forward, which said, as plainly as look could speak, ‘I shall never be able to use those hammers that way.’ (...) The Prince took the hammer. Mr. Hodges adjusted the silver knob; and, with some stout, sounding blows, the Prince finished the last rivet in the Victoria Bridge. There was no cheering over it – the company was too select for that; and the wood-smoke from the engine had long ceased to be a pictorial accessory, and had become a stifling nuisance. So every one stumbled back in the dark to the car (...)⁴

⁴ ‘The Prince of Wales Completing the Victoria Bridge’, *The Illustrated London News*, 6 Oct. 1860, LAC, Box 1939-197 R257-02 C003904, File 6: 6 Oct. 1860-13 Oct. 1860, nos. 127-143.

The prince's attitude as the workers used their hammers made it clear that this was neither his job nor his social environment. Indeed, his look to the duke of Newcastle that humorously said his inability to do the same as the workmen, the word 'humorous' that transcribed the slight preposterousness of the prince doing the same job, established a firm distance between him and his suite on the one hand, and the workers on the other. At the same time, this distance also acknowledged the skill of the workmen whose body strength made them able to use these 'tremendous' hammers. In addition, the tube was referred to as an unpleasant environment with the 'awful' sound of the hammers, the smoke that made breathing difficult, the dark. From the *Illustrated London News* quoted above, we know that there were at least two workers with the prince, but they were not pictured in the sketch that illustrated the article (fig. 2).⁵

Another newspaper that covered the ceremony, *Journal de l'Instruction Publique*, reproduced the speeches of the Grand Trunk directors and the prince. The directors described the bridge as 'this great monument [cited as] an example of what the spirit of enterprise and progress can accomplish in this country, with the help of the capital and know-how of the motherland', and added: 'The Victoria Bridge (...) was built despite the greatest obstacles civil engineering has overcome. This is the link that connects eleven thousands miles of railway, stretching from the west of Canada almost to its eastern frontier, and offers us another way for our commerce when the harsh climate closes the St Lawrence.'⁶ The directors of the company thus emphasised the economic importance of the Victoria Bridge in the development of trade and of the railway network in Canada. Indeed, the bridge was crucially important to the

⁵ 'The Prince of Wales Completing the Victoria Bridge', *The Illustrated London News*, 6 Oct. 1860, LAC, Box 1939-197 R257-02 C003904, File 6: 6 Oct. 1860-13 Oct. 1860, nos. 127-143.

⁶ *Journal de l'Instruction Publique*, Nov. 1860: 'ce grand monument comme un exemple de ce que peut accomplir l'esprit d'entreprise et de progrès de ce pays, aidé comme il l'a été du capital et du savoir-faire de la mère-patrie.

Le Pont Victoria (Votre Altesse ne l'ignore point) a été construit en dépit des plus grands obstacles dont le génie civil puisse avoir à triompher. C'est le chaînon qui relie onze cent milles de chemin de fer, qui s'étendent depuis l'extrémité ouest du Canada presque jusqu'à sa frontière de l'est, et qui lorsque la rigueur du climat nous ferme la voie du St. Laurent offre une autre issue à notre commerce.' My translation.

ambitious Grand Trunk Railway project designed to better connect Canada East and Canada West to one another, to Atlantic seaports, and thus to Europe. The most important Grand Trunk Railway section, from Montreal to Toronto, was built by the same Peto, Brassey, Jackson and Betts. Furthermore, as suggested by the directors of the company in August 1860 and by historian Robert Passfield at the beginning of this introduction, the Victoria Bridge was an engineering challenge because of the width of the river – wooden bridges had been mostly used in the United States and Canada until the 1850s and long span wooden bridges were impossible – and because the temperature variations impacted the material.⁷

The newspaper then described the prince's visit of the company's workshop, mentioned that some workers who had built the bridge addressed him a speech, and transcribed the prince's response:

Gentlemen, - I receive with a particular satisfaction this speech from artisans and workers who, by the sweat of their brows and more than a hard day of smart labour, have contributed to build to the glory of their motherland this monument which honours the hands that built it as much as the brains that designed it. I regret with you the loss of Robert Stephenson. Your regrets only remind me that his father, as famous as he, was from your ranks. England opens to her sons the same career: in England, no success is impossible to genius supported by honesty and industry. It is true that not everyone can win the prize; but everyone can fight to win it, and in this fight victory does not belong to the riche or the powerful, but to the one to whom God gave intelligence and who cultivated in his heart all the moral qualities that constitute true greatness. I congratulate you for the success of your work. I do hope it will prosper; and I wish you with all my heart, you who accomplished this great enterprise so well, and your families, all the happiness you could desire.⁸

The prince of Wales referred to the personal history of a few civil engineers like George Stephenson who worked as a boy in a colliery, and his homage reflected the growing importance

⁷ Theodore Cooper, *American Railroad Bridges*, New York: Engineering News Publish Company, Tribune Building, 1889, 4-17.

⁸ *Journal de l'Instruction Publique*, Nov. 1860: 'Messieurs, - Je reçois avec une satisfaction toute particulière cette adresse de la part des artisans et des ouvriers qui, à la sueur de leurs fronts et par plus d'une rude journée d'un labeur intelligent, ont contribué à élever à la gloire de leur patrie, ce monument qui ne fait pas moins d'honneur aux mains qui l'ont construit qu'aux intelligences qui l'avaient conçu. Je pleure avec vous la perte de Robert Stephenson. Vos regrets me rappellent trop bien que son père, aussi célèbre que lui, était sorti de vos rangs.

L'Angleterre ouvre à tous ses fils la même carrière : nul succès n'y est impossible au génie aidé de l'honnêteté et de l'industrie. Tous ne peuvent pas, il est vrai, remporter le prix ; mais tous peuvent lutter pour l'obtenir, et dans cette lutte la victoire n'appartient ni au riche, ni au puissant, mais à celui à qui Dieu a donné l'intelligence et qui a cultivé dans son cœur les qualités morales qui constituent la véritable grandeur. Je vous félicite sur le succès de votre œuvre. J'ai le plus vif espoir qu'elle prospérera ; et je vous souhaite de tout cœur, à vous qui avez si bien exécuté cette grande entreprise, et à vos familles, tout le bonheur que vous pouvez désirer.' My translation.

of British civil engineering in the nineteenth century and the global expansion of British civil engineers studied by R. A. Buchanan.⁹ Most importantly, the prince's speech described the workers' skills as a moral characteristic, thus encouraging the moral discipline of the labouring classes that this dissertation also studies. It is significant that the workers' speech was the only one that the newspaper did not transcribe, just like the workers were not represented in the *Illustrated London News* picture.

In that sense, the directors' and the prince's words as well as the press coverage of the ceremony evidenced important issues related to the construction of the Victoria Bridge that this dissertation analyses, such as the bridge as the representation of the imperial ties between Britain and Canada and the economic and political importance of the bridge. *The Illustrated London News* article analysed above made it clear that the worksite was an environment that the social elites did not usually frequent, and this social distribution of space is part of the history of the Victoria Bridge and is studied in the following chapters. Similarly, the description of the hammers and the painfulness of the tube are fleeting images of the workers' labour, and this dissertation analyses the nature of labour and its impact on the workers' bodies. Furthermore, the *Journal de l'Instruction Publique* article invites us to study the social elites' vision of the labouring classes and the moral discipline they wanted to impose them in a context of rising industrialism, while the newspapers epitomised both the absence and the voiceless presence of the workers in the sources that this dissertation also addresses.

I- Historiography

Canada has been overlooked by recent imperial historians such as John MacKenzie, Catherine Hall, or Sadiya Qureshi, although John Darwin has studied the role of Canada in what

⁹ R. A. Buchanan, 'The Diaspora of English Engineering', *Technology and Culture*, Vol. 27, No. 3, Jul. 1986, 501-524.

he calls the Empire ‘project’, and Phillip Buckner has called for a renewal of the study of Canada as part of imperial history.¹⁰ This dissertation argues that the study of the Grand Trunk Railway, and more particularly the Victoria Bridge, allows us to better understand imperial connections and Canada’s imperial history.

Railways have been a central feature of the expansion of the British Empire and one which has been much discussed in relation to colonies like India.¹¹ But there is also an important literature on the history of railways, independent from imperial history. The economic history of railways, such as Lewis H. Haney’s work on railways in the United States or François Caron’s study of the development of railways in France, has focused on the economic development of railway networks but has left out, or mentioned very briefly, the history of workers.¹² Similarly, the history of single railway lines like Robert E. Carlson’s study of the Liverpool and Manchester Railway has focused on the history of the project rather than its construction.¹³ From the 1960s, with the emergence of a concern for the history of workers, social history has developed methods and sources which contributed to the expansion of the history from below to understand the workers’ experiences, with E. P. Thompson’s fundamental *The Making of the English Working-Class*, or more recently Malcolm Chase’s study of Chartism in Britain, and in Canada by the works of Bryan D. Palmer or Craig Heron for

¹⁰ See for example John M. MacKenzie, *Propaganda and Empire. The Manipulation of British Public Opinion, 1880-1960*, Manchester and New York: Manchester University Press, 1984; Catherine Hall, ‘Troubling Memories: Nineteenth-Century Histories of the Slave Trade and Slavery’, *Transactions of the Royal History Society*, Vol. 21, 2011, 147-69 and the Legacies of British Slave-ownership project (2009-16); Sadiya Qureshi, *Peoples on Parade. Exhibitions, Empire, and Anthropology in Nineteenth-Century Britain*, Chicago and London: University of Chicago Press, 2011, 382p.; John Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830-1970*, Cambridge University Press, 2012 (2009); Buckner, Phillip (ed.), *Canada and the British Empire*, New York: Oxford University Press, 2008.

¹¹ Ian J. Kerr, *Building the Railways of the Raj, 1850-1900*, Delhi: Oxford University Press, 1995.

¹² Lewis H. Haney, *A Congressional History of Railways in the United States*, Two volumes in one: *To 1850 and 1850-1887*, New York: Augustus M. Kelley, 1968 (1908 and 1910); François Caron, *Histoire des chemins de fer en France, 1740-1883*, tome 1, Paris: Fayard, 1997. See also Hamilton Ellis, *British Railway History. An Outline from the Accession of William IV to the Nationalisation of Railways, 1830-1876*, London: George Allen and Unwin Ltd, 1954, 443p.

¹³ Robert E. Carlson, *The Liverpool and Manchester Railway Project 1821-1831*, New York: Augustus M. Kelley, 1969, 292p.

instance.¹⁴ Labour history in Canada has had a particular interest in skilled workers and the emergence of class consciousness and unions¹⁵ while Bettina Bradbury has questioned the focus on skilled male workers and has used censuses, among a body of sources, to understand ‘the totality of the working-class’.¹⁶ With this development of social history, a number of studies on railway workers have focused on maintenance workers, such as Walter Licht’s analysis of railway workmen in the United States, while railway construction workers have been less studied.¹⁷

This is to be accounted for by the paucity of archival records about railway construction workers in comparison with maintenance workers, although important contributions have opened new possibilities and identified sources to analyse who the railway construction workers were. David Brooke’s history of the railway navy in Britain, based on an analysis of census returns, has shed new light on the history of construction workers and illuminated the debate on sources about the labouring classes.¹⁸ At the crossroads of the history of labour and the history of the British Empire, Ian Kerr’s fundamental study of railways in India has paved the way for a comprehensive history of railways that details construction processes, working conditions and workers’ forms of resistance.¹⁹

Major studies on the Grand Trunk and the Victoria Bridge have also focused on the history of the company, such as Archibald W. Currie’s *The Grand Trunk Railway of Canada*,

¹⁴ E. P. Thompson, *The Making of the English Working Class*, New York: Vintage Books, 1966 (1963); Malcolm Chase, *Chartism: A New History*, Manchester: Manchester University Press, 2007.; Bryan D. Palmer, *A Culture in Conflict: Skilled Workers and Industrial Capitalism in Hamilton, Ontario*, Montreal: McGill-Queen’s University Press, 1979; Craig Heron, *Working in Steel: The Early Years in Canada, 1883-1935*, Toronto: University of Toronto Press, 2008 (1988), Ebook.

¹⁵ See for instance Gregory S. Kealey, “‘The Honest Workingman’ and Workers’ Control: The Experience of Toronto Skilled Workers, 1860-1892’, *Labour / Le Travail*, Vol. 1, 1976, 32-68; Kealey and Palmer, ‘The Bonds of Unity: The Knights of Labor in Ontario, 1880-1990’, *Histoire sociale / Social History*, Vol. XIV, No. 28, Nov. 1981, 369-411.

¹⁶ Bettina Bradbury, *Working Families. Age, Gender, and Daily Survival in Industrializing Montreal*, Toronto: McClelland & Stewart Inc., 1993, 15.

¹⁷ Walter Licht, *Working for the Railroad. The Organization of Work in the Nineteenth Century*. Princeton, New Jersey: Princeton University Press, 1983.

¹⁸ David Brooke, *The Railway Navy. ‘That Despicable Race of Men’*, Newton Abbot, London, North Pomfret (Vt): David & Charles, 1983.

¹⁹ Ian J. Kerr, *Building the Railways of the Raj, 1850-1900*.

one of the most comprehensive studies about the Grand Trunk as a business organisation, which analyses its economic history from 1852 to 1934.²⁰ Robert Passfield's 'Construction of the Victoria Tubular Bridge' examines the bridge's history and construction process with a particular focus on machinery and technical innovations, and emphasises the critical contribution of Canadians, in particular Canadian contractors.²¹ The Grand Trunk Railway shops, where locomotives and rolling stock were built and repaired, have also been studied.²² The 1992 history of the bridge by Stanley Triggs, Brian Young, Conrad Graham and Gilles Lauzon is a more comprehensive study of the construction of the bridge with a clear attempt to better understand the living and working conditions of the workers.²³ However, risk has been overlooked in this literature, although it was a fundamental aspect of the working conditions on the worksite. This dissertation argues that risk is a key element to understand the history and the construction of the bridge.

The research on risk is an expanding field and this dissertation is an attempt to contribute to recent discussions on risk.²⁴ As underlined by historians David Niget and Martin Petitclerc, the historiography of risk is still quite small, although it has benefited from the works in environmental studies, the expansion of the history of science and technology, while the history of insurance, banks, and the welfare state have also contributed to the reflection on risk and analysed risk in association with issues of social class.²⁵ Furthermore, Madga Fahrni and

²⁰ Archibald W. Currie, *The Grand Trunk Railway of Canada*, Toronto: University Press of Toronto, 1957.

²¹ Passfield, 'Construction of the Victoria Tubular Bridge'.

²² R. F. H. Hoskins, *A Study of the Point St. Charles Shops of the Grand Trunk Railway in Montreal, 1880-1917*, 1986, MA Diss., McGill University; Gilles Lauzon, *Pointe-Saint-Charles. L'urbanisation d'un quartier ouvrier de Montréal, 1840-1930*, Quebec: Éditions du Septentrion, 2014, 34-8; see also the studies of metal workers' strikes such as Peter Bischoff, 'La formation des traditions de solidarité ouvrière chez les mouleurs montréalais: la longue marche vers le syndicalisme (1859-1881)', *Labour / Le Travail*, Vol. 21, Spring, 1988, 9-42.

²³ Stanley Triggs, Brian Young, Conrad Graham, Gilles Lauzon, *Le Pont Victoria. Un lien vital. Victoria Bridge, The Vital Link*, Montreal: McCord Museum, 1992.

²⁴ See for instance David Niget, Martin Petitclerc (eds.), *Pour une histoire du risque. Québec, France, Belgique*, Rennes: Presses Universitaires de Rennes, 2012; Megan Davies, Geoffrey Hudson (eds.), *Accidental History of Canada*, Montreal: McGill-Queen's University Press, to be published in 2024.

²⁵ Magda Fahrni and Martin Petitclerc, 'Introduction : L'avenir (probable) du passé : le risque et l'histoire du Québec', *Globe*, Vol. 16, No. 2, 2013, 11-25, 19-21 ; David Niget, Martin Petitclerc, 'Introduction', in Niget and Petitclerc (eds.), *Pour une histoire du risque. Québec, France, Belgique* de Rennes, 10-1.

Petitclerc recall that gender, and notably masculinity, has been an approach to analyse risks.²⁶ At the same time, the sociology of risk constitutes valuable contributions to the historians' definitions of risk, danger, and accident, and this dissertation argues that definitions of these notions are central to the study of risk and accidents.²⁷ Niget and Petitclerc's collection of essays is an important contribution to the history of risk and a call for a better consideration of risk in historical studies. Their book defines risk and danger as two different notions, with risk being tightly connected to 'accident', and argues that when a danger is rationally treated as an accident, it is a risk.²⁸ A risk is therefore the probability, or the possibility, of an accident, and I follow this definition in this dissertation.

In that sense, studying risk is also to study accidents. I rely on the work of Roger Cooter and Bill Luckin whose book has tried to understand the experience of accident and the meaning and definition of accident throughout history based on an interdisciplinary approach.²⁹ In a similar effort to understand accidents, historians such as Magda Fahrni have also studied the social construction of accidents in Quebec.³⁰ Meanwhile, the historiography of accidents has focused on the legal history of accidents, such as Elisabeth A. Cawthon's work on employer liability and workers' compensation in Britain.³¹ More recently, Jamie Bronstein's major study on workplace accidents has explored the legislation but also the experience of accidents

²⁶ Magda Fahrni and Martin Petitclerc, 'Introduction : L'avenir (probable) du passé : le risque et l'histoire du Québec', 16.

²⁷ Ulrich Beck, *Risk Society. Towards a New Modernity*, translated by Mark Ritter, London/Newbury Park/New Delhi: Sage Publications, 1992 (1986); Judith Green, *Risk and Misfortune. The Social Construction of Accidents*, London: UCL Press, 1997.

²⁸ Niget and Petitclerc, 'Introduction', 13-4: 'A la limite, tout danger peut devenir potentiellement un risqué, à condition qu'on le "traite" rationnellement comme un accident, dont la possibilité d'occurrence est évaluée par le savoir probabilitaire.'

²⁹ Roger Cooter, Bill Luckin (eds), *Accidents in History: Injuries, Fatalities, and Social Relations*, Amsterdam and Atlanta: Rodopi, 1997

³⁰ Magda Fahrni, "'La lutte contre l'accident". Risque et accidents dans un contexte de modernité industrielle', in Niget and Petitclerc (eds.), *Pour une histoire du risque*, 171-81.

³¹ See for instance Elisabeth A. Cawthon, *Job Accidents and the Law in England's Early Railway Age. Origins of Employer Liability and Workmen's Compensation*, Lewiston, Queenston, Lampeter: The Edwin Mellen Press, 1997.

throughout the nineteenth century.³² However, the history of risk and accidents is a vast research field which also includes the history of the body, of work and effort, fatigue, health, and industrial hygiene.³³

A number of historical studies of risk and accidents focus on the late nineteenth and twentieth centuries.³⁴ In ‘Lives and Limbs’, historian Leah Leneman proposes a reflection on company records as sources about accidents. She shows that ample statistics about accidents are available from the early twentieth century, in contrast with the scarce archival records of the nineteenth century.³⁵ With the Factory and Workshop Act (1895) and the Notice of Accident Act (1906) for coal mines in Britain, every accident had to be recorded in a register for a factory or a workshop, while coal mines had to notify the District Inspector of Mines.³⁶ She analyses the accident register of the Wemyss Coal Company in Fife, Scotland, from 1921 to 1924, and the accident register at the Bow Bridge jute works in Dundee, Scotland, from 1895 to 1935, from which she establishes statistics about the kinds of injuries, the parts of the body affected, the main causes of injuries, the causes of fatalities, but also the severity of injuries based on the duration of absence in the Wemyss mines and the subjective categorisation of injuries at the Bow Bridge jute works.

II- Sources and methods

As Leneman notes, there is a lack of similar statistics for the nineteenth century. The main sources used for the analysis of the construction of the Victoria Bridge are company

³² Jamie L. Bronstein, *Caught in the Machinery. Workplace Accidents and Injured Workers in Nineteenth-Century Britain*, Stanford: Stanford University Press, 2008.

³³ See for instance Alain Corbin (ed.), *Histoire du corps, vol. 2: De la Révolution à la Grande Guerre*, Paris: Seuil, 2005.

³⁴ See for instance Martin Petitclerc, ‘Le paternalisme industriel et la gestion des risques sociaux au Québec. Le cas de la Montreal Tramways Company au début du XXe siècle’, in Brigitte Caulier, Yvan Rousseau (eds.), *Temps, espaces et modernités. Mélanges offerts à Serge Courville et Normand Séguin*, Laval: Presses Universitaires Laval, 2009, 256-69.

³⁵ Leah Leneman, ‘Lives and Limbs: Company Records as a Source for the History of Industrial Injuries’, *The Society for the Social History of Medicine*, 1993, 405-27, 405.

³⁶ Leneman, ‘Lives and Limbs’, 405-6.

archives, engineers' testimonies, hospital records, newspapers, the Report from the Select Committee on Railway Labourers in Britain (1846) and photographs. The Grand Trunk Railway Company archives, for the most part kept at Library and Archives Canada (LAC, Ottawa, Canada) and the Institution of Civil Engineers (ICE, London, Britain), comprise the proceedings of the meetings of the shareholders of the company, where the reports of the engineers in charge of the construction of the bridge can be found. They provide descriptions of the progress of the works, the disrupting events that delayed the works, and sometimes include the number of workers, boats, and horses. There is no systematic account of the number of workers for each working season of the construction, nor is there a list of workers' names, and there are no payrolls, although payrolls for maintenance workers can be found for later periods.

James Hodges, the contractors' agent and engineer in charge of the construction of the bridge in Montreal, wrote *The Construction of the Great Victoria Bridge in Canada* (1860) which is a major source on the construction process.³⁷ Hodges described the different steps of the construction, but also the events that disturbed the works, from the weather to the workmen's strikes. His book includes a considerable number of drawings and illustrations that are available at LAC. With *A Glance at the Victoria Bridge, and the Men Who Built It* (1860), Charles Legge, a Canadian assistant engineer, also left a major account of the construction of the bridge, in particular of the techniques of construction, although like Hodges he hardly described the workers.³⁸ The biographies of the contractors provide insight into the relations between employers and workers, although their descriptions have to be taken with caution.

The Report from the Select Committee on Railway Labourers in Britain (1846) is an invaluable source on railway construction in Britain, notably on hazards and accidents, and on

³⁷ James Hodges, Engineer to Messrs. Peto, Brassey, and Betts, contractors, *Construction of the Great Victoria Bridge in Canada*, London, John Wheale, 59, High Holborn, 1860.

³⁸ Charles Legge, *A Glance at the Victoria Bridge, and the Men Who Built It*, Montreal: John Lovell, 1860.

labour relations in railway construction, based on the testimonies of thirty-one witnesses, among them engineers, contractors, a doctor, clergymen, missionaries and three navvies.³⁹ It was the only committee appointed by Parliament to inquire about the life and work of railway construction workers, but its recommendations were never debated in Parliament.⁴⁰ British and Canadian newspapers constitute another source on accidents on the Victoria Bridge and on accidents in general.

William Notman was a photographer based in Montreal whom Hodges commissioned to take pictures of the works from 1858 to the end of the construction. Landscape architect Heather Braiden argues that photography became a critical form of communication in mid-nineteenth-century engineering, a medium that facilitated long-distance professional exchanges and information sharing on international construction sites, and that Notman's photographs were 'a communication tool' among engineers based in Britain and in Montreal.⁴¹ These photographs represent a rare iconographic source about a construction site. Most of these photographs are kept at LAC and at McCord Museum in Montreal and constitute a unique source where the workers are sometimes represented.

Sick and injured workers were sent to the St. Patrick's Hospital. The existence of the St. Patrick's Hospital was brief (1852-1860) and its archives have been overlooked, although they constitute a valuable source about the working classes of Montreal as it was initially a hospital for poor Irish people. The archives, kept by the Religious Hospitallers of St. Joseph (Montreal) mainly comprise the correspondence between the Sisters of the hospital, the bishop, and as this dissertation will show, James Hodges. There are also the admission registers for male patients and female patients. Another part of these archives is kept at the Archevêché de Montréal, where the correspondence of the Sisters provides information on the history of the hospital, the

³⁹ Brooke, *The Railway Navvy*, 7, 156.

⁴⁰ Brooke, *The Railway Navvy*, 7.

⁴¹ Heather Braiden, "'Far from Uninteresting': Getting to Know the St. Lawrence River at Montreal During the Construction of the Victoria Bridge", *Urban History Review* 49, no. 2, Spring 2022, 199-200.

relations with the doctors and the finances of the establishment. For this dissertation, I used part of this correspondence and the admission register for male patients.

As we can see, employers' sources constitute the main source of information, and as Leneman observes, company records on injuries have an inbuilt bias.⁴² In the case of the Victoria Bridge, the sources scarcely describe injuries and accidents. This dissertation is thus a modest contribution to the reflection on sources, in particular company sources, about accidents in the absence of statistics and systematic records of injuries and accidents.

This dissertation draws on the histories of immigrant workers, psychiatric patients and criminalized women, where historians can acknowledge the agency of disempowered people by carefully rereading – 'decoding' as historian Roy Porter calls it – the available evidence.⁴³ It argues that the silence of the sources can be decoded to explore the notions of risk, accident and precaution on a nineteenth-century worksite.

III- Argument and outline

This dissertation studies the construction of the Victoria Bridge worksite, from the preparatory works (1853) to the passage of the first train on the bridge on 17th December 1859. The history of this single worksite is a history based on different scales. Indeed, this dissertation contributes to the discussion on the role of Canada in imperial history and argues that the worksite sheds light on the relations between Britain and British Canada, in part because the bridge and the Grand Trunk Railway section from Montreal to Toronto were built by British contractors, and because the bridge was crucial to the development of the geopolitical and economic ambitions of Britain, but also of Canada. This is also the history of the construction of a major civil engineering achievement, which invites us to understand how the bridge was

⁴² Leneman, 'Lives and Limbs', 426.

⁴³ Roy Porter, 'The Patient's View. Doing Medical History from Below', *Theory and Society*, 14, 1985, 175-198.

built, but also how it was perceived by contemporaries. In that sense, this dissertation contributes to the history of the circulation of men and knowledge in a context of rising industrialism and worldwide development of British civil engineering.

In an effort to better understand the history of construction workers, this study focuses on the history of the men who built this bridge, what they did exactly on the worksite, how and when they worked, and who they were. This dissertation thus analyses the workmen's jobs, but also the labour relations on the worksite, and argues that the Victoria Bridge is a case study to analyse paternalism and the development of industrial capitalism and wage employment in nineteenth-century Canada.

As suggested above, there are scarce sources about the Victoria Bridge workers, and this dissertation argues that the analysis of risk offers a new perspective to understand a worksite, the workmen, and labour relations. It also argues that while risk has been overlooked in the literature, it allows us to explore the issues of experience and paternalism, and that its examination sheds new light on the history of large and complex construction sites. Evaluating how risk was defined on the Victoria Bridge worksite, and the meaning of the term 'accident' for Hodges, his colleagues, and the thousands of men who laboured to build the bridge, I argue that risk and risk management formed part of the workers' and employers' working lives and their masculine identities. Indeed, the Victoria Bridge project may signal the onset of the transitional moment in the history of risk that Roger Cooter locates in the 1870s and 1880s.⁴⁴

This dissertation is divided into five chapters. Chapter one analyses the political and economic importance of the Grand Trunk Railway and the Victoria Bridge. It examines the Grand Trunk Railway in relation to other communication networks and analyses the political and economic actors behind that project, arguing that the Grand Trunk and the bridge illustrated the relations between Britain, Canada, and the United States. The second chapter analyses the

⁴⁴ Cooter, 'The Moment of the Accident: Culture, Militarism and Modernity in Late-Victorian Britain', in Cooter, Luckin (eds), *Accidents in History: Injuries, Fatalities, and Social Relations*, 108.

actors of the construction of the bridge. Putting the bridge in perspective with other large construction sites, it studies the contractors, but also the workers involved in the construction and tries to determine who they were. It argues that the labour relations on the worksite were characteristic of the transition between pre-industrial and industrial labour relations. The third chapter details the construction of the bridge and analyses it from the perspective of risk and accidents. It contributes to the efforts made in the literature to define accidents and challenges the silence of the sources to understand the risks on the worksite. The fourth chapter argues that the analysis of risk can be used to circumvent the scarcity of sources about construction workers and constitutes another perspective to better analyse the identity of the workers. Finally, the fifth chapter examines the precautions on the worksite. It explores the notions of precaution and responsibility, but also the roles of employers and workers in the prevention of accident, and argues that the agreement with the St. Patrick's Hospital was an innovative precaution.

Chapter 1: The Grand Trunk Railway Project

In the 1850s, the railway system in British North America was virtually non-existent. There was of course the Champlain and St. Lawrence Railroad – the first railway in Canada, built in 1832, but it was only 22.5 kilometres long.⁴⁵ In 1850, five lines were under construction in Canada – the Laprairie, St. Lawrence and Atlantic, Lachine, St. Lawrence and Industry, and the Erie in Ontario, and their total mileage in operation was eighty-seven kilometres.⁴⁶ By comparison, the railway system in the United States was already 6,400 kilometres long in 1840, and neared 14,500 kilometres in 1850.⁴⁷ The US network was particularly developed in the eastern part of the country where it served the coastal cities,⁴⁸ and most of these early lines were financed by private investors.⁴⁹ Although the railway system in Canada was not as developed as its neighbour's, the beginning of the first railway boom in Canada in 1853 was not the colony's first experience with large scale construction works. Prior to the development of railways, transportation in Canada depended heavily on canals and waterways. Part of this chapter explores the transition between canals and emerging railways – and perhaps their competition, but also the possible links between canal and railway construction.

The different development of the railway systems in Canada and in the United States is a good starting point for the study of the Grand Trunk Railway. The Grand Trunk Railway, whose construction started in 1853, was intended to be the longest railway in the world.⁵⁰ The history of its construction sheds light on the differences and similarities in the construction of lines in the United States and in Canada, in terms of the techniques that were used, the materials,

⁴⁵ See Peter Waite, 'Un défi continental', in Craig Brown (ed.), French edition by Paul-André Linteau, *Histoire générale du Canada*, Montreal: Editions du Boréal, 1994 (1987), 340.

⁴⁶ S. J. Mclean, 'An Early Chapter in Canadian Railroad Policy', *Journal of Political Economy*, Vol. 6, No. 3 (Jun., 1898), 323-352, 351.

⁴⁷ John F. Stover, *American Railroads*, Chicago: The University of Chicago Press, 1962 (1961), 26.

⁴⁸ Stover, *American Railroads*, 19.

⁴⁹ Stover, *American Railroads*, 31.

⁵⁰ See for example Passfield, 'Construction of the Victoria Tubular Bridge', 13.

the innovations, but also the influence of Britain and therefore the respective relationships of the US and Canada with London. In addition, delving into this history gives one insight into the circulation of men, knowledge and expertise between the United States and Canada. On another level, the project and the construction of the Grand Trunk Railway and the Victoria Bridge can help better understand the particular relationship between Britain and British North America. That implies to interrogate the status of British North America: what sort of colony was Canada prior to the Confederation in 1867? What were the relations between Canada and Britain, but also between Canada and the rest of the Empire?

Canada was a key element in the Empire: in the nineteenth century, the majority of the Empire's overseas white settler population was in Canada,⁵¹ and its sense of loyalty towards Britain has been largely discussed.⁵² Yet, there are comparatively few recent studies on Canada in the imperial field. Ged Martin shows that British North America lacked importance 'in British eyes', a phenomenon which has to be examined.⁵³ He argues that Canadian leadership was considered 'unimpressive' and, although Canada was a settlement colony, its population remained small compared to that of Britain or India. That might explain why imperial historiography has been less interested in Canada. But there are other reasons. Prior to the 1950s, the historiography of Canada was closely related to that of the British Empire, with a majority of English-speaking historians considering that Canada's past should be considered from an imperial perspective, and there was no political desire to break away from the British Empire.⁵⁴ Phillip Buckner shows that a shift occurred in the late 1950s and 1960s, when historians – and politicians – disconnected the history of Canada from that of the British

⁵¹ Ged Martin, 'Canada from 1815', in William Roger Louis and Andrew Porter (eds.), *The Oxford History of the British Empire: Vol. III: The Nineteenth Century*, Oxford: OUP, 2001 (1999), 222-246.

⁵² See for example Darwin, *The Empire Project*, 9-11 or Phillip Buckner (ed.), *Canada and the British Empire*, New York: Oxford University Press, 2008, x for example.

⁵³ Martin, 'Canada from 1815', 528.

⁵⁴ Phillip Buckner, 'Introduction: Canada and the British Empire', in Buckner (ed.), *Canada and the British Empire*, 9-12.

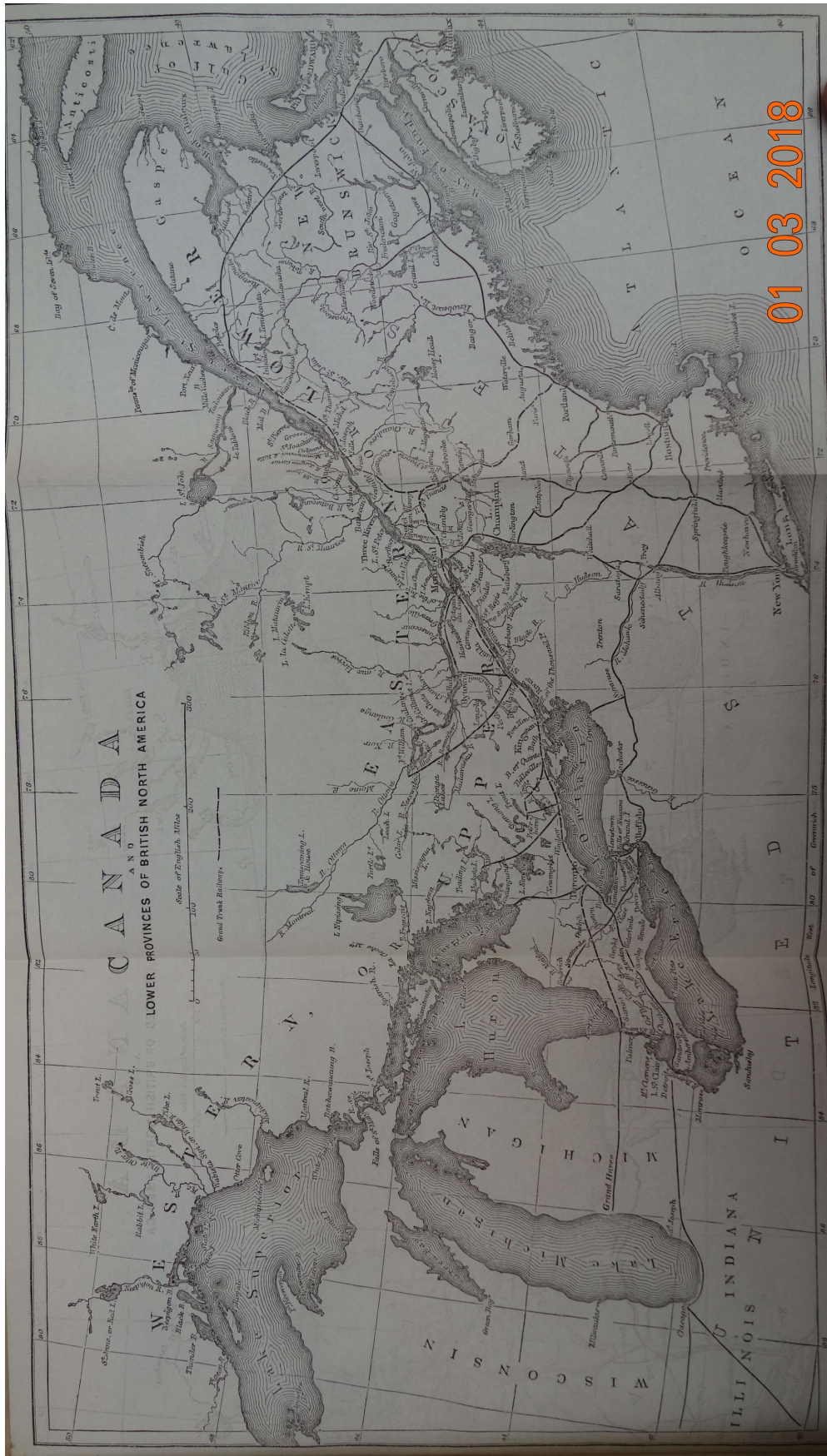
Empire.⁵⁵ It became unpopular to see Canada as an imperialist nation.⁵⁶ Buckner's book tries to reconnect the history of Canada and the British Empire, and to refute the popular assumption that the Canadian participation in the Empire was confined to the elite.

As this chapter will show, the economic and political ambitions that motivated the Grand Trunk and Victoria Bridge project, but also the circulation of money and contractors, should be studied from an imperial perspective. Indeed, it is important to understand the Grand Trunk Railway project as an inherent part of the history of railways in the United States, in Britain and in the British Empire at large. The Victoria Bridge cannot be understood outside the history of the Grand Trunk Railway in relation to these three intertwining backgrounds. In that sense, this chapter argues that the Grand Trunk Railway project and the Victoria Bridge provide a case study to examine the specific links between Canada, the United States, and the British Empire. It analyses the colonial role of the Grand Trunk Railway and the Victoria Bridge, and their economic and geopolitical importance. It also examines the Grand Trunk Railway and the Victoria Bridge in perspective with contemporary railway and canal networks to understand whether the Grand Trunk and the bridge completed or competed with them.

The first section analyses the economic and commercial strategy that motivated the Grand Trunk Railway project. The second section examines the role of the Grand Trunk Railway and the Victoria Bridge in the competition between Canada and the United States. The third section analyses the Grand Trunk Railway and the Victoria Bridge in relation to different geographical spaces, which they were meant to connect and colonise.

⁵⁵ Buckner, 'Introduction: Canada and the British Empire', 18-9.

⁵⁶ Buckner, 'Introduction: Canada and the British Empire', 19.



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Map 1 Map showing the Grand Trunk Railway and the provinces of the United Province of Canada, Institution of Civil Engineers (ICE, London), Vol. 104, Tracts 820, n. d., c. 1855.

- I- 'The great object of the Canadian system of Railways, is to bring their rich provinces (...) nearer to Europe'⁵⁷ (Robert Stephenson, 1854)

1) Trade – Britain's strategy

The Grand Trunk Railway project gives insight into Britain's commercial strategy in Canada. The first point of this section explores the role of Britain in the conception of the Grand Trunk project. It first argues that the Grand Trunk was conceived as a commercial link, and then examines Britain's role in the financing of the Grand Trunk.

In his report to the London Board of Directors of the Grand Trunk Company, in May 1854, engineer Robert Stephenson, who designed the Victoria Bridge, wrote that 'the great object of the Canadian system of Railways, is to bring their rich provinces into direct and easy connection with all the ports of the east coast of the Atlantic, consequently to bring them nearer to Europe'.⁵⁸ The rich provinces Stephenson was alluding to were the regions of Canada West, which correspond to today's Ontario: the peninsula between Lakes Ontario and Erie and the 'fertile belt' that stretched at the Red River, near the American border, were good farmlands (Map 1).⁵⁹

The economy of Canada West was based on agriculture and timber, while fertile lands in the rest of British North America were comparatively scarce, as soil exhaustion made

⁵⁷ Institution of Civil Engineers (ICE), London, Vol 104, Tracts 820, Robert Stephenson, Report to the London Board of Directors, May 1854, quoted in Sir Roney P. Cusack, Report to the London Board of Directors, May 1855, 17.

⁵⁸ ICE, Vol 104, Tracts 820, Stephenson, Report to the London Board of Directors, May 1854, quoted in Sir Roney P. Cusack, Report to the London Board of Directors, May 1855, 17.

⁵⁹ Martin, 'Canada from 1815', 526. About the economy of the different regions of 1840s and 1850s Canada, see for example Jacques-Paul Couturier, Wendy Johnston, Réjean Ouellette, *Un passé composé. Le Canada de 1850 à nos jours*, Moncton: Les Éditions d'Acadie, 2000, p.3-4; Graeme Wynn, 'Aux confins de l'empire', in Craig Brown (ed.), *Histoire générale du Canada*, 320.

agriculture in Lower Canada impossible from 1835.⁶⁰ As early as 1840, the exploitation of timber was concentrated along the Ottawa River and stretched beyond Upper and Lower Canadas.⁶¹ Grain and timber were therefore resources that Canada West exported. Wood had represented one of the best assets of British North America since 1806, when Napoleon imposed the Continental blockade against the British Empire in Europe. Prior to the Napoleonic blockade, Britain had been importing timber from the Baltic Sea region of Northern Europe.⁶² By 1808, Britain was importing 70 per cent of its timber from its British North American colonies, compared to 1.3 per cent in 1800.⁶³ Between 1801 and 1851, the demand for timber dramatically increased with the project to build 1.9 million houses for the booming population in Britain, and to contribute to the development of railways, notably with the construction of sleepers, carriages and stations.⁶⁴ In 1840, manufactured timber from Canada represented a third of Britain's total wood importations from its colonies.⁶⁵ We can see that the exportation of wood was therefore an actual industry: the wood shipped to Britain was transformed in Canada and was not necessarily exported as square timber. Furthermore, Britain's wood supplies depended heavily on British North America.

The role of Canadian timber in the development of British power has been well demonstrated by historian Kenneth Pomeranz, who evidences the European dramatic need for wood, the critical deforestation in Britain and Europe from the sixteenth to the early nineteenth centuries, and the foremost importance of Britain's importations of wood from its North

⁶⁰ H. Clare Pentland, *Labour and Capital in Canada 1650-1860*, Toronto: James Lorimer & Company, Publishers, 1981, 141-142.

⁶¹ Wynn, 'Aux confins de l'empire', 320.

⁶² Susan Galavan, 'Transoceanic Networks of Exchange', *Acadiensis: Journal of the History of the Atlantic region*, Autumn 2019, Vol. 48, No. 2, 90-116, 97.

⁶³ Galavan, 'Transoceanic Networks of Exchange', 98.

⁶⁴ Galavan, 'Transoceanic Networks of Exchange', 98.

⁶⁵ Wynn, 'Aux confins de l'empire', 242, 282-283.

American colonies.⁶⁶ By the Napoleonic era, timber and therefore fuel shortages were perceived as an acute Europe-wide crisis and were getting worse with population growth.⁶⁷

Pomeranz further argues that the rise in fuel prices in eighteenth-century Europe greatly outpaced other price increases: in Britain, he writes, ‘firewood prices had already risen 700 per cent between 1500 and 1630 and three times as fast as the general price level between 1540 and 1630; for much of the country the seventeenth century was a period of energy crisis’, and after 1750, ‘the country was perpetually short of wood, charcoal, naval stores and bar iron (made with charcoal)’.⁶⁸ Even when fuel for cooking was enough, fuel shortages greatly impacted iron forges, which regularly operated for just a few weeks a year in various parts of eighteenth-century Europe.⁶⁹

By 1825, North American timber exports to Britain were large enough to replace the output of over 1,000,000 acres of European forest and continued to soar.⁷⁰ Timber from Canada was not only needed for fuel. Indeed, shortages in better quality timber for ships, and notably ships’ masts, led Britain to ‘try to reserve for the navy all suitable trees in its New England colonies and to shift much construction of merchant ships to its heavily forested colonies from Quebec to Madras’.⁷¹ Just before the American Revolution, one-third of Britain’s merchant ships had been built in the American colonies.⁷² Pomeranz’s point shows that when the Grand Trunk project emerged, Canadian timber had been a resource necessary to the development of Britain’s power and gave it considerable advantage over other European countries. In that sense, the construction of the Grand Trunk Railway and its ambition to establish a direct connection

⁶⁶ Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy*, Princeton: Princeton University Press, 2021, 219-25.

⁶⁷ Pomeranz, *The Great Divergence*, 219-20.

⁶⁸ Pomeranz, *The Great Divergence*, 219-20.

⁶⁹ Pomeranz, *The Great Divergence*, 220.

⁷⁰ Pomeranz, *The Great Divergence*, 275.

⁷¹ Pomeranz, *The Great Divergence*, 222.

⁷² Pomeranz, *The Great Divergence*, 222.

between Canada and Europe was part of a strategy to facilitate trade between the British North American colonies and Britain, and partly served Britain's commercial interests.

Furthermore, the balance Britain established with its colonies also made the Grand Trunk a valuable asset in the commercial development of Canada. In an attempt to show why the Grand Trunk required an access to the sea, Sir Roney P. Cusack, the British managing director of the Grand Trunk Railway Company, argued in his 1855 report to the London Board of Directors that '[t]he greatest market for the surplus produce of Canada West, and of the fertile regions beyond it, is England; and it is from England that the bulk of the manufactured articles consumed in these regions is obtained.'⁷³ Quite clearly, Roney tried to emphasise the privileged commercial relationship that linked British North America and Britain and his description of Canada corresponds to a typical 'economic colony', as defined by historians John Gallagher and Ronald Robinson.⁷⁴ According to Gallagher and Robinson, the colony produced raw materials for Britain, and imported manufactured goods from Britain. The difference with tropical colonies, of course, was that Roney did not seem to imply that Canada's resources were produced purposefully and exclusively for Britain: the agriculture or the production of wood were not altered to meet Britain's requirements. Indeed, historian Douglas McCalla shows that the various economies of the British North American colonies, namely family-oriented agriculture, wood, shipbuilding and fishery, existed before Britain's mercantilist policies.⁷⁵

As Roney used the superlative in defining Britain as 'the greatest market' for Canada West, he implied that Britain was the most important trading partner of Canada West, and therefore their commercial relationship was almost exclusive: Canada needed Britain and, in a sense, Britain needed Canada's resources. Britain's dependence on Canadian timber has been

⁷³ ICE, Vol. 104, Tracts 820, Sir Roney P. Cusack, Report to the London Board of Directors, May 1855, 20.

⁷⁴ John Gallagher and Ronald Robinson, 'The Imperialism of Free Trade', *The Economic History Review*, New Series, Vol. 6, No. 1, 1953, 4-5.

⁷⁵ Douglas McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1971', in Buckner (ed.), *Canada and the British Empire*, 243, 245.

investigated above. In a paper on the growth of the Canadian economy from 1851 to 1900, O. J. Firestone shows that Canada supplied Britain with natural products like wheat, flour, lumber, fish, etc. in exchange for highly manufactured products, and that by 1851 ‘Canada was obtaining about three-fifths of its imports from and shipping a similar proportion of exports to Great Britain’.⁷⁶ The importance of Britain in the exports of Canada is best illustrated in Firestone’s following table (Tab. 1).

	1851 ^a	1860 ^a	1870 ^a	1880	1890	1900
	(Millions of dollars)					
Imports for consumption from:						
United Kingdom	16	20	48	43	42	43
United States	10	23	27	36	52	107
Other foreign countries	1	2	9	11	18	28
All countries	27	45	84	90	112	178
Exports of domestic produce to:						
United Kingdom	*	*	22	43	43	93
United States	*	*	29	34	38	68
Other foreign countries	*	*	7	7	8	16
All countries	*	*	58	84	89	177
	(percent)					
Imports for consumption from:						
United Kingdom	59.3	44.4	57.1	47.8	37.5	24.2
United States	37.0	51.1	32.2	40.0	46.4	60.1
Other foreign countries	3.7	4.5	10.7	12.2	16.1	15.7
All countries	100.0	100.0	100.0	100.0	100.0	100.0
Exports of domestic product to:						
United Kingdom	/	/	37.9	51.2	48.3	52.6
United States	/	/	50.0	40.5	42.7	38.4
Other foreign countries	/	/	12.1	8.3	9.0	9.0
All countries	/	/	100.0	100.0	100.0	100.0
Exports of domestic and foreign product to:						
United Kingdom	58.8	38.1	43.3	54.6	50.5	53.9
United States	35.3	57.1	44.8	37.1	41.2	36.4
Other foreign countries	5.9	4.8	11.9	8.3	8.3	9.7
All countries	100.0	100.0	100.0	100.0	100.0	100.0

^a Figures cover four provinces only.

* No breakdown available for domestic and foreign produce taken separately.

Tab. 1 Commodity Trade with the United Kingdom, the United States and Other Foreign Countries, Selected Years, 1851-1900, from O. J. Firestone, *Canada’s External Trade and Net Foreign Balance, 1851-1900*, 766.

⁷⁶ O. J. Firestone, ‘Canada’s External Trade and Net Foreign Balance, 1851-1900’, in *Conference on Research in Income and Wealth Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth, Vol. 24, A Report of the National Bureau of Economic Research, Princeton: Princeton University Press, 1960, 791p., 757-771, 765.

We can see that Britain dominated Canadian imports and exports in 1851, thus confirming Roney's argument and evidencing the economic importance that Canada had in British eyes. The construction of the railway in Canada could have been yet another investment abroad, just like in France for instance. But to justify the construction of the Grand Trunk, the British managing director emphasised Britain's commercial interest in the completion of this railway. It shows that the Grand Trunk was part of a British commercial strategy on the long term. In that sense, the Grand Trunk Railway project echoed the early railway projects carried out in different parts of the British formal and informal Empire.

Indeed, there were similarities in, for instance, the main incentive for the construction of the Grand Trunk – namely the exploitation of Canadian resources – and the motives that laid behind the construction of the Great Indian Peninsular Railway in India in 1849. In his work based on the analysis of Dalhousie's papers, historian W. J. Macpherson shows that the exportation of raw cotton was a decisive factor in the sanctioning of the Great Indian Peninsular Railway.⁷⁷ In other words, in a settler colony as well as in a tropical colony, trade and Britain's commercial interests rather than the concern for the welfare of the inhabitants determined the construction of a railway. And in that sense, the Grand Trunk Railway project is proof of the ambition to make Canada a 'complementary satellite economy'.⁷⁸ The railway was meant to provide raw materials for Britain, and provide 'widening markets for its manufactures'.⁷⁹

This is not to say that Canada's economy was only meant to provide resources to Britain and the rest of the Empire. On that matter, McCalla shows that the economies of the British North American colonies existed prior to the imperial mercantilist policies that sustained the

⁷⁷ W. J. Macpherson, 'Investment in Indian Railways, 1845-1875', *The Economic History Review*, New Series, Vol. 8, No. 2, 1955, 179.

⁷⁸ Gallagher, John, and Robinson, Ronald, 'The Imperialism of Free Trade', *The Economic History Review*, New Series, Vol. 6, No. 1, 1953, 1-15, 9.

⁷⁹ Gallagher and Robinson, 'The Imperialism of Free Trade', 9.

development of the provinces and favoured transatlantic exchanges, and continued to grow after they were removed.⁸⁰ He insists that after the end of the imperial preferential tariffs in the 1840s and 1850s, the economic relationships with Britain were not purely imperial, and became market driven.⁸¹ However, the railway was the economic and commercial link between Britain and British North America. Although the railway traffic and even its motivation might have been market driven, this market was still very much dominated by London, and the railway still favoured a privileged connection and exchanges between the metropole and the colonies.

Britain played a significant role in the financing of the Grand Trunk project. The Grand Trunk was one of the first railways in North America to be planned as a through line: until then, most railways had been short lines that were later joined together.⁸² The Grand Trunk therefore involved expensive logistics such as the transportation of supplies and money for material, workforce, and so on. It is important here to understand the political and economic context of British North America, and how railways were planned, built, and financed in Canada.

To understand the financial role of Britain in the elaboration of the Grand Trunk, it is necessary to understand the political situation of the Canadas and the political role of railways in the 1840s. In the 1840s, British North America was still a very divided territory: there was no common identity or even political and economic interest between the colonies. In 1837 and 1838, major rebellions occurred in Lower and Upper Canada that have been analysed in detail in the literature.⁸³ Suffice to say that the questioning of the existing political structures and ethnic divisions were among the main reasons for these rebellions. Lord Durham, appointed governor general, was sent to the Canadas in 1838 to solve the crisis. There are various analyses of his actions in recent and older historiographies, but the impact of his 1839 report is beyond

⁸⁰ McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', in P. Buckner (ed.), *Canada and the British Empire*, 245, 248.

⁸¹ McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', for ex. 258.

⁸² Currie, *The Grand Trunk Railway of Canada*, 15.

⁸³ About the rebellions, see for instance J. M. Bumsted, 'The Consolidation of British North America, 1783-1860', in Buckner, *Canada and the British Empire*, 52-57; or G. Wynn, 'Aux confins de l'empire', 248-254.

doubt.⁸⁴ It resulted in the effective union of Lower and Upper Canada in 1841. The political power was shared by an elite of francophones and anglophones who sought to establish a strong federal state, new social institutions, and new transportation systems.⁸⁵

Railways became central to that political project and, therefore, to the development of Canada.⁸⁶ And as early as the 1840s, railway projects looked to Britain for financing and know-how, mainly because Canada lacked resources to build large-scale railways.⁸⁷ The government of Canada made efforts to develop railways and potentially attract British capitals.⁸⁸ In 1849, the Canadian Parliament passed the Guarantee Act: the Province guaranteed the interest up to 6 per cent per year on not more than half the bonds for any railway more than seventy-five miles long, and only if half the total length had already been built.⁸⁹ But, as pointed out by historian Archibald Currie, the Act imposed no restriction on the length of railway that might be built. As a consequence, he wrote, provincial credit might become obligated for virtually unlimited sums.⁹⁰ However, this resulted in some enthusiasm for railway development and in an actual development of railway lines. In Canada, railways therefore corresponded to private companies, which were themselves controlled by common shareholders.⁹¹ Britain's role was pivotal, and here it becomes necessary to define what is meant by 'Britain'.

As regards the railways in British North America, and more specifically the Grand Trunk, Britain mainly corresponded to British private investors and banks. Even when railways were state-funded, as in the Maritimes, the colonies borrowed on bonds held in London banks.⁹² It is

⁸⁴ For a brief overview of historiography on Lord Durham, see for ex. Bumsted, 'The Consolidation of British North America, 1783-1860', 56.

⁸⁵ Brian Young, 'Le Cadre / The Setting', in Triggs et al., *Le Pont Victoria. Un lien vital. Victoria Bridge, The Vital Link*, Montreal: McCord Museum, 1992, 31.

⁸⁶ Young, 'Le Cadre / The Setting', 31. See as well D. McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', 258.

⁸⁷ Currie, *The Grand Trunk Railway of Canada*, 5.

⁸⁸ McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', 249.

⁸⁹ Robert F. Legget, *Railways of Canada*, Vancouver: Douglas & McIntyre, 1973, 37. 75 miles = 121 km.

⁹⁰ Currie, *The Grand Trunk Railway of Canada*, 9.

⁹¹ McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', 250.

⁹² McCalla, 'Economy and Empire: Britain and the Canadian Development, 1783-1871', 250.

therefore obvious that railways in British North America relied mainly – although not only – on British money. As to why British capitalists invested in British North American railways, it is likely that they were motivated, among other reasons, by the end of the Railway Mania in Britain in the late 1840s, which prompted them to invest in railway development in other territories.

They could have invested in Western Europe, for instance, which they did until the early 1850s. They saw in France, for example, less competition and possibly larger profits.⁹³ The Continent was attractive: until the early 1850s, British capital was reluctant to more distant undertakings because that would have involved continuous control, while in Continental Europe the builders did not remain in control and the railways were sold at a profit.⁹⁴ However, in the 1850s, British capital moved massively into countries that needed public works but could not handle them themselves. Historian Leland Jenks defines this as a period when enterprise was administered abroad from London, as London control was necessary for these undertakings.⁹⁵ Moreover, it is likely that the 1848 revolution in France put off further British investment in the country, and that this investment was redirected elsewhere.⁹⁶ At any rate, it was the advice provided to British investors by newspapers like *The Globe* in 1853:

That startlingly eventful land has seen the shopkeeping *regime* superseded by a socialist era, and that again displaced by an Imperial rule, which subjects all property to the will of one powerful personage; not exactly the description of a desirable field for English commerce. It is a common aphorism in this country, that commerce finds its safety in the stability of her institutions; that our dislike to change is the true life of trade, which flourishes in movement, but requires continuity. A country, therefore, whose inhabitants have a practice of placing each of its monarchs between two revolutions, in a sandwich, must be the last refuge for destitute capital in search of employment.⁹⁷

⁹³ Leland H. Jenks, *The Migration of British Capital to 1875*, New York & London: Alfred A. Knopf, 1927, 144.

⁹⁴ Jenks, *The Migration of British Capital to 1875*, 194.

⁹⁵ Jenks, *The Migration of British Capital to 1875*, 195.

⁹⁶ Jenks argues that the panic of 1847, along with criticisms in Britain about investments in France, and finally the 1848 revolution led to British capital returning to Britain. See Jenks, *The Migration of British Capital to 1875*, 144 *et seq.*

⁹⁷ *The Globe*, 14 April 1853.

The political instability in France clearly deterred British capital. That extract also shows that British investors were looking to invest abroad, and that they favoured politically stable countries. The article then proceeded to identify and recommend safe and solid investment opportunities: land in Australia and the Grand Trunk Railway in Canada. Both were under 'British protection', which sounded like a guarantee for stability, and considered profitable. The notion of control is at the centre of Jenks's definition of economic imperialism. In that sense, the British capitalists' investments in Canadian railways represented a form of economic imperialism, of which the Grand Trunk is a good example.⁹⁸

Archibald Currie wrote a very exhaustive history of the Grand Trunk as a business institution, and I am mainly relying on his work for the financial history of the railway and for the following lines. In a context of an 'orgy of speculative activity' with a concentration on railway ventures in 1845, a shortage of raw cotton in 1845-1847 that caused unemployment, short-time working and limited production in Lancashire and Glasgow, as well as a shortage of foodstuffs that resulted in a large outflow of bullion, the commercial crisis of 1847 caused panic in Britain.⁹⁹ Railway construction was accused of having put an undue strain on the national economy, although historian C. N. Ward-Perkins argues that railway investment did put a strain on the credit structure of the country, but had in fact had a stimulating effect on the economy.¹⁰⁰ What is undisputed, however, is that as railway construction in Britain slackened, 'the gap was filled by overseas railways financed by British capital.'¹⁰¹

Railway construction in Britain being less profitable in the 1850s, a firm of famous British contractors, Samuel M. Peto, Thomas Brassey, and Edward L. Betts with William Jackson, were looking for business opportunities abroad.¹⁰² Their work in France was nearly

⁹⁸ Jenks, *The Migration of British Capital to 1875*, 197.

⁹⁹ C. N. Ward-Perkins, 'The Commercial Crisis of 1847', *Oxford Economic Papers*, Jan. 1950, New Series, Vol. 2, No. 1, 75-94, 76-7, 87, 78.

¹⁰⁰ Ward-Perkins, 'The Commercial Crisis of 1847', 86, 85.

¹⁰¹ Ward-Perkins, 'The Commercial Crisis of 1847', 86.

¹⁰² Currie, *The Grand Trunk Railway of Canada*, 6-7.

complete and they would not risk letting go of their staff and skilled foremen and mechanics. As underlined by Currie, established business connections with bankers, investors, suppliers of materials, etc. needed to be in continuous use.¹⁰³

In 1852, Francis Hincks, co-premier of the United Provinces of Canada, was sent to London to negotiate a guarantee with the Colonial Office.¹⁰⁴ At the same time, he was approached by Peto *et alii*, who knew that a railway which connected the settled parts of the biggest and most prosperous colony of British North America with the Atlantic would be a potentially lucrative venture. In the end, the Peto partnership obtained the contract and Canada did not get any London guarantee, but a Canadian guarantee.¹⁰⁵ The bonds and stocks of the Grand Trunk were to be sold through the British bankers Baring and Glyn only.¹⁰⁶

Hincks was quite sure that a railway built by such eminent British contractors and backed by such bankers would be a success. The original project in 1852 was to connect Montreal and Toronto. In 1853, the 530-kilometre project was extended to a projected 1,770-kilometre line, notably because Hincks feared the competition from the St Lawrence and Atlantic that threatened to amalgamate with the Montreal and Kingston.¹⁰⁷ The bankers imposed their scheme on the contractors: they would float all the debentures but only half of the expected amount of stock; the remaining half would go to the contractors.¹⁰⁸ The contractors were free to either dispose of two-thirds of their portion to holders of the first half of the stock at any time within two years, or retain all of it and dispose of it as they wished.¹⁰⁹ Although the contractors were aware of the risk taken, they had no choice but to agree.

¹⁰³ Currie, *The Grand Trunk Railway of Canada*, 7.

¹⁰⁴ Jenks, *The Migration of British Capital to 1875*, 199 and Young, 'Le Cadre / The Setting', 29.

¹⁰⁵ Jenks, *The Migration of British Capital to 1875*, 199.

¹⁰⁶ Currie, *The Grand Trunk Railway of Canada*, 10.

¹⁰⁷ Currie, *The Grand Trunk Railway of Canada*, 11. About the expansion of the Grand Trunk project, see as well Passfield, 'Construction of the Victoria Tubular Bridge', 13.

¹⁰⁸ Currie, *The Grand Trunk Railway of Canada*, 17-8.

¹⁰⁹ Currie, *The Grand Trunk Railway of Canada*, 17.

Canadian politicians were closely linked to the Grand Trunk project, whose board of directors was initially composed of many leaders of the Canadian government. Besides, some contractors or subcontractors were well-connected colonials.¹¹⁰ As historian McCalla clearly put it, the Grand Trunk Railway represented ‘the intertwining of the colonial state and London finance’.¹¹¹ The main local investors were therefore the Government of Canada, plus the Seminary of Montreal and the British American Land Company, created in 1832 in London to promote settlement and land development in the Eastern Townships of Lower Canada.¹¹²

But local investors soon ran short of money.¹¹³ In 1856, the role of the Province was considerably diminished. The Canadian Parliament accepted that Government directors be abolished and agreed to transfer the head office to London: semi-annual meetings would then be held in London, not in Canada.¹¹⁴ The Grand Trunk therefore became more and more controlled from and managed by London: as McCalla put it, it was owned in Britain, controlled from London, and managed in Canada.¹¹⁵

It should be underlined that the Grand Trunk project was not always met with enthusiasm in Canada. In 1854, an article from *Le Courrier de Saint-Hyacinthe* vehemently criticised Hincks and his government, dubbed ‘the Grand-Trunk-Office’ and their collusion with Britain, whose power over Canada was criticised too.¹¹⁶ Thomas Keefer (1821-1915), who advocated the necessity of railways in his *Philosophy of Railroads* (1849) and insisted on the advance the United States had acquired in that matter, actually denounced the Grand Trunk project. He was strongly opposed to the railway being built and owned by British contractors

¹¹⁰ McCalla, ‘Economy and Empire: Britain and the Canadian Development, 1783-1971’, 250.

¹¹¹ McCalla, ‘Economy and Empire: Britain and the Canadian Development, 1783-1971’, 250.

¹¹² Public Archives of Canada, Manuscript Division, British American Land Company, MG 24 I 54, available on Canadiana, British American Land Company Fonds, C-15685, 1.

¹¹³ Young, ‘Le Cadre / The Setting’, 29.

¹¹⁴ Currie, *The Grand Trunk Railway of Canada*, 47-48.

¹¹⁵ McCalla, ‘Economy and Empire: Britain and the Canadian Development, 1783-1971’, 250

¹¹⁶ *Le Courrier de Saint-Hyacinthe*, 10 August 1854: ‘le Ministère-Grand-Tronc’. My translation

on terms he disagreed with.¹¹⁷ He accused the experienced British contractors of having taken advantage of the Canadians who were still ‘ignorant of railways’ and were misled by the ‘wealthiest firm of contractors in the world’.¹¹⁸ Thomas Keefer supported the idea of a railway between Montreal and Toronto: he even argued in 1847 that the prosperity of Montreal depended on it.¹¹⁹ But he was clearly opposed to Britain’s stranglehold on the Grand Trunk, just like the article from *Le Courrier de Saint-Hyacinthe*. The disagreement – and even resentment – were therefore political. The Grand Trunk crystallised the tensions that were caused by the dysfunctions in the imperial relation, and was representative of the power game between Canada and Britain.

In Britain, the Grand Trunk Railway was advertised as a sound investment, as suggested by the following *Globe* article which reflected the contemporary British interest in the Grand Trunk Railway project:

If capital must cross the sea, it may find another employment, still under British protection. If railways are a popular investment, they can be found under a securer government than that of France. The striking prosperity which has recently been developed in Canada is a matter of notoriety. A considerable proportion of British emigrants, 32,000 last year, still seek the British part of North America. The railways are both the consequence and the cause of commercial prosperity, especially in a country where one of the most pressing wants of commerce is, not land or labour, but means of communication. Canada is in the condition to receive a very sudden and great impulse from any development of its roads. The Great Trunk Railway of Upper Canada, therefore, which has now been definitively announced, has only to exist in order to assure a new prosperity for the colony. Of the aggregate capital, £9,500,000, £1,500,000 has been raised in Canada; something less than £1,000,000 remains to be allotted in that colony, £3,623,000 has been taken by the contractors; and the remainder is open, or was a few days since, for capitalists in England. Preparations for active work are already commenced; the engineering staff is under orders; the directors, both in London and in the colony, are such as to guarantee the solidity of the enterprise; for a member of the Canadian Government, or of the first firms in London, is worth a French Emperor any day, much more a French Count.¹²⁰

¹¹⁷ Thomas C. Keefer, *Philosophy of Railroads* and other essays, edited, with an introduction, by H. V. Nelles, Toronto: University of Toronto Press, 1972, xxxv.

¹¹⁸ Keefer, *Philosophy of Railroads*, 145.

¹¹⁹ Keefer, *Philosophy of Railroads*, xxiii-xxiv.

¹²⁰ *The Globe*, 14 April 1853.

Railways were presented as a ‘popular investment’, notably in France, but Canada was better suited for investment because it was politically more stable – no doubt because it was under British administration. The prosperity of Canada was another chief argument: Canada was becoming prosperous, and that prosperity was only meant to grow. Railways in Canada would encourage trade, since they were ‘the consequence and the cause of commercial prosperity’, in a country where trade urgently required means of communication. That was a common argument used by the advocates of various railways in Canada. Alexander Doull, a Scottish engineer who promoted the construction of the Halifax and Quebec in 1850, argued that Canada exported timber, agricultural produce, and minerals like grindstones, limestone, and mineral manures, in an effort to prove that a railway would guarantee a solid income.¹²¹

The readers of *The Globe* probably had the impression that the Grand Trunk was a very safe bet, as suggested by ‘The Great [*sic*] Trunk Railway of Upper Canada (...) has only to exist in order to assure a new prosperity for the colony.’ The article also insisted on the fact that the construction was already under way, which was a way to reassure any potential investor that the Grand Trunk project was not up in the air, but a real opportunity. The fact that the directors of the Grand Trunk were Canadian and British politicians was presented as a guarantee for the whole project. The tone of the article, and more precisely the irony towards France, was also a way to arouse the readers’ nationalist interest in a project on British territory, devised and controlled by British politicians and staff, and by friendly colonials.

This article was followed by another one that described the money market of the day. It detailed the capital of the Grand Trunk and openly encouraged the readers to invest in that project: ‘we consider the prospects of remuneration excellent, particularly when connected, as it will ultimately, with the lower North American provinces’.¹²² Again, the involvement of British and Canadian politicians was presented as a guarantee for the soundness of this venture:

¹²¹ ICE, Tracts 8^{vo} Vol. 138, Alexander Doull, Letter VII, 15 Sept. 1850, 32.

¹²² *The Globe*, 14 April 1853.

‘No project has come before the public recently so fully entitled to implicit and confidential support as the Grand Trunk Railway Company.’¹²³ In fact, the Grand Trunk was later considered a ‘disaster’ and ‘the world’s worst commercial failure’.¹²⁴ Among the reasons for that failure were miscalculations about costs, for instance that of labour, a very disappointing local traffic¹²⁵ and corruption –the prospectus was fallacious and most of the calculations given to potential investors were wrong.¹²⁶

The involvement of Canadian officials in the Grand Trunk project evidences the importance of the railway in the colony’s political and economic strategy, and more specifically Montreal’s, which the second point of this section analyses.

2) The Grand Trunk Railway project and Montreal

The railways of Britain and the United States, as well as the prosperity they were thought to bring, had attracted Canada’s attention. Canadians however only saw railways as complementary to waterways.¹²⁷ That changed at the end of the 1840s when Britain put an end to the imperial preferential tariffs on colonial wheat in 1846 and gradually repealed the preferential tariffs on colonial timber.¹²⁸ Canada was therefore exposed to competition in the British market.

That decision was met in Canada with great anxiety. So far, the Canadas had enjoyed a preferential position in the English market. As seen above, timber was of particular importance.

¹²³ *The Globe*, 14 April 1853.

¹²⁴ G. R. Stevens, *Canadian National Railways. Sixty years of trial and error*, Toronto, Vancouver: Clarke, Irwin & Company Limited, 1960, 242; Currie, *The Grand Trunk Railway of Canada*, 3.

¹²⁵ Stevens, *Canadian National Railways*, 283.

¹²⁶ Currie, *The Grand Trunk Railway of Canada*, 18-9.

¹²⁷ Currie, *The Grand Trunk Railway of Canada*, 3.

¹²⁸ Bumsted, ‘The Consolidation of British North America, 1783-1860’, 51; Jean-Guy Latulippe, ‘Le traité de réciprocité 1854-1866 / The Reciprocity Treaty 1854-1866’, *L’Actualité Economique*, Vol. 52, No. 4, Oct.-Dec. 1976, 432-58, 433; preferential duties on British North American timber were completely abolished in 1860, see Robert Livingston Schuyler, ‘The Abolition of British Imperial Preference, 1846-1860’, *Political Science Quarterly*, Vol. 33, No. 1, March 1918, 77-92, for ex. 90.

It was among the most important raw materials exported from British North America, especially after the independence of the United States, when Britain tried to make the Canadas the main provider in wood for the West Indies.¹²⁹ Historian S. J. Mclean's uses the example of timber as a particularly clear example of the advantages Canada would get from the English market and the imperial preferential tariffs.¹³⁰ He shows that the general duty on timber imported from British North American colonies was only 5s., in contrast with £1 9s 5d per load when imported in foreign ships, and £1 8s when imported in British ships.¹³¹ According to S. J. Mclean, that advantage was such that timber was sometimes shipped from Northern Europe to the British North American colonies, and then sent to Britain as Canadian timber to enjoy the advantage of the preferential tariff.¹³²

The end of protectionism first resulted in a drop in the Canadian grain trade. Still according to S. J. Mclean, the volume of imports and exports at the port of Quebec in the period 1841-1843 fell off by £500,000.¹³³ Not surprisingly, the business communities of Canada were very much alarmed. And as a consequence, railways looked even more promising than before as it became clear that railways would reduce the cost of the transportation of the goods destined to exportation.¹³⁴ Railways thus represented new opportunities to Montreal's business communities. Merchants who focused on transatlantic trade therefore supported the idea of a railway system in Canada because they were trying very hard to win back their domination over the continent.¹³⁵ And indeed, most cities in British North America eventually wanted a railway, which shows that railways became associated with development and economic prosperity.¹³⁶

¹²⁹ Wynn, 'Aux confins de l'empire', 240-241.

¹³⁰ Mclean, 'An Early Chapter in Canadian Railroad Policy'.

¹³¹ Mclean, 'An Early Chapter in Canadian Railroad Policy', 349-50.

¹³² Mclean, 'An Early Chapter in Canadian Railroad Policy', 349-50.

¹³³ Mclean, 'An Early Chapter in Canadian Railroad Policy', 349-50.

¹³⁴ Currie, *The Grand Trunk Railway of Canada*, 4.

¹³⁵ Currie, *The Grand Trunk Railway of Canada*, 4; Pentland, *Labour and Capital in Canada 1650-1860*, 164. Pentland shows very well the irony of the merchants who focused on transatlantic trade and promoted trunk canals and railways to win back their St. Lawrence empire, and how this strategy ended up creating a viable Canadian economy, 146.

¹³⁶ Waite, 'Un défi continental', 340.

In that sense, even though developing railways was part of a commercial and, as mentioned earlier, imperial strategy of Britain, railways were integrated into economic, geopolitical and development strategies of colonies such as Canada.

The Grand Trunk Railway is a good example. As Jenks describes the genesis of the Grand Trunk Railway, he shows that Canadian promoters and Victorian statesmen disagreed on the route and therefore on the objective of the line.¹³⁷ Indeed, the Canadian project aimed at uniting the Canadas, but also to intercept part of the American grain trade, while the British plan tried to avoid the American border and create ‘an all-British route’ and by doing so avoided Canadian towns altogether.¹³⁸ This fundamental disagreement, which brought into opposition Canada’s economic ambitions on the one hand, and Britain’s political strategy on the other, clearly shows that the Grand Trunk Railway was also part of an economic strategy devised by Canada independently of Britain’s schemes. The role of Montreal in the development of railways, and of the Grand Trunk in particular, was crucial.

Indeed, Montreal, which had been – albeit briefly – the capital city from 1846 to 1849, remained an economic and cultural hub in Canada throughout the nineteenth century, as Sherry Olson and Patricia Thornton put it.¹³⁹ They show that between 1840 and 1900, Montreal could compare with other big American cities such as New York, Philadelphia, Louisville or Pittsburgh in terms of population growth.¹⁴⁰ Montreal’s economic power was initially based on its position near the Atlantic Ocean, and waterways linked the city to the interior of the continent. In that sense, Olson and Thornton compare Montreal to Baltimore and Philadelphia. The canals built in the 1820s reinforced that strategic position.¹⁴¹ The Lachine Canal, opened in 1825 and enlarged between 1843 and 1848, allowed the emergence of flour mills, sash and

¹³⁷ Jenks, *The Migration of British Capital to 1875*, 199.

¹³⁸ Jenks, *The Migration of British Capital to 1875*, 199.

¹³⁹ Sherry Olson and Patricia Thornton, *Peopling the North American City. Montreal 1840-1900*, Montreal & Kingston: McGill-Queen’s University Press, 2011, 23.

¹⁴⁰ Olson and Patricia Thornton, *Peopling the North American City*, 3.

¹⁴¹ Olson and Patricia Thornton, *Peopling the North American City*, 7.

door works, tanneries, iron foundries, metal-working plants while artisanal trades like carpentry grew.¹⁴² Montreal therefore hosted a new flourishing industry. Sugar refining and shipbuilding became expanding trades.

Montreal also had a prominent role in both domestic and international trade. It has commonly been defined as the ‘entrepôt’¹⁴³ of Canada: domestic and imported manufactured goods were sent inland to Canada West from Montreal; grain, flour, potash, timber were exported from Montreal, which also provided banking services.¹⁴⁴ Not surprisingly, the end of the imperial preferential tariffs at the end of the 1840s had a particularly strong impact on Montreal where it was perceived as a threat by the local business community. In 1849, around 570 people signed the Annexation Manifesto, which advocated the annexation to the US.¹⁴⁵

The Annexation Manifesto, addressed ‘to the People of Canada’, predicted that the end of the imperial preferential tariffs would ruin Canada. The term ‘decay’ was repeated several times. This new British policy appeared as a catastrophe:

our mercantile and agricultural interests alike unprosperous; real estate scarcely saleable upon any terms; our unrivalled rivers, lakes and canals almost unused; whilst commerce abandons our shores, the circulating capital amassed under a more favourable system is dissipated, with none from any quarter to replace it.¹⁴⁶

The signers therefore pictured Canada as a booming economy which necessitated the protection of a powerful country. According to them, Canada’s economic power was based on banking and securities, real estate, trade, agriculture, but also on the potentiality of its numerous waterways. Its main assets, as explained in a further paragraph, were ‘surperabundant water power and cheap labour’, but Canada suffered from a lack of industry – ‘we have yet no domestic manufactures’ – and a market too limited to attract foreign investments.¹⁴⁷

¹⁴² Young, ‘Le Cadre / The Setting’, 33 and Passfield, ‘Construction of the Victoria Tubular Bridge’, 7.

¹⁴³ Currie, *The Grand Trunk Railway of Canada*, 3; Passfield, ‘Construction of the Victoria Tubular Bridge’, 7.

¹⁴⁴ Passfield, ‘Construction of the Victoria Tubular Bridge’, 7 Young, ‘Le Cadre / The Setting’, 20.

¹⁴⁵ *The Annexation Manifesto of 1849. Reprinted from the Original Pamphlet, with the Names of the Signers*, Montreal: The Montreal News Co., Toronto: The Toronto News Co., 1881.

¹⁴⁶ *The Annexation Manifesto of 1849*, 3.

¹⁴⁷ *The Annexation Manifesto of 1849*, 4.

The lack of manufactures was exaggerated, as there were manufactures in Canada, and more specifically in Montreal. The signers of the manifesto insisted on the urgency of the situation. Their analysis of the economic development of Canada, and the negative impact of the new British policy, led to a political criticism of the relation between Canada and Britain:

Our present form of Provincial Government is cumbrous and so expensive, as to be ill suited to the circumstances of the country; and the necessary reference it demands to a distant Government, imperfectly acquainted with Canadian affairs, and somewhat indifferent to our interest, is anomalous and irksome¹⁴⁸.

It seems that the main criticism, here, was that the government was distant and took no interest in the economic needs and necessities described by the signers. In other words, that government was not considered competent enough to deal with Canadian affairs. Although the Annexation Manifesto did not have, in the end, a significant economic or political impact – Britain did put an end to preferential tariffs and Canada remained a British colony – it is interesting to see that an unpleasant imperial policy led the business community of Montreal to question the status of Canada as a colony. In that sense, the word ‘nation’ used by the signers when they associated Canada deprived of the imperial tariff with ‘a nation fast sinking to decay’ is significant.¹⁴⁹ Although the signers displayed a continuous loyalty towards Britain, which they still called mother nation, their conclusion praised independence and criticised the system of the Empire itself:

We have now no voice in the affairs of the Empire, nor do we share in its honours or emoluments. England is our Parent State, with whom we have no equality, but towards whom we stand in the simple relation of obedience. But as citizens of the United States the public service of the nation would be open to us – a field for high and honourable distinction upon which we and our posterity might enter on terms of perfect equality.¹⁵⁰

Understandably, that sudden praise for independence was caused by the resentment towards a policy voted far away, and which did not take Montreal’s business communities’ economic

¹⁴⁸ *The Annexation Manifesto of 1849*, 4.

¹⁴⁹ *The Annexation Manifesto of 1849*, 3.

¹⁵⁰ *The Annexation Manifesto of 1849*, 9.

interests into account. The signers underlined that Canada on its own was politically too weak and needed an alliance,¹⁵¹ which shows that they looked less for independence than the ability to defend and develop the economy of Canada. Britain therefore appeared in that manifesto as the privileged trade partner, but also as ‘the mother country’ or the ‘parent’ supposed to protect Canada, both economically and politically speaking.

There was some ambiguity here: on the one hand, the manifesto blamed Britain for not protecting Canada anymore, and on the other hand it denounced the inequality at the basis of imperial relations. This ambiguity shows that the claim for independence is more an *ad hoc* response to a frustrating and worrying situation, than the result of a long process and reflection on the nature of colonial policies and relationships. But it remains that a British decision about trade led to a political questioning of the relation between Britain and Canada, and of Canada’s role in the British Empire. The economic and political instability that Britain’s policy was predicted to create led the signers to suggest the annexation of Canada to the United States as the best solution.¹⁵² They argued that this alliance would increase commerce with the United States and other countries, develop the waterways and therefore allow immigration into and exportations from Western Canada, introduce manufactures, and American capital would help build railways.

Throughout the manifesto, railways were associated with prosperity. The manifesto compared the ‘thriving’ American network with the Canadian one which ‘scarcely exceed[ed] fifty miles in length’, and thought it was ‘a fatal symptom of the torpor overspreading the land’.¹⁵³ The railways were not only considered necessary to the development of a thriving country, they were seen as the symbol of a dynamic economy. The annexation would provide the possibility of developing railways:

¹⁵¹ *The Annexation Manifesto of 1849*, 4.

¹⁵² *The Annexation Manifesto of 1849*, 6.

¹⁵³ *The Annexation Manifesto of 1849*, 4. 50 miles = 80 km.

Railways would forthwith be constructed by American capital as feeders for the great lines now approaching our frontier: and railway enterprise would doubtless be as attractive and prosperous among us as among our neighbours. The value of our agricultural implements and many of the necessaries of life, such as tea, coffee and sugar, would be greatly reduced in price.¹⁵⁴

Quite clearly, railways in Canada were considered a necessity for the development of trade. But most importantly, they were understood as the counterpart of American railways, both built with American capital, and the two networks connecting the American and the Canadian spaces.

The Annexation Manifesto shows two things. First, the business community of Montreal considered that Britain was crucially important for trade and economy. Second, railways were even more important than the relationship with Britain. Railways were perceived as the way to reduce the costs of necessary products, to facilitate trade, to attract foreign investments, and in one word, to ensure prosperity. The insistence on rivers, lakes, and more generally speaking waterways shows that canals, in 1849, were also perceived as connecting links. The manifesto hoped that a union with the United States would ‘render our rivers and canals the highway for the immigration to, and exports from, the West’.¹⁵⁵ During the Annexation Meeting that gathered the signers of the Manifesto, railways and canals in the United States were both associated with prosperity.¹⁵⁶ It seems that even at the end of the 1840s, canals were still part of the emerging history of railways in Canada.

3) Canals and railways: from complementing to competing with each other

The third point of this section explores the intertwining history of canals and railways. Canals are a necessary part of this study for three reasons, although this link has not been much

¹⁵⁴ *The Annexation Manifesto of 1849*, 8.

¹⁵⁵ *The Annexation Manifesto of 1849*, 7.

¹⁵⁶ *The Annexation Manifesto of 1849*, 19.

explored by the major works on the Grand Trunk Railway. First, canals were still an industrial force and were of great use when railways became fashionable. They were part of the industrial landscape that railways were trying to integrate. Second, canals preceded railways as the first large-scale works in Canada, and as ‘the first international industry in North America’, to borrow Peter Way’s phrase.¹⁵⁷ As such, they necessarily set precedents in Canada. And finally, canals were pivotal in the proletarianization of workers in North America, and therefore determined a pattern of labour relations and an evolution towards industrial capitalism.¹⁵⁸

Indeed, canals were central in the economy and trade system of North America. However, it would be wrong to assume that canals preceded and allowed the development of trade in British North America. McCalla shows that local trade and exports to Britain of wheat and wood products like potash or barrel staves had been going on for fifty years before the introduction of any canal system.¹⁵⁹ Canals were actually seen as a way to improve provincial development.¹⁶⁰ They were part of Montreal’s strategy to dominate trade. Robert Passfield thus argues that before the opening of the Erie Canal in 1825, Montreal had dominated the trade of the Great Lakes interior, and that Montreal lost the American trade after the opening of the Erie Canal which was focused on New York.¹⁶¹ As a consequence, canals were developed with the ambition to reduce Canadian shipping costs and enable Montreal to compete again against New York for the trade of the American Midwest.¹⁶² With that ambition, the Lachine Canal was enlarged between 1843 and 1848 and the enlargement of the Welland Canal took place from 1842 to 1850, to quote but a few.

¹⁵⁷ Peter Way, *Common Labour. Workers and the Digging of North American Canals, 1780-1860*, Cambridge: Cambridge University Press, 1993, 265-266.

¹⁵⁸ Way, *Common Labour*, see for ex. 79, 247-248

¹⁵⁹ McCalla, ‘Economy and Empire: Britain and the Canadian Development, 1783-1971’, 244-245.

¹⁶⁰ McCalla, ‘Economy and Empire: Britain and the Canadian Development, 1783-1971’, 249;

¹⁶¹ Passfield, ‘Construction of the Victoria Tubular Bridge’, 5.

¹⁶² Passfield, ‘Construction of the Victoria Tubular Bridge’, 6.

This commonly shared view that attributes New York's success to the Erie Canal has repeatedly been challenged by historians like Chilton Williamson or H. Clare Pentland.¹⁶³ Pentland shows that Montreal did dominate trade in 1820 because its water route into the continent was unmatched, even by the Mississippi, and because Montreal was closer to Liverpool by more than 480 kilometres than New York was.¹⁶⁴ He argues that New York's victory over Montreal was rather due to its advantage in ocean freight rates, advantage which the Erie Canal completed.¹⁶⁵ What is interesting is that posterity recalled that the Erie Canal was decisive in New York's supremacy, as Williamson regrets; and that Canada, as a reaction, enlarged existing canals and built new ones. Canals were therefore important to consolidate and improve trade and existing assets, but most importantly, they were also considered the best way to dominate trade.

London played an important part in canal construction. Peter Way shows that canal construction happened in Canada in the 1840s despite the depression and was controlled by the state. Canals were also part of the government's military strategy, as the governor-general in 1819 had the number of soldiers garrisoned in British America increased to 5,000 regulars and land fortifications and military communications improved.¹⁶⁶ The Rideau Canal for instance was meant to improve military communication and was not even deep enough for commercial ships.¹⁶⁷ Quite clearly, as canals were meant to develop provincial Canada and favour military communication, they were conceived as a way to rationalise space and to improve the state's control over the territory. That centralism meant that the financing of these public works was controlled by the state, and so were the production and the defence of the production against

¹⁶³ See Chilton Williamson, 'New York's Impact on Canadian Economy: Prior to the Completion of the Erie Canal', *New York History*, Vol. 24, No. 1, Jan. 1943, 24-38, 24; Pentland, *Labour and Capital in Canada 1650-1860*, 155.

¹⁶⁴ Pentland, *Labour and Capital in Canada 1650-1860*, 155.

¹⁶⁵ Pentland, *Labour and Capital in Canada 1650-1860*, 156. Endnote 47: 'Ocean freight rates on flour to Liverpool were reported to be about twice as much from Montreal as from New York', based on Sir A.G. Doughty, ed. *The Elgin-Grey Papers, 1846-52*, Vol. III, Ottawa, 1937, 1282.

¹⁶⁶ Bumsted, 'The Consolidation of British North America, 1783-1860' 50-1.

¹⁶⁷ Bumsted, 'The Consolidation of British North America, 1783-1860', 51.

disruptive events such as labour unrest.¹⁶⁸ In that sense, canal construction is decisive in the understanding of common labour and construction works in Canada, which the following chapter analyses more closely. When the canal industry declined at the end of the 1840s, Peter Way shows that many canallers turned to mining and railway construction, which is yet more evidence that these two narratives intertwine.¹⁶⁹

However, the decline of the canal industry did not mean that canals became less important altogether and all of a sudden. At the end of the 1840s, there were still ongoing canal projects: the enlargement of the Lachine Canal was completed in 1848, the Welland in the 1850s, and a few canals like the Chats Canal and the Shubenacadie Canal were built between 1854 and 1861.¹⁷⁰ Quite importantly, canals were the privileged routes into the continent. In fact, early railways in Canada such as the nineteen-kilometre-long Lanoraie and Industry Railway, opened in 1850, were first meant to complement the canal network.¹⁷¹ The Grand Trunk Railway, on the contrary, clearly ambited to compete with waterways. In his 1855 report to the London Board of Directors, Sir Cusack P. Roney quoted Robert Stephenson, who wrote in a report in 1854 that

Experience both in England and other countries when railways have come into rivalry with the best navigable rivers (rivers open for navigation throughout the year), has demonstrated beyond the possibility of question, that this new description of locomotion is capable of superseding water carriage, whenever economy and despatch are required; and even where the latter is of little importance, the capabilities of a railway properly managed may still be made available simply for economy.¹⁷²

Stephenson clearly conceived railways and waterways as ‘rivals’. And Stephenson and the members of the Board were right in thinking that railways were more convenient: canals in Canada were frozen for half the year and therefore trade stalled.¹⁷³

¹⁶⁸ Way, *Common Labour*, 231.

¹⁶⁹ Way, *Common Labour*, 271-272.

¹⁷⁰ List provided by Way, in Way, *Common Labour*, 263.

¹⁷¹ Young, ‘Le Cadre / The Setting’, 27.

¹⁷² ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 1855, 16.

¹⁷³ See for instance ICE, Vol. 138, Tracts 8^{vo}, letter II, ‘Alexander Doull, ‘To the Editor of “The Morning Chronicle”’, 13 Aug. 1850, quoting a report by Major Robinson dated 31 August 1848: ‘The navigation of the St.

It could be objected that ‘waterways’ did not necessarily refer to canals, which is true. But Roney explicitly compared the Saint Lawrence canals between Montreal and Brockville with railways, and concluded that a railway would be faster, and would allow more passengers to travel daily.¹⁷⁴ He also showed that Montreal was the landing port of two hundred sea-going vessels, but because of the shallowness of the river, large ships had to discharge part of their cargoes at Quebec and freight was often delayed from fifteen to eighteen days.¹⁷⁵ He argued that the Grand Trunk Railway, when opened west of Montreal, would allow the transportation of freight without interruption. That would therefore be convenient for trade, but would also guarantee the company solid benefits.

Stephenson used the example of England and of vague ‘other countries’ to prove that the Grand Trunk would supersede existing canals without a doubt. However, railways and canals in other countries like the United States actually coexisted at first. Historian John Stover, for instance, shows that railways were rather slow in imposing their superiority over canals in the United States, and that the Erie Canal was still flourishing in the 1850s.¹⁷⁶ It means that the hypothetical success of the Grand Trunk was partly based on the success of existing canals that the railway was meant to steal, hence the numerous mentions of the traffic on existing canals in the Grand Trunk reports. In his report to the London Board of Directors, for instance, Roney compared the tonnage of the Saint Lawrence Canals and the Welland Canals and concluded that the movement on these canals increased by 331 per cent between 1848 and 1853. He then proceeded to show that these same canals presented inconveniences: big vessels could not pass through the Saint Lawrence Canals, which were frozen for four months each year anyway.¹⁷⁷

Lawrence is closed for about six months in every year. During the whole of this period all the produce of the country is locked up’, 14.

¹⁷⁴ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 1855, 6.

¹⁷⁵ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 1855, 6

¹⁷⁶ Stover, *American Railroads*, 34.

¹⁷⁷ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 1855, 15.

The success of the canals, whose traffic kept increasing despite blatant inconveniences, appeared as some sort of guarantee for the triumph of the Grand Trunk Railway.

But the Grand Trunk Railway did not supersede canals straight away. Currie shows that in Canada, freight consisted of low-valued goods transported slowly over long distances to remote markets, contrary to the valuable freight handled rather quickly, and over shorter distances, by British railways. As a consequence, waterways in Canada were cheaper and retained a fair advantage over railways until the 1870s and 1880s.¹⁷⁸ An audit report dated November 1859 and addressed to Thomas Blackwell celebrated the success of the Grand Trunk Railway in these terms:

It may also be remarked that the business men of this country long accustomed to travel by steamboats (before the introduction of railways), are gradually from experience becoming alive, to the value of quick locomotion and regularity of our trains, and these advantages will also force themselves upon those, who still patronize the boats in summer, (but who are obliged to use the rail in winter,) and in the end tend to a more general diversion in our favour. Indeed to my mind, the time is not far distant when business passenger-travel by Lake and River will cease altogether (...).¹⁷⁹

The enthusiasm of J. Hardman, the author of the report, hardly concealed the fact that waterways were still of great use, even at the end of 1859. Businessmen were either ‘gradually’ becoming aware of the advantages of the rail, which implies that they still relied on waterways; or they used waterways in summer, and railways in winter. This clearly contradicted Stephenson’s 1854 expectations and, as argued by Currie, this was probably due to the cheapness of waterway fares.

This section has argued that the Grand Trunk Railway project, and therefore the Victoria Bridge, which made possible the juncture between the banks of the St Lawrence River, was part of the economic strategy of Britain and Montreal. It has shown that the Grand Trunk favoured the commercial interests of Britain and was financed and controlled by British banks and private

¹⁷⁸ Currie, *The Grand Trunk Railway of Canada*, 59.

¹⁷⁹ ICE, Tracts 8^{vo} vol. 140, ‘Report on Competition for Passenger Traffic Between the Grand Trunk Railway, Steamboats on Lake Ontario, River St. Lawrence, And Rival Railways’, 1 Nov., 1859, 13.

investors. At the same time, the Grand Trunk was also crucial to the economic and political ambitions of Montreal. Finally, this section has argued that canals were central in the industrial and economic landscape of Canada, and the Grand Trunk Railway was supposed to compete with them and supersede them. Canals were not the only rivals of the Grand Trunk Railway which was meant to compete with the United States network.

II- The Competition with the United States

1) The developed US railway system

In 1852, the *Journal de Québec* read as follows:

Nothing is more strikingly revealing of the prosperity of a country and its degree of civilisation, than the number and perfection of its transport routes. In that sense, the United-States is perhaps the first country in the world. Since 1830, the construction of railroads has been going on in the whole Union, and has never stopped nor slowed down. (...) The whole length of the railways in Europe today is only 14,142 miles, according to official statistics. According to the official figures given at the beginning of this article, the network of the sole United-States will be equal, in a year or two, to that of the rest of the world.¹⁸⁰

This article is not the most emblematic of the admiration for the American network, as it also criticised the mediocre quality of the railways. But even such a mitigated article could not but praise the length of the network, and the rapidity with which it was built. For Canadian contemporaries, civilisation and railways were clearly connected. In the *Journal de Québec*, the superiority of the American network constituted the actual superiority of the United States on the international stage.

It was no exaggeration to date the beginning of the American network back to the 1830s – that is, a good twenty years earlier than in British North America. The Granite Railway in

¹⁸⁰ *Journal de Québec*, 12 December, 1852, 1: ‘Rien ne découvre d’une façon plus frappante la prospérité d’un pays et le degré de civilisation auquel il a atteint, que le nombre et la perfection de ses voies de communication. Sous ce rapport, les Etats-Unis occupent peut-être le premier rang dans le monde. Depuis 1830, la construction des chemins de fer a suivi, dans toute l’Union, une marche incessante et constamment accélérée. (...) La longueur totale des lignes de chemin de fer, aujourd’hui en Europe, n’est que de 14,142 milles, selon les statistiques officielles. D’après les chiffres que nous avons donnés au début de cet article, les Etats-Unis, d’ici un an ou deux, égalent, à eux seuls, le chiffre qui est celui du reste du monde.’ My translation.

Massachusetts, considered by historian James E. Vance as ‘America’s first railroad’, was built in 1826.¹⁸¹ In 1827, the Baltimore and Ohio Railroad Company and the South Carolina Canal and Railroad Company were the first railways for general commercial purposes and for passengers to be chartered in the United States, and the Baltimore and Ohio Railroad Company was the first railway company that approached Congress for aid.¹⁸² Historian Lewis H. Haney shows that as early as 1836, the railway had practically superseded the road as a national improvement in the United States, while at the same time in Canada there was hardly more than one noticeable railway – the Champlain and St Lawrence Railway, 22.5 kilometres long.¹⁸³ Not surprisingly, therefore, was the railway network more developed in the United States than in British North America where the railway boom started in the 1850s.

The art of building railways was developed in Britain, but historians of American railways like J. E. Vance argue that the United States developed its own railways, independently of Britain. He distinguishes the railway – built in England and Wales in the first quarter of the nineteenth century, and the railroad – built a decade later in North America.¹⁸⁴ He shows that the railway and the railroad were not built in the same contexts, and were therefore not meant to respond to the same challenges. British railways emerged in a well-developed economy where they were meant to provide additional and cheaper transportation, while American lines were built where there was no settlement, with scarce money and cheap expedients.¹⁸⁵ He opposes the ‘city filling’ British railways, to the ‘city founding’ American railroads.¹⁸⁶

This fundamental difference led to different construction techniques. Vance argues that the British practice consisted in building heavily engineered lines that only necessitated weak

¹⁸¹ James E. Vance, Jr, *The North American Railroad. Its Origin, Evolution, and Geography*. Baltimore and London: The John Hopkins University Press, 1995, 21.

¹⁸² Haney, *A Congressional History of Railways in the United States*, 26.

¹⁸³ Haney, *A Congressional History of Railways in the United States*, 74.

¹⁸⁴ Vance, *The North American Railroad*, 4.

¹⁸⁵ Vance, *The North American Railroad*, 4.

¹⁸⁶ Vance, *The North American Railroad*, 6.

locomotives – in other terms, the construction of the line represented a high investment, but the operating cost remained low.¹⁸⁷ Again, that was possible because British railways could benefit from the settlement fabric and the existing economy and market. He observes that when British railways were built in places where the settlement fabric was loose and the investment capital in short supply, cheap expedients like wooden bridges were used, just like in North America.¹⁸⁸

It seems to me that the Grand Trunk Railway constitutes a revealing counterexample to that theory, since it was built in the British fashion described by Vance, but in the North American geography particular to the North American railroads as suggested above. Contrary to British railways, American railroads did not benefit from such capital and therefore were not heavily built lines, that is why they needed more powerful locomotives. The British technique required an important amount of iron, which was too expensive in the United States where the engineers had to adapt the British practice, and finally created an ‘indigenous’ American railroad.¹⁸⁹ Vance uses the term ‘North American’ on purpose, as he tries to show that the American practice dominated the building of rails in the United States, but also increasingly in Canada, although he concedes in a parenthesis that the Grand Trunk was an exception to that rule.¹⁹⁰ In fact, as I will argue in the following chapters, the engineers conveniently used indigenous techniques as well, and it would be inaccurate to consider the Grand Trunk as a railway merely ‘operated from London’, and whose British engineers were unaware and disdainful of North American construction techniques. The Grand Trunk, therefore, is a unique example of a British railway in a North American geography; it is, in other words, a railway situated at the crossroads of British railways and American railroads.

The difference between the development of the American and the Canadian railway systems fuelled the debates on railways in British North America. Civil engineer Alexander

¹⁸⁷ Vance, *The North American Railroad*, 7

¹⁸⁸ Vance, *The North American Railroad*, 6

¹⁸⁹ Vance, *The North American Railroad*, 10. About the use of iron, see Vance, *The North American Railroad*, 53.

¹⁹⁰ Vance, *The North American Railroad*, 11.

Doull (1796-1878) repeatedly argued that British emigrants settled in the United States rather than in the British colonies because of railways. In a letter to the editor of *The Morning Chronicle* dated 14th September 1850, he provided figures regarding British emigration to America between 1829 and 1850. He showed that the number of British emigrants to the British colonies alarmingly decreased, passing from 320,766 people between 1829 and 1839 to 72,432 emigrants between 1848 and 1850. On the contrary, the number of British emigrants going to the United States steadily increased, passing from 292,492 (years 1829 to 1839) to 407,683 (years 1848 to 1850). He thus analysed this evolution:

The primary cause of this diversion of the stream of emigration from the British colonies to the United States is unquestionably the greater facilities for proceeding to the interior from the ports of the States than from those of the British colonies, by the extensive introduction of railways into the States, and their total absence in the colonies; and also the extensive labour-market created by the introduction of those public works in the former which have been neglected in the latter.

This state of things must be very injurious, not only to the interests, but also to the feelings of the British colonists, and calculated powerfully, though silently, to alienate their minds from British connection.¹⁹¹

Alexander Doull thus attributed the attractiveness of the United States to its railway network. He argued that railways allowed emigrants to access the interior of the country, which they could not do in British North America because there were no railways.

Doull's statement is rather unconvincing, as he neglected other factors that encouraged migration to the United States, such as the money sent to relatives to help them pay their passage. That created chain migration: the more emigrants went to the United States, the more other emigrants they attracted. He also omitted to mention the canals that emigrants could use in Canada, and which were advertised for by the Colonial Land and Emigration Commission in 1850.¹⁹² As Alexander Doull was an advocate of railways in Canada, it came as no surprise that he should present railways as the best way to rationalise space. He may also have been strongly

¹⁹¹ ICE, Tracts 8^{vo} Vol. 138, Alexander Doull, Letter VII "To the Editor of 'The Morning Chronicle'", 14 September 1850, p.33. See as well A. Doull's paper read before the British Association for the Advancement of Science, 1851.

¹⁹² *Colonial Land and Emigration Commission. Tenth General Report of the Colonial Land and Emigration Commissioners*, 1850, Presented to both Houses of Parliament by Command of Her Majesty, London, 1850, 71.

convinced that the absence of railways in British North America deterred emigrants who would rather go to the United States where they could rely on a developed network, and perhaps that was partly true. What is noteworthy is that railways were considered a key feature in emigration, in that they could attract and favour settlement.

In this statement, Doull also underlined the fact that railways would provide jobs to newcomers, which was also a way to attract emigrants to colonies where there were few prospects. Indeed, A. C. Buchanan, the Emigration Agent in Canada, wrote in his 1848 report that there were no jobs in Canada.¹⁹³ The position of railway advocates, who saw the railways as both a solution to employ and attract British emigrants, corroborated the advice provided by the Colonial Land and Emigration Commission to Parliament: the establishment of public works would provide employment and develop resources that had been heretofore latent.¹⁹⁴

Furthermore, the development of railways was geopolitically crucial. As alarmingly underlined by A. Doull, railways were becoming necessary to the job market of British North America and to the economic and commercial interests of the ‘colonists’, and as such, railways would guarantee the settlers’ loyalty to Britain. Doull thus tried to demonstrate that British emigrants would rather go to the United States because there were no railways in Canada, and that the absence of railways would also sever the bond between Britain and the settlers, who arguably would turn to the closest country equipped with railways: the United States. In the aftermath of the Annexation Manifesto and in a context when the independence of the United States was still in British officials’ minds, this argument might have had its importance. The American railways, which deviated British subjects from Britain and British colonies, were therefore seen as an indirect, but serious threat.

¹⁹³ A. C. Buchanan, Report of 1848, quoted in *Colonial Land and Emigration Commission. Tenth General Report of the Colonial Land and Emigration Commissioners*, 1850, 3.

¹⁹⁴ Buchanan, Report of 1848, quoted in *Colonial Land and Emigration Commission. Tenth General Report*, 3.

Most sources point to a real anxiety concerning the very concrete threat that the American network represented to the Canadian trade, which appeared in danger of being absorbed by the American railways.¹⁹⁵ In his report quoted above, Roney argued that the Grand Trunk would be a way to secure the independence of the Canadian traffic, and break free from New York and Boston.¹⁹⁶

Because the American railways were dangerously close to the border, they were also perceived as a military threat. In another letter to the editor of *The Morning Chronicle*, Alexander Doull quoted the report of major Robinson, an officer of the Royal Engineers, who wrote in 1848:

Every new line of railway made in that country [the US] adds to their power, enabling them to concentrate their forces almost wherever they please, and by the lines, of which there are already some, and there will soon be more, reaching to their northern frontier, they can choose at their own time any one point of attack on the long-extended Canadian frontier, and direct their whole strength against it.¹⁹⁷

That statement emphasised the ever-growing characteristic of the American network, which sounded like an ever-growing threat. The alarming tone of major Robinson was clearly perceptible, through the insistence on the lines that ‘already’ existed, and the fact that ‘there [would] soon be more’, which added to the sense of urgency conveyed by major Robinson’s report. The vulnerability of Canada, increased by the length of the frontier, seemed obvious: the Americans could move troops quickly wherever they wanted, while the British could not. As underlined by the major: ‘[h]owever powerful England may be at sea, no navy could save Canada from a land force.’¹⁹⁸ There was therefore a clear concern that the United States might try to annex Canada – and should that happen, Britain would not be able to respond. Railways

¹⁹⁵ See for instance Legge, *A Glance at the Victoria Bridge*, 31.

¹⁹⁶ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 1855, 21.

¹⁹⁷ ICE, Vol. 138, Tracts 8^{vo}, A. Doull, Letter II “To the Editor of ‘The Morning Chronicle’”, August 13, 1850, p.14, quoting major Robinson’s Report, August 31, 1848, 23.

¹⁹⁸ ICE, Vol. 138, Tracts 8^{vo}, A. Doull, Letter II “To the Editor of ‘The Morning Chronicle’”, August 13, 1850, 15; quoting major Robinson’s Report, August 31, 1848, 30.

appeared as the necessary infrastructure to check the military power of the United States and to ensure the defence of the wide territory of British North America.

The American railways thus raised concern in Britain and in Canada because the network was more developed than the Canadian system, and it kept growing and getting closer to the border, therefore threatening both the commercial interests and the integrity of Canada. Interestingly, those alarmed voices especially came from railway advocates.

2) The American railways: the new form of that old American threat?

Although a view commonly held in Canada, expressed for instance in the *Journal de Québec* article quoted above, explicitly linked the superiority of the United States over Canada to its developed railway system, that statement is not totally convincing. H. C. Pentland shows that New York's success was not due to the railways, and that its supremacy was earned prior to the railways.¹⁹⁹ As suggested above, Pentland attributes New York's success to a great advantage over Montreal in ocean freight rates – thanks to a well-developed hinterland – but also to more regular sailings and lower port operating costs.²⁰⁰ It is therefore telling that the American railway system should be presented in Canadian newspapers as the reason for the United States' domination on trade.

In fact, H. C. Pentland considers that the business community of Canada conveniently attributed New York's success to the canals in the canal era, and then to the railways, as he writes: 'The reason for New York's success was not much of a mystery, though Montrealers acted as if it was, as if their superior inland water route gave them title to the continental trade, and as if some mechanical adjustment which they had so far overlooked would restore their property to their rightful owners.'²⁰¹ Pentland thus explicitly argues that the business

¹⁹⁹ Pentland, *Labour and Capital in Canada 1650-1860*, 155-156.

²⁰⁰ Pentland, *Labour and Capital in Canada 1650-1860*, 156-157.

²⁰¹ Pentland, *Labour and Capital in Canada 1650-1860*, 156.

community of Canada used the railways as a pretext to explain New York's success. McCalla even argues that 'defensive arguments about faster American progress' were part of a rhetoric in Canadian politics.²⁰² In fact, he shows that Canada did not really lag behind the United States as the expansion of railways to the south and the expansion of railways in Upper Canada actually happened relatively close in time to the US, where the main elements of a trunk line system in the United States were put into place by 1856.²⁰³

The discrepancy between the railway systems in the United States and in British North America was therefore used to explain Montreal's commercial defeat to New York, but then also as the solution to win back its domination over the continent. The business community who advocated the construction of railways in British North America mainly aimed at securing a connection with Britain and Europe at large in order to re-establish their domination over trade. This ambition was crystal clear in Roney's 1855 report to the London Board of Directors, which shows that the Grand Trunk, although not financed by the British government, sprouted from common mercantile interests shared by British investors and shareholders, as well as Canada's merchants. The difference between the American and the Canadian railway networks was used as leverage to push forward the construction of railways in Canada, in the name of trade and military strategy, as the railways came to symbolise the potential aggressiveness of the United States. The constant comparison with the American network, together with these commercial and military concerns, effectively linked the Canadian railways to the United States. The Canadian lines were meant to complete, but also compete with, the American railways.

Interestingly, this rhetoric had also been used with canals at the beginning of the nineteenth century, which suggests that this competition was not new. Indeed, as shown by

²⁰² Douglas McCalla, *Planting the Province: The Economic History of Upper Canada 1784-1870*, Toronto: University of Toronto Press, 1993, 203.

²⁰³ McCalla, *Planting the Province*, 203.

Olson and Thornton, Montreal built canals in the 1820s to enhance the advantages of its natural waterway, and ‘to compete with the Erie and Ohio canal systems’.²⁰⁴ The Canadian transport system was therefore aligned on the American system, notably because it was a response to the challenges that the United States’ innovations represented. Consequently, the competition with the American railways was simply another expression of that relationship, and the Grand Trunk Railway was a good example of that ‘special relationship’ with the United States. Indeed, the company’s archives show that the Grand Trunk’s estimated income, while still under construction, was calculated after the income of American railways.²⁰⁵ In 1854, engineer Alexander Ross, who accounted for the works under construction in his report to the chairman and directors of the Grand Trunk Railway, wrote that he was confident that passenger travel upon the Quebec to Richmond section ‘will compare with any railway in America’.²⁰⁶ Before and during the construction, American railways were perceived as a matter of concern, a rival as well as a model to look up to and to overcome. Roney’s insistence on the importance of a direct connection between British North America and Britain, which I will detail in the following section, also shows that the Grand Trunk is the typical example of a British North American railway meant to protect the colony’s trade.

Roney’s report also detailed the possible connection points with the United States, like Sarnia, Goderich, etc.²⁰⁷ which indicated that the Grand Trunk was expected to complete the American railways. Completing and competing with were indeed not mutually exclusive. The Grand Trunk’s aim was to expand and become a gigantic line meant to facilitate trade from West to East, but also to benefit from the trade in the United States.²⁰⁸ The Grand Trunk was

²⁰⁴ Olson and Thornton, *Peopling the North American City*, 7.

²⁰⁵ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney’s Report to the London Board of Directors, 1855, 7: the annual income of the Grand Trunk was estimated at £600,000, based on ‘the contribution of each resident within the influence of a railway in the United States’ which amounted to 12s. 6d. per annum.

²⁰⁶ ICE, Vol. 104, Tracts 820, Alexander Ross, 30th March 1855, to the chairman and directors of the Grand Trunk Railway, 27.

²⁰⁷ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney’s Report, 1855, 18-9.

²⁰⁸ See for instance *Le Pays*, November 14th, 1855, 3: Montreal hoped that the opening of the Brockville section would bring more of the trade from the west to Montreal.

clearly not expected to focus on Canadian trade only, scaring off the American railways from Canada. In his report, the managing director of the Company Sir Cusack Roney wrote:

The state of Maine requires a supply of 700,000 barrels (equal to about 70,000 tons) of flour a year. Only one-tenth of this amount was taken over the Montreal and Portland line in 1854.

The course of this trade has hitherto been through New York and Boston, and the great bulk of it will so continue until the Grand Trunk Railway is opened to the west.²⁰⁹

One-tenth of the American traffic of flour was not considered enough, as implied by the word ‘only’. The majority of the traffic was taken care of by the old-time rivals New York and Boston. The planning of the expansion of the Grand Trunk was meant to play a part in the American traffic of goods and to challenge the domination of the United States over the American trade. The very length and extension of the Grand Trunk was supposed to enable the Canadian railway system to compete with the United States. That is why Roney’s 1855 report also dwelled on the extension of the Grand Trunk to the west, in order to be connected to the states of Michigan, Iowa, Illinois, Minnesota, Wisconsin and Lakes Huron and Superior.²¹⁰ In other words, the Grand Trunk not only intended to keep the United States away from the Canadian trade, but it also hoped to absorb the US trade as well. The Grand Trunk was not a mere railway, it was a whole system, supposed to be sprawling and growing, and to bring down the domination not so much of the United States as a whole than of powerful cities like New York and Boston that competed with Montreal.

This section has argued that the Grand Trunk Railway was closely related to the United States’ railways. It was presented as a way to compete with the US network, thus reusing a rhetoric that associated the development of communication networks as the means for Canada to compete with its powerful neighbour. At the same time, the board of the Grand Trunk Railway also hoped to absorb the US trade, in an effort to complete the US network. The Grand

²⁰⁹ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney’s Report, 1855, 5.

²¹⁰ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney’s Report, 1855, 10.

Trunk thus intended to connect different spaces and, as the next section shows, played a role in the colonising scheme of Canada.

III- Connecting and Colonizing

1) Connecting Different Spaces

If railways were at the heart of conflicting interests and trade competition, they were also meant to connect different spaces – the colonies of North America and the interior of the territories, Canada and Britain, but also Canada and the United States. The Grand Trunk's expected income was partly based on trade with the US and with Britain. In 1855, Roney estimated that the traffic due to the exportation of flour would bring the company £375,000 a year. The exportation of lumber and flour to the US was also expected to bring large revenues.²¹¹ The figures of the Company's board were quite right: after the announced end of the protective tariffs in 1849, Canada compensated the loss of trade with Britain by redirecting its exportations of lumber towards the United States.²¹²

The Grand Trunk, in particular through the section from Quebec to Richmond, was supposed to create a new route between Portland, Boston, and New York, and therefore a connection between Quebec and Lower Canada, and 'the large manufacturing population of the States of Maine, Connecticut, and Massachusetts'.²¹³ The mention of the large manufacturing population of the United States, soon to be directly connected with Canada, implied that they would represent a large number of potential passengers, but also that trade might thrive with

²¹¹ ICE, Vol 104, Tracts 820, S. P. Bidder, General Manager, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 32 and 33

²¹² James G. Lewis, 'The Age of Wood', in Char Miller (ed.), *The Atlas of U.S. and Canadian Environmental History*, New York: Routledge, 2003, 43.

²¹³ ICE, Vol 104, Tracts 820, S. P. Bidder, 1855, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 32.

them. In a way, the border between the United States and Canada was made porous by the Grand Trunk Railway, despite any potential geopolitical rivalry.²¹⁴

Despite the obstacle formed by the Atlantic Ocean, the Grand Trunk also aimed to facilitate trade with Britain through a closer partnership with sea transportation companies. In his 1855 report, Roney quoted the Commissioners of Public Works in Canada who recommended in November 1854, a ‘necessary’ weekly line of steam communication between England and Canada.²¹⁵ The Grand Trunk, therefore, had strong interests in supporting such a sea communication between Britain and the colony. Roney advocated for a strict alliance with a first-class Canadian steam-ship Company in order to save time and money, without depending on the United States. Indeed, at Portland and Quebec, he argued, there was only one handling between the ships and the railway wagons thanks to the Grand Trunk Company’s wharfs, unlike at Boston and New York where goods had ‘to be carted through the town to the railway termini’.²¹⁶ The Grand Trunk was therefore meant to create an alternative trade route to and from Europe that would arguably be better and more convenient than the US one. It was part of a scheme to increase and facilitate trade with Britain, and consequently with continental Europe, and incidentally with the United States as well, but also to try and compete with the United States’ domination over trade and trade routes.

Trade was one way of connecting regions and countries, and transporting people was another. The Grand Trunk tried to take advantage of the emerging development of ‘pleasure traffic’ and ‘tourists’.²¹⁷ S. P. Bidder, the general manager of the Company, wrote in 1855 that the citizens of the United States shared a desire for travelling.²¹⁸ He argued that in the summer

²¹⁴ However, the Grand Trunk Railway was not the first railway to cross the border between Canada and the United States. The Saint Lawrence and Atlantic Railway, for instance, was opened in 1853.

²¹⁵ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 20.

²¹⁶ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 20-21.

²¹⁷ ICE, Vol 104, Tracts 820, Sir Cusack Roney’s Report, 1855; S. P. Bidder, General Manager, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 32.

²¹⁸ ICE, Vol 104, Tracts 820, S. P. Bidder, General Manager, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 7.

of 1853, the opening of railways allowed them to have access to all parts of the United States, but also to the Niagara Falls and that ‘a large number (...) proceeded through Canada by the river Saint Lawrence to Montreal, and thence to Quebec’. Bidder did not give more precise figures than ‘a large number’ of curious travellers, but sensed the importance of this emerging business:

The opening of the Quebec and Richmond Section of the Grand Trunk Railway will in itself prove an additional element in the future development of this important business, as by means of it the tourist can, without going over any of the same ground again, return to the United States from Quebec by the picturesque scenery of the ‘White Mountains’, through the heart of which the Montreal and Portland section of the railway runs, and which (...) makes the shortest route from Quebec to Boston.²¹⁹

He understood the potential benefits that could result from the growing pleasure of sight-seeing and the convenience of one continuous railway line. If the route of the Grand Trunk had been devised according to commercial and geopolitical strategies, it now tried to take advantage of the scenery the railway went through, using it as a potentially efficient advertising argument. Until the construction of the Grand Trunk Railway, passengers had no choice but to return from Quebec to Montreal by steamboat. With increased accessibility, the railway would reduce the fourteen-hour-long journey to five and a half hours.²²⁰

The Company certainly hoped that passengers would be attracted to the contraction of time and space made possible by the railway. The reports to the Directors of the Grand Trunk Company presented detailed studies of the current traffic of passengers on canals. When Roney accounted for the Montreal to Brockville railway section, he demonstrated its importance and necessity by comparing it to the current figures of navigation.²²¹ He not only argued that trains would be faster – turning a twenty-four-hour journey into a four-and-a-half hours trip – he also estimated the number of passengers using the Saint Lawrence canals in that direction at about

²¹⁹ ICE, Vol 104, Tracts 820, S. P. Bidder, General Manager, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 32.

²²⁰ ICE, Vol 104, Tracts 820, S. P. Bidder, General Manager, March 16th, 1855 (London), to the Chairman and Directors of the Grand Trunk Railway Company, 32.

²²¹ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 6.

two hundred passengers a day in 1853 and 1854. As with trade, the Grand Trunk was therefore expected to supersede canals in the transportation of passengers. And that business, based on the figures of navigation, was supposed to thrive and grow as time passed. The other passengers that particularly attracted the managing director's attention were the immigrants.

Roney underlined the importance of emigration – both to Canada and through Canada to the north-western states of the United States.²²² His report was already quite long, but he considered the matter important enough to give the numbers of emigrants arriving at Quebec each year from 1849 to 1854 (Tab. 2).

Number of immigrants arriving at Quebec between 1849 and 1854	
1849	38,494
1850	32,292
1851	41,076
1852	39,176
1853	36,669
1854	54,112

Tab. 2 Number of immigrants arriving at Quebec, 1849-1854, from Roney's report to the London Board of Directors, ICE, Vol. 104, Tracts 820, 22.

Although the number of immigrants decreased in 1850 and 1853, the general tendency was an increase in the number of immigrants arriving at Quebec. According to Roney, from 1852 onwards, a new type of immigrants – Germans, Swedes and Norwegians – favoured the Saint Lawrence route over that of New York. No doubt, he assumed, because of the superiority of the Saint Lawrence route. His reasoning was the following: if they already preferred the Canadian navigation route, then they would surely favour the railway in Canada, which would prove faster, safer and easier since there would be no transshipment of luggage. The emigration figures given over the past six years were satisfactory, and perhaps would keep increasing. However, he did not give the number of emigrants who actually chose the Saint Lawrence route. He just listed the nationalities of emigrants who seemed to prefer inland navigation, without giving any concrete figures, surprisingly. He just estimated that this traffic would develop.

²²² ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 22.

To complete Roney's statement, let us consider the emigration figures given by the Colonial Land and Emigration Commission for the year 1854 – which corresponded to the year when the highest number of emigrants arrived at Quebec port according to Roney's figures. The Colonial Land and Emigration Commission, which was initially set up to collect and give information on colonial opportunities,²²³ did not provide the number of immigrants arriving at Quebec, but the number of immigrants to British North America from the different ports of England, Scotland and Ireland (Tab. 3).²²⁴

²²³ Marjory Harper, Stephen Constantine, *Migration and Empire*, Oxford: Oxford University Press, 2010, 291.

²²⁴ *Colonial Land and Emigration Commission. Fifteenth General Report of the Colonial Land and Emigration Commissioners. 1855. Presented to both Houses of Parliament by Command of Her Majesty*. London: Printed by George E. Eyre and William Spottiswoode, 1855, Appendix no. 4: 'Return of Emigration in 1854 from each of the Ports in the United Kingdom at which there are Emigration Officers, and from all other Ports.', 66-7. Wales is not mentioned in the Colonial Land and Emigration Commission records.

Ports of Embarkation	Destination	English	Scotch	Irish	Foreigners	Not distinguished	Total	% foreigners
London	BNA	115	/	4	/	193	312	/
Plymouth	BNA	2,618	/	53	/	30	2,701	/
Liverpool	BNA	1,749	285	5,984	5,784	1,315	15,117	38.26%
Southampton	BNA	/	/	/	/	/	/	/
All other Ports	BNA	1,415 (?)	343 (?)	19	270	6	2,053	13.15%
Glasgow & Greenock	BNA	99	3,582	290 (?)	2	160	4,073	0.04%
All other Ports	BNA	38	2,736	34	/	/	2,808	/
Belfast	BNA	/	/	913	/	1	914	/
Dublin	BNA	/	/	1,276	255	6	1,537	16.59%
Cork	BNA	/	/	2,856	13	28	2,897	0.45%
Galway	BNA	/	/	263	/	2	265	/
Limerick	BNA	/	/	4,912	/	/	4,912	/
Londonderry	BNA	/	/	702	/	/	702	/
Sligo & out Ports	BNA	/	/	491	/	4	491	/
Waterford & New Ross	BNA	/	/	3,544	/	13	3,557	/
Tralee	BNA	/	/	1,412	/	/	1,412	/
All other Ports	BNA	/	/	156	/	/	156	/

Tab. 3 Adapted from 'Return of Emigration in 1854 from each of the Ports in the United Kingdom at which there are Emigration Officers, and from all other Ports'. Colonial Land and Emigration Office, April 1855, Appendix 4, 66-7.

Port of Embarkation	United States	North American Colonies						Total
		Canada	New Brunswick	Nova Scotia & Cape Breton	Newfoundland	Prince Edward's Island	Hudson's Bay	
Bangor	20	/	/	/	/	/	/	/
Bideford	/	/	/	/	/	1	/	1
Bristol	1196	89	/	/	/	14	/	103
Cardiff	238	77	/	7	/	/	/	84
Carlisle	/	105	/	/	/	/	/	105
Caernavon	13	/	/	/	/	/	/	/
Falmouth	/	46	/	/	/	/	/	46
Fleetwood	/	/	/	/	/	/	/	/
Fowey	/	320	/	/	/	/	/	320
Goole	/	/	/	/	/	/	/	/
Guernsey	/	/	/	/	/	/	/	/
Hull	328	1073	/	/	/	/	/	1073
Jersey	/	/	/	/	/	/	/	/
Liverpool	158421	12133	2953	/	11	20	/	15117
London	18704	166	20	2	16	108	/	312
Maryport	/	11	/	/	/	/	/	11
Newcastle	137	/	/	/	/	/	/	/
Newport	683	16	/	/	/	/	/	16
Padstow	/	8	/	/	/	/	/	8
Penzance	170	/	/	/	/	/	/	/
Plymouth	262	2701	/	/	/	/	/	2701
Poole	/	22	/	/	/	/	/	22
Portsmouth	349	/	/	/	/	/	/	/
Shields	/	10	/	/	/	/	/	10
Southampton	/	/	/	/	/	/	/	/
Swansea	/	/	/	/	/	/	/	/
Teignmouth	/	24	/	/	/	/	/	24
Truro	/	2	/	/	/	/	/	2
Workington	/	18	/	/	/	/	/	18
TOTAL, ENGLAND	180521	16821	2973	9	27	143	/	19973

Port of Embarkation	United States	North American Colonies						Total
		Canada	New Brunswick	Nova Scotia & Cape Breton	Newfoundland	Prince Edward's Island	Hudson's Bay	
Aberdeen	/	1605	/	/	/	/	/	1605
Arbroath	/	46	/	/	/	/	/	46
Banff	/	101	/	/	/	/	/	101
Dumfries	/	54	/	/	/	/	/	54
Dundee	/	27	/	/	/	/	/	27
Glasgow	2499	1899	15	97	/	/	/	2011
Grangemouth	/	6	/	/	/	/	/	6
Greenock	982	2064	/	55	3	/	/	2122
Kirkwall	/	51	/	/	/	/	/	51
Irvine	53	302	27	/	/	/	/	329
Leith	/	36	/	/	/	/	/	36
Montrose	/	352	/	/	/	/	/	352
Peterhead	/	117	/	/	/	/	/	117
Port Glasgow	/	61	23	/	/	/	/	84
TOTAL, SCOTLAND	3534	6721	65	152	3	/	/	6941
Belfast	184	914	/	/	/	/	/	914
Cork	1139	2819	78	/	/	/	/	2897
Dublin	1251	1537	/	/	/	/	/	1537
Galway	585	265	/	/	/	/	/	265
Limerick	999	4912	/	/	/	/	/	4912
Londonderry	2927	248	454	/	/	/	/	702
New Ross	86	2487	/	/	/	/	/	2487
Sligo	237	495	/	/	/	/	/	495
Tralee	1602	1412	/	/	/	/	/	1412
Waterford	/	1005	/	/	65	/	/	1070
Wexford	/	156	/	/	/	/	/	156
TOTAL, IRELAND	9010	16250	532	/	65	/	/	16847
GRAND TOTAL, UNITED KINGDOM	193065	39792	3570	161	95	143	/	43761
TOTAL EMIGRANTS	236826							

Tab. 4 Return of Emigrants who embarked from the several Ports in the United Kingdom (1854), adapted from Colonial Land and Emigration Office, April 1855, Appendix 2, 62.

Tab. 3 shows that emigrants were categorised according to their age, gender and origin.²²⁵ There was only one category for ‘Foreigners’, without any further detail. But for the sake of the demonstration, let us admit that the ‘Foreigners’ only included the Germans, the Norwegians and the Swedes Roney was mentioning. I do not include the category labelled ‘Not distinguished’. From the biggest ports of emigration – that is, Liverpool, Glasgow, Dublin and Cork, foreigners respectively represented 38.26 per cent, 0.04 per cent, 16.59 per cent and 0.45 per cent of the total of emigrants, and it is doubtful that Swedes and Norwegians would leave from Dublin instead of Liverpool or Glasgow. If we neglect the tiny proportion of emigrants who went to other British North American colonies and therefore consider that these figures were rather representative of the emigration figures to Canada, the proportion of foreigners was not that significant. Even if we take the highest figure of foreigners emigrating from Britain and admit that 38.26 per cent of the total of emigrants arriving at Quebec were Swedes, Germans and Norwegians, and that all of them chose inland navigation, it would still imply that 62 per cent of the 39,792 emigrants to Canada chose another route.²²⁶

It is true however that Roney gave figures of emigrants arriving at Quebec, supposedly from everywhere and not only from British ports. Tab. 4 represents the destinations of emigrants and the ports where they boarded ship.²²⁷ 81.5 per cent of the total of emigrants went to the United States. Out of the total of emigrants from the UK who went to the British North American colonies, 90 per cent went to Canada. The difference between the 54,112 emigrants arriving at Quebec in 1854 (Tab. 2) and the 43,761 emigrants from Britain to British North America (Tab. 4) was 10,351 people. So there were arguably 10,351 emigrants who arrived at

²²⁵ I only reproduced here the table with the emigrants’ ethnicities to verify Cusack’s point.

²²⁶ *Colonial Land and Emigration Commission. Fifteenth General Report*, 1855, Appendix no. 2: ‘A Return of Emigrants who embarked from the several Ports in the United Kingdom during the Year ended December 31, 1854, framed from Statements furnished by the Emigration Officers and O... [illegible] of Customs’, 62-3. I calculated the total of emigrants to Canada by adding the total number of emigrants from English (16,821), Scottish (6,721), and Irish (16,250) ports. The total number of emigrants to the USA from the same ports that I likewise calculated correspond to the number given by the 15th Report of the Colonial Land and Emigration Commission (193,065 emigrants).

²²⁷ I excluded other destinations such as Central and South America, West Indies and Australian colonies.

Quebec from ports other than British ports (which is doubtful, because a number of emigrants from British ports surely arrived in other ports than Quebec, such as Halifax). Even if we consider that these 10,351 emigrants were all Germans, Swedes and Norwegians – which of course cannot be true – that would only represent 19.13 per cent of the total number of emigrants arriving at Quebec. And that is of course a very high and unlikely figure.

Supposing again that all of them chose the inland route, which is also very doubtful, that would still only represent less than two people out of ten who would choose the Canadian route over the American one. The number of emigrants who would choose that inland route would therefore be rather low, especially compared to the number of emigrants from Britain to the United States (193,065 emigrants).²²⁸ But still, that would be rather significant.

The figures for year 1853 are more telling (Tab. 5).

Natives of England	3,928
Natives of Ireland	18,972
Natives of Scotland	4,913
Natives of Germany	3,135
Natives of Norway	5,123
Natives of Holland	32
Natives of Sweden	96
Natives of Canada	4
Total	36,203

Tab. 5 Immigration in Canada, origins of immigrants, 1853, from Colonial Land and Emigration Office, Fourteenth Report, 1854.

The emigration figures given by the fourteenth report of the Colonial Land and Emigration Commission (Tab. 5) showed that there were 3,135 natives of Germany, 5,123 natives of Norway, and 96 natives of Sweden in the total of immigrants for 1853. The total amounted to 23 per cent of total immigration to Canada from Europe in 1853. Assuming that they all favoured the inland route, that number, without being insignificant, would not be totally

²²⁸ Of course, if we add to this hypothetical number, the 38 per cent of ‘foreigners’ departing from Liverpool, the total number of hypothetical Germans, Swedes and Norwegians would then amount to 49.86 per cent of the total number of emigrants arriving at Quebec. But this is of course very unlikely, and no doubt Roney would have used such a high number of potential passengers.

convincing, especially because it is a high figure compared to the real number of Germans, Norwegians and Swedes who did take the inland route, and because even that high number represented less than one out of five emigrants who would choose the inland route. The superiority of the Saint Lawrence route over that of New York was therefore not as established as Roney argued. What is more certain, of course, is that the Grand Trunk was intended to take advantage of emigration to British North America. The role of the Grand Trunk in the colonisation of British North America is therefore to be addressed.

2) The Grand Trunk Railway and Colonisation

Indeed, when Roney advocated the necessity of the Grand Trunk, he first argued that railways brought settlers. He thus described the territory before the opening of the line between Montreal and Portland in July 1853:

those two cities were as much separated from one another by ranges of hills and dense forests, as if they had been 3,000 instead of 300 miles apart. The country, in the centre 150 miles, was totally unknown (...). The first population brought into these 150 miles, was to make the railway, and at its opening there were not upon them more than about 200 settlers.²²⁹

The railway was described as a way to overcome natural obstacles and wilderness – ‘ranges of hills’ and ‘dense forests’. It also represented and allowed the discovery of a new land: what was previously ‘unknown’ became known, and thus, inhabited. That discovery and conquest was made by those who built the railway. The railway not only allowed the contraction of time and space, it completely took over that new land when the railway builders stepped in. In that sense, the railway was the tool of colonisation as it opened up remote and isolated lands, and allowed settlement. There was therefore an ambiguity, or a dual role given to the railway builders: they were sent to build the line and therefore allow settlement, but they also settled down, thereby effectively starting a new settlement in an area where there had been no white settlement so far.

²²⁹ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, May 1855, 4.

Roney confirmed the success of that recent line:

Population has since rapidly filled in along the entire length of the railway; and in the centre there are now about 3,000 active contributors to the Company's traffic and revenue. Large clearances of the forest have taken place, and villages are springing up adjacent to the numerous rivers and streams which run in the vicinity of the line: 28 sawmills have already been built, and others are either planned or in course of construction.²³⁰

The railway turned natural obstacles into profit: clearly, after the construction of the line, nature was described in a positive light as settlers took advantage of the forests and the rivers. Furthermore, the railway company did not only allow settlement in a so far unknown land: it was also becoming richer thanks to the settlement. The construction of the line triggered, in the words of Roney, a virtuous circle of benefits: more and more people, who had now access to these remote lands, settled down. And these settlers launched businesses that were profitable to the company. Roney then proceeded to analyse the healthy business of timber that represented potential revenues for the company. The Grand Trunk therefore allowed the conquest of and the settlement in remote and wild lands, but it also encouraged it as its wealth partly came from the settlers' activities. In that sense, the Grand Trunk definitely contributed to the colonisation of Canada. The terms 'colonisation' and 'colony' were widely used in the company's archives, but also in Canadian and British sources like newspapers and Parliamentary papers, understandingly because Canada was a colony. However, it is necessary to define the colonisation of Canada to understand the power relations between British North America and Britain. In that sense, I follow Phillip Buckner, who warns against the misleading quality of those terms. He shows that the words usually 'imply subordination and inferiority', whereas the British migrants, for whom Britain was the country of their kith and kin, would not accept subordination to Imperial authority after the establishment of settler dominance.²³¹ The relationship between Canada and Britain, just like the relationship between Britain and other

²³⁰ ICE, Vol. 104, Tracts 820, Sir Cusack P. Roney, 4.

²³¹ Buckner, 'Preface', in Buckner (ed.), *Canada and the British Empire*, ix.

Dominions, was rather defined as one between a mother and her daughters until the twentieth century.²³² Emigration was one particular bond that united the colonies and Britain.

The Grand Trunk's contribution to the colonisation of Canada was presented as a solution to the issue of poverty in Britain. In 1853, Roney thus described the ambition of the Grand Trunk:

The policy of the Grand Trunk is one that needs no concealment; it is that of promoting the welfare of the most important dependancy [*sic*] of the British Crown; of consolidating its internal relations; of devolving the resources of a vast region, and making it a home for thousands now struggling for existence in Britain.²³³

The Grand Trunk was thus part of a scheme supposed to be beneficial to both Canada and Britain. Emigration was seen as a way to relieve Britain from poverty and probably from a labour surplus (Fig. 3).

²³² Buckner, 'Preface', vii-viii

²³³ C. P. Roney, Quebec, Sept. 29, 1853, in *The Quebec Morning Chronicle*, 8 Oct. 1853, quoted in *The Sun*, London, November 7, 1853.

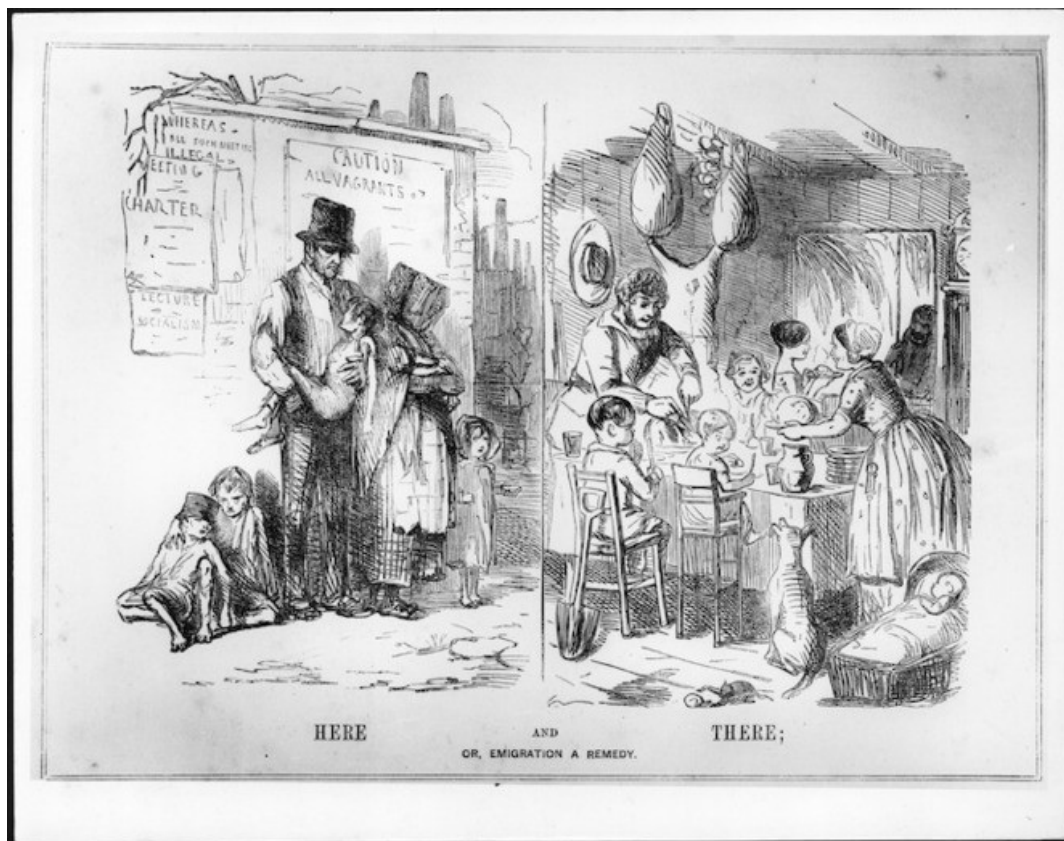


Fig. 3 *Here and There; or Emigration a Remedy*, *Punch*, London, Vol. 15, 8 July 1848, 26, National Library of New Zealand, PUBL-0043-1848-15.

On the left, a starving family with two children look poor and desperate are standing on the street, below a poster about vagrants, suggesting that poverty is large scale in Britain. On the right, the family have many children and lives in a house with plenty of food. The cartoon thus opposes poverty in Britain and abundance offered by emigration.

The Grand Trunk's role in the colonisation process echoed the view represented by the *Punch* cartoon (Fig. 3) that emigration was a solution to poverty. In Britain, newspapers that advertised for the benefits of emigration for Britain and the North American colonies were abundant. In 1847, emigration was sometimes described as a scheme to 'get rid of' labourers and relieve the labour market from pressure.²³⁴

In the 1850s, voices continued to advocate for emigration, but they denounced the emigration schemes of 1847 that just 'handed over' paupers to 'poor deluded Canada'.²³⁵ On the contrary, they insisted on the work power those potential emigrants represented. They were

²³⁴ *Bell's Life in London*, August 22, 1847, 2.

²³⁵ *The Morning Chronicle*, October 25, 1849, 3.

described as ‘England, Ireland, and Scotland’s hardiest and most worthy sons’, ‘hardy and industrious pioneers of future nations’, who were confined to the poorhouses in Britain, starving or committing crimes.²³⁶ The colonies therefore would gladly welcome them and their ‘wealth-creating energies’, while emigration and work would morally elevate the poor.²³⁷ Following a patronising supervision of the poor, rich people and landowners were encouraged to assist emigration in order to put an end to any superabundance of population, and thereby improve poor people’s situations as the latter were supposed to become rich and successful in Canada, provided they were hard-working. In 1849, for instance, three hundred emigrants were sent to Canada from the island of South Uist, Scotland, and their passage was paid by Colonel Gordon, proprietor of the island. A letter by a resident of their new town, addressed to the *Scotsman*, thus described their arrival:

About the middle of last month nearly 300 Highland emigrants from the island of Uist arrived in this town. They were reported to be rather destitute in their circumstances, and were forwarded at the expense of the various towns between this and Quebec. They spoke very little English, were nearly all Roman Catholics, and were said to be from the estates of Col. Gordon of Cluny, and some from Lord Macdonald’s property. The authorities of the town sent them out to the township of Williams, where some families from Uist had settled last year. A good deal of grumbling took place amongst the townspeople here at the arrival of the poor Highlanders, as it took some £100 or so to get them conveyed to Williams, which is some twenty miles north-west of this town. These poor emigrants will no doubt endure a good many privations during the coming winter, but I predict they will get more to eat in the township of Williams than they would have got in Uist had they remained there. The crops in that township having been unusually good this year; provisions are abundant, and of course cheap, and labour dear. The land is of the very finest quality, and much of it in the hands of the Canada Company. These Highlanders will make good settlers in a few years. The girls of the family will make good servants for the inhabitants of the town here who can afford to hire and keep servants. Nine-tenths of all the servant girls in this town are either Irish or Highland Scotch. The men and boys will clear the land, and convert the wilderness into cultivated fields. To raise money to make payments on the land which they will take up, they will hire out occasionally to the surrounding settlers, whose circumstances may happen to be better than their own. This is the way some of our best settlements of Highland Scotch have sprung up around London. Wherever a superabundance of population exists in the Highlands, the best way is to clear them off and send them to Canada. Sir Francis Head said we required ‘men, women, and money.’ I maintain we require ‘men, women, and *children*’, and these, combined with industry, will soon produce money or wealth. One trait in the character of these Highlanders struck me as caused in a great measure by poverty, and that is, they are not ashamed to let you know that they are paupers, and to make themselves out poorer than they are. In

²³⁶ *The Morning Chronicle*, October 25, 1849, 3.

²³⁷ *The Morning Chronicle*, October 25, 1849, 3.

changing some one-pound Scotch bank-notes in our stores, they let us understand they durst not allow the notes to be seen in Scotland, or they would not have got their passage paid.²³⁸

These three hundred emigrants were privately sent to Canada where they were supposed to find food and work. There is a sharp contrast between the money given to them to travel to Canada, and then from Quebec to London, Canada, and the land they were expected to take up and work on. This contrast symbolised the fact that in Scotland, these people were a burden whereas they were expected to be able to pay for themselves now that they were in Canada. The end of the text suggests that the paupers were not only poor, they were dishonest as they supposedly lied about their money and had somebody else pay for their passage, and the article thus perpetuated the stereotype that poverty was immoral. Emigration was pictured as a relief for Scotland, as suggested by ‘Wherever a superabundance of population exists in the Highlands, the best way is to clear them off and send them to Canada.’ Emigration to Canada was supposed to give work to the destitute, but also to teach them moral values through hard work.

The emigrants’ hardships were hardly mentioned, apart from the discreet ‘[they] will no doubt endure a good many privations during the coming winter’. In the introduction to this letter, the *Inverness* admitted that the emigrants would suffer from the lack of shelter during winter, but that they would have plenty of food, which suggested that the cold was a minor evil compared to the resources Canada would offer to the emigrants. The gendered work expected of them, with the men converting ‘the wilderness into cultivated fields’, and the women working as servants, as well as the ‘children’ that the author of the letter hoped for, made it clear that emigration to Canada consisted in the colonisation of wild lands by families. Emigrants were thus expected to produce money and wealth, and represented a resource for Canada. This rhetoric continued well into the 1850s. The Grand Trunk adopted it and found it had a role to play in that scheme. By allowing and encouraging colonisation, the company

²³⁸ *The Inverness Courier*, November 8, 1849, 3.

claimed to play a part in the development of Canada and in relieving Britain from the burden of poverty and unemployment, while ensuring sources of revenue for its own benefits.

In fact, the strong link between the Grand Trunk and colonisation preceded the Grand Trunk project, which in the end merely took on the role attributed to railways, and the rhetoric and fantasies associated with them. A comparison between the Grand Trunk Railway and the projected Halifax and Quebec Railway (early 1850s) is helpful to show what expectations were linked to railways in the British colonies of North America, as well as to understand the local enthusiasm for railways. The Canadian Land & Railway Association, the land company related to the Halifax and Quebec Railway,²³⁹ issued in 1850 a ‘Report & Outline of A Plan by which an Extensive Railway May Be Constructed in the British North American Colonies, Combining its Execution with an Enlarged Scheme of Colonization and Reclamation of Waste Land, and Executing the Works so that the Company and the Emigrants shall be Mutually Benefited.’ The title of this report is telling. The purposes of the Association were clearly stated: it was ‘to employ the surplus labour of the United Kingdom, and thereby to promote the social elevation of the industrious classes’²⁴⁰ and to raise capital in order to build a railway from Halifax to Quebec. The preface of the report immediately emphasised the supposedly unanimous support in Britain for that railway:

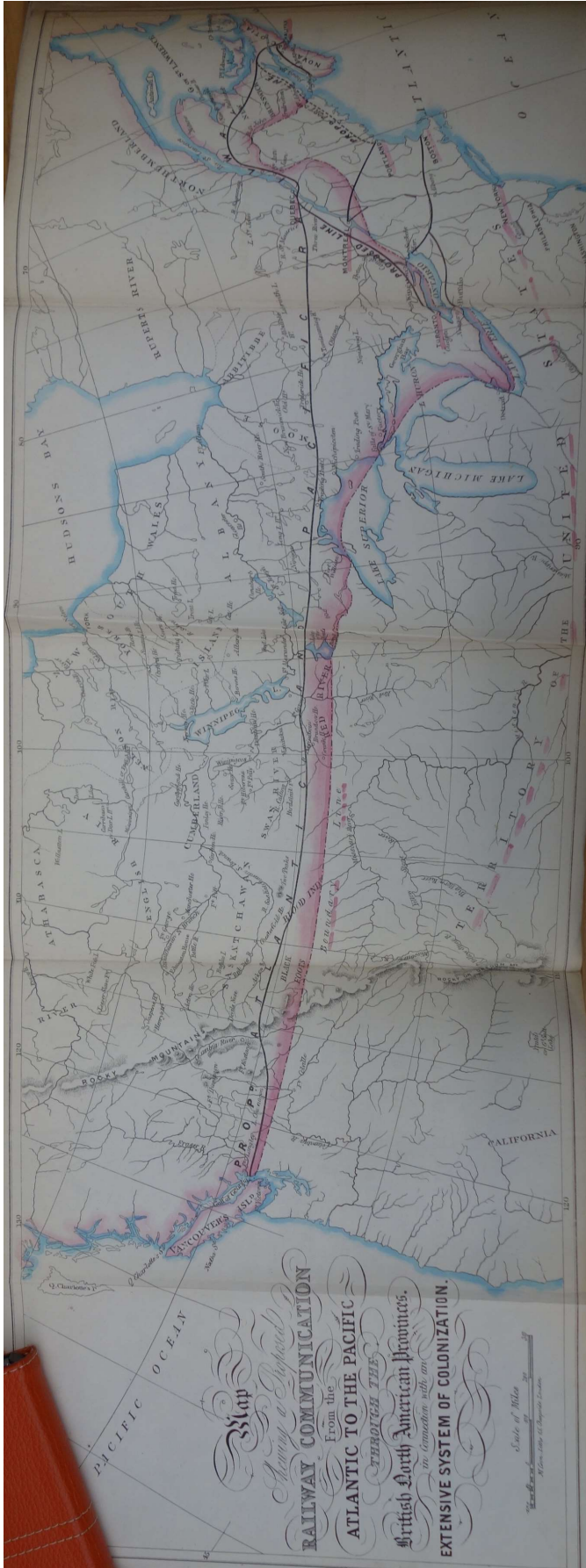
The lively interest which has been excited among the Working Classes throughout the country, upon the subject of the construction of the Halifax and Quebec Railway, and the extensive scheme of colonization therewith, as well as the approval which the plan has met with from many noblemen and gentlemen, has induced the promoters of the undertaking to republish the following Report and Letters (...).²⁴¹

²³⁹ See Daniel Samson, ‘Industrial Colonization: The Colonial context of the General Mining Association, Nova Scotia, 1825-1842’, *Acadiensis*, Vol. 29, No. 1, Autumn/Automne 1999, 3-28, footnote 55, 15.

²⁴⁰ ICE, Tracts 8^{vo} Vol. 138, ‘Canadian Land & Railway Association. Report & Outline of A Plan by which an Extensive Railway May Be Constructed in the British North American Colonies, Combining its Execution with an Enlarged Scheme of Colonization and Reclamation of Waste Land, and Executing the Works so that the Company and the Emigrants shall be Mutually Benefited. With a Map and Plan’, London: printed by J. Bradley, 78, Great Titchfield Street, Marylebone, 1850.

²⁴¹ ICE, Tracts 8^{vo} Vol. 138, ‘Canadian Land & Railway Association. Report & Outline of A Plan by which an Extensive Railway May Be Constructed in the British North American Colonies’, 2.

Railways and colonisation were clearly connected. Working-class people were supposedly attracted to the idea of building the railway and to the idea of colonising – that is, settling down in – Canada. Noblemen and gentlemen, in other words rich educated people whose social status guaranteed the rationality of the project and whose wealth might be invested to realise it, were supposedly interested in that venture too. Furthermore, the passive voice of ‘has been excited’ implied that working-class people were encouraged to support that project.



Map 2 Projected railway from the Atlantic to the Pacific, ICE Vol. 138, Tracts 8^{vo}, Alexander Doull, 'To the Secretary of the Canadian Land & Railway Association. Outline of a Plan by which an extensive Railway may be constructed in the British North American Colonies, combining its execution with an enlarged Scheme of Colonization and Reclamation of Waste Land, and executing the Works so that the Company and the Emigrants shall be mutually benefited', 22 June 1850.

And indeed, as shown by the letters written by civil engineer Alexander Doull in 1850 and gathered in that report, railway construction, emigration and colonisation were interwoven. The map of a projected railway from Halifax to the Pacific Ocean (Map 2) was entitled 'Extensive System of Colonization', and the map showed little more than this projected line, thus suggesting that railway communication was at the heart of this colonisation scheme. In June 1850,²⁴² for instance, Alexander Doull associated very clearly the construction of the railway with the ambition to give value to inaccessible land by opening up the interior of the colony:

It being one of the primary objects of the company to establish industrious and able-bodied emigrants from the mother country on the waste lands through which the railway passes, and to give such an increased value to these lands as will realise a large fund to be applied to the construction of the railway, and at the same time to assist to the greatest possible extent the early struggles of these emigrants by employing them on the various works connected with the execution of the railway and station buildings.²⁴³

There was a common interest between Canada, Britain and the railway company, which willingly played a role in the colonisation and rationalisation of space. Railway construction and emigration were closely connected. Indeed, emigration was meant to relieve the population surplus of Britain, to build the railway, and to people Canada with able-bodied emigrants, and therefore potential workforce. Doull also implied that emigrants, who were supposed to build the railway, were already expected to settle down. The Grand Trunk, in that sense, invented nothing new. Moreover, this colonisation by the railway had a strong moral aspect: emigrants were welcome if they worked to build the railway line.

²⁴² ICE, Tracts 8^{vo} Vol. 138, 'Canadian Land & Railway Association. Report & Outline of A Plan by which an Extensive Railway May Be Constructed in the British North American Colonies', Letter by Alexander Doull to Alexander Campbell 'To the Secretary of the Canadian Land & Railway Association. Outline of a Plan by which an extensive Railway may be constructed in the British North American Colonies, combining its execution with an enlarged Scheme of Colonization and Reclamation of Waste Land, and executing the Works so that the Company and the Emigrants shall be mutually benefited', 22 June, 1850, 271-8.

²⁴³ ICE, Tracts 8^{vo} Vol. 138, Letter by Alexander Doull to Alexander Campbell 'To the Secretary of the Canadian Land & Railway Association. Outline of a Plan by which an extensive Railway may be constructed in the British North American Colonies', 22 June, 1850, 6-7.

In a letter dated August 1850 and addressed to the Editor of *The Morning Chronicle*, Doull insisted on the moral benefits of that colonisation: it would be ‘an effectual mode of averting some of the accumulated and still accumulating evils resulting from a surplus population and over-stocked labour market’.²⁴⁴ In other words, the construction of a railway in Canada, and the colonisation therefore made possible, would relieve Britain from the supposed immorality induced by poverty, these ‘evils’ later described as the ‘fearful ulcers of poverty and crime’. In the end, the Halifax and Quebec Railway did not secure the necessary financial help from the British government.²⁴⁵ However, this connection between the colonisation of British colonies in North America, the construction of a railway, and the relief of Britain from labour surplus and poverty should be kept in mind to understand the Grand Trunk Railway project and the colonial propaganda associated with it.

And indeed, railways, and in particular the Grand Trunk, were symbols of the power and superiority of Britain and its empire in the world. The Grand Trunk project was depicted with enthusiasm by certain newspapers which described it as part of an engineering scheme and challenge to simply take over the world. In 1853, an article – copied in different newspapers – integrated the Grand Trunk into a global railway network controlled by Britain:

The Grand Trunk Railway from that city [Halifax] to Detroit, on Lake Michigan – 1,100 miles is under contract with Jackson, Peto, Brassey, and Betts, of European renown, and the 11,000,000*l.* capital under British management ensures the vigorous prosecution and early completion of this stupendous work. This road connects the north and south shores of the river St. Lawrence, at Montreal, by a tubular bridge upwards of two miles in length, which is under the superintendence of Mr. Robert Stephenson. From Detroit – the terminus of the grand trunk railway through Canada – the great railroad line to the Gulf of Mexico will be shortly completed, much of it being already made. It will therefore be but a short time before the English traveller will find himself on the Pacific side of the Tehuantepec Isthmus, steaming towards Australia, in twelve days from England, having traversed the Atlantic, the British American provinces, the heart of the American continent through the Mississippi Valley, the Gulf of Mexico, and the Tehuantepec Isthmus, where he looks on the Pacific Ocean, and has passed the last obstacle which separated him from the golden hemisphere which his country owns on the other side of the globe. (...) This line from the British Islands to Australia is the shortest and most direct route that can be found for a long

²⁴⁴ ICE, Tracts 8^{vo} Vol. 138, ‘Canadian Land & Railway Association’, Alexander Doull, Letter I ‘To the Editor of ‘The Morning Chronicle’, Aug. 9, 1850, 10.

²⁴⁵ See for instance William Thomas Easterbrook & Hugh G. J. Aitken, *Canadian Economic History*, Toronto: University of Toronto Press, 2002 (1956), 296.

time to come, and perhaps ever. It is opened for nine-tenths of the way by British capital, and will be controlled by British influence.²⁴⁶

This article praised Britain and celebrated its influence over the world, through the enumeration of all the places the railways would go through, but also through the capital Britain was able to invest as well as the talent of its contractors and engineers. The enthusiasm was of course exaggerated in some way, notably because it gave the impression that the network was almost completed, which was far from the truth. But the article bore an obvious fascination for the technical challenges and success that such a railway network represented. The construction of immense railway networks was a contemporary fantasy that was best illustrated by Cecil Rhodes's failed 'Cape-to-Cairo railway' project which aimed to support his own expansionist schemes by crossing the whole African continent.²⁴⁷ The ambitious Grand Trunk Railway project was much more realistic. But at the same time, it was celebrated as one more step into a largely fantasised control of the world allowed by railways. In other words, the Grand Trunk was integrated into an imperial rhetoric that celebrated the power of the British empire that it came to symbolise.

This section has argued that the Grand Trunk Railway aimed to connect Canada with Britain and with the manufacturing regions of the United States. The Grand Trunk Railway also hoped to absorb the passenger traffic due to immigration, although the competition with the route to New York was tough. Furthermore, the association of the Grand Trunk Railway with the colonisation of the vast interior of Canada reflected the contemporary enthusiasm for railways, which were expected to play a crucial role in the colonisation of Canada by British settlers and to relieve Britain of its poorer population groups.

²⁴⁶ *The Berkshire Chronicle*, October 15, 1853, p.2

²⁴⁷ On Rhodes's expansionism, see Darwin, *The Empire Project*, 228-30; Bernard Porter, *The Lion's Share. A History of British Imperialism, 1850 to the Present*, Harlow, London, New York: Pearson, 2012 (1975), 144-5.

Conclusion

The Grand Trunk Railway was gigantic in many ways: it was meant to be the longest railway in the world, in a country where the railway network was not yet developed; it had the huge ambition to offer a direct connection between Europe and British North America, and to compete with the ever-growing commercial and military power of the United States. But it also created a link between the different colonies, between Britain and British North America, and between British North America and the USA. The Grand Trunk was thought as a powerful system, inherited from the previous railway projects that failed and the ideas and fantasies they nourished. It meant to colonise and civilise British North America, to solve Britain's poverty problem and give jobs to and improve moral standards in destitute British. It also meant to attract immigrants and thereby take them away from the United States, to develop Canada's economy and industries while competing with existing canals, and it was hoped it would give back to Montreal its domination over the continent. The Grand Trunk needed London's financial support to start with, but all those ambitions were expected to finance the maintenance and the efficiency of the Grand Trunk Railway, in a virtuous circle of some sort.

The Grand Trunk represented a unique railway of that size in the 1850s, as it met the same geographical challenges as American railroads, but was built in a British fashion. As it was meant to deal with the colonisation of wild lands, with the American threat and with facilitating trade, it connected the commercial and strategic interests of British financials and entrepreneurs, and those of the business community of Montreal. In that sense, the Grand Trunk can be seen as a partnership between Britain and its colony.

The Victoria Bridge, constructed as an integral component of the Grand Trunk, was crucial to its success.²⁴⁸ Without the bridge to pass the St Lawrence obstacle, the political and economic ambitions of the Grand Trunk Railway to connect together Canada East and Canada

²⁴⁸ Passfield, 'Construction of the Victoria Tubular Bridge', 5.

West to Atlantic seaports and thus to Europe would remain impossible. The challenging construction of the bridge was made possible by the workers and contractors that the following chapter analyses.

Chapter 2: The Men of the Bridge

As explained in chapter 1, the Victoria Bridge was built by British contractors and the construction of this massive bridge of tubular design at times required the employment of 3,000 or more workers.²⁴⁹ This chapter focuses on the men who built the Victoria Bridge, both the employers and the workers, and the labour relations on the worksite. Relatively recent historiography has promoted a global history of labour, with sometimes a particular interest in railways. Calling for a renewal of the history of labour and a less Eurocentric approach, Marcel van der Linden explores the definition of global labour, as well as formal types of workers' collective action about economic matters.²⁵⁰ In his contribution to Jan Lucassen's *Global Labour History. A State of the Art* (2008), Shelton Stromquist studies railways and global economy across time and space and draws patterns of railroad labour and labour organisation from a comparative study of a number of territories, among these India, Rhodesia, Ghana, Nigeria, Palestine.²⁵¹

Historians of labour have shown that from the 1840s to the 1870s, Canada was marked by a process of industrial capitalist transformation characterized by the expansion of mechanized factories, the emergence of a class of industrial capitalists and of a 'self-regulating, impersonal labour market'.²⁵² As a consequence, labour relations evolved throughout this period and a political and industrial working class movement emerged, with historians usually distinguishing three periods in the emergence of 'class cohesion and consciousness'.²⁵³ Based on the study of forms of labour protests, historians like Steven Langdon and Bryan D. Palmer

²⁴⁹ *Gazette de Sorel*, 28 December 1858. Number of workers in October 1858.

²⁵⁰ Marcel van der Linden, *Workers of the World. Essays toward a global labor history*, Leiden, Boston: Brill, 2008, 11.

²⁵¹ Shelton Stromquist, 'Railroad Labor and the Global Economy: Historical Patterns', in Jan Lucassen (ed.), *Global Labour History. A State of the Art*, Peter Lang: Bern, Berlin, 2008, for instance 632, 633, 638.

²⁵² See for instance Steven Langdon, 'The emergence of the Canadian working class movement, 1845-75', *Journal of Canadian Studies/Revue d'études canadiennes*, Vol. 8, No. 2, May 1973, 3-13, 4.

²⁵³ Langdon, 'The emergence of the Canadian working class movement, 1845-75', 5.

distinguish several turning points in the transformation of labour organization. Langdon for instance argues that from the 1840s to the early 1850s, ‘workers’ collective action was tentative, isolated and trade-oriented’, before ‘trade unionism expanded, mostly in a craft context’ from the late 1850s to the early 1860s, while the later 1860s to 1870s period was characterized by ‘rapidly increasing organizational linkages [which] marked the emergence of a working class *movement*, with a good base of support and distinctly radical.’²⁵⁴ Palmer focuses on the types of workers who participated in labour protests, and shows that unskilled and skilled workers equally participated to work stoppages from 1815 to 1859, that strikes became the prerogative of skilled workers from 1860 to 1879, while the 1880s were characterised by a prominence of the ‘labour question’, an increased number of unions as well as international unions.²⁵⁵ In his seminal book *Labour and Capital in Canada 1650-1860* (1981), H. Clare Pentland distinguishes a pre-industrial pattern characterised by ‘personal labour relations’ from the impersonal labour market established by industrial capitalism, and shows that industrial labour relations emerged in the 1870s in Canada.²⁵⁶

Because the greater development of trade unions in Canada occurred at the end of the nineteenth century, the historiography on the labour process and on forms of labour protests in Canada has often focused on this later period. Most contributions in the collection *On the Job* (1988) edited by Craig Heron and Robert Storey, for instance, focus on the end of the nineteenth and the twentieth centuries,²⁵⁷ and so have the histories of trade unions.²⁵⁸

This chapter is a plea for microhistory and tries to show that the case study of a worksite can allow us to understand larger patterns of labour and imperial relations in the nineteenth

²⁵⁴ Langdon, ‘The emergence of the Canadian working class movement, 1845-75’, 5. Emphasis in the original.

²⁵⁵ Bryan D. Palmer, ‘Labour Protest and Organization in Nineteenth-Century Canada, 1820-1890’, *Labour/Le Travail*, Vol. 20, Fall 1987, 61-83, 67, 69, 79, 83.

²⁵⁶ Pentland, *Labour and Capital in Canada 1650-1860*, for ex. 24, 26.

²⁵⁷ Craig Heron, Robert Storey (eds.), *On the Job. Confronting the Labour process in Canada*, Kingston and Montreal: McGill-Queen’s University Press, 1988 (1986).

²⁵⁸ See for instance Kealey and Palmer, ‘The Bonds of Unity: The Knights of Labor, 1880-1990’.

century, and that focusing on one worksite can complement the history of labour protests. In that sense, this chapter argues that the Victoria Bridge sheds light on labour relations in a context of empire and rising industrial capitalism and that the worksite was a transition from pre-industrial to industrial capitalist labour relations.

Before studying the labour relations on the worksite, it is necessary to consider the history of the construction of the bridge and the men who built it. In that sense, chapter 2 is also a methodological reflection on the history of individual trajectories. This chapter thus examines the importance of the Victoria Bridge on three different levels: the political and economic importance of the bridge, the importance of the bridge in the history of construction and civil engineering, and the importance of the bridge in the history of labour relations.

The first section focuses on the history of the bridge and puts it in perspective with large construction sites and their role in the development of capitalist labour relationships. The second section studies more precisely the men who built the bridge. It examines the role of the contractors and tries to determine who the workers were. The last section of this chapter analyses the relations of the employers and the employees.

I- The bridge and the industrialists

The genesis of the bridge has been well documented. As suggested in chapter 1, the Peto, Brassey, and Betts firm made a move to build railways in Canada in 1852, and in 1853 the Grand Trunk Railway, whose original project had escalated in only a year, undertook the construction of the Victoria Bridge.²⁵⁹ Most testimonies on famous nineteenth-century railway contractors Peto and Brassey are hagiographic biographies. Samuel Morton Peto (1809-1889)

²⁵⁹ Passfield, 'Construction of the Victoria Tubular Bridge', 11.

started as a fourteen-year-old apprentice to his uncle, a builder.²⁶⁰ He inherited his uncle's business firms and built buildings until 1846, notably the works on the Great Western Railway from Hanwell to Langley, Britain, under Isambard Brunel.²⁶¹ From 1846, he established a partnership with Edward Ladd Betts, his brother-in-law, and built railways in Britain and other countries like Norway or Denmark, usually in partnership with other contractors such as Brassey.²⁶²

Thomas Brassey (1805-1870) started as a land-surveyor and started building railways at twenty-nine years old.²⁶³ He built railways in Britain, such as the Great Northern Railway (1847-1851) and in various parts of the world, such as, among others, France (1841-1843), Italy (1850-1853), Australia (1859-1863), Moldavia (1858-1864), India (1858-1865). As explained in chapter 1, Peto, Brassey and Betts undertook the construction of the Montreal-Toronto section of the Grand Trunk Railway, which included the Victoria Bridge.²⁶⁴

James Hodges (1814-1879), officially 'Senior Agent and Chief Engineer for the Construction', had worked many years as a chief engineer with the firm Peto, Brassey and Betts who convinced him out of retirement to work on the Victoria Bridge.²⁶⁵ Being the construction superintendent for the bridge and the Montreal to Toronto section of the Grand Trunk Railway, he had high responsibilities and his role was prominent. Moreover, he was the agent of the contractors and, 'renowned for his skill in directing a large work force', he managed the Victoria Bridge labour force.²⁶⁶

²⁶⁰ Sir Henry Peto, *Sir Morton Peto. A Memorial Sketch*, London: Elliott Stock, 62, Paternoster Row, E. C., Printed for Private Circulation, 1893, 6.

²⁶¹ Peto, *Sir Morton Peto. A Memorial Sketch*, 13-6.

²⁶² Peto, *Sir Morton Peto. A Memorial Sketch*, 16, 23.

²⁶³ Arthur Helps, *Life and Labours of Thomas Brassey, 1805-1870*, seventh edition, London: George Bell and Sons, York Street, Covent Garden, 1888 (1872), 11, 15.

²⁶⁴ Triggs, 'Le Pont / The Bridge', in Triggs et al., *Le Pont Victoria. Un lien vital. Victoria Bridge, The Vital Link*, Montreal: Musée McCord d'histoire canadienne, 1992, 38.

²⁶⁵ Triggs, 'Le Pont / The Bridge', 45, Passfield, 'Construction of the Victoria Tubular Bridge', 16, and Legge, *A Glance at the Victoria Bridge*, 83.

²⁶⁶ Passfield, 'Construction of the Victoria Tubular Bridge', 16 and Triggs, 'Le Pont / The Bridge', 45.

In 1852, engineer Alexander M. Ross was sent to Canada where he met Thomas C. Keefer who had already planned the future bridge.²⁶⁷ He had imagined a Burr-arch truss bridge which was conventional in North America, where cheaper wooden bridges had been common before the nineteenth-century.²⁶⁸ Historian Passfield shows that Keefer brought two innovations into North American bridges: the long approach embankments which reduced the length of the bridge structure, and a wrought-iron tubular span instead of timber.²⁶⁹ Ross brought Keefer's plan back to England. In 1853, after a visit to Canada, Robert Stephenson agreed to be chief engineer of the bridge, while Ross was resident engineer and assistant engineer to Stephenson.²⁷⁰ From Keefer's plan, they kept important features, such as the ice-breakers at the foot of the piers (Fig. 4). Triggs shows that Ross had planned a tubular bridge from the beginning, which, Ross and Stephenson argued, was cheaper than a suspension bridge similar to the bridge over the Niagara Gorge.²⁷¹

²⁶⁷ Triggs, 'Le Pont / The Bridge', 38.

²⁶⁸ Passfield, 'Construction of the Victoria Tubular Bridge', 9.

²⁶⁹ Passfield, 'Construction of the Victoria Tubular Bridge', 8.

²⁷⁰ Triggs, 'Le Pont / The Bridge', 38 and F. N. Boxer, *Hunter's Hand Book of the Victoria Bridge*, Montreal: Published by Hunter and Pickup, Printed by John Lovell, St. Nicholas Street, 1860, 25.

²⁷¹ Triggs, 'Le Pont / The Bridge', 42. There has been a dispute over the paternity of the structure of the bridge, some attributing it to Ross, others to Stephenson, and others to Keefer. See Triggs, 42 and Boxer, *Hunter's Hand Book of the Victoria Bridge*, 20-7.



Fig. 4 *Pier with Centre Tube*, William Notman, May 1859 McCord Museum N_0000.193.132.133

The triangular-shaped foot of the piers, called ice-breakers, originated from T. Keefer's plan and were literally meant to break the river ice.

The tubular design was fairly new. It was invented in 1845 by Robert Stephenson who had hired William Fairbairn, experienced in the construction of wrought-iron ships, to work on wrought iron and determine its strength.²⁷² Before Stephenson's invention, bridges were usually made of cast-iron beams or cast-iron beams trussed with wrought iron, and spans could not exceed thirty metres.²⁷³ As part of the Chester and Holyhead Railway, Stephenson built the 121-metre-span Conway Bridge (Fig. 5) across the Conway River Estuary in 1848 and the 560-metre-long Britannia Bridge (Fig. 6) in 1850 across the Menai Straits in Britain.²⁷⁴

²⁷² Passfield, 'Construction of the Victoria Tubular Bridge', 10.

²⁷³ Passfield, 'Construction of the Victoria Tubular Bridge', 9.

²⁷⁴ Passfield, 'Construction of the Victoria Tubular Bridge', 11.



Fig. 5 *The Tubular Bridge, Conway*, A. Rosling, n.d., Scottish National Portrait Gallery, PGP R1112.13, Photograph, Gift of Mrs. Riddell in memory of Peter Fletcher Riddell, 1985

The Conway Bridge (1846-1848), Wales, was the first tubular bridge designed by R. Stephenson. The Conway Bridge is one of the last remaining tubular bridges in the world.



Fig. 6 *Bangor, the Britannia Bridge from Anglesea, North Wales*, Unknown, n.d., Scottish National Portrait Gallery, PGP R2224.54, photograph, gift of Mrs. Riddell in memory of Peter Fletcher Riddell 1985

The Britannia Bridge (1846-1850) was built across the Menai Straits, a difficult location because of the strength of the current. The resemblance between the Conway, the Britannia and the Victoria Bridges is striking, as they were all of tubular design. The beam where the train was meant to drive through, called the tube, was made of a number of tubes assembled together. We see that the piers of the Britannia Bridge did not have ice-breakers.

Alexander M. Ross, who was resident engineer in charge of the line from Chester to Conway, was of valuable assistance in the construction of the Conway Bridge and according to

civil engineer Legge was regarded ‘by the profession as *par excellence* a bridge engineer’.²⁷⁵ With the circulation of the same engineers from a bridge to another, there was a strong connection between the Conway, Britannia and Victoria bridges. The 560-metre-long Britannia Bridge was considered ‘an engineering marvel’ by contemporaries and the Victoria Bridge looked very similar, only much bigger as it was three-kilometre-long.²⁷⁶

The Victoria Bridge necessitated 8,250 tons of wrought iron and over 85,000 cubic metres of masonry.²⁷⁷ According to civil engineer Charles Legge, the estimated cost of the bridge, which comprised the approaches and abutments, the masonry in the piers between the abutment, and the wrought-iron tubular superstructure was \$7,000,000, which was reduced to \$6,000,000 before reaching a total of \$6,300,000 with the bonus finally given to the contractors.²⁷⁸ The contract between the Grand Trunk Railway Company of Canada and contractors Jackson, Peto, Brassey, and Betts, stipulated that the bridge should be built in eight years, from 1st July 1853.²⁷⁹ The bridge site was carefully chosen. Triggs underlines that the river was rather shallow over most of its breadth, averaging 1.50 metre deep on each shore at Point St Charles and St Lambert, while the main channel where the steamers passed was 7.5-metre-deep in summer, and 90 metres wide.²⁸⁰ The ice shoves were also less severe than further downstream.²⁸¹ Furthermore, the railway yards and terminal buildings would be close to the river, the port, the city and the industries of the Lachine Canal.²⁸²

²⁷⁵ John Rapley, *The Britannia & Other Tubular Bridges and the men who built them*, Stroud: Tempus, 2003, 20 and Charles Legge, *A Glimpse at the Victoria Bridge, and the Men Who Built It*, Montreal: John Lovell, 1860, 53.

²⁷⁶ Triggs, ‘Le Pont / The Bridge’, 41.

²⁷⁷ Passfield, ‘Construction of the Victoria Tubular Bridge’, 16.

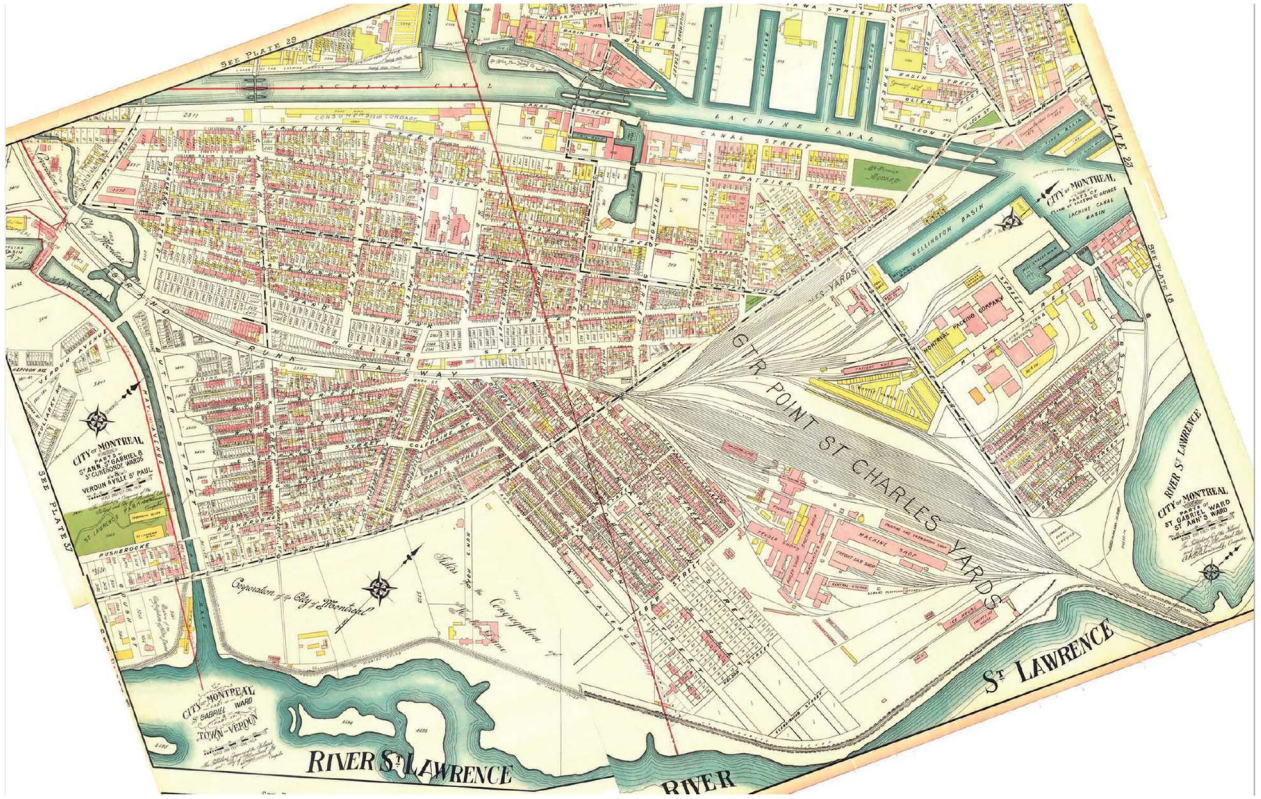
²⁷⁸ Charles Legge, *A Glimpse at the Victoria*, 70. In contrast, the cost of the Conway Bridge was 145,190£ 18s., and of the Britannia £601,865 in Edwin Clarke, *The Britannia and Conway Tubular Bridges. With General Inquiries on Beams and on the Properties of Materials Used in Construction*, Vol. II, London: Published for the author, by Day and Son, Gate Street, Lincoln’s Inn Fields; and John Wheale, 59 High Holborn, 1850, 814-5.

²⁷⁹ LAC, RG12 Vol 2500 ‘Railway-Bridges_Victoria Jubilee Bridge, Montreal, Quebec’.

²⁸⁰ Triggs, ‘Le Pont / The Bridge’, 39.

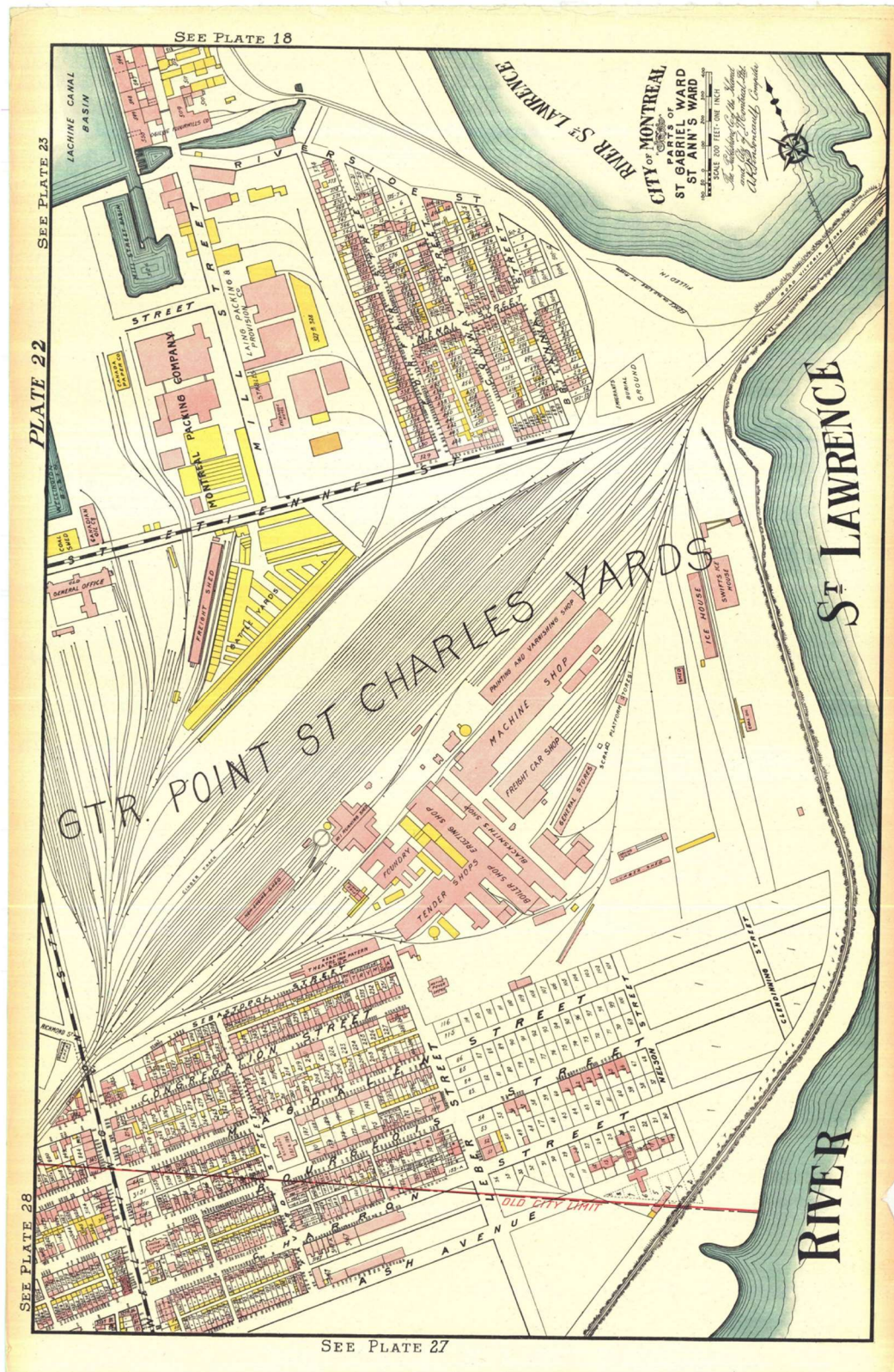
²⁸¹ Triggs, ‘Le Pont / The Bridge’, 39.

²⁸² Triggs, ‘Le Pont / The Bridge’, 39.



Map 3 Map of Pointe-Saint-Charles in 1907, montage from A. R. Pineseault, *Atlas of the Island and city of Montreal* (...), 1907, plates 22, 23, 27, 28, Bibliothèque et Archives Nationales du Québec (BanQ), from Gilles Lauzon, *Pointe-Saint-Charles. L'urbanisation d'un quartier ouvrier de Montréal, 1840-1930*, Quebec: Septentrion, 2014, 162

This map shows the proximity of the Victoria Bridge, the railway yards, the river, the port, the Lachine canal.



Map 4 'City of Montreal, parts of St Gabriel Ward, St Ann's Ward', from A. R. Pinsonneault, Atlas of the island and city of Montreal and Ile Bizard, a compilation of the most recent cadastral plans from the book of reference, Montreal: the Atlas Publishing Co. Ltd., 1907, plate 28

On this 1907 map, the emigrant sheds where some of the workers lived have disappeared, but the names of the streets (Britannia Street, Menai Street, Conway Street), which appeared after the construction of the bridge, bear witness to the filiation between the Victoria Bridge and its models in Wales.

The preparatory works started in 1853 and the actual construction in 1854, which chapter 3 details. When the bridge was completed in 1859, contemporary engineers emphasised the quality of the construction. In a letter to Stephenson and Bidder, George Bruce and B. P. Stockman, who had initially crossed the Atlantic to test the strength of the tubes, wrote: ‘We are in a position to report that everything connected with the arrangements has been most admirable, the work throughout is first class, and will bear comparison with any similar construction in the world. The masonry is of a very superior description, nothing can excel it.’²⁸³ As a conclusion, they praised the contractors: ‘The contract of Messrs. Peto, Brassey and Betts, for the construction of the Victoria Bridge, has, we consider, been carried out most creditably.’ Their letter shows that the quality of the bridge was based on a comparison with other bridges, thus suggesting that the Victoria Bridge belonged to a context of global development of civil engineering. They underlined the efficiency of the construction but also the quality of the work done, notably the masonry, and although they seemed to give the contractors credit for it, it appears that the Victoria Bridge workmen were skilled and excellent workers.

The bridge was also celebrated by contemporaries as ‘the eighth wonder of the world’²⁸⁴ and was compared to the monuments of ancient Egypt and Rome by the Prince of Wales himself.²⁸⁵ The opening of the bridge was celebrated in summer 1860 with a lavish ceremony, where the Grand Trunk Company welcomed the Prince of Wales with a luxurious vehicle specially made for the occasion and deferential speeches thanking the ‘capital and know-how of the motherland’.²⁸⁶ Six temporary triumphal arches were erected along the route

²⁸³ ICE, Tracts8vo_Vol140, Letter by George Bruce & B. P. Stockman to Stephenson, Bidder, about Victoria Bridge, 5 Jan. 1860, 359-360.

²⁸⁴ Legge, *A Glance at the Victoria Bridge*, 21.

²⁸⁵ *Journal de l’Instruction Publique*, 1857-1879, Nov. 1860.

²⁸⁶ ‘Relation du voyage de Son Altesse Royale le Prince de Galles en Amérique’, *Journal de l’Instruction Publique*, 1857-1879, Nov. 1860: ‘aidé comme il l’a été du capital et du savoir-faire de la mère-patrie’. My translation.

to be taken by the royal procession. The Crystal Palace, built to house the Provincial Exhibition, was ‘an architectural testament to the power and presence of the industrial capitalist class that was consolidating its position as the new ruling class in mid-nineteenth-century Britain’.²⁸⁷ An art exhibition, a ball and royal excursions were also part of the festivities.²⁸⁸

The Victoria Bridge was thus the central piece of a ceremony that celebrated not only the colonial ties between Britain and Canada, but also technology and industrial capitalism. While historian Conrad Graham emphasises the homage paid to the industrial capitalist class of Britain, the construction and celebrations of the bridge reflect the emergence of industrial capitalism in Canada. Based on economist Maurice Dobb’s analysis of Marx, historian John Victor Barkans’s dissertation reminds us that the mode of production defines the difference between a pre-capitalist and a capitalist society: ‘the capitalist owns the means of production, intervenes in the labour process, in so far that labour power now becomes a commodity to be bought, sold and used as the capitalist sees fit, and extracts surplus.’²⁸⁹ By the 1850s, and most certainly the 1860s and 1870s, he argues, there was a separation of the producers from the means of production in Canada.²⁹⁰ Concomitantly, the time period was characterised by the development of a ‘landless work force dependent on the sale of their labour for their existence’, and thus the number of workers classified as industrial in British North America rose from 71,222 in 1851 to 144,736 in 1861 and 212,808 in 1871 in the census.²⁹¹ Although this was not the case for the whole territory, Barkans demonstrates that in metropolitan centres, ‘capitalist

²⁸⁷ Conrad Graham, ‘L’inauguration / The Celebration’, 76-9 and 81-3.

²⁸⁸ Graham, ‘L’inauguration / The Celebration’, 83-93.

²⁸⁹ John Victor Barkans, *Labour, Capital and the State: Canadian Railroads and Emergent Social Relations of Production, 1850-1879*, MA Diss., McMaster University, 1976, 10, quoting Maurice Dobb, *Studies in the Development of Capitalism*, London: Routledge and Kegan Paul, 1975.

²⁹⁰ Barkans, *Labour, Capital and the State*, 98.

²⁹¹ Barkans, *Labour, Capital and the State*, 130 and 106. On the evolution of ‘those listed as the “industrial class”’ in the census, see Stanley B. Ryerson, *Unequal Union. Roots of Crisis in the Canadas, 1815-1873*, Toronto: Progress Books, 1975 (1968), 444-5, quoting the *Census of 1871*, vol v; *Report*, Royal Commission on Dominion-Provincial Relations, 1940, Book I, 22, and Appendix ii, 20-7; and F. A. Angers and Patrick Allen, ‘Evolution de la Structure des Emplois au Canada’, *Actualité Economique*, xxix, 80.

social relations were in the ascendancy and constituted the dynamic element in the society's evolution'.²⁹²

Barkans's dissertation focuses on the development of railways in Canada, which, according to him, marked a transition from a mercantilist to an industrial capitalist society with the rise of industrial capitalists and a workforce deprived of property. He argues that prior to the 1850s and the development of railways, the 1840s were only marked by the emergence of small-scale capitalism with the development of manufacturing with few labourers.²⁹³ However, Barkans's point appears to define manufacturing as a first step in the development of industrial capitalism, whereas canal construction was critical in the development of industrial capitalism in Canada prior to the emergence of railways.

Studying canal workers in North America from 1780 to 1860, historian Peter Way argues that canals played a significant role in the transition from traditional social and economic forms, which persisted, to industrial capitalism which was spreading, and on the other hand that canal construction opened up new markets, mobilized 'an army of workers', created new consumers, developed business strategies and initiated state-capital ties.²⁹⁴ Although there was no class consciousness owing to the segmented nature of the work and old allegiances, Way shows that canallers' conflicts evolved from fighting each other to fighting authority, even though conflicts against authority remained short-lived.²⁹⁵ More generally, Way describes the history of canals as a reflection of class²⁹⁶ formation in society: 'The scenario on canals was but a reflection of class formation in larger society. It was a history of movement from the land

²⁹² Barkans, *Labour, Capital and the State*, 130.

²⁹³ Barkans, *Labour, Capital and the State*, 107.

²⁹⁴ Way, *Common*, 3-4.

²⁹⁵ Way, *Common Labour*, 11.

²⁹⁶ In this chapter and in the whole dissertation, I follow E. P. Thompson's definition of class and class-consciousness: 'class happens when some men, as a result of common experiences (inherited or shared), feel and articulate the identity of their interests as between themselves, and as against other men whose interests are different from (and usually opposed to) theirs. The class experience is largely determined by the productive relations into which men are born – or enter involuntarily. Class-consciousness is the way in which these experiences are handled in cultural terms: embodied in traditions, value-systems, ideas, and institutional forms.' Thompson, *The Making of the English Working Class*, 9-10.

or petty production to wage work, the hallmark of proletarianization, that best captures the navvies' story'.²⁹⁷

From their ties with immigration to the techniques and type of work, from the living conditions and relations with employers to their culture, the history of railway workers bears a lot of resemblance with the canallers'. The Victoria Bridge was built in a context of emergence and development of industrial capitalism and industrial workers in urban centres in Canada, while decades of canal construction had started the proletarianization of construction workers. Furthermore, its contractors and, as the next section will show, part of its workforce came from Britain where they had become familiar with wage labour. The Victoria Bridge thus belonged to this transition from a pre-capitalist to a capitalist society in Canada, and its construction played a role in the history of the evolution of society and of social and labour relations.

So, the construction of the bridge, supervised by experienced British contractors and civil engineers, was the hallmark of an imperial system and a changing society. It was part of a transitional period from a pre-capitalist to an industrial capitalist society, and the next section analyses the role of the bridge and its workers in this transformation.

II- The workers

There are sparse records of the number of workers employed on the Victoria Bridge, which makes it difficult to know how many there were exactly. The company archives, and more precisely the 'Minutes of meetings of stockholders and proprietors', comprise engineers' reports from 1854 to 1858, but only two of them provide the number of workers.²⁹⁸ Newspapers often gave vague accounts of the workforce, such as the *Gazette de Sorel* which wrote in 1859

²⁹⁷ Way, *Common Labour*, 79.

²⁹⁸ LAC, RG30-1026, Ross's reports, 24 July 1854 and 6 December 1858.

that ‘a great number of workers have been constantly employed throughout the winter’.²⁹⁹ In contrast, newspaper articles often gave precise figures regarding the size of the different parts of the bridge.³⁰⁰ This discrepancy suggests that contemporary readers might be more interested in the precise description of the works in progress than in the number of workers, but it might also suggest that exact returns of the workforce were not always known.

Historian George Kraus describes how one of the employers of the Central Pacific, when asked about the number of workers, told a journalist in September 1868 that ‘it was impossible to tell as no list of names was kept and the men worked by the squad and not as individuals’.³⁰¹ He added that he could not make the difference between ‘Indians and Chinese’ and, for fear of paying double wages, he employed and paid them ‘by the wholesale’: every morning, the workers were put into groups, and each group was given a scheduled task – going to work, eating or quitting at night. According to the employer, ‘lengthy bookkeeping is avoided, time is saved and cheating prevented’. He could nonetheless estimate that there were about ‘10,000 Chinese, 1,000 whites and “any number” of Indians employed on the road’.³⁰² Although racism is obvious in the words of a white employer who could not tell the difference between Chinese and Indigenous workers, it is likely that this method of counting workers was common on worksites involving thousands of men.

The following table (Tab. 6) represents the number of workers available in company archives and newspapers, with data missing for a number of seasons, and in italics the figures from a newspaper article whose sources are unclear.

²⁹⁹ *Gazette de Sorel*, 5 April 1859.

³⁰⁰ See for instance *Gazette de Sorel*, 5 April 1859.

³⁰¹ George Kraus, ‘Chinese Laborers and the Construction of the Central Pacific’, *Utah Historical Quarterly*, Winter 1969, vol. 37, No. 1, 41-57, 51-2.

³⁰² Kraus, ‘Chinese Laborers and the Construction of the Central Pacific’, 51-2.

June 1854		End of August-December 1858		October 1858	
Source: Alexander Ross, 'Return of Force employed during the Month of June 1854', appendix A, 24 July 1854, LAC, RG30-1026		Source: Alexander Ross's Report, Montreal, 6 Dec. 1858, LAC, RG30-1026		Source: <i>Gazette de Sorel</i> , 28 Dec. 1858	
Categories of workers	Numbers	Categories of workers	Numbers	Categories of workers	Numbers
Carpenters	125	'Men' including those engaged in erecting the tubes	2,560	<i>Not said</i>	3,281
Sawyers	136				
Smiths	72				
Masons, quarry men, stone cutters	364				
Brick makers	0				
Labourers	309				
Mariners	146	Mariners ('hands' who manned the six steamboats and the 72 barges)	500		
TOTAL	1,152		3,060		3,281
Number of horses	74				142

Tab. 6 Number of Victoria Bridge workers in June 1854, August-December 1858, and in October 1858

The numbers of workers show that it was a very large worksite. The Britannia Bridge (1846-1850), which was also considered an engineering marvel on its completion, employed about 800 workers.³⁰³

It is difficult to compare only two different working seasons of the same worksite, four years apart from each other. However, we can see that during the first working season (June 1854), labourers on the one hand and masons, quarry men, stone cutters on the other were the most numerous. Labourers represented almost 27 per cent of the total workforce, and masons, quarry men, stone cutters almost 32 per cent.

These workers were actually particularly needed as the first working season, from May to autumn 1854, was characterised by the building of six dams – used to build foundations – that were put in place and made tight with clay, the construction of a tramway, and the setting

³⁰³ Julie Stone, Menai Heritage, <https://menaibridges.co.uk/history/britannia-bridge/workforce/> (accessed 22 Sept. 2023).

out of stone (see Appendix 1), all activities that indeed necessitated these types of workers.³⁰⁴ By comparison, historian David McCullough estimates that there were about 364 men working inside and above the caisson of the Brooklyn Bridge (1869-1883).³⁰⁵

The table above evidences a sharp difference between the number of workers in June 1854, and in autumn and winter 1858, which suggests that employers hired and dismissed workers according to the needs of the worksite. Pentland explains that with a capitalistic market, ‘the actions of workers and employers are governed by impersonal considerations of immediate pecuniary advantage’, and that ‘the employer is confident that workers will be available whenever he wants them; so he feels free to hire them on a short-term basis, and to dismiss them whenever there is a monetary advantage in doing so.’³⁰⁶ Pentland’s point shows that the variations in the number of workers on the Victoria Bridge site according to the needs of the employers were characteristic of a capitalistic system the worksite belonged to.

Furthermore, Hodges and Legge underlined that the working season in Canada was reduced to six months because of the harsh winters, which suggested that most of the work stopped in winter and consequently that a number of workers were dismissed.³⁰⁷ The above table does not reflect those seasonal fluctuations because work intensified in 1858 and men worked in winter 1858-1859 to finish the bridge (Appendix 1). Seasonal fluctuations in employment were common and Barkans illustrates what he calls insecurity in employment with the common practice of railway companies to cut back on workers during times of declining business, and more particularly in winter.³⁰⁸ He identifies insecurity as ‘one of the features

³⁰⁴ On the construction during the first working seasons: Hodges, *Construction of the Great Victoria Bridge*, 19 and LAC, RG30-1026, ‘Minutes of meetings of stockholders and proprietors’, Bidder’s report, Montreal, 24 July 1854.

³⁰⁵ David McCullough, *The Great Bridge. The Epic Story of the Building of the Brooklyn Bridge*, New York, London, Toronto, Sydney, New Delhi: Simon & Schuster, 2007, Ebook, 293.

³⁰⁶ H. C. Pentland, ‘The Development of a Capitalistic Labour Market in Canada’, *The Canadian Journal of Economics and Political Science / Revue canadienne d’Economie et de Science politique*, Nov. 1959, Vol. 25, No. 4, 450-61, 450.

³⁰⁷ Hodges, *Construction of the Great Victoria Bridge*, 26-7 and Legge, *A Glance at the Victoria Bridge*, 88.

³⁰⁸ Barkans, *Labour, Capital and the State*, 144

specifying the capitalist mode of production in general’ and emphasises its impact on the work relations of railway companies.³⁰⁹ The pattern of recruitment and dismissal on the Victoria Bridge thus reflects a complete adaptation on the part of the bridge employers to a capitalist mode of production, but also to a certain extent to impersonal labour relations.

Because workers have such a shadowy presence in the sources, it is difficult to determine who they were.³¹⁰ However, we know where they came from. Employers’ sources repeatedly mention that the contractors recruited at their own expense workers from England. The men were reportedly from Cheshire and Lancashire and were promised wages forty per cent higher in Canada to do the same work (Appendix 4).³¹¹ They were mainly stone masons, carpenters, quarrymen, engine drivers and fitters, and the contractors advanced passage money to the men, their wives and their children, deducting one shilling a day from their wages until the debt was paid.³¹² These men were recruited to work on the Grand Trunk Railway but it is clear that some of them went to work on the Victoria Bridge, as Hodges complained that a number of mechanics were brought from England at a cost of £3,000. From the tariff fare and the cost of the steamer passage from Montreal to Quebec, we can venture that about 1,000 mechanics recruited in Britain left the worksite in 1854.³¹³

Hodges indifferently called them British or the workers from England, which suggests that nationalities should not be strictly understood as we do today, and ‘English’ might have

³⁰⁹ Barkans, *Labour, Capital and the State*, 144

³¹⁰ I borrow the phrase ‘shadowy presence’ from Gordon H. Chang, Shelley Fisher Fishkin, and Hilton Obenzinger’s ‘Introduction’, who thus characterise the scarcity of archival records about the Central Pacific Railroad Chinese workers, in Gordon H. Chang, Shelley Fisher Fishkin, with Hilton Obenzinger and Roland Hsu (eds.), *The Chinese and the Iron Road: Building the Transcontinental Railroad*. Stanford, CA: Stanford University Press, 2020, 2.

³¹¹ Thomas Brassey (M. P.), *Work and Wages Practically Illustrated*, London: Bell and Daldy, 1872, 35

³¹² Currie, *The Grand Trunk Railway of Canada*, 35

³¹³ As a number of workers were recruited in Cheshire and Lancashire (see Brassey, *Work and Wages*, 35), we can assume that Hodges’s mechanics left from Liverpool. The passage from Liverpool to Quebec was about £3 to £4 at the lowest (see <https://www.theshipslist.com/ships/fares/1849.shtml> based on July 1849, Colonization Circular No.9, 3, accessed 06 Oct. 2023). The cost of the steamer from Quebec to Montreal was about 2s. (from the Fourteenth Report of Colonial Land Emigration Commissioners, 1854, Appendix, 236). The total of £3,000 probably corresponded to about a thousand mechanics, although this calculation excludes wives and children.

meant English, Welsh, Scottish and perhaps Irish.³¹⁴ Employers often praised British workers, usually to the detriment of other workmen. Hodges wrote in the conclusion of his book that '[o]nce brought into proper discipline, they worked as British workmen alone can work. They leave behind them in Canada an imperishable record of British skill, science, and perseverance, in the bridge which they assisted to construct'.³¹⁵ This passage echoed a time-keeper's account of the French public who, full of admiration, reportedly said during the construction of the Paris-Rouen railway (1841-1843), 'My God! The English, how they work!'³¹⁶

This laudatory discourse about British workers was a way to praise the power and skill of Britain, and its superiority over other countries and colonies like Canada. But even though the skills of the British workers were perhaps exaggerated for the needs of imperial propaganda, the probable superiority of the British workers was perceptible in the way they worked, which showed they were used to that type of work. The time-keeper who reported the admiration of the French public explained it as follows:

I think as fine a spectacle as any man could witness, who is accustomed to look at work, is to see a cutting in full operation, with about twenty wagons being filled, every man at his post, and every man with his shirt open, working in the heat of the day, the gangers looking about, and everything going like clockwork.³¹⁷

What made the superiority of the British workers that so astonished their contemporaries was their organisation on the worksite and their gestures: every man was performing a precise task and the groups of men worked smoothly. In other words, they were experienced in and familiar with railway construction, and therefore industrial labour. Their masculinity, symbolised by

³¹⁴ Pentland underlines that in the later part of the nineteenth century, official returns understated the proportion of Irish immigrants by counting the Irish from Liverpool as English, Pentland, 'The Development of a Capitalistic Labour Market in Canada', 459, footnote 37. Similarly, Harper and Constantine note that less is known about Welsh immigrants 'because the way the Welsh were lumped in with the English in population and passenger data in the nineteenth century obliterated them statistically', Marjory Harper, Stephen Constantine, *Migration and Empire*, Oxford: Oxford University Press, 2010, 14.

³¹⁵ Hodges, *Construction of the Great Victoria Bridge*, 75.

³¹⁶ Helps, *Life and Labours of Thomas Brassey*, 38-9: 'Mon Dieu ! les Anglais comme ils travaillent !' My translation.

³¹⁷ Helps, *Life and Labours of Thomas Brassey*, 38-9.

their open shirts and their resistance to the heat, was associated with industrial work. The phrase ‘everything going like clockwork’ written by a time-keeper was not random and echoed the time-keeping which characterised industrial capitalism and that workers sometimes resisted.³¹⁸ The British workers of the Victoria Bridge, who had probably been recruited at high cost, were thus experienced in construction but also in industrial wage labour, and therefore familiar with industrial labour relations.

Although the British workers are the most referred to in employers’ sources, they probably did not represent the majority of the workforce. The exact number of the men recruited in Britain is not known, let alone the number of family members whose passage money was advanced by the contractors. However, historian Jane Greenlaw uses the tax assessment rolls for the Ste Anne’s ward of Montreal from which she provides a list of the 293 inhabitants of the sheds from 1856 to 1860 (see Appendix 2).³¹⁹ The sheds were probably initially not meant for local workers and it is possible that this list represents at least part of the British workforce. Historian Stanley Triggs estimates that these twenty-one sheds could probably house 300 to 500 people.³²⁰ If we take out family members, teachers and widows, we can assume that there were just a few hundred British workers in the sheds.

As historian Leland Hamilton Jenks suggests when he writes that ‘[s]pecial agents roved Lower Canada and Ireland in search of husky workmen’,³²¹ the remaining of the workforce was Irish, Canadian and, as this section shows, Indigenous. Again, the distribution of each ethnicity is not known. In 1859, the workers found the common grave of 6,000 emigrants who died from

³¹⁸ See for instance Thompson, *The Making of the English Working Class*, 305 and the example of the weavers.

³¹⁹ Unpublished. I am grateful to Jane Greenlaw for sharing her work and allowing me to use it, and to Gilles Lauzon who gave me a copy of Jane Greenlaw’s work and without whom I would not even have known about it.

³²⁰ Triggs, ‘Le Pont / The Bridge’, 52.

³²¹ Jenks, *The Migration of British Capital to 1875*, 202.

ship fever in the emigrant sheds – now turned into the workers’ sheds – between 1847 and 1848, and had a monument built in remembrance of ‘their poor countrymen’ (Fig. 7 and Fig. 8).³²²



Fig. 7 View taken during the ceremony of laying the Monumental Stone, marking the Graves of 6000 Immigrants Who Died of Ship Fever at Point St Charles, Montreal, AD. 1847 and 1848, Notman, 1859, LAC, Preservation Centre, 1980-149_55074, Fonds Merrilees, Canadian Scraps No. 1

The monument in memory of the 6,000 emigrants who died in the emigrant sheds in 1847 was erected on 1 December 1859 in the presence of Hodges, Ross, the Bishop of Montreal, the Rev. Canon Leach and the Rev. J. Elligood.

³²² Hodges, *Construction of the Great Victoria Bridge*, 75-6. Hodges writes that the emigrants died between 1846 and 1847, but the stone reads 1847-1848, which is more plausible.

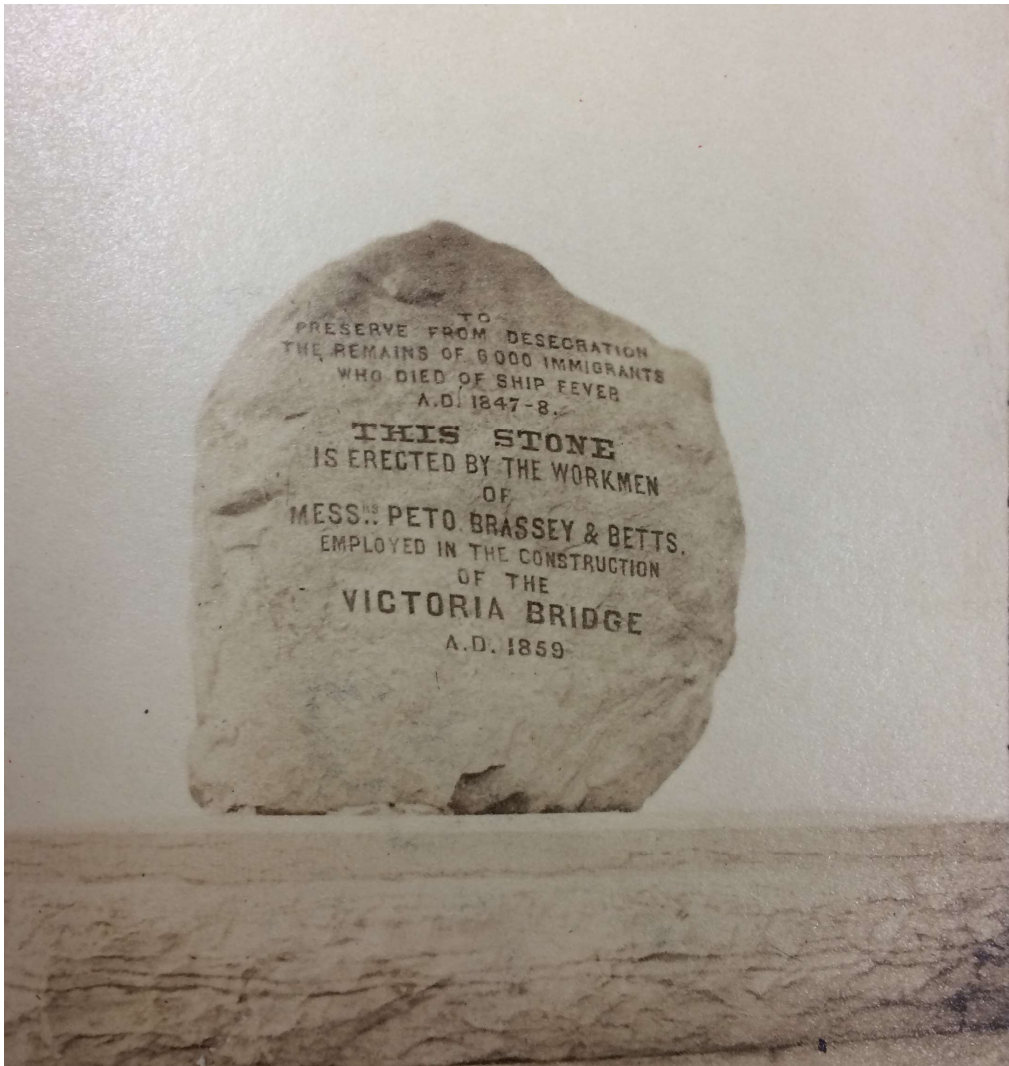


Fig. 8 *Emigrant Memorial Stone 1859*, Notman, 1859, LAC, Preservation Centre, 1980-149_55074, Fonds Merrilees, Canadian Scraps No. 1

The monument in memory of the 6,000 immigrants who died of typhus clearly reads that it was erected by the Victoria Bridge workmen. The ceremony for the erection of this monument at the end of the construction and this inscription can be seen as a celebration of the Victoria Bridge workers themselves.

The stone was set in its place on 1st December 1859 by the Rev. Canon Leach, in the presence of the bishop of Montreal, the Rev. Elligood and the workmen.³²³

These immigrants were probably, for the most part, Irish. Harper and Constantine show that between 1825 and 1867, Irish migrants represented 61 per cent of arrivals from the British Isles, and most of them arrived in Eastern and Central Canada.³²⁴ Hodges explained that ‘the

³²³ Hodges, *Construction of the Great Victoria Bridge*, 75-6. Both Elligood and sometimes the bishop officiated every Sunday as the chaplain of the workers, Hodges 77-8.

³²⁴ Harper and Constantine, *Migration and Empire*, 13.

remains of their [the workers'] poor countrymen were not forgotten' and that the workers asked to fence in the spot where the large granite boulder was erected in memory of the emigrants who died in 1847.³²⁵ It is therefore quite likely that a good number of these workmen were Irish and the erection of this monument an expression of sympathy with these emigrants who had died when so many of them were fleeing the Famine.

Hodges never mentioned the Irish in his book, in contrast with the 'English' workers, and yet they probably made up most of the Victoria Bridge workforce. Indeed, Irish workers represented the majority of workers on other contemporary worksites. Studying the workers of the St Lawrence and Atlantic Railway (1845-1853) in the region of Sherbrooke between 1851 and 1853, historian Jean-Pierre Kesteman uses the 1851-1852 nominal census to get a valuable insight into the social profiles of these railway construction workers.³²⁶ In winter 1852, there were 1,800 workers living on the worksite between Richmond and Sherbrooke, and they represented 26 per cent of the local population.³²⁷ The census shows that 81 per cent of the St Lawrence and Atlantic Railway were Irish.³²⁸ The prominence of Irish railway construction workers in Sherbrooke tends to suggest that they also constituted the majority of the workforce on the Victoria Bridge. There are about 140 kilometres between Sherbrooke and the Victoria Bridge; the St Lawrence and Atlantic Railway was completed in 1853, when the construction of the Grand Trunk section from Montreal to Toronto started, while the construction of the Victoria Bridge started in the winter 1853-1854. Given the proximity in time and space of the two worksites, it is possible that some St Lawrence and Atlantic Railway workers also worked on the Victoria Bridge or Grand Trunk worksites.

³²⁵ Hodges, *Construction of the Great Victoria Bridge*, 76.

³²⁶ Jean-Pierre Kesteman, 'Les travailleurs à la construction du chemin de fer dans la région de Sherbrooke (1851-1853)', *Revue d'histoire de l'Amérique française*, Vol. 31, No. 4, March 1978, 525-45.

³²⁷ Kesteman, 'Les travailleurs à la construction du chemin de fer dans la région de Sherbrooke (1851-1853)', 530.

³²⁸ Kesteman, 'Les travailleurs à la construction du chemin de fer dans la région de Sherbrooke (1851-1853)', 535.

Pentland writes that the Irish ‘took all the unskilled and casual work of Quebec and Montreal, besides thousands of construction jobs’ and that because they were willing to take wage employment despite appalling working conditions and low pay, they ‘made possible the capitalistic market’.³²⁹ With Pentland, Barkans argues that immigration, dominated by the Irish, provided a ‘pool of “free” labour for industrial development’.³³⁰ Attributing the rise of the capitalistic market to the ‘attitude’³³¹ of the Irish immigrants downplays the role of employers who saw the profits this ‘floating labour pool’³³² could allow them, and minimises emigrants’ personal histories and situations and efforts to escape poverty.³³³ What Pentland and Berkans show, however, is the timely coincidence between the development of capitalist industries that needed workers, and the mass immigration of Irish poor who needed work.

In his study of labour activism in central Canada in 1850-1860, Paul Campbell Appleton discusses Pentland’s depiction of the Irish as primitive peasants and of the difference between Catholic and Protestant Irish, and argues that many had probably stopped being labourers before emigrating.³³⁴ Appleton emphasises the role of the Irish in the emergence of union organisation that started to develop in 1853.³³⁵ Furthermore, Pentland shows that the Irish immigrants preferred wage employment to farming.³³⁶ The Irish workers, and among them the Victoria Bridge Irish workers, thus contributed to the development of industrial capitalism in Canada because they were landless workers looking for wage employment, and because some of them were probably already familiar with that type of work.

Little is known about the local Canadians employed on the bridge, except that they were probably involved in strikes, which the next section examines, and that employers depicted

³²⁹ Pentland, ‘The Development of a Capitalistic Labour Market in Canada’, 458, 460.

³³⁰ Barkans, *Labour, Capital and the State*, 103.

³³¹ Pentland, ‘The Development of a Capitalistic Labour Market in Canada’, 460.

³³² Paul Campbell Appleton, *The Sunshine and the Shade: Labour Activism in Central Canada, 1850-1860*, MA Diss., University of Calgary, Unpublished, 1974, 21.

³³³ Harper and Constantine, *Migration and Empire*, 21.

³³⁴ Appleton, *The Sunshine and the Shade*, 16.

³³⁵ Appleton, *The Sunshine and the Shade*, 34.

³³⁶ Pentland, ‘The Development of a Capitalistic Labour Market in Canada’, 460.

French Canadians as less powerful workers than the British. Brassey recommended that French Canadians be hired on the Grand Trunk Railway, and his biographer later commented that the French Canadians ‘except for very light work, were almost useless’.³³⁷ Rowan, the civil engineer in charge of the recruitment of French Canadians wrote:

They could ballast, but they could not excavate. They could not even ballast as the English navy does, continuously working at ‘filling’ for the whole day. The only way in which they could be worked was by allowing them to fill the wagons, and then ride out with the ballast train to the place where the ballast was tipped, giving them an opportunity of resting. Then the empty wagons went back again to be filled; and so, alternately resting during the work, in that way, they did very much more. They could work fast for ten minutes and they were ‘done.’ This was not through idleness, but physical weakness. They are small men, and they are a class who are not well fed. They live entirely on vegetable food, and they scarcely ever taste meat.³³⁸

Rowan and Helps were echoing the common nineteenth-century belief that meat was necessary for health and muscles.³³⁹ Meat has been described by contemporaries and historians as an important feature of British navvies’ diet, and Brassey’s navvies reportedly ate two pounds of beef a day.³⁴⁰ Historian David Brooke describes how Peto and Brassey’s navvies, in Crimea during the war in 1855 to build a railway between Balaklava and the allied camps, reportedly grumbled at the food because they were used to eating beefsteaks, and were suspected in the disappearance of a bullock belonging to a French general.³⁴¹ This anecdote is one example among others of the importance of meat in the representation of British railway workers.

In the quotation above, Rowan and Helps were also reproducing the popular opposition between British men well-fed with meat and skinny French people, represented in Hogarth’s 1749 painting *O the Roast Beef of Old England* (*The Gate of Calais*).³⁴² It pictured starving French people, and a heavy piece of beef being carried to England and coveted by a fat French

³³⁷ Helps, *Life and Labours of Thomas Brassey*, 108.

³³⁸ Helps, *Life and Labours of Thomas Brassey*, 108.

³³⁹ Georges Vigarello, *Histoire de la Fatigue. Du Moyen Âge à nos jours*, Paris : Editions du Seuil, 2020, 190-1

³⁴⁰ John Millar, *William Heap and his Company, 1866*, John Millar (UK) Ltd., Hoylake, Wirral, Cheshire, England, Liverpool: G. M. Business Print, 1991 (1976), 48. Two pounds is about one kilogram of beef.

³⁴¹ David Brooke, *The Railway Navy. ‘That Despicable Race of Men’*, Newton Abbot, London, North Pomfret (Vt): David & Charles, 1983, 123, 129.

³⁴² William Hogarth, *O the Roast Beef of Old England* (*The Gate of Calais*), 1748 (Tate).

friar. The contrast between the British fed with beef and the starving French represented political rivalry and sentiments of contempt for the French. The title of Hogarth's painting and engraving was taken from a popular patriotic song that celebrated roast beef as the symbol of Britain's power and wealth.³⁴³ Historian Fabrice Bensimon, in his recent *Artisans Abroad*, explores the issue of the workers' diet and shows that in the eighteenth century, it was common to equate the Catholic, expansionist Frenchmen with their diets, which satirists liked to mock.³⁴⁴ The diet of the effeminate Frenchmen, supposedly made of frogs and snails, was opposed to the roast beef and ale of John Bull, and these stereotypes endured after the Napoleonic wars, although less aggressive.³⁴⁵ Rowan and Helps's low regard for French workers was thus also based on a popular culture that associated a diet based on meat with manliness and with the political superiority of Britain over rival countries, while physical weakness was attributed to the absence of meat in the French diet.

However, Rowan and Helps's description of men who worked fast for ten minutes before being exhausted is also a depiction of inexperience. According to historian Georges Vigarello, contemporaries noted that apprentices made considerable efforts for poor results and worked in quick, jerky movements that left them tired very quickly.³⁴⁶ They explained this contrast between apprentices and experienced workers in terms of energy and dexterity on the one hand, and of food and portions of food on the other.³⁴⁷ In that sense, the employers' description of French Canadian workers reflected a nineteenth-century growing interest in the workers' energy and the means to improve it. This text also shows that employers focused on ethnicity as the main cause of inefficiency, and overlooked their inexperience.

³⁴³ Analysis of the painting by the Tate, <https://www.tate.org.uk/art/artworks/hogarth-o-the-roast-beef-of-old-england-the-gate-of-calais-n01464> (accessed 7 October 2023). Hogarth was arrested while sketching the gate of Calais, and this painting was a revenge.

³⁴⁴ Fabrice Bensimon, *Artisans Abroad. British Migrant Workers in Industrialising Europe, 1815-1870*, Oxford: Oxford University Press, 2023, 162.

³⁴⁵ Bensimon, *Artisans Abroad*, 163.

³⁴⁶ Vigarello, *Histoire de la Fatigue*, 230.

³⁴⁷ Vigarello, *Histoire de la Fatigue*, 230.

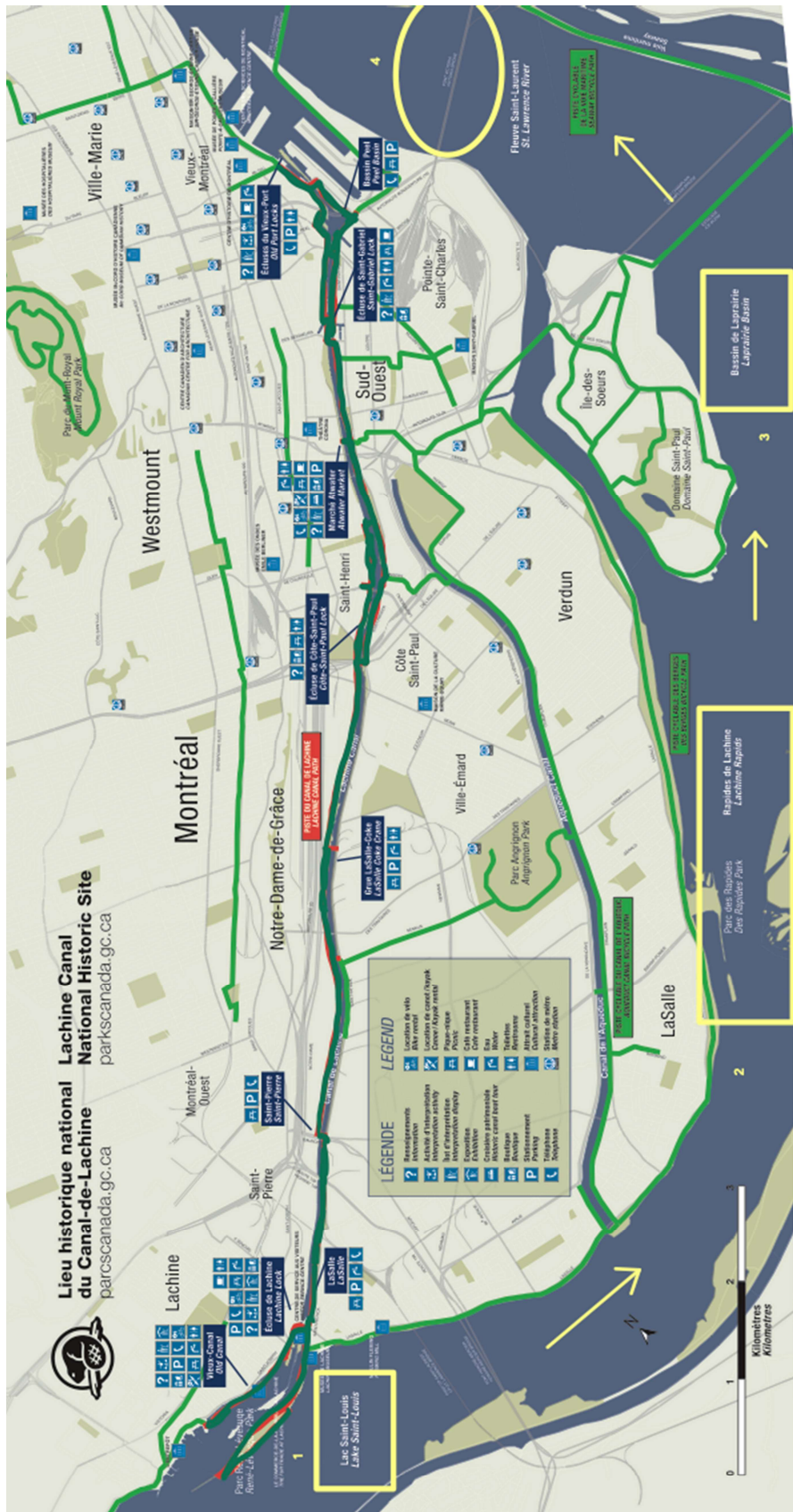
Indigenous workers were employed on the construction of the bridge where they manned the rafts and barges that carried materials on the St Lawrence River. Hodges always mentioned them in this context. He described thirteen of them caught in a raft accident, for example, which the following chapters examine more closely.³⁴⁸ In one instance in 1854, sub-contractors tried to have steamboats tow portions of cribwork into position in a quieter spot of the river near the entrance of the Lachine canal.³⁴⁹ But the current was such that the cribs were destroyed. After several attempts, the material was loaded onto barges, conveyed to Lake St. Louis where the cribs were formed again, and Indigenous workers brought them down the rapids to La Prairie Basin, where a steamboat towed the cribwork to moorings and placed it where the pier was supposed to be built (see Map 5).³⁵⁰ This episode suggests that Indigenous workers saved the situation but also that they were talented pilots. As a matter of fact, a number of sources indicate that most of the raftsmen on the St Lawrence River were Caughnawaga people.³⁵¹

³⁴⁸ Hodges, *Construction of the Great Victoria Bridge*, 62.

³⁴⁹ Hodges, *Construction of the Great Victoria Bridge*, 25.

³⁵⁰ Hodges, *Construction of the Great Victoria Bridge*, 25.

³⁵¹ Pentland, *Labour and Capital in Canada 1650-1860*, 55 and Edward J. Devine, *Historic Caughnawaga*, Montreal: the Messenger Press, 1922, 402.



Map 5 The shipment of stones. The cribs were brought down the rapids from Lake St. Louis to La Prairie Basin by Indigenous workers. A steamboat then took them to the construction site. Map from <https://greatruns.com/wp-content/uploads/2016/11/carte-piste-polyvalente-2012-BIL.pdf>

Some scholars have argued that Caughnawaga men, who had had the reputation of working in the construction of tall buildings, worked on the structure of the Victoria Bridge. Anthropologist David Blanchard cites the recollection of Tom Biabo (whose name he spells Diabo on the next page), whose maternal grandfather, Sositswanorron, reportedly worked on the Victoria Bridge as a young man:

Back in those days us Indians used to work on the river, delivering big ships over the rapids to Montreal and Kingston. Well, when they was building the Victoria Bridge, not the one there now, the old one, men from town got work delivering stone from the quarry behind 'Blind Lady's Hill' to the masons on the bridge site. You know how Mohawks love to build things. So when the men from town were watching the bridge get built, some of the younger guys just climbed right up to take a closer look at how it was done. The Frenchmen they had working there was so scared that they had to hold onto everything they could so they wouldn't fall off. That engineer wasn't getting anything done with so many scared Frenchmen working for him; of course, the guys from town wasn't scared. They just walked along the supports looking the job over, and checking out how the job was done. The engineer saw this and wanted to hire the Indians, but there was a problem cuz most of the men only talked Indian. So he hired a whole crew of the guys from town, with a foreman who could talk English and French and Indian. This is how we got into the construction trade.³⁵²

Blanchard only quotes this single testimony to support the idea that Caughnawaga men worked on the Victoria Bridge and uses no other sources. He does not describe the circumstances in which Tom Biabo (Diabo) shared this recollection, nor does he say who interviewed Tom Biabo (Diabo) and when.

Blanchard refers to Edward Devine's *Historic Caughnawaga* (1922) that landscape architect Heather Braiden also quotes in a much more recent article as her unique source about the work of the Caughnawaga in the construction of the Victoria Bridge.³⁵³ Devine mentions the work of the Caughnawaga on the bridge in one sentence, from which Braiden concludes that Indigenous workers were excluded from Hodges's book and the construction story. It is true that apart from Hodges's exoticized representations of Indigenous workers, their stories remain largely unknown. But that is the case for all the Victoria Bridge workers. Without

³⁵² David Blanchard, 'High Steel! The Kahnawake Mohawk and the high construction trade', *The Journal of Ethnic Studies*, Summer 1983, 41-60, 43-4.

³⁵³ Braiden, "'Far from Uninteresting'", 194-216.

quoting sources, historian Edward Devine writes that “[t]heir brawn and muscle were eagerly sought by the builders of the Victoria bridge, where hundreds of them were developing those qualities of skill and reckless daring which, in after years, they were to display in works of all kinds requiring the use of structural steel.”³⁵⁴

Devine’s sentence is ambiguous: he does not explicitly state that the Caughnawaga worked on the structure of the bridge – they certainly sailed on the dangerous rapids of the St Lawrence River and were renowned pilots, no doubt sought by employers. The first part of the sentence establishes that the Caughnawaga worked on the Victoria Bridge, while the second states that after that they were employed in works that required the use of steel. The logical connection between the two parts of the sentence is unclear, especially since the Victoria Bridge was not made of steel, and steel was used in construction much later, at the end of the 1860s.

The testimony quoted by Blanchard and these three scholars’ position might not be accurate. Indeed, Hodges did not waste any opportunity to describe those he called Indians, and even included a drawing of ‘Indian Chiefs’ in his book. At the beginning of his book, while he described how he went looking for quarries prior to the construction of the bridge, he spent two pages describing his visit to the Caughnawaga who owned the land where he wanted to inspect a quarry. His fascination and even excitement about this meeting is very clear: he recalled how difficult it was to have an appointment with the chiefs and how disappointed he was when he met them, as he expected them to be ‘with paint and feathers’ and to ‘offer him the “calumet of peace”’, just like in ‘Cooper’s novels’, which suggests that Hodges’s exoticized representation of Indigenous people was based on novels.³⁵⁵ In the end, the stone quarries were opened at Pointe Claire.³⁵⁶

³⁵⁴ Devine, *Historic Caughnawaga*, 402.

³⁵⁵ Hodges, *Construction of the Great Victoria Bridge*, 9-10.

³⁵⁶ I would like to thank Gilles Lauzon, who is of the same opinion, for pointing out this passage in Hodges’s text and for his analysis of the issue.

When Hodges recounted the raft accident of 1859, he described an old Indigenous crewmember in the water – the look of his scalp, the way he clutched his handkerchief with the remains of his dinner – and apart from adding an exotic touch to his narrative, this description was unnecessary to the understanding of the accident.³⁵⁷ It is hard to believe that he would have omitted to describe young Indigenous men swiftly climbing up the scaffolding just out of curiosity, and their being so impressive and talented that a whole group of them were hired. Furthermore, as seen above, French Canadians were depicted with some contempt as small, weak and useless men, and it is surprising that no employer should mention it if they had been replaced by Indigenous workers because they were scared of heights.

I wonder if there was perhaps a confusion in the testimony cited by Blanchard with other bridges whose structures the Caughnawaga built. Historian Allan Downey for instance, who states that the men from the Kanien'keha:ka (Mohawk) nation entered the high-steel industry at the beginning of the 1880s, describes the construction of the Canadian Pacific steel bridge linking the south shore mainland to the island of Montreal.³⁵⁸ This bridge, which Blanchard also refers to later in his article, shares some common features with the historical background of the Victoria Bridge. The stone quarry for the Canadian Pacific bridge was on the Kahnawake reserve, just like the first quarry Hodges visited, and so was the quarry cited by Tom Babio (Dabio).³⁵⁹ About the bridge his grandfather worked on, Tom Babio (Dabio) adds 'not the one there now, the old one'. The Canadian Pacific and the Victoria bridges were in Montreal, only separated by some twenty kilometres, and both of them had their structures rebuilt a few years after the construction, in 1897-1898 for the Victoria Bridge and in 1910-1913 for the Canadian

³⁵⁷ Hodges, *Construction of the Great Victoria Bridge*, 62.

³⁵⁸ Allan Downey, 'Indigenous Brooklyn: Ironworking, Little Caughnawaga, and Kanien'keha:ka Nationhood in the Twentieth Century', *American Quarterly*, Vol. 75, No. 1, March 2023, 27-50, 28, 29.

³⁵⁹ Downey, 'Indigenous Brooklyn: Ironworking, Little Caughnawaga, and Kanien'keha:ka Nationhood in the Twentieth Century', 30.

Pacific Saint Laurent Railway Bridge. The railway boom of that period resulted in the construction of a number of railway bridges which could have led to a confusion.

The debate over the nature of the work of the Indigenous workers shows how scarce the sources are about the Victoria Bridge workmen and construction workers in general. Even the study of ethnicities shows that from the available sources, workers are better understood as groups of people rather than individuals, and the analysis of individual trajectories and personal histories is challenging. One of the main problems is the workers' mobility which makes it difficult to follow individuals, although historian David Brooke does in his ground-breaking study of railway navvies in Britain based on a rigorous analysis of census returns.³⁶⁰ Census returns are difficult to use in the Victoria Bridge case because the bridge was built from 1854 to 1859, that is between the 1851 and 1861 censuses.

The circulation of civil engineers from the Conway Bridge to the Britannia and the Victoria Bridges, their engineering similarities and the fact that British workers were recruited in Britain suggest that some British Victoria Bridge workers might have previously worked on the Conway or Britannia Bridge. A comparison between the lists of staff provided by Hodges for the Victoria Bridge and by Edwin Clark, resident engineer for the Conway and Britannia Bridges, shows no results.³⁶¹

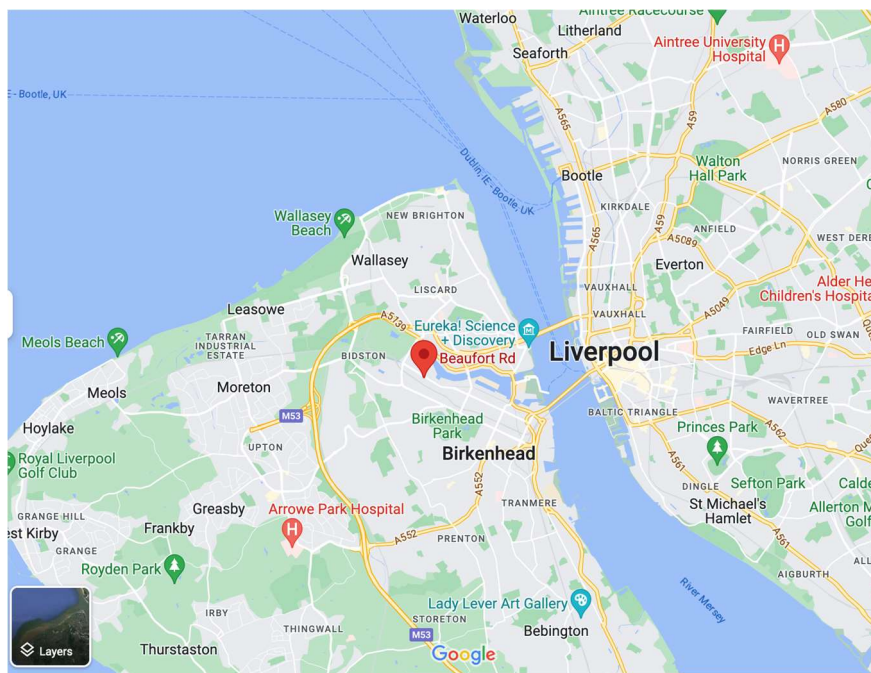
Clark's lists evidence that at least three foremen and one inspector of ironwork worked on the Conway and Britannia bridges: John McLaren (inspector of ironwork on the Conway Bridge and superintendent on work on the Britannia Bridge), Henry Muirhead (foreman on the Conway Bridge and general foreman of works on the Britannia), George Whitting (foreman on the Conway Bridge and foreman of sailors on the Britannia) and Luke Roberts (foreman on the Conway Bridge and foreman of sailors on the Britannia) all worked on the construction and

³⁶⁰ Brooke, *The Railway Navy*.

³⁶¹ Hodges, *Construction of the Great Victoria Bridge*, 103-4, Clark, *The Britannia and Conway Tubular Bridges*, Vol. II, 815.

erection of tubes department of the Britannia Bridge, and because the construction and use of these wrought-iron tubes was new, it is possible that they went to work to the Canada Works in Birkenhead.³⁶²

Indeed, the plates and ironwork of the tubes of the Victoria Bridge were made in Birkenhead, England. In 1853, Peto, Brassey and Betts created a factory there, the Canada Works, for this purpose.³⁶³ Brassey, who had long worked and lived in Birkenhead, chose the place where he knew he could find good and experienced workers.³⁶⁴ Furthermore, the river Mersey made it easier to ship goods out to Canada (Map 6).³⁶⁵ The factory, named Canada Works after Brassey's biggest contract, was under the responsibility of Brassey's brother-in-law George Harrison.



Map 6 Birkenhead

Canada Works, Birkenhead, was conveniently situated near Liverpool but most importantly the River Mersey, from which goods could easily be sent out to Canada. Modern map from Google Maps (October 2023).

³⁶² Hodges, *Construction of the Great Victoria Bridge*, 44 and Triggs, 'Le Pont / The Bridge', 62

³⁶³ Triggs, 'Le Pont / The Bridge', 62

³⁶⁴ Millar, *William Heap and his Company*, 1866, 44

³⁶⁵ Millar, *William Heap and his Company*, 1866, 44

Built between 4 June 1853 and October 1853, it was a modern factory meant to be ‘an absolute model of what an engineering works of that era should be’: it was lit by gas light at night, while windows and rooflights provided illumination during the day.³⁶⁶ Canada Works included iron and brass foundries, blacksmiths shops, copper smiths, machine shops, a fabrication shop, woodwork and pattern shop, engine house, stores, a drawing office, and the latest machines from the US sent for by Brassey, namely morticing and planing machines. There were a number of other machines, among which two rivet making machines, two automatic riveting machines whose power was provided by a steam engine, and a Robert Jacquard press. Canada Works was even equipped with a test and inspection department where parts and materials such as plates, bars and rods were tested for tensile strength, impact and compression.³⁶⁷ The factory also made locomotives, such as the ‘Lady Elgin’ (1854) for the Grand Trunk, and provided equipment for other railway contracts, such as Peto, Betts and Brassey’s contract in Crimea during the war (1854-1855) or India.³⁶⁸

It is possible that some Conway and Britannia Bridges workers were recruited there. I collaborated with historian Julie Stone, from the Menai Heritage, who has been studying the Conway and Britannia Bridges. Julie Stone points out that William Evans (1819-1858), who won the contract for the masonry and ironwork of the Conway Bridge, became manager of the Bridge Department at the Canada Works in 1855 until 1856, thus establishing a solid link between the Chester and Holyhead Railway workforce and Canada Works.³⁶⁹ Some further investigation should be made between the Conway and Britannia Bridge workforces and Canada Works. Canada Works is a subject on its own which this dissertation unfortunately cannot study.

³⁶⁶ Millar, *William Heap and his Company*, 1866, 46.

³⁶⁷ Millar, *William Heap and his Company*, 1866, 48.

³⁶⁸ Millar, *William Heap and his Company*, 1866, 48, 60, 67, 68.

³⁶⁹ Julie Stone, private email to author dated 23 Jul. 2018, based on Grace’s Guide [https://www.gracesguide.co.uk/William_Evans_\(of_Cambridge\)](https://www.gracesguide.co.uk/William_Evans_(of_Cambridge)) (accessed 24 Sept. 2023) and Millar, *William Heap and his Company*, 1866, 22.

From newspaper articles that sometimes mentioned the names of Victoria Bridge workers in the case of accidents, I gathered a list of fifteen names (Appendix 3). With Jane Greenlaw's study of tax assessment rolls, we have a list of 308 potential Victoria Bridge workers' names (see Appendices 2 and 3). Julie Stone provided me with a list of twenty-eight Britannia Bridge workers whom she found in family notices of local newspapers in Wales. In order to see if some Conway and Britannia Bridges crossed the Atlantic to work on the Victoria Bridge, we shared and compared our lists of workers but to no avail. I cross-referenced these three lists of names without success, apart from a possible and dubious match (see Appendix 3). There is therefore no evidence that the Conway and Britannia Bridges workers went to Montreal. An interesting possibility might be to study the passenger lists of ships arriving in Montreal.

Greenlaw's list starts in 1856. In order to try and see whether these people were in Montreal prior to 1856, I looked for Greenlaw's names in Lovell's Montreal Directory (see Appendix 2). It appears that the workers who were already in Montreal in 1853 were labourers and lived in different parts of the city, which suggests that they might be local workers. It is not surprising because the British contractors mainly hired skilled workers from Britain, but it suggests that Greenlaw's list does not comprise only British workers' names. Triggs seems to consider that the inhabitants of the sheds listed in the study of the tax assessment rolls were construction workers and workers employed in the Grand Trunk shops.³⁷⁰ From the occupations of the workers, it is almost certain that a high number of them were employed in the shops: some of them were boilermakers, switchmen, engine drivers, and so on (Appendix 2). However, it is surprising that the occupations of the skilled workers recruited in Britain, such as rivetters (there is only one on the list) or mechanics are not listed. Furthermore, the list starts in 1856, when the section from Montreal to Toronto was completed, and it is possible that a number of

³⁷⁰ Triggs, 'Le Pont / The Bridge', 52.

the listed workers arrived in Point St. Charles to work on the Grand Trunk as maintenance workers, or workers in the Grand Trunk shops, which would explain why a number of them kept living in the Emigrant sheds after 1859 (Appendix 2). There are probably construction workers on the list, especially among the carpenters and stone masons, but we do not know whether construction workers represented a high proportion of Greenlaw's list, and although there might have been British workers among them, it is difficult to assert that the list comprised the names of the workmen recruited in Britain.

In an attempt to retrace individual trajectories, I chose to try and follow William McNab who testified after the death of three workers in July 1859.³⁷¹ William McNab, whose date and place of birth are unknown, was a carpenter whose name appears for the first time in Lovell's Directory in 1856. In 1856-1857 and 1857-1858, he lived on Seigneurs Street.³⁷² He moved to 32 Emigrant Sheds in 1858, where he also lived in 1859. This corresponds to Greenlaw's list, where he appeared to have lived in shed no. 3 in 1858 and shed no. 7 in 1859. His name then disappears from Greenlaw's list and Lovell's Directory, which I checked until 1865. It is therefore probable that William McNab arrived in Montreal in 1856 to work on the Victoria Bridge and left Montreal after the construction. I looked him up in Canadian censuses (East and West Canada), as well as in the census returns of England, Scotland and Wales, but his trace disappears after 1859. I did not have the time and space to do this for the few hundreds names we have, but it would be an interesting project to try and know more about the Victoria Bridge workers' identities and personal histories, and the development of a number of genealogy databases available online should make it possible and easier.

This section evidenced the difficulty to know more about the workers, and especially about individual trajectories. At the same time, this analysis of the workforce showed that the Victoria Bridge worksite adapted in a way to industrial capitalism, in the sense that the workers

³⁷¹ *Montreal Herald and Daily Commercial Gazette*, 21 July 1859. See chapter 5.

³⁷² Lovell's *Montreal Directory*, 1856-1857, 1857-1858.

were hired and dismissed depending on the immediate needs of the works while a number of the workers themselves were familiar with industrial capitalist work which, to some extent, they complied with. However, the complaints about the French Canadian workers and a closer study of labour relations on the worksite suggest that some pre-industrial forms of labour relations persisted, while industrial capitalist labour relations emerged, which made the worksite a transition between two systems.

III- Transitional labour relations

Hodges started the conclusion of his book with a summarised list of the difficulties encountered during the construction, and among them was ‘the difficulty of obtaining, and (...) the still greater difficulty of controlling, labour’.³⁷³ This sentence expressed two fundamental characteristics of labour relations on the Victoria Bridge site: the shortage of labour and the issue of discipline. As explained before, the contractors had to recruit workers from Britain because of the labour shortage in Canada. Hodges complained during the first working season that agents from other worksites offered better wages to the workers, and half of them left.³⁷⁴ He thus described in 1854 a general pressing demand for labour in Canada, which A. C. Buchanan, the Chief Emigration Officer for the Canadas, characterised as ‘unprecedented’, with ‘unusually high’ wages paid to labourers.³⁷⁵

As seen above, Pentland’s definition of a capitalistic market suggests that employers are confident that workers will be available whenever they want them, which was not the case in 1854, marked by a shortage in skilled labour despite heavy immigration.³⁷⁶ The labour relations

³⁷³ Hodges, *Construction of the Great Victoria Bridge*, 72.

³⁷⁴ Hodges, *Construction of the Great Victoria Bridge*, 26.

³⁷⁵ *Colonial Land and Emigration Commission, Fifteenth General Report of the Colonial Land and Emigration Commissioners*, 1855, 45; Appleton, *The Sunshine and the Shade*, 77-8.

³⁷⁶ Pentland, ‘The Development of a Capitalistic Labour Market in Canada’, 450; Appleton, *The Sunshine and the Shade*, 56.

and the balance of power between employers and employees on the Victoria Bridge worksite at the beginning of the construction were thus defined by this general context of labour shortage and competition which prevented the possibility of a free labour market.³⁷⁷ In other words, workers knew that they could leave for better wages when employers needed them, and employers were forced to do something about it. As a consequence of a short labour supply, Pentland explains, pre-capitalist labour relations were characterised by the need for employers to ‘act positively to recruit and retain an appropriate labour force’, notably by recruiting in Europe and adopting measures ‘to hold the labourer when he was caught’.³⁷⁸ Pentland considers these measures the ‘essence of the system’, which consisted in offering continuous or regular employment, even in periods when the employers could not use the workmen.³⁷⁹

Recruiting and retaining an appropriate labour force was precisely the problem Hodges identified in the introduction of this section. The Victoria Bridge employers guaranteed five years’ employment to reliable workers recruited in Britain and,³⁸⁰ although Hodges did not keep the men idle in winter, he made sure ‘to keep the best men together’ by giving them work in winter, even in times when financial difficulties stopped all the other activities.³⁸¹ He could have dismissed them, but he chose to keep them busy to make sure they would stay. These were some of the measures the Victoria Bridge employers established to keep the workers and react to the labour shortage and competition from other employers.

A number of Peto’s and Brassey’s workers followed them from a project to another, sometimes for several years, which tends to suggest that there was some reciprocal advantages in the relations between the employers and the employees.³⁸² Brassey’s son recalled how his

³⁷⁷ Pentland, *Labour and Capital in Canada 1650-1860*, 24. Pentland shows that when labour supply is not abundant enough, especially of most kinds of skilled workers, a free labour market is not possible.

³⁷⁸ Pentland, *Labour and Capital in Canada 1650-1860*, 24-25.

³⁷⁹ Pentland, *Labour and Capital in Canada 1650-1860*, 25.

³⁸⁰ Currie, *The Grand Trunk Railway of Canada*, 29

³⁸¹ Hodges, *Construction of the Great Victoria Bridge*, 30. This happened in winter 1854-1855.

³⁸² Brassey, *Work and Wages*, 274-5 and Peto, *Sir Morton Peto*, 37

father recognised many of the old navvies, addressed them by their first names, shook hands with old gangers and sub-contractors, and he concluded '[a] small manifestation of kindness like this, how little it costs; how much it is valued!'³⁸³ Brassey son thus described how the employer Brassey established what Pentland would characterise as a feudal 'system of status, hierarchies, symbols, privileges, and loyalties'.³⁸⁴ In addition, Triggs notes that Hodges contracted William Notman in 1858 to photograph the construction of the bridge to encourage the workers, and this initiative can be seen as a showcase of the workers and therefore as a reward and personal incentive.³⁸⁵

Indeed, Notman's photographs did not merely document the different steps of the construction of the bridge, their aesthetics enhanced the beauty of the construction work and represented the workers as people, as shown by the three following examples.

³⁸³ Brassey, *Work and Wages*, 274-5

³⁸⁴ Pentland, 'The Development of a Capitalistic Labour Market in Canada', 454

³⁸⁵ Triggs, 'Le Pont / The Bridge', 64



Fig. 9 *Untitled*, Notman, n.d., McCord Museum, Box 'William Notman the founder', N-0000.392.2.28
Pickaxes left in a wooden structure, maybe a dam, with boulders that might need to be removed.

Some photographs, such as Fig. 9, do not document the progression of the works. This photograph looks like a frozen picture of labour itself. It probably represents break time, as the men have deserted the picture and only pickaxes are represented. But the number of the pickaxes represents the number of workers whom we can imagine from the position of the tools in the wood. The way the pickaxes are left stuck in the beam evokes the movement of the pickaxes at a time when photographs could not capture movement. Furthermore, the pickaxes are parallel and each of them takes up a third of the photograph and of the beam they are stuck into, with a final vacant place which also represents a third of the picture. This regularity suggests the regularity of the workers' gestures. The beam in the foreground and the beam the pickaxes are driven into both seem to be on the foreground, thus giving the illusion that the

pickaxes are supporting the top beam. From this perspective, the workers and their labour, symbolised by their tools, seem to be supporting the construction of the bridge.



Fig. 10 *Untitled*, Notman, n. d., McCord Museum, Box 'William Notman the founder', N-0000.392.2.24

Gang of rivetters with their T-shaped tools. On the right, three men and maybe a boy are standing near a furnace used to heat the rivets.

But some photographs represented the workers themselves. In one of those pictures (Fig. 10), a gang of rivetters are posing with their tools, while they are laying the bottom of the tube. They look straight at the camera, and all the lines of the picture, including the x-shaped beams in the background all converge towards the men, who are indeed the real subject of the picture. Although the men are posing, it is very likely that they have interrupted their work for the photograph and that this is not a staged scene. In that sense, the photograph captures a moment of work in progress: the men on the right probably use the furnace to prepare and heat the rivets, which they give to the rivetters, while the man on the left with his crossed arms might be the

foreman.³⁸⁶ Behind the group of rivetters, the tube is being constructed from the other shore of the river, and two piers in between are still bare, thus suggesting that the erection of the tube is in progress and not yet complete. In this picture, the men are identifiable: we can see their faces, their beards, their moustaches, their clothes, etc. They are not merely represented as a group of workmen but also as individuals.



Fig. 11 View of down stream side of No. 12 Tube from No. 11 Pier, showing displacement of Longitudinal and Packing, November 9th, 1859, 9 Nov. 1859, Notman, LAC, PA187234

On 9th November 1859, a scow went out of control and, taken by the current, crashed into No.12 staging. The workers are standing on a wooden staging used to erect the tubes, and are fixing the damages.

Similarly, in a photograph depicting the men at work on the tube in November 1859 (Fig. 11), some of the workers look at the camera and their faces are almost identifiable. Hodges described the accident of a scow on 9th November 1859 which swung round and, floating in the full strength of the current, threatened to destroy no.12 staging, which would have caused the two-thirds finished tube to fall into the river.³⁸⁷ So near the end of the construction, with the tube

³⁸⁶ See as well Triggs, 'Le Pont / The Bridge', 46.

³⁸⁷ Hodges, *Construction of the Great Victoria Bridge*, 70.

almost finished, this accident could have been a catastrophe. Interestingly, on that same day, Notman chose to photograph the men busy fixing the damages on that part of the tube, thus focusing on the workers and their efficiency. These three examples support Triggs's point that Notman's photographs were commissioned to encourage the workers. Although it might not have been the sole purpose of the photographs, they did represent the efficiency of the Victoria Bridge workmen, their labour, but also the workers as individuals, and were therefore part of a system of incentives put in place by the employers.

Similarly, the ceremonies and festivities organised by the Victoria Bridge employers, such as the celebration of the setting of the first stone of pier 11 – the last to be built – in August 1859³⁸⁸ or the ceremony of the setting of the stone in remembrance of the emigrants who died from ship fever, were also part of a system of incentives based on rewards, favours and festivities characteristic of personal labour relations.³⁸⁹

However, the association of such labour relations with the feudal system described by Pentland should be qualified, especially to characterise the Victoria Bridge employers' paternalism. Historian Gérard Noiriel argues that the late-nineteenth-century definition of paternalism, which identified employers with feudal lords who dominated their employees, is not accurate to describe nineteenth-century labour relations.³⁹⁰ To industrial paternalism, characterised by a 'brutal development of patronal authoritarianism' and a total control of the workers' lives, he opposes what he calls 'patronage' after a term coined by engineer and social philosopher Frédéric Le Play (1806-1882).³⁹¹ Noiriel shows that in the nineteenth century,

³⁸⁸ The directors of the Grand Trunk invited a number of people who dined in a caisson, *L'Echo du Cabinet de lecture paroissial de Montréal*, Sept. 1859.

³⁸⁹ Pentland, *Labour and Capital in Canada 1650-1860*, 25.

³⁹⁰ Gérard Noiriel, 'Du "patronage" au "paternalism": la restructuration des forms de domination de la main-d'oeuvre ouvrière dans l'industrie métallurgique française', *Le Mouvement social*, Jul.-Sept. 1988, No. 144, *Paternalismes d'Hier et d'Aujourd'hui*, 14-35, 18.

³⁹¹ Noiriel, 'Du "patronage" au "paternalism"', 30, 18. About patronage and Frédéric Le Play, see as well Donald Reid, 'Industrial Paternalism: Discourse and Practice in Nineteenth-Century French Mining and Metallurgy', *Comparative Studies in Society and History*, Oct. 1985, Vol.27, no. 4, 579-607, 589. As Noiriel recalls, 'industrial paternalism' was coined by Donald Reid, 'Industrial Paternalism: Discourse and Practice in Nineteenth-Century French Mining and Metallurgy'.

employees accepted the employer's actions as natural and legitimate because the power of the employer relied on traditional forms of domination that were particularly characteristic of rural societies.³⁹² Workers, Noiriél recalls, were very much connected to rural forms of work, and although this was particularly accurate for France, it should be underlined that a number of Victoria Bridge workers, probably Canadian, threatened to leave the worksite in summer 1854 because of the harvests, suggesting that a number of them still maintained a connection with rurality.³⁹³

Furthermore, and this is particularly relevant in the case of the Victoria Bridge at the beginning of the construction, patronage reflected a balance of power between working classes and employers who, because of the shortage of skilled labour, could not impose too harshly their conditions to the workforce.³⁹⁴ Skilled workers, on the other hand, weaponised their own value in this context of labour shortage.

For these reasons, the Victoria Bridge labour relations could be defined as patronage. Indeed, Hodges underlined that he provided the workers and their families with a chapel, a schoolroom, a library and housing.³⁹⁵ Chapter 5 explores more deeply these measures in relation to the welfare of the workers, but it is clear that they contributed to the balance of power described by Noiriél in a context of labour shortage. Furthermore, the different forms of conflict and labour protests on the Victoria Bridge worksite in 1854 show that the workers were particularly aware of their own value and the leverage it gave them, and suggest that the workers simultaneously resisted forms of emergent industrial capitalism, and understood how it worked.

There were different sorts of strikes. Some strikes occurred after agents from other worksites tried to tempt the Victoria Bridge workers with very high wages. Those who stayed on the Victoria Bridge were 'ready to strike, unless their demand for an increased rate of wages

³⁹² Noiriél, 'Du "patronage" au "paternalism"', 18.

³⁹³ Hodges, *Construction of the Great Victoria Bridge*, 26-7.

³⁹⁴ Noiriél, 'Du "patronage" au "paternalism"', 21-2.

³⁹⁵ Hodges, *Construction of the Great Victoria Bridge*, 77-8.

was immediately complied with.³⁹⁶ In this instance, and although Hodges did not say whether employers complied in the end, the workers threatened to strike, which shows that they knew the labour shortage was in their favour and that strikes were efficient means to support their claims.

Hodges also complained about the British workers who were ‘exceedingly troublesome this year’ and struck ‘in a fortnight from the time they got to work’.³⁹⁷ He wrote that during that year, they ‘never worked more than four days in the week; and although bound by an agreement made in England, it was found better to forego the amounts advanced to them and let them leave, than to endeavour to restrain them by force of law against their inclinations.’³⁹⁸ From Hodges’s text, the claims of the British workers are not very clear, but because they reportedly refused to work more than four days a week, it would seem that their strike was about working hours. It is also possible that they merely wanted to be let go of their contracts to be able to work on other worksites with more advantageous conditions or wages. The fact that they forced the employers, who had paid for their passages, to break the contracts was significant and made it clear that in 1854, the balance of power was in their favour.

The British workers were not the only ones who went on strike, which suggests that they did not necessarily export forms of protest to the worksite. Indeed, Hodges lamented that strikes happened on a regular basis in Canada:

it is almost a custom in Canada for mechanics and labourers to strike twice a year, let the rate of wages be what it may. The first period of general strike is in the spring, when increased activity in every business is occasioned by the arrival of the spring fleet. The second is at the commencement of harvest, when there is abundant demand for labour. These strikes, though lasting a short time only at each period, produced disorganisation in the work, and the loss of many of our best workmen (...)³⁹⁹

³⁹⁶ Hodges, *Construction of the Great Victoria Bridge*, 26.

³⁹⁷ Hodges, *Construction of the Great Victoria Bridge*, 26.

³⁹⁸ Hodges, *Construction of the Great Victoria Bridge*, 26.

³⁹⁹ Hodges, *Construction of the Great Victoria Bridge*, 26-7.

Hodges described seasonal strikes which he identified as a ‘custom’ in Canada, thus suggesting that the strikes occurred on the whole territory. Although Hodges made it clear that most strikes were about wages, he did not give a precise account of the wages of the Victoria Bridge workers. Sources do not exactly give the same figures (see Appendix 4), and it is difficult to know how much the workers earned depending on the time of year, but we know that French Canadian labourers earned less money (3s. 6d. a day)⁴⁰⁰ than their British counterparts (4s. 3d. to 5s. a day), which perhaps fuelled discontent.⁴⁰¹

Hodges’s text clearly described a movement of general labour unrest in Canada. Appleton shows that in the United States and in Canada, ‘unions sometimes struck at two times in the year, once in spring to gain the wage increase, and again in the fall in an effort to maintain the advance’.⁴⁰² There is no evidence of unions on the Victoria Bridge worksite, but Appleton’s point suggests that wages varied according to seasons and their corresponding needs of employment, and that workers in Canada struck to defend themselves against the constraints of wage employment.

Palmer also points out that 46 per cent of the conflicts prior to 1860 occurred in April, May, and June, 22.7 per cent of strikes in January, February, and March, and in 88 strikes out of 132, the workers tried to push wages.⁴⁰³ Over the period between 1815 and 1859, his study evidences a sharp increase in the number of strikes between 1851 and 1855 as 47 per cent of them occurred then, and the great majority occurred in Toronto, Montreal, Quebec City and Hamilton. The construction of the Victoria Bridge (1853-1859) clearly occurred at a time of labour protest.

⁴⁰⁰ Brassey, *Work and Wages*, 87.

⁴⁰¹ Helps, *Life and Labours of Thomas Brassey*, 200. A comparison between the different railways built by Brassey in the UK, Europe and around the world suggests that the wages of the British labourers were the highest in Australia (1863) and then in Canada, see Helps, *Life and Labours of Thomas Brassey*, Appendix C, 197-201 (see Appendix 4).

⁴⁰² Appleton, *The Sunshine and the Shade*, 136.

⁴⁰³ Palmer, ‘Labour Protest and Organization in Nineteenth-Century Canada, 1820-1890’, 67, 68.

Between 1815 and 1859, the strikers were almost equally skilled (53 per cent) and unskilled (47 per cent), and were dominated by railway labourers (16.6 per cent), closely followed by canal labourers (15.1 per cent of the strikers).⁴⁰⁴ Appleton's and Palmer's studies show that the Victoria Bridge workers participated in a more general context of labour unrest in the metropolitan centres of Canada. Hodges stopped mentioning strikes after 1854, probably because their number and occurrence dropped. Indeed, from 1855, and more particularly between 1857 and 1859, employment decreased and so did the number of strikes.⁴⁰⁵ But as Appleton reminds us that newspapers tended to focus on 'unruly navvies' and that skilled men employed on railways pursued their own interests in a less riotous fashion, it is also necessary to consider the fact that strikes were not the only forms of protest on the Victoria Bridge worksite.⁴⁰⁶

Indeed, Barkans emphasises that strikes were not the only response to the rise of industrial capitalism and that conflict emerged from the new work discipline, 'demanding strict adherence to time schedules and submission to the lines of authority' that industrialists tried to impose on the workers.⁴⁰⁷ E. P. Thompson shows that the employers during the Industrial Revolution were 'obsessed with (...) problems of discipline', and that from their point of view, the 'outworkers required (...) education in "methodical" habits, punctilious attention to instructions, fulfilment of contracts to time, and in the sinfulness of embezzling materials.'⁴⁰⁸ In that sense, Hodges's conclusion about British workers, who '[o]nce brought into proper discipline, they worked as British workmen alone can work' takes on its full meaning. The provisions taken by the Victoria Bridge employers to provide religious education and housing

⁴⁰⁴ Palmer, 'Labour Protest and Organization in Nineteenth-Century Canada, 1820-1890', 69.

⁴⁰⁵ Palmer, 'Labour Protest and Organization in Nineteenth-Century Canada, 1820-1890', 67; Appleton, *The Sunshine and the Shade*, 90-6.

⁴⁰⁶ Appleton, *The Sunshine and the Shade*, 60.

⁴⁰⁷ Barkans, *Labour, Capital and the State*, 150-1.

⁴⁰⁸ Thompson, *The Making of the English Working Class*, 156-7.

to the workers and encourage their loyalty were thus part of the employers' efforts to bring the workers into discipline, that is to force them into industrial labour.

In that sense, when Peto told the Select Committee (1846) that he prohibited alcohol on the Ely and Peterborough district because 'the parent of all accidents is drunkenness, and I think it is better to prohibit it altogether, excepting what the men bring themselves, or their wives bring with their meals',⁴⁰⁹ he was also trying to impose discipline on the workers. Indeed, Thompson argues that railway bosses tried to curb workers' drinking and smoking habits to mould them into good Christians, and consequently, or hopefully, into obedient and responsible employees.⁴¹⁰ These efforts suggest that the labour relations on the Victoria Bridge worksite also intended, on the part of the employers, to shape the workers into good industrial workmen which, arguably, they were not at the beginning of the construction.

It is difficult to locate forms of resistance to this new discipline other than more spectacular manifestations like strikes, but the so-called inefficiency of the French Canadian workers can be seen as a refusal to work more for higher wages. Indeed, Brassey's son, after comparing the wages of French Canadian and British labourers, underlined that 'the English did the greatest amount of work for the money' while Barkans and Pentland show that French Canadians were little interested in wage employment, 'except on a short-term, local, basis'.⁴¹¹ The inefficiency of French Canadian workers might thus be due to the fact that, compared with Irish and British workers, they were not familiar with industrial capitalist work and its constraints, and perhaps did not want to do the greatest amount of work for money. Bensimon explains that the question of the higher productivity of British workers is a difficult one and examines the works on the Paris-Rouen-Le Havre railway to understand why British workers

⁴⁰⁹ Peto, Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index, §1286.

⁴¹⁰ Thompson, *The Making of the English Working Class*, 156-7.

⁴¹¹ Pentland, 'The Development of a Capitalistic Labour Market in Canada', 458 and Barkans, *Labour, Capital and the State*, 103.

were better paid than Frenchmen.⁴¹² Instead of focusing only on skilled workers, he demonstrates that British workers were also better paid for less skilled jobs, such as navvying, which notably consisted in excavating, because they had developed ‘a work culture (...) with teams of workers who knew how to operate effectively with the right techniques’.⁴¹³ In addition, based on the testimonies of Brassey and Joseph Locke, the engineer who conducted the works on the Paris-Rouen-Le Havre line, he shows that in contrast with the French workers who used wooden shovels, small barrows, and inferior pickaxes, the British navvies were equipped with better tools, such as metal spades and full size wheelbarrows.⁴¹⁴

This section showed that the labour relations on the Victoria Bridge worksite were based on the continuity of traditional relations between employers and employees, and at the same time reflected the adaptation of both workers and employers to the growing influence of industrial capitalism. Employers tried to bring the workers into discipline, that is to shape them into good industrial workers. The increased number of strikes in 1854 was not an ephemeral consequence of the labour shortage, and Appleton analyses this labour unrest as a clear sign that ‘Canada was swiftly moving into a new era geared to the industrial revolution’.⁴¹⁵ In that sense, the strikes on the Victoria Bridge worksite contributed to a more general change in labour relations in Canada.

Conclusion

This chapter has argued that the construction of the Victoria Bridge reflected broader changes that were taking place in Canada in the 1850s. First of all, the Victoria Bridge epitomised the experience acquired in the 1840s by British civil engineers, contractors and

⁴¹² Bensimon, *Artisans Abroad*, 50.

⁴¹³ Bensimon, *Artisans Abroad*, 50.

⁴¹⁴ Bensimon, *Artisans Abroad*, 50-1, 92.

⁴¹⁵ Appleton, *The Sunshine and the Shade*, 139.

workers during the railway boom in Britain and should be understood in relation to the growing influence of civil engineering in British colonies. The bridge thus represented a circulation of knowledge best described by a Canadian engineer's homage to Hodges: 'We young Canadian engineers owe him a debt which nothing can cancel, one which will be transmitted to our children and children's children',⁴¹⁶ which typically epitomised the connection between technology and imperialism.⁴¹⁷

This circulation of knowledge was also accompanied by a circulation of men – civil engineers, contractors but also workers. This chapter evidenced the difficulties of studying workers as individuals because of the scarcity of the sources and tried to explore possibilities that could lead to a partial analysis of individual trajectories. However, the workers as groups of people are easier to identify, and this chapter evidenced that they played a part in the transition from pre-industrial to industrial work and labour relations. Some of them appeared to have embraced the idea of wage employment and produced the greatest amount of work for more money, while others were not so experienced and perhaps not so keen. At the same time, the forms of labour protest that occurred in 1854 on the worksite showed that the workers understood wage labour and the leverage labour shortage gave them. In other words, they were well aware of their own value in this context, and knew how to use it to push wages. The 1854 strikes were also the Victoria Bridge workers' participation in a more general movement of labour unrest that took place in Canada.

This chapter was also an attempt to study labour relations without focusing only on forms of labour protests, especially strikes. It showed that, mainly due to the shortage of skilled labour, the relations between employers and employees were based on the persistence of traditional forms of employers' domination and at the same time reflected the growing

⁴¹⁶ Legge, *A Glance at the Victoria Bridge*, 187.

⁴¹⁷ Buchanan, 'The Diaspora of English Engineering', 502.

importance of industrial labour relations. Indeed, employers tried to impose a new discipline on the workers, in an effort typical of industrial employers to shape the workers into industrial workmen. The employers' concern about the workers' wellbeing was thus part of a strategy of management of the workers which the following chapters, in an attempt to study the workers' health and relation to risk, will examine more closely.

Chapter 3. Risks and accidents

‘To every human undertaking there seems of necessity to be a dark side. So it was with the bridge, that marvel of human thought and skill, so perfect in all its detail, and so rounded off in its completeness.’⁴¹⁸ This sentence introduced the detailed account of the death toll on the Brooklyn Bridge worksite (1869-1883), where it was claimed that twenty workers died in thirteen years of construction.⁴¹⁹ The word ‘necessity’ suggests that accidents and death were seen as an essential and unavoidable part of any construction site, as if this fatalism that connected human enterprise and death was commonly accepted. The Victoria Bridge, too, was celebrated as a unique human undertaking – but what was its ‘dark side’ like? The issue of *The Brooklyn Daily Eagle*, published on the very day of the opening of the Brooklyn Bridge, extensively read about the history and the construction of the bridge, but also about its death toll, under the title ‘Dead in the Harness’. There is no similar list of fatal injuries for the Victoria Bridge. Engineers’ reports and testimonies, the company archives, and even newspapers remain rather ambiguous, if not silent, about accidents. And yet, this chapter argues that an analysis of risk on the Victoria Bridge is possible and even necessary to the understanding of the worksite.

The historian aiming to assess the motives and understandings of workers must contend with a scarcity of worker testimonies and a lack of reliable information from companies about injury or risk. Nevertheless, as in the histories of immigrant workers, psychiatric patients and criminalized women, historians can acknowledge the agency of disempowered people by carefully rereading – ‘decoding’ as historian Roy Porter calls it – the available evidence. In his fundamental article ‘The Patient’s View. Doing Medical History from Below’ (1985), Roy Porter argues that the history of medicine as well as radical anti-history of medicine are centred

⁴¹⁸ *The Brooklyn Daily Eagle*, 24 May 1883.

⁴¹⁹ *The Brooklyn Daily Eagle*, 24 May 1883.

on doctors. He defends a ‘sufferers’ history’, which a lack of sources – described as a lack of ‘a historical atlas of sickness experience and response’ – renders difficult.⁴²⁰ He proposes to use literate sufferers’ diaries, letters..., visual arts, but also to read against doctors’ testimonies which, he claims, should be ‘decoded to reveal what the sufferers dreaded or demanded.’⁴²¹ Similarly, in her study of prostitution in early nineteenth-century Montreal, Mary Anne Poutanen proposes to ‘approach criminal justice documents by reading against the grain to locate women’s voices and their experiences’.⁴²²

Furthermore, in their edited study of the Chinese workers who built the Transcontinental Railroad in the 1860s, scholars Gordon H. Chang and Shelley Fisher Fishkin propose a transnational but also interdisciplinary approach to address the problem of scarce archival records of accidents.⁴²³ Archaeologists, an anthropologist and an ethnohistorian use newspaper accounts as well as archaeological data drawn from the study of the remains of thirteen Chinese workers to understand the dangers these workers faced, but also their health care practices and their diet.⁴²⁴

This chapter tries to show how the silence of the sources can be used as a source of information and how reading the sources against the grain can shed new light on a nineteenth-century construction site. Furthermore, it argues that the methods of the historiography of risk and accidents provide methodological tools to understand such worksites and their workers, about whom information is limited. The analysis of risk invites us to understand how workers and employers perceived and defined risk. It also requires analysing the notion of accident, and what ‘accident’ meant on the Victoria Bridge worksite. To do so, this chapter puts in perspective

⁴²⁰ Porter, ‘The Patient’s View. Doing Medical History from Below’, 181.

⁴²¹ Porter, ‘The Patient’s View. Doing Medical History from Below’, 183.

⁴²² Mary Anne Poutanen, *Beyond Brutal Passions. Prostitution in Early Nineteenth-Century Montreal*, Montreal & Kingston, London, Ithaca: McGill-Queen’s University Press, 2015, 23.

⁴²³ Gordon H. Chang, Shelley Fisher Fishkin, with Hilton Obenzinger and Roland Hsu (eds.), *The Chinese and the Iron Road: Building the Transcontinental Railroad*. Stanford, CA: Stanford University Press, 2020.

⁴²⁴ J. Ryan Kennedy, Sarah Heffner, Virginia Popper, Ryan P. Harrod, and John J. Crandall, ‘The Health and Well-Being of Chinese Railroad Workers’, in Chang et al., *The Chinese and the Iron Road*.

the Victoria Bridge with other contemporary construction sites, notably the Brooklyn Bridge but also worksites of various scales in Britain and North America, and tries to establish a taxonomy of accidents that were likely to happen during the construction of the Victoria Bridge. Employers' sources mentioned certain kinds of danger but remained silent about most of them, and this chapter also tries to understand the difference between risks that appeared in the sources, and risks that were not mentioned.

In order to better understand the workers' labour and its inherent risks, the first section of this chapter is descriptive and summarises the different steps of the construction. The second section interrogates the ambiguity of employers' sources: if there is hardly any mention of accidents, could it be that there were indeed no accidents? It also examines the worksite as a particular place of misfortune. Drawing on the conception of accidents as misfortunes and on the descriptive summary of the steps of the construction, the third section examines the risks associated with the construction that are not mentioned in the historical records about the bridge, and tries to understand the silence of the sources. Finally, the fourth section examines the risks that employers' sources described.

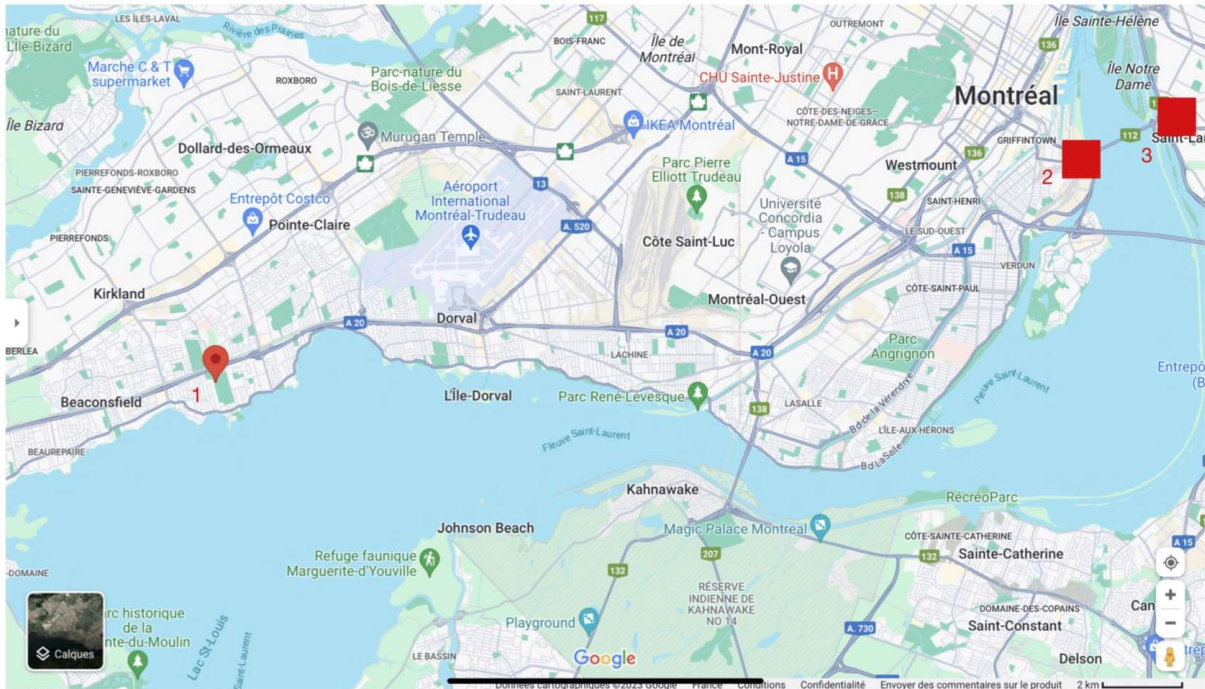
I- Building the bridge: the different steps of the construction

This section is a summary of the main steps of the construction. For clarity purposes, some aspects of the construction have been left aside. Prior to the construction itself, the workers and the employers were involved in the preparatory works which took place during the winter 1853-1854.

The preparatory works first consisted in finding suitable stone. Stone quarries were opened at Pointe Claire, about twenty-six kilometres from Montreal (Map 7).⁴²⁵ A tramway was

⁴²⁵ Hodges, *Construction of the Great Victoria Bridge*, 11. 16 miles = 26 km.

laid from the quarry to the Lake St. Louis, and the stone was brought to the bridge through the Lachine Canal and down the river.⁴²⁶ When the Grand Trunk opened in 1856, the stone was also taken by train to the worksite.⁴²⁷



Map 7 Map showing the stone quarry at Pointe Claire and the Victoria Bridge worksite. Modern map adapted from Google Maps

- 1- Stone quarry at Pointe Claire
- 2- Victoria Bridge, Point St. Charles
- 3- Victoria Bridge, St. Lambert

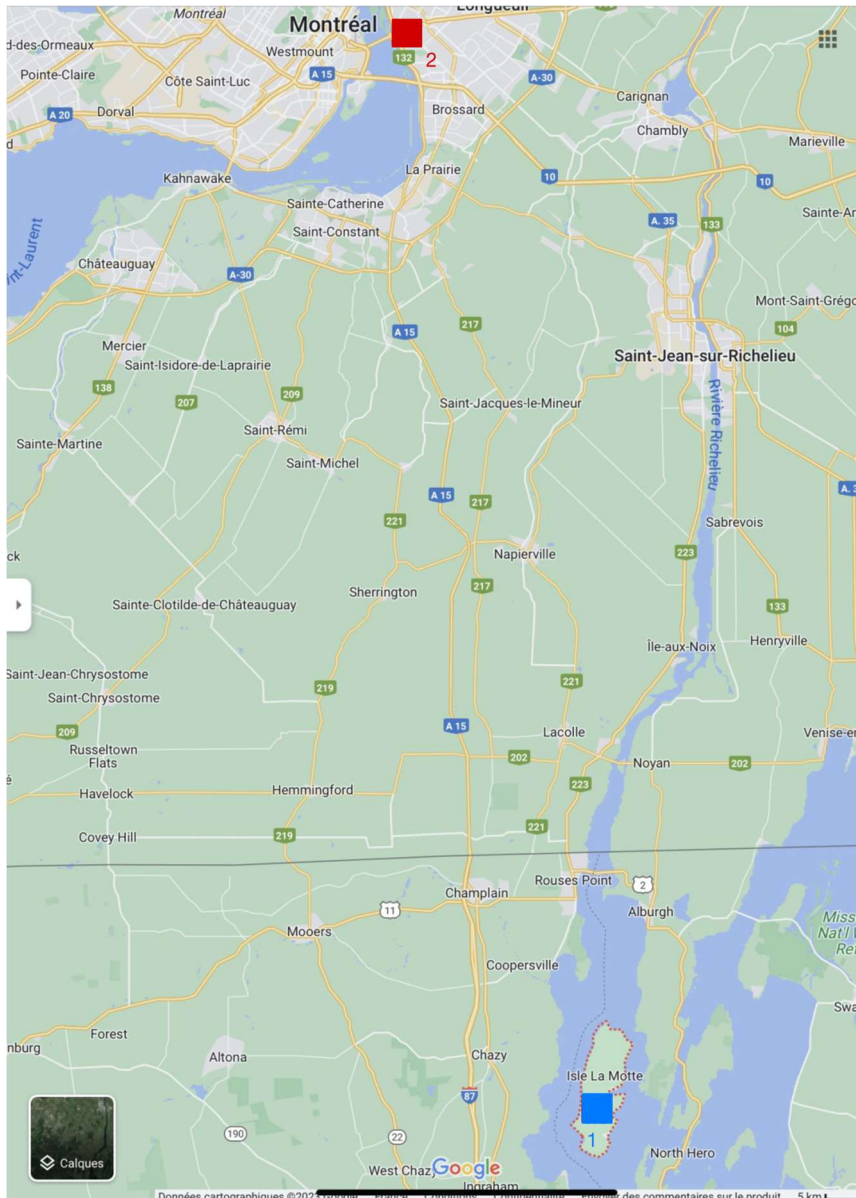
The stone from Pointe Claire was shipped to Victoria Bridge, Point St. Charles, via Lake St. Louis and the St Lawrence River.

The Lake Champlain quarry, situated on Isle La Motte at about one hundred kilometres from the bridge site, supplied the stone for the St Lambert side of the bridge (Map 8).⁴²⁸

⁴²⁶ Hodges, *Construction of the Great Victoria Bridge*, 39; Triggs, 'Le Pont / The Bridge', 55.

⁴²⁷ Hodges, *Construction of the Great Victoria Bridge*, 11.

⁴²⁸ Triggs, 'Le Pont / The Bridge', 55.



Map 8 Map showing the Lake Champlain Quarry and the St Lambert side of the bridge. Modern map adapted from Google Maps

- 1- Stone quarry on Isle la Motte (Lake Champlain)
- 2- Victoria Bridge, St Lambert side

The stone was shipped to St Jean and then transported to the stone fields of St. Lambert.

The stone was shipped by schooner or on barges towed by a steamboat from the Lake Champlain Quarry down the Richelieu River to St Jean (Map 8).⁴²⁹ There, the stone was

⁴²⁹ Triggs, 'Le Pont / The Bridge', 55.

transported on the railway cars of the Champlain & St. Lawrence Railroad to the stone fields of St. Lambert where it was sorted for size.⁴³⁰

The stones weighed ten to fifteen tons and required large blocks of stone to make them.⁴³¹ They were of a peculiar shape and for that reason, the breakage of a stone was a serious problem.⁴³² The quarrying, working, shipping and towing of the stone across the lake, through the canal and against a current of eleven kilometres per hour were minute work which sometimes took more than a week.⁴³³ Every course of stone had to be prepared, sorted, and shipped upon the deck of barges ‘exactly in the order and at the time required’, and a course of stone wrongly sent caused delay and disorganisation.⁴³⁴ There were instances when the whole workforce employed on the construction of a pier was left idle for several days because the chain of a hoisting machine broke.⁴³⁵

During the winter 1853-1854, twenty-five barges were built to convey the stone from the quarry to the works.⁴³⁶ The workers made a level road over the packed ice and marked out the sites of the piers. They also built wharves and the floating dams that were to be used to build the foundations of the piers, which I will come back to.

The construction of the bridge started on 24 May 1854. The bridge was built simultaneously from Point St. Charles and St. Lambert (Fig. 12).

⁴³⁰ Triggs, ‘Le Pont / The Bridge’, 55.

⁴³¹ Hodges, *Construction of the Great Victoria Bridge*, 39.

⁴³² Hodges, *Construction of the Great Victoria Bridge*, 39.

⁴³³ Hodges, *Construction of the Great Victoria Bridge*, 39.

⁴³⁴ Hodges, *Construction of the Great Victoria Bridge*, 38-9.

⁴³⁵ Hodges, *Construction of the Great Victoria Bridge*, 39.

⁴³⁶ Hodges, *Construction of the Great Victoria Bridge*, 9.

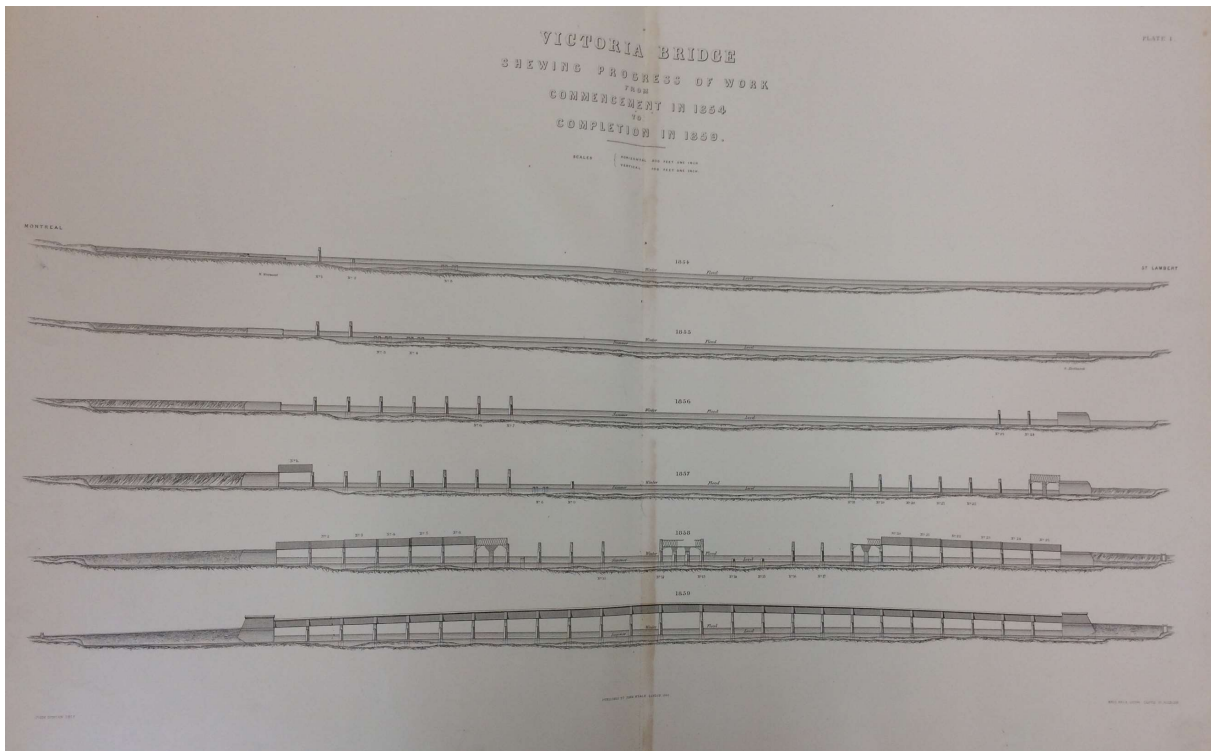


Fig. 12 Shewing Progress of Work from Commencement in 1854 to Completion in 1859, Hodges, Construction of the Great Victoria Bridge, LAC, Winkworth Collection, R9266 Vol. 4107

The construction of the piers and the tube started from both sides of the bridge. This drawing also represents the difference between the summer and winter levels of the water.

The construction started with the building of the piers, which took place from 1854 to 1859. To build the foundations of the piers, it was necessary to have access to the bed of the river. The extreme changes the river was exposed to, the strength of the current, the depth of the water, and the deposit on the rocky bed of the river that needed to be removed, made impossible the use of common construction methods such as the diving-bell or of caissons filled with concrete.⁴³⁷

Two methods were used to build the foundations of the piers: the floating dams (Fig. 13, Fig. 14 and Fig. 15), or floating coffer-dams, and the solid crib coffer-dams (Fig. 16, Fig. 17, Fig. 18, Fig. 19).⁴³⁸ Two piers (nos. 12 and 13) were built using a combination of these two methods.

⁴³⁷ Legge, *A Glance at the Victoria Bridge*, 93.

⁴³⁸ Legge, *A Glance at the Victoria Bridge*, 94-7.

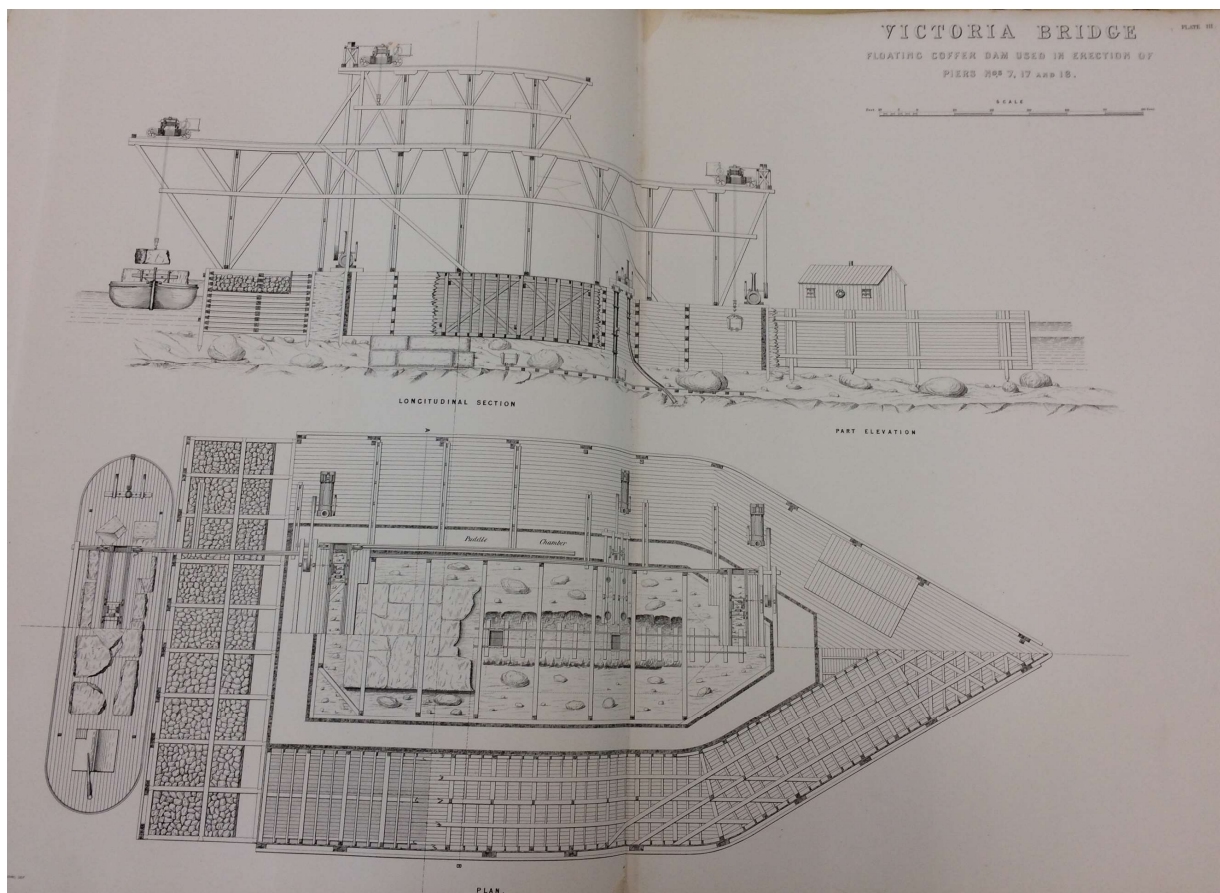


Fig. 13 Floating Coffier Dam Used in Erection of Piers Nos. 7, 17 and 18, Hodges, Construction of the Great Victoria Bridge, LAC, Winkworth Collection, R9266 Vol. 4107

Drawing of a floating coffer dam. The longitudinal section clearly shows the foundation under construction, with a small wagon near a boulder to signify that men worked on the bed of the river.

The floating dams were built during the winter 1853-1854 and were floated down to the pier site in the spring, where steam tugs put them in position where the piers were to be built.⁴³⁹ Once in position, strong piles were slipped down into the bed of the river to keep the dam stationary.⁴⁴⁰ The scuttling valves were opened so the water flooded into the pontoon.⁴⁴¹ The floating dams were thus sunk to the river bed. The tail piece of the floating dams had to be as

⁴³⁹ Triggs, 'Le Pont / The Bridge', 59.

⁴⁴⁰ Legge, *A Glance at the Victoria Bridge*, 95.

⁴⁴¹ Triggs, 'Le Pont / The Bridge', 59; Legge, *A Glance at the Victoria Bridge*, 95.

strong as possible to resist the pressure of the current when the water was pumped out of the central area.⁴⁴²

The floating dams were made of different sections: an inner dam and an outer dam.⁴⁴³ After the pontoon of the outer dam was sunk, a second frame which followed the contour of the pontoon was prepared so that a space was left between this inner dam and the inside of the outer dam, for a puddle chamber (Fig. 13).⁴⁴⁴ Sheet piling, or sorts of fences, was driven in the entire length of this chamber. The gravel and loose stones were removed from the bottom of this chamber, then the 'puddle', or thick clay, was introduced to make it impenetrable to water.⁴⁴⁵



Fig. 14 *Floating Dam*, from Hodges, *Construction of the Great Victoria Bridge*, LAC, Winkworth Collection, R9266 Vol. 4107

⁴⁴² Legge, *A Glance at the Victoria Bridge*, 95.

⁴⁴³ Legge, *A Glance at the Victoria Bridge*, 96.

⁴⁴⁴ Legge, *A Glance at the Victoria Bridge*, 96.

⁴⁴⁵ Legge, *A Glance at the Victoria Bridge*, 96.

A floating dam on the river. In the spring, floating dams were taken to the pier site where they were put in position by steamboats.

The dam was then ready for pumping.⁴⁴⁶ The workers could build the foundations of the piers in the space thus created.



Fig. 15 Enlargement *Floating Dam*, from Hodges, *Construction of the Great Victoria Bridge* from LAC, Winkworth Collection, R9266 Vol. 4107

Floating dams were sunk to the river bed. Men are seen working inside the inner well of the floating dam.

After the completion of a pier, the floating dam was pumped out, a detachable section in the stern removed, and the dam towed away so that it could be re-used later.⁴⁴⁷ It was the only type of dam that could be re-used. Floating dams could be set up in four days, whereas the other systems necessitated several weeks.⁴⁴⁸

⁴⁴⁶ Legge, *A Glance at the Victoria Bridge*, 96.

⁴⁴⁷ Triggs, 'Le Pont / The Bridge', 59.

⁴⁴⁸ Triggs, 'Le Pont / The Bridge', 59.

The floating dams had two major disadvantages. When the bed of the river was irregular, it was difficult and sometimes impossible to achieve a good seal to keep the water out of the work chamber.⁴⁴⁹ Moreover, floating dams could not resist the ice and therefore works with a floating dam imperatively had to be finished before freeze-up.⁴⁵⁰

⁴⁴⁹ Triggs, 'Le Pont / The Bridge', 59.

⁴⁵⁰ Triggs, 'Le Pont / The Bridge', 59.

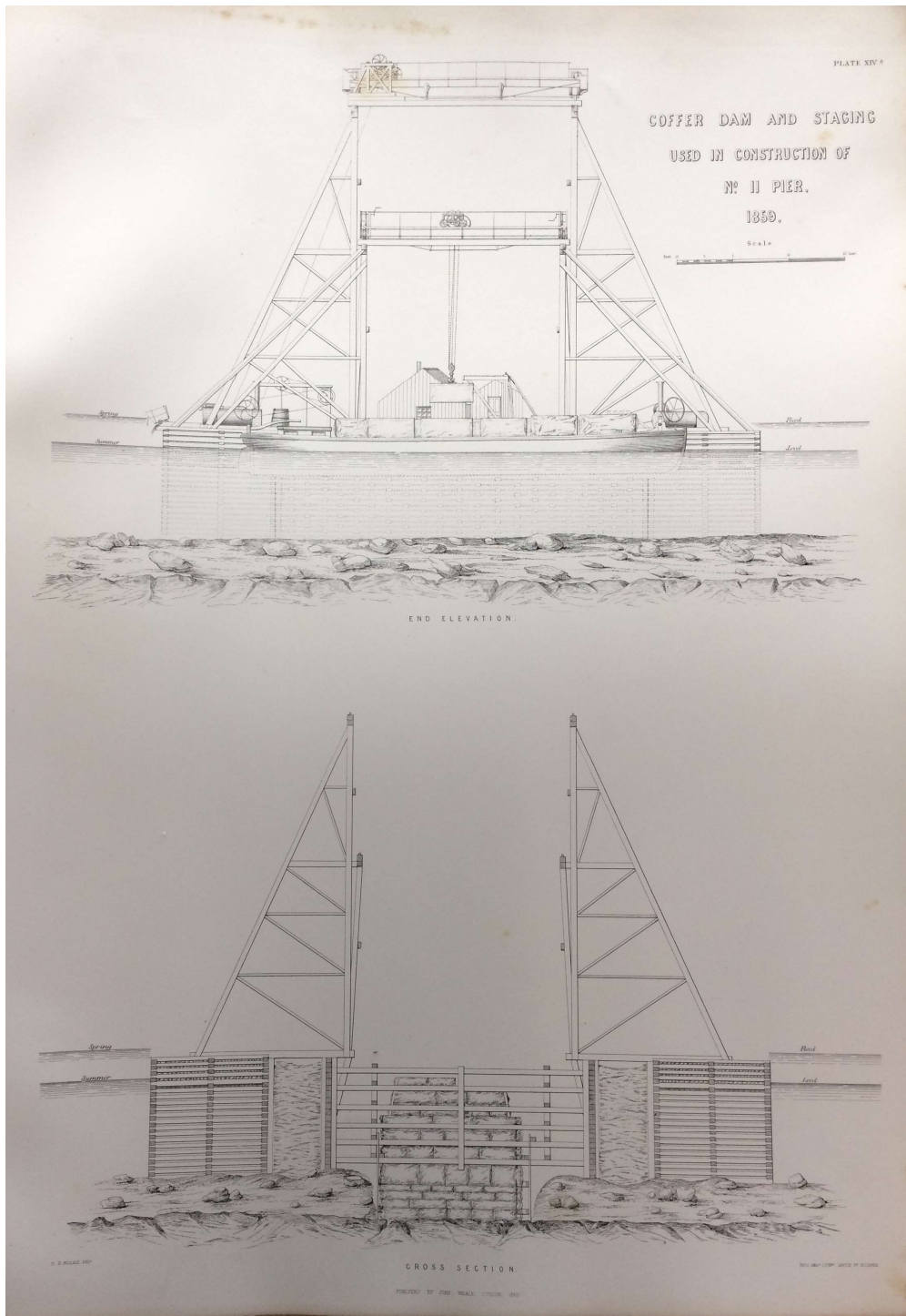


Fig. 16 *Coffer Dam and Staging Used in Construction of No. 11 Pier, 1859*, Hodges, *Construction of the Great Victoria Bridge*, LAC, Winkworth Collection, R9266 Vol. 4107

Drawing of a solid crib coffer-dam. The framework of horizontal logs rested on the bed of the river.

Because of the challenges of the floating dams, solid crib coffer-dams, a system used in North America, were used for the two abutments and seventeen piers out of twenty-four.⁴⁵¹ A

⁴⁵¹ Legge, *A Glance at the Victoria Bridge*, 94.

solid crib coffer-dam consisted of a framework of horizontal logs that was put into the water and weighted down with stones. The cribwork was built as it was being sunk gradually into the water.⁴⁵² It was better adapted to the river bed and its irregularities than the floating dam.⁴⁵³



Fig. 17 *Coffer Dam previous to Pumping*, Notman, n.d, Photograph, McCord Museum, N-0000.193.147.155

View from the surface of the river of a coffer dam still full of water.

As for the floating dam, a puddle chamber encircling the inner wall of the coffer dam was dredged out and filled with clay, thus ensuring the seal between the river bed and the bottom of the crib.⁴⁵⁴

⁴⁵² Triggs, 'Le Pont / The Bridge', 59.

⁴⁵³ Legge, *A Glance at the Victoria Bridge*, 96; Triggs, 'Le Pont / The Bridge', 59.

⁴⁵⁴ Legge, *A Glance at the Victoria Bridge*, 97; Triggs, 'Le Pont / The Bridge', 59.



Fig. 18 *Top of No. 8 Coffor Dam*, Notman, 1858-1860, LAC, Books, Joseph-Patrick, 1983-600006, 20000629894, PA187239

Men working on the top of a solid crib coffer-dam, after it was pumped out.

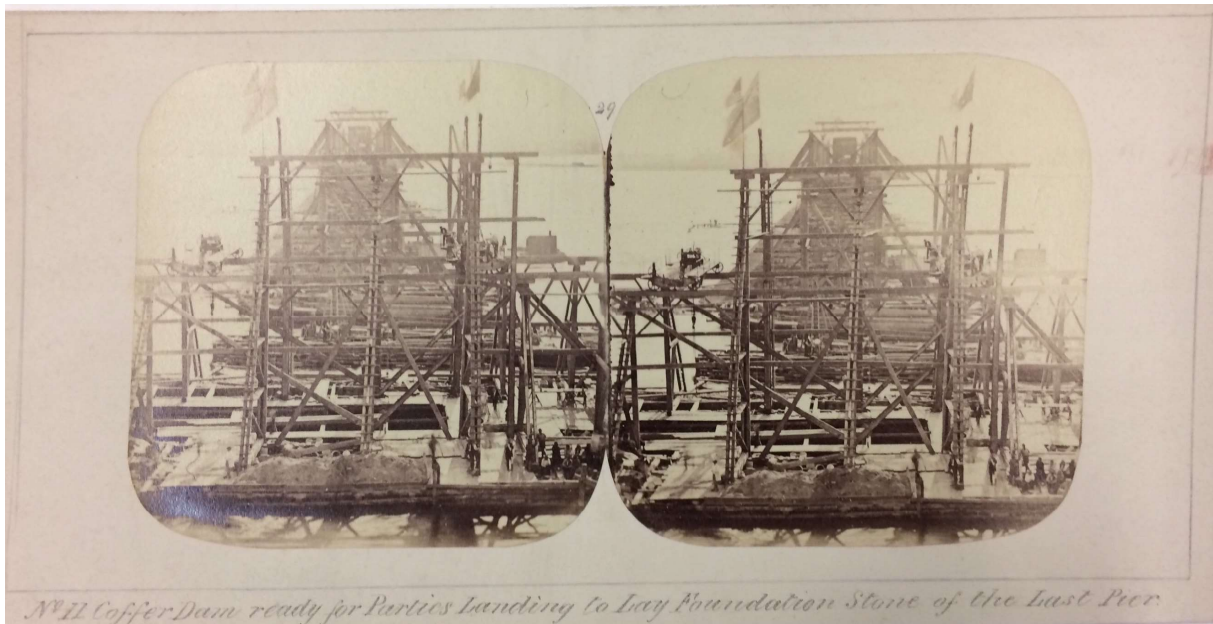


Fig. 19 *No. 11 Coffor Dam ready for Parties Landing to Lay Foundation Stone of the Last Pier*, Notman, 1859, LAC, Books, Joseph-Patrick, 1983-600006, 20000629894, no PA number (29?)

On the 12th August 1859, the foundation stone of the last pier was laid in front of three hundred spectators, hence the crowd in the right corner of the photograph. The picture shows the inner well where the men worked.

After the dams were pumped out, the men could work in the space thus created on the river bed.

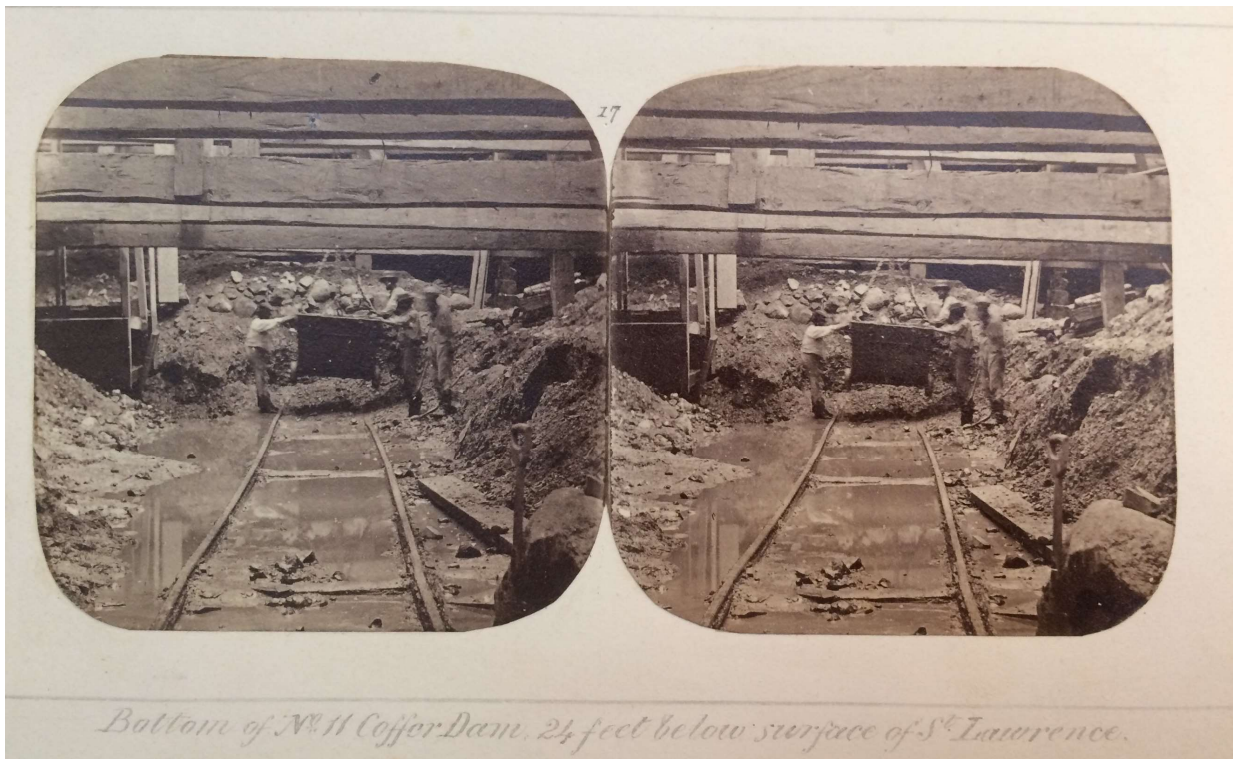


Fig. 20 Bottom of No. 11 Cofferd Dam, 24 feet below surface of St Lawrence, Notman, n.d., McCord Museum, N 0000.193.147.155

To build the foundations of the piers, three men are working inside a coffer dam after the water has been pumped out. They are standing on the bed of the St Lawrence River seven metres below the surface and might be clearing the boulders from the river bed.

After the foundations of the piers were built, the workmen proceeded with the masonry of the piers themselves. The stones were laid in horizontal courses whose lengths varied according to their positions in the pier.⁴⁵⁵ On the bed of the river, they measured 2 to 3.5 metres (7 to 12 feet), and only twenty centimetres (18 inches) under the plates of the tube. The stones were so exactly cut out that they rarely required to be re-dressed after being laid.⁴⁵⁶ Machines were used to hoist the stones, which will be more closely examined in the following section. The ashlar, in dark grey in the following picture (Fig. 21) was laid in hydraulic cement (one

⁴⁵⁵ Boxer, *Hunter's Hand Book of the Victoria Bridge*, 44.

⁴⁵⁶ Boxer, *Hunter's Hand Book of the Victoria Bridge*, 44.

part sand and one part cement) and the backing, from the level of the surface water upwards, was in common mortar.⁴⁵⁷

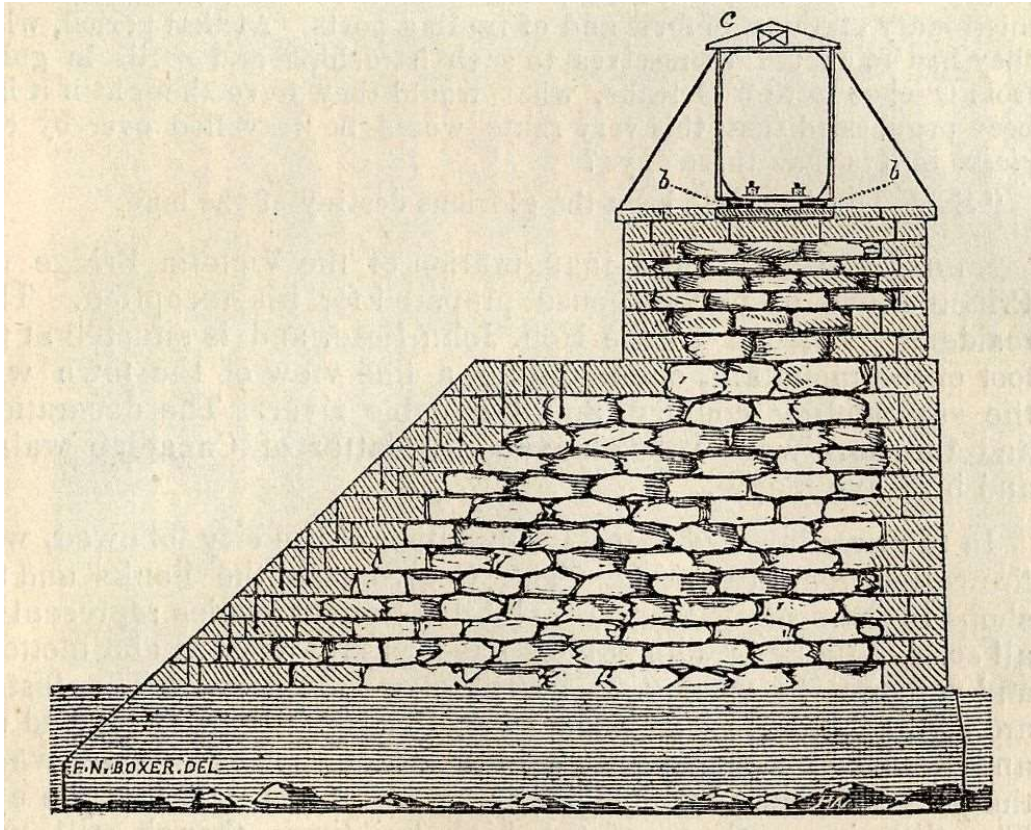


Fig. 21 Section of a pier and tube, Boxer, *Hunter's Hand Book of the Victoria Bridge*, 46, also available at BanQ

The base of the piers rested on the river bed and were the largest part of the pier. The ashlar is represented in dark grey. On top of the pier, the triangle represents the roof and the rectangular shape beneath it corresponds to a tube.

Masonry could not be done in winter because cement and mortar could not be used in cold seasons. In 1857, delays caused the work usually performed during the good season to be done in winter. The piers that necessitated to be built were assembled using felt and strips of asphalted felt were successfully used to bed the ashlar in. In spring, when the frost was out of the stone, the piers were pointed, which meant that the workmen put mortar between the stones, and the interior of the piers was grouted.⁴⁵⁸

⁴⁵⁷ Boxer, *Hunter's Hand Book of the Victoria Bridge*, 45-6

⁴⁵⁸ Hodges, *Construction of the Great Victoria Bridge*, 41-2

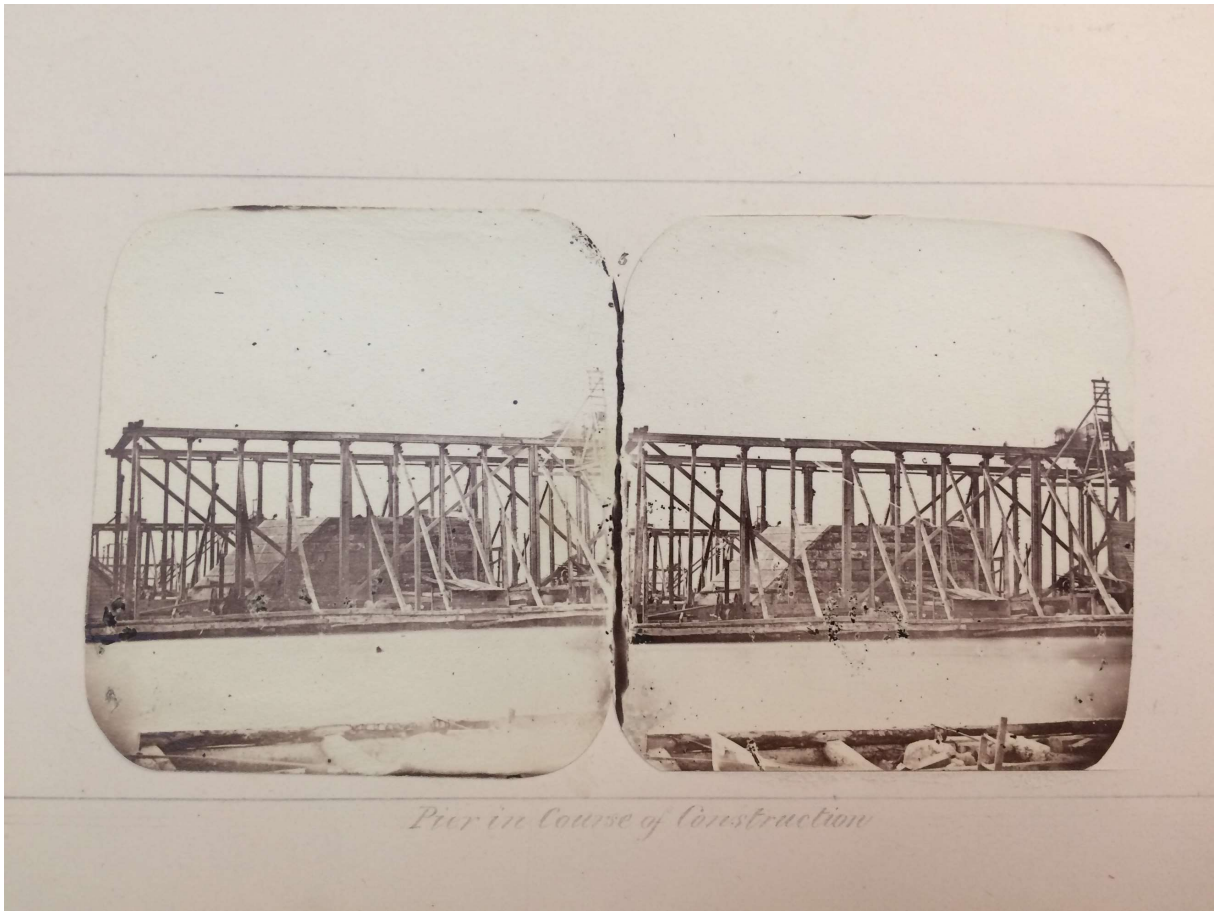


Fig. 22 *Pier in Course of Construction*, Notman, n. d., McCord Museum, N-0000.193.147.155

The slope of the pier under construction suggests that the foot of the pier, with the ice-breaker, is being constructed.

The dams and stagings represented in Fig. 22 and Fig. 23 evidence the involvement of carpenters and joiners in the construction of the piers.



Fig. 23 *Piers Looking out from Centre*, Notman, 25th October 1858, McCord Museum, N-0000.193.128-129

Piers under construction, with derricks visible in the background.

The erection of the tubes started in 1857 and was completed in 1859. Although the bridge when finished looked like a beam, twenty-five tubes were in fact used to form the superstructure.⁴⁵⁹ Just like the piers, the tubes were assembled from both sides of the river (Fig. 24).

⁴⁵⁹ Legge, *A Glance at the Victoria Bridge*, 64.



Fig. 24 *Victoria Bridge in Construction, 1859*, Notman, 1859, LAC, Canadian Scraps No. 1, Fonds Merrilees, 1980-149_55074, 2000805725, picture 5, no PA number

The tube is being constructed from both sides of the river. The section in the foreground is complete, while the stagings that support the structure in the centre of the picture and in the background show that the tube is still being erected.

Part of the tubes of the Conway and Britannia Bridges were assembled on dry land and the others on pontoons, and were then lifted into position, which involved hundreds of men and raising machinery (Fig. 25).⁴⁶⁰



Fig. 25 *Conway*. Floating the second tube into position, 12th October 1848, unknown artist, from Millar, William Heap and his Company, 29

The tubes assembled on dry land form a beam, which is one part of the final tube. This beam is being floated to the site of the bridge, and lifted in position. For the Victoria Bridge, the beam was formed on the structure of the bridge, so no lifting of the tube was needed.

In contrast, the tubes of the Victoria Bridge were not built on dry land but they were assembled and rivetted together on the scaffolding made for that purpose. ‘Fan-shaped’ scaffolding (Fig. 26 and Fig. 27) were used to support the tube under construction.⁴⁶¹

⁴⁶⁰ Millar, *William Heap and his Company*, 1866, 28-37; Clark, *The Britannia and Conway Tubular Bridges*, Vol. II, 642-7.

⁴⁶¹ Triggs, ‘Le Pont / The Bridge’, 61.



Fig. 26 *Staging for No. 6 Tube*, Notman, October 1858, McCord Museum, N-0000.193.3-4

Side view of the stagings used to support the tube under construction in-between piers.



Fig. 27 *No. 11 Pier Showing Cutwater*, Notman, n.d., LAC, Books, Joseph Patrick, 1983-600006, 20000629894, 1858-1860, no PA number

Front view of the stagings used to support the tube under construction. Their 'fan-shaped' timber supported a floor and made them easily identifiable.

The workers were standing on these scaffolding to build the tube. The tube was made of wrought-iron plates riveted together with 'T' iron.⁴⁶² At the Canada Works factory in Britain, a plan or map was prepared for each tube and showed every piece and plate whose position was marked by a distinctive figure, letter or character.⁴⁶³ Every piece of iron was then stamped with a mark corresponding to the mark on the map. On the worksite, the workmen were provided with a similar map to assemble the tubes. Each tube was composed of 4,926 pieces.⁴⁶⁴

⁴⁶² Triggs, 'Le Pont / The Bridge', 61.

⁴⁶³ Hodges, *Construction of the Great Victoria Bridge*, 55.

⁴⁶⁴ Hodges, *Construction of the Great Victoria Bridge*, 55.



Fig. 28 *Framework of Tube and Staging Looking In*, Notman, May 1859, McCord Museum, N-0000.193.132-133

Tube under construction showing the plates that are riveted together. The structure above the truss framework, with a beam spanning across the bridge, is a Wellington crane.

Wellington cranes were used to manoeuvre the plates into position. A Wellington crane (Fig. 28) was ‘a two-legged wheeled machine running on tracks laid on top of the scaffolding, the legs and tracks being outside the sides of the tube’.⁴⁶⁵ As shown in Fig. 28, the crane was made of a beam that spanned across the tube and held a traveller which could lift the load and move it laterally across the structure to place the plates on the sides of the tube.⁴⁶⁶

⁴⁶⁵ Triggs, ‘Le Pont / The Bridge’, 63.

⁴⁶⁶ Triggs, ‘Le Pont / The Bridge’, 63.

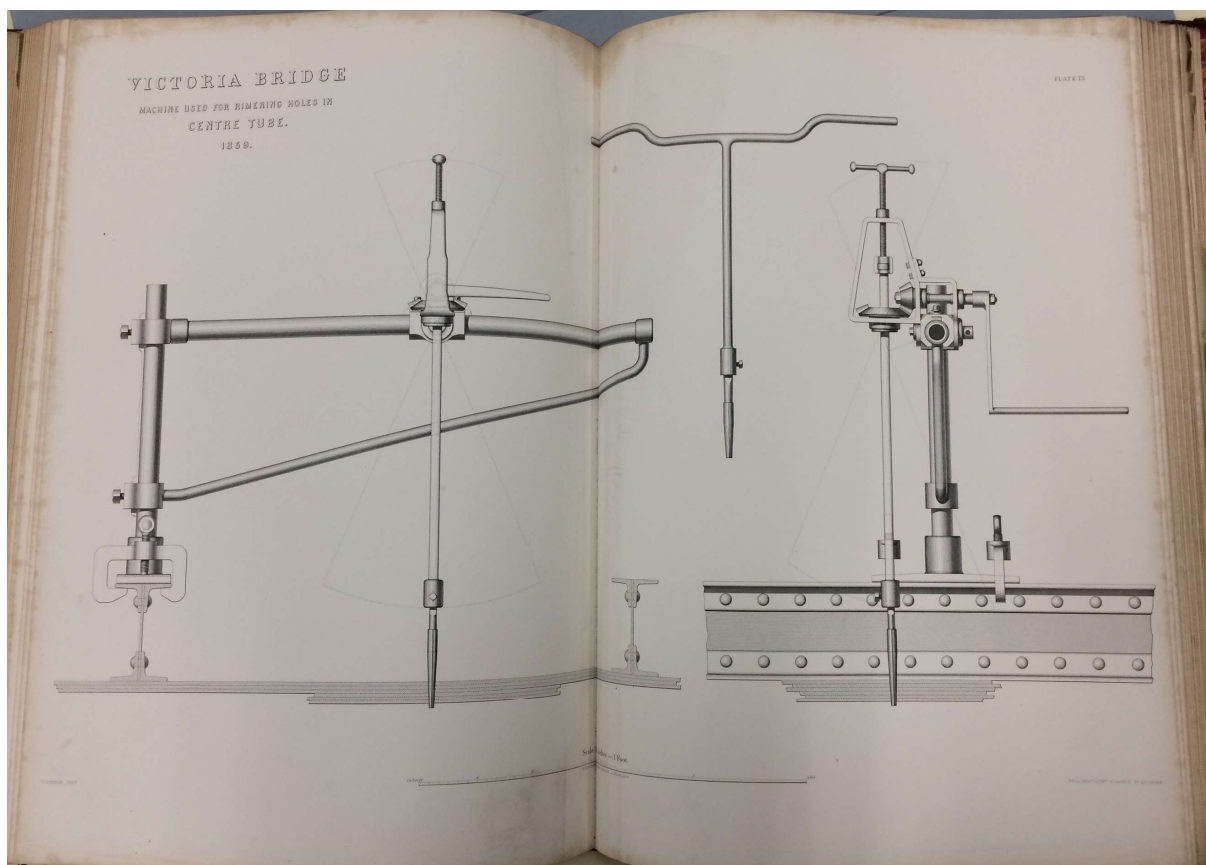


Fig. 29 *Machine Used for Rimering Holes in Centre Tube, 1859*, from Hodges, *Construction of the Great Victoria Bridge*, LAC, Winkworth Collection, R9266 Vol. 4107

Drawing picturing the machine used to make holes of the perfect size before putting in the rivets.

The erection of the tube started with the floor, then the sides and finally the roof.⁴⁶⁷ Until the plates were rivetted, they were held together with screw-bolts.⁴⁶⁸ The workmen had to make holes that were exactly the size of the rivets with a specific tool (Fig. 29), and this task was called rimering. Rimering was used to preserve the iron, which the engineers feared was made brittle by the cold, and the usual technique of driving steel pins with heavy hammers to make the holes large enough was prohibited.⁴⁶⁹ Rivetters then drove hot rivets into the holes.

The roof of the tube was made of wood covered with tin.⁴⁷⁰ Two machines, called painting travellers, ran on rails set on the two edges of the roof and allowed the outside of the

⁴⁶⁷ Passfield, 'Construction of the Victoria Tubular Bridge', 32.

⁴⁶⁸ Hodges, *Construction of the Great Victoria Bridge*, 42.

⁴⁶⁹ Hodges, *Construction of the Great Victoria Bridge*, 43.

⁴⁷⁰ Hodges, *Construction of the Great Victoria Bridge*, 72; Triggs, 'Le Pont / The Bridge', 67.

tubes to be painted in five weeks.⁴⁷¹ The bridge was first opened for the passage of trains on 19th December 1859.⁴⁷²

This section has described the different steps of the construction. It evidenced the employment of a vast variety of workers, from the stonemasons, to the joiners, the carpenters, the sailors, the labourers, the divers, the rivetters, the rimmers. We see also, and this will be analysed in the rest of the chapter, that the works were seasonal but that the men did work in winter, from the preparatory works to the construction of the floating dams throughout the construction. The next section examines the perception of accidents on the Victoria Bridge, in order to understand how accidents were understood and how they were connected to the nature of the works itself.

II- The perception of accidents on the Victoria Bridge worksite

The identification of danger, which might in turn lead to accidents, is at the heart of the history of accidents and the identification of their causes. Sociologist Robert Castel examines strategies of social administration and studies more particularly psychiatry.⁴⁷³ He defines dangerousness, which in psychiatry determines whether an individual is dangerous, as ‘a rather mysterious and deeply paradoxical notion’ because ‘the proof of the danger can only be provided after the fact’, and argues that ‘[s]trictly speaking, there can only ever be *imputations of dangerousness*’.⁴⁷⁴ Castel is referring to ‘insane’ people, but his definition of dangerousness evidences the logical discontinuity between danger, or dangerous situations and behaviours, and accidents that have not yet occurred. The perception of danger, and therefore of the possibility of accidents, is crucial in the history of worksites and the handling of accidents, but

⁴⁷¹ Triggs, ‘Le Pont / The Bridge’, 67; Hodges, *Construction of the Great Victoria Bridge*, 72.

⁴⁷² Hodges, *Construction of the Great Victoria Bridge*, 82.

⁴⁷³ Robert Castel, ‘From Dangerousness to Risk’, Graham Burchell, Colin Gordon and Peter Miller (eds.), *The Foucault Effect. Studies in Governmentality with two lectures by and an interview with Michel Foucault*, Chicago: The University of Chicago Press, 1991, 283.

⁴⁷⁴ Castel, ‘From Dangerousness to Risk’, 283. Emphasis in the original.

also in the understanding of the notion of accident. The Victoria Bridge, when compared to other contemporary worksites, provides a case study to analyse how contemporaries perceived accidents and understood the causal link between danger and accident on nineteenth-century construction sites.

Engineer James Hodges's 1860 book described step by step the construction process and detailed each working season (see Appendix 1), from the preparation works (1853) to the inauguration of the bridge (1860). Significantly, there are a mere six occurrences of the word 'accident' in the whole book and they have different meanings. The first occurrence of the word appears when Hodges described the meticulous work required by the quarrying, working, and shipping of the stones during the 1856 working season. The stones 'had to be prepared, sorted, and shipped upon the deck of barges, exactly in the order and at the time required'.⁴⁷⁵ Any breakage of the stones or even a course of stone wrongly sent could halt the works for more than a week and were referred to as an accident.

In November 1859, a scow carrying a crib-framing was lost to the current and hit the staging of a pier under construction, threatening to destroy the tube which was two-thirds finished. In the end, '[b]eyond the loss of a couple of days, very little mischief resulted from this accident.'⁴⁷⁶ Later that year, an 'accident of a similar nature' occurred when three or four rafts crashed into a temporary pier; the only damage was the loss of a few days' work.⁴⁷⁷ These three examples show that half of the occurrences of the word 'accident' refer to incidents that threatened to delay the completion of the works, which was of great concern because of the short Canadian working season.

In an 1859 instance which slowed construction by two weeks, thirteen rafts, manned by more than one hundred and fifty men, were driven against the wooden stagings set up for the

⁴⁷⁵ Hodges, *Construction of the Great Victoria Bridge*, 38.

⁴⁷⁶ Hodges, *Construction of the Great Victoria Bridge*, 70.

⁴⁷⁷ Hodges, *Construction of the Great Victoria Bridge*, 71.

project, and a total of 500,000 cubic feet of timber scattered on the river.⁴⁷⁸ It must have been impressive: there were so many debris that ‘men were seen walking at the water level’.⁴⁷⁹ This is the only incidence when Hodges explicitly acknowledged that no lives were lost, although he made no mention of injuries. In this instance, he wrote that a ‘loss of time was occasioned by this accident equal to nearly a fortnight’s labour’, again connecting the word ‘accident’ and a delayed completion of the works, but he also implied that workers’ lives could have been lost.

Raft crashes were well-identified risks: it was not the first time that a raft crashed into the works (and it was not labelled an accident) and to prevent that, the centre span had been cleared to make navigation easier.⁴⁸⁰ What made it an accident this time was how huge this catastrophe was but also how worse it could have been, with this enormous mass of timber drifting at five miles an hour, colliding into the stagings, and which could have killed men and destroyed the tube under construction. In this case, the accident was both the contingency of such an amount of timber crashing into the stagings, and the danger that represented for the works and for human lives. This occurrence of the word ‘accident’ both referred to a delayed completion of the work as well as to chance and contingency. In fact, in Hodges’s text, a single occurrence of the word ‘accident’ is used as a synonym of luck and chance.⁴⁸¹

The ‘accidents’ he reported were unexpected and uncontrollable and most interrupted the construction process. The paragraph that precedes the dramatic description of the thirteen rafts describes the risk of fire, explaining that despite a water tank and a twenty-four-hour watchman, several stagings were nearly burnt and one of them narrowly escaped destruction.⁴⁸² Hodges attributed this to the carelessness of the rivet boys. These fires happened, and yet they

⁴⁷⁸ Hodges, *Construction of the Great Victoria Bridge*, 69. 500,000 cubic feet is about 14,000 cubic metres of timber.

⁴⁷⁹ Hodges, *Construction of the Great Victoria Bridge*, 69.

⁴⁸⁰ Hodges, *Construction of the Great Victoria Bridge*, 63-6.

⁴⁸¹ Hodges, *Construction of the Great Victoria Bridge*, 52.

⁴⁸² Hodges, *Construction of the Great Victoria Bridge*, 70.

were not called accidents, precisely because they were expected – hence the water tank and the watchman – and, in the end, they were kept under control.

This conception of accidents also pervades the company archives. Between 1854 and 1858, engineer-in-chief Alexander Ross's accounts mentioned accidents only three times, referring to train accidents,⁴⁸³ fire⁴⁸⁴ and delayed completion of the works.⁴⁸⁵ Again, accidents tended to refer to adverse events that happened at the works rather than damage to labouring bodies. This sparse archival record could be interpreted as meaning that there were few worksite accidents. After all, the death toll, which the third section examines more closely, was relatively low: twenty-six workers died during the six-year construction, most of them drowned.⁴⁸⁶ Those drownings were fatal accidents, at least according to our modern conception, and yet they were not labelled as such in the texts and documents I reviewed.

Examining 'the moment of the accident' in late-Victorian Britain historian Roger Cooter found that accidental injuries were mostly ignored before the 1870s and 1880s, when accidents became a matter of public interest.⁴⁸⁷ As a consequence, accident statistics and hospital records from the 1850s should be treated cautiously because at this historical moment, 'the meaning of an "accident" itself had no stability'.⁴⁸⁸ Cases of burns or fractures were therefore only reclassified as 'accident cases' in the 1870s and 1880s. Cooter's point shows that there was no mention of accidents – or, rather, accidental injuries – in the Victoria Bridge employers' sources because the mid-nineteenth-century definition of 'accident' did not necessarily encompass typical industrial injuries. Even assistant engineer Charles Legge, who appeared to reference accidental injuries, in fact wrote 'accidents to life or limb', implying that

⁴⁸³ LAC, RG30-1026, Minutes of meetings of stockholders and proprietors, Alexander Ross's report, 24 July 1854.

⁴⁸⁴ LAC, RG30-1026, Ross, September 1855.

⁴⁸⁵ LAC, RG30-1026, Ross, 6 December 1858.

⁴⁸⁶ Hodges, *Construction of the Great Victoria Bridge*, 77.

⁴⁸⁷ Cooter, 'The Moment of the Accident' 108.

⁴⁸⁸ Cooter, 'The Moment of the Accident', 111.

‘accidents’ were perceived as negative events that unexpectedly happened *to* something, just like Hodges regretted that accidents could happen *to* the stagings.⁴⁸⁹

The conception of accidents on the Victoria Bridge reflected a more general understanding of accidents as cases of fortune or misfortune. When the thirteen rafts carrying timber crashed into the stagings in 1859, Hodges wrote that ‘[f]ortunately no lives were lost’,⁴⁹⁰ suggesting that the outcome of the raft incident, when it happened, was regarded as a matter of fortune or misfortune. About this particular incident, Hodges added that they were ‘thankful ... to escape so lightly’.⁴⁹¹ The word ‘thankful’ is not random and echoes the term ‘fortunately’ used to describe the outcome of the same accident. Both words imply that this accident could have had an unhappy outcome, and if everything went well in the end it was not anybody’s responsibility. Hodges understood that the fact that nobody died when the accident occurred was due to something beyond human control, such as fate or possibly God.

Historian Valérie Nègre shows that, in the workers’ perspective as well, worksite accidents and divinity were connected.⁴⁹² She relies on four ex-votos from Notre-Dame de Laghet sanctuary (south-east of France, near Nice) dated 1851, 1863, 1927 and 1931 to study the instant when accidents happened. These ex-votos were paintings gifted to the Virgin to thank her for her protection.⁴⁹³

⁴⁸⁹ Legge, *A Glance at the Victoria Bridge*, 85

⁴⁹⁰ Hodges, *Construction of the Great Victoria Bridge*, 69

⁴⁹¹ Hodges, *Construction of the Great Victoria Bridge*, 69

⁴⁹² Valérie Nègre, ‘Quatre accidents saisis sur le vif’, in Valérie Nègre (ed.), *L’art du chantier. Construire et démolir du XVIe au XXIe siècle*, Paris, Gand: Cité de l’architecture et du patrimoine, Snoeck, 2018, 108-11

⁴⁹³ Nègre, ‘Quatre accidents saisis sur le vif’, 108.



Fig. 30 *Untitled*, author unknown, with inscription in Italian 'Ex voto. Ma. Sig. Staudo dentro nel cortile successo il 18 aprile venerdi santo 1851. Paolo Tibaud. Maletto Modesto. Fortune Viegli', 1851, in Nègre 'Quatre accidents saisis sur le vif', 109

Three workers restoring a building are falling from collapsing scaffolding.

They represented workers falling from scaffolding, and pictured or mentioned a divine intervention. Based on the position of the dangling bodies and the techniques used, Nègre

explains that the authors were probably local artisans specialised in votive painting.⁴⁹⁴ The 1851 ex-voto (Fig. 30) represents very precisely the works in progress, and Nègre shows that the artisan himself probably intervened in the making of the ex-voto.⁴⁹⁵ These paintings are thus exceptional testimonies of artisans' perspectives on accidents. In the top left corner of Fig. 30, the Virgin Mary and child are overlooking the scene, suggesting that for nineteenth-century workers too, outcomes of worksite accidents were decided by God. Although there is no such testimony from Victoria Bridge workers, it is quite likely that they shared Hodges's understanding that the outcomes of such accidents were beyond human control and depended on fate or even God.

Sociologist Judith Green analyses how certain misfortunes came to be classified as accidents in the late twentieth century and shows that even with the advent of nosology in 1839, British accidents were still understood as medical misfortunes.⁴⁹⁶ Green would thus regard the accidents that happened at the Victoria Bridge worksite as a problem that concerned the employers, and the outcome of accidents that happened to the workers as a matter of personal misfortune or individual fate. This does not mean that the Victoria Bridge workers or employers did not care about what happened when the thirteen rafts went out of control, but rather that they understood that they wielded no possible control over the course of such an event. They had cleared the span to limit the possibility of such an accident, but when the accident did actually happen, it became a matter of fate and misfortune. In her study of job accidents based on coroners' inquests, historian Elisabeth Cawthon addresses the difficulty to define 'accident' in the nineteenth century and points out that coroners' courts labelled lightning strikes, railway engine wrecks and the beating of servants as accidents.⁴⁹⁷ She underlines the legal importance of the word 'misfortune', noting that the phrase about accident victims who had died

⁴⁹⁴ Nègre, 'Quatre accidents saisis sur le vif', 108.

⁴⁹⁵ Nègre, 'Quatre accidents saisis sur le vif', 108.

⁴⁹⁶ Green, *Risk and Misfortune*, 71.

⁴⁹⁷ Cawthon, *Job Accidents and the Law*, 10.

‘accidentally, casually, and by misfortune’ was printed on some inquisition forms used by coroners.⁴⁹⁸

The employers’ sources from the bridge site are scattered with accidents that could have happened, but whose positive outcomes erased the reality of the accident as well as its potentiality. As a result, employers described dangerous events that could have been tragic, but because there were no casualties, they did not label them as accidents. The risk of drowning while working in the dams is one example. To build the foundations of the bridge, dams were put in place and the water was pumped out, so that the men could work on the bed of the river (Fig. 20). A number of times during this process, the workers only narrowly escaped death and Hodges described how workers had to run for their lives.⁴⁹⁹ Green demonstrates that the word ‘accident’ is used to ‘denote certain kinds of outcome.’⁵⁰⁰ In that instance, the dam flooded but all the workers managed to escape. Such examples from employers’ sources give us a glimpse of the risks the workers faced daily: the potentially tragic consequences of the accident, had the workers not run fast enough, are both implied and absent because the accident did not happen.

Although actual descriptions and acknowledgements of accidents are sporadic in the sources, this chapter has shown thus far that employers’ sources are the main sources that mention them. The worksite appears as a closed environment where the main witnesses of accidents, apart from the workers who left few to no records, were the employers. Cooter shows that worksites such as building sites, docks, railway yards, mines and quarries were ‘relatively private places’, where industrial injuries were kept ‘out of sight’.⁵⁰¹ In that sense, contemporaries did not consider accidents that happened to the workers in a worksite as they would see accidents in the public space. Most newspaper articles that mentioned accidents on the worksite were very short – usually a few-line-long articles. They described the causes of

⁴⁹⁸ Cawthon, *Job Accidents and the Law*, 10.

⁴⁹⁹ Hodges, *Construction of the Great Victoria Bridge*, 49.

⁵⁰⁰ Green, *Risk and Misfortune*, 1.

⁵⁰¹ Cooter, ‘The Moment of the Accident’, 114.

accidents, for instance a fall from a pier, without providing much further details. This article from *Le Courrier du Canada* is one example (Fig. 31) and reads: ‘Accident on the Victoria Bridge. – A Victoria Bridge worker in Montreal fell from a sixty-four-feet-high pier and died a few hours after the accident.’⁵⁰²

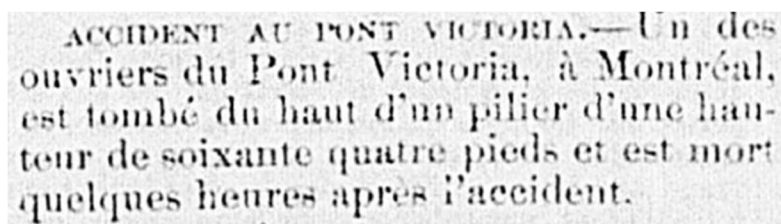


Fig. 31 *Le Courrier du Canada*. *Journal des Intérêts canadiens*, 15 September 1858.

Example of a newspaper article about the accidental death of a Victoria Bridge worker. These articles are often very short and among miscellaneous articles. In this instance, this article is preceded with articles about a comet and about harvests.

Quite often, the names of the victims were not mentioned. This terse coverage in the news implies that the public did not know much about worksite accidents, was not thought to be particularly interested, and read about them as incidental events.

In contrast, contemporaries gave much more attention to accidents that involved members of the public. On 10th June 1856, the boiler of a boat carrying passengers from a Grand Trunk Railway train exploded. Twenty-five to thirty passengers were believed to have been thrown overboard, and a large but unknown number died or were severely injured.⁵⁰³ The *Montreal Herald and Daily Commercial Gazette* gave an extensive account of this accident, detailing when the boiler exploded exactly, how it destroyed the boat, and provided as many details as possible about the victims: their injuries, their names, ages, occupations, family

⁵⁰² *Le Courrier du Canada*. *Journal des Intérêts canadiens*, 15 September 1858: ‘Accident au Pont Victoria. – Un des ouvriers du Pont Victoria, à Montréal, est tombé du haut d'un pilier d'une hauteur de soixante quatre pieds et est mort quelques heures après l'accident.’ My translation. For other similar articles, see for instance *L'Ère Nouvelle*, *Journal du District de Trois-Rivières*, 3 October 1859.

⁵⁰³ *Montreal Herald and Daily Commercial Gazette*, 11 June 1856.

members' occupations, where they were going, and so on.⁵⁰⁴ By doing so, the article depicted the victims as individuals. They were real people, with families and personal stories. Interestingly, a few victims were Grand Trunk employees, but because they were passengers when they were fatally or seriously injured, the fact that they worked for the Grand Trunk Company did not matter. A few days later, the directors of the Grand Trunk Company made it known that they cared about the safety of the passengers, that they would make sure such accidents were avoided, and that relief was provided to 'the injured or their friends'.⁵⁰⁵

The contract between the Grand Trunk Railway Company and Peto, Brassey, Jackson and Betts conveyed a similar understanding of accidents:

the Contractors shall adopt all such precautions by lights and signals, or by the use of boats, hulks, booms or fenders, or by any other means for the protection of the Public using the River, or of the works of the Bridge as shall be reasonably necessary, as also for securing the works while in progress, from any injury they may at any time sustain from vessels navigating the St. Lawrence, or from storms or any other cause likely to damage the works.⁵⁰⁶

It made it clear that the contractors were to prevent accidents, called injuries, that were likely to happen to the public or to the works, and there was no mention of accidents that could happen to the workers. Similarly, a Select Committee was set up in 1854 to investigate accidents that happened on the Great Western Railway from the opening of the line on 10th November 1853 to 10th November 1854.⁵⁰⁷ These inquiries evidence that authorities were concerned with railway accidents to the extent that committees were appointed, which contrasts sharply with the worksite accidents that attracted much less public attention.

Cawthon, who sees newspaper accounts as a much needed assistance to historians to make up for the 'paucity of information' available from inquest documents, relies on *The Times*

⁵⁰⁴ *Montreal Herald and Daily Commercial Gazette*, 11 June 1856.

⁵⁰⁵ *Montreal Herald and Daily Commercial Gazette*, 20 June 1856.

⁵⁰⁶ LAC, RG12 Vol 2500 'Railway-Bridges_Victoria Jubilee Bridge, Montreal, Quebec'.

⁵⁰⁷ *Reports of the Commissioners Appointed to Inquire into a Series of Accidents and Detentions on the Great Western Railway, Canada West*, by Commission bearing date Nov. 3, 1854, Quebec: Stewart Derbishire & George Desbarats, 1855, 19. See as well Barkans, *Labour, Capital and the State*, 152.

throughout her book.⁵⁰⁸ She attributes the heavy newspaper coverage of steam accidents in the nineteenth century to a concern for passenger safety, and points out ‘a comparative lack of interest in accidents in which the public had not been endangered.’⁵⁰⁹ She also underlines that correspondents and reporters tended to ask employers for details.⁵¹⁰ For contemporaries, there were thus different types of accidents. On the one hand, worksite accidents, which concerned the workers, were a matter of private misfortune, while on the other hand, accidents that involved passengers were a matter of public safety concern.

At the same time, the difference between these two types of accidents could be seen as a difference in scale. Victoria Bridge worksite accidents only involved a few people at a time, while accidents such as the boiler accidents made tens of victims. But as Cooter identifies the nineteenth century as the ‘moment of the accident’, he underlines the decisive role of railway accidents in transforming the pre-industrial conception of an accident (‘more or less synonymous with “coincidence”’) to its modern meaning and shows that there was a social reason to this.⁵¹¹ He underlines that although railway accidents caused half as many casualties as horse accidents, railway accidents caused the abrogation in English common law of the principle of deodand (1846) because they involved and threatened ‘persons of status and wealth’.⁵¹² There was thus a spatial and social distribution of risk: worksite accidents were private misfortunes shunned from public safety concern, while accidents on public transportations involving passengers caused alarm.

This section has shown that contemporaries made a connection between dangerous situations and working conditions, and the risk of accidents. However, the Victoria Bridge employers’ sources did not explicitly connect the conditions on the worksite and the risk of

⁵⁰⁸ Cawthon, *Job Accidents and the Law*, 8.

⁵⁰⁹ Cawthon, *Job Accidents and the Law*, 8.

⁵¹⁰ Cawthon, *Job Accidents and the Law*, 9.

⁵¹¹ Cooter, ‘The Moment of the Accident’, 111.

⁵¹² Cooter, ‘The Moment of the Accident’, 111: the principle of deodand required ‘the forfeiture of the objects or instruments which had occasioned a person’s death’.

accidents. They used the term ‘accident’ with different meanings, thus echoing the instability of the definition of accident pointed out by Cooter. What can be inferred from these sources is that employers understood accidents as negative and unexpected events that could happen to the works or the workers’ bodies, and which usually disrupted the works. We can see that for employers, the definition of accidents was closely related to the works, which made the worksite a unique and specific space. Furthermore, employers and workers associated accidents, and more specifically the outcomes of accidents, with fate and misfortune. Contemporaries had different understandings of worksite accidents and accidents that involved members of the public, for reasons that ranged from a growing concern for passengers at a time when railway transportation boomed, to a social and spatial discrimination of victims. With the railways, accidents could suddenly happen to any passenger, while worksite accidents routinely happened to workers, far from the public eye. What happened in the closed environment of the worksite was not of public concern, and the worksite thus appeared as a place of private misfortune. For that reason, what happened on a worksite was the workers’ and the employers’ concern, and the following section tries to understand what happened precisely on the worksite.

III- The risks of labour

To examine risks not mentioned in the sources, this section connects the different steps of the construction (Appendix 1) with a handful of common and potentially hazardous tasks or situations. Based on Ross’s return of the workforce in June 1854 (see chapter 2, Tab. 6), this section also focuses more particularly on the most represented categories of workers, namely the sawyers, the masons, quarry men and stone cutters, and the labourers.

As explained in the first section, the first step of the construction of the bridge in the winter 1853-1854 consisted in building the floating dams that would be used in the construction

of the piers (Fig. 14), making a level road over the packed ice where the bridge would be, and buoying out the sites of the piers as well as the most navigable channels for the steamboats and barges.⁵¹³ The construction of the piers and abutments necessitated the cutting and dressing of stones, and more generally working in the quarries, which started during the preparatory works. Builders, carpenters, joiners, stonemasons, labourers but also blacksmiths for the sharpening of tools would have been involved in these preparatory works.⁵¹⁴

With a total of 31.6 per cent of the total workforce employed in June 1854 (see chapter 2, Tab. 6), stonemasons were the most numerous workmen employed on the worksite in 1854 but there is no record of their number for the other working seasons. In their study of the stone workers on the isle of Purbeck in Dorset from the sixteenth to the nineteenth century, historians Michael Edgar and Andrew Hinde define the specific jobs attributed to different categories of stone workers.⁵¹⁵ Stonemasons were employed on the surface of the quarry, where they dressed the quarried stone blocks to the size and shape required, but Edgar and Hinde show that quarriers and stonemasons were not different trades. Quarriers could work as masons, and vice versa, suggesting that although jobs were labelled, individuals could perform different tasks than what returns of the workforce might imply.⁵¹⁶ As a result, the company's (scarce) data about the numbers of workers might not necessarily reflect the reality of the numbers of workers on the worksite.

Hodges describes how the quarrying, shaping and shipping of the stones were an important and painstaking step of the construction process. While none of my sources gave details about the actual work of the quarrymen and stonemasons, let alone about the accidents they might have faced, quarrying was known to be a very dangerous trade, with a high accident

⁵¹³ Hodges, *Construction of the Great Victoria Bridge*, 16, 17.

⁵¹⁴ Anonymous, *Reminiscences of a Stonemason. By a Working Man*, London: John Murray, 1908, 91: it seems clear that there was usually a blacksmith's shop on building sites.

⁵¹⁵ Michael Edgar and Andrew Hinde, "The Stone Workers of Purbeck", *Rural History* (1999), 10, 1, 75-90, 76, 78.

⁵¹⁶ Edgar and Hinde, 'The Stone Workers of Purbeck', 78.

rate.⁵¹⁷ Raphael Samuel recalls that stone quarrying was ‘a sweat and muscle job’ where hand tools rather than steam-powered machinery were used.⁵¹⁸ An anonymous 1908 British memoir of stonemason is scattered with mentions of potential accidents or diseases.⁵¹⁹ The author documented how dust affected the lungs of stonemasons and how workers were burnt by the stone trains transporting rock to building sites and describes several falls, notably when the men had to wheel barrows filled with heavy stone down a plank walkway.⁵²⁰ He explained that prior to the Employers’ Liability Act (probably the 1880 Bill), the workers climbed up ladders with stones on their shoulders:

it was quite customary to see labourers staggering up a ladder, carrying a window-head or a sill balanced on their shoulders, using both hands to grasp the sides (not the rungs) of the ladders. Stepping off the ladder on to the scaffold with the stone on their shoulders was the crucial difficulty.⁵²¹

This testimony evidenced a number of perilous situations related to ladders and scaffolds and suggested that manpower was very much in use. Although stones on the Victoria Bridge were hoisted by machines from the boats, the men were likely to carry heavy materials up the scaffolding, with all the danger that grasping the sides instead of the rungs of a ladder, with a burden on one’s shoulders, might represent. Furthermore, manual labour was preferred for setting the stone throughout the construction despite the insistence of the sources on the machines used to hoist the stones.⁵²²

In his fundamental article on machinery and steam power, Samuel shows that manpower was very much in use throughout the nineteenth century, and that in fact machinery involved increased physical efforts from the workers.⁵²³ A number of machines were used during the

⁵¹⁷ Raphael Samuel, ‘Mineral workers’, in Raphael Samuel (ed.), *Miners, Quarrymen and Saltworkers*, London: Routledge, 1977, 42.

⁵¹⁸ Raphael Samuel, ‘Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain’, *History Workshop*, Spring, 1977, No. 3, 6-72, 22.

⁵¹⁹ Anonymous, *Reminiscences of a Stonemason*.

⁵²⁰ Anonymous, *Reminiscences of a Stonemason*, 235, 133-4, 87-8.

⁵²¹ Anonymous, *Reminiscences of a Stonemason*, 236.

⁵²² Hodges, *Construction of the Great Victoria Bridge*, 38.

⁵²³ Samuel, ‘Workshop of the World’, for instance 46, 8.

construction of the bridge, such as pumps, pile-drivers, derricks, cranes.⁵²⁴ They were usually conceived and built on the worksite from designs drawn up by the engineering staff, while carpenters, joiners, machinists and blacksmiths built the wooden structures and the iron fittings.⁵²⁵ Engineer Benjamin Chaffey, who supervised the works on the southern part of the bridge at St Lambert, invented machines that Hodges praised for their efficiency, such as the steam-traveller (Fig. 32) which ‘handled the whole of the stone for the work on the south side of the river’, unloading the wagons, stacking the largest blocks of stone of sometimes ten tons each, and requiring the work of only three to four men.⁵²⁶

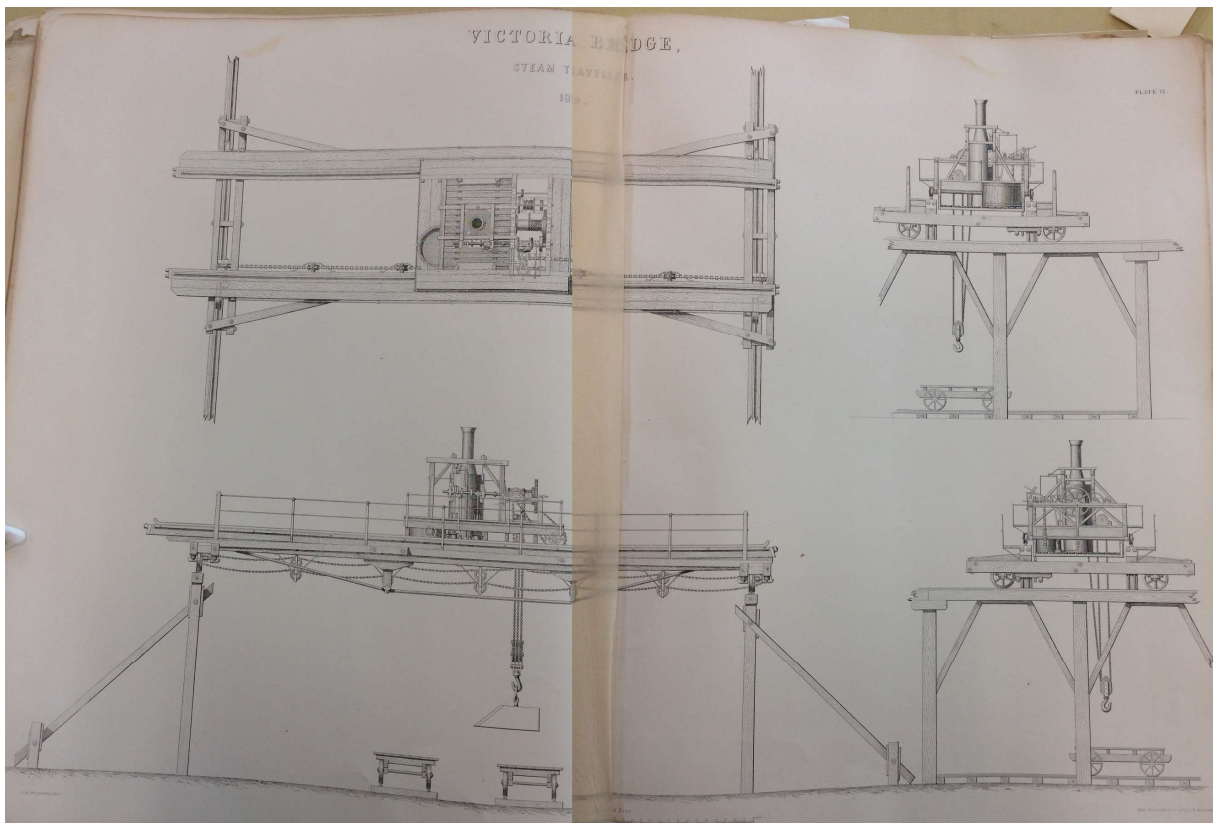


Fig. 32 *Steam traveller, 1859*, Hodges, *Construction of the Great Victoria Bridge*, LAC, Winkworth Collection, R9266 Vol. 4107

The steam traveller was a machine invented on the Victoria Bridge worksite to hoist and stack large blocks of stone.

⁵²⁴ Triggs, ‘Le Pont / The Bridge’, 57-8.

⁵²⁵ Triggs, ‘Le Pont / The Bridge’, 57.

⁵²⁶ Hodges, *Construction of the Great Victoria Bridge*, 32-3.

Chaffey also invented a derrick (Fig. 33 and Fig. 34), or crane, worked by horse or steam power, which could be manned by ‘an intelligent boy’ who, without moving from his position, could make the machine perform several movements at the same time.⁵²⁷

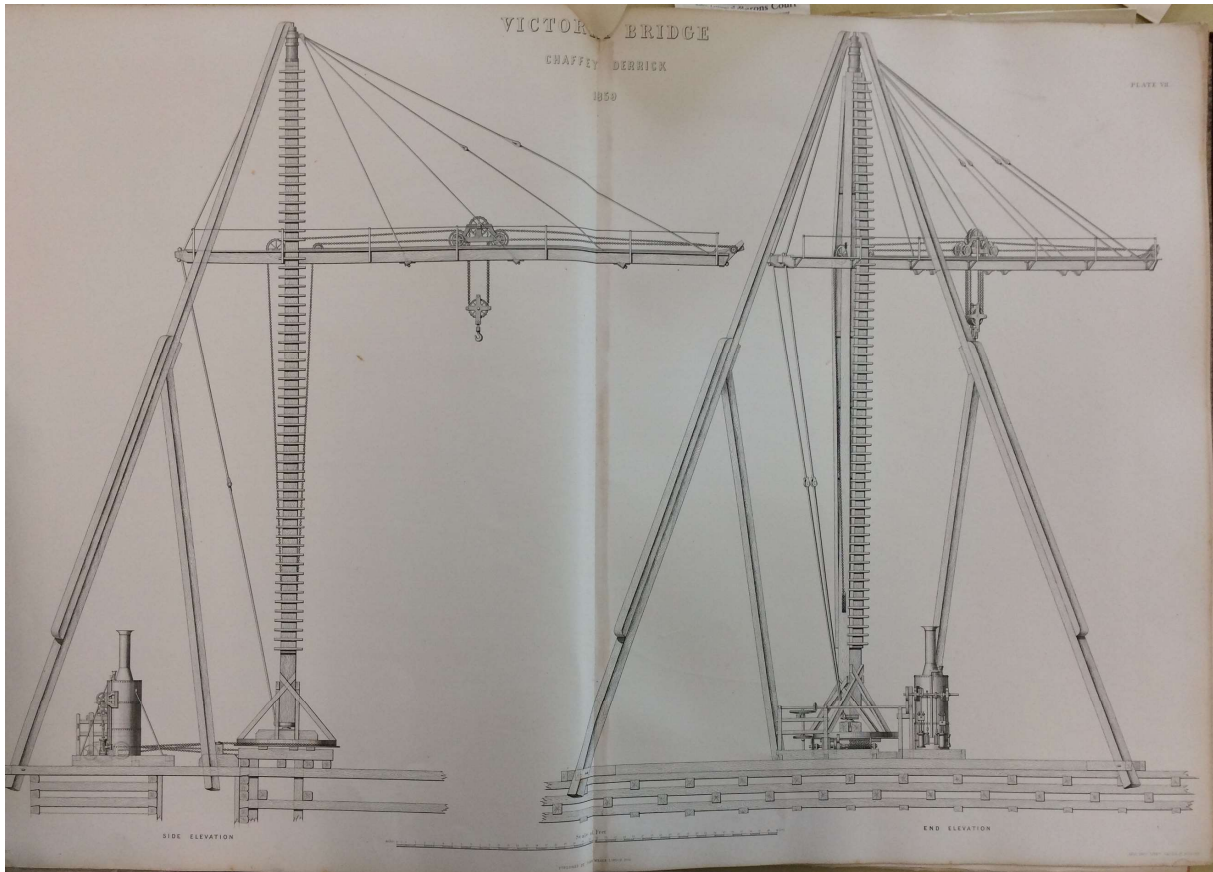


Fig. 33 *Chaffey Derrick*, 1859, Hodges, *Construction of the Great Victoria Bridge*, LAC, Winkworth Collection, R9266 Vol. 4107

Drawing of the derrick devised by Benjamin Chaffey.

⁵²⁷ Legge, *A Glance at the Victoria Bridge*, 106.



Fig. 34 *Floating Derrick and Pile Driver*, Notman, n.d., LAC, Merrilees, 1980-149_55073.1, 2000805 724, No. 1 p.16

Such derricks were notably used to hoist stones.

This crane could lift a stone weighing up to eleven tons from the barge, swing it to the pier site and lower it into position.⁵²⁸ Triggs underlines that it served as a prototype for the steel derricks used in high-rise construction today.⁵²⁹ Employers' sources, in particular the testimonies of

⁵²⁸ Triggs, 'Le Pont / The Bridge', 57.

⁵²⁹ Triggs, 'Le Pont / The Bridge', 57.

engineers, provide lengthy descriptions of the different machines used on the worksite, and a whole section of Hodges's book is devoted to drawings of these machines.⁵³⁰ Samuel underlines that machines were in fact adopted as a last resort because skilled men remained cheaper than machinery, and the use of machines on the Victoria Bridge worksite, with Hodges and Legge emphasising the reduced number of men and boys necessary to work them, was perhaps a response to the problem of labour shortage.⁵³¹ The insistence in the sources on the types and number of machines used during the construction also reflected the engineers' pride in the technical prowess the machines represented, as suggested by Hodges's description of Chaffey's 'genius'.⁵³² As a consequence, the employers' sources are marked by this enthusiasm for the development of machinery and the minute descriptions of what machines could do contrast with the absence of description of the workers' daily labour. We know the weight of the stones the machines could hoist, but there is no description of the stonecutters' daily tasks, for instance. As Samuel underlines, machines were no substitute for human toil, and the number of machines used on the Victoria Bridge as well as their descriptions in the sources should not minimise the reality of the workers' labour and physical efforts.⁵³³

The dams, the scaffolding, the barges and the various attached buildings required the work of sawyers and carpenters who are completely absent from Hodges's or Legge's testimonies, although their presence was recorded in the June 1854 return of the workforce. In his survey on 'the poor' conducted between 1849 and 1850 and published in *The Morning Chronicle*, Henry Mayhew (1812-1887), considered a pioneer of 'what we would now call oral history', interviewed working-class people for the first time.⁵³⁴ Scholar Peter Razzell underlines

⁵³⁰ See for instance Legge, *A Glance at the Victoria Bridge*, 98, 104-7; LAC, Winkworth Collection, R9266 Vol. 4107.

⁵³¹ Samuel, 'Workshop of the World', 58.

⁵³² Hodges, *Construction of the Great Victoria Bridge*, 33.

⁵³³ Samuel, 'Workshop of the World', 7-8.

⁵³⁴ Peter Razzell, 'Introduction', in Henry Mayhew, *The Morning Chronicle. Survey of Labour and the Poor: the Metropolitan Districts*, Vol.1, Sussex: Caliban Books, 1980, 2.

that although Mayhew lacked the tools and methodology used by social scientists today, his work was overall highly accurate, since there were only one or two corrections published in the letter column of the newspaper.⁵³⁵

Mayhew described the work of the sawyers in July 1850, and how machinery was contributing to their decline. He showed that they actually covered four categories of sawyers who were not always interchangeable. For instance, the timber sawyers, who cut wood for carpenters and builders, could not do the job of hardwood sawyers who cut foreign wood like mahogany.⁵³⁶ According to Mayhew's informants, the sawyers had been using the same method for generations: they worked in pair in a pit, one being the topman and the other the pitman. The pits were either scaffold pits or sunk pits, and in the latter case the pit was dug into the earth.⁵³⁷

All the testimonies quoted by Mayhew concurred that the topman had the most difficult job. Calculations by an unnamed scientist but also by the informants and Mayhew himself suggest that a two-metre saw weighed from 27 to 31.8 kilograms; the sawyers pulled it up and down at a rate of ten strokes a minute, and each down stroke was considered equivalent to lifting 39 kilograms. They repeated this ten times a minute, during ten-hour-long work days. A cooper's stave sawyer also underlined the weight of his saw and the number of strokes per minute, as well as the weight they pulled with every stroke.⁵³⁸ These detailed figures, which translated their work into weights, yards, number of strokes per minute, etc. suggest that the sawyers interviewed by Mayhew were keen to stress the strenuousness of their work, thus emphasising the physical strength required for this job but also their arduous working conditions.

⁵³⁵ Razzell, 'Introduction', 6-7.

⁵³⁶ Henry Mayhew, Letter LIX, July 4, 1850, *The Morning Chronicle. Survey of Labour and the Poor: the Metropolitan Districts*, Vol. 5, London and New York: Routledge, 2017 (1982).

⁵³⁷ Mayhew, Letter LIX, July 4, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

⁵³⁸ Mayhew, Letter LIX, July 4, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

Most sawyers stressed that their job was dangerous and accidents occurred frequently: “Accidents are common with sawyers. I’ve fallen many times, and have been cut all to pieces, so to say, by the saw.” (He showed me some scars on his arms.)’, one of them reported to Mayhew.⁵³⁹ Accidents due to falls and injuries caused by saws were thus part of the sawyers’ working conditions, and the multiplicity of the testimonies gathered by Mayhew concur to show these risks were inherent in the sawyers’ jobs.

Scaffolds and scaffolding were a crucial feature of construction sites. In his autobiography, French mason Martin Nadaud described how he fell as a boy from the third floor to the cellar of a building as he was trying to get a hold of a beam to build a scaffolding, and broke both his arms.⁵⁴⁰ Two out of four ex-votos studied by Valérie Nègre represent workers falling because the scaffolding broke, and Julie Stone emphasises how important the quality of the scaffolding was on the Britannia Bridge.⁵⁴¹ Their construction on the Victoria Bridge was even more challenging because they had to resist the ice. When the men started preparing the centre span for the erection of the tube in 1859, the stagings had to be as strong as permanent works because they were to be erected at the centre of the river, where the current was particularly fast and the water particularly deep.⁵⁴² In this particular instance, the work was demanding and precise as each piece of timber was prepared on shore, bore a mark that indicated its position, and was then shipped on a barge in the right order.⁵⁴³

Although the term ‘carpenter’ was broadly used for anyone ‘who cuts, fashions, and joins timber for building’, the ‘correct phrasing’ distinguished the framer of a building, who was the carpenter, and the finisher, who was the joiner.⁵⁴⁴ Mayhew’s informants, whom he

⁵³⁹ Mayhew, Letter LIX, July 4, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

⁵⁴⁰ Martin Nadaud, *Mémoires de Léonard, ancien garçon maçon*, Bourgneuf: A. Duboueix, 1895, Bibliothèque nationale de France, département Philosophie, histoire, sciences de l’homme, 8-LN27-42930, 57-8.

⁵⁴¹ Nègre, ‘Quatre accidents saisis sur le vif’, 108-11, Julie Stone, *The Piers and Piermasters of Menai Bridge*, Menai Heritage, 2017, 12.

⁵⁴² Hodges, *Construction of the Great Victoria Bridge*, 67.

⁵⁴³ Hodges, *Construction of the Great Victoria Bridge*, 69.

⁵⁴⁴ Mayhew, Letter LX, July 11, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

considered ‘the most intelligent of the workmen’, maintained that these two branches could not be interchangeable without ‘an inferior degree of skill in the execution of the work’.⁵⁴⁵ Carpenters were supposed to make and fix roofs, the skeleton parts of the floors, or the small beams of a ceiling, and usually worked at the building. According to an experienced carpenter, they worked quickly and their job was rougher than the joiners’. Joiners often worked in a shop, where they smoothed the surface of a piece of timber for the carpenter, for instance.⁵⁴⁶ Their emblematic tool was the plane which Samuel demonstrates could not be replaced by planing-machines during the nineteenth century.⁵⁴⁷

There were more subdivisions to the jobs of joiners. Just like the sawyers in Mayhew’s previous letter, a journeyman carpenter, who worked for the best shops at the best prices, mentioned how dangerous his activity could be:

I consider mine skilled labour, no doubt of it. To put together, and fit, and adjust, and then fix, the roof of a mansion so that it cannot warp or shrink – for if it does the rain’s sure to come in through the slates – must be skilled labour, or I don’t know what is. Sometimes we make the roof, or rather the parts of it, in the shop, and cart it to the building to fix. (...) Our work is more dangerous than the joiners, as we have to work more on scaffolding, and to mount ladders; but I can’t say that accidents are frequent among us. If there’s an accident at a building by a fall, it’s mostly the labourers.⁵⁴⁸

Mayhew’s informants tended to speak about the risks they faced or not, suggesting that whether common or not, risks were a characteristic of labour. In the case of this carpenter’s testimony, accidents were not frequent, although working on scaffolding and climbing up ladders increased the probability of falling and therefore of injuries. However, the distinction he made between labourers who plummeted and skilled workers who did not fall implied that falling was regarded as evidence of a lack of skill, and he might have downplayed the frequency of carpenters’ accidents. There is no reason to believe that Victoria Bridge carpenters injured themselves more often than their counterparts in London. However, they did work on scaffolding and ladders in

⁵⁴⁵ Mayhew, Letter LX, July 11, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

⁵⁴⁶ Mayhew, Letter LX, July 11, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

⁵⁴⁷ Samuel, ‘Workshop of the World’, 37.

⁵⁴⁸ Mayhew, Letter LX, July 11, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

inclement weather, while the same informant remarked that in London ‘[i]n the winter there’s mostly a slack, as building, of course, ain’t so freely carried on in heavy rain, and frost and snow, and dark short days.’⁵⁴⁹ There is evidence that floating dams and scaffolding were also built in winter, which might have increased the risk of injuries.

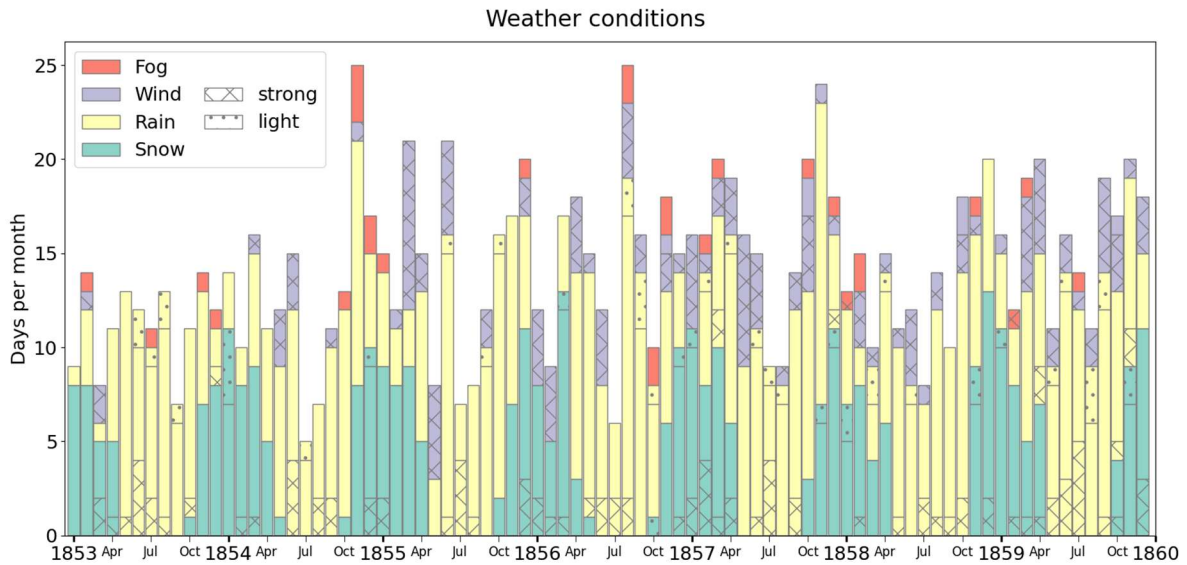
The building of other bridges, like the Brooklyn bridge in the 1880s mentioned in the introduction of this chapter, shows that falling was a common industrial risk and represented a frequent cause of death and injury on such worksites.⁵⁵⁰ In this particular case, the first assistant engineer on the Brooklyn Bridge listed the number and causes of death and injuries during the thirteen-year construction. Out of twenty-nine casualties (deaths and injuries alike) as remembered by the engineer, 41 per cent of them were due to a fall. The death certificates of Britannia Bridge workers suggest that most died because they fell from scaffolding, or because something fell on them.⁵⁵¹ This common industrial risk on this type of construction sites was made even more significant on the Victoria Bridge worksite with the weather conditions. John Bethune (1791-1872), principal of McGill University from 1835 to 1846 and then rector of Christ Church Cathedral from 1850 until his death, recorded the weather conditions in Montreal from 1838 to 1869.⁵⁵² From his annotations for each day between 1853 and 1859, we can have a fair idea of the possible weather conditions on the worksite (Tab. 7).

⁵⁴⁹ Mayhew, Letter LX, July 11, 1850, *The Morning Chronicle. Survey of Labour and the Poor*, Vol. 5.

⁵⁵⁰ See *The Brooklyn Daily Eagle*, May 24, 1883.

⁵⁵¹ I thank Julie Stone, from ‘Menai Heritage’ in Menai Bridge, Anglesey for her invaluable help on the Britannia Bridge worksite. Email to author dated 11 July 2018.

⁵⁵² McCord Museum, Fonds McCord Family, P001-B3.4.



Tab. 7 Weather conditions from Bethune's records

It rained every month between 1853 and 1859, and it snowed about 25 per cent of the time each year. The rain, sleet and sometimes frost, and the snow probably made every wooden surface slippery and increased the risk of falling.

In fact, most newspaper articles that relate accidents at the Victoria Bridge worksite also referred to falls. Falls were not necessarily linked to a particular trade, but often happened when the men were working on the scaffolds and on the piers. In September 1858, for instance, an unidentified worker fell from a pier and died a few hours later.⁵⁵³ On 11th December 1858, a young carpenter from Montreal named Ludger Guérin, twenty-three years old, fell into the river while he was removing the scaffolds from a pier and drowned.⁵⁵⁴ In summer 1859, young Théodore Minou, also a Canadian, had been working on the Victoria Bridge worksite for a few years when he fell from fifteen metres into the river as he was trying to place a massive plank between piers 7 and 9.⁵⁵⁵ On 11th August 1859, a worker named Thomas O'Brien fell into the river and drowned.⁵⁵⁶ On 1st October 1859, two men who were working on the scaffolding of a

⁵⁵³ *Le Courrier du Canada. Journal des intérêts canadiens*, 15 September 1858.

⁵⁵⁴ *L'Ere Nouvelle. Journal du District de Trois-Rivières*, 16 December 1858.

⁵⁵⁵ *La Minerve*, 2 July 1859.

⁵⁵⁶ *La Minerve*, 16 August 1859.

pier fell, one on the ground and the other in the river, and died.⁵⁵⁷ Workers could also be hit by falling materials, like Edward Burke who died on 14th May 1859, crushed by a beam hoisted by a couple of workers.⁵⁵⁸ The ropes broke and the beam fell on Edward Burke who was underneath.⁵⁵⁹ From newspaper articles, I counted ten accidental deaths between 1858 and 1859. I hardly found any such newspaper article prior to 1858, which of course does not mean that no accident happened. Perhaps accidental deaths did not make it to the news, and the number of accidents might have intensified in 1858 when the contractors were given a bonus to finish the bridge by the end of 1859.

These are a few examples of the risks that were induced by each job involved in the construction of the Victoria Bridge. Each step of the construction and the manipulation of each piece of material or tool involved a risk. A tramway was built in 1853 to Lake St Louis, about 30 kilometres up the Saint Lawrence River, for the shipment of stones necessary for the construction of the Victoria Bridge. This would have involved navvies, for instance, whose work was also dangerous. Brooke defined navvies as workers familiar with tasks of excavating and removing rock, soil, clay and gravel outside tunnels, whose nomadic lifestyle took them on to a series of public works over many years.⁵⁶⁰ In contrast, labourers might engage in railway building if the worksite was in their district, and when finished they returned to their previous forms of work.⁵⁶¹ Navvies outworked ordinary labourers at any menial job.⁵⁶² Brooke underlines the danger of tunnel building due to falls of rock and blasting, but more generally speaking, navvies had a dangerous job and railway construction caused an influx of patients to hospitals which Brooke compares to epidemics.⁵⁶³

⁵⁵⁷ *L'Ére Nouvelle. Journal du District de Trois-Rivières*, 3 October 1859.

⁵⁵⁸ *Le Journal de Québec*, 21 May 1859.

⁵⁵⁹ *Le Journal de Québec*, 21 May 1859.

⁵⁶⁰ Brooke, *The Railway Navvy*, 51.

⁵⁶¹ Brooke, *The Railway Navvy*, 51.

⁵⁶² Brooke, *The Railway Navvy*, 51.

⁵⁶³ Brooke, *The Railway Navvy*, 147, 150.

On 29 July 1853, a labourer working on the Quebec-Richmond section of the Grand Trunk had a load of soil dropped on his leg and the broken limb was eventually amputated.⁵⁶⁴ The same newspaper also mentioned a worker from another railway worksite whose toes were severed by a wagon wheel. These accidents happened to labourers and labourers represented 26.8 per cent of the bridge workforce in June 1854, but they were also common accidents likely to occur on a worksite. In January 1859, a tramway was laid upon an incline of timber framing that raised from the packed ice in front of the temporary pier to the top of the pier.⁵⁶⁵ To have a tramway run on a timber incline was common on worksites and was dangerous, and Elizabeth Garnett, a missionary who worked with navvies in Britain, described such kind of ‘most serious accident’. It happened on the new line from Upton to Newbury in the 1880s, where some workmen who had been working on a bridge below Upton were going to another bridge on a truck, while the driver, the stoker and a ganger were riding on the engine:

Communication with the cutting, which is some thirty feet deep at this place, is kept up by means of an incline, about one in five, upon which rails are laid and over which engines and loaded trucks are continually running. In ascending this incline the engine from some cause, probably a subsidence from the continuous wet, left the metals, and toppled over, some fifteen or twenty feet, into the cutting below, dragging with it the truck and precipitating the whole of the men, most of whom were more or less hurt, sustaining either fractured bones, severe lacerations, or scalds, the latter caused by the escape of the boiling water from the engine.⁵⁶⁶

Garnett’s testimony illustrated how fast and easily trucks and wagons running up an incline could topple over, and how the weather conditions could increase that risk which resulted in common injuries on worksites: fractures, lacerations, scalds, etc. The Select Committee for Railway Labourers (1846) provided a list of cases of male patients, workmen and labourers, admitted in the General Infirmary of Northampton from 23 May 1835 to 11 December 1842, during the construction of the London and Birmingham Railway. Fractures represented 99 cases

⁵⁶⁴ *Le Pays*, 3 August 1853

⁵⁶⁵ Hodges, *Construction of the Great Victoria Bridge*, 57.

⁵⁶⁶ Garnett, *Our Navvies*, 126.

out of 124, which means that injuries for which workers were sent to hospital were fractures in 80 per cent of the cases.⁵⁶⁷

But accidents also happened because of a conflict between safety, the workers' comfort, the necessity to work fast, and the habits they developed. Historian Moriceau shows that even when there were safety measures, the workers did not always comply with them, usually because safety measures prevented the smooth performance of a task, and workers dismissed what would slow them down or make the job more complicated or difficult.⁵⁶⁸ Furthermore, the Victoria Bridge workers were pressured into working fast and perfectly by money incentives and, in the case of the gangs of rimmers and riveters, by inspectors who tested each rivet after it was put in and made the men replace it if it was faulty.⁵⁶⁹ This pressure might have encouraged the behaviour described by Moriceau. Similarly, when the dam was no longer of use, the workers had to destroy it, and the following picture (Fig. 35) by Notman shows the workers destroying such a crib.

⁵⁶⁷ Edward Bouverie, M.P., Chairman of the Committee, Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index, 12 June 1846, 119.

⁵⁶⁸ Caroline Moriceau, *Les Douleurs de l'industrie. L'hygiénisme industriel en France, 1860-1914*, Paris: EHESS, 2009, 183.

⁵⁶⁹ Legge, *A Glance at the Victoria Bridge*, 122.



Fig. 35 *Men Destroying a Crib*, Notman, n.d., LAC, Books, Joseph Patrick, PA187241, 23

A group of four men are destroying a crib with thongs under the supervision of the foreman on the right. Two workers are barefoot. In the background, there is a dam and the tube is under construction.

In this picture, the four workers are using thongs to destroy the crib. As pointed out by Triggs, the two workers on the right have removed their boots and are working barefoot while manipulating boulders, debris and thongs.⁵⁷⁰ Triggs also accurately stresses that the foreman on the right is watching and does not seem particularly concerned with the barefoot worker. Injuries to bare feet were frequent. The stonemason whose memoir was published in 1908 found

⁵⁷⁰ Triggs, 'Le Pont/The Bridge', 49.

a job in Pittsburgh to build a brick villa because the man who was working before him in the clay-pit, in clay and water, had removed his shoes and stockings and, having accidentally stuck a pick into his big toe, was therefore laid up.⁵⁷¹ Notman's picture thus illustrates the recurrence of routine risky situations and behaviours on a construction site.

This second section has shown that every job involved in the construction of the Victoria Bridge came with its set of risks that were evidenced on a variety of worksites. The examples examined in this section are only a few examples of the dangers of labour and represent typical worksite accidents. With thousands of workers on the bridge worksite undertaking such dangerous activities over six years, it is quite likely that these accidents took place. The fact that employers' sources did not mention them has now to be examined, together with an analysis of how employers' sources regarded risks.

IV- Employers' sources and accidents

As suggested in the first section, at the end of his book, Hodges pointed out that twenty-six workers died during the six-year construction, suggesting that this was a low death toll, which historian Triggs confirms.⁵⁷² Similarly, 'not more than twenty fatal accidents' reportedly occurred on the Brooklyn Bridge (1869-1883), and Rapley stresses that the fifteen deaths on the Conway Bridge (1846-1848) were 'surprisingly few'.⁵⁷³ It means that 4.3 workers died on average each year on the Victoria Bridge worksite, in comparison with 7.5 on the Conway Bridge and 1.5 worker on the Brooklyn Bridge worksite. Of course, these figures contrasted with the death toll in railway construction and more generally with most nineteenth-century workplaces, where historian Jamie Bronstein defines the death tolls as a 'carnage'.⁵⁷⁴ But the

⁵⁷¹ Anonymous, *Reminiscences of a Stonemason*, 147-8.

⁵⁷² Hodges, *Construction of the Great Victoria Bridge*, 77, Triggs, 'Le Pont / The Bridge', 48.

⁵⁷³ *The Brooklyn Daily Eagle*, 24 May 1883 and Rapley, *The Britannia & Other Tubular Bridges*, 71.

⁵⁷⁴ Bronstein, *Caught in the Machinery*, 73.

death tolls on the Conway, Victoria and Brooklyn bridges suggest that employers also commonly boasted about what they considered low death tolls, which raises the question of what was considered an acceptable death toll.

Besides, when the first assistant engineer on the Brooklyn Bridge listed the causes of death on the worksite for the *Brooklyn Daily Eagle*, he listed twenty-eight deaths and not twenty, which questions the reliability of official figures about the death toll on a worksite. It is also doubtful that the Victoria Bridge death toll would have included Indigenous workers who might not appear in the official returns of the workforce. Furthermore, the insistence of employers and even newspapers on the death tolls suggest that employers and the public focused on fatal accidents. However, death tolls are not completely relevant to evaluate how dangerous a worksite was since they exclude minor and major injuries sustained at work. The list of admissions into Bath hospital of workers victims of accidents on the Great Western Railway (1833-1841) between 30 September 1839 and 17 June 1841 shows that thirteen died in hospital out of a total of 137 admissions.⁵⁷⁵ The death toll on the Great Western Railway was not given but we can see that in two years, there were at least 124 non-fatal injuries. Furthermore, only the victims of serious accidents were likely to have been sent to hospital. When the commissioners of the Select Committee on Railway Labourers presented to Isambard Brunel, the engineer of the Great Western Railway, this list of admissions to Bath hospital, Brunel replied that it was ‘a small list’, that these were very heavy works with ‘immense quantity of powder’ and that the list surely did not ‘show the whole extent of accident’.⁵⁷⁶ When the commissioners insisted, asking if he did not think it was a startling list, Brunel said that ‘if the same number of men had been employed in twos and threes on parish roads, scattered over the country, the number of accidents would have been as large if not larger’.⁵⁷⁷ Brunel thus

⁵⁷⁵ Bouverie, Select Committee on Railway Labourers, 122.

⁵⁷⁶ Isambard Brunel, Select Committee on Railway Labourers, §2152.

⁵⁷⁷ Brunel, Select Committee on Railway Labourers, §2153.

acknowledged that construction was a dangerous trade in general, but that railway construction was worse. Contrary to Hodges for instance who focused on the death toll on the Victoria Bridge, Brunel admitted to the Select Committee the danger of railway construction in terms of injuries.

However, the Victoria Bridge employers did describe injuries when they were due to the weather conditions in Montreal. In the summer of 1854, the men suffered from '*coup-de-soleil*' because of the 'scorching heat'.⁵⁷⁸ In winter, the workers suffered greatly, especially in 1853-1854:

Being without any experience of such a rigorous climate they suffered severely; many of the men had their noses, ears, or feet, frost-bitten, and some had to be sent to the hospital from partial blindness, produced by the glare of the sun upon the snow. During strong winds their eyes were filled with fine drifting snow, at the same time that the sun was shining brightly over head (...)⁵⁷⁹

Hodges, who did not describe typical worksite injuries, enumerated the workers' body parts that were frost-bitten during the first winter of the construction. He underlined the workmen's inexperience of the climate but he also noted at the end of the construction in February 1859 that 'the workmen in a very short period would become covered with icicles, and be driven from their work.'⁵⁸⁰ This insistence on the consequences of the cold on the workers' bodies contrasts with the total absence of description of falls.

This difference suggests Hodges's fascination with these injuries, perhaps because he was himself bewildered by the effects of the cold, but also because he might have thought it fascinating for a British readership. Bronstein has documented nineteenth-century newspapers' gory descriptions of work accidents and contemporaries' 'fascination with mutilation on the job', and found that a reason for this might have been their surprise about the variety of ways in which workers' bodies could interact with machines.⁵⁸¹ Hodges's emphasis on cold-related

⁵⁷⁸ Hodges, *Construction of the Great Victoria Bridge*, 17-8.

⁵⁷⁹ Hodges, *Construction of the Great Victoria Bridge*, 17-8.

⁵⁸⁰ Hodges, *Construction of the Great Victoria Bridge*, 58.

⁵⁸¹ Bronstein, *Caught in the Machinery*, 70-1.

injuries, without being gory, probably reflected his own surprise at the consequences of work in an extreme climate. Moreover, the newspaper articles that related the fatal falls of Guérin or Minou in the previous section always focused on one worker, while in Hodges's words, 'many' were sent to hospital due to weather-related injuries. Perhaps incidents involving a number of victims were more likely to attract employers' attention.

As suggested in the previous section, employers also clearly identified the risk of drowning in a coffer-dam.⁵⁸² They also wrote about the dangers of navigation, made difficult by the current. When close to the construction site, rafts threatened to crash against the works and destroy them, thus putting at risk the men on the temporary works and the crews. On 5th May 1859, one of the fifteen rafts transporting hundreds of pieces of oak timber struck the mooring chains of a barge, sending the thirteen Indigenous crewmembers and the timber into the water.⁵⁸³ Eight or ten boats were immediately sent to their rescue and all of them were saved. Newspapers described a similar accident that happened on 16th June 1859, involving a raft manned by ten to fifteen Indigenous men that crashed against a pier:

A very moving scene happened at the Victoria Bridge yesterday. – A raft, with ten to fifteen savages onboard, was going down the St Lawrence, and when it got close to the bridge, despite the frantic efforts of the powerful rowers, was pushed by the current and a very strong wind, and crashed against a pier. It would be impossible to tell the confusion and the cries. The workmen watched this scene and did not want to go and save the poor souls because they feared their own frail boats might be destroyed by the huge pieces of timber that were carried by the current.

Upon seeing this disaster, a young Canadian called Isaie Vincent jumped into a boat and, thanks to his skill, his composure and his presence of mind, he managed to save 4 of these poor souls who would probably have perished without this brave boy.

We are told that one of the savages was rescued just in time, near Ste Hélène Island where he had swum. The others were picked up by the Grand Trunk boats that were moored near the harbour which is close to the Bridge, and on which a number of spectators had rushed to save the poor men.⁵⁸⁴

⁵⁸² Legge, *A Glance at the Victoria Bridge*, 100.

⁵⁸³ Hodges, *Construction of the Great Victoria Bridge*, 62.

⁵⁸⁴ *L'Ordre, Union catholique*, 17 June 1859: 'Une scène des plus émouvantes est arrivée hier au pont Victoria. – Un radeau, sur lequel se trouvaient de dix à quinze sauvages, descendait le St. Laurent lorsque rendu près du grand pont, malgré les efforts inouis [*sic*] des vigoureux rameurs, et poussé par le courant et un vent très fort, il vint se briser contre un des piliers. Raconter la confusion et les cris en ce moment, serait impossible. Les ouvriers, spectateurs de cette scène [*sic*], n'oseient [*sic*] aller au secours des malheureux, craignant que leur frêle embarcation ne fut [*sic*], elle-même, brisée par les énormes morceaux de bois que chariait [*sic*] le courant.'

This article is further evidence that Indigenous workers manned the rafts. It illustrates the danger of sailing on the St Lawrence, especially when carrying materials, but also the difficulty of saving drowning men, as well as the danger it could represent to the rescuers. This text is also a description of the solidarity on a worksite, and especially in the emergency of an accident. This incident is very similar to the one described by Hodges, but one of them happened on 5th May and the other on 16th June 1859, and it is unlikely that Hodges and the newspaper would have had the date that wrong. This strong similarity suggests that this type of accident was very common and spectacular.

A final serious incident the employers wrote expansively about was the outbreak of cholera in summer 1854 which took a great toll on the Victoria Bridge workforce as the men either fell sick or fled. The history of cholera, historian Christopher Hamlin writes, is a ‘story of fear’ but also a history of changing biomedical science as the contemporary understanding of cholera evolved throughout the nineteenth century.⁵⁸⁵ In Britain, cholera first appeared in 1831 and was therefore, at the time of the construction of the Victoria Bridge, a relatively new and dreadful disease.⁵⁸⁶ In one instance on the Victoria Bridge worksite, ‘out of a gang of 200 men, 60 were sick at one time, many of whom died’.⁵⁸⁷ Hamlin shows that flight was a traditional response to epidemics, although prior to the 1880s states frowned on flight, one of the reasons for this being that movement spread plagues.⁵⁸⁸ The impact of cholera on the worksite was thus not limited to the death of an (unknown) number of workers: many of them

A la vue de ce sinistre, un jeune canadien, du nom de Isaïe [*sic*] Vincent, se jette dans une chaloupe, et à force d’habileté, de sang froid et de présence d’esprit il réussit à sauver 4 de ces malheureux qui auraient sans doute succombé sans le secours de ce brave garçon.

On nous dit que l’un des sauvages a été recouru [*sic*] à temps, vis-à-vis l’Ile Ste. Hélène où il s’était rendu à la nage. Les autres ont été recueillis par les chaloupes du Grand Tronc qui se trouvent amarrées au grand quai qui est près du Pont et dans lesquelles plusieurs spectateurs s’étaient empressés de se jeter pour sauver les malheureux.’ My translation.

⁵⁸⁵ Christopher Hamlin, *Cholera. The Biography*, Oxford: Oxford University Press, 2009, Ebook, 3, 7.

⁵⁸⁶ Hamlin, *Cholera. The Biography*, 117.

⁵⁸⁷ Hodges, *Construction of the Great Victoria Bridge*, 27.

⁵⁸⁸ Hamlin, *Cholera. The Biography*, 117.

fled, to the great alarm of the employers. A letter dated 31st July read: ‘we are struggling against the cholera, but it is a hopeless task, for all who are not attacked and who can do so, leave this part of the country: nearly the whole of our best men have gone westward.’⁵⁸⁹ On 14th August, the same agent wrote:

The harvest is now taking the few men the cholera left us, and some gangs are dispersed entirely. The cholera has been a fearful scourge, and at Vaudreuil is now followed by typhus. A few weeks may bring cooler weather, and we may yet get a great deal of work done before winter sets in. It is annoying, however, to be in want of labourers just as we are ready to make a push, and with the winter so near.⁵⁹⁰

The men were therefore building the caissons for the first time on the Victoria Bridge, while constituting a diminished workforce and disorganised gangs. Cholera is the only illness, defined as ‘disease plus inability to function’ by historian James Riley that employers’ sources mention.⁵⁹¹ It is the only instance where employers actually mention the death – and the cause of death – of the workers, apart from the twenty-six casualties mentioned by Hodges at the end of his book, quite understandably because cholera was a fearful disease to any Victorian but also because of its impact on the worksite.

Riley shows the difficulty of studying but also defining sickness and demonstrates that friendly societies defined sickness as ‘any health condition that rendered a person unable to work. Wellness, therefore, was the ability to work.’⁵⁹² This definition established a strong connection between health and work, where health was defined by the ability to work. Brooke recalls that pulmonary diseases and rheumatic conditions were endemic diseases among navvies and it is quite likely that the workers of the bridge suffered from a number of afflictions.⁵⁹³ Although Brooke suggests that the environment of navy encampments was probably less conducive to disease than some quarters of industrial cities, the Victoria Bridge workers, some

⁵⁸⁹ Hodges, *Construction of the Great Victoria Bridge*, 27.

⁵⁹⁰ Hodges, *Construction of the Great Victoria Bridge*, 27.

⁵⁹¹ James C. Riley, *Sick, not Dead. The Health of British Workingmen during the Mortality Decline*, Baltimore, London: The Johns Hopkins University Press, 1997, 128.

⁵⁹² Riley, *Sick, not Dead*, 127.

⁵⁹³ Brooke, *The Railway Navy*, 43.

of whom were local workers, might also have been affected by Montreal's unhealthy environment.⁵⁹⁴ Bradbury demonstrates that nineteenth-century Montreal had mortality rates 'unmatched in North America.'⁵⁹⁵ The reasons for this, she shows, were low wages, frequent unemployment, but also damp, unsanitary homes, crowding, and inadequate sewage.⁵⁹⁶ As a result, '[b]eing ill or having a family member sick was part of the daily life of most working-class Montrealers; even in years without epidemics Montreal's particularly high rates of disease and death opposed constant challenges to family survival.'⁵⁹⁷ It was estimated, she adds, that in the late 1850s, for every person dying in Montreal there were twenty-eight cases of sickness. Being sick, or living close to sick people, was therefore a characteristic of life in Montreal, even without epidemics. In other words, although Hodges, Bidder or Legge dwelt on cholera and its consequences in 1854, it is quite probable that the workers suffered from various diseases never mentioned by the employers.

The accidents, injuries and diseases described in employers' sources were all connected to the innovative construction methods used on the worksite, the extreme weather, and dramatic events like the outbreak of cholera. Employers clearly acknowledged the existence and approximate number of the victims in the case of extreme weather and cholera. These risks would be considered 'extraordinary' by the employers, unlike the typical industrial risks identified in the previous section. This difference in the sources between typical and 'extraordinary' risks suggests that typical accidents were normalised. Cooter and Luckin show that businesses and the state 'accentuated the normalization of the accident', which were part of the 'natural order' of industrial society.⁵⁹⁸ On the days when Guérin, Minou, O'Brien or Burke died, Hodges simply described the ongoing works, or mentioned the severity of the cold.

⁵⁹⁴ Brooke, *The Railway Navy*, 44; Bradbury, *Working Families*, 105.

⁵⁹⁵ Bradbury, *Working Families*, 105.

⁵⁹⁶ Bradbury, *Working Families*, 105.

⁵⁹⁷ Bradbury, *Working Families*, 105.

⁵⁹⁸ Cooter and Luckin, 'Accidents in History: An Introduction', in Cooter and Luckin (eds), *Accidents in History*, 5.

In October 1859, when two men fell from a pier and died, Hodges only mentioned a raft accident.⁵⁹⁹ Perhaps he did not know about the workers who fell from the pier and nobody thought it was worth letting him know, or maybe such an accident was too common to be mentioned in his book. Hodges chose to describe the injuries due to the cold but Legge, a Canadian civil engineer, did not mention the weather-related injuries in his book, which suggests that Hodges might have found them spectacular enough to write about them and inform his British readers. In that sense, the description or the absence of description of accidents in the sources are equally telling.

Fatigue was a particular feature of the worksite as it was part of the working conditions, it was described in the sources, but its impact on the workers' health and the construction process was not mentioned, and was perhaps misunderstood. Although Legge and Hodges lengthily described the machines, and even the invention of machines, used on the worksite, Samuel shows that machines in the nineteenth century did not alleviate human fatigue and were even accompanied by an increase of sweating, and that hand labour was often preferred to machinery for better performance.⁶⁰⁰ As he describes the work of a number of artisans, he insists on the physical exertion each job represented.⁶⁰¹ The fatigue of manual labour hardly appears in employers' sources. The testimony of C. C. Martin, the assistant engineer on the Brooklyn Bridge, thus described the death of a labourer:

Delaney was a laborer, and was wheeling concrete in a barrow over York street. He had been doing this all day. Just at nightfall, on his last trip, when he had but half a barrow full of concrete, he dumped it on one side. He slipped and fell on the opposite side, into the street, a distance of forty-five feet, killing him instantly. It is not known what caused his fall, as the conditions of the path were the same as they had been all day.⁶⁰²

⁵⁹⁹ Hodges, *Construction of the Great Victoria Bridge*, 70.

⁶⁰⁰ For instance, see Hodges, *Construction of the Great Victoria Bridge*, 32; Legge, *A Glance at the Victoria Bridge*, 98, 104; Samuel, 'Workshop of the World', 8, 17, 56.

⁶⁰¹ Samuel, 'Workshop of the World', for instance 22.

⁶⁰² *The Brooklyn Daily Eagle*, May 24, 1883.

Delaney had thus been doing the same task the whole day, that is pushing a barrow up a plank thirteen metres above the ground, and at the end of the day he fell. Martin's description of this accident shows that Delaney's death was unexpected, even surprising. Indeed, sentences such as '[i]t is not known what caused his fall' or '[h]e had been doing this all day' suggest that the accident was not caused by inexperience since the man knew his job. When he died, his barrow was only half full, suggesting that the task was less difficult, and apart from that, nothing had changed which could have caused his death. This is clearly a description of fatigue which Martin did not seem to understand as the cause of accident. In fact, he did not even mention the physical exertion of such a job. Georges Vigarello has shown that there have been different fatigues and that the understanding of fatigue has evolved throughout history.⁶⁰³ Maybe Martin just considered that fatigue was part of a labourer's job, but it is also possible that he did not perceive the fatigue caused by a labourer's day and its consequences.

Victoria Bridge employers perceived the fatigue on the job when efforts intensified. Hodges used the word 'exertion' about four times in his book, and only from 1858 when the Grand Trunk directors gave the contractors a bonus to finish the bridge by the end of 1859, two years ahead of schedule.⁶⁰⁴ This term crystallised the employer's acknowledgement of the workers' physical efforts that exceeded 'regular' efforts on a worksite. In that sense, the fatigue caused by these unusual efforts was a conflict between efforts normally made on a worksite, and these efforts on the Victoria Bridge.

Hodges only used the term 'exertion' to praise the workmen's efforts and stress the unusual work pace that promised an early completion of the bridge, as shown by these few examples: 'To accomplish the completion of these piers in one season required extraordinary exertion', or 'the work could not have been done with anything like ordinary exertion.'⁶⁰⁵ The

⁶⁰³ Vigarello, *Histoire de la Fatigue*, 11-2.

⁶⁰⁴ Passfield, 'Construction of the Victoria Tubular Bridge', 33.

⁶⁰⁵ Hodges, *Construction of the Great Victoria Bridge*, 45-53.

workers' exertion was the cause of an early completion of the bridge, and thus a cause of success and pride. This suggests that the task was impossible at a normal pace but could be done because of these extraordinary efforts. In December 1858, the work was stalled because of the 'severity of the cold'; and yet, Hodges pointed out that 'it was imperative that the work should be done, and therefore the greatest exertion was made.'⁶⁰⁶ Even in uncommon, extraordinarily difficult circumstances, the work was completed because the workmen made more physical efforts than usual. Exertion was therefore about exceeding the 'limit' imposed by the cold. The employers' sources did not mention the possible consequences of this unusual exertion on the workers' health. From the workers' perspective, the connection between money incentives, fatigue and accidents was probably very clear. Historian Rolande Treppe shows that a French miners' union denounced piecework in 1848 and in 1883 for these very reasons: 'The union denounces piecework which pushes the worker to ignore safety precautions in order to work faster, (...) to excavate under too heavy weights of soil. The miner who does piecework can earn 6 to 7 francs a day, but by putting his life at risk and exhausting himself.'⁶⁰⁷

Similarly, employers tended to minutely detail the exploits of the workmen and to translate them into numbers, just like Mayhew's informants who calculated the weight of their tools and what their daily efforts represented in terms of distance or weight. Vigarello shows how fatigue was measured and put into numbers in the nineteenth century.⁶⁰⁸ This new consideration of fatigue went with increasing interrogations about workers' attitudes, positions, movements, as well as their efficiency.⁶⁰⁹ Movements and efforts became crucial, as well as

⁶⁰⁶ Hodges, *Construction of the Great Victoria Bridge*, 50.

⁶⁰⁷ Rolande Treppe, 'Travail à la mine et vieillissement des mineurs au XIXe siècle', *Le Mouvement social*, Jul. – Sep. 1983, No. 124, *L'usure au Travail*, 131-152, 150: 'Le syndicat blâme le travail à prix fait qui entraîne l'ouvrier pour aller vite à négliger les précautions, à simplifier les boisages, à excaver sous de trop lourdes masses. Le mineur qui travaille à prix fait peut arriver à des journées de 6 à 7 francs, mais en risquant sa vie et en s'exténuant.', (Cahiers de doléances des mineurs français, présentés par la Chambre syndicale des mineurs de la Loire, Paris, 1883). My translation.

⁶⁰⁸ Vigarello, *Histoire de la Fatigue*, 179.

⁶⁰⁹ Vigarello, *Histoire de la Fatigue*, 180.

calculations about strengths and operationalities.⁶¹⁰ The Victoria Bridge employers exemplified this contemporary interest in measuring efforts and efficiency, and by doing so they illustrated the fatigue experienced by the workers. In his December 1858 report, engineer Alexander Ross wrote in his report to the president and directors of the Grand Trunk Company that the men had worked exceptionally fast, and minutely described the quantity of masonry put in position each hour, calculating the work pace in cubic feet and minutes, recounting the number of locomotives, horses, men, etc., thereby illustrating the employer's effort to measure and rationalise the workers' efforts.⁶¹¹ Similarly, Hodges wrote that '8,000 cubic yards = 216,000 cubic feet, of masonry was set, being at the rate of 13 cubic feet per working minute' in September 1856,⁶¹² or in 1858:

in five months 70,000 feet of timber had to be framed into cribs, and sunk in a current running six miles per hour, for which 4870 tons of loose stone were required, 29,620 feet of piles were driven, 1300 yards of puddle clay put in, 88,830 cubic feet of masonry set (equal, from the time it was commenced to completion, to 1890 cubic feet for every working day)⁶¹³

Just like Ross, Hodges detailed the quantity of work done in relation to time. By doing so, he not only illustrated the different tasks performed on the worksite as well as a certain cult of performance, but he also tried to measure the workers' speed and rationalise their work and movements. Both Ross and Hodges implied that exceeding one's physical limits to get a job done was an exploit and not the risk of getting injured, while to the modern reader these calculations evidence that the workmen had to work fast, sometimes in difficult weather conditions.

⁶¹⁰ Vigarello, *Histoire de la Fatigue*, 180.

⁶¹¹ LAC, RG30-1026, Ross's Report, 6 December 1858.

⁶¹² Hodges, *Construction of the Great Victoria Bridge*, 38. 216,000 cubic feet = 6,116 cubic metres; 13 cubic feet = 0.4 cubic metres.

⁶¹³ Hodges, *Construction of the Great Victoria Bridge*, 53.

Fatigue was not only induced by the work pace, but also by the long workdays. In 1855, a *Montreal Transcript* article, written in reaction to an ongoing Grand Trunk workers' strike, implied that long working-hours were common:

We fear there has been altogether too much said and done about this so-called strike. We believe the blame rests not on one side alone; but masters and labourers are alike in fault. For the latter to work twelve hours during the summer, appears to us, so far as their physical health is concerned, most dangerous and prejudicial. It is stated, and by those who have much experience in such matters, that the twelve hours system is a good one, - injurious neither to master nor men. We are told, in the United States, on the great public works, it is the rule; and that here, unfortunately, the Grand Trunk people made it an exception.⁶¹⁴

This article clearly blamed the employers for imposing long workdays. From this article, it is not totally clear whether the strike was prompted by the men working on the Montreal-Toronto section of the Grand Trunk, or by the Victoria Bridge workers. However, as the contractors were the same for both worksites, it is quite likely that the workdays were similar. Based on a *Gazette* article, Appleton shows that the men, who 'wanted their hours of labour reduced from twelve to ten', did not obtain anything in the end:

The contractors for the Grand Trunk indicated a willingness to raise wages by 1s3d for the 12-hour day, but they refused to consider any shortening of hours. In the end the wages remained at 5 shillings (\$1.00) for the longer day, in accordance with the contract under which the men had been recruited in England.⁶¹⁵

This strike shows that employers were more inclined to raise wages than to reduce the length of the workdays, probably because of the short working season. However, the fact that the workers initially demanded a reduction of the work hours and not a raise of wages suggests that they knew too well the consequences of long workdays.

Vigarello shows how nineteenth-century workers described the fatigue of long working hours. Grignon, a tailor, described the strenuousness of the job, how tailors' bodies broke, how limbs became numb and how their health deteriorated so much that when they finally left the

⁶¹⁴ *Montreal Transcript*, May 4, 1855.

⁶¹⁵ *Gazette* (Montreal), 5 May 1855, cited in Appleton, *The Sunshine and the Shade*, 87.

workshop they went straight to hospital.⁶¹⁶ Gauny, a joiner who worked ten hours a day, described how the prospect of the tasks he had to perform haunted him, how his muscles tried to get the job done, how his stomach impatiently waited for the first meal of the day, how also he hated the bell that rang at the start of each new hour.⁶¹⁷ Gauny's testimony is extraordinary because he described both the physical fatigue he endured, but also the mental exhaustion caused by his ten-hour days. The long hours of work necessarily had similar extremely negative impacts on the Victoria Bridge workers' bodies and mental health.

Fatigue also has a proven impact on accidents. Experiments such as the Cambridge Cockpit studies conducted in the 1940s examined the effects of fatigue on skills. Such experiments showed that as fatigue increased, subjects became less reliable but also, they 'developed a degree of negligence which is tantamount to a willingness to take chances.'⁶¹⁸ Experiments conducted on car drivers showed a similar 'explicit increase in risk-taking', while in 1953 '[c]arelessness and spoilage of materials' were reported for munitions workers who had been working long hours.⁶¹⁹ Holding thus concludes: 'These kinds of behaviour seem to imply the acceptance of greater probabilities of failure in the task, or even injuries, in return for savings in time or effort.'⁶²⁰ These three different experiments demonstrate that even experienced workers could take risks and put themselves in danger under the effect of fatigue.

⁶¹⁶ Vigarello, *Histoire de la Fatigue*, 198, quoting Grignon, ouvrier tailleur, *Réflexions d'un ouvrier tailleur sur la misère des ouvriers en général, la durée des journées de travail, le taux des salaires, les rapports actuellement établis entre les ouvriers et les maîtres d'ateliers, la nécessité des associations d'ouvriers comme moyen d'améliorer leur condition*, Paris, 1833, p.2: 'Nous travaillons quatorze à dix-huit heures par jour dans l'attitude la plus pénible ; notre corps se déforme et se casse ; nos membres s'engourdissent et perdent leur agilité, leur vigueur ; notre santé se ruine et nous ne quittons l'atelier que pour entrer à l'hôpital.' My translation.

⁶¹⁷ Vigarello, *Histoire de la Fatigue*, 199, quoting Jacques Rancière, *Gabriel Gauny, le philosophe plébien* (1983), Paris: La Fabrique, 2017, 53.

⁶¹⁸ Dennis Holding, 'Fatigue', 159, in Robert Hockey (ed.), *Stress and Fatigue in Human Performance*, Chichester, New York, Brisbane, Toronto, Singapore: John Wiley & Sons, 1983. The Cambridge Cockpit studies had pilots sat for long periods of time to respond on aircraft controls to changes in a variety of instruments. As alertness declined, researchers noticed shifts in standards of performance, lapses in attention which tended to be centred on items of crucial importance, thereby neglecting other elements. Pilots also evidenced wrong timing, meaning that they executed correct actions but at the wrong time, and their reports became less reliable, with errors blamed on levers and switches, increased anger and increased awareness of physical discomfort. From Holding, 'Fatigue', 152-3.

⁶¹⁹ Holding, 'Fatigue', 159.

⁶²⁰ Holding, 'Fatigue', 159.

This correlation between fatigue and risk-taking implies that workers could indeed put themselves in danger, but that this attitude was caused by labour exertion.

Furthermore, Ross and Hodges only described intense efforts of jobs well done, which tended to downplay diseases and other typical industrial injuries due to fatigue. E. P. Thompson studies the causes of death reported by Dr. Holland, physician to the Sheffield General Infirmary who covered the causes of death in the Sheffield registration district between 1837 and 1842.⁶²¹ Only one death from ‘want of food’ was registered, and Dr. Holland thus commented: ‘They may die of disease, but this is induced by poor living, conjoined with laborious exertion.’⁶²² Dr. Holland’s testimony evidenced that death could result from laborious exertion as well as poor living conditions. For instance, one could die from consumption, but Thompson underlines that consumption was ‘a disease normally associated with poverty and overcrowding’.⁶²³ Similarly, some injuries and accidents on the Victoria Bridge worksite could have been due to fatigue. The newspaper articles that described the death of Guérin and Minou explicitly identified the falls as the causes of death, but those falls could have been caused by fatigue, just like Delaney’s. And yet, fatigue and ‘laborious exertion’ never appeared as a possible cause of injury or death on the Victoria Bridge worksite.

This section has shown that employers’ sources did mention accidents and injuries, thus suggesting a dichotomy between ‘extraordinary’ risks uncommon to the employers, and typical industrial risks that were normalised on the worksite. The sources described fatigue on the worksite, usually in a positive way, in contrast with workers’ perspectives in other nineteenth-century workplaces.

⁶²¹ Thompson, *The Making of the English Working Class*, 325.

⁶²² Thompson, *The Making of the English Working Class*, 326.

⁶²³ Thompson, *The Making of the English Working Class*, 325.

Conclusion

This chapter has argued that there was no stable definition of accident on a nineteenth-century worksite such as the Victoria Bridge, and that an accident was understood as an unexpected event with an unhappy outcome. The instability of the definition of accident partly explains why sources rarely mentioned accidents. However, employers' sources describe a number of events that were not labelled accidents because they had a positive outcome which erased the possibility of accidents. Contemporaries saw worksites as private spaces and places of private misfortunes, where the accidents that happened to the workers were mostly ignored by the public. Contemporaries evaluated the danger of a worksite based on the death toll, and this chapter has shown that death tolls are not accurate to understand risk because they obliterate accidents. In fact, worksite accidents were obliterated because what happened to the workers was considered the problem of the workers. Each job and each step of the construction involved risks that were not described in the sources but can be understood with a comparison with other contemporary workplaces and construction sites. In contrast, the Victoria Bridge employers described cold-related injuries and accidents that they considered extraordinary, thus establishing a dichotomy between the normalised industrial risks on a nineteenth-century worksite, and the accidents that employers and workers were not used to. Fatigue was a cause of accident in nineteenth-century workplaces but the Victoria Bridge employers depicted physical exertion as a positive thing, thus evidencing a discrepancy between employers' and employees' experience of fatigue on the worksite. The following chapter explores the connection between risk and the workers' identities and argues that the analysis of risk offers a new perspective to better understand who the workers were.

Chapter 4. Risk and workers' identities

Hodges concluded his book by celebrating the workers' performance and priding himself on the low death toll.⁶²⁴ Although the personal stories and trajectories of the workers are difficult to identify (see chapter 2), how the workers survived and how well they performed were constitutive of their identities. In an environment where risk was normalised and inhered in the life on the worksite, this chapter argues that risk and working identities were interwoven, and that the analysis of how the workers dealt and coexisted with risk allows us to better understand who they were.

The workers' bodies have been central in the definition of their identities. Looks were associated to particular jobs, and the way workers dressed gave clues about their occupations.⁶²⁵ But contemporaries also often identified a worker's trade based on their physical characteristics. They insisted on the muscles of railway construction workers, in particular navvies, thus establishing a connection between construction workers, their bodies and masculinity. Thomas Fayers observed that contractors and agents selected a navvy based on 'the amount of bone and muscle which nature has given to him'.⁶²⁶ Historian Denis Rowe entitled his study of railway construction workers in northern New South Wales (1854-1894) 'The Robust navvy', and cited newspaper descriptions of striking navvies such as '[h]undreds of "fine manly looking fellows"'.⁶²⁷ At the same time, historians like Alain Corbin underline that the association of a particular working body to a working identity has been part of the construction, sometimes

⁶²⁴ Hodges, *Construction of the Great Victoria Bridge*, 75, 77.

⁶²⁵ In his memoirs, the anonymous stonemason repeatedly referred to clothes: he took a stranger on the street for a quarryman because of his clothes, which he detailed as 'a waistcoat and trousers of moleskin, yellow with stone dust'. When he went on to work on the Lake Shore and Michigan Southern Railway in Cleveland (n.d.), he described the workers' clothes: 'The squad all wore great soft hats, turned down at the brim, or else huge straw hats that we called ten-centers. They also sported white handkerchiefs round their necks, tied so that a point went down at the back, and protected the spine where it was not covered by the shirt.', Anonymous, *Reminiscences of a Stonemason*, 102 and 132.

⁶²⁶ Thomas Fayers, *Labour Among the Navvies*, London: Wertheim; Macintosh, and Hunt, 1862, 13.

⁶²⁷ Denis Rowe, 'The Robust Navvy: The Railway Construction Worker in Northern New south Wales, 1854-1894', *Labour History*, No. 39, Nov. 1980, 28-46, 40.

stereotypical, of the image of the working class.⁶²⁸ As Corbin put it, the study of the working body contributed to the construction of a social type associated with three *topoi*: powerful bodies, the primacy of instinct, and appearance – with bodies shaped by labour, wearing distinctive clothes and being subject to degeneration. This chapter analyses how masculinity impacted the identity and the stereotypical representation of the Victoria Bridge workers, but also the power relations between workers and employers.

The history of medicine has explored the connection between bodies, labour and occupational identities, and established the link between work and occupational diseases. As early as 1700, Bernardino Ramazzini established in his *De Morbis Artificum Diatriba* a very clear connection between jobs and diseases and the deterioration of the bodies. Some physical afflictions, he showed, were very often specific to the occupations of the patients. Painters, for instance, suffered from specific diseases that made them instantly recognisable.⁶²⁹ Workers' bodies thus bore the marks of their occupations in their flesh and identified workers and the professional groups they belonged to. The French introduction to Ramazzini's work, addressed to the *Société royale de médecine* (1776), cited the authors who preceded Ramazzini's work such as Hippocrates but also more recently the *Philosophical Transactions* of the Royal Society of London (1665).⁶³⁰ It also listed the works since Ramazzini's such as Dr Buchan's, and called for Ramazzini's work to be continued.⁶³¹ That 1776 introduction thus suggested that the connection between bodies and labour had long been observed and studied.

⁶²⁸ Corbin, 'Douleurs, souffrances et misères du corps', in Corbin (ed.), *Histoire du corps*, 258-9.

⁶²⁹ Bernardino Ramazzini, *Traité des maladies des artisans*, French transl. by M. de Fourcroy, in *Traité des maladies des artisans, par Ramazzini; Traité de la maladie muqueuse par Roederer et Wagler; Mémoire sur l'angine de poitrine par Jurine*, Paris: Adolphe Delahays Libraire, 1855, 40-41.

⁶³⁰ 'Introduction (lue à la séance de la Société royale de médecine, du mardi 12 novembre 1776)', 1776, in *Traité des maladies des artisans*, 6, 8.

⁶³¹ See Dr. Buchan, *Domestic Medicine; or a Treatise on the prevention and Cure of Diseases, by Regimen and Simple Medicine. To Which is Added, Characteristic Symptoms of Diseases, From the Nosology of the Late Celebrated DR. Cullen of Edinburgh. With an Appendix Containing a List of the Medicines Usually Employed, and the Doses for All Ages*, Newcastle: K. Anderson, 1812, 764p.

This chapter draws on these different perspectives on work and occupational identity and argues that labouring bodies and their handling of risk were part of the workers' identities. In other words, it argues that risk and risk management formed part of the workers' and employers' working lives and their masculine identities. Analysing the notions of masculinity, fear and experience, it tries to demonstrate that the analysis of risk provides tools to interrogate employers' sources about identity, working conditions, masculinity, and power relations on the nineteenth-century worksite. In other words, this chapter tries to analyse the identities of the workers through the way they dealt with risk, arguing that the history of the body can provide tools to circumvent scarce sources about the names and personal stories of particular workers.

The first section analyses risk and accidents as constitutive of a working-class identity. The second section tries to understand whether and how workers accepted risks and accidents. Finally, this chapter explores the role of experience and the ambiguous relation between labouring bodies and experience.

I- Risk and social class

The nineteenth century witnessed a growing acknowledgement in the public debate of the dangerousness of labour and identified the labouring classes as its main victims. In an undated paper probably published at the end of the 1840s, Chadwick wrote about the casualties during the construction of the Sheffield, Ashton-under-Lyne, and Manchester Railway:

I know that in the construction of some of the longer lines of railway there has been, as in the instance in question, a greater loss of life than the public are aware of. Thirty-two killed out of such a body of labourers, and one hundred and forty wounded, besides the sick, nearly equal the proportionate casualties of a campaign or a severe battle! The losses in this one work may be stated as more than 3 per cent. of killed, and 14 per cent. wounded. The deaths (according to the official returns) in the four battles, Talavera, Salamanca, Vittoria, and Waterloo, were 2.11 per cent. of privates (...)⁶³²

⁶³² Edwin Chadwick, *Papers Read Before the Statistical Society of Manchester on the Demoralisation and Injuries Occasioned by the Want of Proper Regulations of Labourers Engaged in the Construction and Working of Railways*, Manchester, UK: Simms and Dinham, n.d., 17.

Chadwick thus argued that the casualties in railway construction were proportionately higher than on a battlefield, and he took as examples famous battles that the British public knew of. He thus contrasted the public awareness of war casualties, and the public ignorance of the greater death toll in railway construction. Chadwick did not exaggerate the dangerousness of railway construction, as Brooke underlines that the construction of a railway line caused a flow of casualties to hospitals.⁶³³

Although the recommendations of the Select Committee on Railway Labourers (1846), encouraged by Chadwick and which Brooke defined as ‘the only determined attempt to reform the conditions under which the navy lived and worked until 1846’ were not even debated by the British Parliament,⁶³⁴ such initiatives evidenced the contemporaries’ growing awareness of workers’ bodies and its materialisation in the public debate. The industrial revolution also contributed to the creation of working-class bodies, and writer and activist Vic Finkelstein has demonstrated that ‘disability’ was a creation of industrial capitalism.⁶³⁵ Philosopher Campbell goes even further and shows that accidents ‘exhibit a pattern which matches certain social profiles, namely age and class’, and defines them as a ‘social phenomenon’ which is ‘more prevalent amongst the young and the poor than among the old and the rich.’⁶³⁶ Accidents did not only belong to the physical world of the workers, where they toiled and might get injured. Campbell’s point suggests that their social class made them belong to a world of accidents.

If injuries and the risk of injuries were constitutive of the workers’ world, then it was the workers’ role to avoid accidents, which allowed employers to dissociate themselves from the problem of accident avoidance. Peter Way shows that contractors and employers considered that ‘the work’s inherent risk was assumed by the labourer when he decided, as part of the free

⁶³³ Brooke, *The Railway Navy*, 150.

⁶³⁴ Brooke, *The Railway Navy*. “*That Despicable Race of Men*”, 155, 7. See also Cooter, ‘The Moment of the Accident’, 107-8.

⁶³⁵ Quoted in David M. Turner and Daniel Blackie, *Disability in the Industrial Revolution: Physical Impairment in British coalmining, 1780-1880*, Manchester University Press, 2018., Ebook, 22.

⁶³⁶ Robert Campbell, ‘Philosophy and the Accident’, in Cooter, Luckin (eds), *Accidents in History*, 32.

labour bargaining process, to take the job'.⁶³⁷ Reviewing the American legal case *Farwell vs. the Boston and Worcester Railroad* (1842), Bronstein underlines that the attorneys of the railroad argued that 'the workers assumed the ordinary risks of the job'.⁶³⁸ Employers thus considered that workers knew about the possible hazards of their occupations and took the job accordingly and knowingly, which implies that accidents were an individual problem. Because workers knew about the risk of the job they signed up for, they were expected to deal with it on their own. Bronstein demonstrates that in case of accidents, legislation was in favour of employers, and that the doctrine of contributory negligence, which unlike the fellow-servant rule 'struck a balance between the legal responsibility of the worker and that of the employer', considered the smallest moment's inattention as negligence.⁶³⁹ Workers were expected to 'extricate themselves from dangerous employment' and, in case of unsafe machinery, they had to leave the dangerous employment if the employers did not promise to repair it.⁶⁴⁰ Even if Bronstein shows that courts sometimes held employers responsible under the doctrine of contributory negligence, we see that workers had to assess the risks they were confronted to and avoid them because it was part of their job as employees.

When accidents happened, employers often assumed that they happened to 'bad' workers, and Corbin shows that from the 1840s the elites associated the working class with debauchery, drunkenness, lack of foresight.⁶⁴¹ Workers were not only likely to have accidents because it was part of their jobs, but also because they were morally questionable and did not pay enough attention to their own safety. Significantly, employers commonly accused workers of neglect and carelessness. When asked about accidents by the Select Committee on Railway Labourers (1846), civil engineer Rawlinson admitted that there was a considerable loss of life

⁶³⁷ Way, *Common Labour*, 150.

⁶³⁸ Bronstein, *Caught in the Machinery*, 21.

⁶³⁹ Bronstein, *Caught in the Machinery*, 29, 28.

⁶⁴⁰ Bronstein, *Caught in the Machinery*, 29.

⁶⁴¹ Corbin, *Histoire du Corps*, 261.

and a great number of accidents on the Blisworth cutting – the London and Birmingham Railway (1833-1838) section he was in charge of.⁶⁴² He described how accidents usually happened on the inclines that joined the bottom and the top portion of the excavation because temporary wagons broke:

the men would sometimes, through carelessness, put more waggons on the incline than the breaksman could hold, and they could overcome him, and sometimes a wheel would break, or a rail would get out of its place. I have seen as many as 20 waggons broken up at one time. Frequently accidents would happen in this way: the men would get upon these temporary waggons to ride from their work, and I believe six or seven men had their arms and legs broken at one time, though the contractor told them to get off the waggons at the top of the incline, and they disobeyed him. There were also frequently accidents arose from the men riding upon these temporary waggons, when worked by a locomotive engine. When the lead had extended a mile or two miles they would go sometimes with 20 waggons, and if the men were riding upon those waggons loaded with rock and large stones, and anything took place to disarrange the train, it is evident that there must be serious accidents.⁶⁴³

Rawlinson clearly put the blame on the workers: they were careless when they put more wagons on the incline than the breaksman could hold, they did not listen when the contractor told them to get off the wagons for their own safety, and they kept riding loaded wagons when it was ‘evident’ that serious accidents might happen, thus defying common sense. He added that the men were supposed to take precautions against danger, but that many of them were ‘reckless and disregardless of anything but the present moment’.⁶⁴⁴ Rawlinson thus established that accidents were the workers’ problems, that the men were in charge of avoiding accidents and when they did not, it was because of their reckless nature.

Isambard Brunel, among other employers, also attributed accidents to the ‘want of attention on the part of the workers’.⁶⁴⁵ Another cause of accidents identified by employers was intoxication, and a number of them accused workers of being drunk on the job.⁶⁴⁶ Peto himself

⁶⁴² Robert Rawlinson, Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index, §788.

⁶⁴³ Rawlinson, Report from the Select Committee on Railway Labourers, §788.

⁶⁴⁴ Rawlinson, Report from the Select Committee on Railway Labourers, §824.

⁶⁴⁵ Isambard Kingdom Brunel, Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index, p.142, §2130-2131.

⁶⁴⁶ See for instance Wellington Arthur Purdon, assistant engineer upon the Sheffield and Manchester line, Report from the Select Committee on Railway Labourers, §1591.

considered drunkenness as ‘the parent of all accidents’.⁶⁴⁷ The causes of accidents identified by employers, be they carelessness or alcoholism, were due to the natures and characters of the workers. In other words, and according to employers, accidents happened because of who the workers were.

Labouring classes thus belonged to a world of accidents, not only because accidents were more likely to happen to them because of their social profile, but also because employers conveniently considered that accidents were the workers’ problems and happened because of the labouring classes’ immoral nature and behaviour. As a result, it was part of the workers’ jobs to protect themselves against potential injuries that were known to occur on a worksite. When Hodges explained that the risk of fire was expected – hence a full water tank and a twenty-four-hour watchman – he blamed the rivet boys and their carelessness when fires did happen.⁶⁴⁸ It shows that when risks to the works or to the bodies were expected and identified, the workers were accused of neglect and carelessness when these risks became accidents that caused damages.

From the perspective of the workers on the Victoria Bridge site, it is likely that risk was considered part of their work, and the way they managed their own work. Perhaps that is why risk and potential accidents only appear between the lines of the employers’ sources – managing risk and avoiding accidents was the business of the workers themselves. In her book on industrial hygiene in France, historian Caroline Moriceau uses the works of the advocates of industrial hygiene and the doctors who observed workers, and shows that they recorded pain and suffering at work, and at the same time that workers and employers kept silent about it.⁶⁴⁹ She quotes Léon Poincaré, a doctor, who understood the workers’ silence as a fear of being ill regarded by employers, and as a form of pride that prevented them from talking about their

⁶⁴⁷ Samuel M. Peto, Report from the Select Committee on Railway Labourers, §1286.

⁶⁴⁸ Hodges, *Construction of the Great Victoria Bridge*, 70.

⁶⁴⁹ Moriceau, *Les Douleurs de l’industrie*, 173-4.

pain.⁶⁵⁰ Moriceau also infers from these descriptions of the workers' silence that they had accepted the idea that industrial work necessarily induced pain and hardships.⁶⁵¹ It was therefore part of the workers' jobs to endure and deal with pain. Assistant engineer Legge thus described the tube under construction from the point of view of 'a person visiting it for the first time', with eight to ten sets of riveters working in the dark, hurling rivets to each other and putting them in place:

The plating being completed and eight or ten sets of riveters at work, the noise, din, darkness, and confusion, rendered the interior of the tube a perfect pandemonium to a person visiting it for the first time, and as he carefully felt his way along, before becoming accustomed to the darkness; falling occasionally over keelsons and other obstacles in his path, trembling with fear lest some of the fiery rivets should come in contact with his face, in their swift passage through the air to their respective destinations; with the smoky blazing fires surrounded by active little imps covered with soot and dirt; together with the drum-like reverberations of the hollow tube, as if a thousand demons were exercising their combined agility and strength in producing the greatest amount of tip tap tapping on its sides and top for his especial benefit, he would have had some difficulty in bringing himself to believe he was not a resident in Pluto's dark dominion, instead of a visitor to the celebrated Victoria Bridge. But as the idea of being an inhabitant of earth gained ground, and while cogitating upon all the wonders surrounding him, with thoughts reverting occasionally to the probable damage sustained by his hearing faculties, these doubts were for the time dissipated by a succession of shrill, sharp whistles in the immediate vicinity, and on turning quickly to learn their import, discerned through the dim, hazy light, the powerful but puffing little engine rapidly approaching with its loaded cars the place he occupied. This ocular demonstration that his ears were still all right, gave renewed energy to his body movements; but in the agile semi-rotary evolution attempted, with a view to prevent any damage either to the engine or himself, by a collision, a not sufficient heed to his footsteps brought that delicate and sensitive part of his person known as the 'shin' into immediate and forcible contact with the hard edge of a keelson bar, and landed its proprietor at full length, face downward, on the bottom of the tube, at the same moment the energetic little locomotive swept past. While afterwards reflecting on the erratic movements described, and congratulating himself on being in possession of all his usual faculties, a sharp stinging pain in the lower extremity brought to mind the damage sustained by his 'understanding', and furnished additional food for reflection, as he limped out of the darkness into broad daylight.⁶⁵²

In these few emphatic lines, Legge described very precisely the confusion he felt as the construction works in the tube tested the limits of his senses. His sight was limited by the darkness, and the only things he saw looked threatening: flying rivets, fires, 'imps' – probably

⁶⁵⁰ Moriceau, *Les Douleurs de l'industrie*, 174, quoting Léon Poincaré, *Traité d'hygiène industrielle à l'usage des médecins et des membres des conseils d'hygiène*, Paris, Masson, 1886, introduction.

⁶⁵¹ Moriceau, *Les Douleurs de l'industrie*, 174.

⁶⁵² Legge, *A Glance at the Victoria Bridge*, 121.

the rivet boys – and a locomotive that was about to run over him. The lexicon of loud and unpleasant sounds refers to highly painful noise in the tube: ‘tip tap tapping’ that sounded like hell, ‘shrill, sharp whistles’, to the extent that he believed he had turned deaf. The darkness and the noise were unnatural, and the over-stimulation of the senses led to confusion: in the same sentence, his thoughts wandered from the feeling of being in hell to being a human being, to his concern over his hearing faculties, to the realisation that he was about to be run over by a locomotive. And in the end, omnipresent danger and ‘a not sufficient heed to his footsteps’ resulted in a painful fall which left him limping out of the tube.

Studying the impact of labour on the body, sociologist Thierry Pillon shows how noise at work is physically difficult to cope with and defines it as an aggression.⁶⁵³ Noise, he explains, causes physical pain, isolation, but also loss of bearings, which is exactly what Legge described. Consequently, noise in the tube was not only painful, it was dangerous as it could increase the risk of falling or receiving a red hot rivet in the face. Legge evidenced a huge discrepancy between the confused and fearful visitor he represented, and the riveters who could throw and catch the rivets expertly, as suggested by ‘their swift passage through the air to their respective destinations’. His text reflected what Corbin describes as a nineteenth-century social fantasy about workers’ bodies which inspired admiration and fear.⁶⁵⁴ These stereotypes represented the labouring body as a powerful body, but with only rudimentary senses because manual work supposedly overdeveloped touch to the detriment of sight and hearing, perceived as intellectual senses.⁶⁵⁵ In effect, Legge contrasted his sensitiveness to the workers’ rudimentary senses: the construction of the tube was excessively painful to his sight and hearing, whereas the workers managed to do a splendid job notwithstanding because their social class made them intrinsically

⁶⁵³ Thierry Pillon, *Le Corps à l’ouvrage*, Paris: Stock, 2012, 28.

⁶⁵⁴ Corbin, ‘Douleurs, souffrances et misères du corps’, 258.

⁶⁵⁵ Corbin, ‘Douleurs, souffrances et misères du corps’, 258-9.

different and less sensitive. The fact that they simply did not have the choice but to adapt to the pains of the workplace was out of consideration.

Legge's description of the interior of the tube emphasises space in the construction project – he compared the tube, where the workers belonged, to 'Pluto's dark dominion', establishing a frontier between the 'visitor' and the workers. The accidents could happen to the visitor, but only occasionally because this was not a space that they frequented. Instead, accidents were part of the workers' world and to be managed by them. The world of accidents the labouring classes belonged to was both socially and spatially circumscribed and clearly separated from the rest of society. Because of the normalisation of accidents befalling labouring bodies, pain was a reality that the workers themselves accepted. Corbin emphasises that should agricultural and industrial labourers go through light injuries at work without stoicism, they would be discredited.⁶⁵⁶ Workers had not only accepted that their jobs came with hazards and risks of injuries; they dealt with pain and accidents because to do so was part of their masculine identity as workers.

In the few lines quoted above, Legge described at least three possible worksite accidents. And yet, by detailing accidents that could happen to an inexperienced visitor, Legge implied that they did not befall experienced workers. In fact, his description reads like a homage to the abilities of the workers, extra-ordinary men with superior strength and endurance who could work efficiently and safely in a dark, dangerous environment. The Victoria Bridge employers' rhetoric lauded the workers' physical aptitudes, as if these were natural characteristics of these heroic members of the working class. As Michel Pigenet's work on French dockers argues, such stereotypes of masculinity also dehumanized the working class. Pigenet shows how stereotypes of masculinity associated with these workers were used to both celebrate and idealise the dockers' physical strength and also to portray them as powerful

⁶⁵⁶ Corbin, 'Douleurs, souffrances et misères du corps', 276.

beasts, thus implying that they were less human than members of the middle- and upper-classes.⁶⁵⁷

The dehumanisation of the labouring classes thus established the workers as *essentially* different. This *Montreal Witness* article (Fig. 36), entitled ‘Who are the “Navvies”?’ and written while navvies were being sent to Crimea during the war (1855), relied on the common comparison of workers with horses:

The continual demand for laborers on canals, railways, docks, &c., has created a distinctive class of ‘Navvies,’ who are able from their superior skill and strength to do twice the amount of work common agricultural laborers can perform. (...) . – Generally they prefer to stay with one master. They will follow him throughout England, and many have visited America, Sweden, and other continental States, under the control of one man. The strongest and most enterprising of the peasantry usually enter the ranks, and in the course of their lives visit every portion of England. The Navvies are selected on the same principle as horses – for their physical strength and their disposition.⁶⁵⁸

The navvies were pictured as a ‘distinctive class’ of workers, whose strength and skills made them a superior class within the working-class. The Crimean war probably contributed to the laudatory description of the men being sent away. At the same time, through the repetition of ‘laborers’ and the word ‘peasantry’, the article insisted on the social profile of the navvies who decidedly belonged to the working-class. The article evidenced a strict dichotomy and power relation between the workers, an indistinctive group called ‘they’, and the employers, called ‘one man’ and ‘one master’: the workers followed the employer who controlled them. The comparison of the navvies with horses, which was also used by Peto (see chapter 3), both celebrated their formidable physical strength and at the same time gave a reassuring image of a strong but tamed working-class.

⁶⁵⁷ Michel Pigenet, ‘A propos des représentations et des rapports sociaux sexués: identité professionnelle et masculinité chez les dockers français (XIXe-XXe siècles)’, *Le Mouvement Social*, n°198, janvier-mars 2002 / La Découverte, Cairn.info, 2002/1, n°198, p. 55-74, 66, 56-7.

⁶⁵⁸ *Montreal Witness*, Wednesday, 28 March, 1855.

WHO ARE THE "NAVVIES?"—Who are the "Navvies?" is a question which has been often asked since the commencement of operations in the Crimea by the Allies; to which question we see the following explanation given by a Portland paper:—"Navvies" are men who originated in the fen counties of England, where they were employed in drainage, and in digging in swamps and marshes. Lincolnshire men are famous at what is called "wet work," or dock excavations in soft ground. From the character of the work at which they were employed, they were called Navigators, which was finally shortened to "Navvies," the name by which they are now universally known. The continual demand for laborers on canals, railways, docks, &c., has created a distinctive class of "Navvies," who are able from their superior skill and strength to do twice the amount of work common agricultural laborers can perform. The English papers report that the party sent to the Crimea includes every kind of workmen,—not only those who handle the shovel and pick, but carpenters, blacksmiths, plate-layers, &c. The Navy proper uses only the shovel, pick, crowbar and wheelbarrow. In the immense army of these workmen there are many who are born and bred to the business—who have commenced at the earliest age they could be of any service, at any kind of railway work, and have followed the business through life.—Generally they prefer to stay with one master. They will follow him throughout England, and many have visited America, Sweden, and other continental States, under the control of one man. The strongest and most enterprising of the peasantry usually enter the ranks, and in the course of their lives visit every portion of England. The Navvies are selected on the same principle as horses—for their physical strength and their disposition. If they prove themselves able men, they are almost certain to be successful. The contractors let out small sub-contracts to the best of them, and in this way the foundations for many fortunes are laid. Some men who now keep bank accounts and dine with Peers, have commenced as Navvies, and risen to the position of giant contractors. Sometimes men of remarkably mechanical and mathematical skill are found in their ranks. On all the great works of Messrs. Peto & Betts, who employ thousands of Navvies, temporary buildings have been erected for school-houses and chapels, and school masters employed. When we say that, of the large body sent to the Crimea the majority have made arrangements for part of their pay to be given to their parents and families at home, we cannot doubt that such a course of education has been of great service to them.

Fig. 36 'Who are the "Navvies"?', *Montreal Witness*, Wednesday, March 28, 1855

Rather long newspaper article about the navvies. It retraces their history, as Peto and Brassey, who endeavoured to build a railway in Crimea as part of the war effort, were sending navvies there. The comparison of the navvies with an 'immense army' militarises the workers in a context of war.

The celebration of a powerful, animalised working-class body meant that the workers could sustain difficult working conditions and exceed the limits of more refined bodies. The elites conveniently pictured the labouring classes as naturally made to endure hard work, thus ignoring again the necessary adaptation of the workers to the hardships of their jobs throughout their lives. Contractor Brassey's son thus downplayed the difficulties of navvies' work:

It is true that the amount of labour performed by the navy in a day involves considerable exertion; but the men, being of powerful frame, and having great muscular development,

are enabled to accomplish their work without undue exertion, and are often able to go home, their day's work accomplished, at three o'clock in the afternoon. If there be special danger to health in the occupation of the navvy, it is because his large earnings admit of greater indulgence in the public-house.⁶⁵⁹

In this text, Brassey's son admitted the physical difficulty of the job, but implied that the natural strength of the workers made the work easy for them, as they were naturally made for this type of work. He described them as physically invincible: what would be considerable exertion to Brassey and his readers was only a job done by three o'clock in the afternoon, 'without undue exertion'. The only danger on the job he identified was alcohol, which meant that injuries and accidents had nothing to do with the navvies' working conditions, but were only due to their bad behaviour. Again, accidents were only the private business of workers who were immoral enough to drink excessively. The laudatory depiction of the workers' bodies dissolved the reality of accidents and made risk invisible. Similarly, historians Turner and Blackie recall that there were two prevalent views about miners' bodies in Victorian Britain: on the one hand, 'miners were represented as a distinctive class of workmen, prey to numerous diseases', and on the other 'coalmining was represented as healthy work and miners were admired for their physical robustness.'⁶⁶⁰ This contradiction further evidences that the celebration of the masculine working body allowed the public to normalise difficult working conditions and to minimise risk and accidents which they regarded as something that only concerned labouring bodies.

This section has argued that risk and accidents were constitutive of workers' identity. The Victoria Bridge worksite epitomised the fact that workers belonged to a world of accidents whose characteristics centred accidents on the social and physical identity of the labouring classes, and in particular construction workers. Indeed, accidents were much more likely to befall workers because of their social class, which both employers and workers accepted. The

⁶⁵⁹ Brassey, *Work and Wages*, 227-8.

⁶⁶⁰ Turner and Blackie, *Disability in the Industrial Revolution*, 106.

Victoria Bridge employers, some of whom testified in front of the Select Committee on railway labourers, shared the commonly held view among the elites that accidents happened because of the workers' immoral behaviours, notably drunkenness. If they often appeared more attentive to the workers' wellbeing than other Victorian employers, their testimonies clearly suggest that accidents were often attributed to the carelessness of the workers.⁶⁶¹ Employers thus considered that accidents happened to the workers not because they were more likely to be in dangerous situations, but because of who they were.

Risk also made the workers essentially different. The celebration of the workers' bodies, presented as stereotypes of masculinity but also bestiality, reduced them to bodies meant to resist hardships and difficult working conditions. In that sense, the celebration of the different and powerful labouring bodies made accidents the exclusive lot of the workers who were naturally made to deal with risk. Turner and Blackie suggest that the public perception of coalmining influenced the miners' views of themselves.⁶⁶² The following section explores how the Victoria Bridge workers contributed to the construction of the stereotypes that defined them and influenced the way they dealt with risk.

II- Taking risks and avoiding accidents

In spite of Peto and Hodges's public pronouncements about the paternalistic care they took of their employees, the risks and danger faced by the workers was not necessarily perceived as wrong, or at least was not understood as bad working-conditions or ill treatment. On the contrary, they demonstrated the skills and the masculinity of the workers. In April 1858,

⁶⁶¹ The Report from the Select Committee on Railway Labourers shows that a number of employers, like Purdon or the employers of the Caledonian line, the Muirkirk and Ayr Line, and the Scottish Central line visited by Thomas Beggs of the Scottish Temperance League, did not provide accommodation nor instruction, and used the truck system, contrary to the Victorian Bridge employers. See for instance §1619, §1645, §1647, §1711.

⁶⁶² Turner and Blackie, *Disability in the Industrial Revolution*, 106.

the spring ice break destroyed the dams necessary for the construction of the bridge and delayed the project. Ross wrote to the president and directors of the Grand Trunk Company (Fig. 37):

In consequence of the havoc made to our dams by the ice in April, our masonry in No. 13 pier did not commence until the 28th of August; and in No. 12 dam our first stone was not laid until the 16th of September. – The former was completed on 26th Nov., and the latter on 4th Dec., instant: -- the time occupied upon the latter being 70 days, working about 18 hours each day. – The amount of masonry in this pier exceeds 12,600 tons, requiring an average of 10 tons being paced in position in each hour, exceeding two cubic feet per minute; an achievement, I do not hesitate to say, without a parallel. – During this period, the masonry placed in position, in the six piers in progress, exceeded one ton per minute. – To supply this demand, four Locomotives, one hundred and forty two horses, six steamboats, seventy two Barges, manned by five hundred hands, and two thousand five hundred and sixty men, including those engaged in erecting the tubes, were besides employed. –⁶⁶³

Because the works were accidentally destroyed – Ross used the word ‘injuries’ earlier in this report, thereby confirming that an ‘accident’ primarily delayed the construction rather than impaired the workers’ bodies – the workers had to work more and faster.

To make up time, the men worked eighteen-hour-days for more than two months. That might sound a little dubious, given that historians like Rouillard and Battye underlined that in the 1860s and 1870s, the ten-hour day was the norm in Canada, and in 1846 Peto claimed it was also the norm on his worksites.⁶⁶⁴ However, when referring to the 1872 nine-hour-day movement, historian Bettina Bradbury uses the works of John Beatty, Heron, Palmer and Rouillard to highlight that ‘unorganised and unskilled workers continued to work up to twelve hours a day’.⁶⁶⁵ In his study of Montreal moulders, who were highly skilled workers, Peter Bischoff explains that since 1872, the men had worked 54 hours a week and had Saturday afternoons off, and that the moulders of the employer called Chanteloup refused to go back to

⁶⁶³ LAC, RG30-1026, Ross, 6 December 1858.

⁶⁶⁴ Jacques Rouillard, *Histoire du syndicalisme au Québec. Des origines à nos jours*, Montreal: Boréal, 1989, 18; John Battye, ‘The Nine Hour Pioneers: The Genesis of the Canadian Labour Movement’, *Labour/Le Travail*, 1979, Vol. 4, 25-56, 49; Peto, Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index, p.75, §1275.

⁶⁶⁵ Bradbury, *Working Families*, 46, citing Bischoff, ‘La formation des traditions’, 25-7; Battye, ‘The Nine Hour Pioneers’; Palmer, *Working-Class Experience: Rethinking the History of Canadian Labour, 1800-1991*, Toronto, 1992, 106-8, Heron, *The Canadian Labour Movement: A Short History*, Toronto, 1989, 14-18, Rouillard, *Histoire du Syndicalisme*, 25-9.

a sixty-hour week, thus suggesting that a sixty-hour week used to be the norm.⁶⁶⁶ Bradbury also shows that male workers needed to get married because they ‘could be away from home from five in the morning to eight or nine at night’.⁶⁶⁷ A typical working day on construction sites contemporary to the Victoria Bridge was therefore probably close to twelve-hour long, depending on the types of workers. That echoes the *Montreal Transcript* article quoted in chapter 3, which read that the twelve-hour system was a good system common in the United States, and regretted that it was not respected by the Grand Trunk.⁶⁶⁸ Similarly, Legge referred to gangs of riveters who could work sixteen-hour-days,⁶⁶⁹ so exceedingly long hours were not uncommon on the Victoria Bridge worksite and Ross’s statement should be taken seriously.

⁶⁶⁶ Peter Bischoff, ‘La formation des traditions de solidarité ouvrière chez les mouleurs montréalais: la longue marche vers le syndicalisme (1859-1881), *Labour / Le Travail*, Vol. 21, Spring, 1988, 9-42, 29.

⁶⁶⁷ Bradbury, *Working Families*, 54.

⁶⁶⁸ *Montreal Transcript*, May 4, 1855.

⁶⁶⁹ Legge, *A Glance at the Victoria Bridge*, 122.

to its ordinary level, the extent of the injuries sustained became apparent; large masses of our dams were thrown into positions which required, in some cases, five and six weeks constant labor to clear away, during and remove, before any progress in removal could be attempted; hence the lateness in the season for the completion of any of our piers thus interfered with, as also the partial completion only of Nos. 14 and 15 already referred to.

On this account, we do not deem it advisable to take any steps in the completion of No. 14 dam, until the river is clear, and early in May, we hope to be able to engage in the construction of this dam, the first and only one now to be completed.

In the erection of the tubes, we experienced a drawback in consequence of the loss of the "Cambria," which had one on board. This had to be replaced, and being sent out by steers to Montreal, reached us in time to accomplish its erection, which has been done.

In consequence of the havoc made to our dams by the ice in April, our masonry in No. 13 pier did not commence until the 28th of August; and in No. 12 dam our first stone was not laid until the 16th of September. The former was completed on 26th Nov., and the latter on 4th Dec., instant:— the time occupied upon the latter being 40 days, working about 18 hours each day. The amount of masonry in this pier exceeds 12,600 tons, requiring an average of 10 tons being placed in position each hour, exceeding two cubic feet per minute; an achievement, I do not hesitate to say, without a parallel. During this period, the masonry placed in position, in the six piers in progress, exceeded one ton per minute. To supply this demand, four Locomotives, one hundred and forty two horses, six Steamboats, seventy two Barges, manned by five hundred hands, and two thousand five hundred and sixty men, including those engaged in erecting the tubes, were besides employed.

And I am
Gentlemen—

Your obedient servant

"signed"

Alex. W. Ross.

(for R. Stephenson self.)

The President then moved the following Resolutions which were adopted unanimously—

RG30. Vol 1026
"Grand Trunk Railway - Company of Canada"
Minute Book 1853-1862

Fig. 37 Extract from Alexander Ross's report to the President and Directors of the Grand Trunk Railway company, 6 Dec. 1858, LAC, RG30-1026, 'Grand Trunk Railway - Company of Canada', 'Minute Book, 1853-1862', Minutes of meetings of stockholders and proprietors.

Engineers' reports on the progress of the works did not mention worksite accidents that happened to the workers, but gave clues about physical exertion.

In his report, Ross might have wanted to reassure the directors of the company that the bridge would be completed on time, but even if he exaggerated the workers' achievements, he minutely detailed the masonry they put in position in tons and cubic feet, per hour and per minute: he appeared genuinely proud. The fatigue induced by this pace and the risks that went with it were not even mentioned. Furthermore, the bridge was finished two years ahead of schedule despite all the challenges.⁶⁷⁰ This achievement underlined the exceptional abilities of the Victoria Bridge workers and was encouraged by the employers' urgency to finish the bridge. But Legge's description of some gangs of riveters who 'have been known to make 4 days in about 16 hours, working time, putting in 700 rivets, when 180 constituted the number required' also alludes to the role of competition and masculinity in the workers' performances.⁶⁷¹

In his essay on Northern Ontario logging, Ian Radforth shows how cutters and haulers competed among themselves for the highest work output of the day, and how their pride, their status among their peers and their manliness depended on it, a 'distinctly masculine outlook that increased productivity – and ultimately employers' profits – at the same time as it expressed a commonality of experience.'⁶⁷² Working as fast as possible – or, rather, faster than the other men – was therefore a common incentive among workers. In his *Reminiscences of a Stonemason* (1908), the author describes how workmen pulled up 159-kilogram stones: two teams of two men stood on each side of a ladder while the stones were leant against the ladder with ropes around them:

Now, unfortunately the contempt which the workmen have for theory or science endangers their lives continually.

I have never once seen workmen employed in this manner all pulling steadily, so as to keep the stone level, and the weight evenly distributed on both sides, but instead of that they started with a jerk and continued, each side striving to get their end up first (thus throwing most of the weight on to the other side). Meanwhile such compliments as 'Get some beef into you!' 'Is there anybody pulling at that side?' etc., would be freely bandied about.

⁶⁷⁰ Passfield, 'Construction of the Victoria Tubular Bridge', 33.

⁶⁷¹ Legge, *A Glance at the Victoria Bridge*, 122.

⁶⁷² Ian Radforth, 'Logging Pulpwood in Northern Ontario', in Heron and Storey (eds), *On the Job*, 252.

In our case I admit that our end was soon the lowest (...). But in my comrade's and my own frantic struggles to keep our end up, the rope (a rotten one) broke, and I fell backwards across the scaffold and landed across the brick wall, ready to receive the cornice.

Had I been standing before an opening for a window, it would have been death or crippled for life.⁶⁷³

This testimony shows how competition, however good-natured, was established by the workers themselves and prevailed over safety. The irony and the jokes, which contributed to this competition, were typical expressions of a culture of masculinity that idealised physical strength. Historians like Xavier Vigna have demonstrated how banter contributed to the sense of belonging to a workers' masculine community.⁶⁷⁴ 'Get some beef into you', 'is there anybody pulling at that side?' were mere evocations of pure strength and could have been said during any activity involving physical power without know-how, such as rope-pulling. The four men in this passage tried to establish who was the strongest, not the best and most skilful worker. This masculine competition could have had dreadful consequences and led to serious injury or death. This example, which according to the author was common, shows how a culture of masculinity was encouraged on worksites by the workers themselves, and no doubt by the employers. It is likely that the exploits of the Victoria Bridge workers were also made possible by a culture of masculinity that both employers and employees encouraged for the different reasons explored above: it encouraged a sense of belonging to the group but also competitiveness among workers, and therefore intense work paces which, in the end, benefited the employers who wanted to finish the bridge by the end of 1859.

Money was a strong incentive. The system of wages on the Victoria Bridge worksite was not piecework nor daily wage altogether, and was meant to encourage production, especially after the directors of the Grand Trunk Company gave the contractors a bonus of \$300,000 to speed up the construction in 1858, so that the bridge could open at the end of the

⁶⁷³ Anonymous, *Reminiscences of a Stonemason*, 237.

⁶⁷⁴ Xavier Vigna, 'Les bizutages dans le monde ouvrier en France à l'époque contemporaine', *Clio. Femmes, Genre, Histoire*, 38, 2013, 152-161, 159.

1859 season.⁶⁷⁵ Brassey normally used to prefer piecework because he thought men would do more and cheaper work,⁶⁷⁶ while daily wage was thought to favour laziness, as workers paid by the day allegedly did the minimum amount of work and just pretended to be busy.⁶⁷⁷ On the Victoria Bridge, Legge explained, wages differed. Platers for instance, who were responsible for the plating of the tube, were paid by the ton, while riveters received a daily wage which was conditioned to a minimum number of rivets they put in.⁶⁷⁸ They were expected to put in 180 rivets each work day, and any over that were paid as extra time. According to Legge, gangs of riveters generally averaged 1.5 days of work each working day.⁶⁷⁹

The employers' money incentive worked. The riveters worked more and faster, in order to get paid more. This was another way to encourage competitiveness that some workers embraced with some riveting gangs earning the equivalent of four days of work in a sixteen-hour day,⁶⁸⁰ but which mostly benefited, in the end, the employers.

Way suggests that contractors already used this practice in the 1820s which, according to the superintendent of the Kanawha River in November 1821, had a considerable effect as some hands gained five to six days' wages in a month.⁶⁸¹ This system therefore also benefited some workers, but Way also underlined that other workers disliked the competitiveness it induced. Competitiveness therefore imposed an increased work pace and an unlimited amount of work to be done, both of which being actively defined by the workers who, for some, welcomed the competition. Reasons for this involved the culture of masculinity they shared and the necessity – and the possibility – to earn more money. Such work pace and long working hours necessarily had consequences on the workers' health, and might have increased the risk

⁶⁷⁵ Passfield, 'Construction of the Victoria Tubular Bridge', 33.

⁶⁷⁶ Brassey, *Work and Wages*, 264. The idea that piecework increased production was shared by a number of contractors, as shown among others by Heron and Storey, 'On the Job in Canada', in Heron, Storey (eds.), *On the Job*, 8.

⁶⁷⁷ Way, *Common Labour*, 42.

⁶⁷⁸ Legge, *A Glance at the Victoria Bridge*, 122.

⁶⁷⁹ Legge, *A Glance at the Victoria Bridge*, 122 and Passfield, 'Construction of the Victoria Tubular Bridge', 33.

⁶⁸⁰ Legge, *A Glance at the Victoria Bridge*, 122.

⁶⁸¹ Way, *Common Labour*, 110.

of accidents. Way shows that canal work implemented a ‘sense of industrial time and discipline’, that work quotas were sometimes imposed and as a result, workers suffered from the nature and pace of the work.⁶⁸²

We can see that the need for money combined with the culture of masculinity encouraged risk-taking behaviours. In addition, Bronstein shows how ‘financial need and social expectations about manliness’ contributed to the workers’ fatalism about workplace accidents. Citing miner B. L. Coombes’s autobiography, she describes what she calls a ‘cycle of work, death, forgetting, and returning to work’.⁶⁸³ After an accident, she explains, ‘colliers would be filled with fear, and some would even stay away from work. After a while, (...) they would forget about the danger, only to be reminded forcefully by the next accident.’⁶⁸⁴ She adds that miners had to choose between danger and dismissal. In spite of Victorian employers’ accusations of carelessness and despite Brassey son’s dismissal of the reality of the dangers that threatened the workers, Coombes’s testimony evidences that the workers were well aware of and dreaded the risks they faced daily. At the heart of the cycle described by Bronstein was fear.

The employers’ sources from the bridge site contain hints of workers adopting precautions against many potential accidents, and on the Victoria Bridge worksite too, fear played an important part in the workers’ acceptance of risk, and in their strategies of risk avoidance. There is no Victoria Bridge worker’s testimony of fear such as Coombes’s but the history of emotions, which underlines the difficulty to gain access to the emotions of the working classes, has worked on reading strategies of the available sources.⁶⁸⁵ The risk of

⁶⁸² Way, *Common Labour*, 32.

⁶⁸³ Bronstein, *Caught in the Machinery*, 89.

⁶⁸⁴ Bronstein, *Caught in the Machinery*, 88, citing B. L. Coombes, *These Poor Hands: The Autobiography of a Miner Working in South Wales*, London: Victor Gollancz, 1939, 121.

⁶⁸⁵ See the pioneer of the history of emotions, Lucien Febvre, ‘La sensibilité et l’histoire: Comment reconstituer la vie affective d’autrefois?’, *Annales d’histoire sociale (1939-1941)*, T. 3, No.1/2, Jan. – Jun., 1941, 5-20; Jan Plamper, *The History of Emotions. An Introduction*, transl. Keith Tribe, Oxford: Oxford University Press, 2015, especially 57-9.

drowning was regarded as particularly significant on the bridge site, and the danger of a flooded dam described by Hodges (see chapter 3) was not an isolated incident. A number of times during this process, workers only narrowly escaped death. In this passage from Hodges, what he describes as curiosity about the colour of the water might well have reflected the workers assessing risk and reacting to danger:

On the 26th July [1858] the dam was pumped out, and found to be very staunch. The boulders covering the bed of the river were removed, and the excavation commenced, when a blow of the pick, within a few feet of the centre of the dam, tapped a spring of thick black water, which at first produced a fountain about as large as a man's finger. This attracted the notice of the workmen, who crowded round to see 'a spring of ink' (as they called it) issuing from the bed of the river, but they found it increase in volume so rapidly, that in a few minutes they had to run for their lives, and in a quarter of an hour the dam was full.⁶⁸⁶

Here, although Hodges gives a glimpse of the risks the workers faced daily, the tragic consequences of this incident had the workers not run fast enough, are both implied and absent because the accident did not happen.

The risk of drowning inhered in the construction of these temporary structures. As Legge described, 'if the foundation was bad, a break would fill the entire cavity in a few moments, the men forsaking their tools, and, squirrel-like, running up the ladders provided for their escape.'⁶⁸⁷ The ladders were a protection to save the workers because the risk of a flooded dam had been anticipated. But what really saved the workers was their ability to identify the danger and move quickly.

There are other examples of the workers' life-saving fear. When the break-up of river ice happened earlier than expected in March 1859, workers labouring on the river began to run for the shore but eventually thought it wiser to remain on the tube.⁶⁸⁸ Three days later, some temporary piers collapsed because of the thaw. According to Hodges, it caused 'great alarm to

⁶⁸⁶ Hodges, *Construction of the Great Victoria Bridge*, 49. Emphasis in the original.

⁶⁸⁷ Legge, *A Glance at the Victoria Bridge*, 100.

⁶⁸⁸ Hodges, *Construction of the Great Victoria Bridge*, 60.

the workmen (...), some of whom narrowly escaped from falling off.’⁶⁸⁹ Hodges remarked that despite the bad weather, ‘every man seemed to imagine that success [in completing the works] depended upon his own individual exertion, and all worked with this feeling as if for very life, irrespective of remuneration.’⁶⁹⁰ Considering the danger of the moving ice, the men probably did believe that their lives depended on how fast they worked. Fear determined what constituted a risk and a potential accident. The workers’ perception and analysis of risk preserved them. Taken from this perspective, the low death toll given by Hodges is a testimony to the workers’ ability to keep themselves safe.

At the same time, the way employers wrote about the workers’ fear suggests that they did not perceive it as a skill. The history of emotions encourages historians to study language as a historical approach of emotions.⁶⁹¹ Based on the methods promoted by the historians of emotions, the analysis of fear on the worksite sheds light on employers’ sources as an elite’s perception of the labouring classes. As underlined by historian Joanna Bourke, fear is about power relations and the distribution of power.⁶⁹² She shows that emotions ‘lead to a negotiation of the boundaries between self and other or one community and another’.⁶⁹³ Taking the example of the categories of ‘school phobic’ and the ‘truants’ in the United States, she shows how each category was used from 1941 to describe the same phenomenon – skipping school – according to the children’s social classes, and how middle-class children were ‘school phobes’, while working-class children were ‘truants’.⁶⁹⁴ We see that the way sources describe fear reflect power relations, and it is particularly the case for the employers’ sources about the workers.

⁶⁸⁹ Hodges, *Construction of the Great Victoria Bridge*, 61.

⁶⁹⁰ Hodges, *Construction of the Great Victoria Bridge*, 61-2.

⁶⁹¹ Joanna Bourke, ‘Fear and Anxiety: Writing about Emotion in Modern History’, *History Workshop Journal*, No.55, Spring 2003, 111-133, 113, 116.

⁶⁹² Bourke, ‘Fear and Anxiety: Writing about Emotion in Modern History’, 126.

⁶⁹³ Bourke, ‘Fear and Anxiety: Writing about Emotion in Modern History’, 124.

⁶⁹⁴ Bourke, ‘Fear and Anxiety: Writing about Emotion in Modern History’, 124, citing Adelaide M. Johnson, Eugene I. Falstein, S. A. Szurek, and Margaret Svendsen, ‘School Phobia’, *American Journal of Orthopsychiatry* 11, 1941, 702-11.

From Hodges's description, it is clear that the employers made them work on the river knowing that the ice was melting, and despite the workers' (well-founded) fear.

Bourke rejects the common division between reason and emotion, and demonstrates that reason could stimulate fear, and fear could inspire reason.⁶⁹⁵ On the Victoria Bridge, fear was the expression of the workers' analysis of danger. It thus appears that the workers had a certain appreciation of risk which they expressed through manifestations of fear, but employers sent them back to work nonetheless.⁶⁹⁶ As Bourke points out, 'fear also shapes social structures (a panicking crowd was perceived to be working class or feminine), and the response to it differed accordingly.'⁶⁹⁷ Hodges's dismissal of the workers' fear reflected the social and power hierarchies on the worksite.

Moreover, Hodges's pondering about the workers who worked faster when they were scared for their lives echoed Brunel's statement that indeed, 'being the immediate sufferer from the consequences of an accident' was 'the most effectual stimulant you can possibly devise.'⁶⁹⁸ Hodges and Brunel perceived fear as a convenient motivation for workers to toil faster and to take charge of their own safety, and by doing so they downplayed the dangerous working conditions that rightly scared the workmen.

This section established that both workers and employers encouraged a culture of masculinity which favoured risk-taking behaviours, but also increased work pace and production. Indeed, the achievements of the Victoria Bridge workers described by Ross allude to this masculine identity that welcomed competitiveness, also encouraged by employers' money incentives. At the same time, workers probably accepted competitiveness because they needed the money and because they had limited choice. The culture of masculinity on a worksite should not conceal the fact that competitiveness increased the risk of accidents, and that workers

⁶⁹⁵ Bourke, 'Fear and Anxiety: Writing about Emotion in Modern History', 126.

⁶⁹⁶ Hodges, *Construction of the Great Victoria Bridge*, 60-2.

⁶⁹⁷ Bourke, 'Fear and Anxiety: Writing about Emotion in Modern History', 125-6.

⁶⁹⁸ Brunel, Report from the Select Committee on Railway Labourers, §2137.

were well aware of the risks they faced daily. Employers' sources contain hints of workers' fear and assessment of risk, and this section relied on the history of emotions to analyse the few testimonies of workers' fear. The employers' discourse downplayed the workers' fear, whereas it was a life-saving skill on the worksite acquired through experience. The following section explores the role of experience and tries to understand what made a good worker.⁶⁹⁹

III- 'Our best men'.⁷⁰⁰ Understanding the workers' experience

Risk management on the bridge site was related to experience, and we need to consider the definition of a 'good' worker. The company discourse presented the Victoria Bridge workers as the best workers in the world.⁷⁰¹ Hodges was apparently so anxious to keep his best workers on the job that he employed them over the winter.⁷⁰² Beyond the obvious propaganda this discourse represented, the ability to avoid injury and death would have been characteristic of a 'good' worker.

As explained in chapter 2, the British contractors recruited part of their workers from Britain and paid for the journey of experienced workers. The Victoria Bridge employers made it public that they kept the same workers over the years. As suggested in chapter 2, Brassey was reportedly able to remember the names of the 'old' navvies, some of them he had not met for years, thus suggesting that he had known them for a long period of time.⁷⁰³ Peto declared in 1846 that 'some men (...) have been with me for 14 to 15 years'.⁷⁰⁴ Although these declarations might be exaggerated, it is clear that Brassey and Peto made sure to have workers they knew and, most importantly, who had years of experience, on their worksites.

⁶⁹⁹ Terry Coleman, *The Railway Navvies. A history of the men who made the railways*, London: Hutchinson & Co, 1965, 176.

⁷⁰⁰ Hodges, *Construction of the Great Victoria Bridge*, 27.

⁷⁰¹ Hodges, *Construction of the Great Victoria Bridge*, 75.

⁷⁰² Triggs, 'Le Pont / The Bridge', 48.

⁷⁰³ Brassey, *Work and Wages*, 274-5.

⁷⁰⁴ Peto, Report from the Select Committee on Railway Labourers, §1270.

On the workers' perspective, experience was not limited to being able to do one's job: it was a necessary condition to stay alive by getting jobs, surviving the hazards of the workplace, but also maintaining their social status. Historians like Bronstein demonstrate the terrible financial and social consequences of debilitating accidents, as disabled male workers were both impoverished and objects of scorn.⁷⁰⁵ Reviewing the same period, Bettina Bradbury notes that accidents undermined the masculinity of the Canadian workers whose legal responsibility was to support their families.⁷⁰⁶ Craig Heron and Robert Storey also analyse how the gendered division of Canadian labour in the twentieth century distinguished the domestic, unpaid, 'feminine' sphere from the public, waged, 'masculine' sphere, and how being able to work was constitutive of the workers' masculine identity.⁷⁰⁷ Risk was not only a threat to the workers' physical integrity, but also to their social identity and function.

At the same time, labouring bodies literally bore the marks of the workers' experience. When listing the common accidents that befell railway men in the US, such as the explosion of boilers, flying sparks or coupling, historian Licht explains that workers 'carried vivid proof of their experience', and that 'foremen looking for veteran workers were known to consider missing fingers as an apt qualification for employment'.⁷⁰⁸ Similarly, Turner and Blackie quote Victorian occupational health expert J. T. Alridge who described certain deformities associated with particular industries as 'trademarks' which acted, as Turner and Blackie tell us, as 'badges of occupational identity'.⁷⁰⁹ Experience was literally part of the workers' physical integrity but also of their identity, and it was a fine line between a crippled body that socially isolated workers, and an injured body that testified the workers' experience and qualified them for employment.

⁷⁰⁵ Bronstein, *Caught in the Machinery*, 87.

⁷⁰⁶ Bradbury, *Working Families*, 80.

⁷⁰⁷ Heron and Storey, 'On the Job in Canada', 9-10.

⁷⁰⁸ Licht, *Working for the Railroad*, 183-4.

⁷⁰⁹ Turner and Blackie, *Disability in the Industrial Revolution*, 80-1.

Apart from the fact that part of the Victoria Bridge workforce was probably recruited because of their experience, the sources allow us to identify the workers as experienced people. As suggested in the previous chapters, employers' sources describe accidents that were not labelled as accidents because of their fortunate outcomes. The association of the outcomes of accidents with fortune and misfortune silenced the role of the workers in the low number of casualties. The few examples of the workers' fear studied in the previous section suggest that the workers were able to identify danger and react accordingly in a matter of seconds. Legge compared the workers who ran up the ladders to escape a flooded dam with squirrels,⁷¹⁰ thus depicting fast and agile workers rather than a panic-stricken crowd. In their study of fear and dangerous environments, psychologists Chris Idzikowski and Alan Baddeley observe two types of reactions of groups of people in a fearful situation. Their reactions can be positive, in which case the individuals in the group support each other, or they can be negative when panic results in a stampeding crowd.⁷¹¹ The employers or newspapers never reported incidents due to groups of workers jostling and stamping each other, which suggests that the Victoria Bridge workmen were experienced groups, used to working with each other.

Millar refers to an eye witness, about whom he gives no details, who stated that people came from miles around to see the rivetters at work on the Conway Bridge and admired the precision of the boys who threw the rivets.⁷¹² If this is accurate, it would suggest that the teams of rivetters were already experienced at doing the same job on the Conway Bridge. Similarly, Legge's description of the riveters throwing and catching the rivets in the tube despite the darkness suggests that they mastered the gestures of their trade, but also that they knew how to work together.

⁷¹⁰ Legge, *A Glance at the Victoria Bridge*, 100.

⁷¹¹ Chris Idzikowski and Alan Baddeley, 'Fear and Dangerous Environments', in Hockey (ed.), *Stress and Fatigue in Human Performance*, 126-7.

⁷¹² Millar, *William Heap and his Company*, 1886, 26.

Descriptions in the sources of the work performed during the construction allude to the workmen's experience. Ross's report in 1858 emphasised the workers' endurance and capacity to work fast and efficiently. In contrast, chapter 2 argued that apprentices worked in quick and jerky movements, were quickly tired and put in a lot of work for less results.⁷¹³ In other words, inexperienced workers were less efficient, and the Victoria Bridge men's work pace and efficiency in eighteen-hour days tend to suggest they were very experienced individuals.

Historians have explored the link between experience and the number of accidents. Turner and Blackie point out that 'age and experience were important determinants of risk'.⁷¹⁴ Examining the mining industry, Bronstein similarly underlines that the 'young workers were particularly exposed to danger, and their relative experience seems to have increased the risk'.⁷¹⁵ Using the *Reports on Gases and Explosions in Collieries* (1847), she shows that '[o]f ninety-four mining deaths reported in Northumberland and Durham, England, in 1840, fifty claimed the lives of workers or children of workers under twenty-five; only two of these were described (...) as deaths by natural causes.'⁷¹⁶ Figures for the South Wales workforce in the early 1850s suggest that boys aged between ten and fifteen constituted one-ninth of the workforce but suffered more than one-fifth of all fatalities.⁷¹⁷ Nowadays, young workers are still more likely to be injured on the job. Matthieu Lépine studies workplace accidents in France today, and shows that according to the Institut national de recherche et de sécurité, accidents of workers under 25 years old are 2.5 times more frequent than for the rest of the workers.⁷¹⁸ Between 2019 and 2022, workers aged 15 to 24 years old represented 8.4 per cent of the

⁷¹³ Vigarello, *Histoire de la fatigue*, 230.

⁷¹⁴ Turner and Blackie, *Disability in the Industrial Revolution*, 73.

⁷¹⁵ Bronstein, *Caught in the Machinery*, 13.

⁷¹⁶ Bronstein, *Caught in the Machinery*, 13-4.

⁷¹⁷ Bronstein, *Caught in the Machinery*, 14, based on the work of John Benson, *British Coal Miners in the Nineteenth Century: A Social History*, New York: Holmes and Meier, 1980, 37.

⁷¹⁸ Matthieu Lépine, *L'Hécatombe invisible. Enquête sur les morts au travail*, Paris: Éditions du Seuil, 2023, 35.

workforce in France, and 10.9 per cent of the total number of accidents. The most represented category of victims of workplace accidents between 2019 and 2022 were the workers aged 25 to 49 years old, who represented 61 per cent of the total workforce, and 49.1 per cent of the total number of accidents.⁷¹⁹

Lépine explores a number of reasons to understand why younger workers are more likely to be victims of accidents on the job. Using the testimonies of the victims' parents and newspaper articles, he argues that younger workers are less likely to oppose an employer telling them to break security rules, but also that younger workers are less experienced, which makes them more vulnerable to fatigue, stress and a work pace they are unused to.⁷²⁰ Furthermore, inexperienced workers are usually treated like any other worker, while the International Labour Organisation observed in 2018 that the risk of injuries is four times higher during the first month on a new job than after twelve months on that same job, and that young workers are more likely to be injured during the first months on a job than older workers.⁷²¹ In his 1895 autobiography, Martin Nadaud (1815-1898) described how, as a boy, he had to climb five floors on a ladder, carrying the bucket of plaster to the mason, twenty-five to thirty times a day.⁷²² He recounted how exhausted he was, but also that when he did not go fast enough, the plaster dried, which infuriated the mason.⁷²³ Nadaud's testimony is further evidence that younger workers were less experienced and tired themselves, while their inexperience could slow down the works and irritate other workmen.

Based on these statements, it appears that young victims constituted the majority of all fatalities, not necessarily because they were young but because they lacked experience. On the Victoria Bridge, it seems that a number of accidents were avoided because the workers noticed

⁷¹⁹ Lépine, *L'Hécatombe invisible*, Annexe 4, 218.

⁷²⁰ Lépine, *L'Hécatombe invisible*, 37-8, 39.

⁷²¹ Lépine, *L'Hécatombe invisible*, 39.

⁷²² Nadaud, *Mémoires de Léonard, ancien garçon maçon*, 52.

⁷²³ Nadaud, *Mémoires de Léonard, ancien garçon maçon*, 52.

the danger and ran.⁷²⁴ Moreover, as suggested in chapter 3, worksites were places where falls or falling objects were common causes of fatal accidents. If, as Hodges maintained, the death toll was relatively low whereas nothing was provided to prevent falls (see chapter 5), then it suggests that the workers themselves were experienced enough to avoid these common accidents. The low death toll at the Victoria Bridge worksite, if accurate, perhaps depended more on the workers' experience (and ability to run fast) rather than the safety provisions employers mentioned.

The role of experience in the workers' avoidance of risk implies that avoiding accidents was something they learnt but also transmitted as part of their trade. The transmission of know-how was commonly observed on worksites. Historian Arwen Mohun extends the concept of vernacular risk culture to study the way workers have negotiated the uncertainties of their labour since the eighteenth century, tracing sets of rules, customs, and beliefs passed informally from person to person and noting that for bridge painters, 'skill, carefulness, and attention to duty were the only means to avoid accidents.'⁷²⁵ Pigenet's study of French dockers demonstrates that the elder showed the young and inexperienced dockers how to save energy, limit pain and suffering and lower the probability of accidents.⁷²⁶ Pigenet describes this transmission as an initiation, which allowed young dockers to become familiar with dockers' know-how and be admitted as part of their community. When the Select Committee enquired about the work of local agricultural labourers on the worksite, civil engineer Rawlinson insisted that barrow work was very difficult and required 'practice and experience', but that some of them managed to be 'as good as any of the others, after a time'.⁷²⁷ Barrow work required the workers to push heavily-loaded barrows up a plank stretched from the bottom to the top of an

⁷²⁴ See for instance Legge, *A Glance at the Victoria Bridge*, 100.

⁷²⁵ Arwen P. Mohun, *Risk. Negotiating Safety in American Society*, Baltimore: The John Hopkins University Press, 2013, 1.

⁷²⁶ Pigenet, 'A propos des représentations et des rapports sociaux sexués: identité professionnelle et masculinité chez les dockers français (XIXe-XXe siècles)', 66.

⁷²⁷ Rawlinson, Select Committee on Railway Labourers, §896, §899.

excavation and was very dangerous. Rawlinson's testimony suggests that workers learnt from others difficult and dangerous tasks, and part of that learning probably included how to run a barrow up a plank safely, without getting injured. Employer Thomas Jackson confirmed that the local inhabitants of Bangor (Wales) worked very well alongside the navvies, and improved 'very rapidly (...) [f]rom seeing the men work'.⁷²⁸ People might not have the power to prevent accidents, but they learnt to avoid them, and this was an important part of the knowledge base of a nineteenth-century construction worker.

Conclusion

This chapter showed that workers' identities were closely related to risk and the way they dealt with it. Drawing on the works of historians of labour and of the body, it suggested that workers belonged to a world of accidents because of their social class, but also because nineteenth-century employers considered that accidents were the workers' individual problems. The Victoria Bridge employers contributed to the commonly held view among nineteenth-century social elites that the workers' bodies were extremely powerful with rudimentary senses, which also made them naturally able to deal with pain, exertion and difficult working conditions. The celebration of the Victoria Bridge workers' physical abilities thus echoed the nineteenth-century laudatory descriptions of labouring bodies which marked the workers as essentially different and contributed to make risk avoidance and accidents the workers' business. In other words, risk partly defined the workers' occupational identities.

At the same time, the celebration of the workers was part of a masculine identity that both workers and employers acknowledged. In that sense, the employers' sources can be

⁷²⁸ Thomas Jackson, Select Committee on Railway Labourers, §1972-1974.

understood on several levels. When assistant engineer Ross described the exploits of the workers, we can perceive the exhausting work pace imposed on the workforce, but also the culture of masculinity that encouraged competitiveness among the workers, and the experience of the individuals who could work so fast, for so long, and could perform such efficient team work. The culture of masculinity that pervaded nineteenth-century worksites and was encouraged by both workers and employers also suggests that workers were not passive victims of the capitalist industry but sometimes contributed to it.

This chapter has argued that although available sources describe few fatal accidents and even less non-fatal incidents, it is possible to establish that the Victoria Bridge workers were good and experienced and probably formed a community. From the accounts of accidents that happened on the bridge, we see that when confronted to dangerous situations, the workers identified the danger and reacted accordingly to save themselves, which was described as either fear or curiosity in employers' sources. Based on the employers' descriptions of these incidents and the work of labour historians, this chapter established that at least two factors can explain the relatively low death toll on the worksite: first, fear was a life-saving skill and suggests that workers were perfectly able to assess danger. Second, the silences of the sources indicate that the workers had acquired experience during their careers, and possibly transmitted it as it was also a condition for efficient work in groups. Indeed, the employers praised the performances of the Victoria Bridge workers, but they usually attributed them to their physical strength, thus ignoring their experience and their necessary adaptation to the hardships of the work. Similarly, although they clearly described fearful reactions from the workers, they never described panic-stricken and disorderly mass movements, which they did when a huge number of Indigenous workers almost drowned.⁷²⁹ The accomplishments of the Victoria Bridge workers and their reactions in front of danger suggest that they were experienced. Their experience, as well as the

⁷²⁹ Hodges, *Construction of the Great Victoria Bridge*, 63-5.

fact that the precautions taken on the worksite and explored in the next chapter were not always efficient, suggest that the workers played an active role in the low death toll and might have been partly responsible for the low number of casualties.

Chapter 5: ‘And this is to be accounted for by the excessive precautions that were taken’.⁷³⁰ Accidents and precautions.

Accidents were an inherent part of nineteenth-century worksites, and the previous chapters illustrated the instability of the nineteenth-century definition of accident analysed by Cooter.⁷³¹ Studying nineteenth-century French miners, historian Rolande Treppe observes that big-scale, spectacular mining accidents have created a ‘mythology’ that has led us to ignore the real dangers that routinely threatened miners.⁷³² She explains that the statistics of the mineral industry only accounted for deadly accidents and serious injuries, just like the Victoria Bridge employers’ sources ignored typical industrial accidents (see chapter 3).⁷³³ It appears that official discourses thus neglected the reality of common, daily accidents. And yet, Hodges for instance attributed a lower number of casualties to precautions that he mentioned several times, thereby implicitly acknowledging the risk of accidents.⁷³⁴ There is therefore a discrepancy between, on the one hand, common and normalised accidents that were disregarded by employers and authorities, and on the other hand so-called precautions meant to prevent casualties that were hardly ever mentioned.

Because the dangers that threatened workers on a daily basis were less prominent in contemporary sources than spectacular accidents, their consequences on the workers’ lives were also less documented. Asking what precautions actually consisted in is a valid question, given that employers mentioned them without accurately describing risks. Another valid question would be whether precautions were only meant to prevent spectacular accidents. In this chapter,

⁷³⁰ Hodges, *Construction of the Great Victoria Bridge*, 58.

⁷³¹ Cooter, ‘The Moment of the Accident’, 111: ‘the meaning of an “accident” itself has no stability’.

⁷³² Treppe, ‘Travail à la mine’, 144.

⁷³³ Treppe, ‘Travail à la mine’, 145.

⁷³⁴ Hodges, *Construction of the Great Victoria Bridge*, 58: ‘There were, indeed, fewer casualties than usually occurred in the summer season upon similar work. And this is to be accounted for by the excessive precautions that were taken (...)’.

I argue that they did not and that precautions were meant to prevent different sorts of accidents, which implies that employers knew about various dangers.

Trempé accurately points out the reality of risks, that is their commonality, their constant presence in the workers' routine. For the workers and to another extent for the employers, the consequence of the constant presence of risk is the necessity to avoid it. Trempé does not explain how, on a daily basis, workers and employers avoided accidents. Precautions in the nineteenth century are difficult to study because they are often alluded to at best. Until the second half of the twentieth century, sociologist Judith Green argues, prevention was seen 'as a largely improbable enterprise' and 'may have been implicit in the patterns produced by ever more detailed statistics, but was not explicitly addressed as a discrete activity.'⁷³⁵ This chapter addresses the difficulty pointed out by Green to study precautions before the second half of the twentieth century. It interrogates the notion of precaution during the construction of the Victoria Bridge, which implies to analyse how precaution was understood on nineteenth-century worksites. It also raises the question of responsibility and reliability, and therefore of the strategies of power and management centred on the notion of precaution. In other words, this chapter tries to understand who was supposed to take precautions and why, what these precautions were intended to achieve and what they really prevented. As this chapter will show, the contractors made a deal with a local hospital in Montreal, and I argue that this agreement is key to understanding the notion of precaution on the worksite. In that sense, this chapter is also an attempt to examine how to use hospital records in a broader reflection on risk and accidents.

The first section focuses more particularly on cold-related injuries which, according to employers, were new to them and to a number of workers. The workers and the employers therefore had the opportunity, during the six-year construction, to learn about this new risk. This chapter thus uses cold-related injuries as a case study to understand how workers and

⁷³⁵ Green, *Risk and Misfortune*, 95.

employers came to learn about a particular risk and about solutions to avoid accidents and injuries. It cross-examines employers' accounts of injuries, temperature accounts and hospital records to analyse the concept of anticipation, which is necessary to understand precautions. The second section analyses the notion of precaution on the Victoria Bridge worksite, challenging Triggs's analysis of safety measures to which he attributes the low death toll during the construction.⁷³⁶ This section also relies on the historiography of company hospitals which it hopes to modestly contribute to. At the crossroads of the historiographies of canals, railways and accidents, the third section explores the issue of responsibility on the worksite.

I- The notion of anticipation

This section addresses the idea of anticipation, to which the notion and definition of precaution are intrinsically linked. This section tries to understand what anticipation was like on the Victoria Bridge worksite, and to what extent anticipation was even possible. Indeed, taking precautions to prevent injuries implies to first identify the risks of accidents, that is, the real cause of accidents, and understand how precisely accidents happened. Anticipation results from a learning process, for both workers and employers, of the risks at play. This learning process is even more significant in an environment new to employers and/or workers, which requires to understand new risks.

The adaptation to the risks pertaining to a new environment pervades the history of worksites. Diseases like malaria are a widely explored example of a risk belonging to a new construction environment, with deadly consequences and which required a thorough learning process to understand its causes and prevent its spreading. In his major work on the history of railways in India, historian Ian Kerr shows how railway construction in India evolved from the

⁷³⁶ Triggs, 'Le Pont / The Bridge', 48.

identification of new problems – ranging from what Indian labourers could and would do, health issues, or the timely delivery of supplies – and their ‘ad hoc solutions’, to a ‘routinized’ construction process.⁷³⁷ He therefore clearly describes how a learning process was required in a new construction environment. As part of this learning process was an increased concern for the health of the workers, mainly because, Kerr argues, ‘the prevention of epidemic disease was an important element in obtaining and retaining labour at the work-sites and thus getting the job finished on time’.⁷³⁸ Kerr shows that although the etiology of cholera was still unknown, there was a recognition that unsanitary living conditions played a significant part in the spreading of the disease, while the role of the mosquito in the transmission of malaria was only discovered in 1898.⁷³⁹ Sanitation was then included in lectures and manuals prepared for the instruction of the young engineer, and made into practice at the worksites.⁷⁴⁰ Experience on how to prevent epidemic diseases was thus learnt on the worksite and became part of the training of the next generation of engineers. That shows two things: first of all, identifying the right causes of risks – be they diseases or accidents, was a difficult challenge that should not be underestimated. Second, experience – made of trial and error and ‘ad hoc solutions’ – was part of a learning process meant to preserve the workers’ health to make sure the job could be finished on time.

To better understand the learning process that made anticipation possible on the Victoria Bridge worksite, this section first focuses on cold-related injuries. As shown previously (see chapter 3), they are the most detailed injuries in Hodges’s book, but not in Canadian engineer Legge’s book, thus implying that cold-related injuries were new to British employers and workers. The cold therefore represented a risk that was part of the new construction environment and that necessitated *ad hoc* solutions. The dreadful consequences of the cold,

⁷³⁷ Kerr, *Building the Railways of the Raj*, 32-33.

⁷³⁸ Kerr, *Building the Railways of the Raj*, 166.

⁷³⁹ Kerr, *Building the Railways of the Raj*, 165.

⁷⁴⁰ Kerr, *Building the Railways of the Raj*, 165.

discovered at the very beginning of the construction in the winter 1853-1854, thus allow the examination of a possible learning process of cold-related risks during the six-year construction, and interrogate the possibility of their anticipation.

Hodges explicitly refers to injuries due to the cold twice in the book: at the beginning of the construction in 1853-1854, and at the end of the construction in 1858-1859. In 1853-1854, the men had their noses, ears or feet frost-bitten and suffered from snow blindness.⁷⁴¹ In 1859, they also ‘occasionally’ suffered from frost bites, despite the ‘greatest care’.⁷⁴² It therefore seems that the precautions taken against the cold – this ‘care’ – were either non-existent or clearly not enough since workers sustained the same type of injuries after six years on the worksite. However, the crucial word here is ‘enough’. What precautions could be considered sufficient enough? And most importantly, how possible was it to establish efficient safety measures? In other terms, what needs to be understood is how precise and accurate anticipation could be on the worksite.

Indeed, there were precautions to protect the men from being frost-bitten. About the winter 1853-1854, Hodges wrote: ‘Being without any experience of such a rigorous climate they suffered severely; many of the men had their noses, ears, or feet, frost-bitten, and some had to be sent to the hospital from partial blindness, produced by the glare of the sun upon the snow.’⁷⁴³ About the winter 1859, he wrote:

During the extreme cold, or when the thermometer was more than 20° below zero, Fahrenheit, if there was any wind at all, the men could not work, as at such times the smallest portion of the body left exposed was frozen instantly. The greatest care was, therefore, requisite. The men had to work in thick gloves, and with heavy coats on. Fur caps covered their ears, and heavy handkerchiefs were worn over the greater part of their faces, so that only a very small portion was visible. Even with all this care they occasionally got frost-bitten.⁷⁴⁴

⁷⁴¹ Hodges, *Construction of the Great Victoria Bridge*, 17-18.

⁷⁴² Hodges, *Construction of the Great Victoria Bridge*, 57-58.

⁷⁴³ Hodges, *Construction of the Great Victoria Bridge*, 17-18

⁷⁴⁴ Hodges, *Construction of the Great Victoria Bridge*, 57-58. -20 degrees Fahrenheit = -28.9 degrees Celsius.

The nature of the injuries was the same in 1853-1854 and 1859: in winter, the greatest danger for the workers was to be frost-bitten. The main difference, however, is that those injuries seemed less frequent at the end of the construction, despite very low temperatures – January 1859 registered the coldest days in years.⁷⁴⁵ There is indeed an opposition between the ‘many men’ who suffered from frost-bitten limbs at the beginning of the construction, and the injuries happening ‘occasionally’ six years later. The workers had learnt to protect themselves by using multiple layers of clothes to protect the body parts that were frozen in 1853-1854: thick gloves to protect the hands, coats, fur caps to protect their ears, and handkerchiefs to protect their noses. Similarly, a newspaper article describing the body of a deceased Victoria Bridge worker gives a good idea of how workers layered their clothing in winter: long boots, stockings, woollen trousers, two shirts, a top coat, a sash plus a neck tie, and leather mitts.⁷⁴⁶ These protections worked to some extent, in the sense that in 1859, the body parts that were frost-bitten were those ‘left exposed’.

The workers’ clothes are thus to be seen as precautions against the cold, and a sign of adaptation to extreme temperatures. As mentioned in the previous chapter, Peto and Brassey endeavoured to build the Balaklava Railway during the war in Crimea in 1855, simultaneously with the construction of the Victoria Bridge. The navvies were under the contractors’ responsibility and were not military, and Brooke considers the surgeon and his four assistants and nurses, the policeman, the cook and the hairdresser sent with the navvies evidence of the contractors’ ‘concern for the needs of the men’.⁷⁴⁷ The navvies sent to Crimea were also given clothes for warmth: ‘red flannel and striped cotton shirts, moleskin trousers, waistcoats and pea-jackets with, as alternative dress for warmer weather, roomy smocks; woollen caps or sou’westers covered their heads and they were shod in “ankle jacks” (laced boots).’⁷⁴⁸ The

⁷⁴⁵ Hodges, *Construction of the Great Victoria Bridge*, 57.

⁷⁴⁶ *Pilot*, 13 January 1859, quoted in Triggs, ‘Le Pont / The Bridge’, 49.

⁷⁴⁷ Brooke, *The Railway Navy*, 125.

⁷⁴⁸ Brooke, *The Railway Navy*, 125.

clothes listed by Brooke evidence a concern about the weather and its impact on the workers, with alternative garments being provided to adapt to temperature variations. Evidently, the multiple layers of clothes were meant to protect the men from the cold, just like on the Victoria Bridge worksite. It is possible that this list of clothes resulted from the experience of the cold and its consequences that employers, too, acquired in Canada. There is no evidence, however, that the Victoria Bridge workers were provided with warm clothes. Furthermore, although layering clothes helped against the cold, the workers would have needed to dry out wet clothing. Missionary Garnett underlined that navvies often worked wearing wet clothes:

How well some of us remember often in the early mornings, sometimes through rain or snowstorms, meeting from one hundred and fifty to two hundred navvies walking four miles from a neighbouring town to the reservoir where their work lay! These men would get there wet and tired and have to work their clothes dry, and then after a long day's toil (and remember a navvy's toil is lifting twenty tons of puddle his own height in the course of the day) would have to walk the same distance back again.⁷⁴⁹

Garnett associated wet clothes with the difficult and unfair working conditions of the navvies. Their clothes were wet because they lived too far from the construction site, and Garnett's main reproach is the usual lack of accommodation available for the navvies. In the case of the Victoria Bridge workers, we know that some of them lived in the old emigrant sheds which were solid buildings, or in town, but not in shanties like railway workers often did, which might have helped to dry out wet clothes.⁷⁵⁰

After 1853-1854 on the Victoria Bridge worksite, cold-related accidents were no longer the result of the brutal discovery of extreme temperatures unheard of before, but occasional injuries that were now well-known but had somehow not been avoided. The precautions taken to prevent cold-related injuries therefore turned these injuries into accidents that could be predicted, as suggested by Green.⁷⁵¹ Accidents, and in this instance cold-related accidents, thus

⁷⁴⁹ Garnett, *Our Navvies*, 9-10.

⁷⁵⁰ Triggs, 'Le Pont / The Bridge', 52.

⁷⁵¹ Green, *Risk and Misfortune*, 201: 'Accident prevention reduces uncertainty by constructing the accident as an event that could be predicted, at least in theory.'

happened despite workers and employers knowing the causes and consequences of such accidents: they knew that intense cold could lead to workers being frost-bitten, they devised ways to protect the bodies against the cold, and yet accidents happened anyway. Karl Figlio, in his major contribution ‘What is an accident?’, explains that the concept of negligence ‘enabled outcomes that were not directly and maliciously intended still to be held at someone’s responsibility; in short, accountability became divorced from culpability.’⁷⁵² In that sense, it can be argued that cold-related accidents after 1853-1854 happened not because the clothes were not thick enough, but because employers made the workers toil despite freezing temperatures. The workmen had parts of their bodies freeze because they were probably not the ones who controlled the timing of their work and exposure. That does not imply, of course, that the employers were then motivated by malicious intentions, as there was hardly any good reason why the employers would take the risk of losing their workmen, in a context of labour shortage, due to frost-bitten limbs. Although they were required to work faster by the end of the construction, they still had to preserve the workers’ health in order to finish on time, as suggested above. The cold-related accidents after 1853-1854 were most probably due to a miscalculation of the risk and the cold.

In addition to weather conditions, John Bethune, principal of McGill University from 1835 to 1846, also recorded the lowest and highest temperatures, wind, and pressure in Montreal from 1838 to 1869.⁷⁵³ Scholar Victoria Slonosky compares the climate observations in the St. Lawrence Valley of twelve individuals, among whom John Bethune.⁷⁵⁴ Slonosky argues that his record is ‘unusual in that he recorded minimum and maximum temperatures, rather than temperature observations made at regular, fixed hours as most of his contemporaries

⁷⁵² Karl Figlio, ‘What is an accident?’, in P. Weindling (ed.) *The Social History of Occupational Health*, London: Croom Helm, 1985, 180-206 quoted in Green, *Risk and Misfortune*, 20.

⁷⁵³ McCord Museum, Fonds McCord Family, P001-B3.4.

⁷⁵⁴ Victoria Slonosky, ‘Historical climate observations in Canada; 18th and 19th century daily temperature from the St. Lawrence Valley, Quebec’, *Geoscience Data Journal*, Feb. 2014, 1-18.

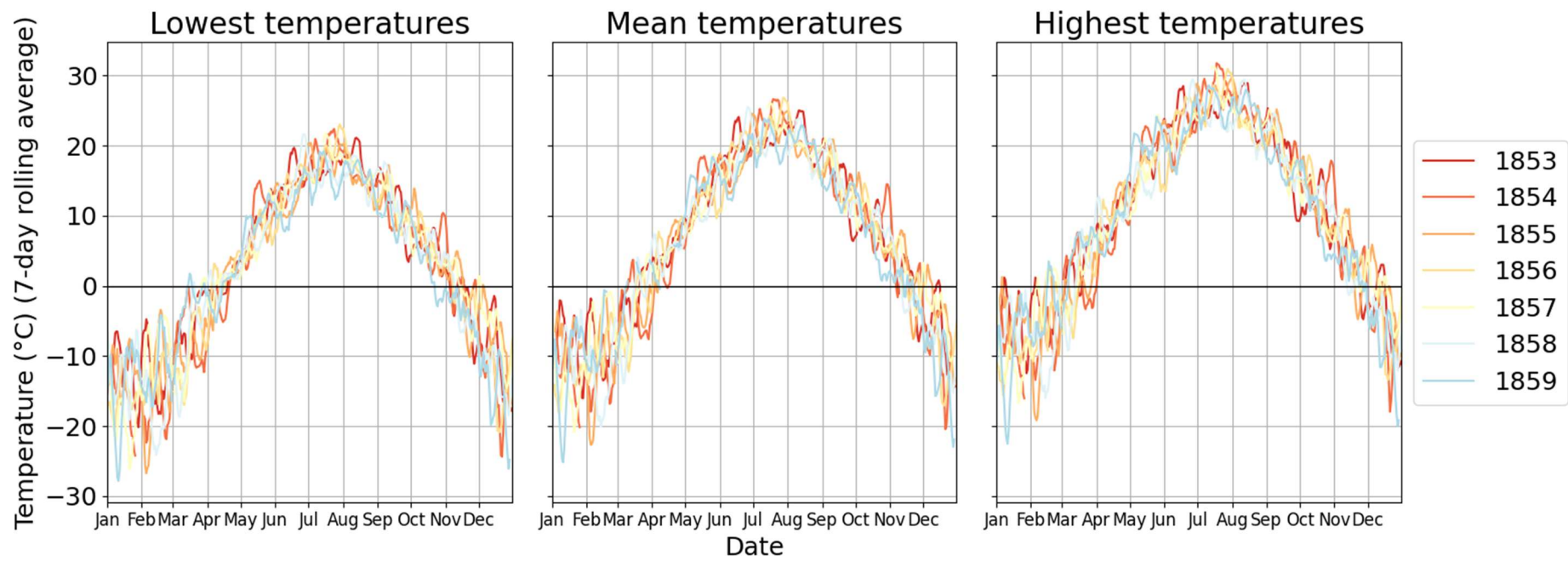
did.⁷⁵⁵ Although nothing is known about the instruments he used or where his observations were taken, she supposes that they were taken at Christ Church Cathedral or McGill University.⁷⁵⁶ If so, Bethune's instruments were located about three kilometres from the river. Slonosky compares historical and modern observations and shows that Bethune's values bear no evidence of any instrumental problems or bias.⁷⁵⁷ Bethune's records can thus be safely used to examine how possible anticipation of the cold and cold-related accidents was on the Victoria Bridge worksite. To examine whether the temperature variations from one year to another made anticipation possible, I use Bethune's recorded temperatures to compare each working season.⁷⁵⁸ Tab.8 compares the lowest, mean and highest temperatures of all working seasons.

⁷⁵⁵ Slonosky, 'Historical climate observations in Canada', 12.

⁷⁵⁶ Slonosky, 'Historical climate observations in Canada', 12.

⁷⁵⁷ Slonosky, 'Historical climate observations in Canada', 14.

⁷⁵⁸ McCord Museum, Fonds McCord Family, P001-B3.4_Part17.

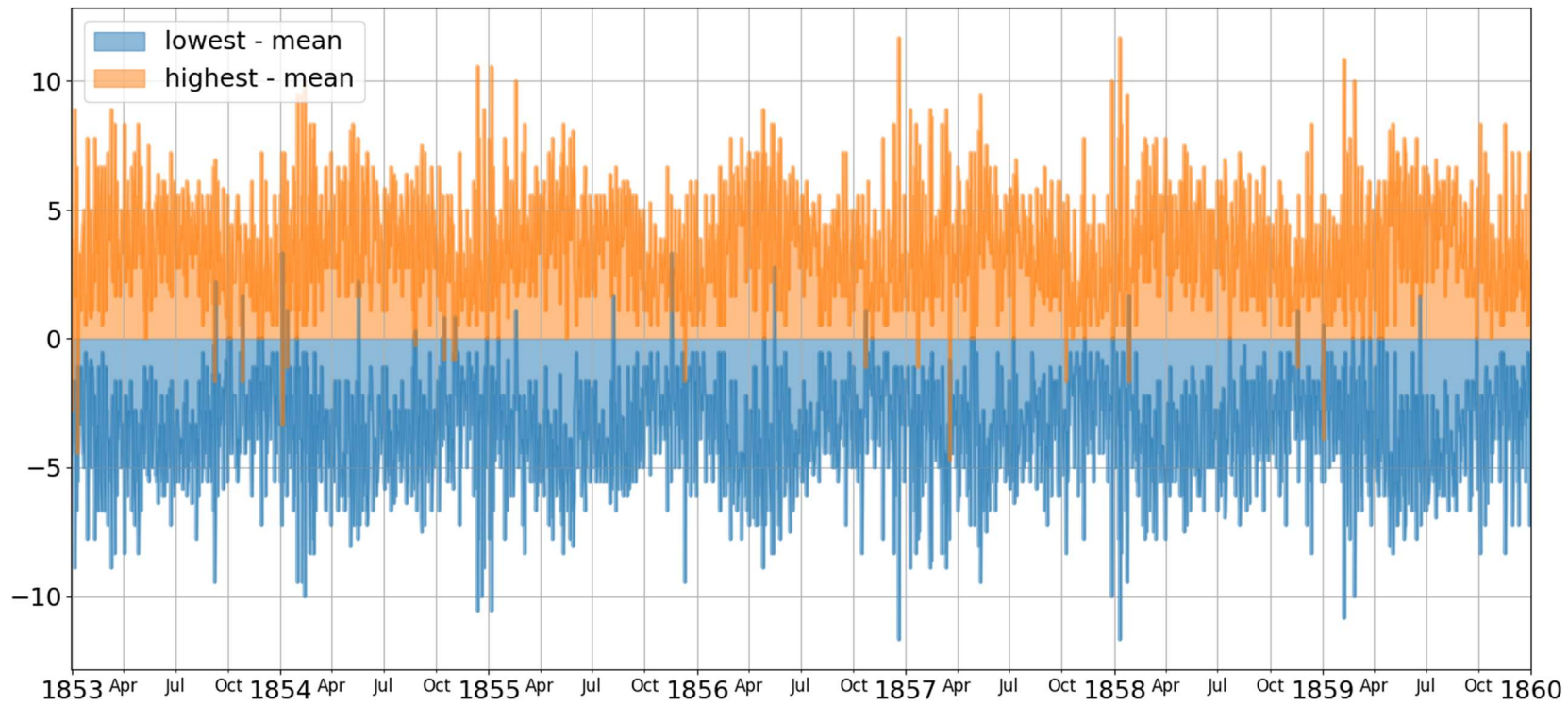


Tab. 8 Seasonal temperatures rolling (1853-1859)

Tab.8 shows that temperatures followed a similar seasonal pattern, suggesting it was possible to anticipate precautions against the cold. Confirming Hodges's statement, 1859 was clearly colder than the others, which is also documented by other contemporary records which show that the 1859 temperatures were the coldest in forty years.⁷⁵⁹ That explains the cold-related accidents mentioned by Hodges in 1859: the winter was unusually cold, in a way that could not have been predicted, so precautions were not sufficient and workers got frost-bitten. However, if the winter 1859 was exceptionally cold, surely the workers and the employers could have adapted during that season. Similarly, even though they had no experience of such a climate in 1853-1854, they could have devised efficient ways to protect themselves and avoid the high number of casualties. However, Bethune's data invite us to change scales and to study cold-related risks on a daily basis instead of comparing all working seasons (Tab. 9 and Tab. 10).

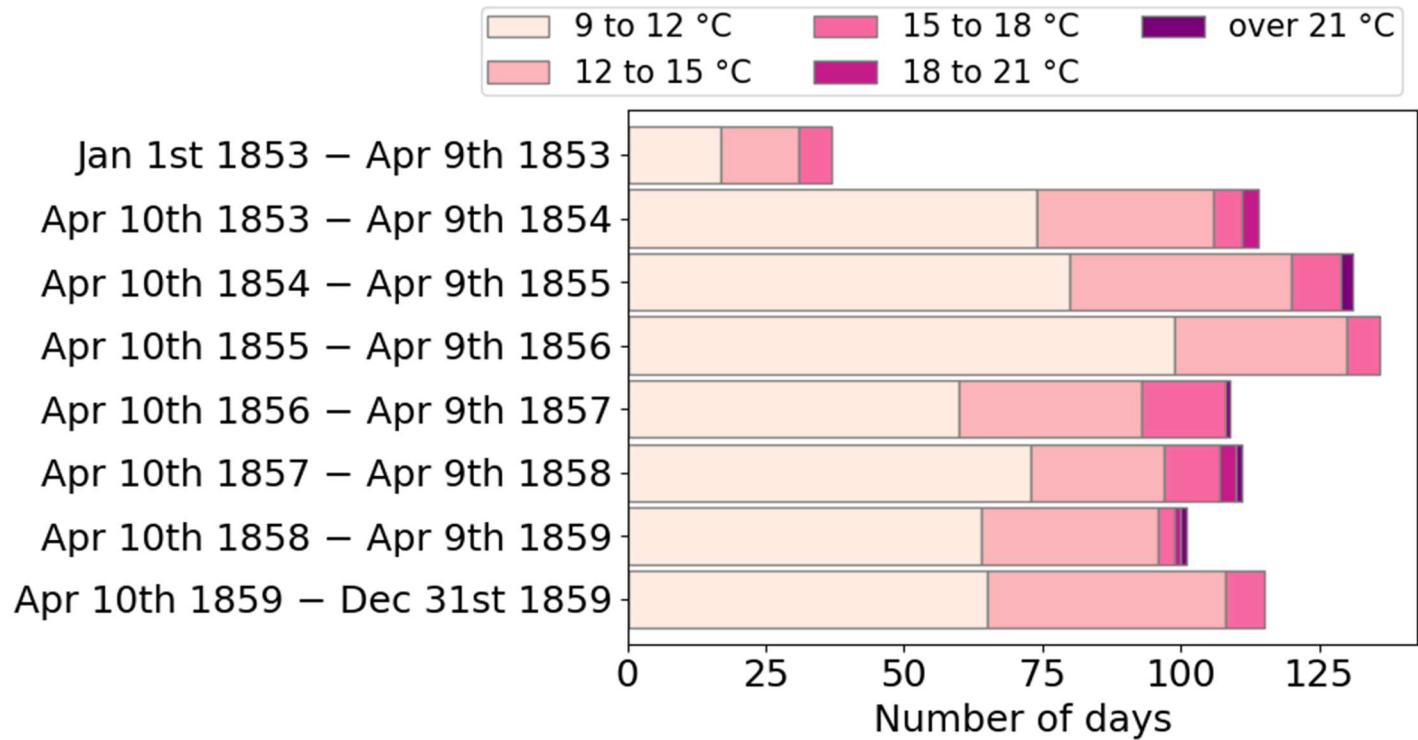
⁷⁵⁹ McCord Museum, Fonds McCord Family, P001_B3.4_Part10.

Temperature amplitude per day



Tab.9 Temperature amplitude per day (1853-1860)

Large daily temperature differences



Tab. 10 Large daily temperature differences (1853-1859)

Tab. 10 examines daily amplitudes (the difference between the lowest and highest temperatures) with thresholds for daily temperature variations per year. It reveals sharp temperature differences in single days, and from one day to the next. Tab. 10 evidences the daily temperature differences, which were usually comprised between 9 and 12 degrees Celsius, and could reach over 21 degrees Celsius. Tab. 9 and Tab. 10 show that although anticipation was possible from one year to another, it was much more difficult from one day to the next, or even from one moment of the day to another, which probably favoured accidents. The very low temperatures that can be observed each year (Tab. 9), but even more sharply in 1855, 1857, 1858 and 1859, were short and isolated incidents that made adaptation and prevention difficult, and almost impossible. They indicate when cold-related accidents probably happened: they did not necessarily happen throughout the winter, but rather when workers were taken off-guard during the day, or during one extremely cold day in a milder week. That also suggests that the precautions taken by the workers and the employers, that is the layers of clothes, were just enough for an average and regular winter, but probably insufficient with sudden temperature variations.

However, the cold and potential cold-related injuries described by contemporaries like Hodges or Helps and illustrated by Bethune's records tend to crystallise the issue of risk and injuries on temperatures. As explained before (see chapter 3), the fact that Hodges repeatedly described cold-related injuries but not typical industrial accidents tends to suggest a certain fascination on the part of Hodges and his imagined British readers for such extraordinary temperatures and injuries. The danger for researchers is to share this fascination, made easier by the accessibility of those extreme working conditions and injuries in the sources. The consequence of this would be to exaggeratedly emphasise the impact and importance of weather conditions on the workers' health and working conditions. The question here is the following: did extraordinary temperatures really cause more accidents? Or, were there significantly more

accidents because of the cold? Studying the Chinese workers involved in the construction of the Canadian Pacific Railway (CPR) between 1880 and 1885, Zhongping Chen gives particular attention to the winter of late 1882 to early 1883, ‘one of the severest ever known in Canada’.⁷⁶⁰ Based on newspaper sources, he evidences a high number of casualties which he attributes to the cold weather, although some of the quoted newspapers did not evidence a clear connection between the death of Chinese workers and the cold weather. One of them, for instance, read: ‘We learn that no less than thirteen Chinamen have died at Port Moody railway works since the gang was placed there last fall. This is a large percentage, however it is to be accounted for.’⁷⁶¹

Zhongping Chen notably emphasises one fatal consequence of the long and cold winters: scurvy, which ‘continually wreaked havoc among the Chinese laborers as late as March 1883’, despite medical care.⁷⁶² Scurvy is caused by a lack of Vitamin C, and as early as the seventeenth century, Samuel de Champlain, who did not understand the disease, described the dreadful consequences of scurvy in Sainte Croix and Quebec due to the cold and six-month-long winters in Canada, where he observed that those who survived scurvy seemed to get better with spring.⁷⁶³ Scurvy can thus accurately be considered a consequence of long and cold winters, when fresh vegetables were a rare commodity for months on end.

Zhongping Chen thus establishes a clear connection between the cold weather and a higher death toll. There were similarities between the Victoria Bridge and the Canadian Pacific

⁷⁶⁰ Zhongping Chen, ‘The Construction of the Canadian Pacific Railway and the Transpacific Chinese Diaspora, 1880-1885’, in Chang et al. (eds.), *The Chinese and the Iron Road*, 444-5, quoting *Colonist*, Victoria BC, April 3, 1883.

⁷⁶¹ *British Columbian*, 24 Jan. 1883. Another newspaper article, not cited by Zhongping Chen, mentions beriberi as the cause of death of at least ten Chinese labourers, *British Columbian*, March 7, 1883.

⁷⁶² Zhongping Chen, ‘The Construction of the Canadian Pacific Railway and the Transpacific Chinese Diaspora, 1880-1885’, 445.

⁷⁶³ BNF, Lk12-720, collection numérique, Samuel de Champlain, *Les voyages du sieur de Champlain, Xaintongeois, capitaine ordinaire pour le Roy, en la marine. Divisez en deux livres, ou Journal tres-fidele des observations faites és descouvertes de la Nouvelle France: tant en la description des terres, costes, rivieres, ports, haures, leurs hauteurs, & plusieurs declinaisons de la guide-aymant; qu'en la creance des peuples, leur superstition, façon de vivre & de guerroyer: enrichi de quantité de figures . Ensemble deux cartes geographiques : la premiere servant à la navigation, dressée selon les compas qui nordestent, sur lesquels les mariniers naviguent : l'autre en son vray meridien, avec ses longitudes & latitudes: à laquelle est adjouté le voyage du destroit qu'ont trouvé les Anglois, au dessus de Labrador, depuis le 53e degré de latitude, jusques au 63e en l'an 1612 cerchans un chemin par le Nord, pour aller à la Chine*, Paris: Jean Berjon, 1613, 52-5, 202.

Railway worksites: the winters could be unusually cold, as in 1859 and 1882-1883, and the workers had no experience of the climate – although probably much more dramatically so for the Chinese labourers who were from Guangdong Province, a tropical area.⁷⁶⁴

Nevertheless, although Zhongping Chen shows that the cold could have a dramatic impact on the death toll of a worksite, there is no similar enumeration of deceased Victoria Bridge workers during winter in the newspapers. While Hodges mentions diseases that plagued the worksite like cholera, there is no mention in employers' sources or in contemporary newspapers of illnesses such as scurvy or any cold-related illness. Winters were harsher on western worksites. In her contribution on the Central Pacific Railroad (CPRR), archaeologist Kelly J. Dixon focuses on the area around Donner Pass, in the Sierra Nevada region, considered as 'one of the coldest and snowiest places in the United States', and describes how the CPRR workers, inexperienced with such a climate, were tragically confronted with snow storms and avalanches.⁷⁶⁵

The CPRR, Dixon tells us, recorded weather patterns, including precipitation and snowfall in 1870.⁷⁶⁶ If the employers made the effort to do so, it suggests that they considered the weather likely to dangerously disturb the construction. Hodges provided diagrams of the temperatures for the years 1855, 1856, and 1857 (Fig. 38 and Fig. 39) which are more difficult to use than Bethune's data because they are less precise and do not mention how the temperatures were recorded – whether it was the coldest and warmest temperatures of the day or the temperatures at two moments of the day that were represented on the diagrams.

⁷⁶⁴ Zhongping Chen, 'The Construction of the Canadian Pacific Railway and the Transpacific Chinese Diaspora, 1880-1885', 444-5.

⁷⁶⁵ Kelly J. Dixon with contributions by Gary Weisz, Christopher Merritt, Robert Weaver, and James Bard, 'Landscapes of Change. Culture, nature, and the archaeological heritage of transcontinental railroads in the North American West', in Chang et al. (eds.), *The Chinese and the Iron Road*, 193.

⁷⁶⁶ Dixon, 'Landscapes of Change', 193.

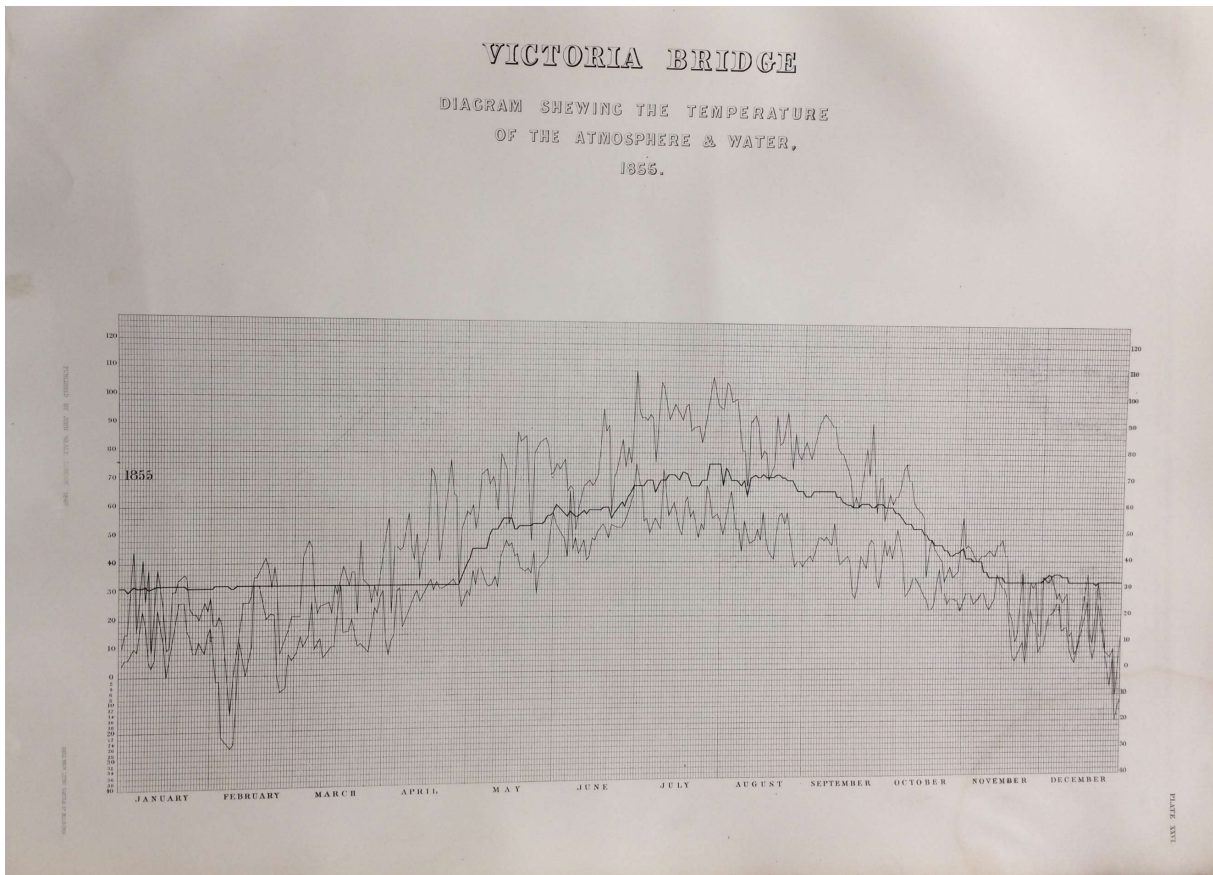


Fig. 38 *Diagram shewing the temperature of the atmosphere & water, 1855*, Hodges, *Construction of the Great Victoria Bridge*, plate XXVI, LAC, Peter Winkworth Collection of Canadiana, R9266-209-5-E, Volume number: 4114.

Diagram that shows the temperature of the atmosphere and the water in 1855, but we do not know how the temperatures were recorded.

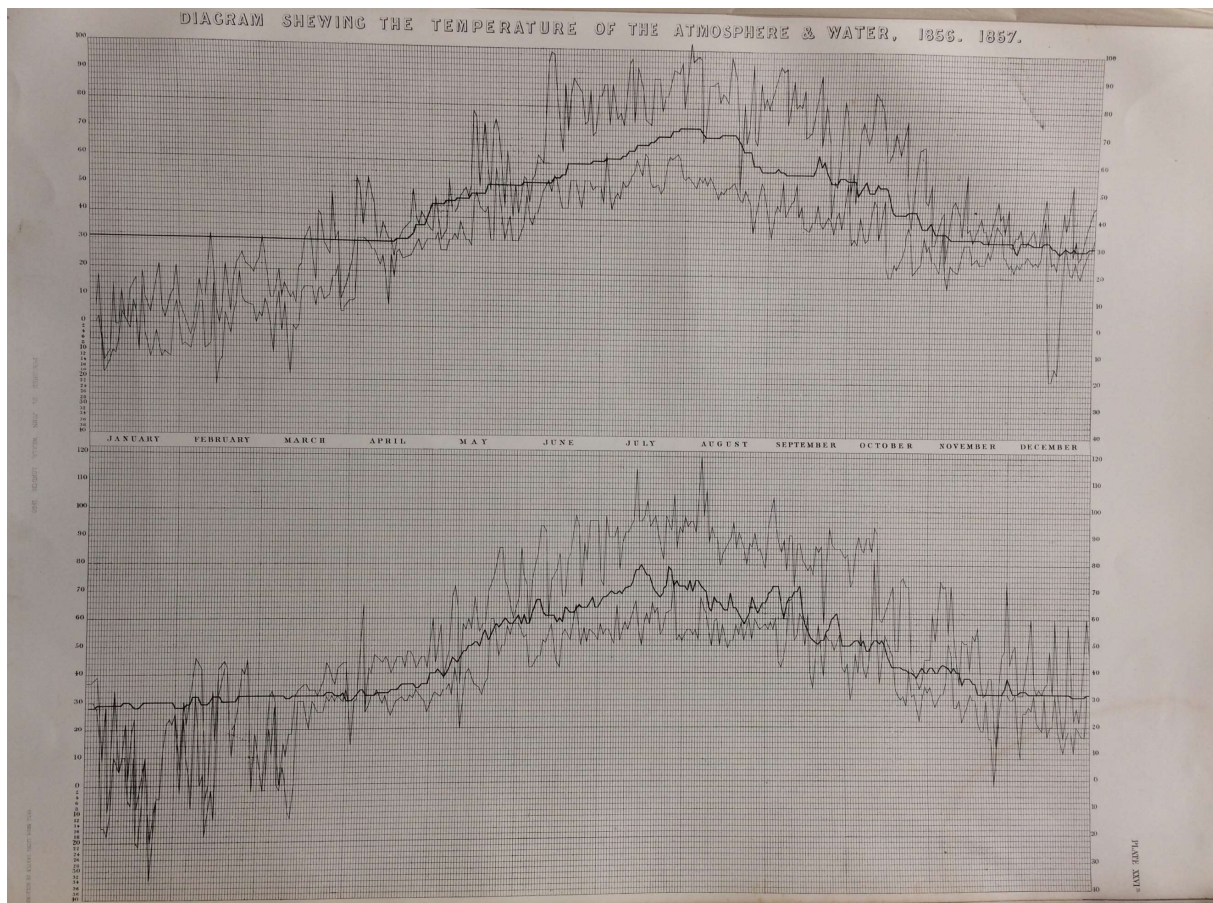


Fig. 39 *Diagram shewing the temperature of the atmosphere & water, 1856, 1857*, Hodges, *Construction of the Great Victoria Bridge*, plate XXVIa, LAC, Peter Winkworth Collection of Canadiana, R9266-209-5-E, Volume number: 4114.

Diagram that shows the temperature of the atmosphere and the water in 1856 and 1857. The plate (XXV) that precedes the 1855, 1856 and 1857 diagrams represent the deflections of the tubes when tested, and it is possible that recording the temperatures was meant to better understand the deflections of the tube.

Maybe the employers started recording temperatures after the men suffered from the cold and the heat in 1853-1854. They might also have recorded temperatures because temperature variations had an impact on the tube which they scrupulously measured.

However, despite these diagrams which evidence the fact that the employers had the means to measure temperatures, Hodges's and Legge's texts remained vague whenever they mentioned the weather, while they measured almost everything: the number of rivets that were used, the weight of the stones, the width of the asphalted felt used to bed the ashlar in, etc. which they scrupulously reported to their readers. Hodges just mentioned unusually cold temperatures: it was -38 degrees Celsius on 10, 11 and 12 January 1859 – the coldest days in

Canada in years, and -29 degrees Celsius was the temperature beyond which the men could not work in 1859.⁷⁶⁷ He described the ‘formidable’ snowstorms in 1855-1856 but not their impact on the workers, merely expressing his own fascination with the snowdrifts forming ‘a well-beaten road’.⁷⁶⁸ These very few instances of weather description, as well as Hodges’s palpable fascination with the exoticism of extreme weather, contrast with the absence of precise data about the weather in his text. The fact that none of the minute engineers, who meticulously recorded everything, did not do so for the weather implies that it did not have a tremendous impact on the course of the construction, nor was it responsible for most casualties among the workers. Significantly, Hodges wrote in 1859:

During the erection of this tube, scores of men were frozen in their hands, noses, ears, and face. Some had to go to the hospital in consequence; yet not a man lost either finger or toe; neither was any man seriously injured during the time the tube was in progress. There were, indeed, fewer casualties than usually occurred in the summer season upon similar work. And this is to be accounted for by the excessive precautions that were taken, in consequence of the certain knowledge that the slightest carelessness would produce fearful mutilation, and very probably loss of life itself.⁷⁶⁹

Although in this passage Hodges tried to demonstrate the efficiency of the precautions against the cold, he proved that casualties ‘usually’ happened whatever the weather was like, the key sentence of this passage being: ‘There were, indeed, fewer casualties than usually occurred in the summer season upon similar work.’ It suggests that there were precautions to protect the workers from extreme weather conditions in winter, but that danger inhered in the work and no precautions were taken against the hazards of the job.

Furthermore, the contractors struck a deal with a local Montreal hospital, an important topic that the second section of this chapter will analyse. The admission register of St Patrick’s hospital, which covers the years 1852 to 1860, does not provide the causes of admission (Fig.

⁷⁶⁷ Hodges, *Construction of the Great Victoria Bridge*, 57.

⁷⁶⁸ Hodges, *Construction of the Great Victoria Bridge*, 35.

⁷⁶⁹ Hodges, *Construction of the Great Victoria Bridge*, 58.

40), and I could not find a specific register recording the deaths and causes of deaths of the patients.⁷⁷⁰

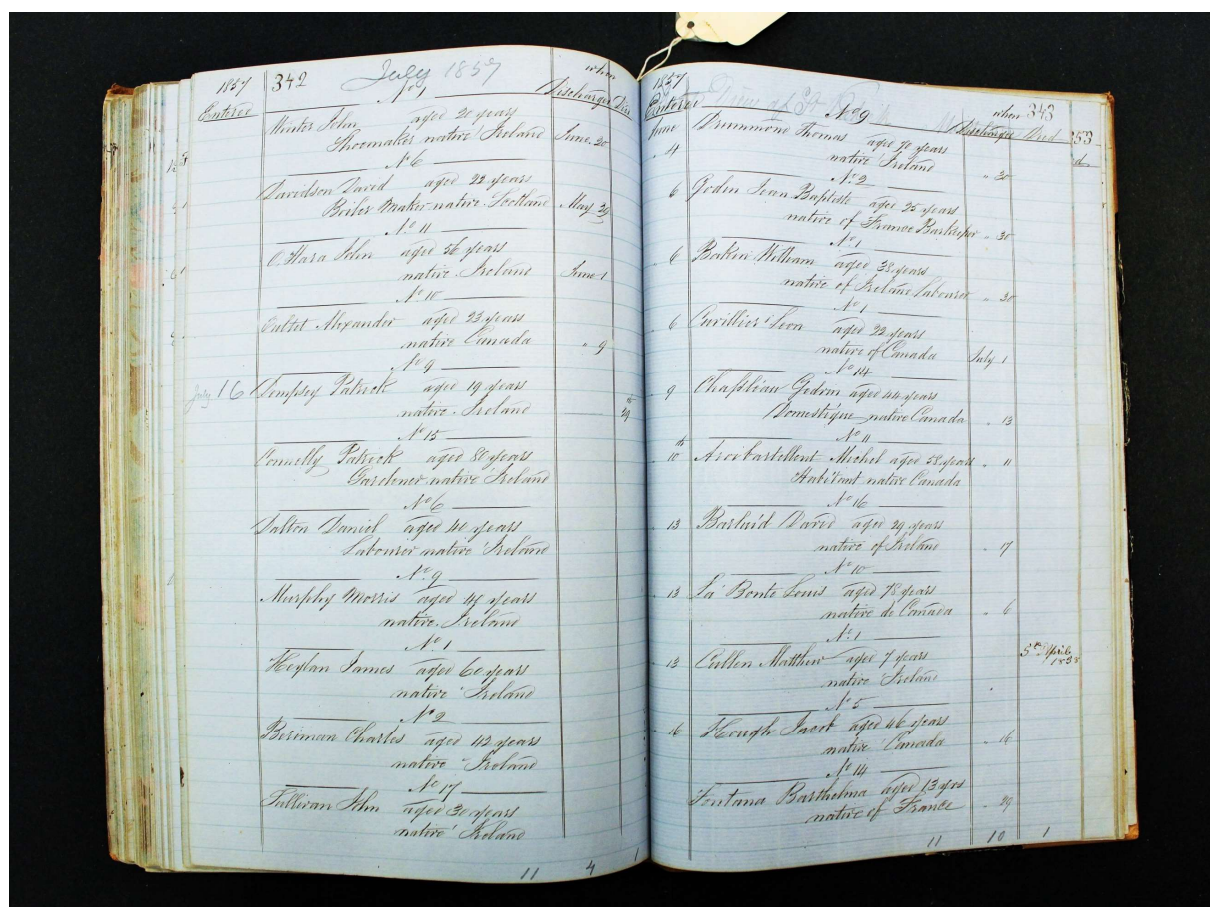


Fig. 40 Register of the Male Patients of the Hotel-Dieu St Patrick Montreal, Aug. 1852-May 1860 (ARHSJM)

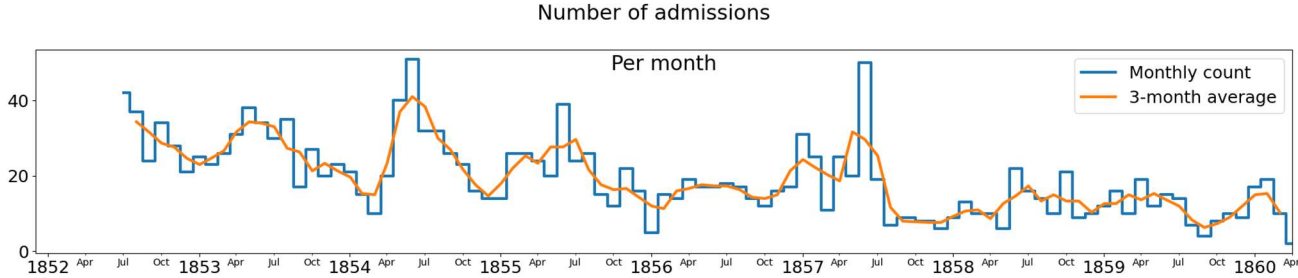
The admission register provides the names of the patients, their origins, sometimes their occupations, the dates of admission, discharge and death, as well as numbers which might correspond to the bed numbers.

The register does not reflect the real number of casualties on the worksite for a number of reasons: first, it is not restricted to the names of the Grand Trunk and Victoria Bridge workers, as the construction of the Montreal-Toronto section and the Victoria Bridge started after 1852. Second, ill and injured workers did not necessarily go to hospital. As shown by Roy Porter, patients were not necessarily cared for at the hospital and resorted to self-medication,⁷⁷¹ and Glenda Maconachie details the role of wives and families in providing medical care to the

⁷⁷⁰ Musée des Soeurs Hospitalières, Montreal, Archives des Religieuses Hospitalières de St Joseph de Montréal (ARHSJM), Register of the Patients of the Hotel-Dieu St Patrick Montreal, Aug. 1852-May 1860.

⁷⁷¹ Porter, 'The Patient's View. Doing Medical History from Below', 175.

workers that supplemented that provided by the hospital.⁷⁷² Finally, workers who died on the worksite or in the river were of course not in the admission register. It is also probable that only critical cases were sent to the hospital. However, it is possible to count the number of admissions per month to try and see a pattern of seasonal admissions (Tab. 11, Tab. 12, and Tab. 13).



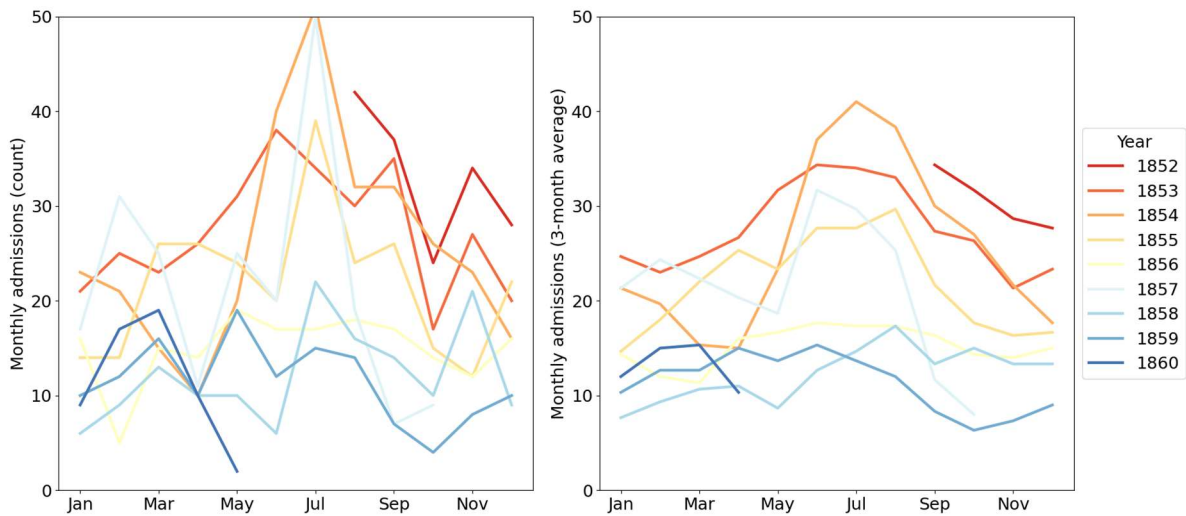
Tab. 11 Number of admissions (St Patrick’s Hospital, 1852-1860)

	1852	1853	1854	1855	1856	1857	1858	1859	1860
January	/	21	23	14	16	17	6	10	9
February	/	25	21	14	5	31	9	12	17
March	/	23	15	26	15	25	13	16	19
April	/	26	10	26	14	11	10	10	10
May	/	31	20	24	19	25	10	19	2
June	/	38	39	20	17	20	6	12	/
July	/	34	28	39	17	50	22	15	/
August	42	30	25	24	18	19	16	14	/
September	37	35	32	26	17	7	14	7	/
October	24	17	26	15	14	9	10	4	/
November	34	27	23	12	12	/	21	8	/
December	28	20	16	22	16	8	9	10	/
Average no. admissions in winter/month		23,2	19,6	17,6	12,8	20,25	11,6	11,2	
Average no. admissions/month in other seasons		30,14	25,71	24,86	16,57	20,14	12,57	11,57	
difference		6,94	6,11	7,26	3,77	-0,11	0,97	0,37	
Total admissions in winter		116	98	88	64	81	58	56	
Total admission per working season in winter: 1853-54, 1854-55, 1855-56, 1856-57, 1857-58, 1858-59, 1859		Winter 1853-54: 106	Winter 1854-55: 93	Winter 1855-56: 70	Winter 1856-57: 101	Winter 1857-58: 36	Winter 1858-59: 68	Winter 1859: 18	
Total admissions in other seasons		211	180	174	116	141	88	81	

Tab.12 Number of admissions (St Patrick’s Hospital) between 1852 and 1860 and during the construction (1853-1859)

In June 1854, there was one patient who suffered from cholera; in July 1854, there were 23 of them; in August 1854, there were 7 of them. The number of admissions in June, July and August were thus modified to obtain the number of admissions excluding the outbreak of cholera: total of admissions – no. of cholera patients. June: 40-1 = 39; July: 51-23 = 28; August: 32-7 = 25.

⁷⁷² Glenda Maconachie, ‘Blood on the Rails: The Cairns-Kuranda Railway Construction and the Queensland Employers’ Liability Act’, *Labour History*, No. 73, Nov. 1997, 88.



Tab.13 Number of admissions to St Patrick’s Hospital – seasonal comparison (1852-1860)

Unfortunately, as suggested in chapter 2, we do not have the exact number of workers employed on the bridge per month between 1854 and 1859, which does not allow a comparison between the number of admissions and the number of workers. The hospital closed in 1860, when the Religious Hospitallers moved in March 1860 to Mont Ste Famille, where the new premises could welcome 210 patients instead of 75.⁷⁷³ The last entry of the register of admissions is dated 2nd and 1st May 1860. Consequently, the register does not allow a solid comparison between the number of admissions during the construction of the bridge, and prior to and after the construction. As shown in Tab. 11, a comparison between the springs and summers 1852 and 1853 on the one hand, and the springs and summers 1854 to 1859 on the other does not evidence a sharp increase of admissions during the construction, but again the comparison between two working seasons prior to the construction and the six working seasons of the construction does not provide a solid ground to determine a convincing pattern.

⁷⁷³ Robert Lahaise, ‘L’Hôtel-Dieu du Vieux-Montréal (1642-1861)’, in Michel Allard (ed.), *L’Hôtel-Dieu de Montréal 1642-1973*, Montreal: Les Cahiers du Québec, Editions Hurtubise HMH, 1973, 54-5.

However, Tab. 11, Tab. 12, Tab. 13 show that there was no dramatic increase of admissions in winter, contrary to what Hodges's book suggests, while there was an increase of admissions in summer. That is, of course, probably related to the fact that employment was limited in winter, and summer was acknowledged by the St Patrick's doctors themselves as the busiest season for the hospital because of the arrival of large numbers of immigrants, of sick people from other parts of the country, and because of the heat.⁷⁷⁴ Notwithstanding the cholera outbreak in July and August 1854, very visible in Tab. 11 and Tab. 12, admissions clearly increased in summer, and more dramatically in 1857. Tab. 11 shows that there was a huge difference in the number of admissions between winter working seasons and the rest of the year, suggesting that the huge majority of serious accidents and diseases happened in spring and summer. This seasonal pattern would thus confirm that although the weather was a major issue on the worksite, it probably was not the main cause of injuries, which were probably caused by the job itself. Even if it is unknown how accurately the number of admissions reflected the number of Victoria Bridge workers sent to hospital, there was no major surge in winter admissions during the construction, which suggests that even at the beginning of the construction, the number of critically injured workers by the cold was not dramatic. The discrepancy between Hodges's insistence on cold-related injuries and these figures also encourages researchers to take some distance with weather-related injuries and focus more on industrial accidents, however less visible in the sources.

The first section of this chapter thus addressed the notion of anticipation and focused on cold-related injuries, which represented a new risk to employers and part of the workers and can therefore be used as a case study to analyse possible strategies of adaptation to and anticipation of a new danger. The cross-examination of Hodges's testimony and Bethune's data suggests that anticipation of cold-related injuries was only possible up to a certain point, which

⁷⁷⁴ ACAM, 525.102, 852-28, 17 July 1852, Letter by A. H. David MD, St Patrick's Hospital, to chairman O'Brien.

explains why such injuries happened throughout the construction. Bethune's data invite us to examine a daily pattern of temperatures instead of a seasonal pattern, which illustrates the moment when accidents happened: they probably occurred when temperature variations happened so brutally that anticipation was impossible. The precautions taken against the cold were probably good only to a certain extent, and could not be sufficient against a variation in the normal seasonal pattern. This section also proposed to read against the sources: although Hodges insisted on the danger of the cold and the injuries it could provoke, this section showed that most accidents and injuries were probably due to the job performed, and not the weather, suggesting that the repeated descriptions of cold-related injuries, just like the descriptions of snowstorms, were part of Hodges's and his imagined readers' fascination with a weather unknown in Britain. Based on this analysis of anticipation, the second section of this chapter will examine the notion of precaution, which Hodges explicitly connects with the low death-toll on the worksite.⁷⁷⁵

II- The notion of precaution

Characterising the attitude of James Hodges towards his workers, his assistant engineer Charles Legge commented, 'there beat not a heart more tender and sympathising than his on the occurrence of any of those fatal or serious accidents to life or limb, which always accompany the prosecution of so great a work, but in this instance reduced to a minimum by the effective and careful provision provided in every department.'⁷⁷⁶ Legge's remark implies that, while injuries were common on this type of worksite, accidents were minimized due to the careful management strategies. It is significant that both Hodges's and Legge's accounts mentioned such safety measures. As these texts were intended to be published, the insistence

⁷⁷⁵ Hodges, *Construction of the Great Victoria Bridge*, 58, 77.

⁷⁷⁶ Legge, *A Glance at the Victoria Bridge*, 85.

on the precautions or provisions taken would have been part of the employers' strategy to bolster their reputation. But at the same time, the employers' confidence about the efficiency of their precautions also suggested that they thought accidents were avoidable. Historian Magda Fahrni shows that industrial modernity, defined as the political, intellectual, and ideological changes that were associated with the transition to industrial capitalism, was characterised by the attempt to understand and control accidents, in contrast with pre-industrial societies which attributed accidents to fate, God or misfortune.⁷⁷⁷ She argues that this belief in rationality and the possibility to control accidents coexisted with faith and fatalism at the turn of the twentieth century in Montreal, and we can see that the Victoria Bridge worksite epitomised the coexistence between the association of accidents with misfortune (see chapter 3) and the ambition to control them.⁷⁷⁸ In that sense, the Victoria Bridge was not only a transition from pre-industrial to industrial labour relations, the precautions taken on the worksite also illustrated the slow transition from fatalism to a rational understanding of accidents. We thus need to analyse these measures to understand the notion of precaution on the worksite.

As seen in the first section of this chapter, some precautions were a response to the injuries caused by the cold weather conditions that so impressed the employers at the beginning of the construction, and mainly consisted in the workers' layered clothing and 'fires in braziers' that lighted the gangs working at night in 1859, although these did probably very little against the cold.⁷⁷⁹ As suggested above, although these precautions were insufficient when temperatures dropped excessively, they were good enough provided that there were no sudden temperature variations, especially compared with provisions taken on western worksites.

Examining the material practices of Chinese railroad workers in North America and the archaeological evidence of their adaptation to the cold, archaeologists Barbara L. Voss and

⁷⁷⁷ Fahrni, "La lutte contre l'accident", 175, 177.

⁷⁷⁸ Fahrni, "La lutte contre l'accident", 177.

⁷⁷⁹ Hodges, *Construction of the Great Victoria Bridge*, 57-8.

Kelly Dixon invite us to enrich our understanding of precaution on the worksite: adequate protection against the cold included appropriate material living conditions. Voss pays particular attention to housing and shows that companies provided tents, which housed between four and twelve people, afforded minimal insulation, and where ‘sleeping together conserved body warmth’.⁷⁸⁰ Dixon studies the archaeological remains of work camps, and more particularly Summit Camp (Nevada County, California) where Chinese workers stayed for four years (1865-1869), in the Sierra Nevada and the Rocky Mountain regions. Archaeological investigation shows evidence of the workers’ adaptation to the cold, such as hearths, wooden cabins,⁷⁸¹ although it is not known whether these were provided by the companies or built by the workers,⁷⁸² and dugouts which served as windbreaks and shelters.⁷⁸³ Both Dixon and Voss accurately define housing as a provision against the cold. In contrast, Triggs argues that the Victoria Bridge workers who lived with a large number of children and families in the old emigrant sheds, bought and converted into housing by the contractors, formed a small community quite different from ‘the stereotype of the brawling railway construction camps found in other parts of Canada and the United States’, although Kesteman demonstrated, based on the study of the census, that 60 per cent of the people on the worksite of the St Lawrence and Atlantic were with family.⁷⁸⁴ This community included a grocery store, a boarding house, an inn, and the children attended school.⁷⁸⁵ The sheds can be seen in the background of William Notman’s photograph (Fig. 41).

⁷⁸⁰ Barbara L. Voss, ‘Living between Misery and Triumph. The Material Practices of Chinese Railroad Workers in North America’, in Chang et al. (eds.), *The Chinese and the Iron Road*, 176.

⁷⁸¹ Dixon, ‘Landscapes of Change’, 196.

⁷⁸² Voss, ‘Living between Misery and Triumph’, 177.

⁷⁸³ Dixon, ‘Landscapes of Change’, 205-6, 209.

⁷⁸⁴ Triggs, ‘Le Pont / The Bridge’, 53; Kesteman, ‘Les travailleurs à la construction du chemin de fer dans la région de Sherbrooke (1851-1853)’, 532.

⁷⁸⁵ Triggs, ‘Le Pont / The Bridge’, 53.



Fig. 41 *Untitled*, Notman, n.d., McCord Museum, Box 'William Notman the founder', N-0000.392.2.21

In the background, rows of houses correspond to the old emigrant sheds converted by the contractors into housing for the workers.

The sheds appear like solid structures with chimneys, and from the outside look like buildings where the workers could cook, eat and sleep protected against the cold. That suggests that the material living conditions of the Victoria Bridge workers, in particular their housing, was an appropriate provision against the cold.

However, it is unlikely that the Victoria Bridge employers understood precautions against the cold in such a broad sense. Legge's remark, cited at the beginning of this section, shows that precautions were rather meant to prevent 'fatal or serious accident to life or limb'. Similarly, in Hodges's text quoted above: 'scores of men were frozen in their hands, noses, ears, and face (...) yet not a man lost either finger or toe; neither was any man seriously injured during the time the tube was in progress. (...)', precautions were supposed to prevent 'fearful

mutilation' and death.⁷⁸⁶ Again, this shows that employers evaluated accidents according to the gravity of their outcomes. How this gravity was defined was probably quite far from our modern conception.

Edwin Chadwick's 'On the demoralisation and injuries occasioned by the absence of due responsibility for the proper selection and regulation of labourers in the construction and management of railways', partly relied on the testimony of John Robertson, surgeon and president of the Statistical Society of Manchester.⁷⁸⁷ Robertson's letter, based on an anonymous source 'officially connected with the works', listed the accidents that happened on the Summit Tunnel construction site (1838-1841), excluding fatal accidents. He recounted 140 'severe cases' that included burns from blasts, lacerations, dislocations, but also the loss of both eyes, of half a foot... He distinguished these from 'about four hundred cases of minor accidents' such as: 'trapped and broken fingers, (which form a large proportion of them, *seven* of them required amputation,) injuries to the feet, lacerations of the scalp, bruises, broken shins, – many of these minor cases were occasioned by drinking and fighting.'⁷⁸⁸ In our modern conception, amputated fingers would be a serious injury and would be considered, in Legge's words, 'one serious accident to (...) limb'. What made a difference between Robertson's severe cases and minor accidents was the integrity of the working body: it was possible to get back to work even with a few fingers missing, but it was impossible to do so when blind or permanently unable to walk. That distinction seems to be at the heart of the conception of precautions on the Victoria Bridge worksite.

⁷⁸⁶ Hodges, *Construction of the Great Victoria Bridge*, 58.

⁷⁸⁷ John Robertson, letter dated 13 Nov. 1845 about the viaducts and other works on the Sheffield, Ashton-under-Lyne, and Manchester Railway, in particular the Summit Tunnel, cited in Edwin Chadwick, 'On the demoralisation and injuries occasioned by the absence of due responsibility for the proper selection and regulation of labourers in the construction and management of railways', in Edwin Chadwick, *Papers Read Before the Statistical Society of Manchester on the Demoralisation and Injuries Occasioned by the Want of Proper Regulations of Labourers Engaged in the Construction and Working of Railways*, Manchester, UK: Simms and Dinham, n.d., 10.

⁷⁸⁸ Chadwick, 'On the demoralisation and injuries', 10. Emphasis in the original.

We know from Hodges that although the risk of drowning was the main cause of death, most of the workers were good swimmers, and there were life-buoys and boats ready to save drowning workers.⁷⁸⁹ Hodges's statement about the swimming abilities of most of the workforce is surprising as most Europeans and White Americans did not know how to swim, and when they did they used the breaststroke and backstroke, keeping their faces out of the water even in competition, and therefore did not swim well, historian Karen Eva Carr writes.⁷⁹⁰ In contrast, Carr uses archaeology, oral history and oral tradition, testimonies of sixteenth-century European explorers in the Americas and accounts of nineteenth-century American and British contemporaries to show that Indigenous people throughout North America were good and fast swimmers, who used the overhand crawl, could swim underwater, upstream and across rivers, who competed in swimming races and for whom swimming appeared as an everyday activity.⁷⁹¹ Carr's point suggests that the workers mentioned by Hodges were perhaps considered good swimmers because they could swim, which was uncommon enough to be seen as a talent. In addition, the majority of them might not have been good enough swimmers to swim in the current of the St. Lawrence. Some of them might have been very good swimmers, but it is doubtful that the majority of the workforce was.

At the same time, the insistence on the workers being good swimmers might also refer to the Indigenous workers, although it is doubtful that Hodges would have failed to mention it. Indeed, Carr underlines that from the sixteenth century to the nineteenth century, Europeans associated Indigenous peoples' ability to swim with a skill suitable only for animals, just like their technique of overhand crawl was rejected in Britain well into the nineteenth century because it was considered uncivilized.⁷⁹² Chapter 2 has analysed Hodges's exoticized

⁷⁸⁹ Hodges, *Construction of the Great Victoria Bridge*, 77.

⁷⁹⁰ Karen Eva Carr, *Shifting Currents. A World History of Swimming*, London: Reaktion Books, 2022, Ebook, 388, 390, 397.

⁷⁹¹ Carr, *Shifting Currents*, 54-5, 262, 403.

⁷⁹² Carr, *Shifting Currents*, 264, 406, 403.

descriptions of Indigenous people, and it is likely that he would have followed his contemporaries' shocked descriptions of the crawl's splashing.⁷⁹³

The life-buoys and boats were a clear attempt to prevent drowning. Triggs provides the example of boatman Joseph Vincent, who saved at least ten men who fell from the bridge, arguing that the precautions of having boats at the ready probably lowered the death toll.⁷⁹⁴ Triggs maintains that '[b]esides strategically-placed rowboats and lifebelts, other safety precautions must have been taken, to account for what was considered at the time to be a relatively low number of deaths'⁷⁹⁵, thus completely disregarding the workers' role and experience in avoiding accidents. Historians Marlène Ellerkamp and Brigitte Jungmann have demonstrated that despite health insurance schemes and provisions like modern housing, the health of the workers of the textile factory *die Jute* (1888-1914) in Bremen was catastrophic.⁷⁹⁶ Their work suggests that what seems like pioneering measures about the workers' health did not necessarily result in an improvement of their working and health conditions. The connection Triggs draws between precautions taken by employers and the low death toll is thus flawed. Furthermore, these supposed 'other safety precautions' are dubious for a number of reasons.

Indeed, the workers were likely to drown when water rushed in the dams, and chapter 3 has established that death was probably avoided partly thanks to the workers' experience. Drowning could also happen when workers fell from boats. Even then, the precautions cited by Hodges against drowning, such as the boats and lifebuoys, did not prevent drowning altogether. Hodges admitted that when men ended up in the water – which seldom occurred, he added – they were drawn into the eddy by the current, and rarely rescued.⁷⁹⁷ When he described an

⁷⁹³ Carr, *Shifting Currents*, 403.

⁷⁹⁴ Triggs, 'Le Pont / The Bridge', 48.

⁷⁹⁵ Triggs, 'Le Pont / The Bridge', 49.

⁷⁹⁶ Marlène Ellerkamp and Brigitte Jungmann, 'Le travail et la santé: la vie des ouvrières d'une usine textile de Brême entre 1888 et 1914', French transl. by Christian Challot, *Le Mouvement social*, No. 124, L'usure au Travail (Jul.-Sep. 1983), 113-130, esp. 116, 119, 122-3, and Alain Cottureau, 'L'usure au travail: interrogations et refoulements', *Le Mouvement social*, Jul.-Sep. 1983, No. 124, 8.

⁷⁹⁷ Hodges, *Construction of the Great Victoria Bridge*, 77.

accident that involved thirteen Indigenous workers manning the raft that crashed into the temporary work, he explained that it seemed impossible to save so many men.⁷⁹⁸ On 11th December 1858, a young carpenter from Montreal named Ludger Guérin, twenty-three years old, fell into the river while he was removing the scaffolds from a pier:

New accident on the Victoria Bridge. – Last Saturday afternoon, a young carpenter named Ludger Guérin was removing the scaffolds from the pier when he suddenly fell into the river. His three fellow workers jumped into a boat to save him, but in vain. He was an excellent swimmer and managed to stay on the surface of the water for half an hour, but because of his worker's clothes he could not escape his fate. The boat he was waiting for his rescue flooded and was difficult to manoeuvre because of the current and the ice; one of the men who manned the boat was even in great danger (...)⁷⁹⁹

Guérin's death was another evidence that falls were a common accident, but it also shows that even when workers were good swimmers as Hodges suggested, and Guérin certainly was as he managed to remain on the surface for thirty minutes, they died because the boats were too slow to come to a victim's rescue in winter. The workers' swimming skills and the boats were therefore not enough to prevent accidents. In addition, those limited provisions were intended to prevent what appeared as the greatest threat to life on the worksite, namely drowning, thus reflecting a limited understanding of risk. Like the ladders in the dams (see chapter 3), they establish an anticipation of the risk of drowning. But based on Hodges's testimony and chapter 3 on the risk of falling, a number of men drowned, or almost did, because they fell from the bridge. It seems that no precaution was taken to prevent falling off the bridge.⁸⁰⁰

⁷⁹⁸ Hodges, *Construction of the Great Victoria Bridge*, 63-5.

⁷⁹⁹ *L'Ere Nouvelle. Journal du District de Trois-Rivières*, 16 December 1858: 'Nouvel accident au Pont Victoria. Samedi dernier dans l'après-midi un jeune charpentier du nom de Ludger Guérin, occupé a [*sic*] détacher l'échafaudage d'un pilier du pont, tomba précipitamment dans le fleuve. Ce fut en vain que trois de ses camarades se jetèrent dans un bateau pour le sauver, car, quoique excellent nageur et qu'ils [*sic*] se fut [*sic*] maintenu près d'une demie-heure [*sic*] sur l'eau, il se trouva tellement embarrassé dans ses habits d'ouvrier qu'il ne put échapper [*sic*] à son sort. Le bateau dont il attendait son salut s'étant d'ailleurs rempli d'eau, manoeuvrait difficilement au milieu du courant et des glaces flottantes ; l'un de ceux qui le montaient courut même le plus grand danger (...)' My translation.

⁸⁰⁰ In a private email to author, 11 July 2018, Julie Stone, who conducts research on the Britannia Bridge (1846-1850) at the Menai Heritage (Wales), underlines that the weather could be extreme on the Britannia Bridge worksite and that there were wind shields on scaffolding, which does not seem to be the case for the Victoria Bridge worksite. This fact suggests that Stephenson, who was involved in the construction of both tubular bridges, was aware that falls were a common risk on construction sites.

Hodges commissioned the noted Montreal photographer William Notman (1826-1891) to document the construction of the bridge. Analysing Notman's photographs, landscape architect Braiden borrows from scholar Susan Leigh Star's application of the concept of boundary objects to define Hodges's book, explaining that forms of visual representation of the bridge construction like the lithographs, 'convey a broader cultural narrative to lay audiences.'⁸⁰¹

Notman shot film at the Victoria Bridge site from 1858 until the end of the construction, official images that represent what the employers thought was appropriate to show as part of that cultural narrative. *Interior of Staging with Tube in Progress* (Fig. 42) shows workmen sitting and standing on top of the structure.



Fig. 42 *Interior of Staging with Tube in Progress*, William Notman, LAC, Joseph Patrick Books collection, PA-187238, ca. 1859.

Workers building the floor of the tube. In the background, a section of the tube is already erected. Men are sitting and even standing on top of the staging, with nothing to prevent them from falling off.

⁸⁰¹ A boundary object 'allows members of different social groups – engineers, their patrons, and the public – to gain insight into the complex construction project even though the book and their understanding may be quite different', Braiden, "Far From Uninteresting", 200.

No barrier is evident to prevent them from falling into the river if they were dislodged from their position. Although the men undoubtedly posed for this picture, other images suggest that no precautions were taken. Fig. 43, for instance, clearly shows that there were no safety measures to protect men from plummeting from the bridge.



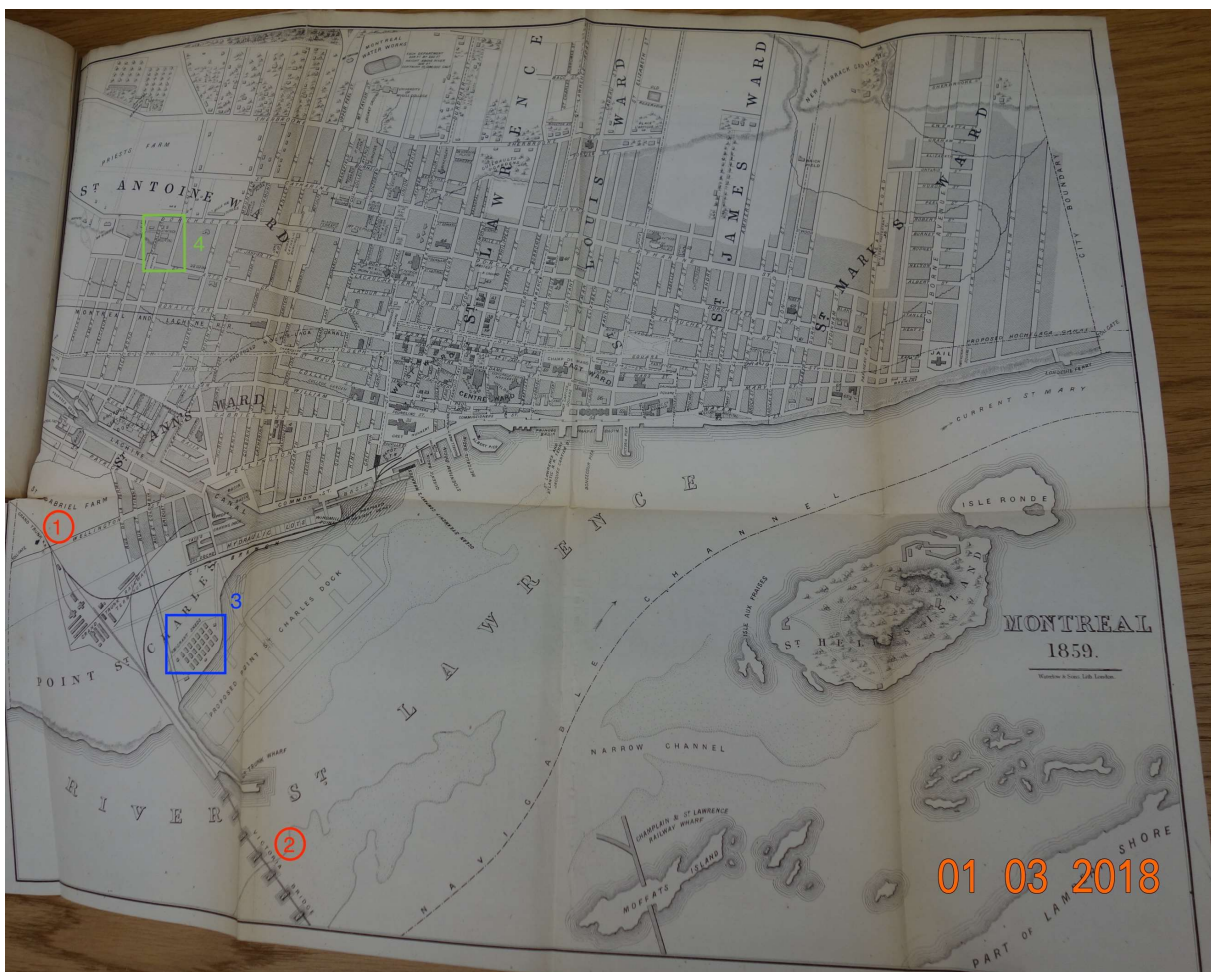
Fig. 43 *Centre Tube, March 1859*, Notman, March 1859, McCord Museum, McCord_N-0000.193.134-135

Centre tube under construction. In the background, the tube is being built simultaneously from the shore. In the foreground, above the roof, the platform that spans the tube is a Wellington crane (see chapter 2). On the side of the tube, men are standing on scaffolding, and no barrier prevents them from falling. A group of men are standing on the top of the tube, and again there is nothing to prevent them from plummeting from the bridge.

That does not mean that the employers did not connect the risk of drowning with the risk of falling. When a worker, however good a swimmer he might have been, fell into the river, it was necessary to save him from drowning. However, if a worker fell, or if he placed himself at risk by standing on the top of the tube, this might have been deemed the responsibility of the employee not the employer. The precautions taken to protect workers from the cold or from the

river had a common feature: they did not stop accidents from happening altogether, but they tried to prevent the workers from dying or being mutilated. In other words, these precautions prevented workers from being unable to work.

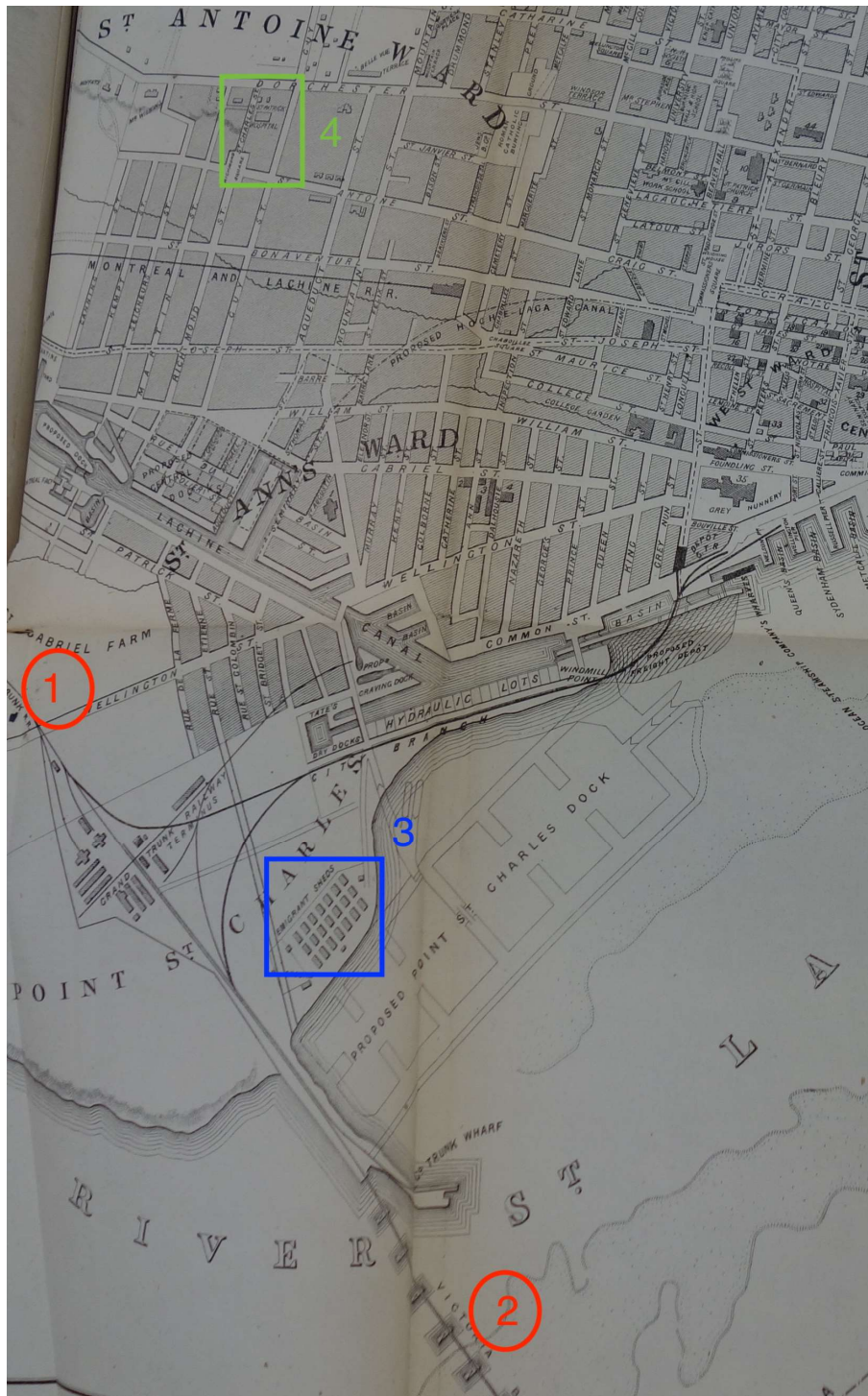
A more comprehensive move to mitigate the damage caused by accidents at the bridge site was the contract that the employers made with St Patrick's hospital. St Patrick's hospital, situated Faubourg St Antoine, was founded in 1852 by Bishop Ignace Bourget of Montreal, and was managed by the Religious Hospitallers of St Joseph (Map 9 and Map 10).⁸⁰²



Map 9 Map of Montreal, adapted from 'Montreal, 1859', ICE, Tracts 8^{vo}, Vol. 140

Map of Montreal in 1859, showing the Grand Trunk Railway line, the Victoria Bridge, the sheds, and St. Patrick's Hospital.

⁸⁰² Lahaise, 'L'Hôtel-Dieu du Vieux-Montréal (1642-1861)', 51.



Map 10 Enlargement of 'Map of Montreal, 1859' (adapted), ICE, Tracts 8^{vo}, Vol. 140

- 1- The Grand Trunk Railway
- 2- The Victoria Bridge with the piers visible
- 3- The 'emigrant sheds' converted by the contractors into sheds for the workers.
- 4- St Patrick's Hospital where ill and injured Grand Trunk and Victoria Bridge workers were sent and taken care of.

The St. Patrick's Hospital was created because the poor Irish Catholics used to choose to be cared for at Montreal General Hospital, which was Protestant but where the staff spoke English, instead of going to Hôtel-Dieu which was Catholic but where the staff spoke French, which alarmed Montreal's Catholic community.⁸⁰³ Although it intended to provide medical care for Montreal's poor Irish Catholic community, it made a point of welcoming and treating sick people regardless of their origins and religions.⁸⁰⁴ This was the institution where the injured workers from the bridge and the Grand Trunk Railway were treated. Newspaper articles of the period mentioned the work of the hospital in caring for bridge workers,⁸⁰⁵ and Hodges did likewise throughout his account, which concludes with an expression of gratitude towards the medical staff. The hospital agreement was a typically paternalistic employer initiative like worker libraries and religious education, but it was also an acknowledgment of the dangerous work involved in bridge building and an institutional innovation to safeguard a skilled workforce in a growing colony.

The fact that employers would send their workers to the hospital and provide them with medical attendance was not new or extraordinary. There was no workers' compensation legislation in Britain until 1880 and the Employers' Liability Act, but employers often compensated injured employees, notably by covering part of their medical costs.⁸⁰⁶ Historians David Turner and Daniel Blackie, in their study of disability in British coalmining, show that the Keelmen's Company in Newcastle, supported by coal owners, created in the eighteenth century the 'first form of specialist hospital provision for workers in the coal industry', with the Keelmen's Hospital providing medical care and sickness benefits paid to members in their homes, while other mine owners imposed medical insurance schemes to grant the workers

⁸⁰³ Lahaise, 'L'Hôtel-Dieu du Vieux-Montréal (1642-1861)', 51 and ARHSJM, Fonds St Patrick's hospital, 'Extrait des Annales de l'Hôtel-Dieu de Montréal'. The Catholic patients were supposedly mistreated by the Protestant medical staff, who also reportedly encouraged them to abandon the Catholic faith.

⁸⁰⁴ ACAM, 525.102, 855-11, Report 31 Dec. 1855.

⁸⁰⁵ *Le Pays*, 3 August 1853.

⁸⁰⁶ Bronstein, *Caught in the Machinery*, 3.

access to hospital care.⁸⁰⁷ However, they also underline the limits of such institutional medical care: with the exception of the Keelmen's Hospital, such hospitals in the second half of the nineteenth century did not provide long-term treatment and injured mineworkers, for instance, often had to make their own prosthetic limbs themselves or have them made by friends or relatives.⁸⁰⁸ In construction, some British and American railway companies of the period provided free medical care or artificial limbs. Those provisions were partly meant to deter the workers from taking political or group action, but paternalism also played a significant role in granting medical attendance to workers, although much more in Britain than in the US.⁸⁰⁹ Looking at the construction of canals in North America between 1780 and 1860, Peter Way notes that canal boards hired doctors or established hospitals in case of epidemics or 'to preserve an evaporating labour force'.⁸¹⁰ The scheme elaborated by the Chesapeake & Delaware Canal in 1824 to provide health care consisted in having the contractors and the workers pay for the building and its services, and the model 'became popular on many public works.'⁸¹¹ In Britain, David Brooke shows through detailed examples that railway companies and contractors financed hospitals, although the number of casualties was so significant that their subscriptions 'by no means equalled [the hospitals'] expenses.'⁸¹² Hospitals nevertheless remained a secondary concern to companies since Brooke adds that they spent more money on missionaries than on hospitals.⁸¹³

The Victoria Bridge contractors were known for their paternalism, and even philanthropy. Biographer Arthur Helps emphasises that when British railway contractor Brassey was dying, navvies came to bid him farewell.⁸¹⁴ As explained in chapter 2,

⁸⁰⁷ Turner and Blackie, *Disability in the Industrial Revolution*, 136.

⁸⁰⁸ Turner, Blackie, *Disability in the Industrial Revolution*, 139.

⁸⁰⁹ Bronstein, *Caught in the Machinery*, 35, 37.

⁸¹⁰ Way, *Common Labour*, 158-9.

⁸¹¹ Way, *Common Labour*, 159.

⁸¹² Brooke, *The Railway Navy*, 150.

⁸¹³ Brooke, *The Railway Navy*, 150.

⁸¹⁴ Helps, *Life and Labours of Thomas Brassey*, 172-3.

contemporaries testified that Peto took great care of his workers,⁸¹⁵ while some described Hodges as philanthropic and concerned with labourers' welfare.⁸¹⁶ Despite the obvious hagiographic aspect of those biographies, the paternalism of these employers who provided chapels, Bibles, education, and shelter to their workers was probably genuine, even if somewhat calculated. Kerr shows that during the same time period in India, where Brassey also built railways, British engineers were 'very slow to take responsibility for the workers' well-being and to recognise that decent housing, good water supply and adequate sanitation could expedite work of construction'.⁸¹⁷ That was maybe due to racism but Kerr also underlines that the worker needed the job more than the employer needed the worker, thus suggesting that labour was plentiful in addition to being cheap.⁸¹⁸

Displaying concern for the workers' wellbeing was thus meant to keep and preserve an expensive workforce. In that sense, providing hospital care for workers injured on the job was another facet of this deliberate paternalism and suggests that employers regarded it as their responsibility to repair damaged bodies, rather than preventing workers from being injured. The economic motivation of medical provisions was common on construction sites, and Peter Way, calling such company-oriented healthcare 'a low-cost antidote to infectious disease', shows that work 'had to go on' and medical care was provided to that effect.⁸¹⁹ Hospitals themselves considered that care meant to get bodies well enough to go back to work, in an effort to save the workers and their families from destitution and dependency.⁸²⁰ For that reason, hospitals usually excluded disabling injuries, and were only interested in cases that could be cured and

⁸¹⁵ Peto, *Sir Morton Peto*, 78-80.

⁸¹⁶ Legge, *A Glance at the Victoria Bridge*, 85.

⁸¹⁷ Kerr, *Building the Railways of the Raj*, 88.

⁸¹⁸ Kerr, *Building the Railways of the Raj*, 168, 87.

⁸¹⁹ Way, *Common Labour*, 160.

⁸²⁰ Turner and Blackie, *Disability in the Industrial Revolution*, 137.

taken care of.⁸²¹ However, the agreement with the St Patrick's hospital was not only about providing care: it was a precaution, an anticipation of accidental injuries.

The correspondence between the employers, the Sisters, and the bishop spells out Hodges's agreement, on behalf of the contractors, and the hospital. The first available letter is dated October 1853 (Fig. 44a and Fig. 44b).⁸²²

⁸²¹ Turner and Blackie, *Disability in the Industrial Revolution*, 137.

⁸²² ARHSJM, Fonds St Patrick's Hospital, unnamed to Hodges, and Hodges's response, Oct. 1853.

James Hodges Esq
on behalf of
Messrs Jackson Peto Brassey & Betts,
Montreal,

Montreal October 1853.

Sir

In answer to your application for accommodation in the St. Patrick's Hospital in this City, I beg to state that you can have such accommodation under the following conditions, viz:

A room or rooms will be fitted up in the Hospital with twenty five beds for the exclusive use of the patients whom you may send to the Hospital. The rooms to be ready to receive patients by the day of next.

You will pay on demand to the Hospital, One hundred pounds cy, once for all, to defray in part the expenses of fitting up the rooms and providing beds and bedding and other necessary furniture.

Fig. 44a Unsigned letter to Hodges, and Hodges's response, Oct. 1853, ARHSJM, Fonds St Patrick's Hospital.

Unsigned letter proposing a deal to Hodges regarding the accommodation of workers in St Patrick's Hospital. It is a response to Hodges's application, thus suggesting that the employers endeavoured to strike a deal with the hospital early in the construction process.

furniture,
and you will further pay for each
patient whom you may send to
the Hospital, towards his board, at
the rate of twenty shillings per month,
that ~~each patient~~ shall remain in the Hospital.
The physician & surgeon, both
as regards his own attendance, care,
and services and the drugs and medicines
to be furnished, shall be entirely at
your own cost. I have the honor to be
Sir
Your most Obedt. servant,

In behalf of Messrs Jackson Peto Brassey
and Betts, I accept of the above conditions,
Montreal October 1853.

Fig. 44b Unsigned letter to Hodges, and Hodges's response, Oct. 1853, ARHSJM, Fonds St Patrick's Hospital.

Hodges, acting as agent of Peto, Brassey, and Betts, agreed to the deal, although further letters were exchanged until a final agreement was reached in 1854.

It was a response to Hodges who had applied for accommodation in the St Patrick's Hospital, showing that the employers moved to make arrangements with the hospital very early in the construction process. Peto, Brassey, Jackson, and Betts were given 'a room or rooms' with twenty-five beds for the exclusive use of Victoria Bridge patients for which they were required to pay £100 to furnish and set up the rooms. Hodges agreed.

Negotiations continued between the Sisters, the bishop, and the employers, until February 1854 when Peto, Brassey, Jackson, and Betts accepted the following terms: they would pay £100 to outfit the new twenty-five bed ward, available at all times for the workmen who might 'require medical attendance'; they would pay two dollars a week for each Grand Trunk railway patient for the duration of their illness; and they would also pay the doctors while the hospital provided medicines.⁸²³ This agreement appears to have been made between the contractors and the bishop rather than the company and the Committee of St Patrick's Hospital,⁸²⁴ and the records indicate that it continued throughout the construction period.⁸²⁵

There is no evidence of sick clubs on the Victoria Bridge worksite, although Peto declared to the Select Committee (1846) that there were nearly always sick clubs, to which the workers were compelled to contribute.⁸²⁶ He also explained that the workers themselves

⁸²³ ARHSJM, Fonds St Patrick's Hospital, Jackson, Peto, Brassey, Betts, Hodges to Revd. T. Plamondon, 17 Feb. 1854. The Grand Trunk workers included the Victoria Bridge workers since Hodges thanked St Patrick's medical staff at the end of his book. The doctors Hodges paid tribute to were Drs Macdonell, David, Robillard, Godfrey and Howard. A few letters suggest that Macdonell, David and Howard (at least) were the doctors of St Patrick's Hospital (in a letter dated 16 February 1852, 'Opinion des médecins de l'Hôpital de St Patrice sur l'incompétence de la maison actuelle, servant d'Hopital', ACAM 525.102, 852-1, they complained to the Committee of management of the St Patrick's Hospital about a number of flaws of the building), while the Sisters opposed St Patrick's Hospital's doctors, accused of making poor patients pay, and their own doctors (ACAM, 525.102, 852-16, n.d.).

⁸²⁴ ACAM, no classification number, April 1854.

⁸²⁵ ACAM. A few letters from the Sisters to the Bishop allude to the Grand Trunk workers throughout the construction period. Until 1857, the Sisters regularly complained that the doctors tried to make poor patients pay, arguing that only the Grand Trunk workers and patients in the private rooms were supposed to. From the Sisters' letters (ACAM, 19 Sept. 1854, 525.102, 854-5; 23 Sept. 1854, 525.102, 854-7; 23 Sept. 1854, 525.102, 854-8), it is not clear whether the Grand Trunk workers themselves were also required to pay the doctors: the Sisters insisted that only patients in private rooms and the Grand Trunk workers should be required to pay, and in 525.102, 854-7 Sister Mance suggested that doctors should have a fixed salary instead of demanding more money from the patients. It therefore remains unclear whether the Sisters were only referring to the fee paid by the contractors, or an additional fee paid by the workers because the doctors thought the salary given by the contractors was not enough.

⁸²⁶ Peto, Report from the Select Committee on Railway Labourers, §1310 and §1314.

appointed a committee of management who chose a surgeon, whereas the correspondence between the Sisters, the Bishop and Hodges suggests that the contractors took care of the arrangement with doctors.⁸²⁷

Booking an entire twenty-five bed hospital ward (out of seventy-five beds)⁸²⁸ for injured workers so early in the history of the construction, demonstrated a clear anticipation of accidents. The number of admissions provided by Tab. 11 does not, of course, reflect the number of patients at hospital each month, but it shows that there were rarely more than twenty-five admissions per month. Even if all these admissions were Grand Trunk workers – which is highly unlikely – these figures suggest that the contractors thought big when they booked twenty-five beds. We know from Legge that the estimated cost of the bridge, which comprised the approaches and abutments, the masonry in the piers between the abutment, and the wrought-iron tubular superstructure was \$6,300,000, which included the \$300,000 bonus given to the contractors in 1858 (see chapter 2).⁸²⁹ We do not know how much the contractors paid for the workers' wages, the British workers' passages, the chapels, schoolrooms, libraries, priests, nor do we know how many men were sent to the hospital. So, although we know that the contractors paid £100 for the room, \$2 a week for each patient, £1000 annually for the medical staff, it is difficult to put the sums in perspective with the total cost of the works.

However, this agreement is distinctive from the employers' compensation payments detailed by Bronstein because disbursements were made both before and after accidents occurred.⁸³⁰ It also differs from the company hospitals described by Brooke and Way, where employers chose not to cover the full costs of the workers' medical care, because Victoria Bridge contractors invested money in medical care before and throughout the construction

⁸²⁷ Peto, Report from the Select Committee on Railway Labourers, §1323.

⁸²⁸ Lahaise, 'L'Hôtel-Dieu du Vieux-Montréal (1642-1861)', 54.

⁸²⁹ Charles Legge, *A Glance at the Victoria Bridge, and the Men Who Built It*, Montreal: John Lovell, 1860, 70.

⁸³⁰ Bronstein, *Caught in the Machinery*, 3, 32-9.

period.⁸³¹ Hodges often complained about the scarcity of labour in Canada East, and skilled workers were recruited in Britain because of it.⁸³² The agreement with the hospital was a way to preserve valued skilled workers. Just like the lifebuoys, providing hospital rooms aimed at preventing the mutilation or the death of workers. It was a significant and rather unusual precaution that did not prevent accidents from happening, but it ensured that every effort would be dedicated to making broken bodies productive once more.

Legge's and Hodges's text demonstrate that taking precautions was expected from a good employer. This second section showed that precautions did not necessarily prevent accidents from happening, as shown by the precautions taken to save workers from drowning, but not from falling into the river. Precautions were meant to prevent death or serious injuries to make sure that injured workers would be able to go back to work, in a context of labour shortage. Although these precautions were somewhat limited, this section established that the agreement with the St Patrick's hospital was a clear anticipation of accidents and an innovation in terms of preserving the workers' bodies. It also tried to warn against establishing too hastily a connection between provisions taken by employers, however innovative they were, and a necessary improvement of the health and working conditions of the workers. Studying precautions taken by employers does not prejudge their efficiency, especially when they were praised by the employers themselves, and should not erase the experience of the workers and the precautions they took by themselves. The understanding of precautions described in this section also reflects how responsibility was conceived on the Victoria Bridge worksite:

⁸³¹ Way, *Common Labour*, 160. The examples analysed by Brooke show that the money spent on medical care by railway companies in Britain did not cover the workers' real needs and was much lower than the Victoria Bridge provisions. For instance, the London & Birmingham gave £115 10s to Northampton General Infirmary to cover costs of £600, the Chester & Holyhead gave 10 guineas to Chester Infirmary (but donated £300 for religious and moral instruction), when the Victoria Bridge contractors paid £100 for the room, \$2 a week for each patient, and the medical staff cost £1000 annually. Brooke, *The Railway Navy*, 150; Hodges, *Construction of the Great Victoria Bridge*, 77.

⁸³² Brassey, *Work and Wages*, 35.

employers provided precautions against death, but employees were expected to avoid accidents, just like they were supposed to avoid falling off the bridge.

III- The issue of responsibility and liability

As workers were expected to avoid accidents, they were likely to be considered responsible should an accident occur. At a time prior to the 1880s and any legal system of compensation, this section tries to understand how accidents and their consequences were dealt with on the Victoria Bridge worksite. To do so, it is necessary to rely on the definitions of responsibility, liability and negligence analysed by historians of labour such as Bronstein. Indeed, because accidents were costly to society, as Chadwick argued in ‘On the demoralisation and injuries occasioned by the absence of due responsibility for the proper selection and regulation of labourers in the construction and management of railways’,⁸³³ it was crucial to determine who was responsible when an accident happened. From factories to mines, from navigation to construction works, employers usually blamed the workers’ ‘recklessness and indiscretion’.⁸³⁴ Uneducated workers, Chadwick and his sources stated, had ‘a slowness of perception and action (...), and an apathy even to visible danger to themselves’.⁸³⁵ Accidents thus supposedly happened because of the workers’ carelessness or their inappropriate reactions in front of danger.

In Canada, a similar position was John Mactaggart’s, clerk of the Rideau Works (1826-1832), who lamented that blasting’s high wages attracted inexperienced workers: ‘many of them were blasted to pieces by their own *shots*, others killed by stones falling on them. I have

⁸³³ Chadwick, ‘On the demoralisation and injuries’, 5-51.

⁸³⁴ Chadwick, ‘On the demoralisation and injuries’, 20.

⁸³⁵ Chadwick, ‘On the demoralisation and injuries’, 25.

seen head, arms, and legs, blown about in all directions; and it is vain for overseers to warn them of their danger, for they will pay no attention.’⁸³⁶ Mactaggart clearly put the blame for those terrible accidents on the workers themselves who were maimed or killed by their own actions, he insisted, without listening to anybody who tried to warn them in vain. They were thus twice responsible for these accidents: they did not work properly, and they did not listen or pay attention. In contrast, Way shows that canal contractors and companies did not take adequate safety protections against blasting accidents: ‘Benign neglect, not blatant disregard for worker safety, characterized employer policy, but the result was the same’.⁸³⁷ Blasting was not the only cause of injuries on the Rideau Canal, and Mactaggart even blamed the Irish workers for suffering from the cold in winter because, he wrote reproachfully, they did not purchase blankets and stockings during the summer.⁸³⁸

Peter Way characterizes as what could be called negligence the employers’ responsibility in the high number of blasting casualties: they could have reduced the number of casualties had they been more concerned in worker safety. Negligence is crucial to understand ‘the “accidental”’ because it is a concept that is essential to the definitions of responsibility and liability, Campbell shows.⁸³⁹ Indeed, Campbell tells us, one is responsible for the accidents one has caused to others, but also for the accidents one might have been able to prevent but has failed to do so.⁸⁴⁰ The canal employers described by Way could have prevented blasting casualties but they did not, and therefore we would nowadays consider them responsible for a number of these accidents. On the other hand, liability ‘is incurred only when there is also a duty of care, when there is (...) the possibility of negligence.’⁸⁴¹ Campbell shows very well that

⁸³⁶ John Mactaggart, *Three Years in Canada; An Account of the Actual State of the Country in 1826-7-8*, London, 1829, v. 2, 245-246, cited in Way, *Common Labour*, 149. Emphasis in the original.

⁸³⁷ Way, *Common Labour*, 149.

⁸³⁸ Way, *Common Labour*, 150.

⁸³⁹ Campbell, ‘Philosophy and the Accident’, 27.

⁸⁴⁰ Campbell, ‘Philosophy and the Accident’, 27.

⁸⁴¹ Campbell, ‘Philosophy and the Accident’, 32.

doing nothing to prevent an accident happening to somebody one has a duty of care to try and prevent amounts to actually doing something: being negligent.⁸⁴²

It now appears quite clearly that the main issue in establishing the negligence of employers was to determine their duty of care, which could lead to judicial battles. In retracing the history of the legal options for injured workers, Bronstein uses the famous legal case *Priestley v. Fowler* (1837) which involved Charles Priestley, a young butcher's assistant in Britain who was injured in 1835 when an overloaded cart broke down and meat fell on him. His father sued Fowler, the employer, and Priestley received compensation. In 1837, the case was reheard and the original decision was reversed.⁸⁴³ Bronstein demonstrates that this case, considered as having introduced the fellow servant rule, had nothing to do with any fellow servant, but rather dealt initially with the issue of whether the employer owed any particular duty of care to his employee.⁸⁴⁴ When, probably at the end of the 1840s, Chadwick demonstrated in his paper cited above the connection between the deprivation of railway construction workers and the absence of provisions on the part of their employers, he was in effect trying to establish the employers' duty of care, and therefore their liability in the workers' ill health due to night work, irregular hours of sleeping, and the moisture of the tunnel.⁸⁴⁵

Establishing the duty of care is important for us to understand the concept of negligence, but in the nineteenth century it was no proof of employers' negligence. In fact, as Bronstein shows, with the 1846 Fatal Accident Act negligence of the employer had to be proven.⁸⁴⁶ She explains that when a worker was injured at work but no fellow servant was involved, employers might claim that the worker had committed some negligence that had led to the injury.⁸⁴⁷ Furthermore, when workers continued to work in an unsafe environment, they were considered

⁸⁴² Campbell, 'Philosophy and the Accident', 27.

⁸⁴³ Bronstein, *Caught in the Machinery*, 20.

⁸⁴⁴ Bronstein, *Caught in the Machinery*, 20.

⁸⁴⁵ Chadwick, 'On the demoralisation and injuries', 14-5.

⁸⁴⁶ Bronstein, *Caught in the Machinery*, 28.

⁸⁴⁷ Bronstein, *Caught in the Machinery*, 28.

in most American states and in England to have consented to the arrangement.⁸⁴⁸ That could be observed on most nineteenth century construction sites. Way, for instance, lists the hazards that threatened the lives of canal construction workers, and explains that employers ‘maintained that canallers chose to risk their well-being and were thus responsible for any consequences’.⁸⁴⁹ The words ‘chose’ and ‘responsible’ used by Way are not random: workers were given an illusory choice that made them responsible for anything happening to them on the job.

In this context of interrogation and judicial battles on the issue of responsibility in Britain and in North America, I use the accounts of two accidents as case studies to analyse responsibility on the Victoria Bridge worksite. Again, there is no testimony such as Mactaggart’s for the Victoria Bridge worksite, and as typical worksite accidents are absent from employers’ sources, so is responsibility for potential accidents. Newspapers, however, provide a few accounts of accidents and reflect contemporary positions on responsibility on worksites such as the Victoria Bridge. As shown in chapter 3, workers’ accidents were usually recounted in very short newspaper articles, while large scale accidents that involved members of the public were more lengthily described. One of the examples studied in the previous chapter, such as the boiler accident, showed that employers’ responsibility was engaged in public accidents, which they tried to deny. Because the articles about workers’ accidents are much shorter, they do not give evidence about the employers’ reactions or what happened next to the injured and their families after an accident. But they do show a contemporary ongoing debate about employers’ responsibility.

On 10 November 1858, *La Minerve* wrote:

Three men working on the Victoria Bridge fell from a pier last Wednesday, one of them was killed and the two others are seriously injured. Several accidents of that kind happened recently and show that the contractors have not used sufficient means to ensure the safety of the workers.⁸⁵⁰

⁸⁴⁸ Bronstein, *Caught in the Machinery*, 30.

⁸⁴⁹ Way, *Common Labour*, 160.

⁸⁵⁰ *La Minerve*, 10 Nov. 1858: ‘*Accident.* – Trois hommes travaillant au pont Victoria sont tombés mercredi dernier d’un des piliers du pont, l’un d’eux a été tué, et les deux autres sont gravement blessés. Plusieurs accidents de cette

This short article established a clear connection between the number of accidents and the responsibility of the employers, where their responsibility is defined as doing everything in their power – and paying enough money – to ensure the safety of the workers. *La Minerve* was thus very critical and clearly blamed the contractors for the high number of accidents.

Just three days later, however, the same newspaper published an erratum that was completely opposed to the accusations of the 10th November:

In the *Minerve* last Wednesday, it was written that three men working on the Victoria Bridge fell, that one of them was killed and the other two were seriously injured. We are told that none of the workers lost their lives.

The precautions taken by the contractors and the administration of the Company are such that one should be in awe of the few accidents that happen in these dangerous and gigantic constructions, where an army of men work night and day. Just a few weeks ago, the works, worksites, workshops and piers of the Victoria Bridge gathered nearly 3,000 workers. Now, if one thinks about accidents that happen in the building of houses, one sees the irrefutable disproportion with the accidents that happen to the workers of the Grand Trunk, and one should be convinced that the contractors and their bosses took wise measures to protect the life of their employees from danger.⁸⁵¹

Although these two articles were diametrically opposed, one stating that there were several accidents on the worksite and the other objecting there were actually very few of them, they shared the same conception of employers' responsibility: contemporaries expected employers to take measures to protect the workers' lives. It is important to underline that the 13th November article did not rule out the accident altogether, but merely emphasised that nobody died, thus confirming that an accident truly became one when a life was lost. Without death or serious and debilitating injuries, an accident was not considered and labelled as an accident.

nature récemment arrivés montrent que les contracteurs n'ont point adopté des moyens suffisants pour pouvoir [*sic*] à la sûreté des ouvriers.' My translation.

⁸⁵¹ *La Minerve*, 13 Nov. 1858: 'Rectification. Dans la *Minerve* de mercredi, il était dit que trois hommes travaillant au pont Victoria étaient tombés, que l'un d'eux avait été tué et les deux autres gravement blessés. Nous sommes informé qu'aucun des trois ouvriers n'a perdu la vie. Les précautions prises par les contracteurs et l'administration de la Compagnie sont telles qu'on doit s'étonner du peu d'accidents qui arrivent dans ces constructions aussi dangereuses que gigantesques et où près d'une armée d'hommes travaillent nuit et jour. Il n'y a pas encore plusieurs semaines, les ouvrages, chantiers, ateliers et piles du pont Victoria comptaient près de 3000 travailleurs. Si l'on réfléchit maintenant aux accidents qui arrivent aux constructions de maisons, l'on verra la disproportion incontestable qui existe avec ceux arrivés aux ouvriers du Grand Tronc, et l'on sera convaincu de la sagesse des mesures prises par les contrateurs [*sic*] et leurs chefs pour mettre la vie des employés à l'abri du danger.' My translation.

The number of accidents on the Victoria Bridge worksite was a recurrent issue in the press, suggesting that it was a debate throughout the construction. On 18th July 1859 in the *Montreal Herald and Daily Commercial Gazette*, ‘a citizen of Montreal’ lengthily responded to the *Commercial Advertiser*, stating that few accidents had occurred during the construction of the Victoria Bridge, thanks to the efforts of the employers:

The *Commercial Advertiser* of the 14th inst., in alluding to an accident which occurred at the Victoria Bridge on the 10th inst., states that there has been an immense loss of life during its construction. I think if the writer takes the trouble to inquire, he will find he makes a mistake about the great loss he speaks of; for, on the contrary, there has not been on an average one life lost to each pier, and there has never been a work of the same magnitude where so many men have been employed and where the percentage of loss of life from accidents and disease has been so small. With regard to the care taken to prevent accidents, nothing has been left undone. There are life buoys in every direction in all the boats and on every pier where men are working, and there are always boats kept in readiness to pick men out of the water when they fall in. (...)

The mother of one of the deceased young men is expected to arrive in a few days from England, and it will be some consolation for her to know that every effort and precaution that human wisdom and humanity could suggest were used by those present; and were she without friends, she would find none more ready to sympathize and aid her if necessary than the noble-hearted Superintendent of the work.⁸⁵²

This ‘Citizen of Montreal’, taking sides with the Victoria Bridge employers, rebutted the rumour of ‘an immense loss of life’ during the construction, and detailed the precautions taken by the employers to prevent accidents. He insisted that the employers worked hard to take these measures: ‘nothing has been left undone’, ‘in every direction’, ‘on every pier’, ‘every effort and precaution’, etc. Rejecting any high number of casualties, he praised the employers for the low death toll which he attributed to the precautions they took. The precautions he listed were the same as the precautions described by Hodges: life-buoys and boats at the ready to prevent the men from drowning. There was no mention of any other supposed precaution.

The pattern was similar to the two *La Minerve* articles quoted above: an accident or the rumour of an accident was reported, and newspapers argued over the number of accidents that usually happened on the worksite, thus echoing the rumours of mistreatment of the workers that

⁸⁵² *Montreal Herald and Daily Commercial Gazette*, 18 July 1859.

Hodges dismissed at the end of his book.⁸⁵³ Perhaps, indeed, newspapers merely tried to publish sensational articles that blamed employers for a catastrophic number of accidents. But this constant dispute about the welfare of the workers and the number of accidents illustrates the importance of the issue of responsibility for contemporaries. Good and bad employers were defined according to the number of accidents that occurred, which always remained very vague. The *Commercial Advertiser* mentioned ‘an immense loss life’, to which the *Montreal Herald and Daily Commercial Gazette* opposed quite confusedly that ‘there has not been on an average one life lost to each pier’. As there are twenty-four piers, would that mean that there were less than twenty-four deaths, which would contradict the twenty-six deaths Hodges admitted? Were there a little less than twenty-four deaths? Or a lot less? What determined how many accidents was acceptable is very unclear.

Both *La Minerve* and *Montreal Herald and Daily Commercial Gazette* articles which defended the employers contrasted the Victoria Bridge with other worksites, thus defining normality and what was an acceptable number of accidents by comparing worksites. There were comparatively fewer accidents on the Victoria Bridge worksite than on house construction sites, argued *La Minerve* on 13th November 1858, therefore there was a low number of accidents on the Victoria Bridge worksite, which evidenced the efficiency of the employers’ precautions. By doing so, they admitted that accidents on all construction sites were normal. The question, therefore, is as follows: how many accidents were considered normal, and how many were considered too many, for that is what defined responsible and irresponsible employers?

In both cases, the absence or low number of accidents (real or exaggerated), was attributed to the precautions taken by the employers. There was therefore a contradiction between these positions expressed about the precautions on the Victoria Bridge worksite, and the positions of a Mactaggart, for instance. On the one hand, contemporaries of the Victoria

⁸⁵³ Hodges, *Construction of the Great Victoria Bridge*, 77: ‘during the early part of the work, the attention paid to the welfare of the workmen was not duly appreciated at Montreal’.

Bridge such as journalists or Hodges himself attributed the absence – or on the contrary the high number – of accidents to the precautions taken by responsible – or irresponsible – employers. On the other hand, employers like Mactaggart attributed accidents to the carelessness or recklessness of the workers themselves. This contradiction illustrates the ongoing societal debate on accidents and responsibility in the nineteenth century. Furthermore, and it is confirmed by our second case study, this contradiction also shows that contemporaries mainly invoked the employers' responsibility to take precautions when they questioned the reality of accidents. Indeed, when people tried to determine whether one or too many accidents happened or not, they used employers' precautions as a reasonable explanation. They thus attributed the absence or on the contrary the high number of accidents to the precautions taken by the employers. The reality of the accident was thus related to employers' precautions. However, as the second case study shows, when accidents happened and were examined in their individuality, contemporaries raised the possibility of workers' responsibility.

Our second case study is an accident that occurred on 12th July 1859. A boat capsized and the three workers drowned. Their names were Kirkup, Jamieson and Daugherty (or Doherty, or Dogherty) who manned the boat. Lanclot Marshall Kirkup was a twenty-one-year old local worker who still lived with his father.⁸⁵⁴ His name, L. Kirkup Jun., appears in Hodges's list of staff as inspector of riveting, which might explain why this case was profusely described in newspapers.⁸⁵⁵ Robert Jamieson was a mechanic⁸⁵⁶ but I have found no further

⁸⁵⁴ As suggested by the advertisement published in *La Minerve*, 19 July 1859, by Robert Kirkup (16 July), living on 48 Ste Marie Street, proposing a reward to whoever could find the body of his son. This address was verified in Lovell's Directory. As press articles like *Montreal Herald and Daily Commercial Gazette*, 19 July 1859, indicate that Kirkup's body was buried in Mount Royal Cemetery, young Kirkup's and Jamieson's full names were found on the website Find A Grave (<https://fr.findagrave.com/cemetery/639448/memorial-search?firstname=&middlename=&lastname=Kirkup&cemeteryName=Cimeti%C3%A8re+Mont-Royal&birthyear=&birthyearfilter=&deathyear=1859&deathyearfilter=&memorialid=&mcid=&linkedToName=&datefilter=&orderby=r&plot>, accessed 17 May 2023) which registers only one Kirkup. His date of birth is unknown, but he died on 12 July 1859, date of the boat accident. Robert Jamieson is also registered on Find A Grave in Mount Royal Cemetery, having died on 12 July 1859, his date of birth unknown.

⁸⁵⁵ Hodges, *Construction of the Great Victoria Bridge*, 104.

⁸⁵⁶ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

information about him nor about Dogherty. The cause of the accident was disputed, with some arguing that a hawser dangling between two piers caused the boat to capsize. It is perhaps for this reason that a number of articles detail this accident and the coroner's inquest, contrary to most accidents which were usually briefly and laconically mentioned in newspapers. As put by *L'Ordre*, the jury examined whether the workers died from negligence on the part of the Grand Trunk, or of accidental death.⁸⁵⁷ This case study thus raises another understanding of responsibility: contrary to the previous case study where the employers' responsibility was involved in the precautions taken to prevent accidents from happening, with high numbers of accidents attributed to the employers, this case study suggests that responsibility was related to the immediate cause of the accident.

Through this series of newspaper articles, it becomes clear that the responsibility of the workers themselves was as much as the hawser and the negligence of the company at the heart of the coroner's inquest. The accident was thus reported in *The Quebec Mercury* just four days later:

They had been engaged at the bridge, and were proceeding in a boat to some part of it, when the boat struck a rope, which was stretched between two piers, and was capsized. Immediate help was tendered, and a boat sent to their rescue, but, on account of the strength of the current, every effort was unavailing.⁸⁵⁸

This article, which had the name of one of the workers wrong, clearly identified the cause of the accident: the boat capsized because of a rope, which supposed that somebody had put and left it there in the first place. That would be negligence on the part of somebody and contrasted with the word 'unfortunate' used in the *Montreal Herald* article a few days later, which implied that the cause of the accident was just misfortune:

With regard to the care taken to prevent accidents, nothing has been left undone. There are life buoys in every direction in all the boats and on every pier where men are working, and there are always boats kept in readiness to pick men out of the water when they fall in.

⁸⁵⁷ *L'Ordre, l'union catholique*, 22 Jul. 1859.

⁸⁵⁸ *The Quebec Mercury*, 16 July 1859.

When the unfortunate accident occurred there was a boat and several men within twenty feet from where the occurrence took place, and although every effort was made, they could not succeed in getting one of the men out of the water.

The boat was capsized by the current striking the bow while her stern was in the eddy, which she was just leaving, and not by coming in contact with a rope.⁸⁵⁹

This letter by an anonymous ‘citizen’ discarded any human responsibility: it firmly opposed the theory that a rope would have caused the accident, arguing that the boat capsized because of the current, and detailed all the precautions taken by the employers to prevent drowning should some workers fall in the river. This insistence on listing the employers’ precautions refuted any negligence on the part of the company: the employers had a duty of care and did everything they could to try and prevent accidents, to borrow Campbell’s words.⁸⁶⁰ Although the two articles opposed on what caused the boat to capsize, they underlined that every effort was made to save the three men, thus suggesting that this type of accident had been anticipated but that these provisions just proved inefficient.

During the coroner’s inquest, Dr. Godfrey, the doctor who formerly identified Robert Jamieson on the 18th July, testified that the deceased was ‘of temperate habits.’⁸⁶¹ William McNab, a foreman, described Jamieson and Dogherty using the same words: ‘a sober, steady man’, and so did John Melville, mechanic, to describe Jamieson.⁸⁶² He added that Dogherty was ‘a good boatman’. These three similar statements, which preceded the analysis of the accident itself, show the importance in a nineteenth-century inquest of evaluating the victims’ characters when establishing the responsibility for the capsizing of the boat. Two of these witnesses used the exact same adjectives, implying that Jamieson and Dogherty could not have been drunk on the job. They were not usually careless or reckless, which tended to clear them of all responsibility in this accident. They were also competent workers: several witnesses, including Legge, underlined that Dogherty was a good boatman, who used to be ‘a salt water

⁸⁵⁹ ‘Correspondence’, *Montreal Herald*, 18 July 1859.

⁸⁶⁰ Campbell, ‘Philosophy and the Accident’, 32, 27.

⁸⁶¹ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

⁸⁶² *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

sailor (...) and well acquainted with the currents'.⁸⁶³ McNab the foreman added that Dogherty 'was constantly in the habit of passing between St. Lambert's and Montreal, as a boatman', thus implying that Dogherty had taken this route multiple times and was no beginner. The victims were therefore skilled and could not be blamed for engaging in a job without experience, which Mactaggart accused the victims of blasting of. Both McNab and Melville declared that they did not know what caused the death of the victims, with McNab saying that it was not customary to run a rope between two piers.

When asked about the cause of the accident, witnesses had different views. The captain of the barge 'The Tube', Joseph Robignot, thus described the moment of the accident:

One man was at the bow, the other at the stern, and one in the centre rowing. When they were passing from pier 15 to 14, the boat when taking the current, at the latter pier, edged a little; the men at the bow and stern threw themselves to the same side and the boat capsized; if these men had not done this the boat possibly would not have capsized (...) The boat was capsized by no obstacle or rope. There was a rope from pier 15 to 14, but it was clear of the water.⁸⁶⁴

Robignot, a boatman himself, clearly blamed two of the workers who did not have the appropriate reaction and caused the boat to capsize. After detailing all the efforts made to save the men, he added that the boat was a strong boat, implying that there was no defect with it, and that '[i]t was purely an accident'. That last sentence is an interesting window on how workers like Robignot understood the word accident: an accident was not caused by any negligence or any obstacle; it happened for no good reason, it was just misfortune. At the same time, he admitted the presence of a rope between the two piers but made it clear that the rope could be seen since it was not in the water, and therefore could have been avoided. In his effort to explain what happened, he added that he himself almost drowned there:

To the Jury – I fell into the river at the same place, and swam to the St. Lambert's wharf.
This occurred yesterday.
A Juror – Yesterday?
Witness – Yes. The eddys [*sic*] at that pier are so strong that they forced me to the bottom for some minutes.⁸⁶⁵

⁸⁶³ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

⁸⁶⁴ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

⁸⁶⁵ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

By admitting that he himself almost drowned at the very same place, Robignot made it clear that this spot in the river was dangerous. Despite his efforts to describe the provisions taken to save men from drowning, he was safe not because boats came to pick him out of the water, but because he swam to safety, thus confirming that the precautions taken by the employers were limited.

John Walsh, a labourer, maintained that a hawser was dangling in the water and that he initially thought that the rope had caused the accident:

The hawser was dipping up and down in the water as the waves took it. I thought at the time that the hawser was the cause of the accident. Some other men thought the same thing; but I am not sure. It is not my opinion now. In the evening, when we were crossing there was no hawser there. When I saw Dogherty easing upon his oars, I thought he was pulling in the hawser. If they had not time to go above the hawser, the current would bring them down over it and cause them to upset. I considered that with this hawser the condition of the boat was dangerous. I never saw a hawser there before, nor do I know for what it was intended.⁸⁶⁶

Walsh's testimony opposed Robignot's on several points. Robignot identified the river as being dangerous to boatmen, while Walsh explicitly identified the hawser as a risk. With Robignot, the risk was the natural environment on which nobody had any control, while a rope dangling in the passage of boats was a risk made by employers or fellow workers. Walsh's testimony is a little contradictory as he publicly renounced the idea that the hawser caused the accident, and at the same time his whole testimony suggested just that. The fact that Walsh and McNab had never seen any rope tied between these two piers, and Robignot confirmed that it was the first time a rope was put there, also suggests that the presence of such an obstacle was unfamiliar to the victims.

Robignot admitted that he and his men had put it there at noon but never thought that it was dangerous, even in the water. He maintained that the hawser was above water and said that he would hold himself responsible if the hawser had been in the water when the accident

⁸⁶⁶ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

occurred because ‘no one had a right to place it in that position’.⁸⁶⁷ Robignot was thus ready to admit responsibility for an ill-placed rope, but not for the boat that capsized.

As for the employers, Legge and General Superintendent John Duncan denied any responsibility.⁸⁶⁸ Legge explained that although the boats, which were all good boats, were under his superintendence, he had no control over the boat that capsized. He also explained that ropes were thrown out to bring the barges from one pier to another, but that captains were supposed to be on the watch for small boats which were not supposed to pass when the ropes were extended, and which had been equipped with life-preservers for the last two years. Duncan concurred and, although he had no personal knowledge of the accident, he underlined the efficiency of the boats and the life-preservers, and that he thought ‘the accident occurred by the boat not taking the current in the proper way’. Both employers thus objected to the accident that the precautions taken against drowning were efficient, therefore they declined any responsibility. Legge’s testimony made it clear that if anyone was to blame, it was the captains, while Duncan – who, again, was not there when the accident happened – blamed the boatman who did not take the current as he should have done.

Two days later, Horace S. Sergeant, engineer, Michael Burke, carpenter, and J. B. Duquette, sailor, maintained that the boat capsized because of the current.⁸⁶⁹ Sergeant said he saw no rope or obstacle, but that the boat was not safe with more than two men in such a current. Duquette added that the boat ‘took the current broadside on; had she done so by the prow there would have been less danger’. They thus went along with Duncan’s version. The jury’s verdict was accidental death.⁸⁷⁰

This case study shows that responsibility was at the heart of the coroner’s inquest. Everybody denied responsibility, both employers and the other workers who could have been

⁸⁶⁷ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

⁸⁶⁸ *Montreal Herald and Daily Commercial Gazette*, 21 Jul. 1859.

⁸⁶⁹ *Montreal Herald and Daily Commercial Gazette*, 22 Jul. 1859.

⁸⁷⁰ *Montreal Herald and Daily Commercial Gazette*, 22 Jul. 1859.

involved. The defence of the employers meticulously ruled out any possibility of their responsibility being involved. In her history of the fellow-servant rule, Bronstein recalls that in the *Farwell vs. Boston and Worcester Railroad* (1842), Justice Charles Shaw expanded the fellow-servant rule to limit even more the responsibility of the employers.⁸⁷¹ According to Shaw, employers were not responsible for workplace accidents unless an implied contract indicated they were.⁸⁷² He just conceded that ‘there might be grounds for a case if an employer had provided faulty or insufficient working materials’,⁸⁷³ and Legge avoided that accusation by insisting that all the boats were good boats. All the witnesses made it very clear that they understood that the inquest was looking for the cause of the accident. The presence of the rope was of crucial importance. However, before the inquest was adjourned, a number of testimonies agreed on the presence of a rope, including the man who had put it there, but two days later, the very presence of the rope was denied and the jury found the death accidental. Walsh’s about-turn and Sergeant, Burke and Duquette’s testimonies in favour of their employers were common in such situations, where fellow workers tended to testify for the company in fear of losing their jobs.⁸⁷⁴

We will probably never know what really happened, but it is likely that there was indeed a rope between the two piers when the accident occurred. Bronstein shows that with the fellow-servant rule, which English judges extended to the largest possible number of situations until the 1870s, workers could only get compensation in court under two circumstances: if they had been injured by a clearly malicious worker, or by the employer himself.⁸⁷⁵ In this context, the responsibility of the Victoria Bridge employers would have had to be proven for the victims to

⁸⁷¹ Bronstein, *Caught in the Machinery*, 22.

⁸⁷² Bronstein, *Caught in the Machinery*, 22.

⁸⁷³ Bronstein, *Caught in the Machinery*, 22.

⁸⁷⁴ Bronstein, *Caught in the Machinery*, 31.

⁸⁷⁵ Bronstein, *Caught in the Machinery*, 26.

get any compensation at all. As historians like Bronstein show, even when employers were sued and the case went to court, judges rarely ruled in favour of the workers.⁸⁷⁶

The two case studies analysed in this section reflect two different understandings of responsibility on the Victoria Bridge worksite. The first one demonstrated that contemporaries associated responsibility with the precautions taken to prevent accidents from happening, while the second showed that responsibility was determined by who or what caused an accident.

The immediate consequence of determining the responsibility for an accident was the compensation given to injured workers and, sometimes, their families. As underlined above, workers were rarely granted compensation in courts. In the absence of any insurance legislation, paternalism and charity were the only ways to obtain compensation.⁸⁷⁷ Historian Walter Licht explores the question of compensations on US railroads and shows that compensations merely depended on companies and employers, who were free to choose whether and how they would compensate injured workers and dead workers' families.⁸⁷⁸ Railroad companies thus granted gratuities, sometimes hospital and funeral expenses in an informal and unsystematic way.⁸⁷⁹ As shown in the previous section of this chapter, the contractors' agreement with the St Patrick's hospital was also part of these paternalistic compensation schemes.

Sometimes, Licht tells us, companies also gave compensations to widows in the form of gratuities or employment.⁸⁸⁰ It is not known whether the Victoria Bridge employers provided relief to the workers' families, although historian Jane Greenlaw's huge work on the tax assessment rolls for the Ste Anne's ward of Montreal might provide some clues. As explained in chapter 2, Jane Greenlaw's study of these rolls provides a list of the 293 inhabitants of the sheds from 1856 to 1860, and some of them might have been Victoria Bridge construction

⁸⁷⁶ Bronstein, *Caught in the Machinery*, 19.

⁸⁷⁷ Bronstein, *Caught in the Machinery*, 19.

⁸⁷⁸ Licht, *Working for the Railroad*, 197.

⁸⁷⁹ Licht, *Working for the Railroad*, 197.

⁸⁸⁰ Licht, *Working for the Railroad*, 203.

workers.⁸⁸¹ This list gives the names and occupations of the inhabitants, and the sheds they lived in between 1856 and 1860. There are two occurrences where the man's name is replaced by his widow's: Martin Devaney (or Devany), occupation unknown, lived in shed 7 in 1857 and 1858, then in shed 20 in 1859, and in 1860 his name in shed 20 is replaced with Mrs Devany (or Devaney). Similarly, William Shanton (or Shelton), labourer, lived in shed 1 in 1856 and 1857, and in 1858 and 1859 his name is replaced with 'widow Shanton' and 'widow Shelton'.

We do not know what happened to Martin Devaney and William Shanton, but the employers let their widows live in the sheds after they died. Yet, Bradbury underlines how difficult it was for widows to survive without a husband's wages, and shows that widows often had to move to cheaper premises or bigger ones, if they wanted to take boarders in.⁸⁸² It is thus possible that Devaney and Shanton died on the job and their widows were allowed to keep on living there, suggesting that the widows might have been given employment. It was not uncommon for women, especially married women, to work in railway construction camps, as suggested by Peto's testimony to the 1846 Select Committee, where he declared that a man and his wife were usually put in charge of each temporary building, the wife being paid 25s. a week for 'cooking and making the beds' for about twenty-five men.⁸⁸³ The fact that some widows kept on living in the sheds that belonged to the contractors thus tends to suggest that some widows might have been granted some relief after the deaths of their husbands.

Conclusion

This chapter has examined the paradoxical presence of precautions in employers' sources: on the one hand, employers such as Hodges and Legge argued that the low number of serious injuries was due to the precautions they took, and on the other hand they kept very quiet

⁸⁸¹ Greenlaw, Unpublished.

⁸⁸² Bradbury, *Working Families*, 197-213 esp. 207.

⁸⁸³ Report from the Select Committee on Railway Labourers; together with the Minutes of Evidence and Index. Ordered by The House of Commons, to be Printed, 28 July 1846, §1289-90.

about the accidents that caused those injuries. This chapter thus tried to understand what these precautions were, what they prevented, and how precautions were understood on the worksite, but also who was responsible for taking such precautions. Taking precautions suggested that employers and workers anticipated, and therefore identified, risks. When employers took provisions like boats and lifebuoys, they clearly anticipated the risk of drowning. The first section of this chapter focused on cold-related injuries as a way to analyse a new type of risk, in order to understand how workers and employers learnt about and adapted to the cold throughout the construction. This chapter thus showed that the precautions against the cold were probably efficient up to a point, but were not enough when temperatures dropped suddenly, which happened regularly but randomly. The comparison with other nineteenth-century worksites, such as railway worksites in western Canada where Chinese workers toiled, suggests that the working conditions on the Victoria Bridge worksite were comparatively good. But it seems that precautions on the Victoria Bridge worksite often shared this feature: they were only good up to a certain point and could not cope with situations that were more difficult than average on the worksite. There were numerous boats and lifebuoys to save drowning workers, but they were inefficient in many instances and notably when the current was too strong, which appeared to be the case in quite a few accidents.

The understanding of precautions also reflects how accidents were perceived on the worksite: the outcome of accidents was death or very serious and debilitating injuries, and precautions were meant to prevent that, while incidents with less impressive outcomes were not considered. This chapter argued that the precautions taken by the employers intended to make sure that damaged bodies could get back to work. In that sense, and based on the comparison with other company hospitals, the agreement with the St Patrick's hospital is an innovative precaution to safeguard an expensive workforce, in a context of labour shortage. However, this chapter also tried to warn against a line of reasoning that can be found in the historiography and

seems faulty: it is incorrect to infer from a low death toll that the employers took appropriate precautions. As argued in chapter 3, a low death toll could also be due to the workers' experience. Besides, as underlined in this chapter, historians have established that employers' provisions, however innovative, did not necessarily guarantee an improvement of the working conditions or the workers' welfare and good health. This chapter also tried to show that although Hodges mainly focused on the difficult weather and cold-related injuries, most accidents were probably accidents that typically occurred on a nineteenth-century construction site.

However, the employers' insistence on the precautions they took also suggests the importance of the employers' role in the prevention of accidents. The official positions of Hodges and Legge who boasted about the provisions they took contrasted with accusations in newspapers blaming the employers for the high number of accidents on the worksite. This discrepancy illustrates the ongoing debate about responsibility in the nineteenth century, but also suggests that contemporaries attributed the number of accidents on a worksite to the precautions, or the lack of precautions, taken by the employers. The accidents studied in the third section of this chapter explored the understanding of responsibility on the Victoria Bridge worksite. They demonstrated that employers were responsible for preventing accidents from happening, but when an accident occurred, it was often the victims' responsibilities that were engaged and scrutinised. As shown by a number of historians like Bronstein or Licht, companies granted compensations in a very unsystematic way and it is difficult to know precisely how the Victoria Bridge employers behaved on that matter. The agreement with the St. Patrick's hospital was, of course, part of a paternalistic scheme of compensations. Perhaps some families and widows also received compensation in the form of employment. This chapter is also a call for a study of the role of women in the construction of the Victoria Bridge. Indeed, the role of the Religious Hospitallers in the workers' health, the presence of quite a few women in the sheds evidenced by the tax assessment rolls, the number of families that lived with the

workers, challenge the gendered representation of the construction sites as masculine environments and deserve to be studied to complement our understanding of the construction of the Victoria Bridge, but also to allow us to acknowledge and analyse the presence and role of women on nineteenth-century worksites.

Conclusion

In 1989, a series of commemorative stamps was issued to celebrate the 150th anniversary of the first Canadian photograph, a daguerreotype attributed to Pierre-Gaspard-Gustave Joly de Lotbinière in 1839. However, the four series of stamps did not celebrate Joly de Lotbinière, but William Notman and the Victoria Bridge (Fig. 45).



Fig. 45 Stamp commemorating the 150th anniversary of the first Canadian photograph, 1989, LAC, Notman, William (1826-1891), R7426 (or R7426-1579-5-F), Vol. 28, file 2.

This commemorative stamp represents a portrayal of William Notman and one of his photographs of a pier of the Victoria Bridge under construction.

This stamp represented the bridge under construction instead of the imposing, massive completed bridge, suggesting that the bridge was a significant piece of heritage, but also that its construction was pivotal in Notman's career and in the history of photography in Canada, as well as a major achievement of civil engineering. As shown by this dissertation, the construction of the bridge was indeed a civil engineering challenge, but it was also more than

that. This dissertation has argued that the history of the Victoria bridge construction allows us to analyse the imperial relations between Britain and Canada, as well as larger patterns of labour relations in a context of rising industrialism. The construction of the bridge is also a case study to analyse risk and accidents in the nineteenth century, and the previous chapters have argued that the worksite represented a transitional moment in the evolution of labour relations and the understanding of accident.

The Grand Trunk Railway and the Victoria Bridge exemplified the economic and geopolitical importance of the nineteenth-century development of communication networks on several levels. From a colonial perspective, the Grand Trunk and the Victoria Bridge were financed and controlled from London by British private investors and bankers, thus illustrating the City, defined by John Darwin as one of the most powerful components of the British system along with the British Isles, India, and the white colonies of settlement, and which corresponded to the commercial power of Britain based notably on merchant marine, installations, banks, and British-owned railways.⁸⁸⁴ On another level, as suggested in chapter 1, the business community of Montreal played an active part in the development of the Grand Trunk project, thus evidencing the local importance of the Grand Trunk and the bridge, their role in the relations between Montreal and the United States and in the colonisation of the interior of Canada. Although the literature has mostly focused on railway networks, with Eric Hobsbawm defining the nineteenth-century expansion of railways as '[v]ast networks of shining rails, running along embankments, across bridges and viaducts, through cuttings, through tunnels up to ten miles long, across mountain passes as high as the major Alpine peaks', this dissertation has argued that bridges were more than just parts of a railway line, and were sometimes crucial junctions that connected territories and made the railway possible.⁸⁸⁵

⁸⁸⁴ Darwin, *The Empire Project*, 9-11.

⁸⁸⁵ Eric Hobsbawm, *The Age of Empire, 1875-1914*, New York: Vintage Books, 1989 (1987), 27.

The history of the Victoria Bridge echoes and differs from the major features identified by historians of railways and of railway workers. Indeed, historians have studied the development of railway networks in various parts of the British Empire and have analysed their expansion from an imperial historical perspective, such as Kerr in his fundamental history of railway building in India.⁸⁸⁶ The building of the Grand Trunk and the Victoria Bridge shared a number of common features with the building of railways in India. In both instances, railways were financed and controlled by Britain and contributed to the introduction of capitalism in the colonies, which workers sometimes resisted.⁸⁸⁷ These common aspects suggest that railways and construction sites were microcosms that crystallised the technological and social changes of the nineteenth century, as well as colonial and labour relations.

But at the same time, the Grand Trunk also epitomised the particular status of Canada as a white colony of settlement in the imperial system, illustrating Hobsbawm's point that most of British investment went to the white-settler colonies.⁸⁸⁸ Indeed, the Grand Trunk Railway shops suggest that the Grand Trunk contributed to the development of industry in Canada, contrary to other colonies where railways contributed to perpetuating underdevelopment by inhibiting industrialisation since colonies had no industry for building locomotives and had to import them.⁸⁸⁹ Another of the major and most obvious differences with railways in India is the racism analysed by Ian Kerr, which sometimes took the form of violence from European workers against Indians, which did not happen in Canada, although the descriptions of Indigenous workers in employers' sources were expressions of white exoticism.

Shelton Stromquist, who studies railway labour around the globe, focuses on the centrality of race in the construction of working-class identities, which is refreshing but also excludes from his analysis the workforce in colonies like Canada. And yet, this dissertation has

⁸⁸⁶ Kerr, *Building the Railways of the Raj*.

⁸⁸⁷ Kerr, *Building the Railways of the Raj*, 2, 169-81.

⁸⁸⁸ Hobsbawm, *The Age of Empire, 1875-1914*, 66.

⁸⁸⁹ Stromquist, 'Railroad Labor and the Global Economy: Historical Patterns', 629.

argued that worksites such as the Victoria Bridge contributed to the proletarianization of workers and to the emergence, if not of class consciousness, of collective actions to defend their rights.⁸⁹⁰

The history of labour has often focused on later periods in Canada, with the emergence of skilled workers' large-scale collective actions with sometimes international connections. John Battye has argued that the 1872 nine-hour movement was fundamental in the birth of a Canadian labour movement, and has shown that Canadian unionists were inspired by the movement for the nine-hour day of British workmen in Newcastle.⁸⁹¹ In his study of the organisation of moulders in Montreal, Peter Bischoff shows that the moulders' union, founded in 1859, only grew influential some twenty years later.⁸⁹² The historians who have studied unions prior to the industrialisation of the 1880s have argued that the first unions in Quebec were created at the beginning of the nineteenth century but that they were usually short-lived, counted only a few members, and until 1860 had few connections with one another.⁸⁹³ This dissertation, and in particular chapter 2, has not focused on unions, but has tried to study other forms of labour resistance to capitalism. It has notably suggested that Victoria Bridge workers contributed to the forms of labour unrest that took place in Canada in 1854 and faded when labour stopped being in such a high demand.⁸⁹⁴ Furthermore, the worksite brought together contractors but also workers who had different experiences of public work and wage labour in a context of rising industrialism, which allows us to analyse the emergence of industrialism and the persistence of previous forms of labour relations.

⁸⁹⁰ Stromquist, 'Railroad Labor and the Global Economy: Historical Patterns', 629.

⁸⁹¹ Battye, 'The Nine Hour Pioneers: The Genesis of the Canadian Labour Movement', 26-7.

⁸⁹² Bischoff, 'La formation des traditions de solidarité ouvrière chez les mouleurs montréalais: la longue marche vers le syndicalisme (1859-1881)', 10.

⁸⁹³ Rouillard, *Histoire du syndicalisme au Québec*, 11, 20.

⁸⁹⁴ On the link between the weakness of unions in the 1850s and the absence of severe shortage of workmen in the colonies, see Battye, 'The Nine Hour Pioneers: The Genesis of the Canadian Labour Movement', 25.

Indeed, employers' sources document the presence on the worksite of workers recruited in Britain. The Grand Trunk Railway and the Victoria Bridge thus contributed to a global movement of circulation of men, knowledge, and know-how that increased with the Industrial Revolution and has been studied by historians of migration, labour historians, or historians of civil engineering.⁸⁹⁵ Studying the link between the end of the Railway Mania in Britain, the circulation of British engineers and contractors, and the recruitment of British workers in a context of skilled labour shortage, this dissertation has supported Eric Richards's point which connects emigration with the outreach of British industrialisation.⁸⁹⁶

Furthermore, the Victoria Bridge worksite gives the opportunity to study a space where British, Irish, French Canadian and Indigenous workers toiled together. As explained in this dissertation, the nationalities in employers' sources and census might not refer to strict categories as they do today, and 'British' might sometimes refer to a number of ethnicities, such as English, Welsh, Scottish and perhaps Irish. Although employers' sources, and in particular Hodges's book and the contractors' biographies, insist on the presence of workers from Britain, this emphasis does not mean that the British workers numerically dominated the workforce, but we lack data to estimate the exact numbers of British, local and Indigenous workers. The employers' few descriptions of the workers associated them with racial stereotypes which belonged to a British system of imperial propaganda and representations of the Other, with the under-fed French, the savage Indigenous, and the glorious British worker, and this dissertation has argued that the stereotypes about the French Canadians and the British might also give clues about the workers' different experiences of and perspectives on wage labour.

⁸⁹⁵ See for instance Harper and Constantine, *Migration and Empire*; Eric Richards, *Britannia's Children. Emigration from England, Scotland, Wales and Ireland since 1600*, Hambledon and London, London and New York: Palgrave Macmillan, 2004; Bensimon, *Artisans Abroad*; Buchanan, 'The Diaspora of English Engineering'.

⁸⁹⁶ Richards, *Britannia's Children*, 119.

As explained in this dissertation, working conditions cannot be fully understood without an analysis of the risk and accidents faced by the workers. Indeed, risk and accidents were part of the reality of labour and of the workers' daily lives. Niget and Petitelerc underline that the scarce histography of risk is in part due to the problem of the definition of risk.⁸⁹⁷ They suggest that the analysis of risk proposes a probabilistic perspective on danger and is always related to the concerns of a given society.⁸⁹⁸ This dissertation concurs with this analysis as it tries to propose a reflection on the definition of risk on a nineteenth-century construction site. It argues that understanding risk on the worksite is also a way to analyse how society and contemporaries understood danger but also accidents and prevention, and that the case of the Victoria Bridge shows that risk should be understood as a culture of the worksite.

Most studies of railway workers have had an interest in risk and accidents and have devoted a chapter to this issue.⁸⁹⁹ But this dissertation has argued that risk offers another perspective to understand a worksite, the workers' lives, what they did, and who they might have been. Indeed, the analysis of risk invites us to study the workers' experience of their work environment, and with the help of testimonies from contemporary workers from other worksites, we can better understand the impact of noisy, dark, and cold workplaces on the workmen's bodies and senses. In addition, this dissertation argues that risk-taking behaviours and intense work pace, although due to financial necessity and the employers' urge to finish the bridge, shed light on a culture of masculinity that played a part in the workers' acceptance of wage labour and competitiveness. At the same time, the analysis of workers' attitudes in front of danger suggests that they were experienced workmen. In that sense, and because the notion and definition of accidents were still unstable in the nineteenth century, this dissertation has tried to show that the analysis of risk should be part of the study of a worksite and should be

⁸⁹⁷ Niget and Petitelerc, 'Introduction', 11.

⁸⁹⁸ Niget and Petitelerc, 'Introduction', 13.

⁸⁹⁹ Kerr, *Building the Railways of the Raj*; Brooke, *The Railway Navy*.

explored to understand how workers and employers perceived risk and accidents, as well as the prevention of accidents.

Furthermore, the analysis of risk on the worksite offers another perspective on labour relations. Instead of focusing on a vertical relation between employers and workers, the analysis of risk tries to understand how both workers and employers understood and dealt with risk. Engineer Edwin Clark's accident, which happened during a rehearsal of the lifting of the first tube of the Conway Bridge in 1848 and severed his great toe, was yet another reminder that accidents happened on a very regular basis on worksites, regardless of the tasks involved.⁹⁰⁰ Despite scarce archival sources, the analysis of risk suggests that a low death toll had more to do with workers' avoidance of accidents than employers' provisions, and thus recalls that workers were not passive victims of accidents and wage labour on the worksite, but knew about risk and accidents, transmitted this knowledge, and tried to avoid accidents.

Indeed, this dissertation has analysed the notion of death toll and has challenged the idea that what was considered a low death toll was due to employers' precautions. In that sense, it has tried to understand what precautions meant on a nineteenth-century worksite. Recovering the archives of the St. Patrick's Hospital, this dissertation has argued that the agreement with the hospital was an innovative precaution meant to prevent the death of the workers and have them back to work. At the same time, these chapters have argued that the management of risk was also a way to control the workers, and that the agreement with the St Patrick's Hospital was mainly a means to safeguard a skilled workforce, and cannot be understood as the employers taking responsibility for accidents. On the contrary, accidents were considered individual problems. The study of the archives of the St Patrick's Hospital is also a modest contribution to the history of hospitals, and in particular company hospitals.⁹⁰¹

⁹⁰⁰ Clark, *The Britannia and Conway Tubular Bridges*, Vol. II, 644.

⁹⁰¹ See for instance Helen Vandenberg, 'A Powerful Protector of the Japanese People': The History of the Japanese Hospital in Steveston, British Columbia, Canada, 1896-1942, *Nursing History Review* 25 (2017), 54-81; for hospitals from the perspective of the history of medicine, see for instance Roy Porter, *The Greatest*

The main difficulty of this study has been the scarcity of sources about the workers and about accidents. There are a number of sources about the Grand Trunk maintenance workers, available at Exporail Museum (Montreal) for instance, but much fewer about construction workers.⁹⁰² As Kerr regretted, '[n]ineteenth-century construction workers will always be mute: people spoken of, who left no first-hand accounts of their own.'⁹⁰³ No first-hand account of the workmen who built the bridge has been found so far. But there are sources about them, and the available information about the Victoria Bridge workers as groups of men are rather significant because they stayed in the same place during the construction process, in contrast with railway workers' camps which followed the construction of the line: we know about the Victoria Bridge workers' housing, we have pictures of the sheds where some of them lived, we know about the community they formed on the outskirts of Montreal, the traces they left in the city such as the black stone in memory of immigrants, and we have abundant pictures of the works. At the same time, the paucity of archival records about the Victoria Bridge workers as individuals, which makes it difficult to study individual trajectories, exposes the limits of the study of a six-year-long worksite.

Historians like David Brooke have identified railway workers and segments of their lives based on census returns, but these sources are difficult to use for the Victoria Bridge workers, a number of whom were probably not in Montreal at the time of the 1851 and 1861 censuses.⁹⁰⁴ As suggested in chapter 2, I used Montreal's Directory and the census returns of East and West Canada, of England, Scotland and Wales to try and follow some workers identified in newspapers or in Greenlaw's list, but I could not do it for most of them and this

Benefit to Mankind. A Medical History of Humanity from Antiquity to the Present, London: William Collins, 1997, Ebook Edition, 2013.

⁹⁰² See for instance ACHF/Exporail, Centre de documentation, 'Appendix 6 Report', 1857, with reports on the Toronto to Sarnia section, a return of the casualties of maintenance workers, and the detailed salaries of maintenance workers.

⁹⁰³ Kerr, *Building the Railways of the Raj*, 14.

⁹⁰⁴ Brooke, *The Railway Navy*.

work should be conducted further. I contacted genealogical societies in Montreal but also in Ontario to look for potential descendants of the workers. I only received two answers about ancestors who may have worked on the Grand Trunk. There was no evidence to support these hypotheses, one of these cases was not relevant to this study as the ancestor probably worked near Toronto, while the other person did not wish to pursue this investigation.

The question of individual trajectories leads to one of the main questions raised by the study of this worksite: what happened to the Victoria Bridge workers after the construction? This question is very difficult to answer and I have not been able to know for certain what they did after the construction. As suggested above, investigating the history of the identified workers (Appendices 2 and 3) using genealogy databases, Montreal's Directory and census returns might give some answers about individuals' stories.

The mobility of railway workers, however, might give some clues about what some of the workers did after the construction. Some Grand Trunk and Victoria Bridge workers were reportedly sent to Crimea during the war (1854) because they were accustomed to the climate, although there is no solid evidence to support this. Terry Coleman, for instance, states that many of the men engaged for the railway in Crimea had served for a while in Canada on the Grand Trunk, and he cites as an example the chief engineer of the Crimea railway, James Beatty (which he spells Beattie).⁹⁰⁵ But Beatty did not work on the Grand Trunk: he was sent by Peto and Betts to New Brunswick and Nova Scotia to make surveys and trial sections from 1852 to 1854, before he went to Crimea in 1855 where he was chief engineer of the Crimea Railway.⁹⁰⁶ John Millar also mentions that Grand Trunk and Victoria Bridge workers were sent to Crimea because they were used to working in low temperatures, but he does not share his sources.⁹⁰⁷ According to Brooke, the press reported that the men who enrolled to Crimea had previously

⁹⁰⁵ Coleman, *The Railway Navvies*, 185.

⁹⁰⁶ Grace's Guide, based on Beatty's obituary, 1857, ICE: https://www.gracesguide.co.uk/James_Beatty, accessed 13 Oct. 2023 and Brooke, *The Railway Navy*, 126-7.

⁹⁰⁷ Millar, *William Heap and his Company*, 1866, 60-1.

worked for Peto and Betts in Canada on a line from St John, New Brunswick, which would echo Beatty's biography.⁹⁰⁸

The fact that later sources might have mistaken other lines built in Canada for the Grand Trunk suggests the importance, for twentieth-century contemporaries, of the Grand Trunk Railway which came to represent any line built by British workers in Canada. In addition, Coleman and Millar both underline that these workers were recruited because they were used to the cold, thus suggesting that British workers toiling in extremely low temperatures have been associated with the Grand Trunk as late as the 1990s.

What should be remembered is that the railway built in Crimea was yet another project that involved British workers and further evidenced the great mobility of British railway workers. This mobility, which Brooke has documented, suggests that at least part of the workforce, and probably British workers, left Canada. Hodges wrote that the workmen endeavoured to erect the stone in memory of the 1847 immigrants '[t]owards the close of the work, when the workmen were thinking of leaving Canada'.⁹⁰⁹ Although Hodges did not elaborate, this sentence would suggest that a number of them left Canada after the construction.

As explained in chapter 2, a number of workers followed Peto and Brassey from one project to another. The list of Peto's and Brassey's contracts after the Grand Trunk and the Victoria Bridge can be places where part of the workers may have gone to work. Peto and Brassey ran several contracts and projects simultaneously, and it is possible that some workers left the Victoria Bridge worksite before the construction was finished. But I will only consider the projects ran by Peto and Brassey after 1859. Peto and Betts built the section between Strood and Elephant and Castle of the Metropolitan extension of the London, Chatham, and Dover Railway (1860), while Brassey built the Shrewsbury and Hereford Railway in England (1861),

⁹⁰⁸ Brooke, *The Railway Navy*, 124.

⁹⁰⁹ Hodges, *Construction of the Great Victoria Bridge*, 76.

and it is thus possible that part of the British Victoria Bridge workers went to England to build these lines.

Peto, Betts and Brassey were involved in the construction of the Ruse-Varna Railway in Moldavia in 1864, but a great number of the workers had been trained and involved in the construction of the Cernavoda-Constanta railway (1858) in Moldavia, built by other contractors, and where British skilled workers had soon to be replaced by local workers when they were sufficiently trained.⁹¹⁰ It is therefore unlikely that a significant number of them had previously worked on the Grand Trunk and Victoria Bridge. Peto and Betts's last big contract together was the extensions to the West-End and Blackfriars bridge of the London, Chatham, and Dover Railway (1866), which proved disastrous for them and bankrupted them.⁹¹¹ But Brassey continued to be involved in a great number of projects where some of the Victoria Bridge workers might have followed him, such as the Maremma Railway in Italy in 1860 or the Queensland Railway in Australia (1863).⁹¹² Brassey also built the Delhi and Umritsir Railway in India (1864) but Kerr shows that British plate-layers and other skilled British workmen were used extensively prior to the 1860s, before plate-laying became a job done largely by Indians under European supervision, and it is therefore possible but unlikely that a number of Victoria Bridge workers went to India with Brassey.⁹¹³

It is also possible that a number of the workmen went to the United States or remained in Canada where, as suggested in this dissertation, railway construction was booming. In addition, migrant workers sometimes married and settled down and the description by Fabrice Bensimon of British workers who married local women in a village in Seine-Inférieure (France) in 1846 is a story that could have happened to a few Victoria Bridge workers.⁹¹⁴ Perhaps a

⁹¹⁰ J. H. Jensen and Gerhard Rosegger, 'British Railway Builders along the Lower Danube, 1856-1859', *The Slavonic and East European Review*, Vol. 46, No. 106, Jan. 1968, 105-28, 120, 114.

⁹¹¹ Peto, *Sir Morton Peto*, 46-50.

⁹¹² Helps, *Life and Labours of Thomas Brassey*, 197-201.

⁹¹³ Helps, *Life and Labours of Thomas Brassey*, 197-201; Kerr, *Building the Railways of the Raj*, 148-9.

⁹¹⁴ Bensimon, *Artisans Abroad*, 155.

further investigation of the potential 308 Victoria Bridge workers will provide some answers about their personal histories, and perhaps the women and children who played a part in the construction of the Victoria Bridge will become less of a shadowy presence. The Victoria Bridge was one worksite, but it was also a history of labour, of empire, and the history of the thousands of people who made this bridge in 1860 a symbol of their skills.

As I explored the archives of the St. Patrick's Hospital, I realised that they might constitute a considerable source of information that has been understudied, and a study of this hospital could be part of a broader project on accidents and hospitals in Canada.

Résumé en français de la thèse

Le 25 août 1860, le prince de Galles est accueilli en grande pompe à Montréal par le maire et les élites sociales de la ville. La visite princière est abondamment décrite et célébrée par les journaux, dont *The Illustrated London News* qui note avec une satisfaction manifeste les acclamations qui accompagnent le prince, alors que les visites royales de l'Empire britannique sont alors une nouveauté.⁹¹⁵ Cette visite a pour objectif principal l'inauguration du pont Victoria, le premier pont à enjamber le fleuve Saint-Laurent. Ce pont tubulaire, long d'environ trois kilomètres, est alors considéré comme « un exploit d'ingénierie monumental (...) de par sa taille inégalée, l'audace de sa conception, et la prouesse que représente sa construction malgré des conditions extrêmement difficiles⁹¹⁶ ».

Le pont Victoria, construit entre 1853 et 1859, est en effet d'une importance cruciale pour le projet ferroviaire du Grand Tronc, dont l'ambition est de relier le Canada Est et le Canada Ouest aux ports maritimes de l'Atlantique et ainsi à l'Europe. Une firme de célèbres entrepreneurs britanniques, Samuel M. Peto, Thomas Brassey, Edward L. Betts et William Jackson est en charge de la construction de la section la plus importante du Grand Tronc ainsi que du pont Victoria, conçu par l'éminent Robert Stephenson et son assistant Alexander Ross, l'ingénieur en chef du Grand Tronc au Canada⁹¹⁷. Il s'agit d'un pont tubulaire dont la construction, achevée avec deux ans d'avance malgré les difficultés financières et un certain nombre d'épreuves détaillées plus loin, emploie parfois plus de 3000 ouvriers⁹¹⁸.

⁹¹⁵ *Illustrated London News*, 25 août 1860, Bibliothèque et Archives Canada (BAC), Boîte 1939-197 R257-02 C003904, Dossier 5, Élément 104, 25 août 1860, 167, 168, 169.

⁹¹⁶ Robert Passfield, « Construction of the Victoria Tubular Bridge », 5: « monumental engineering achievement (...) for its unsurpassed magnitude and boldness of conception, and for the feat of its construction under extremely difficult conditions. » Ma traduction.

⁹¹⁷ Le terme de firme est employé par commodité, mais dans les années 1850, les partenariats entre entrepreneurs ne sont pas encore des firmes formelles et institutionnalisées.

⁹¹⁸ Cf. par exemple *Gazette de Sorel*, 28 décembre 1858. Nombre d'ouvriers donné pour octobre 1858.

Les directeurs de la Compagnie du Grand Tronc ouvrent la cérémonie d'ouverture par un discours en l'honneur du prince qui est ensuite invité à niveler le mortier préalablement étalé pour lui afin que la dernière pierre du pont puisse être déposée. C'est également lui qui place le dernier rivet dans la structure métallique du tube. Les articles de presse décrivent le tube comme un environnement déplaisant qui agresse les sens à cause de la fumée qui rend l'air irrespirable, du bruit, de l'obscurité, illustrant ainsi le contraste entre les élites sociales qui découvrent et ne supportent pas le chantier achevé, et les ouvriers pour qui le chantier a été l'environnement de travail quotidien pendant six ans⁹¹⁹. Les descriptions des journaux sont d'autant plus frappantes qu'elles invisibilisent les ouvriers, pourtant bien présents. Ainsi, ils prononcent un discours en l'honneur du prince, mais leur discours est le seul à ne pas être retranscrit.⁹²⁰ Les ouvriers qui préparent le tube à recevoir le rivet du prince ne sont pas non plus représentés dans l'illustration qui accompagne l'article.⁹²¹ En revanche, les paroles que leur adresse le prince sont bien relayées par la presse :

Messieurs, - Je reçois avec une satisfaction toute particulière cette adresse de la part des artisans et des ouvriers qui, à la sueur de leurs fronts et par plus d'une rude journée d'un labeur intelligent, ont contribué à élever à la gloire de leur patrie, ce monument qui ne fait pas moins d'honneur aux mains qui l'ont construit qu'aux intelligences qui l'avaient conçu. Je pleure avec vous la perte de Robert Stephenson. Vos regrets me rappellent trop bien que son père, aussi célèbre que lui, était sorti de vos rangs.

L'Angleterre ouvre à tous ses fils la même carrière : nul succès n'y est impossible au génie aidé de l'honnêteté et de l'industrie. Tous ne peuvent pas, il est vrai, remporter le prix ; mais tous peuvent lutter pour l'obtenir, et dans cette lutte la victoire n'appartient ni au riche, ni au puissant, mais à celui à qui Dieu a donné l'intelligence et qui a cultivé dans son cœur les qualités morales qui constituent la véritable grandeur. Je vous félicite sur le succès de votre œuvre. J'ai le plus vif espoir qu'elle prospérera ; et je vous souhaite de tout cœur, à vous qui avez si bien exécuté cette grande entreprise, et à vos familles, tout le bonheur que vous pouvez désirer.'

Le prince célèbre alors les ingénieurs civils britanniques, en particulier George Stephenson qui, avant d'être ingénieur, a travaillé dans une mine, et cet hommage se fait l'écho de l'importance

⁹¹⁹ « The Prince of Wales Completing the Victoria Bridge » (« Le prince de Galles parachevant le pont Victoria », ma traduction), *The Illustrated London News*, 6 oct. 1860, BAC, Boîte 1939-197 R257-02 C003904, Dossier 6: 6 oct. 1860-13 oct. 1860, N° 127-143.

⁹²⁰ *Journal de l'Instruction Publique*, Nov. 1860

⁹²¹ « The Prince of Wales Completing the Victoria Bridge » (« Le prince de Galles parachevant le pont Victoria », ma traduction), *The Illustrated London News*, 6 oct. 1860, BAC, Boîte 1939-197 R257-02 C003904, Dossier 6: 6 oct. 1860-13 oct. 1860, N° 127-143.

croissante des ingénieurs britanniques dont des historiens comme R. A. Buchanan ont étudié la diaspora et l'expansion mondiale au cours du XIXe siècle⁹²². De manière significative, il associe les compétences des ouvriers à des valeurs morales. Le travail et la discipline, tout comme la distribution sociale et spatiale de l'environnement que représente le chantier, ainsi que la nature du travail, les gestes des ouvriers et l'impact du travail sur le corps, mais aussi l'absence et la présence muette des ouvriers dans les sources, sont autant de thématiques esquissées par la presse à l'occasion de la cérémonie d'ouverture, et qui sont au cœur de ce travail de thèse.

I- L'historiographie

L'histoire de l'Empire britannique, notamment les études relativement récentes, se sont peu intéressées au Canada, en témoignent les travaux de John MacKenzie sur la propagande impériale, de Catherine Hall sur l'esclavage, ou de Sadiah Qureshi sur la représentation des peuples colonisés⁹²³. Il faut souligner toutefois les travaux de John Darwin, qui a étudié le Canada dans le cadre de ce qu'il appelle le « projet » de l'Empire britannique, et qui démontre que le Canada est un pilier du système britannique, au côté des autres colonies de peuplement, des Iles Britanniques, l'Inde, et la City.⁹²⁴ De son côté, Phillip Buckner souligne que les historiens et la classe politique du Canada a, dans les années 1950 et 1960, séparé l'histoire du Canada de celle de l'Empire britannique, le rôle impérialiste du Canada étant alors mal vu.⁹²⁵ Buckner réfute l'idée que la participation du Canada à l'Empire britannique n'est que le fait

⁹²² R. A. Buchanan, 'The Diaspora of English Engineering', 501-24.

⁹²³ John M. MacKenzie, *Propaganda and Empire. The Manipulation of British Public Opinion, 1880-1960*, Manchester and New York: Manchester University Press, 1984 ; Catherine Hall, 'Troubling Memories: Nineteenth-Century Histories of the Slave Trade and Slavery', *Transactions of the Royal History Society*, Vol. 21, 2011, 147-69 et le projet Legacies of British Slave-ownership (2009-16) ; Sadiah Qureshi, *Peoples on Parade. Exhibitions, Empire, and Anthropology in Nineteenth-Century Britain*, Chicago and London : University of Chicago Press, 2011.

⁹²⁴ John Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830-1970* (2009), Cambridge University Press, 2012, 9-11.

⁹²⁵ Buckner, 'Introduction: Canada and the British Empire', 18-9, in P. Buckner (dir.), *Canada and the British Empire*, New York: Oxford University Press, 2008.

d'une certaine élite, et appelle à renouveler l'histoire du Canada au sein de l'histoire impériale.⁹²⁶

D'un autre côté, le chemin de fer est un élément central de l'expansion de l'Empire britannique et a fait l'objet d'études majeures, notamment en relation avec des colonies comme l'Inde. Il existe également une littérature très développée sur l'histoire des chemins de fer, indépendamment de l'histoire impériale. L'histoire économique des chemins de fer a analysé le développement des réseaux ferroviaires à une échelle nationale, comme les travaux de Lewis H. Haney sur les chemins de fer aux États-Unis ou de François Caron sur le développement des chemins de fer en France, mais n'a que très peu évoqué l'histoire des ouvriers.⁹²⁷ D'autres travaux, qui se sont penchés sur l'histoire de lignes ferroviaires individuelles, comme ceux de Robert E. Carlson sur la ligne entre Liverpool et Manchester, se sont concentrés sur l'histoire du projet plutôt que sur celle de sa construction.⁹²⁸

A partir des années 1960s, avec l'émergence d'un intérêt nouveau pour l'histoire des ouvriers, l'histoire sociale développe des méthodes et des sources qui ont contribué à l'expansion de l'histoire par le bas pour comprendre les expériences des travailleurs, notamment avec l'ouvrage fondamental de E. P. Thompson, *The Making of the English Working-Class*, ou plus récemment l'étude de Malcolm Chase sur le chartisme en Grande-Bretagne.⁹²⁹ L'histoire ouvrière au Canada s'est particulièrement intéressée aux travailleurs qualifiés et à l'émergence de la conscience de classe et des syndicats, notamment avec les travaux de Bryan D. Palmer ou

⁹²⁶ John Darwin, *The Empire Project* ; Buckner, Phillip (dir.), *Canada and the British Empire*, New York: Oxford University Press, 2008.

⁹²⁷ Lewis H. Haney, *A Congressional History of Railways in the United States*, Two volumes in one: *To 1850 and 1850-1887*, New York: Augustus M. Kelley, 1968 (1908 and 1910), 335 p.; François Caron, *Histoire des chemins de fer en France, 1740-1883*, tome 1, Paris: Fayard, 199. Cf. aussi Hamilton Ellis, *British Railway History. An Outline from the Accession of William IV to the Nationalisation of Railways, 1830-1876*, London: George Allen and Unwin Ltd, 1954.

⁹²⁸ Robert E. Carlson, *The Liverpool and Manchester Railway Project 1821-1831*, New York: Augustus M. Kelley, 1969.

⁹²⁹ E. P. Thompson, *The Making of the English Working Class*, New York : Vintage Books, 1966 (1963) ; Malcolm Chase, *Chartism: A New History*, Manchester: Manchester University Press, 2007.

de Craig Heron par exemple.⁹³⁰ Remettant en cause l'accent mis par l'historiographie sur les travailleurs masculins qualifiés, Bettina Bradbury utilise les recensements pour analyser les expériences des familles ouvrières et comprendre « la totalité de la classe ouvrière⁹³¹ ». A la faveur de ce développement de l'histoire sociale, des historiens s'intéressent à l'histoire des cheminots qui assurent le fonctionnement des chemins de fer, tel Walter Licht qui analyse les ouvriers des chemins de fer aux États-Unis. En revanche, les ouvriers de la construction des chemins de fer ont été moins étudiés.⁹³²

Cette disparité s'explique par la rareté des documents d'archives concernant les ouvriers de la construction ferroviaire tandis que les sources sur les cheminots sont plus abondantes. Dans le cas du Grand Tronc, par exemple, les archives de la compagnie contiennent les salaires des cheminots, alors que ceux des ouvriers de la construction sont plus difficiles à trouver⁹³³. Cependant, les contributions majeures de David Brooke ou Ian Kerr proposent de nouvelles perspectives et identifient des sources permettant d'analyser qui étaient les ouvriers de la construction ferroviaire. Ainsi, David Brooke étudie les terrassiers en Grande-Bretagne, appelés *navvies*, grâce à une analyse rigoureuse des recensements. Son livre propose un éclairage approfondi de l'histoire des ouvriers de la construction des chemins de fer, et apporte plus généralement une réflexion déterminante sur les sources dans l'histoire ouvrière⁹³⁴. Le travail de Ian Kerr, consacré aux ouvriers des chemins de fer indiens, se situe à la croisée de de l'histoire ouvrière et de l'histoire de l'Empire britannique. Dans cet ouvrage pionnier, Ian Kerr

⁹³⁰ Bryan D. Palmer, *A Culture in Conflict: Skilled Workers and Industrial Capitalism in Hamilton, Ontario*, Montreal: McGill-Queen's University Press, 1979 ; Craig Heron, *Working in Steel: The Early Years in Canada, 1883-1935*, Toronto : University of Toronto Press, 2008 (1988), Ebook.

⁹³¹ Bettina Bradbury, *Working Families. Age, Gender, and Daily Survival in Industrializing Montreal*, Toronto: McClelland & Stewart Inc., 1993 : 'the totality of the working-class', 15.

⁹³² Walter Licht, *Working for the Railroad. The Organization of Work in the Nineteenth Century*. Princeton, New Jersey : Princeton University Press, 1983.

⁹³³ Cf. par exemple ACHF/Exporail, Centre de documentation, 'Appendix 6 Report', 1857, comprenant les rapports sur la section entre Toronto et Sarnia construite par d'autres entrepreneurs que Peto, Brassey et Betts, les accidents subis par les cheminots, leurs salaires.

⁹³⁴ David Brooke, *The Railway Navy. 'That Despicable Race of Men'*, Newton Abbot, London, North Pomfret (Vt): David & Charles, 1983.

propose une histoire des chemins de fer aux dimensions internationales tout en détaillant les procédés de construction, les conditions de travail mais aussi les formes de résistance des travailleurs⁹³⁵.

La plupart des travaux sur le Grand Tronc et le pont Victoria sont consacrés à l'histoire de la compagnie, comme *The Grand Trunk Railway of Canada* d'Archibald W. Currie qui propose l'une des études les plus complètes sur le Grand Tronc et son histoire économique commerciale entre 1852 et 1934⁹³⁶. Dans « Construction of the Victoria Tubular Bridge » Robert Passfield examine l'histoire et le processus de construction du pont Victoria, et s'intéresse tout particulièrement aux machines et aux innovations techniques, ainsi qu'à contribution essentielle des Canadiens, en particulier des entrepreneurs canadiens⁹³⁷. Les ateliers du Grand Tronc, où les locomotives et le matériel roulant étaient construits et réparés, ont également été étudiés⁹³⁸. L'ouvrage collectif de Stanley Triggs, Brian Young, Conrad Graham et Gilles Lauzon, publié en 1992, étudie de manière plus complète la construction du pont et présente un intérêt marqué pour les conditions de vie et de travail des ouvriers⁹³⁹. Cependant, l'analyse du risque est un aspect qui a été peu étudié, bien que le risque soit fondamental dans l'analyse des conditions de travail sur le chantier. Cette thèse soutient ainsi que le risque est un élément clef pour comprendre l'histoire et la construction du pont.

La recherche sur le risque et les accidents est en plein développement. Cette thèse s'essaie à contribuer aux discussions récentes sur le risque⁹⁴⁰. Comme le soulignent les

⁹³⁵ Ian J. Kerr, *Building the Railways of the Raj, 1850-1900*, Delhi : Oxford University Press, 1995.

⁹³⁶ Archibald W. Currie, *The Grand Trunk Railway of Canada*, Toronto : University Press of Toronto, 1957.

⁹³⁷ Passfield, 'Construction of the Victoria Tubular Bridge'.

⁹³⁸ R. F. H. Hoskins, *A Study of the Point St. Charles Shops of the Grand Trunk Railway in Montreal, 1880-1917*, 1986, mémoire de master, McGill University ; Gilles Lauzon, *Pointe-Saint-Charles. L'urbanisation d'un quartier ouvrier de Montréal, 1840-1930*, Québec : Éditions du Septentrion, 2014, 34-8 ; cf. aussi Peter Bischoff, « La formation des traditions de solidarité ouvrière chez les mouleurs montréalais: la longue marche vers le syndicalisme (1859-1881) », *Labour / Le Travail*, Vol. 21, Printemps, 1988, 9-42.

⁹³⁹ Stanley Triggs, Brian Young, Conrad Graham, Gilles Lauzon, *Le Pont Victoria. Un lien vital. Victoria Bridge, The Vital Link*, Montreal: McCord Museum, 1992.

⁹⁴⁰ Cf. par exemple David Niget, Martin Petitclerc (dir.), *Pour une histoire du risque. Québec, France, Belgique*, Rennes: Presses Universitaires de Rennes, 2012 ; Megan Davies, Geoffrey Hudson (dir.), *Accidental History of Canada*, Montréal : McGill-Queen's University Press, à paraître en 2024.

historiens David Niget et Martin Petitclerc, l'historiographie du risque est encore tenue, bien qu'elle ait bénéficié des apports récents de l'histoire environnementale, de l'expansion de l'histoire des sciences et des technologies dans le contexte de la modernité industrielle, ainsi que des études sur les assurances, les banques et l'État-providence⁹⁴¹. Madga Fahrni et Petitclerc rappellent également que le genre, et notamment la masculinité, constituent une approche intéressante à l'analyse du risque. En parallèle, les définitions du risque, du danger et de l'accident proposées par la sociologie du risque nourrissent la réflexion des historiens du risque. Comme le montre cette thèse, les définitions de ces notions sont essentielles à l'étude du risque et des accidents. L'ouvrage dirigé par Niget et Petitclerc est une contribution majeure à l'histoire du risque qui appelle à une meilleure intégration du risque en histoire. Ils définissent le risque et le danger comme deux notions différentes, le risque étant une notion intrinsèquement liée à l'« accident⁹⁴² ». Ils montrent que « tout danger peut devenir potentiellement un risque, à condition qu'on le « traite » rationnellement comme un accident, dont la possibilité d'occurrence est évaluée par le savoir probabilitaire⁹⁴³. » Un risque représente donc la probabilité, ou la possibilité, d'un accident, et je suis cette définition dans ma thèse.

En ce sens, l'étude du risque et celle des accidents sont liées. Roger Cooter et Bill Luckin, sur les travaux desquels je m'appuie dans cette thèse, ont tenté de comprendre par une approche interdisciplinaire l'expérience de l'accident ainsi que la signification et la définition de l'accident qui ont évolué au cours du XIXe siècle⁹⁴⁴. A travers une étude de la Ligue de sécurité de la Province de Québec, Madga Fahrni analyse également la construction sociale de la catégorie de l'accident⁹⁴⁵. L'historiographie des accidents s'est aussi concentrée sur l'histoire

⁹⁴¹ Madga Fahrni et Martin Petitclerc, « Introduction : L'avenir (probable) du passé : le risque et l'histoire du Québec », *Globe*, Vol. 16, No. 2, 2013, 11-25, 19-21 ; David Niget, Martin Petitclerc, « Introduction », in Niget and Petitclerc (eds.), *Pour une histoire du risque. Québec, France, Belgique*, 10-1.

⁹⁴² Niget et Petitclerc, « Introduction », 13-4

⁹⁴³ Niget et Petitclerc, « Introduction », 13-4

⁹⁴⁴ Roger Cooter, Bill Luckin (eds), *Accidents in History: Injuries, Fatalities, and Social Relations*, Amsterdam and Atlanta: Rodopi, 1997

⁹⁴⁵ Madga Fahrni, « « La lutte contre l'accident ». Risque et accidents dans un contexte de modernité industrielle », in Niget et Petitclerc (dir.), *Pour une histoire du risque*, 171-81.

des accidents et la législation, comme les travaux d'Elisabeth A. Cawthon sur la responsabilité de l'employeur et l'indemnisation des travailleurs en Grande-Bretagne⁹⁴⁶. Les travaux majeurs de Jamie Bronstein sur les accidents du travail analysent la législation mais aussi l'expérience des accidents tout au long du XIXe siècle⁹⁴⁷. Toutefois, l'histoire du risque et des accidents est un vaste champ de recherche qui se nourrit également des apports de l'histoire du corps, de l'histoire du travail et de l'effort, de la fatigue, de la santé et de l'hygiène industrielle⁹⁴⁸.

Un certain nombre de travaux sur les risques et les accidents s'intéressent tout particulièrement à la fin du XIXe siècle et au XXe siècle. Dans son article « Lives and Limbs », l'historienne Leah Leneman propose une réflexion sur les archives des entreprises en tant que sources d'information sur les accidents⁹⁴⁹. Elle montre que, alors que les archives sur les accidents sont rares au XIXe siècle, les nombreuses statistiques sur les accidents qui sont disponibles dès le début du vingtième siècle constituent une mine d'informations⁹⁵⁰. En effet, en Grande-Bretagne, le Factory and Workshop Act (1895) et le Notice of Accident Act (1906) pour les mines de charbon imposent que chaque accident soit reporté : dans les usines et les ateliers, les accidents doivent être consignés dans un registre, et dans les mines de charbon, il est normalement nécessaire d'informer l'inspecteur des mines du district de tout accident⁹⁵¹. Leneman choisit donc de travailler sur une mine et sur une fabrique, et analyse le registre des accidents de la Wemyss Coal Company à Fife, en Écosse, de 1921 à 1924, et le registre des accidents de la fabrique de jute Bow Bridge à Dundee, en Écosse, de 1895 à 1935. A partir de ces sources, elle établit des statistiques sur les types de blessures, les parties du corps touchées,

⁹⁴⁶ Cf. par exemple Elisabeth A. Cawthon, *Job Accidents and the Law in England's Early Railway Age. Origins of Employer Liability and Workmen's Compensation*, Lewiston, Queenston, Lampeter : The Edwin Mellen Press, 1997.

⁹⁴⁷ Jamie L. Bronstein, *Caught in the Machinery. Workplace Accidents and Injured Workers in Nineteenth-Century Britain*, Stanford : Stanford University Press, 2008.

⁹⁴⁸ See for instance Alain Corbin (dir.), *Histoire du corps, vol. 2 : De la Révolution à la Grande Guerre*, Paris : Seuil, 2005.

⁹⁴⁹ Leah Leneman, « Lives and Limbs: Company Records as a Source for the History of Industrial Injuries », *The Society for the Social History of Medicine*, 1993, 405-27.

⁹⁵⁰ Leah Leneman, « Lives and Limbs », 405.

⁹⁵¹ Leneman, « Lives and Limbs », 405-6.

les principales causes de blessures, les causes de décès. Elle estime également la gravité des blessures en fonction de la durée consignée de l'absence des ouvriers dans les mines de Wemyss et en fonction de la catégorisation subjective des blessures à la fabrique de Bow Bridge.

II- Sources et méthodologie

Toutefois, comme le souligne Leneman, il n'existe pas de sources ni de statistiques similaires pour le XIXe siècle. Les principales sources utilisées pour l'analyse de la construction du pont Victoria sont les archives de la compagnie, les témoignages des ingénieurs, les archives hospitalières, les journaux, le *Report from the Select Committee on Railway Labourers in Britain* (1846) et des photographies. Les archives de la Compagnie du Grand Tronc, conservées pour la plupart à Bibliothèque et Archives Canada (BAC, Ottawa, Canada) et à Institution of Civil Engineers (ICE, Londres, Grande-Bretagne), comprennent les procès-verbaux des assemblées des actionnaires de la compagnie, lesquels contiennent les rapports des ingénieurs chargés de la construction du pont. Ces rapports décrivent le déroulé et la progression des travaux, les événements qui les perturbent et les retardent, et indiquent occasionnellement le nombre d'ouvriers, de bateaux et de chevaux. Il n'y a pas de relevé systématique du nombre d'ouvriers pour chaque saison travaillée de la construction, ni de liste de noms d'ouvriers, ni de grilles de salaires, bien que l'on puisse trouver les salaires des cheminots pour les périodes ultérieures.

Le livre écrit par James Hodges, l'agent des entrepreneurs et ingénieur en charge de la construction du pont à Montréal, *The Construction of the Great Victoria Bridge in Canada* (1860) est une source majeure sur la construction du pont. Hodges y décrit les différentes étapes de la construction, mais aussi les événements qui ont perturbé les travaux, des intempéries aux grèves des ouvriers. Son livre comprend un nombre considérable de dessins et d'illustrations qui sont disponibles à BAC. Charles Legge, un ingénieur adjoint canadien, livre également un

compte-rendu détaillé de la construction du pont dans *A Glance at the Victoria Bridge, and the Men Who Built It* (1860). Il y décrit en particulier les techniques de construction. Hodges et Legge, en revanche, décrivent très peu les ouvriers. Les biographies des entrepreneurs donnent un aperçu relatif des relations entre employeurs et ouvriers, et leurs descriptions élogieuses de Brassey et Peto doivent être considérées avec mesure.

Le Report from the Select Committee on Railway Labourers in Britain (1846) est une source inestimable sur la construction ferroviaire en Grande-Bretagne, notamment sur les dangers et les accidents courants, ainsi que sur conditions de travail des ouvriers et les relations entre employeurs et travailleurs. Trente-et-un témoins ont été interrogés par le *Select Committee*, la plupart étant des ingénieurs, des entrepreneurs, un médecin, des ecclésiastiques, des missionnaires et seulement trois terrassiers⁹⁵². Il s'agit de la seule commission nommée par le Parlement britannique pour enquêter sur la vie et le travail des ouvriers de la construction ferroviaire. Toutefois, ses recommandations n'ont même pas été débattues au Parlement⁹⁵³. Les journaux britanniques et canadiens constituent une autre source d'information sur les accidents survenus lors de la construction du pont Victoria et sur les accidents de manière générale.

William Notman, un photographe qui travaille à Montréal depuis 1856, est chargé par James Hodges de prendre des photos des travaux de 1858 à la fin de la construction. D'après l'architecte paysagiste Heather Braiden, la photographie devient au milieu du XIXe siècle un medium de communication privilégié parmi les ingénieurs, leur permettant d'échanger malgré de longues distances car il est courant que les ingénieurs ne soient pas forcément sur le lieu de la construction⁹⁵⁴. Stephenson, par exemple, est en Grande-Bretagne au moment de la construction, et pour Braiden les photographies de Notman sont « un outil de communication »

⁹⁵² Brooke, *The Railway Navy*, 7, 156.

⁹⁵³ Brooke, *The Railway Navy*, 7.

⁹⁵⁴ Heather Braiden, « « Far from Uninteresting »: Getting to Know the St. Lawrence River at Montreal During the Construction of the Victoria Bridge », *Urban History Review* 49, no. 2, Printemps 2022, 199-200.

entre les ingénieurs en Grande-Bretagne et ceux qui suivent les travaux à Montréal⁹⁵⁵. Ces photographies constituent une source iconographique exceptionnelle sur un chantier de construction. La plupart de ces photographies sont conservées à BAC et au Musée McCord à Montréal et représentent parfois les ouvriers eux-mêmes.

Les ouvriers malades et blessés du Grand Tronc et du pont Victoria sont soignés à l'hôpital Saint-Patrick, et l'étude des archives de cet hôpital est un aspect important de mon travail. En effet, l'existence de l'hôpital Saint-Patrick a été brève (1852-1860) et ses archives ont été négligées. Elles constituent pourtant une source précieuse sur les classes laborieuses de Montréal car il s'agit initialement d'un hôpital pour les Irlandais pauvres. En effet, l'hôpital St Patrick est fondé en 1852 car la communauté catholique de Montréal constate que les Irlandais ne se font pas soigner à l'Hôtel-Dieu, hôpital catholique, car le personnel y est francophone, et préfèrent se rendre au General Hospital qui est protestant mais où le personnel est anglophone⁹⁵⁶. Les archives, conservées par les Religieuses Hospitalières de Saint-Joseph (Montréal), comprennent principalement la correspondance entre les sœurs de l'hôpital, l'évêque et, comme étudié dans cette thèse, James Hodges. On y trouve également les registres d'admission des patients masculins et féminins. Une autre partie de ces archives est conservée à l'Archevêché de Montréal, où la correspondance des religieuses fournit des informations sur l'histoire de l'hôpital, les relations entre les religieuses, les patients et les médecins, les problématiques du coût des soins ainsi que les finances de l'établissement. Pour ce mémoire, j'ai utilisé une partie de cette correspondance et le registre d'admission des patients masculins.

Comme nous pouvons le constater, les sources des employeurs constituent la principale source pour ce travail et, comme l'observe Leneman, les archives des entreprises

⁹⁵⁵ Heather Braiden, « « Far from Uninteresting », 199-200.

⁹⁵⁶ Lahaise, 'L'Hôtel-Dieu du Vieux-Montréal (1642-1861)', in *L'Hôtel-Dieu de Montréal 1642-1973*, edited by Michel Allard, 11-56. Montreal: Les Cahiers du Québec, Editions Hurtubise HMH, 1973, 51 et ARHSJM, Fonds Hôpital St Patrick, « Extrait des Annales de l'Hôtel-Dieu de Montréal ». Les patients catholiques auraient été maltraités par le personnel protestant qui les aurait vivement encouragés à abandonner la foi catholique.

présentent un biais inhérent sur les accidents⁹⁵⁷. Dans le cas du pont Victoria, les sources décrivent très peu les blessures et les accidents. Cette thèse contribue ainsi modestement à la réflexion sur les sources concernant les accidents, en particulier les sources des entreprises, en l'absence de statistiques et de compilations systématiques des cas de blessures et d'accidents.

Plus largement, ce travail s'appuie sur l'histoire des travailleurs immigrés, des patients psychiatriques et des femmes criminalisées, qui montre qu'en procédant à une relecture minutieuse et rigoureuse des sources – en les « décodant » pour reprendre l'expression de Roy Porter – il est possible de recueillir des informations sur les personnes laissées à la marge de la société⁹⁵⁸. En effet, dans son article majeur « The Patient's View. Doing Medical History from Below », Porter montre que l'histoire de la médecine est centrée sur les médecins. Il défend une « histoire des malades », que le manque de sources, décrit comme l'absence d'un « atlas historique de l'expérience de la maladie et de la réponse à la maladie », rend difficile⁹⁵⁹. Il propose d'utiliser les journaux intimes, les lettres, les arts visuels des malades alphabètes, mais aussi de lire les témoignages des médecins qui, selon lui, devraient être « décodés pour révéler ce que les malades redoutaient ou exigeaient⁹⁶⁰ ». De même, dans son étude de la prostitution à Montréal au début du XIXe siècle, Mary Anne Poutanen propose d'« aborder les documents de la justice pénale en les lisant à contre-courant pour localiser les voix des femmes et leurs expériences⁹⁶¹ ». Mon mémoire soutient ainsi que le silence des sources peut être décodé pour explorer les notions de risque, d'accident et de précaution sur un chantier du XIXe siècle.

⁹⁵⁷ Leneman, « Lives and Limbs », 426.

⁹⁵⁸ Roy Porter, « The Patient's View. Doing Medical History from Below », *Theory and Society*, 14, 1985, 175-198.

⁹⁵⁹ Porter, « The Patient's View. Doing Medical History from Below », 183 : a « sufferers' history », « a historical atlas of sickness experience and response ». Ma traduction.

⁹⁶⁰ Porter, « The Patient's View. Doing Medical History from Below », 183 : « decoded to reveal what the sufferers dreaded or demanded. » Ma traduction.

⁹⁶¹ Mary Anne Poutanen, *Beyond Brutal Passions. Prostitution in Early Nineteenth-Century Montreal*, Montreal & Kingston, London, Ithaca : McGill-Queen's University Press, 2015, 23.

III- Problématique et plan

Ma thèse examine le chantier du pont Victoria, depuis les travaux préparatoires (1853) jusqu'au passage du premier train sur le pont le 17 décembre 1859. L'histoire de ce chantier est une histoire à plusieurs échelles. En effet, ce travail contribue à la discussion sur le rôle du Canada dans l'histoire impériale. Le chantier offre ainsi un prisme de compréhension des relations entre la Grande-Bretagne et le Canada britannique, en partie parce que le pont et le tronçon du Grand Tronc entre Montréal et Toronto ont été construits par des entrepreneurs britanniques, mais aussi parce que le pont est d'une importance cruciale pour le développement des ambitions géopolitiques et économiques de la Grande-Bretagne et du Canada. L'histoire du pont est également l'histoire de la construction d'un ouvrage d'art majeur, qui nous invite à analyser comment le pont a été construit, mais aussi comment il a été perçu par les acteurs contemporains du XIXe siècle. En ce sens, cette étude contribue à l'histoire de la circulation des hommes et des savoirs dans un contexte d'essor de l'industrialisme et de développement mondial du génie civil britannique.

Dans le but de mieux comprendre l'histoire des travailleurs de la construction, la thèse se concentre sur l'histoire des hommes qui ont construit ce pont, et tente de comprendre leur travail sur le chantier, c'est-à-dire comment et quand ils travaillaient, et qui ils étaient. Les métiers des ouvriers sont analysés ainsi que les tâches qu'ils exécutent, de même que les relations de travail sur le chantier. La thèse soutient ainsi l'idée que le pont Victoria constitue une étude de cas qui permet d'analyser le paternalisme et le développement du capitalisme industriel et du travail salarié dans le Canada du XIXe siècle.

Comme nous l'avons suggéré plus haut, les sources sur les ouvriers du pont Victoria sont parcimonieuses et cette thèse défend l'idée que l'analyse du risque représente une nouvelle perspective pour comprendre un chantier, ses ouvriers et les relations entre ouvriers et employeurs. Bien que le risque ait été négligé dans la littérature, son analyse nous permet

d'explorer autrement l'expérience ouvrière et le paternalisme, et permet de saisir à travers un autre prisme de compréhension l'histoire de chantiers complexes et d'envergure. A travers l'analyse de la définition du risque sur le chantier du pont Victoria et la signification du terme « accident » pour les employeurs et les milliers d'hommes qui ont travaillé à la construction du pont, je soutiens que le risque et la gestion du risque font partie intégrante de la vie professionnelle des ouvriers et des employeurs, ainsi que de leur identité masculine. En effet, il est possible que le pont Victoria marque le début du moment de transition dans l'histoire du risque que Roger Cooter situe dans les années 1870 et 1880⁹⁶².

Ce travail est divisé en cinq chapitres. Le premier chapitre analyse l'importance politique et économique du chemin de fer du Grand Tronc et du pont Victoria. Il examine le Grand Tronc en lien avec d'autres réseaux de communication et analyse les acteurs politiques et économiques à l'origine de ce projet. Ce chapitre soutient que le Grand Tronc et le pont sont une illustration des rapports entre la Grande-Bretagne, le Canada et les États-Unis. Le deuxième chapitre analyse les acteurs de la construction du pont. Le pont est d'abord mis en perspective avec d'autres grands chantiers de l'époque afin d'en saisir ses particularités, mais aussi les liens de continuité qu'il présente avec les ouvrages d'art du XIXe siècle.

Le chapitre 2 étudie également les entrepreneurs, mais aussi les ouvriers impliqués dans la construction et tente de déterminer qui ils étaient. Dans ce chapitre, nous étudions les relations entre patrons et ouvriers et nous défendons l'idée que sur ce chantier, ces relations sont caractéristiques de la transition entre les relations de travail préindustrielles et industrielles.

Le troisième chapitre détaille la construction du pont et l'analyse sous l'angle des risques et des accidents. Il contribue aux efforts déployés dans la littérature pour définir les accidents et remet en question le silence des sources pour comprendre les risques sur le chantier.

⁹⁶² Cooter, 'The Moment of the Accident: Culture, Militarism and Modernity in Late-Victorian Britain', in Cooter, Luckin (eds), *Accidents in History: Injuries, Fatalities, and Social Relations*, 108.

Le quatrième chapitre soutient que l'analyse des risques peut être utilisée pour contourner la rareté des sources sur les travailleurs de la construction et constitue une autre perspective pour mieux analyser l'identité des travailleurs.

Enfin, le cinquième chapitre examine les précautions prises sur le chantier. Il explore les notions de précaution et de responsabilité, mais aussi les rôles des employeurs et des travailleurs dans la prévention des accidents, et soutient que l'accord avec l'hôpital Saint-Patrick est une précaution innovante.

IV- Résumé du chapitre 1

Dans les années 1850, le réseau ferroviaire de l'Amérique du Nord britannique est presque inexistant. Le Champlain and St. Lawrence Railroad, le premier chemin de fer au Canada, construit en 1832, mesure 22,5 kilomètres⁹⁶³. En 1850, cinq lignes sont en construction au Canada⁹⁶⁴. À titre de comparaison, le réseau ferroviaire des États-Unis est déjà long de 6 400 kilomètres en 1840 et approche les 14 500 kilomètres en 1850⁹⁶⁵. Le réseau étatsunien est particulièrement développé dans l'est du pays où il dessert les villes côtières, et la plupart de ces premières lignes sont financées par des investisseurs privés⁹⁶⁶.

Le premier boom ferroviaire du Canada, en 1853, ne signifie cependant pas que la colonie n'a pas d'expérience en matière de travaux de construction d'envergure. Au contraire, le Canada a de l'expérience en matière de construction des canaux, dont le principal désavantage est cependant d'être gelés une partie de l'année. Ce chapitre examine le projet du Grand Tronc en relation avec le système des canaux qui est, lui, bien développé et montre que les instigateurs britanniques du projet du Grand Tronc espèrent pouvoir absorber le trafic des

⁹⁶³ Cf. Peter Waite, « Un défi continental », in Craig Brown (dir.), édition française par Paul-André Linteau, *Histoire générale du Canada*, Montréal : Éditions du Boréal, 1994 (1987), 340.

⁹⁶⁴ S. J. Mclean, « An Early Chapter in Canadian Railroad Policy », *Journal of Political Economy*, Vol. 6, No. 3 (Jun., 1898), 323-352, 351.

⁹⁶⁵ John F. Stover, *American Railroads*, Chicago : The University of Chicago Press, 1962 (1961), 26

⁹⁶⁶ Stover, *American Railroads*, 19, 31.

canaux. Pourtant, les canaux et les chemins de fer continuent à se compléter au XIXe siècle, notamment aux États-Unis⁹⁶⁷.

Ce chapitre montre que le Grand Tronc se veut une réponse au développement ferroviaire étatsunien qui est vu comme une menace commerciale et militaire, notamment par les milieux d'affaires de Montréal. Ce chapitre aborde les relations commerciales entre le Canada, la Grande-Bretagne et les États-Unis pour comprendre l'intérêt d'une ligne qui relie l'intérieur du Canada aux ports de l'Atlantique. Il étudie le rôle stratégique, en particulier financier, joué par les milieux d'affaires de la Grande-Bretagne mais aussi de Montréal dans l'élaboration du projet du Grand-Tronc, et examine également le rôle du projet du Grand Tronc dans la colonisation des espaces du Canada encore peu peuplés par la population blanche. Dans ce sens, l'histoire du Grand Tronc et du pont Victoria s'inscrit également dans celle des migrations. Le pont Victoria joue donc un rôle crucial dans ces ambitions politiques, commerciales et coloniales, puisque sans lui, le Grand Tronc ne peut franchir le St Laurent.

V- Résumé du chapitre 2

Le chapitre 2 plaide pour une revalorisation de la micro-histoire et défend l'idée que l'étude du pont Victoria permet l'analyse des rapports entre ouvriers et employeurs dans un contexte d'émergence du capitalisme industriel. Ce chapitre soutient ainsi que le chantier représente une transition entre les rapports pré-industriels entre ouvriers et employeurs, et les rapports instaurés par le travail capitaliste.

Ce chapitre tente de démontrer l'importance du pont du point de vue de l'histoire de la construction, du génie civil et des ouvrages d'art, et du point de vue de l'histoire des relations entre ouvriers et patronat. Il examine le rôle des entrepreneurs et des ingénieurs britanniques en mettant en exergue leur mobilité, et en étudiant les ponts tubulaires qu'ils ont construits juste

⁹⁶⁷ Stover, *American Railroads*, 34.

avant le pont Victoria. En effet, l'étude de la mobilité des employeurs permet d'aborder celle des ouvriers, car les sources suggèrent qu'une partie d'entre eux suivent Peto et Brassey sur leurs différents projets.⁹⁶⁸

En effet, une partie des ouvriers sont recrutés en Grande-Bretagne, mais il est difficile de déterminer leur nombre exact. En s'appuyant sur des témoignages d'ouvriers du XIXe siècle et de travaux d'historiens comme ceux de Raphael Samuel, ce chapitre explore également les métiers des ouvriers du pont Victoria. Ce chapitre suggère que les ouvriers sont plus facilement identifiables en tant que groupes d'individus, alors qu'il est très difficile d'identifier des trajectoires individuelles. Toutefois, ce chapitre tente d'identifier des sources et des pistes pour tenter d'isoler quelques histoires personnelles à partir de noms d'ouvriers issus de l'analyse de journaux et les rôles d'évaluation fiscale. Ce chapitre étudie également les origines des ouvriers, identifiés comme Britanniques, Anglais, Irlandais, Canadiens Français et Autochtones, ainsi que le regard porté par les Britanniques sur les travailleurs selon leur nationalité. Ce chapitre défend l'idée que les stéréotypes associés aux différents types d'ouvriers sont peut-être aussi une source d'information sur leur rapport au travail capitaliste. En effet, ce chapitre étudie également les grèves en les rattachant au contexte ouvrier du Canada de l'année 1854, et avance également l'idée que les résistances ouvrières au développement du capitalisme ne s'expriment pas nécessairement à travers des grèves.

VI- Résumé du chapitre 3

Ce chapitre explore les risques et accidents sur le chantier. Il aborde tout d'abord le déroulé de la construction du pont afin de mieux comprendre les risques inhérents à chaque étape de la construction. Ce chapitre examine également la définition de l'accident, et soutient avec Cooter que la définition de l'accident n'est pas encore stabilisée au XIXe siècle, ce que

⁹⁶⁸ Brassey, *Work and Wages Practically Illustrated*, 274-5 and Peto, *Sir Morton Peto*, 37.

démontrent les sources des employeurs du pont Victoria⁹⁶⁹. Ces sources, et en particulier le livre de Hodges, montre que les accidents typiquement associés aux travaux de construction et identifiés à l'aide d'études comparatives de chantiers de la même époque, ne sont pas mentionnés. Nous savons qu'il y en a eu, puisque certains sont documentés par les journaux. En revanche, Hodges décrit à plusieurs reprises les blessures liées au froid qu'il découvre lors du premier hiver de la construction. Il y a donc un décalage entre ces risques nouveaux, liés à l'environnement canadien du chantier, et les risques industriels qu'il ne décrit pas, ce qui suggère que les risques industriels comme la chute sont normalisés. Ce chapitre analyse donc les risques identifiés et décrits par les employeurs, ainsi que ceux que l'on devine dans les sources. Il interroge également le concept de taux de mortalité utilisé pour évaluer la dangerosité d'un chantier et que les employeurs utilisent pour illustrer l'efficacité de leurs mesures sur les chantiers.

VII- Résumé du chapitre 4

Le chapitre 4 défend l'idée que l'analyse du risque permet de mieux comprendre l'identité des ouvriers dans un contexte de sources lacunaires et s'appuie sur l'histoire du corps pour comprendre le risque au travail et l'impact du labeur sur le corps des ouvriers. Dans un premier temps, le chapitre montre que la distribution du risque est sociale et que le risque participe de la construction d'une identité ouvrière. Les élites sociales isolent le corps de l'ouvrier du reste de la société en l'animalisant ou en exagérant ses capacités qui lui permettraient d'endurer des conditions de travail très difficiles. De plus, le corps marqué par le travail identifie l'ouvrier, mais aussi son expérience.

Ce chapitre essaie également d'évaluer le rapport au risque des ouvriers du pont. Il montre que le rapport au risque permet d'identifier une culture masculine qui est encouragée à

⁹⁶⁹ Cooter, « The Moment of the Accident », 111.

la fois par les employeurs, qui en sont clairement les bénéficiaires, et par les ouvriers. En examinant les sources des employeurs, on voit que les ouvriers sont soumis à une cadence de travail intense, mais aussi qu'ils réchappent souvent à des accidents sur le point de se produire. Ce chapitre défend l'idée que l'analyse du risque permet de suggérer que les ouvriers du pont sont des ouvriers expérimentés, et ont probablement joué un rôle actif dans le taux de mortalité relativement faible sur le chantier.

VIII- Résumé du chapitre 5

Le chapitre 5 examine la notion de précaution sur le chantier. En effet, les employeurs comme Hodges et Legge insistent sur l'efficacité de leurs mesures de prévention des accidents, qui expliqueraient selon eux le faible taux d'accidents, sans que ces mesures soient clairement décrites. Par ailleurs, on observe un décalage entre l'absence de description des risques dans ces sources, et l'allusion à des précautions censées protéger de risques non identifiés.

Ce chapitre s'intéresse d'abord aux blessures causées par le froid que décrit Hodges. En effet, puisque Hodges et les ouvriers britanniques découvrent les conséquences du travail dans le froid, ces risques de blessures nous permettent d'étudier l'apprentissage d'un risque nouveau, d'observer la mise en place de « précautions » et d'évaluer leur efficacité. Ce chapitre croise ainsi les témoignages des employeurs, les mesures météorologiques et les archives hospitalières pour évaluer le risque de blessures dues au froid, et les précautions mises en place.

En s'appuyant sur la littérature et sur l'analyse des sources des employeurs, ce chapitre remet également en question l'idée que les précautions mises en place par les employeurs ont pour conséquence un taux plus faible d'accidents et d'accidents mortels⁹⁷⁰. En effet, la plupart

⁹⁷⁰ Marlene Ellerkamp et Brigitte Jungmann, « Le travail et la santé: la vie des ouvrières d'une usine textile de Brême entre 1888 et 1914 », trad. Française de Christian Challot, *Le Mouvement social*, No. 124, L'usure au Travail, juillet-septembre 1983, 113-130, en particulier 116, 119, 122-3, et Alain Cottereau, « L'usure au travail : interrogations et refoulements », *Le Mouvement social*, juillet-septembre. 1983, N° 124, 8.

des accidents mortels sur le pont seraient dus à des noyades. Hodges et l'historien Stanley Triggs défendent l'idée que les ouvriers sont de bons nageurs et que les bateaux et les bouées prévus pour le secours d'ouvriers tombés à l'eau permettent de limiter le nombre d'accidents mortels. Or, l'histoire de la natation suggère que les bons nageurs dans la société occidentale au XIXe siècle sont très rares⁹⁷¹. De plus, un examen attentif du livre de Hodges et des journaux suggère que les bateaux ne sont pas toujours des solutions efficaces, en particulier en hiver. Ce chapitre soutient que les noyades sont plutôt dues à des chutes, et que même si les bateaux parviennent à secourir des ouvriers tombés à l'eau, l'étude de photographies et d'articles de journaux laissent penser qu'aucune précaution n'est prise pour prévenir les chutes. En revanche, l'étude des archives de l'hôpital St Patrick montre que les entrepreneurs ont établi très tôt dans l'histoire de la construction un accord avec l'hôpital, et versent des sommes importantes dans le cadre de l'accord avec cet hôpital. En ce sens, ce chapitre soutient que l'accord avec l'hôpital St Patrick constitue une forme de précaution innovante. Enfin, ce chapitre explore la notion de responsabilité à travers l'étude de deux accidents.

⁹⁷¹ Carr, Karen Eva, *Shifting Currents. A World History of Swimming*, London : Reaktion Books, 2022, Ebook.

Appendices

Appendix 1 – Detailed steps of the construction with disrupting events described in employers’ sources. From Hodges, *Construction of the Great Victoria Bridge*, and Ross’s reports to the directors of the Company (LAC, RG30-1026, 1854, 1855, 1856, 1858).

Appendix 2: Jane Greenlaw, tax assessment rolls for the Ste Anne’s ward of Montreal, compared with Lovell’s Montreal Directory (1860-1861).

Appendix 3: Names of workers from newspapers, compared with Greenlaw’s list (tax assessment rolls for the Ste Anne’s ward of Montreal), the list of Britannia Bridge workers provided by Julie Stone, and Hodges’s book and list of staff.

Appendix 4: Wages on the Grand Trunk Railway and in the UK.

Appendix 1 – Detailed steps of the construction with disrupting events described in employers’ sources. From Hodges, *Construction of the Great Victoria Bridge*, and Ross’s reports to the directors of the Company (1854, 1855, 1856, 1858, LAC, RG30-1026)

Preparatory Works and Working Season No.1				
Dates	General steps	Works - chronology	Events that disrupted the works	
Winter 1853-1854	Preparatory works (Hodges)	find suitable stones	Winter 1853-1854: no experience of the climate: injuries (Hodges 17)	
		building of 25 barges,		
		building a tramway		
		building wharves		
		building floating dams		
		making a level road over the packed ice		
		marking out sites of the piers		
		anchorage ensued: crib-work moorings framed upon the ice		
Spring-Summer 1854	First working season (until autumn 1854): 1) North abutment dam, dams no. 1 & no.2: in their places 2) No. 1 dam: pumped out & tight with clay puddle 3) Masonry proceeded with: dam no.2, abutment dam being supplied with clay puddle 4) dams 3 & 4: constructed 5) engines for pumping water & setting out stone: ready to be fixed on the 6 dams (Ross, 1854, RG30-1026)	24 May: beginning of construction (Hodges 19)	Since Oct. Or Nov: quarries in operation and provided large quantities of stone (Ross, July 1854, RG30-1026)	scorching heat! Consequences: 'coup-de-soleil' (Hodges 17-18)
		scuttling of the caissons		
		sheet piling		
		pumping (24 August)		
		construction of tramway		
		near completion of Pier 2		
		South abutment in progress		
		dams of Piers 3, 5, 6 got in		
		Embanked approach to N. abutment being heightened & widened		
Winter 1854-1855			Nov 1854: severe frosts (Hodges 27)	
	Close of the season: very little progress (Hodges 28)		1st week of Dec. 1854: so cold that work on river abandoned (Hodges, 27)	
			Winter 1854: temporary works for the dams destroyed by packed ice (Hodges 28), probably around 23 Dec	

Working Season no.2 and Winter 1855-1856			
Dates	General steps	Works - chronology	Events that disrupted the works
Spring-Summer 1855		28th April: start 2nd working season (Hodges, 30)	Strike (Hodges, 31)
	2nd working season: financial problems caused delays (Hodges 34-35, Ross report 1855 RG30-1026): interruption of the works during 'the best portion of the season' (Hodges 34), i.e probably spring & summer.		Financial problems
		near completion of Pier 2 (Ross, Sept 1855)	
		South abutment in progress (Ross, Sept 1855)	
		dams of Piers 3, 5, 6 got in (Ross, Sept 1855)	
Embanked approach to N. abutment being hightened & widened (Ross, Sept 1855)			
Winter 1855-1856			Snow storms: 'more formidable than any before remembered in Canada' (winter 1855-56) - Hodges 35
		framing and sinking from the ice of mooring cribs for piers 7, 8, 9, and 10, Hodges 35	
	10 Jan 1856: ice bridge formed (Hodges 35): work on river ice now possible		

Working Season No. 3: Spring-Summer 1856			
Dates	General steps	Works - chronology	Events that disrupted the works
	10 Jan 1856: ice bridge formed (Hodges 35): work on river ice now possible		
Spring-Summer 1856	similar operations to 1855	south abutment carried up to tube level (Hodges 38)	
		tramway that carried material for S. abutment now extended to Nos. 24 & 23 piers (Hodges 38)	
		North abutment carried to 32 feet (9.8 metres) above summer water level	
		19 May-21 July: No. 6 dam, very difficult to make it staunch	2 dams: important leakages, difficult to solve
		No. 3 dam pumped out (Hodges 35). Important leakage discovered, pb difficult to solve	
		1 June - 31 Oct: pier no.7	
		Masonry of dam no.3. commenced - completed 31 Oct	

Working Season No. 3: Autumn-Winter 1856			
Dates	General steps	Works - chronology	Events that disrupted the works
Autumn-winter 1856	similar operations to 1855	September 1856: '8,000 cubic yards = 216,000 cubic feet, of masonry was set, being at the rate of 13 cubic feet per working minute during the whole of that period (Hodges, 38). 216,000 cubic feet = 6,116 cubic metres; 13 cubic feet = 0.4 cubic metres	
		No.23 pier: 1 Oct - 15 Nov. Emphasis: 'under seven weeks' so construction time very short (Hodges 37)	
		No. 5 pier completed (Hodges 37)	
	Ongoing in November	Preparations for following year (Ross, 6 Nov. 1856): to procure & dress stone in large amounts for advancement of piers;	
		Preparations for following year (Ross, 6 Nov. 1856): workshops being constructed at Pointe St Charles to erect the iron tubing	
		Preparations for following year (Ross, 6 Nov. 1856): landing wharf nearly completed (east side of bridge) to connect the RR with St Lawrence & avoid transhipment	
	Good season. At the close of the season: 9 piers completed (Ross, 1856)		

Winter 1856-7 & Working Season No. 4: Spring-Summer 1857			
Dates	General steps	Works - chronology	Events that disrupted the works
Winter 1856-1857			'The last winter was one of unusual severity, and consequently brought with it in a greatly increased proportion, all the attendant difficulties of working a railroad in these latitudes' (Bidder, 1857, RG30-1026)
Spring 1857		1857: Important delay due to financial reasons until the end of June (Hodges 40): 'The most valuable part of the year was therefore lost'. Consequence: tasks that should have been performed in 'the proper season'" were performed in November, 'amidst cold and snow'	
Summer 1857	1857: year when tubes were commenced; building of piers	1) No. 1 tube placed together: staging constructed with scows which 'were moored in position, scuttled, and kept in place by piles'; the piles were bolted to the sides of the scows, the tops received 'the sills upon which the framing carrying the truss and platform was erected' Hodges 42 2) Staging for No.25 tube in the summer. No ironwork. Tube commenced when the ice bridge was formed. See below	
		dams 19, 20, 21 22 constructed	

Working Season No. 4: Summer-Autumn 1857, Winter 1857-8			
Dates	General steps	Works - chronology	Events that disrupted the works
Summer-Autumn 1857	1857: year when tubes were commenced; building of piers	Piers 18, 19, 20 completed	Pier 20: excavation of foundation= lots of trouble: continual breaking in of the ground under the piles (Hodges 40)
		7 July-11 Sept: dam 9 commenced (Hodges 41)and ompete for pumping on 11 Sept.	Dam 9: Heavy leakage from 11 Sept. to 2 Nov.) reduced by 2 Nov. See 3 Dec. (Hodges 41)
		Middle July: dam 8 commenced (Hodges 41), see Oct 1857	
		Oct.: pumping dam 7	Dam 7: strong leakage that could very hardly be stopped (Hodges 41)
Winter 1857-1858		Work in winter: 'during the winter', work was completed (i.e dams/piers) without masonry but with asphalted felt, Hodges 41.	Dam 9, 3 Dec.: masonry of dam 9 abandoned because of the cold: 'the weather became too severe and it had to be abandoned' (Hodges 41).
		Dams 12 & 13= sinking cribs (Hodges 46)	

Working Season No. 4: Winter 1857-8			
Dates	General steps	Works - chronology	Events that disrupted the works
Winter 1857-1858	1° Cribs in position 2° Erection of the tube 3° Building of centre piers	Cribs (nos. 14, 15, 16 dams) completed by 10 March (Hodges 47): 'All surface ice was removed; and, by means of hooks and tools made for the purpose, the anchor ice was also cleared away. Cribs of the exact size of the dam head were then framed in the water, and kept in position by chains from moorings fixed in the ice above, and by piles driven into the bed of the river behind the cribs. (...) The framing and sinking of these cribs proved to be an easier work than was expected; and so sanguine of success were all engaged in the work, that it was regretted Nos. 12 and 13 heads had not been done that way.'	
		11 tubes erected in 1858. First tube: No.25. Good substantial scaffoldings made the erection of tubes simple (Hodges, 54)	
		Centre piers 12 & 13 needed to be (and were) completed to receive the centre tube if erected during winter. To receive the centre tube, 2 temporary piers were commenced (constructed in cribwork, they were meant to support the truss when high enough), Hodges 54	
	'The great exertions which were made throughout this year much increased the probability of the Company being able to open the bridge by the end of 1859.' Hodges 53		

Working Season No. 5: Spring-Summer 1858				
Dates	General steps	Works - chronology	Events that disrupted the works	
Spring-Summer 1858	<p>1858: goals: 1) No. 11 pier left out as provision for the navigation; 2) Nos. 12 & 13 piers were to be completed; 3) provision was to be made to for putting up the centre tube during following winter (Hodges, 45).</p> <p>'To accomplish the completion of these piers in one season required extraordinary exertion'</p>	<p>April 1858: start of the season (Ross, 1858)</p>	<p>Ross, 1858: ice broke on 1 Apr: 'in a very few minutes [it] annihilated our hopes'. Consequence: it 'required, in some cases, five and six weeks constant labor to clear away, destroy and remove, before any progress in renewal could be attempted; hence the lateness in the season in the completion of any of our piers thus interfered with, as also the partial completion only of Nos. 14 and 15'</p>	
		<p>Dams 14, 15, 16: nothing could be done until the old cribs were removed. To do this: 'tumwaters of planks and timber were formed in front of the old cribs, to prevent the rush of water from passing over the work'. Then men were 'placed as closely as possible': they worked in the water with tings and hooks to clear away to loose stone 'to a considerable depth'. Then divers were employed. Next step: 29 May.</p>		
		<p>7 May: no. 17 floating dam pumped out & in position, Hodges 50. See 16 May and 14 July.</p>		
		<p>16 May: No. 17 floating dam scuttled. Then divers removed boulders and stones; and then again they inspected the puddle trench, Hodges 50. See 14 July</p>		
		<p>29 May: sides of dam 16 commenced. Next steps 4 Sept & 13 Sept & 23 Nov. Hodges 51</p>		
		<p>16 June: No. 10 dam commenced (consequence of arrangement to finish brdige by end1859), Hodges 53. Finished 24 Sept.</p>		

Working Season No. 5: Spring-Summer 1858			
Dates	General steps	Works - chronology	Events that disrupted the works
Spring-Summer 1858	1858: goals: 1) No. 11 pier left out as provision for the navigation; 2) Nos. 12 & 13 piers were to be completed; 3) provision was to be made to for putting up the centre tube during following winter (Hodges, 45). 'To accomplish the completion of these piers in one season required extraordinary exertion'	20-ton boulder finally removed on 7 July from puddle-chamber of No. 13 dam (even blasting failed, it took 6 days), Hodges 48	20-ton boulder that took 6 days to be removed
		Dam 13: Divers employed to remove all boulders, Hodges 48	
		14 July: dam 17: unwatered by pumps. No big leakage. Then excavation & masonry, Hodges 50. See 23 July & 3 Sept.	
		23 July: dam/pier 17: 1st stone of pier laid (Hodges, 51). See 3	
		26 July: dam 13 pumped out & staunch.	Dam 13: Blow of the pick caused 'a spring of ink' and very important leakage (Hodges, 49). Leakage kept appearing without being stopped until they realised there was a bed of boulders and live sand under the clay (Hodges, 49).
		Dam 13: masonry commenced 29 Aug (until 26 Nov)	
		31 Aug: masonry dam 8 commenced, Hodges 53. Completed 21 Oct.	
		2 Sept: Dam for No. 12 pier (constructed like no.13) pumped out. (Hodges 50) See 15 Sept & 3 Dec.	

Working Season No. 5: Autumn-Winter 1858			
Dates	General steps	Works - chronology	Events that disrupted the works
Autumn-winter 1858		3 Sept: pier 17: masonry completed. 'the old dam was then dismantled and pulled to pieces, there being no further use for it.' Hodges 51	
		4 Sept: dam 16: pumped out	Dam 16: leakage difficult to stop (see 13 Sept). Hodges 51
		13 Sept: dam 16: masonry commenced, Hodges 51.	
Winter 1858-1859	1° Completion of pier 12; 2° roads made upon the ice; 3° building of the stagings for centre tube; 4° tramway laid upon an incline; 5° plating of the bottom of the tube; 6° greater part of the tube put in place	15 Sept-3 Dec: masonry of no.12 pier completed. Hodges 50	Pier 12, before 3 Dec.: 'During the latter part of the time the progress was exceedingly slow and unsatisfactory, in consequence of the severity of the cold; but it was imperative that the work should be done, and therefore the greatest exertion was made.' Hodges 50
		Pier 12: 'the time occupied upon the latter being 70 days, working about 18 hours each day. – The amount of masonry in this pier exceeds 12,600 tons, requiring an average of 10 tons being E94 in position in each hour, exceeding two cubic feet per minute; an achievement, I do not hesitate to say, without a parallel. – During this period, the masonry placed in position, in the six piers in progress, exceeded one ton per minute. – To supply this demand, four Locomotives, one hundred and forty two horses, six steamboats, seventy two Barges, manned by five hundred hands, and two thousand five hundred and sixty men, including those engaged in erecting the tubes, were besides employed' (Ross, 1858)	
		By Dec., the cribs for the 2 temp. Piers were finished & 2/3 of the truss were in place. (See 1858), Hodges 56	

Working Season No. 5: Winter 1858			
Dates	General steps	Works - chronology	Events that disrupted the works
Winter 1858-1859	1° Completion of pier 12; 2° roads made upon the ice; 3° building of the stagings for centre tube; 4° tramway laid upon an incline; 5° plating of the bottom of the tube; 6° greater part of the tube put in place	Ice bridge formed about the middle of 1st week of January 1859 (Hodges 57). Event underlined by Bethune.	Jan. 10th, 11th, and 12th, were the coldest days experienced in Canada for many years, the thermometer at the bridge registering no less than 36° below zero, Fahrenheit.' (Hodges, 57). Also underlined by Bethune.
		After ice bridge formed: 'Gangs of men were set to work to form roads upon the ice for the conveyance of materials to the centre tube; and at the same time, the carpenters were vigorously at work completing the stagings, which fortunately were uninjured by the ice.' (Hodges, 57)	
		Work done in January: 1) tramway laid upon an incline of timber framing that went from the packed ice to the top of pier 12; 2) at the bottom of incline: a crane erected to transfer the iron from the sleighs to the trucks 3) engine fixed on packed ice in front of pier 12: force pumps and hose arranged in case of fire. Watchmen employed night and day. 4) Upon No. 12 pier: traversing platform; from the centre line of the bridge, a track laid down as the work progressed to every part of the tube (Hodges, 57)	Gangs working at night: 'During the extreme cold, or when the thermometer was more than 20° below zero, Fahrenheit, if there was any wind at all, the men could not work, as at such times the smallest portion of the body left exposed was frozen instantly. the greatest care was, therefore, requisite. the men had to work in thick gloves, with heavy coats on. Fur caps covered their ears, and heavy handkerchiefs were worn over the greater part of their faces, so that only a very small portion was visible. even with all this care they occasionally got frost-bitten.' (Hodges, 58). So they worked up to -28°C.

Working Season No. 5: Winter 1858			
Dates	General steps	Works - chronology	Events that disrupted the works
Winter 1858-1859	1° Completion of pier 12; 2° roads made upon the ice; 3° building of the stagings for centre tube; 4° tramway laid upon an incline; 5° plating of the bottom of the tube; 6° greater part of the tube put in place	31 Jan: plating of the bottom of the tube commenced (Hodges, 57)	“The vapour from the open water below the bridge in extremely cold weather was exceedingly troublesome, particularly during the night. At such times, when there was an air up-stream, the workmen in a very short period would become covered with icicles, and be driven from their work.” (Hodges, 58)
		By 9 Feb: plating of bottom well advanced; 40 gangs of rimmers at work night & day (Hodges, 58)	“During the erection of this tube, scores of men were frozen in their hands, noses, ears, and face. Some had to go to the hospital in consequence; yet not a man lost either finger or toe; neither was any man seriously injured during the time the tube was in progress. There were, indeed, fewer casualties than usually occurred in the summer season upon similar work. And this is to be accounted for by the excessive precautions that were taken, in consequence of the certain knowledge that the slightest carelessness would produce fearful mutilation, and very probably loss of life itself.” (Hodges, 58)
		12 Feb: 1st pair of side plates erected. (had been brought to the work upon sleighs as the tube progressed	
		28 Feb: the bottom was completed & riveted; 180 feet of the sides were in place, 100 feet of the top was plated, Hodges 59	

Working Season No. 5: Winter 1858			
Dates	General steps	Works - chronology	Events that disrupted the works
Winter 1858-1859		11 March: the greater part of the iron in place (Hodges, 59). The iron was thus put in place until 11 March.	
		24 March: riveting 'well advanced' - 'only 5600 more rivets to finish' (Hodges, 59)	Heavy rain, ice 'getting very rotten, with a great deal of water upon it' (Hodges, 59)
		25 March: 15 bottle screw-jacks placed to put less lateral strain upon the tube (rather than tube supported by wedges). Removal of wedges. Hodges 60	1st movement of ice caused surprise & then fear: 'A panic immediately seized all hands, and most of the men were for running for the shore, but as that was nearly a mile off, while the ice in motion was only half that distance, it was thought wiser to remain upon the tube. In a few minutes all movement of the ice ceased, and the men turned to their work again with a quaint remark or two.' (Hodges, 60)
		26 March: 'A sharp frost made the ice much more safe, and most of the men returned to their work, so that by night very few rivets were required to make the tube complete' (Hodges, 60). These men were probably rivetters, just like on 25 March (above).	
			27 March: 'Ice unsafe; men not able to get out to centre tube' (Hodges, 61)

Working Season No. 6: Spring-Summer 1859			
Dates	General steps	Works - chronology	Events that disrupted the works
Spring-Summer 1859	1° Building and completion of the last pier; 2° Temporary stagings for the tubes; 3° Completion of the tube; 4° Removal of the cribwork of the dam and removal of the stagings	28 March: 'Ice breaking up, and shoving very heavily, just eight weeks from the commencement of tube, being certainly one week earlier than anticipated.' (Hodges, 61)	'Upon an inspection of the temporary piers after the shoving was over, it was discovered that the ice had racked or shoved them bodily down the stream some two feet. (...) The same thing happened at No. 7 staging, the temporary piers were forced some three feet down steam, causing great alarm to the workmen who were upon it at the time, some of whom narrowly escaped from falling off by the concussion produced during the shoving.' (Hodges, 61)
		3 May: attempt to commence pier no.11, although the centre span was not free for the navigation and although it was the only channel available for navigation (Hodges, 63).	

Dates	General steps	Works - chronology		Events that disrupted the works
Spring-Summer 1859	<p>1° Building and completion of the last pier;</p> <p>2° Temporary stagings for the tubes;</p> <p>3° Completion of the tube;</p> <p>4° Removal of the cribwork of the dam and removal of the stagings</p>	<p>5 May: cribwork intended to form a portion of the dam head was commenced. Lake full of rafts (at least 15), which represented risks of accidents, Hodges 63-65: two raft crashes but no mention of the crew members (p.64).</p> <p>1st attempt at building pier 11 failed. Afternoon: 2nd attempt w/ scows upon which cribwork was built, Hodges 65</p>	<p>18 May: immense quantity of materials in the way of navigation finally got away. 'After that period the steamboats and rafts made use of this opening to the great relief of the work generally. Still, occasionally, from casualties beyond control, rafts continued to be driven out of their course and carried against the temporary stagings.'(Hodges, 69)</p>	Rafts accident
		<p>2 Aug: Dam started in May: 'The various works progressed so simultaneously & rapidly, that on the 2nd of Aug, at 10:30 am, the engine was started, and pumping commenced. At 6:30pm, we were scrambling over the slippery boulders forming the bed of the river, while outside the dam the mighty waters rushed madly past at the rate of eight or nine miles per hour.'(Hodges, 67)</p> <p>'Fires were immediately made on the bed of the rive, and two gangs of men were set to work, one party clearing away all boulders, &c., from the site of the pier for excavation to be commenced, while the others were employed sinking a sumpt hole to the rock.' = work after 6.30pm so night work, (Hodges, 67)</p>		

Working Season No. 6: Summer-Winter 1859			
Dates	General steps	Works - chronology	Events that disrupted the works
Summer 1859		11 Aug: dam started in May for pier 11: excavation for the 1st length of masonry taken out, (Hodges, 67)	
		12 Aug: foundation stone of pier 11, the 'last pier of the Victoria Bridge' laid in the presence of 300 spectators (Hodges, 67).	
		26 Sept: pier 11 completed (Hodges, 67)	
Autumn-winter 1859	<p>1° Building and completion of the last pier;</p> <p>2° Temporary stagings for the tubes;</p> <p>3° Completion of the tube;</p> <p>4° Removal of the cribwork of the dam and removal of the stagings</p>	<p>Creation of temporary stagings upon which the tubes were to be put together.</p> <p>Intended to avoid accidents: 'These stagings, as the centre of the river was approached, almost ceased to appear like temporary works, - the depth of the water, the rapidity of the current, and the danger from rafts, rendering it imperative, in order to ensure safety, that they should be as well and as strongly constructed as permanent works usually are.' (Hodges, 67)</p>	
		<p>After the temporary piers were in place: piles driven through pockets or chambers left in the cribs for that purpose; upon the piles: erection of the uprights carrying the platform; then erection of the superstructure (with a derrick), (Hodges, 68-9). The whole of the work was prepared upon shore; each piece of timber was loaded upon the barge in the required order, and had a mark showing its position in the work (Hodges, 69)</p>	
		Oct: completion of the last staging (No.14)	

Working Season No. 6: Autumn-Winter 1859			
Dates	General steps	Works - chronology	Events that disrupted the works
Autumn-winter 1859		Removal of the cribwork of the dams '[a]s soon as the season was sufficiently advanced, and the temperature of the water favourable' (Hodges, 69). Steam cranes put on barges, stones removed from the inside of the cribs by handnippers & hooks, sometimes divers were employed; the timber work was ripped up by the steam crane in pieces 20 to 30 tons weight. (Hodges, 70) At each staging: a force pump was fixed & a watchman kept day & night to prevent risk of fire (Hodges 70).	
	1° Building and completion of the last pier; 2° Temporary stagings for the tubes; 3° Completion of the tube; 4° Removal of the cribwork of the dam and removal of the stagings	Removal of the dams & stagings before the season closed (except Nos. 12 & 14 stagings), Hodges 71.	9 Nov: 'accident': 'On the 9th of November, during the time that No. 11 dam was being taken to pieces, an accident occurred, which for some time threatened to destroy No. 12 staging, an accident which would have caused the tube, then two-thirds finished, to have fallen into the river. The removal of the stones, which was the first operation in the clearing away of the dam, had been completed, and provision was being made for the removal of the cribwork upon the scow in the centre of the dam head, when, without any notice, the scow with the crib-framing upon it swung round, and, before anything could be done to stop it, was floating in the full strength of the current, broadside on to one of the cribs upon which was erected the staging of No. 12 tube.' (Hodges, 70)
	17 Dec: 'day appointed for the first passage of trains through the bridge' (Hodges, 71)		

Appendix 2: Jane Greenlaw, tax assessment rolls for the Ste Anne's ward of Montreal, compared with Lovell's Montreal Directory (1860-1861).

Abbreviations:

POtGT: Proprietor other than Grand Trunk.

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861, New Edition corrected in May & June 1860-1861
1	ADAMS William	engineer	shed no.1	/	/	/	/	/	/
2	ADDISON William	?	/	/	/	shed no.1	shed no.1	/	Addison William, boilermaker, 5 Emigrant Sheds
3	AHERN John	?	/	shed no.2	/	/	/	/	Ahern John, ...orchester
4	ANDERSON Colin	turner	/	/	/	/	/	G. T. Row - 23 [c]	Anderson Colin, turner, off Cross Street
5	ANGLIS David	labourer	shed no. 5	/	/	/	/	/	/
6	ARCHAMBAULT Joseph	labourer	shed no.2	shed no.5	shed no.5	shed no.13	shed no.13	/	/
7	ARMSTRONG Thomas	?	/	/	/	shed no. 18	/	/	Armstrong Thomas, laborer, 11 Emigrant Sheds
8	AULINEAU Julien	?	/	shed no. 5	/	/	/	/	/
9	BAINHAM/BURNHAM John (or Brinham)	?	/	shed no.3	shed no.3	shed no.9	shed no. 9	/	/
10	BAIRD Thomas	blacksmith	shed no.1	/	/	/	/	/	/
11	BATTY Isaac	?	/	shed no.7	shed no.7	/	/	/	/
12	BAYNE/BAIN/BANE/BEAN/BRIN Charles	labourer (carekeeper?)	shed no.3	shed no.3	shed no.3	shed no.9	shed no.9	/	/
13	BEACON John	carpenter	shed no.3	/	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
14	BEATON William	mason	shed no.1	/	/	/	/	/	/
15	BEATON William	smith	/	G. T. Row - 1	/	/	/	/	/
16	BENOIT Pierre	?	/	/	/	shed no.6	shed no.6	/	Benoit Pierre, blacksmith, Fullum / Benoit Pierre, laborer, 24 Emigrant Sheds
17	BESANT William	?	/	shed no.1	shed no.1	/	/	/	/
18	BILODEAU George	labourer	shed no.6	/	/	/	/	/	/
19	BOLTER Charles	?	/	/	/	/	G.T. Row [1- ²]POtGT	G.T.Row - 9	/
20	BOOKSTORE Martin	?	/	shed no.6	/	/	/	/	/
21	BONNEVILLE Simeon	contractor	shed no.6	/	/	/	/	/	/
22	BOULANGER/BOLANGET Paul	Grand Trunk	/	/	/	/	Near Bridge [C] POtGT	Near Bridge [B] POtGT	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
23	BOYD William	?	/	shed no.3	shed no.3	/	/	/	Boyd William H., 127 Notre Dame?
24	BEAUFORT Eugène	innkeeper	/	/	/	/	G.T. Row 27-30	GT Row - 45	/
25	BRADY/BREALY John	clerk	/	/	G.T. Row - 27	GT Row 24	GT Row 26	/	/
26	BRAVEY James	?	/	/	/	/	shed no.14	/	/
27	BREEN John <i>or BRUN</i>	?	/	shed no.5	shed no.5 <i>non noté sur liste par logements</i>	/	/	/	Breen John, boatman, Rue de la Ferme
28	BREEN Maurice <i>or BRUN</i>	?	/	shed no.5	/	/	/	/	Breen Morris, mason, 18 St Bernard
29	BROCKWELL/BROCKVILLE Henry	carpenter	shed no.1	shed no.1	/	/	/	/	Brockwell Henry, inkeeper, so.side Canal basin?
30	BROMELEY James	gas (?) fitter	/	/	/	/	G.T. Row 24	G.T. Row 25	Bromley, James, fitter, Grand Trunk Row
31	BROMLEY William	?	/	/	/	G.T. Row 22	/	/	/
32	BROWN Charles	?	/	/	/	/	shed no.11	/	Brown Charles, carpenter, 8 ST. Edward lane?

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
33	BROWN Thomas	labourer	shed no.4	shed no.4	shed no.4	/	/	/	Brown Thomas, laborer, St Etienne near St-Patrick
34	BROWNE/BROWN Frederick	teacher	shed no.5	shed no.6	shed no.6	shed no.16 (schoolhouse)	G.T. Row - 12 (school), 15 (master)	/	Brown Frederick, trader, GT Row?
35	BURNETT William	?	/	/	/	shed no.14	/	/	Burnett Wm., laborer, Craig near St Ignace?
36	BURRELL James	cabinet maker	Point St Charles - 1	/	/	/	/	/	Burrell James L., cabinetmaker, 31 St. Lawrence, shop 4 Perthuis
37	BUTCHART Alexander	?	/	shed no.1	/	/	/	/	/
38	CADNER John	labourer	shed no.3	/	/	/	/	/	/
39	CALLAGHAN John	labourer	shed no.3	/	/	/	/	/	/
40	CANTHAN James	?	/	/	/	shed no.9	/	/	/
41	CARL/CARLE James	labourer	shed no.6	shed no.7	/	/	/	/	/
42	CATO James	b..? Conductor master	/	G.T. Row - 3	G.T. Row - 2	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
43	CAVANNAH/KAVANAUGH/ CAVANAGH Michael	?	/	shed no.2	shed no.2	shed no.5	/	/	/
44	CHAURET Olivier	stonecutter	shed no.2	/	/	/	/	/	/
45	CHURCH S. HOUSE		/	/	shed no.1	/	/	/	/
46	CLARKE James / CLARK Js (?)	Grand Trunk	/	shed no.5	/	/	Wellington - 43POiGT	/	/
47	CLARKE/CLARK Michael	blacksmith	shed no.2	shed no.2	shed no.2	shed no.5	shed no.5	/	Clark Michael, blacksmith, GTR, 21 Emigrant sheds
48	COCKFIELD Joseph	fitter (engineer)	Pointe St Charles -5	G.T. Row - 17	/	/	/	/	/
49	COCKFIELD Moses	fitter (engineer?)	/	/	/	G.T.Row -25	G.T.Row 27	/	/
50	COGARON/COGELON / COOHAN / COGAN Simon	labourer	shed no.5	shed no.6	shed no.6	shed no.17	shed no.17	/	/
51	COLE William	engine driver	/	/	/	G.T. Row -19	/	/	/
52	COLERELL	labourer	/	/	/	/	G.T. Row -8	/	/
53	COOK David	boarding house keeper	Pointe St Charles -4	G.T.Row - 13	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
54	COOK William	blacksmith	shed no.1	/	/	/	/	/	/
55	COTTON William	?	/	/	/	G.T. Row -8	/	/	/
56	CRENSHAW Robert	engineer innkeeper	pointe St Charles -1	/	/	/	Wellington - 45 <i>is proprietor</i>	/	/
57	CRITCHLEY Thomas	shed no.5	/	/	/	/	/	/	/
58	CROFT James	painter	Pointe St Charles -7	/	/	/	/	/	/
59	CROW / <i>CRAW</i> John	?	/	/	shed no.5	shed no.13	shed no.13	/	Crow John, laborer, 64 Emigrant Sheds
60	CUDIHAY/CUDGHAY Edmund	?	/	/	/	shed no.4 (<i>Cuddihay E.</i>)	shed no.3	/	Cuddihy Edward, carpenter, 10 Emigrant sheds?
61	CUDIHAY/CUDIHY Frances	?	/	/	/	shed no.1	/	/	/
62	CUDIHAY/CUDDIHAY/ <i>CUDDIHEY</i> William	carpenter	shed no.4	shed no.4	shed no.4	/	/	/	/
63	CULLIN John	?	/	/	/	shed no.14	/	/	Cullin John, laborer, corner William and Eleanor / Cullin John, laborer, 129 St Joseph
64	CURRAN/CURRIN James	labourer	shed no.5	shed no.5	shed no.5	shed no.13	/	/	Curran John, laborer, off St. Patrick, west?

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
65	CURRY Frank	?	/	/	/	/	G.T. Row -7	/	/
66	DAWES Mark	clerck	/	/	/	/	/	G.T. Row 1 <i>POtGT</i>	Dawes Mark C., clerk, Congregation, south GTR
67	DAYA/DAY Charles	?	/	/	shed no.1	shed no.3	/	/	/
68	DELOWRY James	labourer	shed no.6	/	/	/	/	/	Delowry James, laborer, 72 Murray
69	DEMPSAY S	?	/	/	shed no.5	/	/	/	Dempsey Sylvester, carpeter, Grand Trunk at Dempsey, Thomas, barkeeper Ottawa Hotel, 78 Great St. James
70	DERAME/DEROME widow		/	/	/	shed no.15	/	/	Derome, Mrs. X., huckster, rear 200 St. Dominique
71	DEVANEY/DEVANY Martin	?	/	shed no.7	shed no.7	shed no.20	Mrs shed no.20	/	Devaney, Mrs Martin, 94 Emirant sheds
72	DICKSON Charles	engineer	/	G.T. Row - 24	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
73	DICKSON/DIXON Richard	?	/	/	shed no.2	shed no.6	/	/	/
74	DONOVAN/DONAVAN Michael	fitter	shed no.4	shed no.4	shed no.4	/	/	/	/
75	DONOVAN Timothy	?	/	/	/	shed no.10	shed no.10	/	Donovan Tim., 49 Emigrant sheds?
76	DOUGLASS Edward	blacksmith pattern maker (?)				G.T. Row -17	G.T. Row -19	/	Douglas Edward, blacksmith, G.T. Row
77	DOVE William	blacksmith	shed no.2	shed no.2	shed no.2	shed no.5	/	/	/
78	DOYLE Edward	?	?	?	G.T. Row -25	/	/	/	/
79	DOYLE William	?	/	/	/	shed no.8	/	/	/
80	DREW <i>widow J.</i>		shed no.4	shed no.4	shed no.4	shed no.10	shed no.10	Grand Trunk 1 1/2 r... (1) POtGT	Drew, Mrs, 47 Emigrant sheds / Drew, Mrs, St Charles st., near crossing, Point St. Charles
81	DRIVER William	stonecutter	shed no.2	shed no.1	/	/	/	/	/
82	DUCKET James	conductor	/	/	/	/	/	G.T. Row -17 ©	/
83	DUGGAN/DOGAN Thomas	carpenter	shed no.5	shed no.7	Shed no.7	shed no.20	/	/	Duggan Thomas, carpenter, 95

									Emigrant sheds
	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
84	DUNLOP James	switchmen	/	/	/	/	Near Bridge -(B) <i>POtGT</i>	/	Dunlop, James, brakesman, Grey Nun's Park, Point St Charles
85	DUNLOP Robert	labourer	shed no.3	/	/	/	/	/	/
86	DWYER Cornelius	labourer	shed no.3	/	/	/	/	/	/
87	DWYER JOHN	labourer	/	G.T. Row - 15	/	/	/	/	Dwyer, Mrs John, St Stephen, near St Patrick?
88	FEAGUE (?) <i>HEAGUE</i> Edward	labourer	shed no.3	/	/	/	/	/	/
89	FENDER James	?	/	/	shed no.2	shed no.1	shed no.1	/	Fender James, tinsmith, 1 Emigrant sheds
90	FENNALL/FENNEL/ <i>FANNELL</i> Thomas	labourer	shed no.4	shed no.4	shed no.4	shed no.12	/	/	/
91	FENNICK Andrew	fitter	/	/	/	/	/	G.T. Row -21	Fenwick Andrew, fitter, St. Charles st., Pt St Charles
92	FIRTH Joseph	?	/	/	/	shed no.3	/	/	/
93	FITZGERALD John	labourer	shed no.5	/	/	/	/	/	too many Fitzgerald John, laborers

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
94	FITZMORRIS widow		shed no.2	/	/	/	/	/	/
95	FLANNIGAN John	?	/	shed no.5	shed no.7	shed no.21	/	/	Flanigan John, laborer, 102 Emigrant sheds / Flanigan John, laborer, 75 Dorchester
96	FOLEY James	?	/	shed no.7	shed no.2	shed no.5	shed no.5	/	many Foley James, laborers
97	FOLEY John	fitter	shed no.4	shed no.4	shed no.4	shed no.10	shed no.10	/	/
98	FOLEY Michael	labourer	shed no.3	/	/	/	/	/	Foley Michael, laborer, in rear 99 College
99	FOSTER John	?	/	/	/	/	Congregation -3 house (?) (800) <i>POtGT</i>	G.T. Row -15 [c]	/
100	FRAIL John	?	/	/	/	/	shed no.2	/	/
101	FRENCH Robert	engine driver	/	/	/	/	/	G.T. Row -15	/
102	GAY William	labourer	shed no.5	shed no.4	shed no.4	shed no.10	/	/	Gay Wm, laborer, 44 Emigrant sheds

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
103	GLEESON Patrick	carpenter	Pointe St Charles - 5	G.T. Row - 14	G.T. Row - 17	/	/	/	Gleeson Patrick, carpenter, Wellington west
104	GOLDEN Thomas	engineer	/	G.T. Row - 21	G.T. Row - 24	/	/	/	Golden Thomas, engineer, Congregation, Point St Charles
105	GOLDEN William	fitter	Pointe St Charles - 6	/	/	/	/	/	/
106	GOLDRIGG Andrew	labourer	shed no.3	/	/	/	/	/	/
107	GOUDEY/GOUDY/GONDY Alex	labourer	shed no.5	shed no.6	shed no.6	DOWDY: Near Victoria Bridge - 2 <i>POtGT</i>	GOUDY: Near Bridge - 3 <i>POtGT</i>	/	/
108	GRAY Isaac	?	/	/	shed no.2	/	/	/	/
109	GREENWOOD Cornelius	engine driver	/	G.T. Row - 8	G.T. Row - 8	G.T. Row -9	G.T. Row - 10	G.T. Row [a]	Greenwood Cornelius, engine driver,GT row
110	GUIRE Ellen	?	/	G.T. Row - 18	/	/	/	/	/
111	GUIRSON William	s..(?) keeper	/	/	/	follows G.T. depot	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
112	GURNEY/GURNEY Edward	patron (pattern) maker	Pointe St Charles -7	G.T. Row - 23 /		G.T. Row -11	G.T. Row - 11 [b]	(car maker) G.T. Row -7 <i>POiGT</i>	Gurney, Ed., pattern maker, GT Row
113	HAIRD Isaac	blacksmith	shed no.1	/	/	/	/	/	/
114	HAIRD William	blacksmith	/	/	/	/	G.T. Row - 13	/	/
115	HALL Thomas	labourer (brakesman)	/	/	/	/	G.T. Row - 26 [a]	G.T. Row -25 [b]	Hall Thomas, laborer, Wellington near railway
116	HALLOWELL/ <i>HOLLOWELL</i> Thomas	labourer	Pointe St Charles - [b]	shed no.3	shed no.3	shed no.7	/	/	/
117	HANNAH Thomas	labourer	shed no.3	/	/	/	/	/	/
118	HARKINS Peter	labourer	shed no.2	/	/	/	/	/	Harkins, Peter, laborer, 22 Emigrant sheds
119	HARN John	shed no.2	/	/	/	/	/	/	/
120	HARRISON John	fitter	Pointe St Charles -3	/	/	/	/	/	/
121	HARRISON Thomas	conductor	/	G.T. Row - 10	/	/	/	/	Harrison, Mrs Thos., dressmaker, 80 Bleury?
122	HARVEY William	labourer	shed no.4	shed no.4	shed no.4	shed no.11	/	/	/
123	HAWLEY John	?	/	/	shed no.5	/	/	/	/
124	HAYES widow		/	/	/	shed no.14	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
125	HAYNUS Samuel	engineer	/	/	/	/	G.T. Row -5	/	/
126	HENNIGAN James	stonecutter	shed no.2	/	/	/	/	/	/
127	HEYWOOD Samuel	engineer fitter	/	/	/	G.T. Row -5	G.T. Row - 15 [b]	/	/
128	HILLS Benjamin	conductor	/	/	/	/	/	G.T. Row - 25 [c]	/
129	HOBROUGH/HOBNISH Charles	?	/	shed no.1	shed no.1	/	/	/	Hobrough Charles, carpenter, Wellington, near railway crossing
130	HOLDAN widow Margaret HINE		/	/	/	/	G.T. Row -2	/	/
131	HOLIDAY John	labourer	shed no.6 (<i>en réalité shed no.7</i>)	/	/	/	/	/	/
132	HOLLAND John	fitter	shed no.5	shed no.5	shed no.7	Near Victoria Bridge - 3 <i>POtGT</i>	/	/	Holland John, fitter and turner, Grand Trunk st.
133	HOLLAND William	?	/	/	/	/	shed no.22	/	/
134	HORNET John	?	/	/	/	shed no.21	/	/	/
135	HOUGH Henry	?	/	/	/	/	shed no.12	/	Hough Henry, carpenter, GTR, 59 Emigrant sheds
136	HOUSTON Magnus	?	/	/	/	shed no.22	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
137	HUGHES Humphrey	smith	/	/	/	/	/	G.T. Row - 7	Hughes Humphrey, blacksmith, St. Patrick
138	HUNTER James	labourer (librarian)	/	/	G.T. Row - 3	/	Congregation -11 <i>POtGT</i>	/	Hunter James, librarian, GT Congregation
139	HUSSEY/ <i>HUGEY</i> Maurice/Morris	labourer	shed no.5	shed no.5	shed no.5	shed no.15	/	/	/
140	HYNES William	labourer (clerk)	shed no.5	shed no.6	shed no.6	shed no.17	/	/	/
141	JOB John	?	/	/	shed no.2	shed no.10	/	/	Job John, laborer, 46 Emigrant Sheds
142	JOHNSON/JOHNSTON/ <i>JOHNSTONE</i> David	labourer	shed no.6	shed no.7	shed no.7	shed no.20	shed no.20	/	/
143	JOHNSTON David	?	/	/	/	/	shed no.10	/	/
144	JOHNSTON Hamilton	?	/	/	/	shed no.21	shed no.10	/	/
145	JONES Fred	driver	/	/	/	/	Congregation -14 proprietor other than <i>GT ie J. Hodges</i>	/	Jones Frederick, engine driver, Bellevue, south GT railway
146	JONES Griffiths	?	/	/	shed no.1	shed no.12	/	/	/
147	KELLY Henry	surveyor	shed no.6 (or <i>shed no.7</i>)	shed no.7	shed no.7	shedn no.20	shed no.20	/	Kelly Henry, 97 Emigrant sheds?

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
148	KELLY Richard	?	/	/	/	shed no.11	/	/	Kelly Richard, laborer, St Etienne?
149	KENNEDY Daniel	labourer	shed no.3	/	/	/	Congregation -1 <i>proprietor</i>	/	Kennedy Daniel, laborer, Congregation, Point St Charles
150	KENNESON James	fitter	Pointe St Charles -3	/	/	/	/	/	/
151	KERENS/KERNS John	?	/	shed no.5	shed no.5	shed no.13	shed no.13	/	/
152	KING George	?	/	shed no.2	/	/	/	/	/
153	KNIGHT John	fitter	/	/	/	/	G.T. Row - 11 [a]	/	Knight, John, fitter, GT Row
154	LAINING John	engineer	/	G.T. Row - 7	/	/	/	/	/
155	LAWDER/LAWTHER (?) William	engineer (mechanic turner)	/	/	/	G.T. Row -2	G.T. Row -6	G.T. Row -15 [a]	/
156	LENNON/LEMON/LENNAN Thomas	carpenter	shed no.6 (or <i>shed no.7</i>)	shed no.6 (<i>en réalité shedn no.5</i>)	shed no.6	shed no.18	/	/	Lennon Thomas, carpenter, off GT street
157	LEONARD James	labourer	shed no.6	/	/	/	/	/	Leonard James, laborer, Grand Trunk street
158	LIVESLEY/LIVESLIE/LEVESLEY James	?	/	shed no.7	shed no.7	shed no.22	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
159	LOWE/LAW William	fitter (engineer)	Pointe St Charles - 6	G.T. Row - 21	G.T. Row - 23	G.T. Row - 20	G.T. Row - 22	G.T. Row -2 <i>POrGT</i>	/
160	LOYD Thomas	carter	shed no.2	/	/	/	/	/	/
161	LYNCH John	labourer	shed no.6 (or shed no.7)	/	/	/	/	/	Lynch John, rear 14 St. Germain
162	LYNCH Thomas	labourer	shed no.4	/	/	/	/	/	/
163	MALONEY William	?	/	shed no.3	/	/	/	/	/
164	MATTEY Joseph	blacksmith	/	/	/	/	/	G.T. Row -21 [c]	Mattey Joseph, blacksmith, Centre st., Point St. Charles
165	MATTHEWSON James	Grand Trunk	/	/	/	G.T. Row -12	G.T. Row -9	/	/
166	MATTIMORE/ <i>MATIMORE</i> / <i>MATTIMON</i> Bernard	labourer	shed no.4	shed no.4	shed no.4	shed no.12	/	/	/
167	MAY Edward	labourer	shed no.4	shed no.4	shed no.1	shed no.1 (<i>en réalité shed no.2</i>)	/	/	May Mrs. Edward, 7 Emigrant sheds
168	McCORMICK Thomas	carpenter	shed no.2	/	/	/	/	/	/
169	McDONALD Thomas	labourer	shed no.2	/	/	/	/	/	/
170	McENNAKNY Michael	moulder	shed no.6	/	/	/	/	/	/
171	McGARVEY Francis	labourer	shed no.3	/	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
172	McGRATH James	?	/	/	/	/	/	G.T. Row -13 [b]	McGrath, James, coppersmith, Grand Trunk st., Point st. Charles / McGrath james, laborer, 66 St Dominique
173	McHUGH Andrew	carpenter	shed no.6 (<i>pr shed no.7</i>)	/	/	/	/	/	/
174	McINTOSH Archibald (Archd)	?	/	/	/	shed no.21	/	/	/
175	McIVER Pat	foremen	/	/	/	G.T. Row -10	/	/	/
176	MCKAY Henry	carpenter	shed no.2	shed no.1	shed no.1	G.T. Row -14	G.T. Row -16	/	McKay Henry, carpenter, Grand Trunk row
177	MCKAY Henry	?	/	/	shed no.1	/	/	/	/
178	McKENZIE Charles	labourer	/	/	/	/	G.T. Row -4	/	/
179	McKERNAN/ <i>McKEMAN/McKENNAN</i> James	?	/	/	/	shed no.21	/	/	/
180	McLELLAN Thomas	grocer (tuner)	/	/	/	/	Congregation -26 <i>POtGT</i>	G.T. Row -3 <i>POtGT</i>	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
181	McLEOD William	boiler maker	/	G.T. Row - 5	G.T. Row - 5	G.T. Row -7	/	/	McLeod Wm, boiler maker, Victoria terrace Point St Charles
182	McMULLAN MILES	cooper	/	/	/	/	G.T. Row - [1 ¹] <i>proprietor</i>	G.T. Row -9 <i>proprietor</i>	/
183	McMULLIN/McMULLEN Denis/Dennis	labourer	shed no.4	shed no.4	shed no.4	shed no.10	shed no.10	/	McMullen Denis, laborer, 45 Emigrant sheds
184	McNAB William	?	/	/	shed no.3	shed no.7	/	/	McNab, Wm, carpenter, 32 Emigrant Sheds
185	MELVILLE James	?	/	/	shed no.1	/	/	/	/
186	MELVILLE/MILVILLE John	foremen engineer	Pointe St Charles -2	G.T. Row - 2	/	shed no.3	shed no.22 [105]	/	/
187	MENZY Ches	?	/	/	/	shed no.2	/	/	/
188	MEYER Jacob	pattern maker	/	/	/	G.T. Row -15	G.T. Row - 17	/	Meyer Jacob, pattern maker, GT Row
189	MIDDLETON Edward	engineer (labourer)	Pointe St Charles -5	/	shed no.1	shed no.1 (<i>or shed no.3</i>)	Wellington [between 41 and 42] <i>POtGT</i>	/	Middleton Edward, laborer, Wellington west

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
190	MILLS John	?	/	/	shed no.3	/	/	/	/
191	MILLS Matthew	?	/	/	/	shed no.8	/	/	/
192	MILLS Samuel	turner	/	/	/	G.T. Row -6	/	/	/
193	MOFFAT M	?	/	/	shed no.6	/	/	/	/
194	MOFFAT / <i>MAFFAL</i> Michael	mason	shed no.1	shed no.1	shed no.1	shed no.17	shed no.17	/	Moffatt Micahel, mason, 77 Emigrant sheds
195	MOLEY/ <i>MULEY</i> John	fitter	shed no.4	/	/	/	/	/	/
196	MONAGHEN/ <i>MONAGHAN</i> James	?	/	/	shed no.6	shed no.17	/	/	/
197	MORRISEY/ <i>MORRISY</i> John	?	/	shed no.4	shed no.4	/	/	/	Morriseey John, laborer, off 25 McCord
198	MOWER William	?	/	/	/	shed no.7	shed no.7	/	/
199	MUNRO/MUNROE/ <i>MURRAY</i> George	joiner	shed no.3	shed no.4	shed no.4	shed no.11	shed no.11	/	Munroe George, carpenter, 55 Emigrant sheds
200	MURPHY Thomas	?	/	/	shed no.2	shed no.6	shed no.6	/	Murphy Thomas, laborer, 25 Emigrant sheds
201	MURRAY John	?	/	/	/	shed no.10	shed no.10		too many occurrences

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
202	MURTHA/ MURTAUGH/ MORTON/ <i>MURTAGH/ MUSTAUCH</i> Luke	grocer	shed no.5	shed no.5	shed no.5	shed no.15	shed no.15	/	Murtagh Luke, laborer, 74 Emigrant sheds
203	NEWMARCH/NEWMARSH John	labourer	shed no.6	shed no.6	/	shed no.2	shed no.2	/	NewMarsh John, laborer, 9 Emigrant sheds
204	NEWMARCH/ NEWMUTON W	?	/	/	shed no.1	/	/	/	/
205	O'BRIEN Mrs		/	/	/	/	shed no.17	/	O'Brien, Mrs B, boarding house, 18 and 20 St John / O'Brien Mrs Michae, boot binder, 148 William / O'Brien Mrs, 82 Emigrant Sheds / O'Brien Mrs. 104 St Elizabeth
206	OGLE Wiliam	engineer	/	G.T. Row - 18	G.T. Row - 22	/	G.T. Row - 21	/	/
207	OHARA Francis	?	/	/	/	shed no.12	shed no.12	/	O'Hara, Francis, laborer, 58 emigrant sheds
208	OHARA Patrick	labourer	shed no.5	shed no.6	shed no.6	/	/	/	O'Hara Patrick, laborer, St Etienne

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
209	OLIVER John	?	/	shed no.1	/	/	/	/	/
210	O'NEIL Patrick	carpenter	shed no.5	shed no.6	shed no.6	Near Victoria Bridge - 1 48 <i>proprietor</i>	Near Victoria Bridge (A) <i>POiGT</i>	Near Victoria Bridge [A] <i>POiGT</i>	O'Neil Patrick, carpenter, Grey Nun's Park, Pt St Charles
211	O'NEIL Thomas	labourer	shed no.6	/	/	/	/	/	/
212	PAISLEY Daniel	?	/	/	/	shed no.22	/	/	/
213	PARKER Robert	?	/	/	/	shed no.17	/	/	/
214	PERKINS George	labourer	shed no.1	shed no.1	shed no.1	shed no.1	/	/	/
215	PERKINS Henry	?	/	/	shed no.4	shed no.11	shed no.11	/	/
216	PITTS John	carpenter	shed no.1	shed no.1	shed no.1	shed no.3	/	/	Pitts John, carpenter, 12 Emigrant sheds
217	PREVOST Toussaint	?	/	/	shed no.6	shed no.18	/	/	Prevost Toussaint, boatman, 83 Emigrant sheds
218	PROVOST Pierre	?	/	/	shed no.2	/	/	/	/
219	RADCLIFFE/REDCLIFF Samuel	blacksmith	Pt St Charles - 3	G.T. Row - 12	/	/	/	/	/
220	RAFFERTY John	labourer	shed no.5	/	/	/	/	/	/
221	RANKIN James	blacksmith	/	/	/	/	Congregation -16 <i>POiGT</i>	G.T. Row -23	Rankin James, blacksmith, Bellevue Pt St Charles

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
222	RATTARY Robert	?	/	/	/	shed no.4	/	/	Rattray Robert, laborer, 21 Ann?
223	RAWLESTONE William	engine driver	/	/	/	G.T. Row -21	/	/	/
224	RAYNOLDSON	foreman	/	/	G.T. Row - 1	G. T. Row -1	/	/	/
225	REDDEN John	?	/	shed no.7	shed no.7	shed no.22	shed no.22	/	Reddan John, laborer, 16 Emigrant sheds?
226	REEVES William	fitter	shed no.6	/	/	/	/	/	/
227	REILLEY John	?	/	shed no.3	/	/	/	/	several Reilly John, laborers
228	RICHARDSON Henry	freight man (clerk)	/	/	G.T. Row - 20	/	Congregation [11] in reer? <i>POtGT</i>	/	Richardson Henry, clerk, south of GT Railway
229	ROBB Joseph	engine driver	/	/	/	/	/	G.T. Row - 23 [b]	Robb, Joseph, engine driver, Cross st.
230	ROBERTS William	carpenter	shed no.5	/	shed no.2	shed no.15	shed no.17	/	/
231	ROBERTSON Charles	clerck	Pt St Charles - 7	G.T. Row - 22	/	/	/	/	/
232	ROBINSON William	engine driver	/	/	/	/	G.T. Row - 23	/	Robinson, William, engine driver, GT Row

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
233	ROLLO John	?	/	/	/	shed no.5	/	/	Rollo Mrs, 26 City Councillors?
234	ROSETTON/ <i>ROSSETON</i> Thomas	?	/	/	shed no.4	/	/	/	/
235	ROW Thomas	carpenter	shed no.5	/	/	/	/	/	/
236	ROX/NOX George	(painter)	/	/	shed no.2	/	Congregation - 17 <i>P</i> 0 <i>i</i> GT	/	/
237	RYAN Cornelius	?	/	/	/	/	shed no.17	/	Ryan Cornelius, laborer, 73 Emigrant sheds / Ryan Cornelius, laborer, Rue de la Ferme
238	RYAN Phillip	labourer	shed no.4	/	/	/	/	/	/
239	S	?	/	/	shed no.5	/	/	/	/
240	SANCTUARY William	?	/	/	/	shed no.4	shed no.1	/	/
241	SCOFFIELD wid. R	boarding house keeper	/	/	/	/	/	G.T. Row -19 [a]	/
242	SEAREY/ <i>SEERY</i> / <i>SURY</i> / <i>SEALY</i> / <i>STEERY</i> Bernard	labourer	shed no.2	shed no.2	shed no.2	shed no.6	shed no.6	/	Seery Bernard, 28 Emigrant sheds?
243	SEULAH / SENLAH / <i>SENLAK</i> Daniel	labourer	shed no.6	/	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
244	SHALLOW John	inspector	Pt st Charles - 1	/	/	/	/	/	/
245	SHANTON / SHELTON William	labourer	shed no.1	shed no.1	SHELTON widow William & Clara Holt G.T. Row - 21	SHANTON widow G.T. Row -18	/	/	/
246	SHARPLES / CHARPLES Peter	overseer (?) (engineer)	Pt. St. Charles -6	G.T. Row - 19	/	/	Congregation -27	/	Sharples Peter, Wellington, west of R crossing
247	SHAY Cornelius	labourer	shed no.3	/	/	/	/	/	/
248	SHERATL / SHERATH Oliver	?	/	shed no.1	/	/	/	/	/
249	SIMPSON Jonathan	labourer (engineer)	shed no.5	G.T. Row - 9	G.T. Row - 7	G.T. Row -23	G.T. Row - 25	G.T. Row -25 [a]	/
250	SMITH George	blacksmith (labourer ...)	Pt. St. Charles -2	G.T. Row - 6	/	/	G.T. Row - 11	G.T. Row - 17 [b]	Smith George, blacksmith, opposite 61 Dalhousie
251	SMITH James	blacksmith	Pointe St Charles -2	/	/	/	/	/	/
252	SMITH James	labourer	shed no.5	shed no.6	/	/	/	/	Smith James, laborer, Wellington near St Patrick
253	SMITH Thomas	labourer	shed no.6 (en réalité shed no.7)	shed no.7	shed no.7	shed no.7	shed no.7	/	many occurrences

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
254	STANFORTH/STANFORD Gaspard/Jasper	labourer	shed no.4	shed no.4	/	shed no.15	shed no.14 (<i>shed no.15</i>)	/	Stanford Jasper, laborer, 72 Emigrant sheds
255	STARKE Andrew	labourer	shed no.6 (<i>en réalité shed no.7</i>)	shed no.7	/	/	foreman, St Charles Street - 2 proprietor	foreman, St Charles Street - 2 proprietor	/
256	STEWART/ STEWARD/ STUART Andrew	?	/	shed no.6	shed no.6	shed no.17	shed no.17	/	/
257	STORRY/STOREY/ <i>STORY</i> Sto (Edward)	?	/	/	shed no.5	shed no.13	shed no.13	/	Storry, Edward, rivetter, 62 Emigrant sheds
258	STUART/ STEWART John	carpenter	shed no.6 (<i>en réalité shed no.7</i>)	shed no.7	shed no.7	shed no.20	shed no.20	/	Stuart John, carpenter, 96 Emigrant sheds
259	STUART (STEWART?) Peter	carriage maker (carpenter)	Pt St Charles -5	G.T. Row - 16	G.T. Row - 19	/	Congregation -12 <i>POtGT</i>	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
260	STUART (STEWART?) Peter	storeman (painter)	Pt St Charles -6	/	/	/	Congregation -13 <i>POtGT</i>	/	/
261	SULLIVAN Patrick	?	/	shed no.2	shed no.6	shed no.17	/	/	Sullivan Patrick, laborer, 79 Emigrant sheds?
262	SULLIVAN Thomas	?	/	shed no.4	/	/	/	/	/
263	TAGUE Edward	labourer	shed no.5	shed no.7	/	/	/	/	/
264	TAKLETON John	?	/	/	/	/	shed no.2	/	/
265	THOMAS Richard L	?	/	/	/	/	/	G.T. Row -13	too many occurrences
266	THOMAS William	finisher	/	/	/	/	/	G.T. Row 23 [a]	Thomas William, gasfitter, Grand Trunk row?
267	THOMPSON John	conductor	shed no.5	/	/	/	/	/	Thompson John, conductor, Centre street, Point St Charles
268	THOMPSON Robert	blacksmith	shed no.6	shed no.5	/	/	/	/	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
269	THOMPSON William	?	/	/	/	shed no.18	shed no.3	/	Thompson William, carpenter, 12 Emigrant sheds?
270	THOMPSON William	gas fitter	/	/	/	/	G.T. Row - 20	/	/
271	THORBORNE/ THORNBURN William	spring maker	/	/	/	G.T. Row -16	G.T. Row - 18	/	Thorburn, William, spring maker, G Trunk row
272	TONE Bernard	teacher	shed no.3	/	/	/	/	/	Tone Bernard, teacher, St Patrick
273	TURNER Edward	?	/	/	/	shed no.1	shed no.1	/	Turner Edward, laborer, 2 Emigrant sheds
274	W	?	/	/	shed no.3	/	/	/	/
275	WAINE/WAYNE John	lzbourer	/	G.T. Row - 4	G.T. Row - 4	G.T. Row -4	G.T. Row -1	G.T. Row -11	/
276	WAKEFIELD Mark	overseer	Pt St Charles -3	/	/	/	/	/	Wakefield, Mrs, south GTR, Point St Charles
277	WAKEFIELD widow (Martha BLACKLOCK)	boarding house	/	G.T. Row - 4	G.T. Row - 4	G.T. Row -4	G.T. Row -1	G.T. Row -11	Wakefield, Mrs, south GTR, Point St Charles?
278	WALKER Alexander	fitter	/	/	/	/	/	G.T. Row -21 [b]	/

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
279	WALKER Robert	?	shed no.6 (shed no.7)	/	/	/	/	/	/
280	WALL James (Jones?)	mason	shed no.1	shed no.1	/	/	/	/	Wall James, stonecutter, 72 Murray?
281	WALTON William	?	/	shed no.2	/	/	/	/	Walton William, carpenter, Point St Charles, near railway crossing
282	WANTON David	?	/	/	/	/	shed no.14	/	/
283	WATERS James	carpenter	shed no.4	/	/	/	/	/	Waters James, carpenter, St Etienne
284	WATSON William	carpenter	/	/	G.T. Row - 26	/	/	/	Watson, william, st Antoine corner Seigneurs
285	WELSH John	?	/	/	/	shed no.14	/	/	Welsh John, laborer, 56 Emigrant sheds. Maybe the John Welsh who testified after the death of Kirkup?

	Name	Occupation	1856	1857	1858	1859	1860	1861	Lovell's Directory 1860-1861
286	WHITE William	?	/	/	/	/	shed no.21	/	White William, boilermaker 101 Emigrant sheds?
287	WILBERTH Robert	?	/	shed no.6	/	/	/	/	/
288	WITTS Daniel	labourer	shed no.6 (shed no.7)	/	/	/	/	/	Witts Daniel, laborer, Farm St.
289	WOOD Henry	bridge inspector	/	/	/	G.T. Row -3	G.T. Row -3	G.T. Row -13 [a]	Wood Henry, foreman, GT Row
290	WOODHALL/ WOULDALL Thomas	carpenter	shed no.1	/	/	shed no.4	/	/	Woodhall Thomas, carpenter, 147 William
291	WYER Robert	guardian	Pt St Charles -1	Pt St Charles -2 [a]	/	/	/	/	Wyer Robert, messenger, contractors' office, GTR, Pt St Charles?
292	WYND William	coach builder	Pt St Charles -7	/	/	/	/	/	/
293	YOUNG William	engineer	shed no.1	/	/	/	/	/	/

Appendix 3: Names of workers from newspapers, compared with Greenlaw's list (tax assessment rolls for the Ste Anne's ward of Montreal), the list of Britannia Bridge workers provided by Julie Stone, and Hodges's book and list of staff.

	Last name	First name	Job / Other remarks	Age	Nationality	Dead or alive	Source	Also present in Greenlaw's list	Also present in J. Stone's list	Also present in J. Hodges's book
1	Barney	/	'conducteur de chaloupe' (sailor)			Alive in July 1859	La Minerve, 2 Jul. 1859			
2	Burke	Edward		young' ('jeune')	/	Died 14 May 1859, crushed by a beam	Le Journal de Québec, samedi 21 mai 1859. D'après la Minerve	no	no	no
3	Burke	Michael	capenter		/		Montreal Heral and Daily Commercial Gazette, 22 July 1859	no	no	no
4	Dogherty / Daugherty	?	boatman. Young, robust, excellent swimmer, used to salty waters	/	/	alive in July 1859	Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859	no	no	no
5	Duquette	J.B.	sailor	/	/	alive in July 1859	Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	a Ducket James, conductor, in GT Row-17 in 1861	no	no
6	Guérin	Ludger	charpentier	23 years old	/	Died Sat. 11 Dec. 1858, afternoon: fell from a scaffolding	L'Ere Nouvelle. Journal du District de Trois-Rivières, 16 déc. 1858. D'après la Minerve	no	no	no
7	Jamieson	Robert	a mechanic (according to dr Godfrey); a labourer working for Hodkinson, i.e. on tubes	/	/	Died 12 July 1859	Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859	no	no	No

	Last name	First name	Job / Other remarks	Age	Nationality	Dead or alive	Source	Also present in Greenlaw's list	Also present in J. Stone's list	Also present in J. Hodges's book
8	Kirkup	L.	Description of his clothes and his height (5 pieds 9 1/2 pouces = 5 feet 9 1/2 in.)	21	Canadian as Robert Kirkup, his father, offered reward to find him in La Minerve, 19 Jul. 1859.	Died 12 July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	no	no	inspector of riveting, part of contrators' staff, superintendents, inspectors, foremen, &c.
9	M'Nab	William	foreman (witness)	/		alive in July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	yes (McNab): shed 3 (1858) and shed 7 (1859)	no	no
10	Melville	John	mechanic (witness)	/		alive in July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	Maybe: James Melville, shed 1 (1858); John Melville/Milville, foreman engineer, present at least since 1856	no	foreman of shops, part of contrators' staff, superintendents, inspectors, foremen, &c.
11	Minou	Théodore	worker 'had been employed for a few years on the construction of the Victoria Bridge'. My translation.	young' ('jeune')	Canadian	Died end of June 1859, fell after being hit by a beam	La Minerve, 2 Jul. 1859	no	no	no
12	O'Brien	Thomas	worker living on Grand-Tronc st. My translation	/		Died Thu. 11 Aug. 1859: fell into the water and drowned	La Minerve, 16 Aug.1859	no	no	No

	Last name	First name	Job / Other remarks	Age	Nationality	Dead or alive	Source	Also present in Greenlaw's list	Also present in J. Stone's list	Also present in J. Hodges's book
13	Robignot / Robinot	Joseph	captain of the barge 'The Tube'	/		alive in July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	no	no	no
14	Sergeant	Horace S.	engineer. In charge of an engine on one pier.	/		alive in July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	no	no	no
15	Walsh	John	labourer	/		alive in July 1859	La Minerve 19 Jul + Montreal Heral and Daily Commercial Gazette, 21 & 22 July 1859,	same as John Welsh, shed 14 (1859)?	no	no

Appendix 4 – Wages on the Grand Trunk Railway and in the UK

Table 1: Wages on the Grand Trunk, undated.

Wages on the Victoria Bridge are not given and assumed to be close to the wages given on Peto, Brassey, and Bett's section of the Grand Trunk.

		CANADA Grand Trunk Railway	Per diem				
Source			s.	d.	to	s.	d.
1852	Helps, <i>Life and</i>						
Min. to max	<i>Labours of Thomas Brassey, 1805-1870, Appendix C, 200</i>	Labourers	4	3	to	5	0
		Masons	7	6	to	8	6
		Carpenters	6	6	to	8	6

		CANADA Grand Trunk Railway	Per diem					Comparison with UK	
Source			s.	d.	to	s.	d.		
No date									
Variation: from start to end of works (undated)	Brassey, <i>Work and Wages, 35</i>	Labourers	3	6	to	6	0	They 'received forty per cent. more for doing the same work than they had been previously earning in England', Brassey, 35	
	Brassey, <i>Work and Wages, 87</i>	French-Canadian labourers	3	6		/	/		
Min. to max.		English labourers	5	0		6	0		
	Brassey, <i>Work and Wages, 35</i>	Masons	7	6	to	/	/		5s. a day (i.e. masons received 50 per cent more in Canada)

1854	Source	CANADA	Per diem					Comparison with UK
			s.	d.	to	s.	d.	
Min. to max.	<i>Herapath's Railway and Commercial Journal</i> , March 4, 1854, cited in Currie, <i>The Grand Trunk Railway of Canada</i> , 29	Artisans	8			10		Twice the salary in Britain
		Unskilled workers	4	0	to	/	/	
		Steady workers	A bonus of 1 to 2 pounds at end of year					

Table 2: Wages of railway workers in Britain from 1836 to 1871.

Year	Line	Type of workers	Wages	Remarks
Source: Brassey, <i>Work and Wages</i> , 194-7				
1836	The Aire and Calder Navigation	Navvies working in butty-gangs by piece work	From 4s. to 5s. and in some cases 6s. per day	
1836	The London and Birmingham Railway	Plate-layers working on the piece-work system:	5s./day	
		Plate-layers working by the day:	3s. 6d./day	
1837	Penkrige viaduct on the Grand Junction Railway	Navvies	From 2s. 6d. to 2s. 8d. per day	
		Artisans	From 22s. to 23s. per week	
1846	Trent Valley line	Navvies	From 3s to 3s. 6d.	On many portions of the contract: men worked night and day
		Men employed in filling wagons	From 2s. 9d. to 3s.	
1869	In South Wales	Wages as low as they have ever been		Consequence of the long-continued depression in the iron trade
1871	Widening of the London and North-Western Railway	Navvies	From 3s. to 3s. 6d./day	Wages have risen: consequence of the great demand for labour in all parts of the country. According to contractor, cost of labour is 15 dearer, but superior skill and contrivance
		Carpenters and smiths	5s. to 5s. 3d./day	
		Masons and bricklayers	6s./day	

	ENGLAND	Per diem				
	Source: <i>Helps, Life and Labours of Thomas Brassey, 1805-1870, Appendix C, 197</i>	<i>s.</i>	<i>d.</i>	to	<i>s.</i>	<i>d.</i>
1843	Gloucester and Bristol Railway Labourers	2	4	To	2	9
1849	Great Northern Railway Labourers	2	9	'	3	0
1851	Shrewsbury and Hereford Railway Labourers	2	4		2	9
1855	Leicester and Hitchin Railway Labourers	2	9		3	3
1858	Shrewsbury and Crew Railway Labourers	2	9		3	0
1861	Shrewsbury and Hereford Railway Labourers	2	9		3	0
1864	Tenbury and Bewdley Railway Labourers	2	9		3	3
1866	Wellington and Drayton Railway	2	9		3	3
1868	Silverdale Railway Labourers	3	2		3	6

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La naissance d'un pont. La construction du Pont Victoria à Montréal (1853-1859)

Résumé

L'imposant pont Victoria, long d'environ trois kilomètres, est le premier pont à avoir enjambé le St Laurent. Construit à Montréal entre 1853 et 1859, il est d'une importance cruciale pour le projet ferroviaire du Grand Tronc (GT), dont l'ambition est de relier le Canada Est et le Canada Ouest aux ports maritimes de l'Atlantique et ainsi à l'Europe. Une firme de célèbres entrepreneurs britanniques, Peto, Brassey, Jackson et Betts, est en charge de la construction de la section la plus importante du GT ainsi que du pont Victoria, conçu par l'éminent Robert Stephenson et son assistant Alexander Ross, l'ingénieur en chef du GT au Canada. Il s'agit d'un pont tubulaire dont la construction, achevée avec deux ans d'avance malgré des difficultés financières et diverses épreuves, emploie parfois plus de 3000 ouvriers. Cette thèse contribue à la discussion sur le rôle du Canada dans l'histoire impériale, mais aussi à l'histoire de la circulation des hommes et des savoirs dans un contexte d'industrialisation croissante et de développement mondial du génie civil britannique. Elle étudie les relations entre employeurs et ouvriers sur le chantier et fait du pont Victoria une étude de cas permettant d'analyser le paternalisme et le développement du capitalisme industriel et du travail salarié dans le Canada du XIXe siècle, avec une attention particulière portée à l'analyse du risque et des accidents.

Mots-clés : Mots-clés : histoire ouvrière ; Canada ; empire britannique ; risque ; histoire des accidents ; chemins de fer ; pont ferroviaire

The Birth of a Bridge. The Building of the Victoria Bridge in Montreal, 1853-1859

Summary

The impressive, three kilometres Victoria Bridge across the St Lawrence River, built 1853-1859 in Montreal, was crucially important to the ambitious Grand Trunk Railway (GTR) project designed to better connect Canada East and Canada West to one another, to Atlantic seaports, and thus to Europe. A partnership of famous British contractors, Peto, Brassey, Jackson, and Betts, built the most important section of the GTR and the Victoria Bridge, designed by the eminent Robert Stephenson with his assistant Alexander Ross, the GTR's engineer-in-chief in Canada. Construction of this massive bridge of tubular design, finished two years ahead of schedule despite financial difficulties and hardships of various natures, at times required the employment of 3000 or more workers. This dissertation contributes to the discussion on the role of Canada in imperial history, but also to the history of the circulation of men and knowledge in a context of rising industrialism and worldwide development of British civil engineering. It analyses the labour relations on the worksite, and argues that the Victoria Bridge is a case study to analyse paternalism and the development of industrial capitalism and wage employment in nineteenth-century Canada, with a particular focus on the analysis of risk and accidents.

Keywords : labour history; Canada; British Empire; risk; history of accidents; railways; railway bridge

UNIVERSITÉ SORBONNE UNIVERSITÉ

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ED188 – Histoire moderne et contemporaine

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DISCIPLINE : Histoire moderne et contemporaine