

TRANSPORTATION SHAPING THE ENVIRONMENTAL HISTORY OF ONTARIO

Transportation of things over any distance is uniquely human. It enables us to draw on the riches of nature, and it leads to the deepest transformations of our environment. The history of our province has seen many advances in transportation. It also reveals many impacts on people and the environment. This historical study seeks understanding of the environment as residents saw it, together with the challenges it posed for them. The study is focused on technological advances in transportation. It recognizes decisions by organizations private and public to use technological change to advance movement of goods and people within (and across) the province.

This study builds on an earlier study of transportation in Northern Ontario.¹ That stage is no small one, since Northern Ontario constitutes seven-eighths of the territory of Ontario. Most Ontarians live in the lower one-eighth, of course, and they have made so many of the decisions that shaped the history of Northern Ontario, including the development of transportation. Since the Canadian capital is in Ontario, we may include national decisions about transportation in Ontario as being made in the province, too. Among the most important were decisions before the Great War to build railways across Northern Ontario. It has been said that there was an over-building of railway lines during the Laurier era. This national question receives an interesting answer in Northern Ontario. That is only one of the contributions of this study.

This article surveys Ontario transportation development in four parts. The first looks at transportation driven by muscles or the forces of nature. The second examines how steam power was harnessed to move water craft and machines on land. It also considers how electric power offered alternatives or complements to steam engines. The third part recognizes the impact on transportation of the internal combustion engine. The conclusion notes competition among the various modes of transportation and some of the environmental consequences.

I

From time immemorial, humans used their legs and arms to get around--and get around they did! Tens of thousands of years ago, our ancestors walked out of Africa and spread across Asia and Europe (and beyond).² Through harsh weather and mild, they found homes in many places. Some crossed narrow waters to Australia and populated that continent at least sixty-five thousand years ago. Those who came to the Western Hemisphere later in the last glacial period may also have used water craft to travel down the West Coast and on to the southern parts of

¹ Ernie Epp, "Transportation and Communications," in *A Vast and Magnificent Land: An Illustrated History of Northern Ontario*, edited by Matt Bray and Ernie Epp ([Thunder Bay and Sudbury]: Lakehead University and Laurentian University, 1984), 49-70.

² The last of these migrations out of Africa is being re-enacted by journalist Paul Salopek in what he expected to be a seven-year trek around the world. See *National Geographic* December 2013 for his "Out of Eden" trek and later reports on the World Wide Web.

South America. They developed great civilizations in the "New World," long before Europeans found them, and they did this largely without the assistance of animal muscle.³ Nor did they draw on natural forces, especially wind power, as their distant relatives did when crossing the Atlantic Ocean.

Conventional histories of Ontario begin with European voyages of the late fifteenth century. In one decade, Mediterranean mariners in the service of several European rulers ventured out on the Ocean Sea.⁴ Advances in shipping and navigation enabled Christopher Columbus to sail west to "India" in 1492, Vasco da Gama to take a fleet around Africa to South Asia in 1497, and John Cabot to sail across the North Atlantic to a "New Found Land," also in 1497. Each discovered wealth, with the fisheries off Newfoundland being the English gain. Others followed in their little sail-driven vessels. A French mariner named Jacques Cartier encountered Indigenous people in their canoes on the Gaspé coast in 1534 and found them eager to trade furs for European manufactures.⁵ An important people in the Great Lakes basin, the Ojibway, had a tradition of migration from the Atlantic coast up the St. Lawrence-Great Lakes waterway to Lake Superior.⁶ This movement surely depended on canoes. And these same traditions told of a long journey by canoe from Lake Superior to the St. Lawrence River, which enabled an Ojibway seer and his wife to discover these European newcomers. This powerful tradition recognized goods that the newcomers offered, which came to play such an important part in the life of the Ojibway: tools, clothing, weapons, liquor.⁷

Maintaining contact with European traders became the central concern of the First Nations. We can piece the story together. In 1535 and 1540, Cartier visited towns in the St. Lawrence valley called Stadacona and Hochelaga, with rapids impeding travel up the river beyond Hochelaga.⁸ Some sixty-five years later, Samuel de Champlain found little in the way of settled communities at these places, where Québec and Montréal would later grow into important cities.⁹ Instead, Champlain encountered a great gathering of people at the mouth of the Saguenay River as they celebrated a victory over enemies. He also described the way in which the chief "embarked his wife and children, and a quantity of furs; and in like manner were launched well nigh two hundred canoes, which go extraordinarily well, for though our

³ Charles C. Mann, *1491: New Revelations of the Americas before Columbus* (New York: Knopf, 2005).

⁴ J.H. Parry, *The Age of Reconnaissance* (New York: New American Library of World Literature, 1964), provides a classic account of European geographical exploration.

⁵ Hiram B. Stephens, *Jacques Cartier and the Four Voyages to Canada* (Toronto: Musson Book Company, n.d.).

⁶ William W. Warren, *History of the Ojibway People* ([St. Paul, MN]: Minnesota Historical Society Press, 1984), 76-94.

⁷ *Ibid.*, 118-120.

⁸ See Stephens, *Jacques Cartier and the Four Voyages to Canada*, 40-95, for the 1535 visit and 102-109, for the 1540 visit.

⁹ Cf. Bruce G. Trigger, *Natives and Newcomers: Canada's "Heroic Age" Reconsidered* (Kingston: McGill-Queen's University Press, 1985), 130-134 and 175-81.

shallop was well manned, yet they went more swiftly than we." Champlain described the craft as being "some eight or nine paces long and a pace and a half broad" and made of "a bark of trees called birch-bark strengthened within by little circles of wood strongly and neatly fashioned." The canoe was "so light that a man can carry one of them easily," but it was strong enough to carry a thousand pounds of freight.¹⁰

Was the "Captain" whom Champlain encountered at Tadoussac the chief of the Kichesiperini, the Algonquin of the Island, living near what is now Pembroke, whom he visited in 1613? The visit was a response to stories told by Nicolas Vignau, a youth Champlain had left with the Kichesiperini in the "hostage exchange" custom of the First Nations, of a voyage to the North Sea that might offer a route to the riches of Asia. The people who hosted Champlain's visit enjoyed a controlling position on the Great River named after traders from the west, the Ottawas (or Odowas).¹¹ Father Gabriel Sagard travelled to the country of the Hurons (Wendats) near Georgian Bay a few years later. He described the way in which the Wendats travelling down the river ran their canoes ashore at the Island and allowed the Algonquin to take goods from the canoes in the way of a toll. He also described the people there as the wealthiest he had seen and marvelled at the rich garb of the women.¹²

Commercial activity of this sort was one thing; warfare to open and maintain trade links was quite another. And both occurred throughout the seventeenth century. It is quite likely that the Algonquin had driven the Iroquoians from the St. Lawrence valley by the end of the sixteenth century--after all, Champlain was drawn into expeditions against Iroquoians in 1609 and 1610, and the Algonquin faced warfare with them in the 1630s.¹³ Bruce Trigger, ethnohistorian of the Wendats, had focused on the Mohawk-Mahican war of 1624-1628 in theorizing that the Mohawk sought direct access to European traders--the Dutch on the Hudson River--and fought any people who got in their way.¹⁴ Better known in Canadian history than Mohawk attacks on the Mahicans was the warfare in 1649 by which Iroquoians dispersed the Four Nations Confederacy of the Wendats, driving some of them into the St. Lawrence Valley and taking others to strengthen their communities in what is now upstate New York.¹⁵ The Iroquoian dispersion of the Wendats, fellow Iroquoians though they were, might be regarded as

¹⁰ *Works of Samuel de Champlain*, edited by H.P. Biggar and translated by H.H. Langton (Toronto: The Champlain Society, 1922-1936), 1:104-105. See also Johann Georg Kohl, *Kitchi-Gami: Life among the Lake Superior Ojibway*, translated by Lascelles Wraxall (reprint of 1860 edition; St. Paul, MN: Minnesota Historical Society Press, 1985), 28-34, on the construction and use of canoes on Lake Superior in the 1850s, and James Raffan, *Fire in the Bones: Bill Mason and the Canadian Canoeing Tradition* (Toronto: HarperCollins Publishers Ltd., 1996).

¹¹ *Works of Samuel de Champlain*, 2:277-297.

¹² Father Gabriel Sagard, *The Long Journey to the Country of the Hurons*, edited by George M. Wrong (Toronto: The Champlain Society, 1939), 255-258.

¹³ *Works of Samuel de Champlain*, 2:82-100 and 124-134. Cf. Trigger, *Natives and Newcomers*, 175-177.

¹⁴ Bruce G. Trigger, "The Mohawk-Mahican War (1624-28): The Establishment of a Pattern," *Canadian Historical Review* 52:3 (September 1971), 276-286.

part of a Five Nations effort to expand their trading territory into the interior, given that they had direct access to the Dutch. Disrupting trade with the French would strengthen the position of their European ally. In this context, the "Wars of the Iroquois" had a geopolitical importance impacting the people of the Upper Lakes.¹⁶ A great victory that the Ojibway won in the 1660s near the mouth of Lake Superior marked the farthest advance of the Five Nations.¹⁷ It was succeeded by a war the Iroquois did not win, when Algonquian nations fought their way as far east as Lake Ontario, established themselves in "southern Ontario," and then joined in the Great Peace of 1701 at Montréal.¹⁸

If these wars involved limited use of canoes, the advance of Frenchmen into the interior certainly did require them. The most prominent of these *coureurs-de-bois* was surely Pierre Radisson who, with his partner Des Groseilliers, survived a winter south of Lake Superior, saw the potential of trade from the Northern Sea, and inspired an English initiative in the form of the Hudson's Bay Company, chartered in 1670.¹⁹ *Coureurs-de-bois*, gradually become *voyageurs* employed by merchants trading into the Upper Country, used their muscles for a century and a half to carry on the fur trade. They moved trade goods inland to a multiplicity of posts and carried furs back to their employers in Montréal.²⁰ Meanwhile the men of the English company "sat on the Bay" for more than a century--except for a short-lived and ill-fated establishment

¹⁵ Bruce G. Trigger, *Children of Aataentsic: a history of the Huron People to 1660* (Kingston: McGill-Queen's University Press, 1987), 789-840.

¹⁶ The classic account by George T. Hunt, *Wars of the Iroquois: A Study in Intertribal Trade Relations* (n.p.: University of Wisconsin Press, 1960), has been supplemented by Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region 1650-1815* (New York: Cambridge University Press, 1991).

¹⁷ We can compare two accounts of this battle: a French agent's report at the time and the Ojibway tradition almost two centuries later. See *The Indian Tribes of the Upper Mississippi Valley and Region of the Great Lakes as described by Nicolas Perrot, French commandant in the Northwest*, . . . translated, edited, annotated . . . by Emma Helen Blair (2 vol.; Cleveland, OH: The Arthur H. Clark, Company, 1911), 1:178-181, and Warren, *History of the Ojibway People*, 147-148.

¹⁸ Leroy V. Eid, "The Ojibwa-Iroquois War: The War the Five Nations Did Not Win," *Ethnohistory* 26:4 (Autumn 1979), 297-324. See also Peter S. Schmalz, "The Role of the Ojibwa in the Conquest of Southern Ontario, 1650-1701," *Ontario History* 76:4 (December 1984), 326-352, and Peter S. Schmalz, *Ojibwa of Southern Ontario* (Toronto: University of Toronto Press, 1991), 35-62 (chapter 3 "The Golden Age 'Our Warriors Make the Earth Tremble'").

¹⁹ Grace Lee Nute, *Caesars of the Wilderness: Médard Chouart, Sieur des Groseilliers and Pierre Radisson, 1618-1710* ([St. Paul, MN]: Minnesota Historical Society Press, 1943), 27-38, examines the conventional view. For an Indigenous view, see Warren, *History of the Ojibway People*, 121-122. Radisson's own account of the Lake Superior stay is now available in *Pierre-Esprit Radisson The Collected Writings*, Volume 1 *The Voyages*, edited by Germaine Warkentin (Montréal and Kingston: McGill-Queen's University Press/Toronto: The Champlain Society, 2012), 261-293. For the founding of the Hudson's Bay Company, see E.E. Rich, *The History of the Hudson's Bay Company, 1670-1870* (3 vol.; Toronto: McClelland and Stewart, 1960), 1:21-60.

in the 1750s on the Albany River--while Indigenous traders obtained furs in the interior, brought them to the posts, traded them there for various manufactures, and then took these goods back to trade for furs in the interior.²¹

The French trade out of Montréal extended practically to the Rocky Mountains before Britain obtained Canada by war in 1759-60. The 1763 Treaty of Paris created a great colony reaching as far as the Mississippi River and including the territory of Indigenous People with whom the Crown alone could deal as regards land. British control of both the Hudson and St. Lawrence rivers enabled some merchants to trade to the Southwest while others traded to the Northwest. When Anglo-Americans unhappy with British taxation decided not to trade with Britain, they forced the Albany merchants to transfer their trade to the St. Lawrence at Montréal. And when a number of these merchants formed a North West Company as the American War for Independence began in 1776, they were equipped to trade across and beyond the Great Lakes. However, they soon found the Hudson's Bay Company establishing its own inland posts in order to maintain its claims in Rupert's Land. The result was a fierce competition that eventually forced the companies into one organization in 1821.²²

During those years of competition, the Nor'Westers felt compelled in 1803 to move their entrepot from Grand Portage to the mouth of the Kaministiquia River. The 1783 Treaty of Paris had divided the Upper Country, and Jay's Treaty confirmed the International Boundary in 1794. Twenty years earlier, Nor'Westers had combined trade outfits to support Peter Pond in crossing Rupert's Land into the Athabasca country. This distant trade required a *rendezvous* of the Montréal and wintering partners on Rainy Lake rather than at Fort William.²³ And the

²⁰ The trade they made possible has been analyzed by Dean L. Anderson, "The Flow of European Trade Goods into the Western Great Lakes Region, 1715-1760," in *The Fur Trade Revisited: Selected Papers of the Sixth North American Fur Trade Conference, Mackinac Island, Michigan, 1991*, edited by Jennifer S.H. Brown, W.J. Eccles, and Donald P. Heldman (East Lansing and Mackinac Island: Michigan State University Press and Mackinac State Historic Parks, 1994), 93-115.

²¹ The classic account is A.J. Ray, *Indians in the Fur Trade: Their Role as Trappers, Hunters and Middlemen in the Lands Southwest of Hudson Bay, 1670-1870* (Toronto: University of Toronto Press, 1975).

²² See E.E. Rich, *The Fur Trade and the Northwest to 1857* (Toronto: McClelland and Stewart, 1967), 130-162; Alma E. Henry, "Fur Trade Rivalry on the Rainy River (1793-1797)," edited by David M. Chapman, Thunder Bay Historical Museum Society *Papers and Records* 28 (2000), 51-71; and Susan J. Campbell, "Competitive Fur Trade Tactics; Pointe de Meuron 1817-1821," Thunder Bay Historical Museum Society *Papers and Records* 1 (1973), 33-40. [Hereafter this journal is cited as *Papers and Records*.]

²³ Gregg A. Young, "The Organization of the Transfer of Furs at Fort William: A Study in Historical Geography," *Papers and Records* 2 (1974), 29-36; David Kemp, "The Impact of Weather and Climate on the Fur Trade in the Canadian North-West," *Papers and Records* 8 (1980), 32-42; Joseph D. Winterburn, "Lac la Pluie Bills of Lading 1806-1809," *Papers and Records* 9 (1981), 7-13; Merv Ahrens, "Travelers and Historical Cartography of the 'Back Road'

Coalition of 1821, in which the wintering partners of the North West Company joined the Hudson's Bay Company, surely reflected their acceptance that York boats from Hudson Bay were more efficient for transporting supplies and furs than the birch-bark canoes used by the North West Company.²⁴ Fort William was left in something of a trade backwater--especially when Governor George Simpson instituted a rigorous conservation policy in the region--but the Governor still used Montréal canoes driven up Lake Superior by trusted *voyageurs* when he crossed the continent on his inspection tours.²⁵

Fifteen years before this fur trade reorganization, war between Britain and France had opened a second great staple trade for British North America. Napoleon, Emperor of the French, aimed to strangle his island enemy by cutting off its trade with Europe. Dependent as the Royal Navy was on timber and naval stores from northern Europe, the British Government responded to the Continental System in 1806 with preferential tariffs to encourage timber production in North America. The "King's Arrow" had long been used to mark trees near the Atlantic coast for mast-making, but the great white and red pine forests of the St. Lawrence and Ottawa basins offered even greater resources. Timber makers sent crews up the Ottawa to cut trees, move them to river banks, and then float them down the Ottawa and St. Lawrence rivers to Québec City. This great trade, pursued on both sides of the Ottawa River, continued to be protected even after Britain adopted Free Trade in the late 1840s.²⁶ The timber trade, which employed French Canadians and Irish immigrants, helped to build the future city of Ottawa, and it made Québec a great port through the nineteenth century.²⁷ And one of the reasons for the creation in 1893 of Algonquin National Park (as it was originally named) was protection of the headwaters of five rivers flowing into the Ottawa River.²⁸

connecting Rainy Lake and Lake of the Woods--Pre-1734 to Present," *Papers and Records* 38 (2010), 20-35.

²⁴ Cf. Marjorie Wilkins Campbell, *The North West Company* (Toronto: Macmillan Company of Canada Limited, 1957), 254-277 (Chapter XI "Not By Others' Hands"), and Rich, *The Fur Trade and the Northwest to 1857*, 239-244.

²⁵ See Patricia Jasen, "Imagining Fort William: Romanticism, Tourism and the Old Fort, 1821-1971," *Papers and Records* 18 (1990), 2-19. Judith Petch, "Selections from HBC Post Journals of Fort William in the 1820s and 1830s," *Papers and Records* 25 (1997), 46-63, illuminates the post-Coalition state of Fort William. James Raffan, *Emperor of the North: Sir George Simpson & the Remarkable Story of the Hudson's Bay Company* (Toronto: HarperCollins Publishers Ltd., 2007, 86-95), describes Simpson's first voyage up the lakes.

²⁶ A.R.M. Lower, *Great Britain's Woodyard: British America and the Timber Trade 1763-1867* (Montréal: McGill-Queen's University Press, 1973).

²⁷ Michael S. Cross, "The Shiners' War: Social Violence in the Ottawa Valley in the 1830s," *Canadian Historical Review* 54:1 (March 1973), 1-26, and "The Lumber Community of Upper Canada, 1815-1867," *Ontario History* 52:1 (March 1993), 65-76.

²⁸ Gerald Killan, *Protected Places: a History of Ontario's Provincial Parks System* (Toronto; Dundurn Press, 1993), 8-16.

Settlement of what is now southern Ontario was facilitated by the Great Lakes, as well as by the St. Lawrence and Niagara rivers, all of which the United Empire Loyalists and later American settlers crossed on their way into what became Upper Canada in 1791. Transportation was vital to their movement and essential to their life in the new colony. Ships sailed the lakes, and shipbuilding developed to provide these vessels.²⁹ That was the easy part, but freight had to be moved inland and the roads remained notoriously bad for more than a century. People could walk to their destinations, of course, and horses could be ridden for long distances.³⁰ But roads had to be cut out of the forest, and the governments of Upper Canada devoted much effort to building these roads.³¹ The building of roads continued for more than a century as successive governments sought to facilitate settlement and economic activity.³² And transport of freight on the rivers was often impeded by rapids, as *voyageurs* knew so well. It was not just the employees of fur companies who were compelled to make portages.³³ Niagara Falls was an awesome barrier to river travel, and the Niagara Portage had its own history.³⁴

Some of these barriers to transportation were eventually overcome by the building of canals. The earliest was actually built to facilitate the movement of furs, when the North West Company dug a canal beside the St. Mary's River in 1798.³⁵ Perhaps the most famous rapids in Canadian history, the Lachine rapids at Montréal, were not bypassed by a canal until 1825. And

²⁹ Mary Quayle Innis, "The Industrial Development of Ontario 1783-1850," *Ontario Historical Society Papers and Records* 32 (1937), 104-113; E.A. Cruikshank, "Notes on the History of Shipbuilding and Navigation on Lake Ontario up to the time of the launching of the Steamship Frontenac at Ernesttown, Ontario, 7th September, 1816," *Ontario Historical Society Papers and Records* 23 (1926), 33-44. [Cited hereafter as *OHS Papers and Records*.] See also Bruce A. Parker, "Shipbuilding in the Niagara Peninsula: A Study of Nineteenth Century Enterprise," in two parts: *Inland Seas*, 36:2 (Summer 1980), 87-95, and 36:3 (Fall 1980), 179-185.

³⁰ C.A. Fleming, "Pioneer Settlers Walk 130 Miles," *OHS Papers and Records* 35 (1943), 14-24; Charles Aikens, "Journal of a Journey from Sandwich to York in the Summer of 1806," *OHS Papers and Records* 6 (1905), 15-20.

³¹ R. Louis Gentilcore, "Lines on the Land: Crown Surveys and Settlement in Upper Canada," *Ontario History* 61:1 (June 1969), 57-73; W.H. Breithaupt, "Dundas Street and Other Early Upper Canada Roads," *OHS Papers and Records*, 21 (1924), 5-10; Michael S. Cross, "The Stormy History of the York Roads, 1833-1865," *Ontario History* 54:1 (March 1962), 1-24.

³² Keith A. Parker, "Colonization Roads and Commercial Policy," *Ontario History* 67 (1975), 31-38; George W. Spragge, "Colonization Roads in Canada West, 1850-1887," *Ontario History* 49:1 (Winter 1957), 1-17; Helen E. Parson, "The Colonization of the Southern Canadian Shield in Ontario: The Hastings Road," *Ontario History* 79:3 (September 1987), 263-273; Diane Newell, "Silver Mining in the Thunder Bay District, 1865-1885," *Papers and Records* 13 (1985), 28-45.

³³ Percy J. Robinson, "Toronto Carrying Place," *OHS Papers and Records* 29 (1933), 82-84, and "The Toronto Carrying Place and the Toronto Purchase," *Ontario History* 39 (1947), 41-49; George Laidler, "The Nottawasaga Portage, Simcoe County, Ontario," *OHS Papers and Records*, 35 (1943), 39-48. See also Marilyn G. Miller, *Straight Lines in Curved Space: Colonization Roads in Eastern Ontario* (Toronto: Ontario Ministry of Culture and Recreation, 1978).

³⁴ Ernest Green, "The Niagara Portage Road," *OHS Papers and Records* 33 (1926), 260-311.

the first known instance of a timber slide on the Ottawa River was the one Ruggles Wright built in 1829. (A 1.2 kilometre chute by-passing the Chaudière Falls in Ottawa provided the future King George V and his wife with an all-Canadian thrill in 1900.)³⁶ An American challenge to the St. Lawrence system appeared after the Erie Canal linked Buffalo, New York, and Lake Erie to the Hudson River in 1825.³⁷ This challenge was sharpened by construction in the following decade of the Oswego Canal, linking Lake Ontario to the Erie Canal, too.³⁸ The first Welland canal, linking Lakes Erie and Ontario and by-passing Niagara Falls, was completed in 1829.³⁹ And the Rideau Canal, built for fear of another American attack like the War of 1812, was opened in 1839 between the Ottawa River and Lake Ontario.⁴⁰ Sometimes the canals were quite short, as in the case of the Burlington Bay Canal.⁴¹ And there were navigation improvements on some rivers.⁴² A much larger project, improving navigation on the St. Lawrence between Kingston and Montréal, was carried out with Imperial financing during the 1840s, even as a new era in transportation dawned.⁴³ And the Welland canal was improved a number of times over the next century, even as railways were completed and moved many people and much freight.⁴⁴

³⁵ R.A. Brotherton, "Lake Superior and Early Navigation," *Inland Seas* 13:1 (Spring 1957), 50-53, describes activity during the fur trade era.

³⁶ Patricia Jasen, *Wild Things: Nature, Culture, and Tourism in Ontario, 1790-1914* (Toronto: University of Toronto Press, 1995), 73-75 (an illustration appears between pages 54 and 55).

³⁷ D.G. Creighton, *The Commercial Empire of the St. Lawrence, 1760-1850* (Toronto: Ryerson Press, 1937), is the classic account of the rivalry. See also Wikipedia, "Erie Canal."

³⁸ Janet Larkin, "The Oswego Canal: A Connecting Link Between the United States and Canada, 1819-1837," *Ontario History* 103:1 (Spring 2011), 23-41.

³⁹ E.A. Cruikshank, "The Inception of the Welland Canal," *OHS Papers and Records* 22 (1925), 60-88; Hugh G.J. Aitken, *The Welland Canal Company: a Study in Canadian Enterprise* (Cambridge, MA: Harvard University Press, 1954); William R. Willoughby, "The Inception and Financing of the First Welland Canal," *Inland Seas* 12:3 (Fall 1956), 155-166. See also Wikipedia, "Welland Canal."

⁴⁰ Hammett P. Hall, "The Construction of the Rideau Canal, 1826-1832," *OHS Papers and Records* 22 (1925), 117-124. See also F.C. Curry, "The Rideau Canal System," *Inland Seas* 21:3 (Fall 1965), 210-216, and Wikipedia, "Rideau Canal."

⁴¹ Rod Millard, "Building the Burlington Bay Canal: The Staples Thesis and Harbour Development in Upper Canada, 1823-1854," *Ontario History* 110:1 (Spring 2019), 59-87.

⁴² B.E. Hill, "The Grand River Navigation Company and the Six Nations Indians," *Ontario History* 62:1 (March 1993), 31-40. Some projects were not achieved; see Guy St. Denis, "An Erie Canal for Western Upper Canada: A Forgotten Episode in Ontario's Transportation Evolution," *Ontario History* 85:3 (September 1993), 231-250.

⁴³ E.P. Johnson, "Canal Engineering Yesterday and To-day," *OHS Papers and Records* 23 (1926), 365-69; Gilbert Norman Tucker, *The Canadian Commercial Revolution 1845-1851*, edited by Hugh G.J. Aitken (Toronto: McClelland and Stewart, 1964), 19-45; Frederick C. Curry, "St. Lawrence Steamboat Days," *Inland Seas* 7:4 (Winter 1951), 264-271; James Gilmore, "The St. Lawrence River Canals Vessel," *Inland Seas* 12:4 (Winter 1956), 243-250, 13:1 (Spring 1957), 17-23, and 13:2 (Summer 1957), 95-104.

The era of steam power began in Great Britain during the second half of the eighteenth century. James Watt is justly famous for his development of the reciprocating steam engine, on which he and Matthew Boulton obtained a patent in 1776. The first applications of steam power occurred in factories, and it was only after the patent expired in 1800 that others were able to apply steam power to transportation.⁴⁵ There had been experiments with steam-powered vessels in Britain and France before 1800, but Robert Fulton achieved the first commercial successes on the Hudson River above New York City in 1807.⁴⁶ This improvement in the water movement of people and freight was not different in kind from shipping in earlier eras. The technology had to be developed, of course, and the initial use of paddle-wheel craft and the later development of screw propulsion are important to the Ontario study. It is worth noting that a Canadian-built vessel, the *SS Royal William*, competes for the honour of being the first vessel to cross the Atlantic almost entirely under steam power in 1833.⁴⁷ These were important advances, although wind would continue to drive freight into the twentieth century.⁴⁸

The truly revolutionary advance was the application of steam power to transportation on land. Advances in road construction had occurred in England, but the roads of British North America were almost invariably very poor and raised the cost of transportation to prohibitive heights.⁴⁹ An initial answer to these transportation challenges appeared in England in 1825 in the form of the Stockton and Darlington Railway. And the Liverpool and Manchester Railway was opened in 1830.⁵⁰ In North America, the first section of the Baltimore and Ohio Railway went into service in 1827. John Molson and other Montréal merchants opened a Champlain

⁴⁴ Rowley W. Murphy, "The Welland Canals," *Inland Seas* 15:3 (Fall 1959), 172-179; Rowley Murphy, "Memories of the Third Welland Canal," *Inland Seas* 19:4 (Winter 1963), 260-265; 20:1 (Spring 1964), 21-29; 20:2 (Summer 1964), 120-128; 20:3 (Fall 1964), 196-204; and 20:4 (Winter 1964), 295-303; and Ruth F. McMillan, "The Welland Canals," *Inland Seas* 23:4 (Winter 1967), 316-319.

⁴⁵ See W.O. Henderson, *The Industrialization of Europe 1780-1914* (London: Thames and Hudson, 1969), for an illustrated survey of this development.

⁴⁶ Wikipedia, "Robert Fulton."

⁴⁷ Wikipedia, "SS Royal William."

⁴⁸ The ten volumes published by Her Majesty's Stationery Office in 1980 for Britain's National Maritime Museum under the series title, *The Ship*, are of great value. See particularly volumes 4 Alan McGowan, *The Century before Steam: The Development of the Sailing Ship 1700-1820*, 5 Robin Craig, *Steam Tramps and Cargo Liners 1850-1950*, and 7 Basil Greenhill, *The Life and Death of the Merchant Sailing Ship 1815-1965*, for the development in context.

⁴⁹ W.B. Hobson, "Old Stage Days in Oxford County," *OHS Papers and Records* 17 (1919), 33-36; James J. Talman, "Travel in Ontario before the Coming of the Railway," *OHS Papers and Records* 29 (1933), 85-102.

⁵⁰ Peter Mathias, *The First Industrial Nation: An Economic History of Britain 1700-1914* (New York: Charles Scribner's Sons, 1969), 275-289, places the development in the British context.

and Saint Lawrence Railroad in 1836, and the Albion Mines Railway began carrying coal in Nova Scotia in 1839. A continental railway mania developed in the 1840s, as lines were built westward from Boston, New York, Philadelphia, and Baltimore to reach Chicago by 1854. Portland, Maine, joined in the activity with an Atlantic and St. Lawrence Railroad, which met the St. Lawrence and Atlantic Railroad in 1853 to give Montréal a year-round link to the ocean.⁵¹

Canada West joined in with the Great Western Railway, on which construction began in October 1849. Completed in January 1854 from Niagara Falls to Windsor, this railway opened the southwest of the colony for the rising commercial town of Hamilton.⁵² No less important was the fact that it provided another route from the Atlantic Coast to Chicago by linking two US railways, the New York Central and the Michigan Central. Montréal's desire to maintain the "Commercial Empire of the St. Lawrence" led to construction of the Grand Trunk Railway, which was not completed to Sarnia until 1860. It provided a year-round route across Canada West and freed the communities of the upper St. Lawrence and the north shore of Lake Ontario from seasonal constraints on the movement of freight and people.⁵³ Construction of short lines from the shores of Lake Ontario also encouraged lumber production during these years.⁵⁴

As leaders of another ambitious city, Toronto business people had the Toronto, Simcoe and Huron Union Railroad chartered in 1850. It became the Ontario, Simcoe and Huron Railway as construction began in 1851. The first eighteen months were devoted to building over the Oak Ridges Moraine. During this same period, the Toronto Locomotive Works built the first steam locomotive constructed in Canada, as a leading example of the industrial impact of the new technology. The line had been completed to Collingwood by 1855 and thus facilitated movement of goods and people to and from the Upper Lakes.⁵⁵ The Welland Canal lost much of its significance for Toronto business people. The railway also enabled farmers to move their products to market, as people spoke of the "Oaks, Straw, and Hay" railway. A reorganization in 1858 produced the Northern Railway Company of Canada, with Frederick William Cumberland selling vessels the company owned and refusing to build more lines in the Huron region.⁵⁶ As a consequence, the Toronto, Grey and Bruce Railway was built to Owen Sound between 1869 and 1873. Thus, two ports on Georgian Bay had railway access to Toronto, Lake Ontario, and the St. Lawrence River. Shipping into Lake Superior became possible after a canal was completed on the American side of the St. Mary's River in 1854. A Northwest Trading and Colonization

⁵¹ James E. Vance, Jr., *The North American Railroad: Its Origin, Evolution, and Geography* (Baltimore and London: The Johns Hopkins Press, 1995), lives up to its title.

⁵² Russell D. Smith, "The Early Years of the Great Western Railway, 1833-1857," *OHS Papers and Records* 60:4 (December 1968), 205-227.

⁵³ Creighton, *The Commercial Empire of the St. Lawrence, 1760-1850*; A.W. Currie, *The Grand Trunk Railway of Canada* (Toronto: University of Toronto Press, 1957).

⁵⁴ W.E. Greening, "The Lumber Industry in the Ottawa Valley and the American Market in the Nineteenth Century," *Ontario History* 62:2 (June 1970), 34-36.

⁵⁵ Wikipedia, "Toronto, Grey and Bruce Railway."

⁵⁶ Russell D. Smith, "The Northern Railway: Its Origins and Construction, 1834-1855," *Ontario History* 48:1 (Winter 1956), 24-36; Wikipedia, "Northern Railway of Canada."

Company was organized in 1858, and it used the *Rescue* to carry mail bound for the Red River settlement to Lake Superior that very year.⁵⁷

Toronto's links to ports on Georgian Bay--and to lake vessels sailing as far as Lake Superior--aroused visions of a much larger Canada than the province in which Lower and Upper Canada had been combined in 1841.⁵⁸ The interests controlling the Hudson's Bay Company realized that their great domain of Rupert's Land might find a new future in sale of prairie lands to European settlers. The British-sponsored North American Exploring Expedition led by Captain John Palliser, which scouted the West between 1857 and 1861, revealed the agricultural potential of the prairies. After the Hudson's Bay Company surrendered its rights to the watershed of Hudson Bay in 1869, the way was open for the Dominion of Canada to acquire the western domain and settle it for the benefit of Canadians.⁵⁹ The Province of Canada had sent out its own explorers in 1857, led initially by George Gladman and geologist Henry Youle Hind. Hind took over the scientific exploration after 1859, while Simon J. Dawson headed the surveyors. Dawson's report, tabled in the Legislative Assembly in 1859, "proposed a route to the west different from that advocated by Hind and the expenditure of considerable amounts of public money to build wagon roads over various portages and to construct locks at Fort Frances [on Rainy Lake]. His proposal was designed to make maximum use of navigable rivers, to prepare the way for a railway linking east and west, and to forestall any move northward by aggressive American interests."⁶⁰ Only after the achievement of Confederation was Dawson commissioned to begin construction of his route. When Métis resistance at Red River to Canada's designs on the West provoked a military expedition, Dawson was provided with more than 1,000 workers to develop the route. Colonel G.J. Wolseley's men put in 5,000 workdays improving the route in the spring of 1870. Within a year, an emigrant transport service was providing a Canadian route to Red River, although many travelers rode US railways to Moorhead, Minnesota, and then took a steamboat down the Red River into Manitoba.⁶¹

Shipping on the Great Lakes began to develop in earnest. A Civil War blockade runner, the *Chicora*, had been used by Cumberland's Toronto and Lake Superior Navigation Company to

⁵⁷ J. McCannell, "Shipping out of Collingwood," *OHS Papers and Records* 28 (1932), 16-24.

⁵⁸ Morris Zaslow, *The Opening of the Canadian North, 1870-1914* (Toronto and Montréal: McClelland & Stewart, 1971), 147-165 and 179-98, surveys almost half a century of Ontario's development.

⁵⁹ Vernon C. Fowke, *The National Policy and the Wheat Economy* (Toronto: University of Toronto Press, 1957), provides the classic account of this development.

⁶⁰ Elizabeth Arthur, "Dawson, Simon James," *Dictionary of Canadian Biography* Volume XIII. See also "Extracts from S.J. Dawson's Report of the Country between Lake Superior and the Red River Settlement, 1858-59," introduced and edited by Peter Raffo, *Papers and Records* 41 (2013), 62-71.

⁶¹ Elizabeth Arthur, *S. J. Dawson C. E* (Thunder Bay: Thunder Bay Historical Museum Society, 1987); James J. Talman, "Migration from Ontario to Manitoba in 1871," *Ontario History* 43 (1951), 35-41; Wikipedia, "Old Dawson Road." See also G.K. Mills, "The Nottawasaga River Route," *OHS Paper and Records* 8 (1907), 40-48, for the four routes to the West.

carry part of the Wolseley Expedition to the Lakehead in 1870. The Beatty Line, based in Sarnia, had the *Manitoba* in commission in 1870, and it became the first steam vessel to cross the bar into the Kaministiquia River. The Beatty Line added the *Ontario* and *Québec* in 1872 and 1873. Soon afterward, it was using Welland-canal-sized vessels, the *Sovereign* and *Asia*, to carry steel rails from Kingston to Lake Superior for railway construction. This company was reorganized as the North West Transportation Company in 1882 and operated two large steamers, *Monarch* (1880) and *United Empire* (1888).⁶² A Georgian Bay Navigation Company had been organized in Collingwood in 1876 to serve Georgian Bay ports and to provide service to Sault Ste. Marie. In 1880, Thomas and John J. Long reorganized their service as the Great Northern Navigation Company. This "White Line" was challenged about 1890 by the "Black Line," organized by M. Burton of Barrie and W.J. Sheppard of Waubaushene. These lines were merged in the Northern Navigation Company in 1899.⁶³

A Canadian transcontinental railway was clearly needed and construction of one was promised to British Columbia in 1871. Sir John A. Macdonald's Conservative government, preoccupied with a Confederation promise to the Maritimes, was building an intercolonial Railway from the Atlantic coast to Québec City. Efforts to have private interests build the Pacific line failed in the Pacific Scandal, and Alexander Mackenzie's Liberals were forced to launch construction of a Pacific railway on the Kaministiquia River in 1875 as a second government project.⁶⁴ Although Prince Arthur's Landing initially appeared to have been bypassed, its leaders constructed a railway from their port to the head of construction and gained largely from the project. (*Henderson's Directory* stated in 1885 that Prince Arthur's Landing had 5,000 residents, whereas West Fort William had only 250, most of them employees of the Canadian Pacific Railway.)⁶⁵

⁶² Albert G. Ballert, "The Ports and Commerce of Georgian Bay" Part I, *Inland Seas* 11:1 (Spring 1955), 26-34, and Part II, *Inland Seas* 11:2 (Summer 1955), 119-125; James H. Rutherford, "Early Navigation on the Georgian Bay," *OHS Papers and Records* 18 (1920), 14-20; James P. Barry, "The First Georgian Bay Steamers," *Inland Seas* 23:3 (Fall 1967), 191-198; McCannell, "Shipping out of Collingwood," 16-24; W.R. Williams, "The Northwest Transportation Company," *Inland Seas* 18:2 (Summer 1962), 112-118; Fleetwood K. McKeen, "Early Parry Sound and the Beatty Family," *Ontario History* 56:3 (September 1964), 167-84..

⁶³ "The Northern Navigation Company Limited," *The Scanner: Monthly News Bulletin of the Toronto Marine Historical Society*.

⁶⁴ Peter B. Waite, *Canada 1874-1896: Arduous Destiny* (Toronto: McClelland and Stewart, 1971), 54-61. See also Dale C. Thomson, *Alexander Mackenzie: Clear Grit* (Toronto: Macmillan Company of Canada, 1960), 124-126, 134-136, 140-141, 186-188, 196-198, 227-228, and 249-250; Pierre Berton, *The National Dream 1871-1881*, volume 1 of *The Great Railway* (Toronto: McClelland and Stewart, 1970), 229-245 and 279-300; and Bruce Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," *Thunder Bay: From Rivalry to Unity*, edited by Thorold J. Tronrud and A. Ernest Epp (Thunder Bay: Thunder Bay Historical Museum Society, 1995), 76-78.

⁶⁵ A. Ernest Epp, "The Achievement of Community," *Thunder Bay: From Rivalry to Unity*, 181.

Organization of the famous "syndicate" to whom Macdonald's Conservative government entrusted Pacific railway construction in 1881 had momentous consequences. The line from the Kaministiquia to Red River was not in operation until 1882. By that time, however, W.C. Van Horne had taken over the Government line and was driving construction westward; the crews had reached the Rocky Mountains by the end of the year.⁶⁶ As Wikipedia's history of the Canadian Pacific Railway observes, "The construction seasons of 1884 and 1885 would be spent in the mountains of British Columbia and on the north shore of Lake Superior." Building through the "sea of mountains" is the better known of these challenges, with the last spike being driven by Donald Smith on 7 November 1885. The daunting work in Northern Ontario had required the labour of 12,000 men and 5,000 horses and was concluded with a spike-driving just west of Jackfish four days earlier. This work has received far less attention than the conquest of the Rocky Mountains--except for the fact that the CPR moved a military force to suppress the North-West Rebellion from Montréal and Toronto to Winnipeg in only nine days the preceding spring.⁶⁷

Construction of the Canadian Pacific Railway across Northern Ontario had a dramatic effect on the environment. A CPR blacksmith spotted a rust-coloured patch in a rock cut in 1883, and this discovery of the 'Devil's ore' became the basis of a great nickel industry in the Sudbury basin.⁶⁸ The movement of wheat from the Prairies began that same year, and its trans-shipment through terminal elevators in the re-named Port Arthur launched a great Lakehead business. Providing the port facilities required by this trade would demand much of the local

⁶⁶ Frederick Brent Scollie, "Falling into Line: How Prince Arthur's Landing became Port Arthur," *Papers and Records* 13 (1985), 8-19.

⁶⁷ W. Robert Wightman and Nancy M. Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800-1990s* (Toronto: University of Toronto Press, 1997), 61-64; Wikipedia, "Canadian Pacific Railway." See also Pierre Berton, *The Last Spike 1881-1885*, volume 2 of *The Great Railway* (Toronto: McClelland and Stewart, 1971), 270-283 and 358-379. William P. Skrepichuk, *Troop Treks of 1885: Documents and Illustrations* (Thunder Bay: Thunder Bay Historical Museum Society, 2019), surveys the achievement by the spring of 1885. See "The North Shore, 1884." edited by F. Brent Scollie, *Papers and Records* 43 (2015), 5-19, for a journalist's observations in the preceding year, and Jan Morrison, "Along the CPR Line: Schreiber to Fort William," *Papers and Records* 33 (2005), 3-16, for illustrations spanning the ensuing century. Elinor Barr, "Creation of a Division Point: Ignace 1883-1887," *Papers and Records* 7 (1979), 12-16, examines development farther west.

⁶⁸ O.W. Main, "International Nickel: The First Fifty Years," *Canadian Business History: Selected Studies. 1497-1971*, edited by David S. Macmillan (Toronto: McClelland and Stewart, 1972), 254-261, and Matt Bray, "A Company and a Community: The Canadian Copper Company and Sudbury, 1886-1902," in *At the End of the Shift: Mines and Single-Industry Towns in Northern Ontario*, edited by Matt Bray and Ashley Thompson (Toronto: Dundurn Press Limited, 1992), 23-44. Dale Wilson, *Sudbury Electrics & Diesels* (Sudbury: Nickel Belt Rails, 2001), focuses on "the rail transportation systems, past and present of and for the mining companies" in the Sudbury Basin.

communities--and of the Dominion government.⁶⁹ Lumber cut in sawmills on Lake of the Woods was already being shipped to Winnipeg and other prairie markets. (Some of it was used to build the line elevators that moved wheat from farmers' wagons into the boxcars in which the CPR transported grain to the Lakehead.) And Keewatin became the site of a large flour mill, which harnessed the power of the Winnipeg River flowing out of the Lake of the Woods to grind wheat from the Prairies into flour. At its peak, the mill completed in 1888 could grind 62,000 bushels of wheat into 10,000 barrels of Five Roses flour each day.⁷⁰

Ontario's forest industries had fostered a remarkable series of developments in the eastern part of the province (initially Canada West). The Brockville and Ottawa Railway was chartered in 1853 and completed a line to Almonte in 1859; it had extended its line to Sand Point on the Ottawa River by 1865. Meanwhile, the Canada Central Railway had been incorporated in 1861 and built a line from Carleton Place on the Brockville and Ottawa Railway to Ottawa by 1870. Soon afterward, the Canada Central Railway began building westward as far as Pembroke. The two companies merged in the Canada Central Railway in 1878, and this company, which had extended its line as far as Mattawa by 1881, was purchased by the Canadian Pacific Railway as that company was building its line around Lake Superior.⁷¹ During these same years, the timber king John R. Booth began building a railway between Ottawa and Swanton, Vermont, on Lake Champlain. Then he added the Ottawa, Arnprior and Parry Sound Railway, which ran from Ottawa to Depot Harbour on Georgian Bay. The resulting Canada Atlantic Railway chartered in 1897 "handled up to 40% of the grain trade from Lake Huron [and] the Canadian Prairies . . . prior to the construction of the Canadian Northern Railway's transcontinental line across Ontario, as well as prior to the opening of the Fourth Welland Canal."⁷²

The Lakehead became the site of more railway development as the CPR built terminal elevators and coal docks on land long occupied by the Hudson's Bay Company near the mouth

⁶⁹ A.A. Anderson, "The Development of the Harbours of Port Arthur and Fort William," *Papers and Records* 11 (1983), 42-48; Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 78-80.

⁷⁰ A. Ernest Epp, "The Lake of the Woods Milling Company: an Early Western Industry," *The Canadian West: Social Change and Economic Development* (Calgary: University of Calgary/ Comprint Publishing Company, 1977), 147-162 and 209-213 (notes); Wikipedia, "Lake of the Woods Milling Company."

⁷¹ Wikipedia, "Brockville and Ottawa Railway."

⁷² W.H. Breithaupt, "The Railways of Ontario," *OHS Papers and Records* 25 (1929), 12-25; Terry Ferris, "Railways of British North America," *OHS Papers and Records* 38 (1946), 31-42; Robert M. Stamp, "J.D. Edgar and the Pacific Junction Railway: The Problems of a Nineteenth Century Ontario Railway Promoter," *Ontario History* 40:3 (September 1963), 119-130; C.C.J. Bond, "Tracks into Ottawa: The Construction of Railways into Canada's Capital," *Ontario History* 57:3 (September 1965), 123-134; Fleetwood K. McKeen, "Depot Harbour--The First Seaway Terminal," *Inland Seas* 21:2 (Summer 1965), 180-186; Wikipedia, "Canada Atlantic Railway."

of the Kaministiquia River.⁷³ This fostered the growth of the town of Fort William and challenged Port Arthur to new endeavours. Port Arthur's leaders chartered a Port Arthur, Duluth and Western Railway to open another hinterland for the Lakehead.⁷⁴ The town also built the Port Arthur Street Railway, which served the Port Arthur community and enabled its residents to work in the CPR elevators and other places of employment in the town of Fort William.⁷⁵ Then the Canadian Northern Railway, which was building a line out of Manitoba and across northern Minnesota into the Rainy River valley, purchased the PeeDee (as Port Arthur's first initiative came to be called) and built a second transcontinental railway through the Rainy River valley into Port Arthur and onward to the east.⁷⁶ This line, later part of the Canadian National Railways system, supported the development of gold mines in the Geraldton region during the Thirties.⁷⁷ The Canadian Northern also built what was then the largest terminal elevator in the world on Port Arthur's waterfront and established other facilities, including its own coal docks.⁷⁸

Sir Wilfrid Laurier's Liberal government precipitated even more railway development. Desirous of giving Québec City its own hinterland--the CPR was Montréal-based and the Canadian Northern principals lived in Toronto--Laurier proposed a National Transcontinental railway running from Moncton, New Brunswick, across Northern Québec and Ontario to Winnipeg. This line would link at Winnipeg with a Grand Trunk Pacific (GTP) railway across the Prairies and central British Columbia to the Pacific Ocean at Prince Rupert.⁷⁹ And the Lakehead benefitted one more time--although at the expense of the Fort William First Nation, whose reserve was expropriated so that a terminal elevator could be built on the shore of Thunder

⁷³ Elizabeth Arthur, "William C. Van Horne, the CPR and the Kaministiquia Property: A Selection of Letters," *Papers and Records* 13 (1985), 20-27; "Grain Elevator Maps of Thunder Bay," introduction by F. Brent Scollie, *Papers and Records* 6 (1978), 8-15; Antonio (Tony) Pucci, "Community in the Making: A Case Study of a Benevolent Society in Fort William's 'Little Italy'," *Papers and Records* 6 (1978), 16-27; Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 78-80.

⁷⁴ Elinor Barr, *Thunder Bay to Gunflint: the Port Arthur, Duluth and Western Railway* (Thunder Bay: Thunder Bay Historical Museum Society, 1999).

⁷⁵ F.B. Scollie, "The Creation of the Port Arthur Street Railway 1890-95. Canada's First Municipally-Owned Street Railway," *Papers and Records* 18 (1990), 40-58.

⁷⁶ T.D. Regehr, *Canadian Northern Railway: Pioneer Road of the Northern Prairies, 1895-1918* (Toronto: Macmillan of Canada, 1976), especially 79-106 (building into Port Arthur) and 122-25 (building eastward); Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 80-81; Wightman and Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800-1990s*, 107.

⁷⁷ G.B. Weiler, "Some Memories of the Thunder Bay Gold Rush of '34," *Papers and Records* 8 (1980), 22-31.

⁷⁸ Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 81.

⁷⁹ Robert Craig Brown and Ramsay Cook, *Canada 1896-1921: A Nation Transformed* (Toronto: McClelland and Stewart, 1974), 148-153 (in Chapter 8 "Farmers, Railways, and the Tariff).

Bay--when the GTP built a line from the National Transcontinental near Sioux Lookout into Fort William in order to move Prairie grain to ships on Lake Superior.⁸⁰

These railways and the grain they moved required a great deal of shipping on the Great Lakes.⁸¹ Henry Beatty had joined the CPR in 1882 to take charge of construction and operation of the railway company's fleet, consisting in 1883 of the *Algoma*, *Alberta*, and *Athabasca*. The *Algoma* sank in a storm on Isle Royale in 1885 and was not replaced until the *Manitoba* went into service in 1889.⁸² A decade later, the Beattys merged their North West Navigation Company with the Longs' Great Northern Navigation Company to form the Northern Navigation Company of Ontario Limited. Later in the year 1899, this combination took in the North Shore Navigation Company, thus merging the White and Black Lines in the Northern Navigation Company Ltd., "the largest firm operating in the passenger and package freight trade on the Canadian upper lakes."⁸³ A dozen years later, this Upper Lakes company was combined with the Richelieu and Ontario Navigation Company to form Canada Steamships Lines, a powerful competitor through the twentieth century (and beyond).⁸⁴ Another grain carrier appeared in the twentieth century in the form of Paterson Steamships.⁸⁵ All of these ships depended on lighthouses established on the shores of Lake Superior, and even then disasters occurred.⁸⁶

⁸⁰ Wightman and Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800-1990s*, 107-108. See Patricia Vervoort, "Thunder Bay: Once a City of Train Stations," *Papers and Records* 27 (1998), 46-63, for one of the consequences. Thorold J. Tronrud, "Images of 1908," *Papers and Records* 27 (1998), 65-66, illustrates construction of the Grand Trunk Pacific Elevator. See also Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 81-82.

⁸¹ See Muirhead, "The Evolution of the Lakehead's Commercial and Transportation Infrastructure," 84-96, for the shipping and shipbuilding development seen from the Lakehead.

⁸² Keith Fleming, "Owen Sound and the CPR Great Lakes Fleet: The Rise of a Port, 1840-1912," *Ontario History* 76:1 (March 1984), 3-31; Fred Landon, "Sixty Years of the C.P.R. Great Lakes Fleet," *Inland Seas* 1:1 (January 1945), 3-7; Lorenzo Marcolin, "Canadian Pacific Steamships and the Plimsoll Load Lines," *Inland Seas* 35:1 (Spring 1979), 35-51.

⁸³ Epp, "Enterprise and Combination: St. Lawrence River-Great Lakes Shipping," 1-15;

⁸⁴ A. Ernest Epp, "Enterprise and Combination: St. Lawrence River-Great Lakes Shipping 1895-1926," paper presented to Canadian Business History Conference, Trent University, May 1984; John B. Dempsey II, "Canada Steamship Lines, Limited: World's Largest Inland Water Transportation Company," *Inland Seas* 15:1 (Spring 1959), 4-14; Wikipedia, "Canada Steamship Lines."

⁸⁵ Dave Tremblay, "The Development of Paterson Steamships' First Generation Fleet, 1915-1940," *Papers and Records* 14 (1986), 38-45; Eugene Onchulenko, "The Paterson Fleet--A Photo Essay," *ibid.*, 46-54. See also Randy Wilkie and F. Brent Scollie, "Thunder Bay Harbour, 1913 and 1936: Portraits in Maps," *Papers and Records* 5 (1977), 19-22.

⁸⁶ "The Point Porphyry Light, Lake Superior: The Andrew Dick Diary and Reminiscences of Bob McKay from a Century of Lighthouse Keeping," introduced and edited by Beth Boegh, *Papers and Records* 33 (2005), 17-41.

While the largest railway projects in Ontario involved construction of lines linking industrial Central Canada (and the East) to Western markets and Pacific ports, there were railway developments linking industrial centres to Northern Ontario resources. The Algoma Central Railway was chartered in 1899 to bring pulpwood and iron ore to Francis H. Clergue's pulp mill and his soon-to-be built steel mill in Sault Ste. Marie. In the next fifteen years, this line connected with the Canadian Pacific at Franz, the Canadian Northern at Oba, and the National Transcontinental at Hearst.⁸⁷ Clergue's hope to build as far as James Bay was achieved by an Ontario crown corporation building from North Bay. The Temiskaming and Northern Ontario Railway (T&NO) chartered in 1902 was built northward between 1903 and 1909 to a junction with the National Transcontinental at Cochrane. However, the line from Cochrane to Moosonee was only begun in the 1920s and not completed until 1932. In the meantime, the T&NO provided vital links for the farmers, forest industries, and mine operators of Northeastern Ontario. The first mineral discovery, silver at Cobalt, led to a mineral rush that developed gold mines at Kirkland Lake and other mines in the Timmins area. And Iroquois Falls became the site of the first mill built in 1913-14 by the Abitibi Pulp and Paper Mills (soon to be the Abitibi Power and Paper Company).⁸⁸

Among the environmental consequences of steam railways, the burning of coal held a leading place. Vast quantities were required, and the import of coal from the United States made it available for heating purposes as well as to power steam engines. This import has been usefully studied by David F. Walker.⁸⁹ The sparks from the locomotives also lit fires in grasslands and forests surrounding the lines. One response of the Ontario Department of Lands and Forests was to hire men from the Pays Plat First Nation to patrol the Lake Superior line during the summer and watch for fires that the locomotives had ignited.⁹⁰

While steam railways were being extended in Northern Ontario, interurban trains powered by electricity appeared in Southern Ontario to meet the transportation needs of

⁸⁷ J. Konarek, "Algoma Central and Hudson Bay Railway: The Beginnings," *Ontario History* 62:2 (June 1970), 73-81; O.S. Nock, *Algoma Central Railway* (Sault Ste. Marie: Algoma Central Railway, 1975); Roderick Cunningham, *Algoma Central Corporation: the Centennial Anniversary History 1899-1999* (Sault Ste. Marie: Algoma Central Corp., 1999); Doreen Rice, "Algoma Central Steamships," *Inland Seas* 23:3 (Fall 1967), 225-230; Doreen Rice, "Algoma Central Steamships 1970," *Inland Seas* 26:4 (Winter 1970), 263-65.

⁸⁸ Albert Tucker, *Steam into Wilderness: Ontario Northland Railway* (Toronto: Fitzhenry & Whiteside, 1978).

⁸⁹ David F. Walker, "Transportation of Coal into Southern Ontario, 1871-1921," *Ontario History* 63:1 (March 1971), 15-30; W.A. Howard, "The Ontario Car Ferry Company 1905-1950," *Inland Seas* 6:2 (Summer 1950), 111-113.

⁹⁰ See Ontario Sessional Papers 1939 Number 3 Report of the Minister of Lands and Forests of the Province of Ontario for the Fiscal Year ending March 31st, 1938, 209-225, especially 220 regarding railway fires. and the reminiscence of Roy Kenney about the first fire ranger from Pays Plat First Nation, Chief Louis Mushquash, in Judi Sundland, *Rosspport: Facts and Fish Tales* (Rosspport: Forget-Me-Not Gift Shop, 1998).

passengers (rather than freight). Among the earliest was the Guelph radial line, "The most extensive line of the Toronto Suburban Railway . . . surveyed in 1911 . . . with most of the track laid in 1914 for 41.5 miles westward from Islington."⁹¹ Sir Adam Beck's vision of a radial system operated by the Hydro-Electric Power Commission of Ontario led to passage of the Hydro-Electric Railway Act in 1914. As automobiles became more popular after the Great War, Premier E.C. Drury decided to cancel the Provincial guarantee on bonds sold to finance radial railways. Although this largely ended work on Beck's vision, a number of lines were operated by Hydro-Electric Railways, including the Toronto and York Radial Railway (1921-27), the Guelph Radial Railway (1926-37), the Windsor, Essex and Lake Shore Rapid Railway (1929-32), the Hamilton Street Railway (1930-46), the Sandwich, Windsor and Amherstburg Railway (1930-34), the Brantford and Hamilton Electric Railway (1930-31), and the Hamilton, Grimsby & Beamsville Electric Railway (1930-31).⁹² And the Lakehead too saw one of these endeavours.⁹³ Another great transportation service which continued, even as more and more automobiles appeared on the streets, was provided by the Toronto Transportation Commission established in 1921 and now better known as the Toronto Transit Commission.⁹⁴

III

While railways were still being built in various parts of the province, a new technology appeared to complement the steam railways and ultimately to compete with them, too. While the railway was a British innovation that spread around the world, the automobile was a European innovation that began changing the world in North America. A successful internal combustion engine was first built by Nicolaus A. Otto in 1876--followed by Karl Benz only three years later--and Gottlieb Daimler and Wilhelm Maybach had perfected a smaller and higher speed version by the end of the century.⁹⁵ In the midst of these achievements, Karl Benz produced a Patent Motorcar in 1885 that represented the first practical automobile. Among his innovations were "a speed regulation system, the ignition using sparks from a battery, the spark plug itself, the carburetor, the clutch, the gear shift, and the water radiator."⁹⁶

The North American automobile industry grew out of the manufacture of carriages and wagons. William Durant and Josiah Dort, for example, had made their Durant-Dort Carriage Company the largest manufacturer of carriages in the United States. Durant recognized the market potential of a safe automobile and acquired the Buick Motor Company in 1904, in order to obtain a good engine for his vehicles. Durant partnered with Canada's largest carriage maker, R. S. McLaughlin's Oshawa company, to create the McLaughlin-Buick car. With the vision of "a

⁹¹ Raymond L. Kennedy, "Toronto Suburban Railway: Guelph Radial Line," *Old Time Trains* (www.trainweb.org), 1.

⁹² Wikipedia, "Hydro-Electric Railways."

⁹³ Mark Chochla. "A Radial Railway Venture: The Mount McKay and Kakabeka Falls Radial, 1904-1947," *Papers and Records* 39 (2011), 3-28.

⁹⁴ Mike Filey, *The TTC Story: the First Seventy-five Years* (Toronto: Dundurn Press, 1997).

⁹⁵ Wikipedia, "History of the internal-combustion engine."

⁹⁶ Wikipedia, "Karl Benz."

large automobile company, which would manufacture several independent marques and control subsidiary component-making companies," Durant opened an escrow account in 1907 with McLaughlin to create the General Motors Holding Company and thus made McLaughlin one of the largest shareholders in the continental enterprise.⁹⁷ During this same period, Henry Ford was developing a car that his employees could afford to buy. Gordon M. McGregor saw the potential of building such cars, not just for Canadians but for the whole British Empire. He organized the Ford Motor Company of Canada in 1904 and turned his Walkerville Wagon Works (located in what is now Windsor) into one of the largest makers of automobiles in the world.⁹⁸

With these and other makers of automobiles offering their products--one thinks of the Russell Motor Car Company that grew out of Canada Cycle and Motor Company in 1903 and built "The Thoroughly Canadian Car" for the upscale market until 1916--governments suddenly faced a demand for good roads on which these vehicles could be driven safely.⁹⁹ An Ontario Good Roads Association had actually been organized in 1894, and it began offering education and training in 1901. Advocacy was essential in encouraging local governments, as well as the provincial government, to build good roads. As the Commissioner of Highways observed in 1900: "Good roads are essential to the full development of agriculture. In a country such as Ontario, dependent on agriculture, this means that good roads are of very great importance to the towns and cities as well."¹⁰⁰ Even more basic was the production of fuel to power these cars. Ontario had its own area of petroleum production, but the industry would soon be a thoroughly continental one controlled by US producers. The auto industry shaped large parts of urban Ontario as Oshawa became synonymous with General Motors, Oakville with Ford, and Windsor with both Ford and Chrysler.¹⁰¹

⁹⁷ Wikipedia, "History of General Motors."

⁹⁸ James J. Flink, *The Automobile Age* (Cambridge, MA: The MIT Press, 1988), especially 129-130 and 251-52.

⁹⁹ Robert Collins, *A Great Way to Go: The Automobile in Canada* (Toronto: The Ryerson Press, 1969), includes illustrations of many automobiles.

¹⁰⁰ See, for example, the Ontario Sessional Papers 1898-1899, Number 26 Third Annual Report of the Provincial Instructor in Road Making 1898, with illustrations of good roads and bad; Ontario Sessional Papers 1901, Fifth Annual Report of the Commissioner of Highways Ontario 1900--the quotation is from page 7 of the report--and Ontario Sessional Papers 1913 Number 3 Report of the Minister of Lands, Forests and Mines of the Province of Ontario for year ending 31st October 1912, 91-121, which notes road construction in Northern Ontario, and *ibid.*, Number 14 Annual Report on Highway Improvement [in] Ontario 1913, which provides diagrams of various types of road construction (including the Roman) on pages 14-27.

¹⁰¹ W.A.E. McBryde, "Ontario: Early Pilot Plant for the Chemical Refining of Petroleum in North America," *Ontario History* 79, 3 (September 1987), 203-229; Hugh M. Grant, "The 'Mysterious' Jacob L. Englehart and the Early Ontario Petroleum Industry," *Ontario History* 85, 1 (March 1993), 65-76; Tomothy W. Cobban, *Cities of Oil: Municipalities and Petroleum Manufacturing in Southern Ontario, 1860-1960* (Toronto: University of Toronto Press, 2013); G. Keith Whynot, "Some Business Aspects of Tanker Transportation in the Great Lakes and St. Lawrence River Areas," *Inland Seas* 30:4 (Winter 1974), 268-286.

Development of the highway network of Southern Ontario can be seen in the numbers assigned highways in the mid-twenties. Highways 2-7 were designated in 1925, including highways 3 (from the Ambassador Bridge in Windsor to the Rose Hill Road in Fort Erie--259 kilometres), 6 (from Port Dover to Highway 17 near Espanola--480 kilometres), and 7 (from the vicinity of Ottawa to Highway 40 in Sarnia--535.7 kilometres). In fact, highways 1-28 (excluding 18, 22, 25 and 27) were designated in the 1920s and highways 33, 34, 35, 37, 38, 40, 41, 48, and 58, during the 1930s.¹⁰² What is now a 400-series highway, the Queen Elizabeth Way around the west end of Lake Ontario, began to be built in 1931 as a relief project involving the widening of "the Middle Road in a similar fashion to the nearby Dundas Highway and Lakeshore Road." After the 1934 election, the Minister of Highways decided the highway should resemble the German *autobahnen*. Thus "when opened to traffic in 1937, it was the first intercity divided highway in North America and featured the longest stretch of consistent illumination in the world."¹⁰³

Maps published by the Ontario Department of Highways in 1939 revealed how well-provided with highways Southern Ontario was, whereas the District of Muskoka and Northern Ontario had been given only a few highways.¹⁰⁴ (Muskoka cottage-owners might be able to use steamboats instead of cars.)¹⁰⁵ Building the roads required by automobiles in Northern Ontario required a great deal of work. A fascinating example of non-governmental activity occurred between the Lakehead and the state of Minnesota. Lumber producer William Scott, whose men were working forest limits south of the Lakehead, joined members of the Port Arthur Rotary Club in building the "Scott Highway" south to the International Boundary on the Pigeon River. In 1916, they built a bridge across the Pigeon River to link their highway with Minnesota State Highway 61. The "Outlaw Bridge," as people enjoyed calling it because of its having been undertaken without government approval, was recognized by the Province at its opening. And Highway 61 it remains, as an "alien" addition to the numbering of Ontario highways!¹⁰⁶

Ontario's response to the Great Depression had involved significant development of highways in Northern Ontario. Manitobans led in those years in calling for the construction of a "Trans-Canada Highway." People in the resort area of Kenora were eager to have a highway enabling Winnipeg cottage owners to drive to the Lake of the Woods district. The result was construction around 1930 of a highway through the rugged Shield country west of Kenora.¹⁰⁷ Completion of this road from Winnipeg to Kenora was a mere start on what was needed, and

¹⁰² Wikipedia, "List of highways in Ontario."

¹⁰³ Wikipedia, "Queen Elizabeth Way."

¹⁰⁴ Ontario Sessional Papers 1939 Number 32 Annual Report of the Department of Highways for the fiscal year ending March 31st, 1938, 10 and 11.

¹⁰⁵ Redmond Thomas, "The Beginning of Navigation and the Tourist Industry in Muskoka," *OHS Papers and Records* 42:2 (April 1950), 101-105; Howard Pammit, "The Steamboat Era on the Trent-Otonabee Waterway, 1830-1950," *Ontario History* 56:2 (June 1964), 67-103.

¹⁰⁶ Beverly Soloway, "Bridging the Gap: The Outlaw Bridge and the Scott Highway," *Papers and Records* 46 (2018), 5-28.

the Ontario government responded: "During the summer [of 1931], certain routes were definitely designated as links of a Trans-Canada Highway in order that Federal aid towards this gigantic undertaking could be participated in." The longest section extended from the Manitoba border to Schreiber.¹⁰⁸ Workers from the relief camps had by 1935 built a highway to the Lakehead. There was joy in many quarters when a cavalcade of Winnipeggers was able to motor to the Twin Cities in Minnesota and then drive to the Twin Cities of Northwestern Ontario, to be feted there on Dominion Day 1935.¹⁰⁹ Work continued eastward from the Lakehead to Nipigon and sections of highway were also being built along the North Shore of Lake Superior.¹¹⁰

At this point, the Ontario Government carried through a decisive change in its highway development. As the 1939 Annual Report of the Department of Highways stated: "On April 1st, 1937, the beginning of the fiscal twelve months covered by this report the amalgamation of the Department of Highways and the former Department of Northern Development became officially effective. This amalgamation has made a unit of the highway work in the Province."¹¹¹ The Ferguson Highway had been constructed into Northeastern Ontario by 1927 and opened the Timiskaming District--farm land around New Liskeard and the mining districts of Kirkland Lake and Cochrane--to motor vehicle traffic from the south. This highway had by 1937 been extended to Hearst and even farther west. Following the merging of the departments, the Ontario Government focused work on linking the Lakehead to southern Ontario by road. Crews were re-directed from the North Shore to the building of a highway from Nipigon to the mining district around Geraldton. The Ferguson Highway became Highway 11 in 1937, a bridge was built spanning the Nipigon River, and the section to Nipigon had been completed by 1943. It was now possible to drive from Toronto to the Lakehead and on into the United States or westward to Manitoba.¹¹²

The interwar years witnessed equally great development in another form of transportation using internal-combustion engines. The Wright brothers flew an aircraft

¹⁰⁷ See Ontario Sessional Papers 1931 Number 41 Report of the Department of Northern Development for the Year ending 31st October 1930: "Kenora to Manitoba Boundary section of the Trans-Canada Highway: Ten and one-half miles of right-of-way were cut out and burned and seven and one-half miles of road were built, leaving approximately eight miles yet to build before the boundary is reached" (page 9). The Ontario Archives has a fine collection of pictures showing this work!

¹⁰⁸ Ontario Sessional Papers 1932 Number 38 Report of the Department of Northern Development for the year ending 31st October, 1931, 8.

¹⁰⁹ The Port Arthur *News-Chronicle* and the Fort William *Times-Journal*

¹¹⁰ Ontario Sessional Papers 1938 Number 50 Report of the Department of Northern Development for the fiscal year ending March 31st 1937, 6.

¹¹¹ Ontario Sessional Papers 1939 Number 32 Annual Report of the Department of Highways for the fiscal year ending March 31st 1938, 8.

¹¹² Edgar J. Lavoie, "Completing the Original Trans-Canada Highway," *Papers and Records* 45 (2017), 76-77.

successfully in 1903, and the Great War 1914-18 had revealed the potential of their invention for aerial combat. Canadian pilots back from combat soon revealed the potential of aircraft for conquering the bush country of Northern Ontario, never more spectacularly than in the Red Lake gold mining district. The mining development that followed the discovery of gold there in 1924 required efficient transportation, and Hudson on the former National Transcontinental Railway--now part of the Canadian National Railways system--became the port from which aircraft flew men, supplies, and equipment to Red Lake.¹¹³ It has been said that Hudson became the busiest airport in the world during these years, with Robert Starratt's Northern Transportation Company morphing into Starratt Airways in 1932.¹¹⁴ Similarly, Jack and Chuck Austin established Austin Airways in Timmins in 1934 to serve Northeastern Ontario communities.¹¹⁵ And Orville J. Wieben launched Superior Airways at the Lakehead in 1941 and went on to serve the First Nations north of Sioux Lookout for the next forty years.¹¹⁶

Another use of aircraft had been pioneered by the Laurentide Company in the St. Maurice watershed of Quebec. Curtis HS-2L flying boats declared war surplus by the United States Navy were purchased for fire patrol and aerial photography of the forests.¹¹⁷ The Government of Ontario created a Provincial Air Service in 1924 to do the same thing in Northern Ontario. From a base on the St. Mary's River at Sault Ste. Marie, pilots used the same type of aircraft for "aerial detection of forest fires, aerial transportation of fire crews and equipment, map making, aerial photography and forest inventory. . . . In the first year of operation, 600 forest fires were spotted."¹¹⁸ Aerial sketching of forests had begun as early as 1922, and aerial photography was introduced in 1926. The resulting Forest Resource Inventory--as it was named in 1952--was an immense improvement over the timber cruising on foot prevalent in the nineteenth century.¹¹⁹

When the Canadian (Bennett) Government responded to unemployment during the early thirties with a variety of relief camps, it decided that Intermediate Landing Fields should be cut out of the forest at intervals across Northern Ontario. Many of these fields were established along the northern CNR line and added to the infrastructure of the North. When the Canadian (King) Government created Trans-Canada Airlines (TCA) in 1937, it began service as a subsidiary of Canadian National Railways with two passenger aircraft and a bi-plane used to

¹¹³ Nancy M. and W. Robert Wightman, "Beyond Rail and Road: The Red Lake-Pickle Lake Gold Fields, 1925-1954," *Papers and Records* 21 (1993), 19-34.

¹¹⁴ Canadian Bushplane Heritage Centre, "Starratt Airways."

¹¹⁵ Larry Milberry, *Austin Airways: Canada's Oldest Airline* (Toronto: Canav Books, 1985).

¹¹⁶ *Fly North* (Newsletter of the Northwestern Ontario Aviation Heritage Centre), volume 8, number 4 (October-December 2014), 3 and 4.

¹¹⁷ Wikipedia, "Bush flying."

¹¹⁸ Canadian Bushplane Heritage Centre, "Ontario Provincial Air Service."

¹¹⁹ Richard S. Lambert, with Paul Pross, *Renewing Nature's Wealth: A Centennial History of the Public Management of Lands, Forests and Wildlife in Ontario 1763-1967* (Toronto: Ontario Department of Land and Forests, 1967), 234-249 (Chapter 12 "The Start of the Air Service"); Bruce West, *The Firebirds* (Toronto: Ministry of Natural Resources, 1974).

survey routes. Passenger service between Montreal and Vancouver began on 1 April 1939.¹²⁰ Scheduled service linking major Canadian centres did not begin until 1947, and the Lakehead was initially served by aircraft that flew from Toronto on the south side of Lake Superior and jumped over the "snout of the wolf" to the Fort William airport.¹²¹ Trans-Canada Airlines faced competitors, of course, and the vast reaches of Northern Ontario drew others into the industry.¹²² And one of these interests, Austin Airways become Air Ontario was acquired by the Deluce family. Robert Deluce eventually established Porter Airlines in competition with Air Canada out of the Island Airport in Toronto.¹²³

Another kind of internal combustion engine, the diesel, drove another transportation innovation after the Second World War. The innovation began in Manitoba, when Svein Sigfusson established a winter fishery on Reindeer Lake in 1942 and began to move the tons of fish they caught by diesel tractor trains on ice roads to the railhead at Flin Flon. Six years later, he began to extend the network of winter roads into Northwestern Ontario. In one memorable trip, "We went the 500 miles from Ilford [in northern Manitoba] to Big Trout Lake in five and one half days, unloaded and safely stowed the makings of the nursing station; with that we were done hauling for the winter." On the trip out, the smallest of the three tractors, a five-ton International TD9, went through the ice on Poplar Lake, but it "came up bright as a mint nickel" when salvaged four years later; the driver had managed to grope his way under the ice to the hole before he ran out of oxygen!¹²⁴ Ice roads run by trucks have become a vital part of the transport system for the First Nations of Northern Ontario.¹²⁵

The fifties witnessed another significant application of the diesel engine as railways replaced their steam locomotives with diesel-engined ones.¹²⁶ There were various impacts, as coaling stations were phased out and small communities died. The result was quite obvious on the North Shore of Lake Superior at Jackfish and other locations. The transition reduced the risk of forest fires, although the employment consequences cannot be ignored. No longer were people from First Nations hired to patrol the rail line and spot fires started by sparks from the

¹²⁰ Peter Pigott, *National Treasure: The History of Trans-Canada Airlines* (Madeira Park, BC: Harbour Publishing, 2001); Wikipedia, "Trans-Canada Air Lines."

¹²¹ Roy H. Piovesana, "The Establishment of Fort William Municipal Airport, 1928-1939," *Papers and Records* 4 (1976), 24-35; Wightman and Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800 to the 1990s*, 302-303.

¹²² K.M. Molson, *Pioneering in Canadian Air Transport* (Winnipeg: James Richardson & Sons, Limited, 1974); F.J. Blatherwick, *A History of Airlines in Canada* (Toronto: The Unitrade Press, 1989).

¹²³ Wikipedia, "Robert Deluce."

¹²⁴ Svein Sigfusson, *Sigfusson's Roads* (Winnipeg: Watson & Dwyer, 1992), especially pages 108-109.

¹²⁵ See Wikipedia, "Ice Roads," especially the section relating to Canada, as well as the maps published by the Ontario Ministry of Northern Development and Mines.

¹²⁶ J. Parker Lamb, *Evolution of the American Diesel Locomotive* (Bloomington and Indianapolis: University of Indiana Press, 2007).

steam locomotives. By the fifties, of course, Marathon and Terrace Bay boasted pulp and paper mills drawing on the forests between the CPR divisional points of Schreiber and White River and creating new employment opportunities.¹²⁷

IV

The second half of the twentieth century saw momentous changes in transportation within the province of Ontario. The earliest involved the Canadian government's deciding both to build a St. Lawrence Seaway enabling ocean-going ships to sail to the head of the lakes and to support construction of a coast-to-coast Trans-Canada Highway. It is worth noting that the passenger ships of Canada Steamship Lines continued to serve the Great Lakes region into the fifties.¹²⁸ Construction of the Seaway, which involved significant hydroelectric developments in New York State as well as Ontario, began in 1954.¹²⁹ Officially opened on 26 June 1959, it enabled "salties" to load grain at the Lakehead for Atlantic markets after carrying iron ore from the port of Sept-Îles, Québec, to replace US ore in Hamilton's steel furnaces.¹³⁰ The grain trade boomed for a quarter century, only to be impacted by various market and system changes. However, Prairie grain remains an important part of the bulk freight business of the St. Lawrence-Great Lakes Seaway.¹³¹

¹²⁷ See Wikipedia, "Marathon, Ontario," and "Terrace Bay."

¹²⁸ Margaret Lorimer, "A Summer on the Boats," *Papers and Records* 37 (2009), 60-64, provides a memoir of work on the SS *Noronic* during 1948, a year before this splendid passenger vessel saw its forty-five years of service end in a fire on the Toronto waterfront. See Clive Dudley, "The Burning of the *Noronic*," *Papers and Records* 18 (1990), 20-29, for pictures of the disaster.

¹²⁹ For the background, see James Mitchel, "Deep Waterways Movements--Their Origin and Progress in Ontario," *OHS Papers and Records* 19 (1922) 134-138; DeW. Carter, "Relative Size and Capacities of Our Canals Reflected in Trend of Traffic," *OHS Papers and Records* 23 (1926), 19-27; Gary Pennanen, "Battle of the Titans: Mitchell Hepburn, Mackenzie King, Franklin Roosevelt and the St. Lawrence Seaway," *Ontario History* 89:1 (March 1997), 1-21; and Roberta M. Styran and Robert R. Taylor, "Alex Grant and the Big Ditch: Building the Welland Ship Canal," *Ontario History* 109:2 (Autumn 2017), 167-183. See also Roberta M. Styran and Robert R. Taylor, "The Welland Canal: Creator of a Landscape," *Ontario History* 72:4 (December 1980), 210-229.

¹³⁰ N.R. Danielian, "The St. Lawrence Seaway," *Inland Seas* 6:1 (Spring 1950), 3-9; Lionel Chevrier, *The St. Lawrence Seaway* (Toronto: Macmillan Co. of Canada, 1959); *The Canadian Encyclopedia*, "The St. Lawrence Seaway"; Donald A. Grandre, "Recent Changes in the Flow Pattern of Iron Ore on the Great Lakes," *Inland Seas* 27:4 (Winter 1971), 247-259; Frank E. Kirby and A.P. Rankin, "The Bulk Freighter of the Great Lakes," *Inland Seas* 34:3 (Fall 1978), 218-223; Robert D. Graham, "H to the 50th Power: Hall Corporation's Golden Anniversary," *Inland Seas* 34:4 (Winter 1978), 252-264; Gary S. Dewar, "Changes in the Existing Bulk Fleet, 1945-1970," *Inland Seas* 45:2 (Summer 1989), 95-116, and Gary S. Dewar, "Changes in the Post-War Fleet, Part II," *Inland Seas* 45:3 (Fall 1989), 165-182.

¹³¹ InfoSuperior, "Bay's History--Richardson International Limited owns two grain elevators in Thunder Bay, Ontario, one of which will soon be marking 100 years of operation"--posted 1

The Trans-Canada Highway was an even larger project. Construction began in 1950, following passage of the Trans-Canada Highway Act the previous year. Ontario was responsible for a large part of the project, since one-third of the transcontinental route was located in Ontario (and one-quarter in Northern Ontario). The original route west from Montréal, along the Ottawa River and into Northern Ontario, was to follow the CPR line between Sudbury and Wawa and westward along the North Shore of Lake Superior to Nipigon and the Lakehead.¹³² This route was unacceptable to Sault Ste. Marie, and a route along the North Shore of both Lakes Huron and Superior was adopted instead.¹³³ The highway was officially opened in the Rogers Pass on 30 July 1962. It provided an all-Canadian route for trucks as well as buses and motor cars across Ontario. No longer did Winnipeggers have to travel through Chicago and Detroit to reach Toronto and other Southern Ontario cities.¹³⁴ The resulting traffic challenged the package freight business of the railways and of Canada Steamship Lines, which closed its business in Thunder Bay in 1972.

Transportation developments in these years provided new possibilities for northern communities. Some roads into these areas were built within the "Roads to Resources" program of the Diefenbaker Government beginning in 1958. These roads were built northward from the Trans-Canada Highway and supported the logging roads constructed by the pulp and paper companies as they switched from water transport of timber to trucks hauling logs on trailers.¹³⁵ The result was less pollution of rivers and lakes, although the industry's contribution to climate change was surely increased.¹³⁶ Mechanization of the logging industry involved greater use of machinery in the forests, with cutting machines replacing the chain saws that had earlier

October 2017; see also Wikipedia, "Canada Steamship Lines," "Saskatchewan Wheat Pool," which merged with other former farmer cooperatives to become Viterra in 2007 and is now controlled by Glencore International, in Switzerland., and "G3 Canada," which operates the former facilities of the Canadian Wheat Board and Bunge Canada.

¹³² *Canada Year Book 1951* (Ottawa: King's Printer, 1951), 631-634; the map appears on page 632.

¹³³ Wightman and Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800-1990s*, 297.

¹³⁴ David W. Monaghan, *Canada's "new main street": the Trans-Canada Highway as idea and reality, 1912-1956* (Ottawa: Canada Science and Technology Museum, 2002), is all too limited for Ontario construction. See also Wikipedia, "Trans-Canada Highway," which specifies both highways 17 and 11 as parts of the Trans-Canada Highway in Ontario. The ratios mentioned in the paper focus the main coast-to-coast highway.

¹³⁵ *Canada Year Book 1960* (Ottawa: Dominion Bureau of Statistics, 1960), 830-831, and *Canada Year Book 1962* (Ottawa: Dominion Bureau of Statistics, 1962), 512; Wightman and Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800-1990s*, 597-599.

¹³⁶ W.R. Williams, "Big Tugs and Big Rafts: A Story of Georgian Bay Lumbering," *Inland Seas* 3:1 (January 1947), 11-16; Grace Lee Nute, "Peninsula, the Pic River Region, and Modern Marathon," *Inland Seas* 4:1 (January 1948), 3-14; J.W. Alexander and W.L. Oliphant, "The big Tow," *Inland Seas* 17:4 (Winter 1960), 264-272.

replaced manually-driven saws.¹³⁷ The Ministry of Transportation and Communications formed in 1971 led to the creation of NorOntair, with its Short Take-Off and Landing (STOL) program. And the Ministry of Northern Affairs built airports serving First Nations during these years.¹³⁸ Bearskin Lake Air Service, which began scheduled flights between Big Trout Lake and Sioux Lookout in 1977, took over many of its routes after NorOntair collapsed in 1996.¹³⁹

Completion of the Trans-Canada Highway led to far-reaching changes in the movement of freight. A railway strike in 1950, which provoked the first use of back-to-work legislation by the Canadian government, preceded the completion of the Trans-Canada Highway, but it encouraged shippers to think about using trucks rather than railways to move freight.¹⁴⁰ The development of containers to move cargoes enabled railways to continue moving freight over long distances, but the package freight business of the railways and of ships on the Great Lakes gradually moved to trucks and buses. Before the end of the century, aircraft had entered the business as well. Federal Express--FedEx, as the company is familiarly known--achieved a particularly efficient movement of packages by aircraft in North America and around the world. If Canada Steamship Lines and eventually Greyhound abandoned this business, other companies (including Purolator and Canada Post) continue to move parcels as Amazon became a large purveyor of stuff from its huge warehouses.¹⁴¹

No less momentous was construction of still another of the postwar projects, which greatly expanded the use of pipes to transport natural gas. TransCanada Pipelines Limited built a system of pipes supported by pumping stations across the Prairie West and Northern Ontario to move natural gas from Alberta fields to Central Canadian markets as far east as Montréal.¹⁴² Consumers who had previously purchased natural gas from US suppliers could now obtain this vital fuel from Canadian producers. Or, more significantly for environmental reasons, they were able to turn from burning US coal--with all of the pollution consequences that coal-burning produced--to a more benign fuel. Construction of the section across the Canadian Shield--some 1,090 kilometres in length--was carried out by Northern Ontario Natural Gas, chartered by Parliament in 1956. The line had reached the Lakehead by the end of 1957 and Alberta natural gas became available to Toronto consumers on 27 October 1958.¹⁴³ *Canada 1867-1967* revealed changes in freight movement during these years, as the ton-miles of freight carried by various modes saw railways falling from 71.7% of the total in 1945 to 42.4% in 1964 and waterways experiencing a similar decline (from 46.1% in 1938 to 27% in 1964), whereas pipelines increased

¹³⁷ Ian Radforth, *Bushworkers and Bosses: Logging in Northern Ontario, 1900-1980* (Toronto: University of Toronto Press, 1987), 57-63 ("Along Skidding Trails"), 63-66 ("Dare-Devils on the Drive"), and 180-181 (trucking). See also page 79 for instances of railways built on timber limits.

¹³⁸ Epp, Transportation and Communications," 62.

¹³⁹ Wikipedia, "Bearskin Airlines."

¹⁴⁰ CBC News, "FAQ: Back-to-work legislation."

¹⁴¹ Wikipedia, "Greyhound Canada."

¹⁴² William Kilbourn, *Pipeline: Transcanada and the Great Debate: A History of Business and Politics* (Toronto: Clarke, Irwin, 1970).

¹⁴³ Wikipedia, "TransCanada pipeline."

from 0.7% in 1950 to 21.6% in 1964. Of course, this was less a transfer of business than an addition to the freight (oil and natural gas) being moved in Canada.¹⁴⁴

Toronto carried out its own transportation projects during these years. The TTC opened the Yonge Street subway line in 1954 and added more and more lines as the years passed. Most of the lines were underground, but the terrain produced some above-ground sections.¹⁴⁵ These might be regarded as anticipations of the light-rail urban systems that other cities built later.¹⁴⁶ All of these systems were powered by electricity, and thus they met the challenge of developing post-carbon transportation systems. Toronto was spared the environmental horror created in Los Angeles by a conspiracy of auto, tire, and fuel companies.¹⁴⁷ The Government of Ontario Transit system, launched in 1967, extended rapid transit beyond the TTC subway system.¹⁴⁸ Highway building still took place in Toronto and across Southern Ontario. Fred "Big Daddy" Gardiner, the first chair of the Toronto Metro Commission, is remembered in the Gardiner Expressway. He also had the Don Valley Parkway built.¹⁴⁹ The Ontario Department of Highways had designated sections of King's Highway 401 by the end of 1952. It completed the Macdonald-Cartier Freeway--as it was designated in 1965--during 1964 and built the last intersection grade-separation near Kingston in 1968.¹⁵⁰ And the highway planned in the late fifties as a freeway bypassing Highway 401 was opened in its central sections in 1997, as the 407 Express Toll Route.¹⁵¹

Among the novel developments in transportation around the end of the century was the idea of "Active Transportation." Bicycles, dominant in many cities of the world, began to be recognized as important in Ontario, too. Cities painted bicycle lanes on streets and built quite separate bicycle routes. And the lifting of rail lines in various areas opened the possibility of developing a Trans Canada Trail for hikers. The idea was born in 1992, during Canada's 125th anniversary celebration, and work continues to complete the Great Trail (as it was re-named in 2016). The challenge is particularly great in Ontario, as it has been for every means of transportation.¹⁵² But the use of waterways west of Thunder Bay evokes memories of the

¹⁴⁴ *Canada 1867-1967* (Ottawa: Dominion Bureau of Statistics, 1967), 204-228.

"Transportation." The table, "Intercity Ton-Miles Performed in Canada by Mode of Transport, 1938-64," appears on page 215.

¹⁴⁵ Wikipedia, "Toronto subway."

¹⁴⁶ Wikipedia, "Confederation Line," in Ottawa relates to one of a number of such lines.

¹⁴⁷ Barry Commoner, *The Closing Circle: Nature, Man & Technology* (New York: Alfred A. Knopf, 1971), chapter 4 "Los Angeles Air." See also Devra Davis, *When Smoke Ran Like Water: Tales of Environmental Deception and the Battle Against Pollution* (New York: Basic Books, 2002), 58-60.

¹⁴⁸ Wikipedia, "History of GO Transit."

¹⁴⁹ Timothy J. Colton, *Big Daddy: Frederick G. Gardiner and the building of Metropolitan Toronto* (Toronto: University of Toronto Press, 1980).

¹⁵⁰ Wikipedia, "Ontario Highway 401."

¹⁵¹ Wikipedia, "Ontario Highway 407."

¹⁵² Wikipedia, "Trans Canada Trail."

canoes used centuries--nay millennia--earlier to move people and goods on the rivers and lakes of our province.