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Résumé de l'article

La ville ontarienne de Merriton était au 19e siècle en plein essor, avec ses nombreuses usines de toutes sortes. Ce corridor industriel était principalement le résultat de développements technologiques surtout dans les domaines des transports et de communications. La force motrice des industries et le lien avec le monde extérieur étaient fournis par les canaux de la rivière Welland auxquels venaient s'ajouter les chemins de fer. Les besoins de la guerre et les politiques tarifaires, ainsi que les entrepreneurs locaux et les politiques fiscales de la ville contribuèrent aussi à la croissance de la ville. Néanmoins, les découvertes scientifiques appliquées à la production eurent un impact significatif. Les facteurs technologiques contribuèrent de façon tout aussi importante au déclin de la ville. La montée et le déclin de Merriton montrent comment le technologie peut, tant au niveau global que local, créer, entretenir et miner les petites collectivités humaines.

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MERRITTON, ONTARIO: THE RISE AND DECLINE OF AN INDUSTRIAL CORRIDOR (ca. 1845-1939)

Robert R. Taylor[1]

ABSTRACT

Merritton, Ontario, was a 19th-century boom town with many and various mills. This industrial corridor was largely the product of developments in technology, especially in transportation and communication. The Welland canals provided water power for industries and provided links to the wider world. Railways supplemented the canals. War needs and tariff policies helped the town's growth. Local entrepreneurs and town taxation policies played roles. Nevertheless, scientific discoveries applied to production were significant factors. Technological factors were equally important in contributing to the town's decline. Merritton's rise and fall shows how technology, both at the global and local levels, can create, nurture and abandon small human communities.

RESUME

La ville ontarienne de Merriton était au 19e siècle en plein essor, avec ses nombreuses usines de toutes sortes. Ce corridor industriel était principalement le résultat de développements technologiques surtout dans les domaines des transports et de communications. La force motrice des industries et le lien avec le monde extérieur étaient fournis par les canaux de la riviére Welland auxquels venaient s'ajouter les chemins de fer. Les besoins de la guerre et les politiques tarifaires, ainsi que les entrepreneurs locaux et les politiques fiscales de la ville contribuèrent aussi à la croissance de la ville. Néanmoins, les découvertes scientifiques appliquées à la production eurent un impact significatif. Les facteurs technologiques contribuèrent de façon tout aussi importante au déclin de la ville. La montée et le declin de Merriton montrent comment le technologie peut, tant au niveau global que local, créer, entretenir et miner les petites collectivités humaines.

In the second half of the nineteenth century, Merritton, Ontario, was a bustling factory town rivalling nearby St Catharines in the number and variety of its mills.

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In 1871, for example, its thirteen water-powered industries generated more horsepower than did the sixteen water-powered industries of St Catharines.[2]

Horwitz's *Directory* for 1874 noted that the settlement, soon to be incorporated as a village, had 'attracted to it men of capital and enterprise, who have erected some of the largest and best Mills and Factories in the Province.'[3] Fisher and Taylor's *Directory* for 1875-76 remarked that, 'from the energy and enterprise manifested within its borders', Merritton 'bids fair to rise in importance.'[4]

By the third decade of the 20th century, however, the promise shown in the 1870s had not been fulfilled. Merritton was no longer economically important, and was eventually annexed by its growing neighbour, St Catharines, in 1961. Today its 19th-century industries have largely vanished, leaving only a few foundations or other traces presumably underground, and a handful of remaining structures either in ruins or transformed almost beyond recognition. The town's industrial boom seems part of a remote, unimportant past.[5]

Why did Merritton boom and then decline? It appears that the village and its industrial corridor were largely creations of 19th-century technology. In short, the rise of Merritton was due mainly to the use of a man-made waterway to transport raw materials and finished products, the harnessing of water power with the latest available technology and the application of steam power to land transportation. Moreover, the village's industrial history is a good example of the way in which, long before the era of fax machines and computers, small localities were transformed by world-wide currents of technological and economic change. Several other factors impinging on Merritton from far beyond its borders played

2 Census of Canada, Manuscript Schedules, 1871. 'Lincoln County: Return of Industrial Establishments' (Schedule 6), Microfilm Reels 9921 and 9922, National Archives of Canada.

3 J. Horwitz, **St Catharines General and Business Directory for 1874** (St Catharines, 1874, 165.

4 Fisher and Taylor's, **St Catharines Directory for 1875-1876**, 46.

5 In 1989-90, the Welland Canals Society sponsored a project to train three students, graduates in archaeology, to develop skills in heritage consulting. The students surveyed the route of the Second Welland Canal through St Catharines, Merritton and Thorold, with a view to determining which industrial sites could be profitably excavated by archaeologists. Of special interest are the Collier mill site at Lock 5, where ruins of a foundation and a tailrace are visible, and several mill sites at Lock 7, where weir remains can be seen. (See Welland Canals Society Archaeology Project, **A Survey of Historical Structures. The Welland Canal Industrial Corridor**, 1990.)

a role in the town's growth. Ironically, its decline was also due largely to developments in technology, including changing modes of exploitation of water power and to the perfection of Ontario's railway network.

THE BOOM TOWN

The village grew up on a gradual slope north of the Niagara escarpment (on land near a gully known as Shaver's Ravine) where United Empire Loyalists aspiring to be gentlemen farmers had settled in the 1780s [Fig. 1]. After the First Welland Canal was built through this area, 1824-1829, [Fig. 2] several small settlements, including two with the unprepossessing names of Centreville and Slabtown, emerged along its on banks. But it was not until after about 1845 that the 'Factory Town' (as it became known) appeared. In the next several decades, a surprising variety of mills were built here, and the population rose steadily.[6] The village of Merritton was incorporated in 1874, and in 1918 it officially became a town.

The story of the village's heyday was short but complicated. Mill structures burned down. In one case, a mill had to be demolished when the Great Western Railway was built. Businesses changed hands frequently. Buildings devoted to producing one sort of product were refitted to produce something else. One structure might house two enterprises. Partnerships were formed and dissolved quickly.

Sorting out the complex picture is not an easy task. Needless to say, Merritton's businessmen were profit-oriented capitalists, not archivists. Hence the surviving

6 Other than Oliver Phelps' saw mill, built c. 1830 on the First Welland Canal in the northern part of this area, there is little evidence of mill construction before the 1840s (See note 11). From a first recorded total of 1000 in 1869, the population rose to 1500 in 1895, 1900 in 1911, and 2544 in 1921. For these statistics, I am grateful to Dr Roberta M. Styran, who compiled them from Canada Census figures, and various directories and gazetteers.

records are sparse, often confusing. Nevertheless, some facts are indisputable. Merritton's industrial corridor supported many mills powered by water channelled off the Second Welland Canal in raceways or flumes. As in most pioneer communities, the first mills were those producing flour and lumber, as well as mills devoted to processing wood products. As well, various ancillary industries grew up beside these canal-based enterprises. The first mills (i.e. in the 1840s and 1850s) were mainly two- to three- storey wooden frame structures with clapboard siding, on a rectangular plan.[7]

Although the Lybster Cotton Mill and Riordon's Paper Mill were built of sandstone in the 1860s, brick or stone was rare until the 1870s. In profile the mills were box-like; their roofs, slightly pitched.[8]Long since burned or demolished, they were not usually the picturesque structures beloved of visitors to 'heritage villages.' Merritton's later 19th-century mills, such as the rebuilt Beaver Cotton Mill [see below], were typically of brick or stone.

The earlier industries especially utilized water power by direct drive mechanisms, which means that a head of water (a body of water kept in reserve at some height upstream from the mill) turned a vertical wheel which, connected to shafts, gears and belts, caused grindstones or saws to move. Their large wheels were probably enclosed to prevent winter ice from damaging them. In fact, after the middle of the century some mill owners, such as the Riordons, began to use turbines, i.e. horizontal wheels operating in cast iron casings under the water level.

In order to utilize the Canal's water power, mill owners had to enter into complicated and lengthy lease agreements with the Public Works Commission of the United Canadas (modern Ontario and Quebec shared the same government from 1841 to 1867.) These agreements show not only a lively concern to protect the navigation on the canal but also reveal an awareness that reservoirs of water were a precious commodity as fundamental to the economy then as oil supplies are today. In the twenty-one year lease agreement between the Commission and the Lybster Cotton Mill owners, dated 12 May 1862 [Fig. 3], the millowners were

7 Good accounts of 19th century industrial processes can be found in two reports by Felicity L. Leung, **Grist and Flour Mills in Ontario. From Millstones to Rollers, 1780s-1880s** (Ottawa, 1981, and **Direct Drive Waterpower in Canada: 1607-1910** (Microfiche Report, Series No. 271, Canadian Parks Service, 1986). Evocative photographs have been published by Carol Priamo, in her **Mills of Canada** (Toronto, 1976). The Backus (Backhouse) Mill at Port Rowan (1808), a wooden frame structure on a stone foundation, is probably also similar to the early mills of the Merritton area.

8 Public Works Commission (Upper Canada)/ Department of Public Works (Dominion of Canada), Register B, 1841-1881, 527-8.

allowed to admit vessels to wharves adjacent to their planned mill 'through the passageways covered by floating bridges for the purposes of discharging or receiving a cargo but in no case shall such vessels be detained longer than may be strictly necessary....' At their own expense, the millers were to construct 'the Regulating wear [weir] and Gates for the discharge of the water through the Canal Bank or Breast wall of the wase Wears [waste weirs] also the Flumes head and tail Races...for the conveyance of the water through the said Lot....' The lease agreement went on to stipulate that 'the water to be discharged from the [canal] shall be returned to the level below the one from which it is taken or the second level below...and shall run in the direction and manner to be indicated by the said Commissioner....' There should be 'no waste of water or damage to the said Canal or to the navigation thereof....'[9]

This water, vital to the operation of the canal, was also the source of local prosperity. With the construction of mills such as those referred to in the above document, a community had emerged. Insofar as the mills became social as well as business centres, they formed the nucleus of what was to be the village of Merritton.

SOME REPRESENTATIVE MILLS

As in other pioneer communities, flour mills were among the first to be established. The Smyth brothers' Merritton Flour Mill was typical: it was founded in the 1840s, at Lock 10 of the canal [Fig. 4], and later was taken over by Thomas Towers. Several other flour mills -- mainly custom mills to grind the local farmers' grain -- came and went over the years. Grain brought for milling was also used in distilling: distilleries were founded on the raceway near Clifford's Creek (*c.* 1840) and at Brownlee's Flour Mill, opened in 1857. Mills which used the processed flour appeared: the St Catharines Biscuit Works was active in the 1870s also at Lock 10. As so often in pioneer North America, the flour mills presaged the growth of a town.

Virtually as important as flour mills to 19th-century life were the sawmills. Oliver Phelps' saw mill operated in the 1830s at Lock 7 of the First Canal. William McCleary and John Maclean's lumber mill, founded about 1848 at Lock 21, was active until 1911 [Fig. 16]. Orson and Noah Phelps, great-nephews of Oliver, had a saw mill at Lock 8, from 1853 to about 1885 [Fig. 8].

9 Ibid.

Later, ready supplies of wood led to a flourishing paper-making industry. John Riordon's paper mill was founded in 1863 at Lock 6, and then after 1867, moved to a large pink sandstone structure at Lock 17 [Fig. 15]. Lincoln Paper began in 1877 on the raceway, and later incorporated a mill at Lock 7. There were several paper mills, including Canadian Vegetable Parchment, Garden City [Fig. 7], Interlake Tissue and St Lawrence Paper Alliance (now Domtar Fine Papers) and Kimberly-Clark. The paper makers, it seems, were especially prone to expanding and merging, as their markets expanded and their competition increased.

Along with prosperity came a now familiar problem. The saw mills and paper mills were early polluters of the waterway, and lease agreements accordingly contained clauses in which the millers agreed not to throw into the canal 'bark, chips, slabs, edgings, sawdust or other rubbish or refuse of any kind' on pain of having the Public Works authorities seize the mill.[10]The persistent inclusion of such clauses suggests that mill owners continued surreptitiously to dump refuse in the operating waterway, even though ultimately such action might be detrimental to their own interests.

In a society on the move, albeit only by horse and buggy, spokes, wheels and carriage parts were vital, and Merritton, with its several saw mills, was well placed to supply the need. Three spoke factories operated in the community, including Canada Wheel Works, founded in 1868 by E.H. Phelps and his associates at Lock 11 [Fig. 11]. Industry on this site continued to serve the modern transportation industry as the Phelps company became first Pioneer Pole and Shaft, then Canada Pole and Shaft and finally the Hayes Wheel Company (1922) which concentrated on producing automobile parts. Hayes Dana Steel Products, which operated here until 1987, was the last of Canada Wheel Works' business descendants to be located near Lock 11.

Thanks in part to local supplies of wool, textile mills also developed, among which were Beatty and Henderson's woollen mill (active in the 1880s at Lock 8) and Disher and Haight's woollen mill, which started about 1856 at Lock 9. Associated with these mills was the Barber Knitting Company, opened about 1870 at Lock 9. Due partly to changing national trade policies, William and Alexander Waite founded Beaver Cotton, later known as Merritton Cotton Mill, in 1857 at Lock 15, at the base of the escarpment. After a fire, it was rebuilt in 1884-5 as a handsome complex of pink sandstone buildings, the main one four storeys high with two fine towers [Fig. 14]. The Canadian Coloured Cotton Mill (also known as Lybster Cotton) [Figs. 3 and 13] was founded by John Gordon and Donald

10 See, for example, the lease agreement between the federal Department of Public Works and John Riordon, when the latter was expanding his paper mill operations in 1870; ibid., 682.

Mackay of Toronto, on Lock 14's weirpond at Merritt Street and the concession road.

Flour, lumber, paper and textile mills: these were the main types of mills in early Merritton. But there was also a wide range of other industries. Metal work, for example, was undertaken at several sites. James Wilson's iron foundry (on Merritt Street near Riordon Paper) was operating with lathes, planers, fans, saws and drills in the 1880s. The Merritton Brass Foundry began about 1898, also on Merritt Street at the concession road. In such metal-working shops, water power operated bellows in furnaces, or hammers in the forges. In 1870, Collinson and Burch opened a factory to produce knives and other sharp instruments at Lock 6; later this was taken over by Whitman and Barnes [Fig. 6].

Various other mills and factories also operated in Merritton. John Brown's Cement and Plaster Mill was founded in 1853 on the old First Canal channel which was still connected to the weirpond of Lock 19 on the new Second Canal. Independent Rubber opened in 1912 in the former Merritton Cotton Mill. At least two tanneries operated in the 1870s. There were also, a various times, a flax mill, a carpet factory and two brickworks.

The most innovative of Merritton's entrepreneurs was Thomas L. Willson (1860-1915) who founded his Canada Carbide plant at Lock 10 in 1896 [Fig. 10]. Using a mixture of lime and coal tar heated with an electrical current, Willson discovered a cheap way to produce calcium carbide. A by-product of calcium carbide is acetylene, then widely used in street lights, carriage lamps, locomotive headlights and navigation buoys. He sold the patent to the company that later became Union Carbide. The electric power was provided by a small generating plant at the lock. Later, the Pres-To-Lite company opened not far from Willson's business and used his products.

WHY THERE? WHY THEN?

Old maps and directories, the papers of the Welland Canal Company, the records of the Board of Public Works of the United Canadas and other sources give us this picture of a bustling industrial corridor. But they do not answer the vital questions: why did these industries locate at what became Merritton? Why in the two or three decades after about 1845?

Answers to these questions can be found first in the general trends and important events of the 19th century in both the Niagara area and abroad. Slabtown and Centreville, both of which began as temporary settlements for canal workers, were never isolated. Their growth into Merritton owes much to influen-

ces remote from local fields and woodlots. The most important general factor behind Merritton's birth was the great economic and technological expansion of 1850-1880 in the modernizing

West. Beginning in England in the 1770s, the Industrial Revolution had made Britain 'the workshop of the world.' In simple terms, the Industrial Revolution was the use of machinery, powered by water or steam, for the production of basic goods. In the textile industry, technical innovations such as the flying shuttle (about 1733) greatly increased productivity. Then James Watt's improved steam engine (1775) transformed coal mining, and eventually the iron and steel industries, as well as land and water transportation.

At the same time, the United Kingdom, was entering its great canal-building era. Francis Egerton, third Duke of Bridgewater (1736- 1803), is often credited with starting England's inland navigation system, of which his canal from Worsley to Manchester (begun in 1759) was the first link. These canals provided vital connections between the sources of raw materials and the new factories, mines, and ports. In the Canadas, apart from the Welland, the major Upper Canadian canal was the Rideau, built 1827-1832 as a defensive measure after the War of 1812. In New York State, the Erie Canal (built 1817-1825) threatened to siphon off the Canadian Great Lakes trade to the American Atlantic coast. Although early canals could operate with relatively simple technology, their construction was viewed by contemporaries as fundamental to building financial and political empires.

Eventually, the steam engine which powered many of the new industries was applied to transportation. In 1829, George Stephenson's 'Rocket' (on the Liverpool and Manchester Railway) demonstrated the practicability of the steam-driven locomotive. In the following year, the first locomotive was constructed in the United States, for the South Carolina Railway. At the same time, given the great increase in production, and the improvement in transportation -- the application of steam power to ships -- Atlantic and world trade grew. The late 18th and early 19th centuries were, therefore, a time of great technological progress and economic expansion. The sudden emergence of Merritton's industrial corridor was a consequence of this process, as the development of canal systems, the application of water and steam power to industrial production and the introduction of steam-powered locomotives, began to affect the area.

The role of technological factors, however, must not be over- emphasized. Local factors such as the availability of timber and wheat supplies provided the environment in which canals and railways could prosper. Before the role of technological or economic influences from further afield even began to take effect, the Lake Ontario plain of the eastern Niagara peninsula was a potentially rich area for pioneer industry. Thriving farms provided grain for flour mills, as well as

wool for woollen mills and livestock hides for tanneries. Even after extensive clearing for farms, vast stands of timber remain to be exploited by sawmills. In other words, local conditions such as the availability of timber and wheat supplies provided the environment in which canals and railways could prosper. Moreover, at the start of the period under study, the fine harvests of 1848 and 1849 produced plenty of wheat to feed the flour mills. Improvements in farm machinery in the 1840s contributed to those bumper harvests. Later, the first paper makers such as Riordon established here not only because of the canal and railways but because of the ready local supplies of agricultural products such as straw, used to make paper before the introduction of ground wood pulp.

THE CANALS COME TO NIAGARA

The most important local factors which created the corridor were the building of the first two Welland Canals and the arrival of two important railway lines. The First Welland Canal was built through the area that became Merritton in 1824-29. With a view to attracting mills, the directors of William Hamilton Merritt's Welland Canal Company reported in 1827 that the new canal's back-ditches and waste weirs could provide an 'abundant supply of water for hydraulick erections, to any extent, without causing any perceptible current in the canal.'[11] In 1830 the first raceway from the escarpment through the Merritton area to St Catharines was constructed by the Welland Canal Hydraulic Company. Unfortunately, some of the First Canal's wooden locks and dams began to decay fairly soon, inhibiting the efficient use of its water power,[12] and in 1836 the waterway was closed for six months due to slumping of the banks of the channel. The Company had its hands full simply trying to survive financially.

In 1840 the Board of Works of the government of Upper Canada took over the canal's operation and in the following year the Public Works Commission of the now United Canadas began the construction of the Second Welland Canal. To be sure, the route was not very different. The new waterway, like the original, left Port Dalhousie on Lake Ontario, followed the Twelve Mile Creek through St Catharines, and then Dick's Creek and Shaver's Ravine to the foot of the

11 **Annual Report of the Board of Directors of the Welland Canal Comapny for 1827** (St Catharines, 1828), 8. The report of 1832 was equally sanguine about the future of milling on the canal.

12 See Killaly and Baird's survey of 1837. (141-d WeCa B, Map Library, Brock University. The original is in the National Archives of Canada.

Niagara Escarpment. There it ascended a natural ramp of glacial till up the side of the 'mountain,' from which point it ran south to Port Colborne [See Fig. 2]. The lift of six stone locks on the escarpment and the gentle slope of the land from its base towards St Catharines (necessitating ten more locks) involved the damming of water in large ponds which were potential reservoirs of power for water-driven mills. As with the First Canal, the greatest volume and greatest head of water on the whole canal was between Thorold, on the top of the escarpment, and St Catharines, about five kilometres (three miles) to the north. The fall of water was about 100 metres (300 feet). Moreover, the new canal, more soundly financed than the first, was consequently more soundly built, with masonry locks supplanting the original wooden ones. Whereas the First Canal had offered mainly back ditches and a raceway as sources of water power, the Second Canal had huge reservoirs. The new waterway, therefore, offered a more reliable power resource and a more stable investment to businessmen than had the first. Many of its locks and weirs are still standing today.

With its unreliable wooden dams and small back ditches, the First Welland Canal had attracted very little milling activity to the Merritton area. Nevertheless, it did offer some evidence of a Niagara-wide movement to the canal's banks of mills which previously had been dispersed throughout the Peninsula, at sites such as St Johns in the Short Hills. Oliver Phelps built a sawmill at Lock 7 (First Canal) in the late 1820s and there may have been a grist mill at Lock 9 (First Canal).[13]In the late 1840s, however, the Second Canal provided a greater and more reliable source of energy as well as a more dependable route for the transportation of raw materials and finished products.

The Merritton-St Catharines raceway was also improved with the construction of the Second Canal [See Fig. 2]. This small ditch carried the vital water to the mills

13 On Phelps' mill, see Welland Canal Company, **Survey of Lands Appropriated to the use of the Welland Canal Company**, 1826, 58 (Special Collections, Brock University). There is also a reference to Phelps' mill in November 1830 in a description of the sale of hydraulic privileges. ('Third Report of the Select Committee of the House of Assembly of Upper Canada,' **Appendix to the Journal of the House of Assembly of the Second Session of the Twelfth Provincial Parliament**. Session 1836, vol. 2. (Toronto, 1836, 549). Seymour Phelps claimed that Robert Campbell had a grist mill at Lock 13 (site of Lock 9 of the second canal). ('Junius,' **St Catharines. A to Z. 1856**, St Catharines and Lincoln Historical Society, 57.) However, at this point in my research, I have found no other evidence of such a mill in the Merritton area.

of St Catharines without jeopardizing the potential efficiency of Merritton's factories. Although most of these were on the canal itself (in Merritton), several grew up along the hydraulic raceway, notably the 'Upper' Lincoln Paper Mill.

In 1847, the engineer Samuel Keefer reported that 96 horsepower out of a potential of 493 was already in use at Locks 16-21 (on the escarpment slope), although the 400 horsepower available at Locks 8 to 15 (through Centreville and Slabtown) was still untapped.[14] McCleary and Maclean's lumber yard, founded *c*. 1848, and William Beatty's sawmill, founded 1851, are examples of new enterprises going into business on 'the mountain' after the improved canal opened. Moreover, new industries appeared which did not depend solely on local supplies of raw materials; metal-working firms, for example, could more easily import coal from the US. The Second Welland Canal, therefore, was a huge, literally powerful, waterway, and entrepreneurs soon were aware of this fact.

By 1852, W.H. Smith's directory, *Canada: Past, Present and Future*, noted that 'there is no doubt that considerable manufacturing towns will eventually spring up on the canal. The unlimited supply of water power for turning machinery, with the facility of obtaining coal from the Ohio mines, at a small expense, offer advantages such as few places in the Province possess for similar undertakings.' Smith reviewed all the suitable industrial sites along the canal route, but singled out as 'the principal locality' 'the distance of four miles between Thorold and St Catharines, between which places there is a fall of about three hundred feet,'[15]

Later, mill owners began to switch to other forms of power. In 1871, an oil refinery was driven entirely by steam and two other mills were powered by water combined with steam.[16] The Lybster Cotton Mill, for example, was using this combination in 1869.[17] In the early 20th century, mill owners began to use hydroelectricity.

14 The range of locks from 2 to 7 showed 140 horsepower in use with 220 as yet unexploited. Locks 6 and 7, included in this range, are part of my Merritton study, but it is impossible to know if the figure for horsepower in use included mills at those locks. (Samuel Keefer, 'Statement showing the water power employed for Mills on the line of Canal and of the power still available,' 28 January 1849, 223, in the **Letter Books of the Welland Canal Company 1846-1847**, Microfilm Reel 72-2, St Catharines Historical Museum).

15 W. H. Smith, **Canada: Past, Present and Future** (Toronto, 1852), 192.

16 'Lincoln County: Return of Industrial Establishments,' Census of Canada. Manuscript Schedules, 1871 (Schedule 6), Microfilm Reel 9921, National Archives of Canada.

17 McEvoy and Anderson's **Province of Ontario Gazetteer and Directory. 1869** (Toronto, 1869), 306.

Nevertheless, the canal which had helped to create Merritton still provided an avenue of commerce and a source of reasonably clean water for manufacturing processes. Cotton millers (such as the Waites) established in Merritton because of the generous supplies of water for washing their raw material. Canal water was similarly used in the early paper mills such as Riordon's, which also used it for their steam engine boilers. Some paper mills also used waste material from the nearby cotton mills. Unfortunately, the channel could be used as a disposal ditch for industrial waste although, as noted above, efforts were made by the Public Works Commission (and later the Ministry of Public Works) to control this practice. Another advantage of canal-side sites was the ready availability of water for firefighting, which resulted in lower insurance rates for mills. Hence canal water had several uses, besides providing power, which made operating a mill in Merritton attractive to businessmen. These factors applied even after the completion in 1887 of the Third Welland Canal, which by-passed Merritton taking most of the water-based commerce with it..

Of course the canal was first and foremost a transportation artery. The Welland's owners clearly understood the importance of being competitive, and from the beginning the tolls were set low enough to stimulate regular use of the canal.[18] The completion of the St Lawrence River Canals in 1848 also helped to increase the commerce on the waterway. The Welland was -- and still is -- closed in the winter months. The broad, relatively clean expanses of the canal's channel and weirponds, which have dwindled into today's pungent, narrow murky ditch, thus provided cheap and reliable transportation until dewatering, about 1915.

THE RAILWAYS COME TO NIAGARA

If the waterway was the first major factor in creating Merritton's boom, the railways were the second. After the hesitant beginnings (in the late 1830s) along the St Lawrence River and in Nova Scotia, and the greater success (late 1840s) with the St Hyacinthe-Longeuil line, in the later 1850s Canadian railway builders be-

18 Hugh G.J. Aitken, **The Welland Canal Company. A Study in Canadian Enterprise** (Cambridge, MA, 1954), 65 and 139-41. The canal attracted commercial traffic immediately and the volume of freight passing through increased steadily. For example, whereas in 1831, 210,105 bushels of wheat made the transit, in 1841, 1,579,966 bushels were recorded; the figures for cubic feet of squared timber for the same years are 28,500 and 1,155,086, respectively. Ibid., 142.

came more confident. As with other still quiet agricultural settlements in southern Ontario, in Merritton the principal effects of the railways were threefold: to provide an attractive site for larger scale industries; to open up wider sources of raw materials such as metals, textiles and paper; and to create national and continental markets for locally finished goods.[19]

The first line to affect the area was the Great Western, which passed across the canal near Lock 12 in 1853. Its station and yards were built just south of Slabtown on the eastern side of the channel. This east-west line, now the route of the CNR, and others built to the south drew American businessmen to the Niagara peninsula which itself had long been a conduit channelling trade to and from Canada West. Capitalists from Toronto were also attracted to Merritton in the railway era. Gordon and MacKay, for example, built their cotton mill in Merritton just south of the Great Western line in 1861 [Figs. 3 and 12]. Even American entrepreneurs were drawn to Merritton: in 1880, Whitman and Barnes of Akron, Ohio, took over Collinson and Burch's Knife Works (at Lock 6). From the 1850s, American coal and iron, from western New York, Ohio and Pennsylvania, could be imported more easily, a fact which helped the local metal industries, such as Wilson's Foundry. American coal would later power the steam-driven turbines of the Riordon, Lincoln and Lybster Mills.

Another important railway line was the Welland, completed in 1859, which ran north-south along the east side of the canal. While a railway parallel to the canal might seem to offer competition to the waterway, in fact this was not the case. With ships growing in size and capacity, the railway served to lighten them at either terminus, parts of their cargoes being carried by train from one end of the canal to the other. Soon, landmarks of both Port Dalhousie and Port Colborne were their grain elevators. As well, it could link canal ports with each other in the winter, when the waterway was closed, and, as it did after 1877, connect with the Great Western, near Merritton. These railways, and their spur lines into the heart of the village provided more connections to the wider trading world.

At first the canals, then the railways, drew the mills, which in turn attracted employees, both labourers and professionals, to settle in the growing village. Various service businesses and their operators, and other industries, often related to the canal- and railway-side factories followed. By 1900, 19th-century technological developments had created a vibrant community, which boasted a fine pink sandstone village hall (1879), within hailing distance of the railway yard and the canal and several fine churches.

19 John N. Jackson and Carole White, 'The Industrial Structure of the Niagara Peninsula,' unpublished MS, Dept of Geography, Brock University, 1971, 52.

THE INFLUENCE OF WARS

Important as technology and entrepreneurial strategy were in causing Merritton's growth, diplomatic and military events must also be considered. Decisions taken in Kingston, Montreal, Ottawa, Washington, London -- and even St Petersburg -- in the period 1846-1879 had repercussions in Merritton. For example, the Crimean War (1853-56) created a demand in Britain for the flour of Canada West, since the conflict closed Russia's wheat exporting Black Sea Ports. This fact partly explains the prosperity of local mills in the 1850s (such as those at Lock 10). Similarly, when the American Civil War broke out in 1861, there was an increased demand for Canadian cotton products. Hence Merritton's cotton mills thrived. Having noticed the deleterious effect of the American war on paper making in the United States, John Riordon decided to establish his first mill at Lock 6 in 1863.[20] Relatively distant happenings, therefore, affected Merritton's growth.

EFFECTS OF GOVERNMENTAL TARIFF POLICIES

The changing economic policies of governments also influenced how mills were supplied, where their products went, and indeed whether or not mills were established at all. Until their repeal in 1846,the British Corn Laws gave Canadian wheat a preference. Abolition of these laws throughout the Empire created problems for Canadian farmers and millers, who, faced with lower prices for their product, looked for other markets and turned to the United States. By 1849 the legislature of the United Canadas was controlled by Free Traders such as Robert Baldwin and Louis- Hippolyte Lafontaine. These men, supported (incidentally) by William Hamilton Merritt, helped to bring about the Reciprocity Treaty of 1854. This 'free trade' agreement required that duties be lowered or abolished on many natural products. For example, the treaty made it easier to import American wool, cotton and wheat while timber from Canada entered the US more freely. Flour processed in Merritton found its way back into the American market more profitably. Although it is probably impossible at this date to quantify Reciprocity's effect, and although the stimulating effects of the canal and the railways pre-date the treaty, the treaty must also have helped to encourage construction of mills in Merritton.

20 A.J. Blyth, 'Development of the Papermaking Industry in Old Ontario 1824-1867,' **Ontario History** 62:2 (June 1970), 131.

In 1865, Washington abrogated the Reciprocity Treaty, and British North America had to find new ways to protect and develop its economy. One consequence was the decision of New Brunswick, Nova Scotia, Canada East (Quebec) and Canada West (Ontario) to join forces as the Dominion of Canada. After Confederation in 1867, the new Dominion began to raise tariffs to shelter Canadian industries. In 1879, John A. Macdonald instituted the 'National Policy' in which higher tariffs were imposed on imported manufactured goods, especially those from the United States. This policy was designed to stimulate Canadian industry and had some success throughout the new country. In Merritton, it presumably stimulated the development of woollen mills, such as Beatty and Henderson's, in operation in the 1880s, and may have inspired the rebuilding in stone (after a fire) of the Beaver Cotton Mill, 1882-1885.

Later changes in the tariff policies in Canada and the United States are too complicated to detail here. It is clear, however, that Merritton's paper-making mills -- the older as well as the newer ones of *c.* 1910 -- must have benefitted from Ontario laws (1900-1911) limiting the export of wood pulp and timber, and from Washington's tariff adjustments (1909-1913), which opened the American market to Canadian newsprint. These policy changes partly explain the establishment in 1911 of Interlake Tissue at Lock 21, and Garden City Paper at Lock 7, as well as the expansion of the Lincoln Mill in the early 20th century. Merritton's industrial corridor, therefore, represented not only the consequences of general technological changes as they affected industry and transportation in the western world. Military and economic factors, both domestic and international, also played a role in local developments.

INDUSTRY-SPECIFIC FACTORS

Despite the importance of these more general influences, certain mills were established and prospered because of factors peculiar to those industries. The saw mills are a good example. The first of these served the limited local construction needs of infant Niagara communities. Later, in the 1850s, Canadian lumber exports to the States grew because this was a time of increasing industrialization south of the border. Great cities such as Chicago were growing, creating a heavy demand for Canadian timber for construction. Railways, both Canadian and American, were developing, too, and the needs of the railway builders for ties, trestle supports, etc. must also have stimulated Merritton's lumber mills. Here again, the tiny communities of Centreville and Slabtown found that they could supply an international market.

LOCAL ENTREPRENEURS

If the tide of economic and political events was generally controlled by distant individuals and events, several canny local businessmen nevertheless rode it successfully. They, too, must be considered as influential, although lesser, causative factors in the growth of this industrial corridor. Merritt, the instigator of the canal scheme and of the Welland Railway, played an obvious role in setting the stage of the village's prosperity. He was also one of the founders of the Welland Canal Loan Company which in 1851 leased about 400 acres adjacent to the canal in what became Merritton. Merritt called the area 'Welland City' (a name it retained until 1856), and invited entrepreneurs to set up businesses there. The company's 1855 description of the advantages of the village summarizes the role of the canal and the railways: 'Flouring mills, cotton and woollen factories, locomotive, Carriage, Nail, Spike, Edge-Tool and various kinds of machine shops' would prosper here, said the advertisement, which also indicated that 'both vessels and railway cars can approach each separate Mill and Factory, and be discharged or laden by machinery without the expense of transshipment.' Moreover, there was an abundance of water power, gas was available for lighting purposes (from the St Catharines Gas Works, opened 1855), and the 'mountain terrace' offered 'a most attractive view,' presumably a good site for entrepreneurs' homes.[21]The company's advertisement in a St Catharines newspaper in October of the same year offered rent-free terms to iron, cotton or woollen manufacturers who would build stone structures which could be in operation before 1 January 1857.[22]

Various businesses, including the Lincoln Paper Company (in 1878)[23] leased acreage from the Welland Canal Loan Company, but Merritt's venture was not

21 Text printed on Map 985.198.1a., in the archive of the St Catharines Historical Museum.

22 St Catharines, **Journal**, 25 October 1855, 3.

23 Minute Book of the Lincoln Paper Company, 14 (at the St Catharines Historical Museum).

as successful as the undertakings of the Phelps family, which gave its name to Phelps Street in Merritton. Oliver Phelps, as noted above, was probably the lone saw mill owner on the first canal in the Merritton area. Phelps was also a contractor on the original waterway, with responsibility for lock construction, the most intensive part of which included the future site of Merritton. With a sharp eye to the main chance, Phelps bought a large piece of land between Locks 7 and 15 on both sides of the first canal, set up his mill and built himself a home above Lock 15.[24]But it was really Oliver Phelps' great-nephews who created Merritton's industrial spine. O.J. Phelps had a saw mill at Lock 12 of the Second Canal and a provisions store at Lock 10 . Noah and O.J. Phelps operated a saw mill at Lock 8. Elijah Phelps and his partners, at Lock 11, founded the Canada Wheel Works in 1865. Noah Phelps was president of the Lincoln Paper Mill (on the raceway) while Philander and Judson Phelps began as blacksmiths near Lock 7 and later started a Hammer Factory at Lock 10, which flourished in the 1860s. Judson was involved with the Lincoln Paper Mill, too.[25]

These men were not absentee owners, but residents of the village [Fig. 9]. In fact, the Phelps, devout Methodists, appear to have been employers with a social conscience, who contributed to Merritton's reputation for good worker-employer relations, which itself would make the village attractive to investors. The claim was frequently made that, in the words of one anonymous source, the mill owners 'built up a tradition of fair play and community welfare which has no

24 Oliver Phelps' mills is shown on a map in the Welland Canal Company's **Survey of Lands Appropriated to the Use of the Welland Canal Company** (1826), 59. There is a reference to this property in the Welland Canal Company's **Journal of Deeds, Contracts, Leases, Awards, Bonds, Mortgages, and Letters in the Welland Canal Office from 1826 to 1860** (Register A), 67. Both documents are in Brock University's Niagara Collection.

25 The mills of the Phelps' empire are described in several St Catharines and Lincoln County Directories for the period 1860 through 1890. The maps produced by the Department of Railways and Canals (in the National Map Collection) also show them; for example, that of c. 1882 (#0073969).

equal.'[26] More research needs to be done on this subject, but it appears that the Phelps helped to make Merritton an attractive place in which to live and work.

THE TOWN FATHERS

Merritton's elders were aggressive in attracting and keeping investment in their home town. Beginning in 1876, the village council offered tax exemptions to mill owners. For example, in 1878 the entrepreneurs who formed the Lincoln Paper Mill Company successfully applied to the village council for exemption from taxation for twenty years.[27] About 1900 the village published a small booklet, with a red cover embellished with gold lettering, entitled 'Notice to Manufacturers and Capitalists wishing to Establish a Manufacturing Industry in Merritton, Ontario.' In it they said they were 'prepared to grant land free lying alongside the railroads; also Free Taxes, Free Water for Domestic and Fire protection and Electrical Motive Power at a nominal cost per horse power for a term of years.'[28] The town continued to publish attractive brochures, as for example in the 1920s, when another handsome little pamphlet announced that 'Merritton...bids you welcome and opens the Doors of Opportunity for you in Canada' -- an appeal to American capital.[29]In 1906, the Niagara Falls, New York, *Gazette* marvelled: 'Even the little village of Merritton, Ontario, is very much alive to its own interests and can give this city some pointers on the matter of industrial promotion.'[30]

26 This is from an anonymous 'Brief History of the Town of Merritton' found in the St Catharines Centennial Library, Special Collections. Journalists' comments from the early twentieth century are in a similar vein.

27 Merritton Civic Records 1874-1899, St Catharines Historical Museum Microfilm, Reel 171.268; see, for example, the village council meetings of 13 December 1875; 28 December 1875, 7 January 1876 and 24 April 1878. See also the **Minute Book of the Lincoln Paper Company**, meeting of 16 January 1878, 13 (at the St Catharines Historical Museum).

28 At the St Catharines Historical Museum Archive, file envelope labelled 'Merritton. Industry, General - A.'

29 Ibid., 'Merritton. Industry, General - B.'

30 Niagara Falls (NY), **Gazette**, 2 July 1906, 8.

THE LABOURERS

By 19th-century standards, working conditions seem to have been at least tolerable. What about the workers' skills? To be sure, in the late 1840s the Merritton area possessed a sufficient, although not very skilled, labour supply, many of them of Irish background. The cessation of building on the Second Welland Canal in 1845 had left many workers ready for new employment. Soon, the Canadian boom of the early 1850s attracted immigrants, mainly from England. These men and women were often accustomed to the discipline of the modern factory and could adapt quickly to working amid the modern pulleys, gears, belts, flumes and wheels of Merritton's mills. Trade unions of the area, moreover, have been described as 'fair-minded and dignified.'[31] Merritton's relatively contented working class, therefore, may also have made the town attractive to investors. As with the owners' attitudes, further research needs to be done here.

IMPACT OF SOCIAL CHANGE

Technological factors, as we have seen, were fundamental to the town's growth, but technology often acted in tandem with social and cultural factors. Because paper-making is still predominant in Merritton, it is worth recalling the changes -- both technological and social -- which affected this industry throughout the western world. In the early nineteenth century, the steam engine had been applied to the printing press, making possible the production of many more books, journals, newspapers, and pamphlets. Of course more paper -- especially newsprint -- was needed and so the modern pulp and paper industry evolved. Increasing literacy due to compulsory and universal elementary education meant that there were more readers to consume the products of the presses. In addition, as 'consumerism' developed, wrapping paper or packaging became more widely used. Merritton's paper mills developed, therefore, not simply as a result of factors such as the Welland Canal, the railways, or available forest resources, but also as a consequence of the social revolution of the 19th century.

31 'Brief History of the Town of Merritton' (St Catharines Centennial Library, Special Collections).

THE PARAMOUNT ROLE OF TECHNOLOGICAL CHANGE

This said, one returns to technological change as the major influence behind Merritton's prosperity. The paper-making industry, still represented in Merritton by Domtar Fine Papers and Kimberly Clark, was revolutionized by technological discoveries in the later 19th century and early 20th centuries. Specific to paper-making was the discovery of methods of using groundwood pulp and the sulphite process. A mechanical groundwood process was introduced at John Riordon's paper mill in 1875.

After 1888, his brother Charles introduced the recently perfected sulphite process for papermaking. Developed in Europe, the new method involved dissolving and extracting much of the lignin and resinous material found in wood by using a water solution of sulphur dioxide. In Merritton, large concrete 'sulphite towers' eventually appeared at the Lincoln and Riordon paper mills.

Towards the end of the 19th century, a new source of power became available, as running water was harnessed to produce hydro-electricity, a new, inexpensive and efficient method of powering machinery independent of sources of water or steam. A way to transmit electricity by direct current had been discovered in 1873, but transmission over long distances remained a problem. In 1896, the American Niagara Falls Power Company began in 1896 to transmit power by alternating current, and in 1898, the first electricity produced by a Canadian hydro-electric generating station was produced at the DeCew Falls plant south of St Catharines. Here the Welland Canal again played a role in providing power, insofar as surplus water from the channel was used. Back at Niagara Falls, between 1901 and 1923 several companies established hydro-electric generating stations, revolutionizing the pattern of industry in Ontario. Merritton was favourably situated a few miles from where these pioneering steps were taken in the development of hydro-electricity. The cheap electrical power soon being developed attracted businesses such as Interlake Tissue, to its site near Lock 21 in 1911.

DECLINE OF THE 'FACTORY TOWN'

Walking along the Merritt Trail beside the old canal through Merritton today, one sees little trace of the mills discussed above. Only a remnant of the Whitman Barnes knife works, the stripped down shell of the Lybster Cotton Mill, the ruins of the upper Lincoln Mill and a crumbling part of the Beaver Cotton Mill remain. Ironically, most of the stone locks which predated these mill structures

survive remarkably intact. Why the disappearance?

In Merritton's decline, as in its growth, local conditions, national and international economic and political conditions, and, above all, technological developments were influential. As early as 1864, the failure of the local wheat crop was a harbinger of future economic challenges to the village's businesses. Flour millers faced the gradual depletion of Niagara supplies of wheat and by the 1880s they found themselves in annual difficulties. To area farmers, fruit growing and viticulture began to seem more profitable. Raising apples, peaches and grapes looked like a better investment as nearby city populations -- with their fruit-hungry markets -- swelled, and as the expanding railway network offered quick transportation for perishables. Niagara was becoming 'Grape and Wine Country.' Other factors were at work as well. The end of the Crimean War in 1856 brought heightened competition for millers. On the other hand, huge modern flour mills developed at the southern canal terminus, including the Robin Hood Mill, because Port Colborne was more favourably situated than Merritton to absorb the wheat trade coming out of the American mid-west and later the Canadian and American prairies. The introduction in the 1860s of the 'gradual reduction' process, and, in the 1870s, of rollers (in place of the traditional millstones) coincided with these challenges to Merritton's flour millers, and must have added to their difficulties. In the 1890s, changes in American tariff policies meant further problems for their mills.[32]The millers found business hard to come by and gradually closed. Smyth's millstones, for example, ceased to turn in 1891.

The lumber mills, too, declined as the forests of southern Ontario disappeared. John McLean sold his sawmill in 1911. Several sites, however, did not totally disappear but were converted to paper production. On the former McCleary and McLean site, for example, a series of paper mill companies have operated, including the present Kimberly Clark.

Local urban geography also played a role in Merritton's decline. Expansion of the older mill buildings was difficult. It was often advantageous for the new 20th-century machinery to be housed in sprawling one-storey structures, as opposed to the two and three-storey buildings common throughout the 19th century. By 1900 much of the land occupied by Merritton's mills was cramped by other structures -- houses, stores, churches and so on. There were large ponds, the

32 The decline of Merritton's flour mills is complicated and can only be described superficially here. Many factors were at work, such as the souring of wheat crops and the exhaustion of Niagara's soil. For a good description of what was an Ontario-wide problem, see Leung, **Grist and Flour Mills in Ontario**, 161-3, 227-9.

raceway and other smaller back ditches, streams and watercourses, not to mention streets and railway tracks all of which inhibited horizontal expansion. Mills in the stretch between Locks 6 and 13 were cramped by what is now Oakdale Avenue, and the line of the Niagara, St Catharines and Toronto Railway Company (incorporated in 1899, although begun in 1856). Moreover, the escarpment mills, such as Riordon's, if they expanded, would have had to build on uneven, sloping terrain. Physical growth of plant facilities was therefore a problem.

National and international economic and political conditions and policies contributed to the decline. The long depression of *c.* 1873-1895 saw a rationalization of businesses and the number of companies in the St Catharines area actually declined between 1880 and 1920.[33]After the turn of the century, large corporations (often American) were swallowing up smaller companies, and closing unprofitable factories, of which Whitman and Barnes at Lock 6 was one (1921). In 1897, the Canadian tariff on imported woollen goods was lifted, which led to the markets being flooded with British woollens and the decline of Merritton's woollen mills and knitting factories, which had flourished in the 1880s. The post-war recession of the early 1920s caused many business bankruptcies throughout Canada. Furthermore, the pulp and paper industry was faced with increased competition from American companies setting up plants in Canada, facts which contributed to the closing of the Riordon Mill, in 1921. The Lincoln and Lybster Mills amalgamated in 1928 to form Alliance Paper, which has survived as part of Domtar Fine Papers.

The technological improvements in the utilization of water power and water transportation had been prime factors in Merritton's birth and expansion. By about 1920, however, the same factors helped to prevent most of the village's industries from reaching maturity. That new product of harnessed water power -- hydro-electricity -- and the construction of yet another Welland Canal (the Fourth), which involved the de-watering of the Second Welland, helped to cause Merritton's decline. The example of Interlake Tissue turned out to be an exception, for new industry tended to move away from the canal when electrical machinery was introduced in the early 1900s. As electric power was increasingly used by North American factories, water, although still used for cleaning or processing, was no longer necessary to move mill wheels and other machinery, or, combined with coal, to drive steam engines. Wherever Ontario's growing hydro-electric power grid could reach out from Niagara Falls, businessmen could set up a mill. Merritton, although at first benefitting from its proximity,

33 Robert Shipley, **St Catharines. Garden on the Canal. An Illustrated History** (Burlington, 1987), 70.

was no longer as favoured a location. Exploitation of water power through technology had helped to create its mills and then, as that exploitation became more sophisticated, undermined their prosperity.

Only the paper-making industry has survived in Merritton because of the proximity of both well-developed railway and highway transportation and cheap electricity from Niagara Falls. Even so, the community's two long-lived paper-making firms are dwarfed by the giant Quebec and Ontario Paper Mill in Thorold.

The expansion of the railway network, which earlier had brought so much business to Merritton, later contributed to stagnation. In the 1880s new industries were being drawn away from Niagara communities such as Merritton to larger centres, especially Toronto and Hamilton which had larger populations and larger local markets. In these centres a process of concentration and specialization of manufacturing was underway, catalyzed in part by the railways.

Comparison of Merritton's history with that of another canal community is useful. To the south, Welland slowly eclipsed Merritton. Although the former 'Seven Mile Stake' lacked the water power potential of the Merritton, with its proximity to the escarpment and its gradual slope away from the cliff, Welland was bisected by each successive waterway (until the By-Pass built 1965-1973 circumvented the city), a fact which until at least the mid-twentieth century, attracted industry. When it became the seat of the County of Welland in 1856, Welland was able to attract a different sort of business and professional activities. Moreover, even after the Second World War, Welland still offered flat empty land on which modern factories have built and expanded.

The 19th-century technological revolution was the main agency which created Merritton and its industrial corridor. By the turn of the century, however, continued technological change was helping to undermine the local economy. The population of the village (officially a town after 1918) continued to grow, but by about 1950 Merrittonians were as likely to be employed in St Catharines or in Thorold as in the few remaining local industries. In 1961, when St Catharines swallowed up the 'Factory Town,' Merritton disappeared as a separate entity. Today, the tale of Merritton's vanished industrial corridor is a fascinating subject for historians and archaeologists because it reveals how global technological and economic changes create, nurture, and abandon small human communities.

Acknowledgements:

I am indebted to Dr Roberta M. Styran for her advice, especially concerning the history of the First Welland Canal, and to Professor John N. Jackson, for his knowledge of Merritton's industrial history.

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FIGURE 1. **Merritton c. 1880.** [Map by Loris Gasparotto, Cartographer, Geography Department, Brock University.]

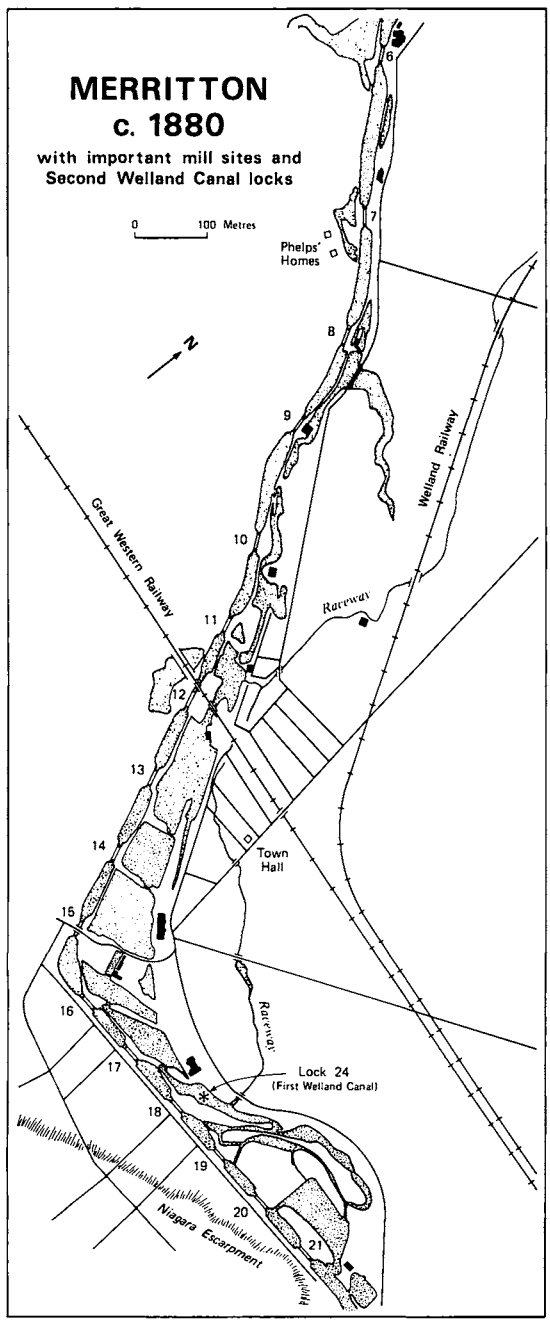

FIGURE 2. **Routes of the Four Welland Canals.** The construction of the Second Welland Canal was one of several technological catalysts to Merritton's development. [Map by Loris Gasparotto, Cartographer, Geography Department, Brock University.]

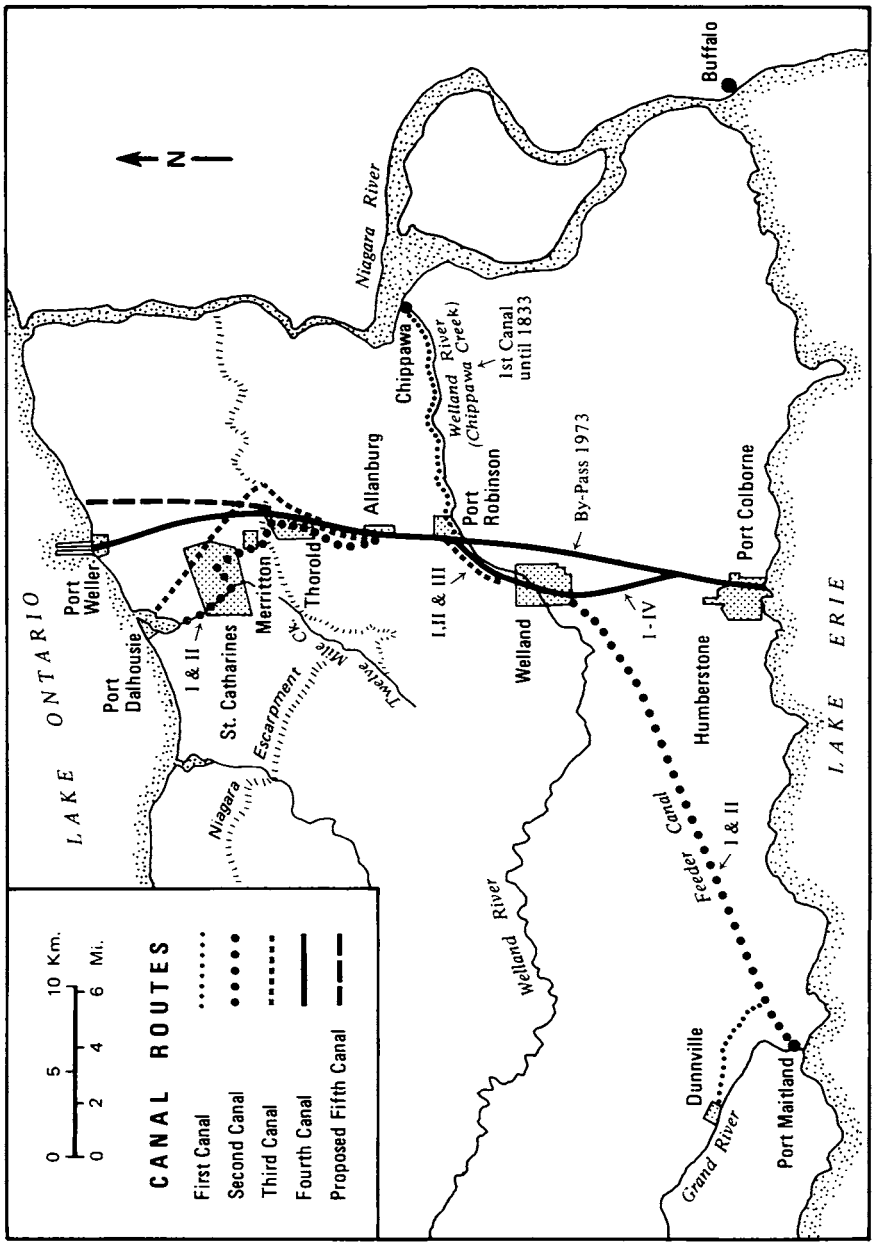

FIGURE 3. **At Lock 14.** Map accompanying the 1862 lease between the Public Works Commission of Canada West and John Gordon and Donald MacKay for their cotton mill. The Merritton landscape was characterized by huge weirponds. The channel of the First Canal, north of the mill, was used as a tailrace. The village hall was built, 1879, in the second block south of the railway. [Public Works Commission/Department of Public Works, **Register B 1841-1880**, 523.].

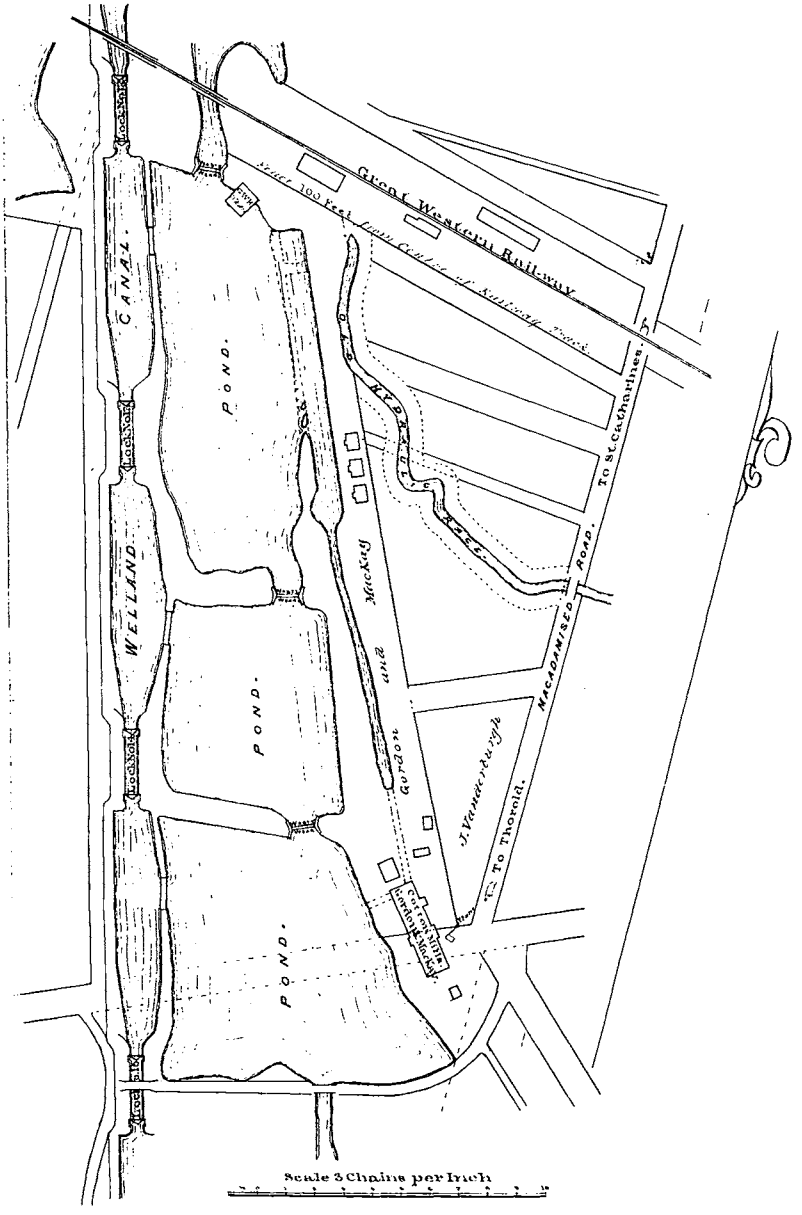

FIGURE 4. **At Lock 10:** Map accompanying the 1851 lease between the Public Works Commission ofthe United Canadas and Thomas Towers, 'Machinist,' for his grist mill. Originally owned by Oliver Phelps, this site later supported Thomas Willson's carbide plant. Both locks, wrongly numbered by the original map-maker, have been crudely re-numbered by a later bureaucrat, providing a challenge for the historian. [Public Works Commission/Department of Public Works, **Register B 1841-1880**, 26.].

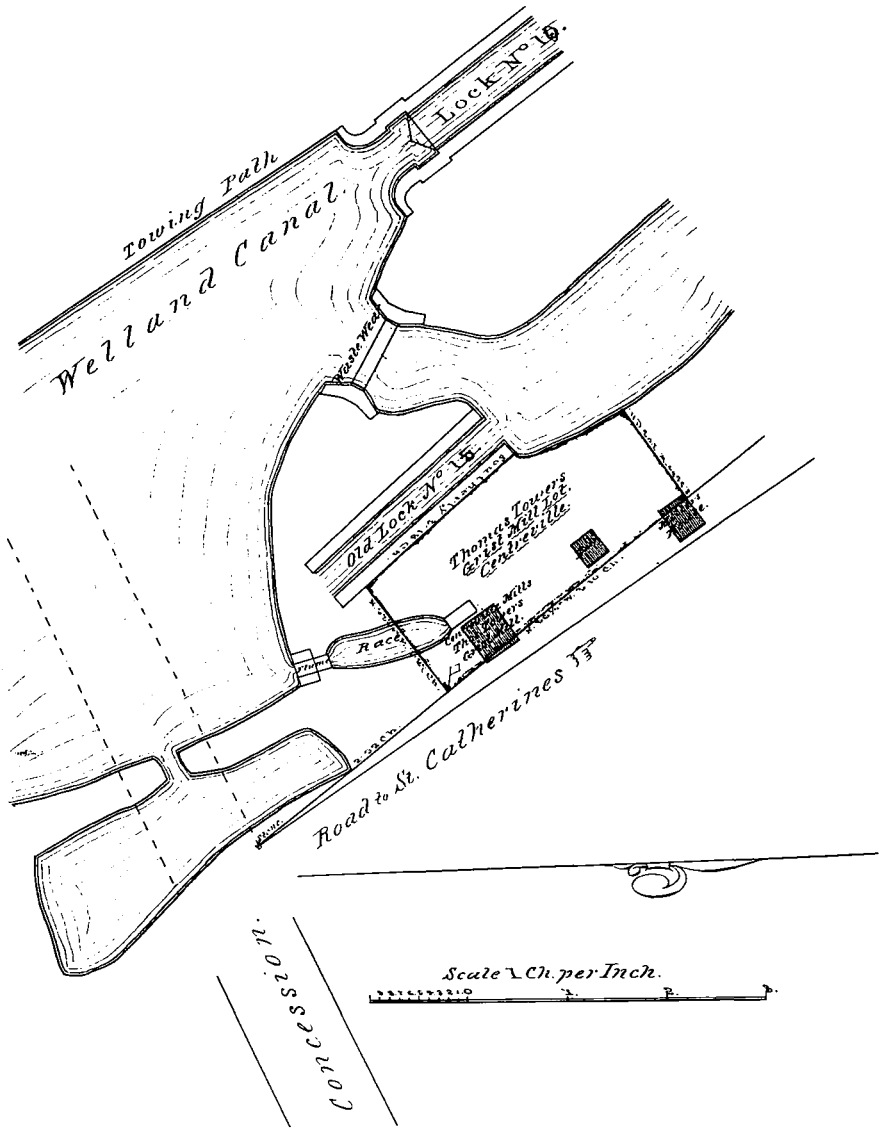

FIGURE 5. **On the Niagara Escarpment c. 1910.** The second canal, already superceded by the Third Canal and soon to be superceded by the Fourth (present) Canal was still a reminder that falling water was the original source of power for Merritton's industrial corridor. This waterway would be decommissioned c. 1915, and hydro-electricity, another harnessing of water power, would soon dramatically alter the whole Niagara industrial scene. [St Catharines Historical Museum N 2891 (Hereafter cited as SCHM)].

FIGURE 6. **Lock 6.** Originally founded by Collinson and Burch in 1870, Whitman Barnes' Knife Works operated here after1880. Oliver Phelps' saw mill had stood near here on the First Canal in the 1830s. McGeachie Brothers' saw mill and John Riordon's first paper mill also drew power from the weirpond behind the lock. [St Catharines Centennial Library].

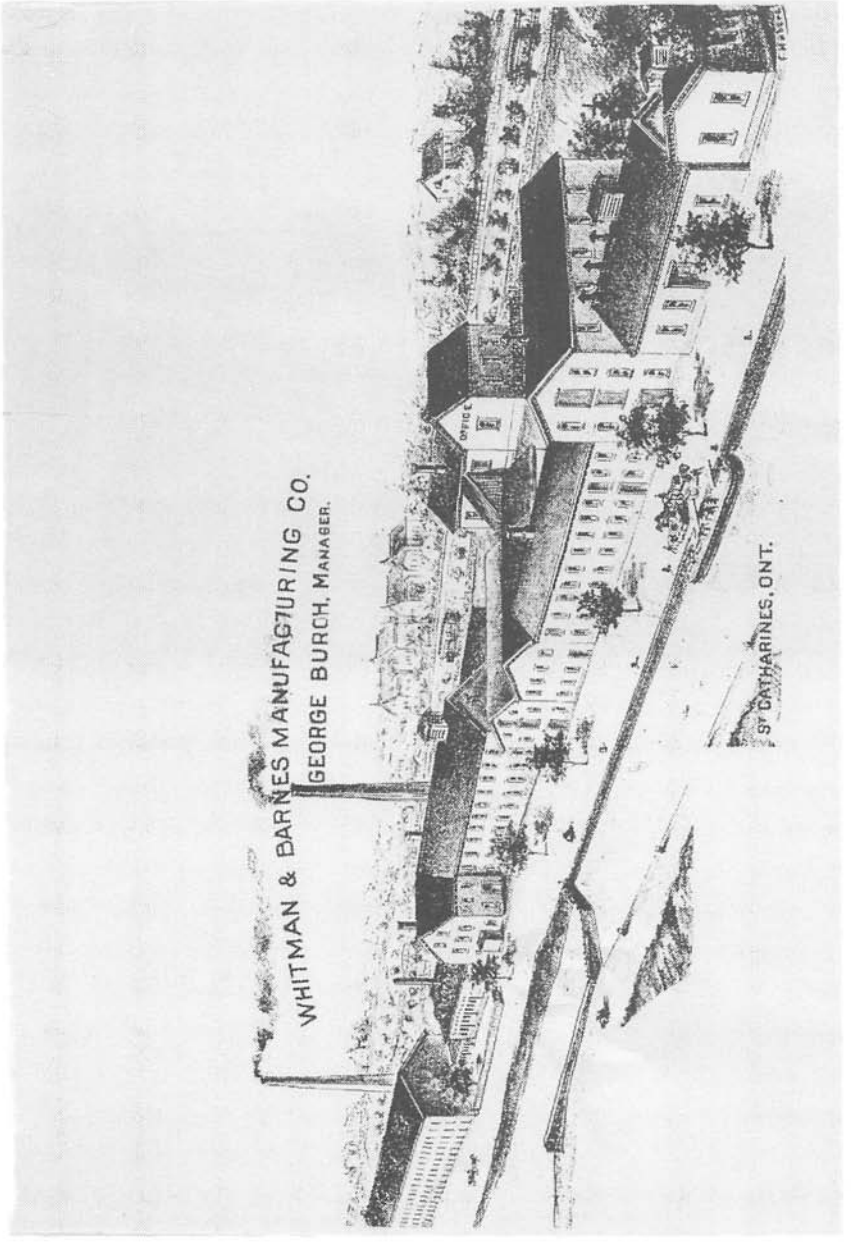

FIGURE 7. **Lock 7.** c. 1914, the Garden City Paper Mill, formerly part of Lincoln Paper, as the 'Lower Lincoln', opposite Turner Crescent. Noah Phelps' home is visible on the rise, in Centreville, to the left. Earlier, Macdonald and Jones operated a saw mill here. [SCHM N 3608].

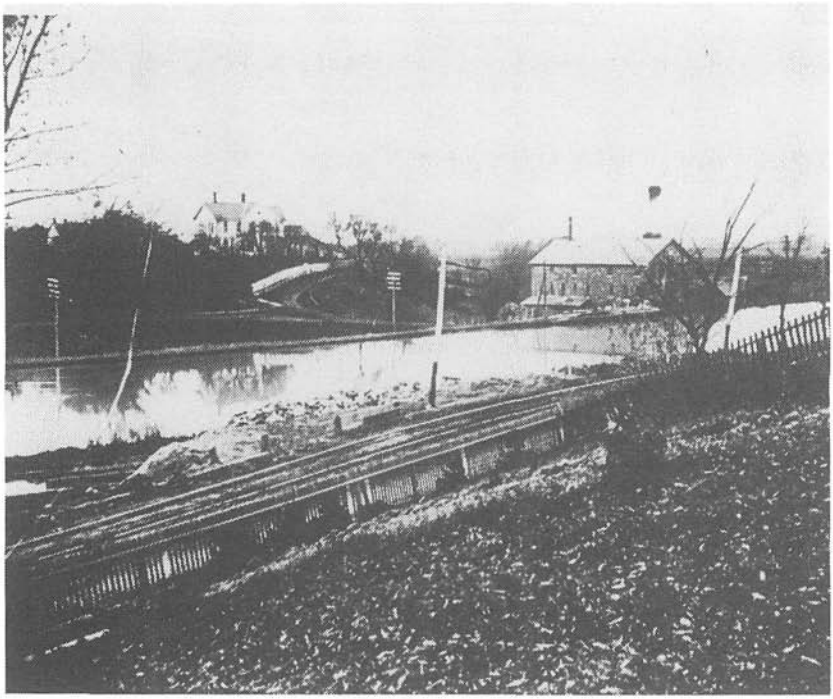

FIGURE 8. **Lock 8.** Noah and O.J. Phelps' saw mill, in operation c. 1856-1885. In 1881, along with lath and shingles, they produced 5 million feet of lumber. (William M. Evans, **St Catharines Directory of 1881-82 with Directories of Thorold, Merritton, and Port Dalhousie** (Toronto, 1881), 208). [SCHM N 1034].

FIGURE 9. **Above Locks 7 and 8.** The home of Noah Phelps, entrepreneur and industrialist, on Canal Street, now Moffat Street, in what was Centreville. The house still stands, well restored. [H.R. Page, **Historical Atlas of Lincoln and Welland Counties**, 1876, 43].

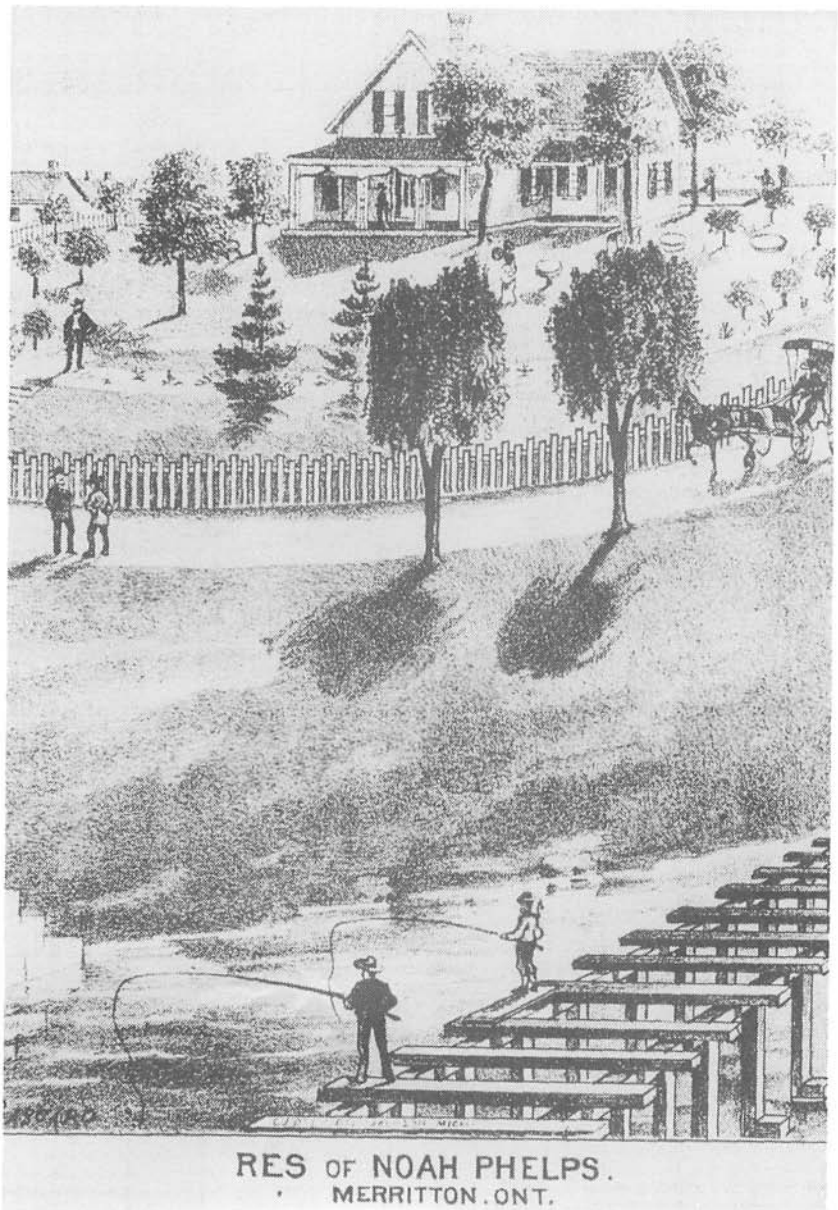

FIGURE 10. **Lock 10.** Canada Carbide Works stood on the site of several mills, including the Merritton Flour Mill and the St Catharines' Biscuit Works. Founded by Thomas L. Willson, the 'Father of the Canadian Electro-Chemical Industry,' it was taken over by Shawinigan Chemicals in 1928. [SCHM N 5307].

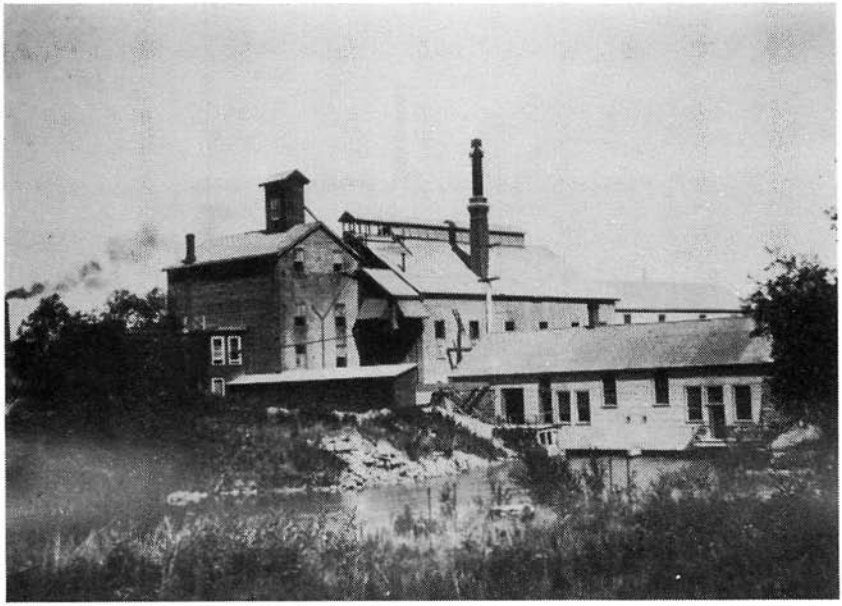

FIGURE 11. **Lock 11.** Canada Wheel Works, also known as E.H. Phelps and Co., produced 'bent goods' for carriages and sleighs. The raceway running to St Catharines is in the foreground. Later Hayes Dana Steel Products operated on this site. [SCHM R 2536].

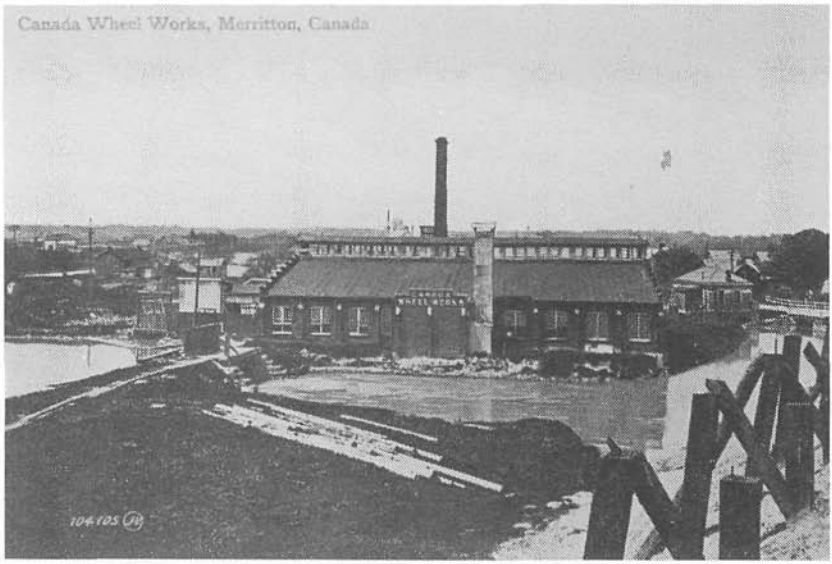

FIGURE 12. **On the Raceway.** Lincoln Paper had two mills. Mill 'A' was on the raceway. Mill 'B' was at Lock 7. The company employed 50 'hands' in 1877, and was producing 'manilla paper, white print, paper bags, etc.) in 1881. (Evans, **St Catharines Directory for 1881-82**, 208). Mill 'A' is one of the ancestors of the present Domtar Fine Papers. The buildings on the site of Mill 'A' are now in ruins. There is no trace left of Mill 'B'. [St Catharines Centennial Library].

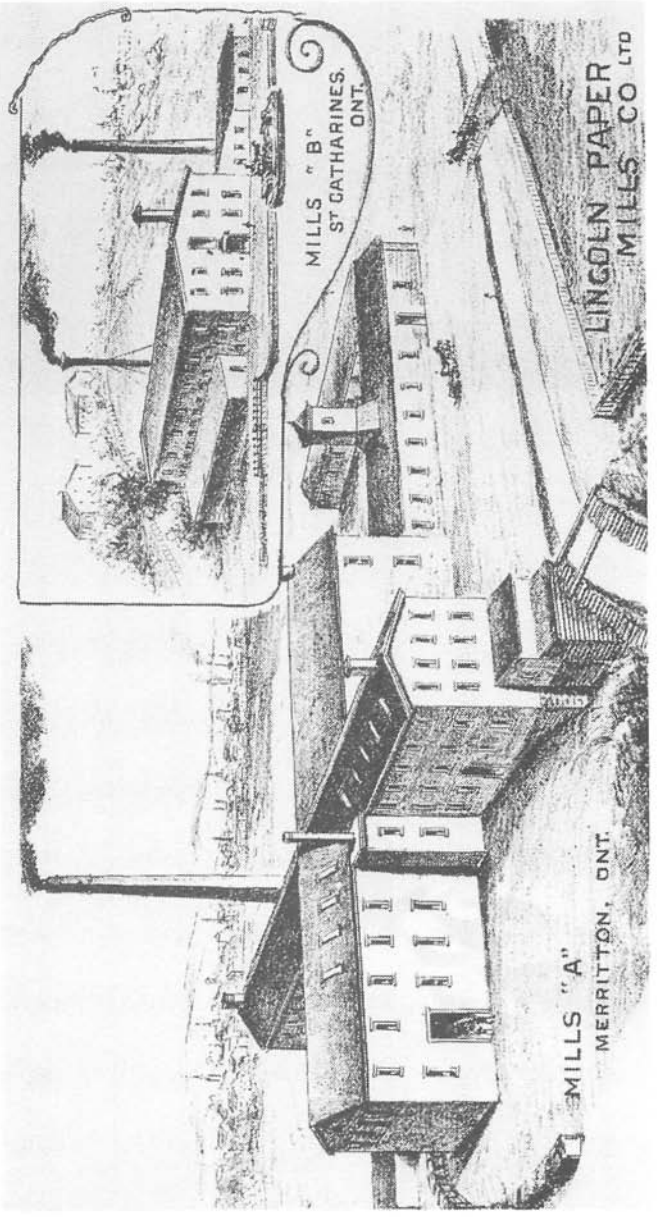

FIGURE 13. **Lock 14.** Lybster Cotton Mill, now surrounded by Domtar, was employing 200 'hands' in 1869, who worked at at 261 looms, and 11,500 spindles, and claimed to be the 'pioneer cotton mill in the Dominion.' (Evans, **op. cit.**, 207). [SCHM N 8502].

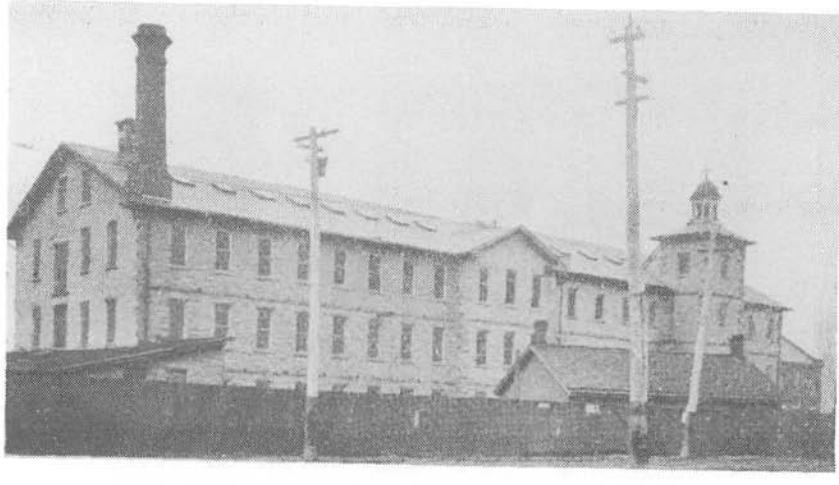

FIGURE 14. **Lock 15.** Beaver Cotton Mill was founded in 1857 by W.W. Waite, who was later first reeve of the village of Merritton. (Typically, mill owners in 19th century communities often became local politicians.) The complex was rebuilt in pink sandstone, 1882-1885. Lock 15 is to the right; the raceway which powered the original mill runs between the two structures. After 1912, the complex was taken over by Independent Rubber. [SCHM N 1077].

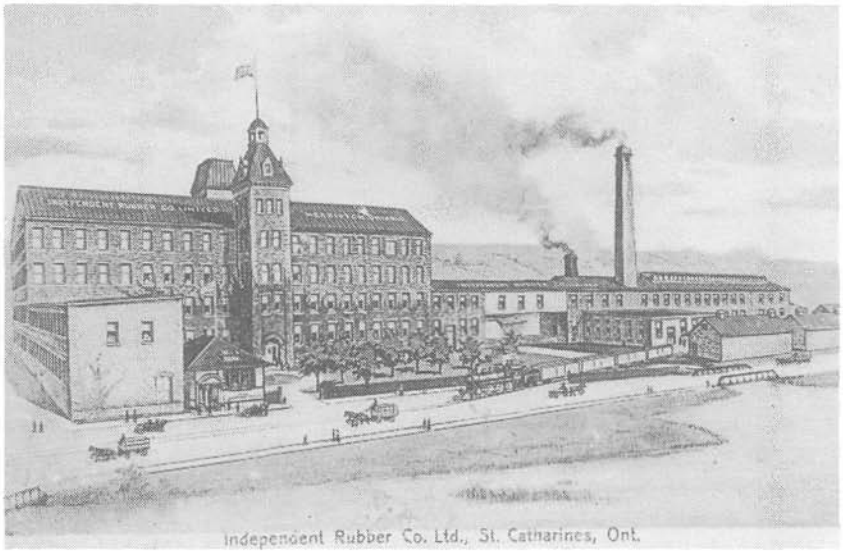

FIGURE 15. **Lock 17.** The Paper Mill of John and Charles Riordon. John was known as the 'Father of the Canadian Pulp and Paper Industry,' but it was Charles who was a pioneer here in the use of chemical pulp. The size of the weir pond suggests the extent of water power available on the Second Welland Canal. [SCHM N 1042].

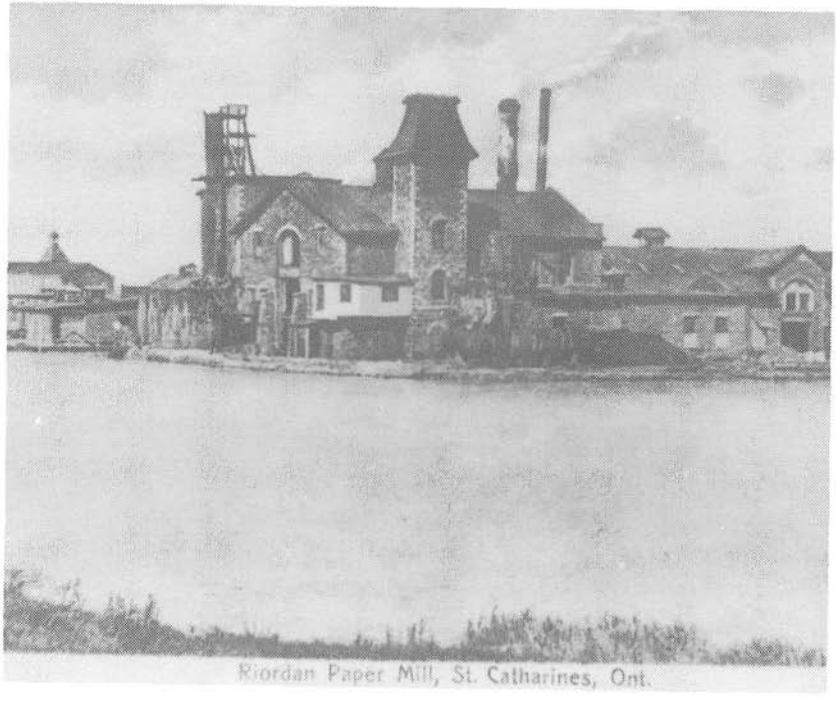

FIGURE 16. **Lock 21.** McLeary and Mclean's Lumber and Planing Mill, one of the longest-lived enterprises in the canal corridor, producing building supplies (such as sash and doors), and masts and other parts for ships. Kimberly-Clark Paper is on the site today. [St Catharines Centennial Library].

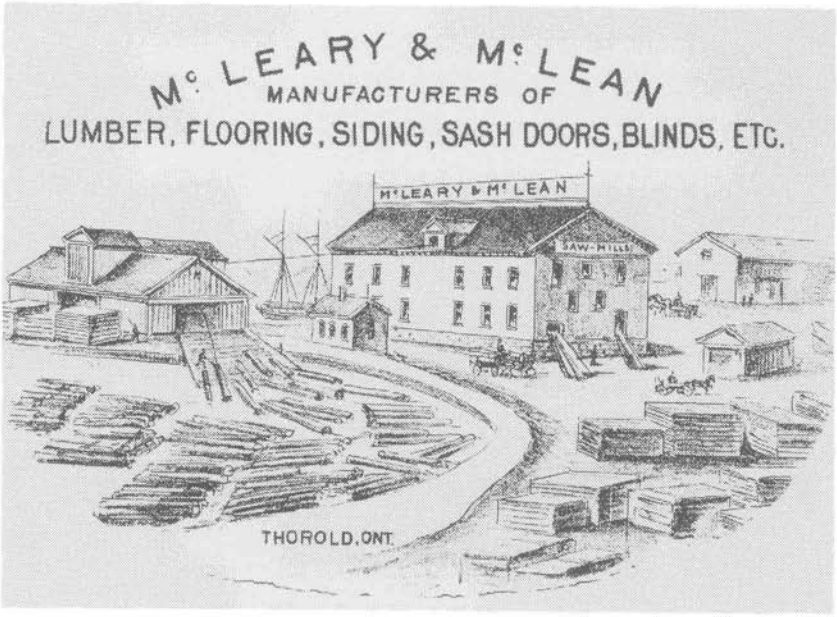
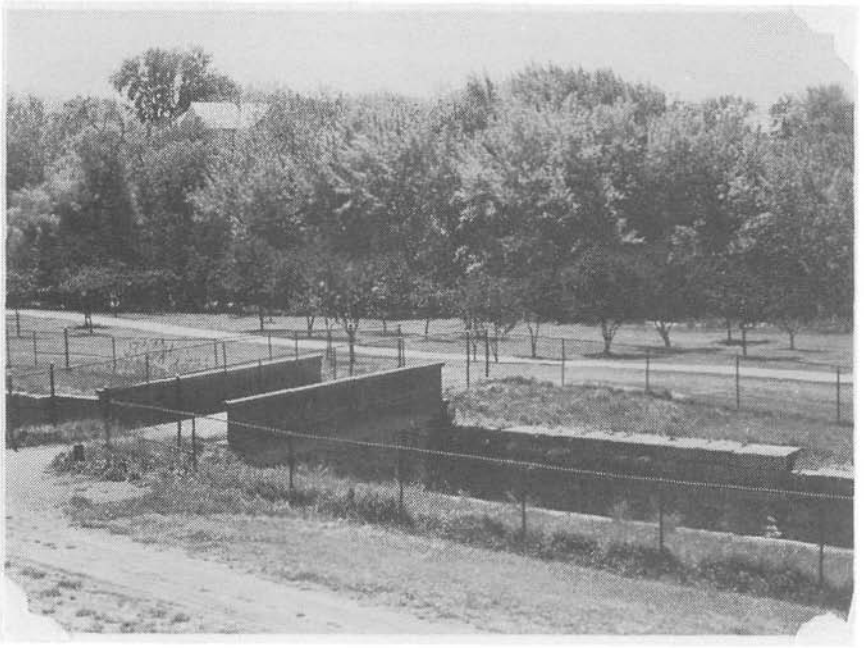
FIGURE 17. **Lock 7 Today.** Flowering trees line the Merritt Trail, installed in the early 1980s; the reinforced concrete bridge was built in the 1930s. The Phelps house and the lock are the only reminders of the noise and bustle of Merritton's once flourishing industrial corridor (See Figures 7 and 9). [Author].