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A History of Manufacturing in Niagara, Pre–1969

Introduction

In the initial years following Loyalist settlement in the Niagara region, manufacturing was limited to small-scale local production to fit the community's needs. As the growing towns of Niagara increased in population in the early 19th century, industrialists such as William Hamilton Merritt began to foster the growth of various manufacturing industries in the region. This was not a unique phenomenon the growing population of Upper and Lower Canada provided opportunity for a transition from a mercantilist economic system primarily focused on the export of natural resources, to an industrial capitalist economy where goods could be manufactured and sold within Canada.

This paper provides a brief overview of Niagara's largest manufacturing sectors and their histories, from Indigenous tool makers, to millers, to modern automotive and heavy industry. General themes are studied in greater detail, including labour movements, technological advances, and environmental impact.

The Niagara region's physical features made it a unique and attractive place for capitalists looking to settle industrial businesses in Canada's growing economy. Niagara's ample water access, proximity to the United States, Welland Canal systems, and railway lines made it an ideal location for manufacturing goods. Through the 20th century, this trend continued with the introduction of cheap hydroelectric power and its location as a major shipping route.

National and global events, such as the World Wars and the Great Depression, helped shape both local conflicts and prosperity in the manufacturing sector. In the first half of the 20th century, manufacturing in Niagara was characterized by the mechanization and consolidation of major industries and major changes in the labour movement and worker's rights. By the second half of the 20th century, concerns about pollution and the start of the "green revolution" created major changes in Niagara's manufacturing sector.

By 1969, Niagara had been home to booming industries including textiles, paper, canning, automobile and heavy industry, and chemical production over the nearly 200 years since Loyalist settlement. However, as technology in the late-20th century improved, the attractive qualities of the Niagara region, such as access to markets, waterpower/ hydroelectricity, and transportation routes, became less compelling. Many Niagara manufacturers closed or moved locations, leaving the headlines post-1969 to be filled with lost jobs and fears of unemployment for the region's workers.

Indigenous Manufacturing: The Lithic Industry

Manufacturing is the process of turning raw materials or parts into finished goods using tools, human labour, machinery, or chemicals. As such, the history of manufacturing in Niagara can be traced back to its Indigenous peoples who carved tools for hunting, fishing, and domestic use. Archaeological finds in the form of projectile points, smoking pipes, pottery sherds, and tools made of both bone and stone demonstrate the importance of producing necessary everyday items for the various Indigenous communities within Niagara since the Paleo-Indian era.

Onondaga chert is the most common natural material that Indigenous peoples quarried in Niagara, and is abundant throughout the region, especially in the south along the shores of Lake Erie where the Onondaga Escarpment is located. Access to this cherty limestone influenced the movement of these first hunter-gatherers in the area.

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They used the hard, flaky stone to manufacture tools including spears, arrow heads, knives, hand axes, drills, and hide scrapers. Such tools were used in hunting and in ceremony, preparing sustenance, building shelter, and were commonly exchanged as trade goods. In one Fort Erie location near the Peace Bridge, archaeologists from 1997 to 2000 recovered more than one million artifacts including chert flakes as discards of the manufacturing process, flaked stone tools (spear heads, scrapers and drills), ground stone tools (axes and net sinkers), and similar lithics dating from the Late Archaic Period to the present.[1]

Courtesy of the Niagara Falls History Museum.

Early Manufacturing in Niagara: Mills

Colonists who remained loyal to the British Empire through the American Revolutionary War were known as Loyalists and began to settle in Niagara in 1779. They established farms in the region, providing the economic basis for Niagara's earliest manufacturing industry: mills.[2] Growing settlement in the early Niagara region was the result of efforts to solve provision insecurity at Fort Niagara, which had to support British soldiers and Loyalist refugees during and after the Revolutionary War. An agreement between the Governor of Quebec, General Fredrick Haldimand, and the Seneca First Nation in 1779 allowed for Loyalist settlement on the west bank of the Niagara River.[3] Peter Secord and Daniel Servos of Butler's Rangers established Niagara's first mills in the following few years.

Although there is plenty of evidence regarding mills in the late 18th century in Niagara, most of it doesn't provide details about when and where these mills were built. Thus, there is some guess-work involved in establishing Niagara's earliest manufacturing industry. Peter Secord's saw-and-grist mill was likely built sometime between 1782 and 1783 along the Four-Mile Creek near modern-day St. Davids. Daniel Servos' grist mill was likely built sometime in 1785 and was also located somewhere along Four-Mile Creek. About a decade later, a survey of the "Home District" identified 20 mills in the region.[4]

Since mills were water-powered, they had to be constructed on rivers, creeks, and streams with sufficient water flow. Niagara's natural geology provided ample space for building mills, which proved integral to Niagara's growing communities. Grist mills produced flour for the locals. The grain and corn grown by Niagara's settlers was ground between mill stones, powered by a paddle wheel in the river or creek. Early sawmills used a paddle wheel to power a toothed blade that cut logs into planks for building construction.

Through the late 18th century, more and more mills were built in Niagara. Some of these include Benjamin Canby's in the Short Hills area and Niagara Falls, John Darling's mills just south of Short Hills, in what is today the St. John's community in Thorold, and Captain Ryerse's mill along Long Point on Lake Erie. The integral role mills played in early Niagara resulted in small mill settlements quickly growing into towns. These early mill towns were the defining features of Niagara. The grist mill was usually the first non-domestic building constructed in a new settlement. Buildings would be constructed using planks sawn by hand until a sawmill could be built to make construction more efficient. These early Niagara industries allowed communities to be self-sufficient. As a result, mills began to symbolize the continuity and stability of early Niagara communities while attracting settlers and merchants, which stimulated economic growth.

Niagara's milling industry continued to grow through the beginning of the 19th century. However, a consistent problem for Niagara's millers was the dry season, which caused water levels in the natural waterways to drop and interfered with milling operations. This meant that most mills had to operate seasonally when the water was high enough to produce power from the water wheels. William Hamilton Merritt (1793–1862), like many of Niagara's mill-owners, took issue with the seasonal nature of milling. Merrit's industrious and capitalist spirit drove him to find a solution: he and his business associates formulated the idea to build a feeder canal between the Welland River and Twelve-Mile Creek to improve water volume and supplement waning hydraulic power to his mills. This idea grew into what became the First Welland Canal. Construction began in 1824 and the canal was completed in 1829. The First Canal connected Lake Ontario at Port Dalhousie to the Welland River. A feeder canal at the Welland River was constructed shortly after and completed in 1833, providing a direct route to Lake Erie.

The increased waterpower along the Canal proved to be much stronger than the natural waterways, which allowed for greater industrial production at the mills. As a result, much of Niagara's milling industry relocated from the natural waterways to the banks of the Canal. One year after opening, the Canal supported six mills. Just 17 years later, there were 32 mills along the Canal between St. Catharines and Thorold alone.[5] However, this also meant that earlier milling centres like St. John's quickly became obsolete, due to their distance from the canal system.

At the same time as the construction of the First Welland Canal, Niagara's mills began to transition from community-based businesses to merchant mills. The Canal was largely responsible for this since the relocated mills were producing a surplus of flour which could then be exported for profit. That made milling centres that were located farther away from the Canal more obsolete, securing the changing geography of Niagara's milling industry. As industrial land around the Canal became sparse in the 1830s, hydraulic raceways were constructed to allow for water-powered manufacturers to access the Canal without being located directly on it. This allowed for greater flexibility in building location, which contributed to the continued prosperity of Niagara's milling industry throughout the 19th century.

Hydraulic raceway through St. Catharines. Photo courtesy John Burtniak Niagara Collection/Brock Library Archives & Special Collections.

Early Industrial Expansion: the impact of the Welland Canals and Niagara's railway

The opening of the First Welland Canal not only reshaped Niagara's milling industry, but also facilitated the establishment of more water-powered manufacturers and revolutionized trade with the United States by providing direct access to American markets. Although small manufacturing businesses existed in Niagara prior to the Canal, they were limited to the local market. Blacksmiths, tanneries, carriage and wheel makers, and textile makers all operated on a small, local scale. The additional waterpower from the Canal and easy access to American markets, in addition to Niagara's railway systems that were introduced in the mid-19th century, stimulated significant growth across all Niagara industries by allowing them to reach beyond local markets.

By the 1840s, the First Welland Canal was already in poor shape, mostly due to deterioration of the wooden locks. This, in combination with the growing size of merchant ships, led to the construction of the Second Welland Canal, which started in 1842 and was completed in 1851. Twenty years later, in 1872, construction on the Third Welland Canal began. This canal bypassed the Twelve-Mile Creek and allowed for a quicker route to Lake Erie. However, significant widening at Allanburg and Port Robinson had an immense impact on the industrial landscape, taking away previously vital manufacturing space which was forced to relocate.[6] Construction on the Fourth Welland Canal, today's canal, began in 1913. The First World War caused significant delays and it was finally completed and opened in 1932. The Fourth Welland Canal bypasses Port Dalhousie, providing a straighter and more direct route from Port Weller to Port Colborne.

The major attraction to the first two canals for manufacturers was the access to waterpower, which was strongest between Thorold and St. Catharines. Thus, most canal industries settled in that small section. Following the introduction of hydroelectric and steam-power to the region in the late 19th century, the power-generating capabilities of the canal became less important. Instead, what began to draw manufacturers to the canal was the access to the shipping route to import raw materials and export finished products beyond local markets. Thus, in the late 19th and early 20th centuries, industries began to settle and grow in the southern sections of the Canal, from Welland to Port Colborne.

Railroads were a late introduction to the Niagara region. There were several failed attempts to establish railways in the 1820s and 30s, and it was not until 1839 that Niagara's first railroad, the Erie and Ontario Railroad, was opened. The railroad was horse-powered and moved passengers from Queenston to Chippawa. In 1853 the first steam-powered passenger and freight-train line in Niagara, the Great Western Railway, opened, running from Hamilton to the Niagara Falls suspension bridge, with stops in Grimsby and St. Catharines. Over the next 30 years, several rail lines were built in the region, including the Buffalo, Brantford and Goderich Railway (1854) through Fort Erie and Port Colborne, the Welland Railway (1859) from Port Dalhousie to Port Colborne, and the

Toronto, Hamilton and Buffalo Railway (1875). By 1907, every major town in the Niagara region had at least one principal railway station, including Grimsby, Beamsville, Jordan, St. Catharines, Port Dalhousie, Niagara-on-the-Lake, Queenston, St. Davids, Niagara Falls, Thorold, Allanburg, Merritton, Welland, Chippawa, Fort Erie, Port Colborne, Wainfleet, Fenwick, and others.[7]

The introduction of railroads had a profound impact on the manufacturing industry in Niagara. The construction industry provided the stimulus to Niagara's heavy industry sectors. Demand for raw and finished materials such as squared timber, ties and trestles, steel rail lines, rolling stocks, gravel, and rubber increased the need for steel and iron foundries, large lumber yards, and bigger quarries. Machinery and engines for building the railroad and train cars encouraged the establishment of machinery shops, and, of course, the human labour required to build the railroads attracted new workers to the region.

Once rail lines were complete and operable, Niagara's manufacturing industry benefitted from significantly faster and consistent land connections to the United States and other Canadian cities. This meant better communication, better ability to import raw materials and export finished products beyond local markets, and a more mobile population. Railways also helped connect Niagara communities outside of the Welland Canal corridor to shipping routes.

The construction of the canals and the Niagara railway systems revolutionized Niagara's manufacturing landscape, transforming the Niagara region from a "pioneer" settlement into a major industrial centre in a matter of decades. They provided affordable and reliant transportation for raw materials, finished goods, and people. The canals and railways attracted people to Niagara, transforming the area from quiet market towns to bustling industrial metropoles. Many of Niagara's specialized manufacturing industries, including textiles, pulp and paper, fine metals, and heavy industry such as steel and iron foundries, were attracted to the region because of the opportunities afforded by the canals and railway lines.

Textile Production

Small-scale textile production has always been present in Niagara communities. However, the transition to industrial textile mills that began in the Niagara region in the early- to mid-19th century, following scientific innovations in textile production in Britain, led to the mechanization of textile production. Early textile mills relied on water to power the machinery, so textile mills found homes along Niagara's waterways. Like Niagara's other water-powered industries, textile mills began to flourish after the construction of the First and Second Welland Canals.

During the American Civil War, the Confederacy enacted 'King Cotton Diplomacy' to coerce France and Great Britian into an alliance with the Confederacy by implementing a trade embargo on cotton against the countries. At the beginning of the Civil War, cotton from the American South dominated the global market, and the Confederacy hoped that by starving France and Great Britain of cotton, they would be forced into an alliance to secure access to the cotton market.[8] The trade embargo provided opportunity to grow the cotton industry in Upper Canada, and more mills were established in Niagara, primarily along the canal.

Niagara textile mills in the 19th century primarily produced large-scale unfinished textile products which were sent to other manufacturers to be used to produce clothing and furniture, and put to industrial use. The mills received the raw cotton or other materials, cleaned and prepared the fibres (a process called carding), and then wove the cloth (a process known as fulling). Niagara was home to various types of textile manufacturing, from wool to cotton, haircloth, and in the 20th century, rayon and other synthetic products.

Niagara was home to dozens of textile mills by the mid-19th century. Three of the most significant mills were Lybster Cotton Mill in Merritton, Canada Hair Cloth in St. Catharines, and Empire Cotton Mill in Welland. Lybster Cotton Mill, founded by John Gordon and Donald Mackay in 1860 under the original name Canadian Coloured Cotton Mill, was located at Lock 14's weir[9] pond and was one of Canada first cotton mills. By 1870, Lybster Cotton Mill was the third-largest textile mill and the 25th-largest industrial firm in Ontario.[10] Canada Hair Cloth, founded by the McSloy brothers in 1884, was located on St. Paul Street in St. Catharines along the raceway, which provided ample waterpower to the factory. Originally, Canada Hair Cloth produced the interlining for men's suits and sofa material for railway carriage seats. They primarily used horse and goat hair, cotton, and later, nylon fabrics.

In 1913, Empire Cotton Mills was built by Montreal capitalist Col. James W. Woods in the growing community of Welland. Woods recruited experienced Quebecois textile workers to work in the plant. Some 20 French families had settled in the area by 1915, and by 1919, 250 francophones were working in Welland, most of them at Empire Cotton.[11]

Empire Cotton employees in the textile mill. Courtesy of the Welland Museum.

A strong French-Catholic community called the "French Town" developed close to the mill. In 1920, the Roman-Catholic parish of Sacré-Coeur was established in French Town, and served as a cultural centre for the growing French population. Empire Cotton was part of Welland's industrial-based economy and, thus, suffered during the Great Depression. While the Second World War led to an increase in general prosperity, the textile industry, including Empire Cotton, continued to decline. However, Welland's French Town continued to thrive, and workers laid off at Empire Cotton due to declining economic conditions were hired at Welland's other industrial manufacturing plants. The francophone community in Welland continued to grow, reaching its height in the 1960s. The linguistically and culturally thriving French community had its own schools, youth groups, and choirs.[12]

The textile industry in Niagara boomed from the late 19th century well into the 20th century. Although the textile industry was generally in decline following the Second World War, import tariffs on cheap textile products protected it until the mid-1980s. Thus, by the late 1960s, Niagara's textile industry continued at a consistent, though slowly declining, pace.

Pulp-and-Paper Mills

Like the textile mill, pulp-and-paper mills were established in Niagara in the second half of the 19th century. Pulp-and-paper mills also required reliable sources of water to power machinery, along with access to raw materials and local labourers. Thus, pulp-and-paper mills established themselves along the banks of the Welland Canal and natural waterways. Niagara's pulp-and-paper mills manufactured various types of paper products by pulping plant and wood material into paper-based products. Initially, most paper was made from rags that were pulped through a chemical process to make high-quality paper called rag-paper or cotton-paper. Wood-paper, also known as pulp-paper production, began in the mid-19th century as a result of increased demand for paper. Pulp-paper excelled in the Canadian market, since newly developed railway lines allowed for easy maneuvering of raw materials, primarily spruce trees, across the country for paper production.

John Riordan, known as "the father of the Canadian newsprint industry"[13] founded the first paper mill in Niagara in 1863. Riordan Paper Mill was located on land leased from Thomas Merritt at Lock 6 in Merritton. Riordan was the first to introduce pulp-paper manufacturing in Canada and the first to use a sulphite pulp production technique to manufacture wrapping paper.[14] In 1867, Riordan built a second mill at Lock 18, which produced newspaper for the *Toronto Globe* and other news companies.

Other paper mills in the region included: Lincoln Pulp and Paper, founded in 1877 in Merritton, which produced manilla paper, printing paper, and sack paper; Kinleith Paper Company (1899) in St. Catharines; Interlake Paper and Tissues (1912) in Thorold; Garden City Paper Mill (1912) in St. Catharines, which produced vegetable parchment, gift wrap, and toilet tissue; Abitibi (1912) in Thorold; and Beaver Wood Fibre Company Ltd. (1915) in Thorold, producers of fibreboard and newsprint.

The success of Canada's paper industry resulted in major consolidations of various pulp-and-paper mills into larger companies. By the 1930s, most major paper mills in Niagara were operated by Canadian International Paper Co., Kimberly-Clark, or Alliance Paper Mills Ltd. The major consolidations allowed for the paper industry leaders to control the cost of raw materials and production, and harness some leverage when securing production contracts, especially those with news companies. Demand for paper remained steady throughout the 20th century, and by the 1960s, paper mills consistently paid one of the highest wages in the Niagara region.

Fine Metals: Tools and Farming Implements

The manufacturing stimulated by railway and canal construction in the mid- and late-19th century provided the necessary infrastructure for large-scale fine metal production in Niagara, primarily tool and farming implement manufacturing for the agricultural industry in Niagara and abroad.

One of Niagara's earliest large-scale fine metal producers was the Welland Vale Works, also known as Tuttle, Date, & Rodden, founded in 1869. The factory was in St. Catharines and originally manufactured axes, edge tools, scythes, the 'Black Prince' axe and the world-famous 'Rodden Fork'.[15] The original factory was powered using waterwheels along the Welland Canal. In 1871, Welland Vale was one of Canada's largest tool and farming implement producers and was ranked the 37th largest industrial firm in Ontario.[16] Despite several major factory fires in 1877, 1900, 1936, and 1946, Welland Vale Manufacturing had continued success and was one of St. Catharines' largest employers through the 20th century until 1965 when it closed due to a strike, the first and only one ever to occur at the plant.

Cover of Welland Vale Manufacturing Cycling catalogue for 1898. Courtesy Toronto Public Library.

Another popular Niagara farming implement producer was M.K. Rittenhouse, in Jordan Station. Founded by Moses Rittenhouse in 1914, M.K. Rittenhouse produced fine agricultural equipment and spraying equipment used in the Niagara region. M. Beatty & Sons, primarily a heavy industrial manufacturer, also produced agricultural equipment sold in the Niagara region, starting in the late 19th century, before shifting to focus exclusively on heavy machinery.

In Merritton, a company called the Whitman & Barnes Manufacturing Company (aka the "knife factory") was opened in 1870 along the Welland Canal as one of many industrial businesses powered by flow of wastewater through the locks. It manufactured cutting tools that were crucial for farmers in Niagara and beyond, including sickles, mowers and reapers, straw cutters and planers. The goods from this factory were shipped internationally, and the business employed 160 individuals at the height of its operations.[17]

The rise in the production of farm implements, tools, and other fine metal work had drastic effects on the agricultural industry. New and increased access to farming tools helped reduce the need for human labour. This led to a free labour market, where 'free' meant "the sense of being removed from other obligations and free to move to wherever the jobs and opportunities arise."[18] Thus, the growing fine metal industry provided opportunities for agricultural workers to seek wage labour in the manufacturing sector, or to move west for new farming opportunities outside of their local sphere.

Canning and Food Processing

The process of canning, which involves hermetically sealing and sterilizing food preserves using heat, was invented by French confectioner Nicolas Appert in 1809. Commercial canning was introduced to the Niagara region in the 1880s. Niagara's climate and fertile soil had produced a strong fruit and vegetable farming industry which benefited from the introduction of canning. Niagara was also an attractive location for canneries, since there was ample access to water for the canning processes, and easy access to railway lines to move finished products to market. Commercial canning allowed for growers to have an extended market, provided more seasonal work for Niagara and surrounding residents, and allowed for consumer access to a variety of produce regardless of the season. In Niagara, canning mostly consisted of fruits and vegetables, but also included condensed milk, fish, meats, and later soups and stews.

Group photo of employees at Canadian Canners Factory 22, otherwise known as St. David's Canning Co. Courtesy Niagara-on-the-Lake Museum.

By 1900, Niagara had several well-established commercial canneries, which included St. Davids Canning Co. (1865), J.H. Wethey Ltd., later known as Garden City Canning and Preserving Company in St. Catharines (1883), the Grimsby Canning Company (1882), and the Erie Preserving Company, in St. Catharines (1894). Some early canners like L.M. Schenck & Co Producers and Packers were both growers and canners. David Jackson Lowrey, founder of St. Davids Canning Co., also transitioned from solely fruit-growing to canning in 1897 following a slump in the fresh fruit market.[19] However, as it grew, canning became its own industry separate from farming.

Soon after the establishment of canneries in Ontario, factory owners realized the need for oversight, price control, standardization, and quality control. There were various attempts to organize the canners, including the Canadian Canners Goods Packers Association (1883–1901) and the Dominion Syndicate (1901–1903), both of which failed. In 1903, the Canadian Canners' Consolidated Companies Ltd (later shortened to Canadian Canners Ltd.) was successfully established. Canadian Canners Ltd. (CCL) eventually controlled most of the Niagara canning industry, owning nearly 20 canneries in the region from its inception in 1903. All those factories operated under their own labels, providing the illusion of market competition. For companies that were part of CCL, there were tremendous benefits. CCL's size allowed it to control market prices and industry standards, negotiate lower prices with growers, secure contracts with larger grocers and chain stores, and present a united front to government entities when it came to tariffs, safe food laws, and labour laws. This put smaller, individually owned canneries at a significant disadvantage, which in turn often forced them to sell to CCL.

However, some canneries remained separate from CCL, such as Arkell Foods. Arthur Arkell, a grocer from Hamilton, began processing fruit in his 4,000-square-foot Grimsby factory in 1946. By 1969, Arkell Foods had established a second plant in Niagara-on-the-Lake and had expanded its Grimsby factory to 10,000 square feet. In the 1960s, the company regularly employed approximately 60 people and 250 seasonal workers. It produced over 3,000 tonnes of preserved fruit every year which was distributed in Ontario, Quebec, England, and West Germany.[20]

Grimsby Canning Company workers pit Niagara peaches. Courtesy St. Catharines Public Library.

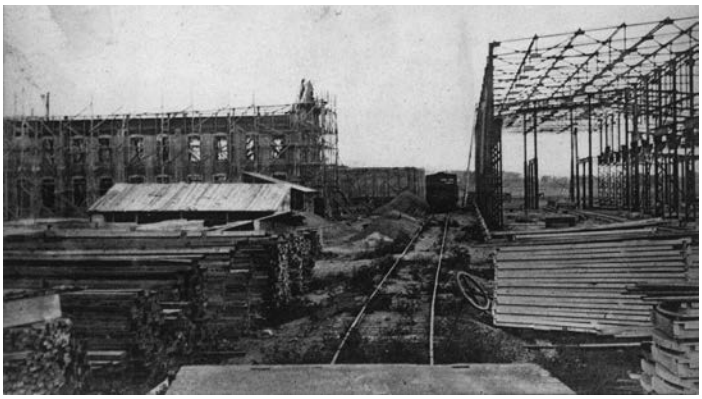
Further mechanization of the canning industry, along with better refrigerated transportation techniques in the 1940s and 1950s, meant that larger plants became more attractive than the smaller factories originally purchased by CCL. This led to the conglomeration of several smaller plants into larger ones, and by 1956, approximately 60 CCL plants across Canada had been closed.[21] Many Niagara plants closed around this time, including Grimsby Canning Co. (closed in 1953), Jordan Station Canning and Packing Co. (1950s), Simcoe Canning Co. and Fonthill Canning Co. (both in 1958), and Delhi Fruit and Vegetable Canning Co. Ltd. (1961). Other Niagara CCL factories were sold to other companies: Niagara Falls Canning Co., sold to Gerber in the 1950s, and British Canadians Canners Ltd. sold to Irish Dry Beverages in 1962. In 1956, Del Monte purchased the majority shares in CCL and absorbed it. This led to further closures of smaller scale CCL factories, and by 1969, only Boese Foods Ltd. remained of the Niagara CCL canning companies.

Heavy Industry

Heavy industry is typically comprised of large-scale, complex manufacturing such as steel and iron foundries, machine manufacturing, coal production, chemical production, and automotive, aircraft, and large ship building. Heavy industry was established in the Niagara region because of the construction of the Welland canals and railway lines. Metal foundries and machine manufacturing were founded to support the construction, and after the canals and railways were complete, more heavy industry began to settle in the southern half area of the Niagara region, primarily in Niagara Falls, Port Colborne, and Welland, because of the easy access to transportation, waterpower, and available land.

One of Niagara's first heavy industry businesses was M. Beatty and Sons Ltd., in Welland. Founded by Irish immigrant Matthew Beatty in 1862, M. Beatty and Sons (originally called Matthew Beatty, Foundry and Machine Shop) first manufactured agricultural equipment and steam engines. The business originally employed 60 to100 skilled mechanics and was Welland's largest employer until the 20th century. During the construction of the Third Welland Canal, M. Beatty and Sons began manufacturing dredging equipment, submarine rock drilling machinery, and hoisting engines.

In the early 20th century, M. Beatty and Sons began manufacturing ships, but by the First World War, production had slowed. In 1919, M. Beatty and Sons was purchased by the Canadian Meade Morrison Manufacturing Company, and later the building was purchased by the Welland branch of the United Steel Corporation of Canada.[22] Other iron, steel, and large-scale heavy metal manufacturers also settled in Niagara. Canada Forgings set up in Welland in 1912, along with Atlas Steel (1918) and Welland Iron and Brass Works (1919).



M. Beatty and Son's new factory, located on North Main Street, Welland. Courtesy Welland Museum.

In the early 20th century, Canadian heavy industries began settling in the nearby Hamilton area rather than Niagara, primarily because of the location which served as a better distribution centre with access to a wider area of Canada compared to Niagara.[23] American businesses looking to set up shop in Canada, and electro-metallurgic factories, chemical plants, automobile factories, and some large-scale machine manufacturing replaced these earlier heavy metal industries which had moved to Hamilton.

Carbide and calcium carbide became one of Niagara's leading electro-metallurgic industries by the early 20th century. Carbide is produced by heating carbon and other metals at extremely high temperatures to produce specialized metals used for machinery. Calcium carbide is used in the production of acetylene (a fuel) and calcium cyanamide (a chemical fertilizer). Canada Carbide in Merritton, established in 1862, was Niagara's first carbide manufacturer. By 1915, Niagara had numerous other carbide plants including Norton Silicone Carbide in Chippawa (1910), Union Carbide in Welland (1914), and Exolon Esk Company of Canada in Thorold (1914). Merritton was also home to the first-ever calcium carbide factory, Willson Carbide, founded in 1895 by Thomas Willson, inventor of the chemical compound. This factory relied on the cheap production of electricity to produce acetylene from carbide, which is one of the reasons why the carbide industry was successful in Niagara.

Late 19th-century hydroelectric power generation at Niagara Falls powered the carbide industry and was crucial to its progress. In this way, Niagara's manufacturing and hydro sectors were intertwined and relied on one another for mutual success. They grew out of the technological

revolution of the late 1800s—a phase of rapid scientific discovery, standardization, and mass production. Another industry in Niagara that relied on electric power generation from Niagara Falls was the silverware industry. A 1938 report on Canada's jewellery and silverware industry estimated the value of silverware production that year at $4,782,956, with only 15 manufacturing plants in the entire country.[24] Three of those were in Niagara Falls, including the International Silver Co. of Canada, Ltd. on River Road, McGlashan, Clarke Co., Ltd. on Palmer Ave., and Oneida Ltd. on Ferry Street.[25] Silverware manufacturers took advantage of the cheap electricity at the Falls, electroplating metal objects with a thin layer of decorative silver. By the 1960s, Oneida began to offer a stainless-steel option for manufacturing tableware, which became extremely popular, and the age of silver plating came to an end.

The Oneida Silverware Factory in 1917. Courtesy Niagara Falls Public Library.

McGlashan, Clarke Co., Ltd. had its start in Port Colborne, powered by yet another one of Niagara's many resources: natural gas. Gas was used in the silver smelting process. The company was originally founded in 1880 but moved to Niagara Falls in 1895 after an explosion damaged its plant and injured four employees. In general, the silverware products manufactured in Niagara were shipped throughout Canada and the industry played a significant role in the local economy by providing employment for thousands of workers over the years.

Many of Niagara's heavy industry manufacturers played important roles in the war effort during the First and Second World Wars. M. Beatty and Sons leased its yards and berths to the British American Shipbuilding Company, which built hulls for the Dominion Government and were used in the *War Weasel*, the *War Badger*, the *War Raccoon*, the *Canadian Otter*, and the *Canadian Squatter*. McKinnon Industries produced saddlery, hardware, shells, fuses, and shrapnel bullets under a wartime contract beginning in 1916.[26] Foster Wheeler, founded in 1927, originally produced machine parts, primarily condensers, steam generating units, and heat transfer equipment. During the Second World War, it produced marine boilers used on Allied ships, and semi-mobile steam-electric power plants that were meant to provide Allied troops with power in Europe.[27] The power units ultimately were not necessary during the war, and the United Nations Relief and Rehabilitation Organization contracted Foster Wheeler to build the units for humanitarian efforts in war-torn China instead. Norton Silicone Carbide, also called Norton Abrasives and "The Norton Company" produced carbide and chemical abrasives and has been reported to have worked on the Manhattan Project. Norton produced a component of the "Little Boy" atomic bomb dropped on Hiroshima in 1945 by the United States.

The component was a stabilizing element that allowed pilots to handle the bomb on the Enola Gay until it was dropped. Norton's participation in the Manhattan Project remained secret for nearly 20 years after the end of the war. Foster Wheeler also joined Norton in Niagara's nuclear-age industries as part of the Atoms for Peace program, manufacturing the condenser for Canada's first full-scale nuclear power plant in 1962.[28] From the 1960s onwards, Foster Wheeler continued to manufacture nuclear plant components along with its other regularly manufactured machines.

Buggies, Bicycles, and the Automobile

The 20th-century automobile industry also represents one of Niagara's largest heavy industries. However, to properly understand the growth of the auto industry in Niagara, attention must be given to the manufacturing of other modes of personal transportation constructed in the region. Niagara's manufacturing sector, related to road transportation, demonstrates the transition from muscle-powered machinery to the automobile. Bicycles, carriages, and automobiles all have long manufacturing histories in the region.

The bicycle boom hit Canada in the late 1890s. First, it was used primarily for leisure by the wealthy, but when larger manufacturers began to produce bicycles, they became more affordable and transitioned to a personal mode of transportation for many. Niagara's biggest bicycle producer was Welland Vale Manufacturing. The company began producing bicycles in 1895. Its most successful model was called the "Perfect Bicycle", which came in both a men's and women's specific frame. By 1898, Welland Vale produced 10 different models of bicycles, including a racing bike and a tandem bicycle.[29] The bicycles were sold out of Welland Vale's retail store in Toronto, where customers from across Ontario would come to purchase their bicycles.

In 1898, the American Bicycle Company, a consolidation of American bicycle manufacturers, began to build a factory in Hamilton. In response, the leading Canadian bicycle manufacturers, who were already in stiff competition with each other in the Canadian market, decided to consolidate and form the Canada Cycle & Motor Company Ltd., otherwise known as CCM, in 1899.[30] The consolidation included Canada's top-five bicycle manufacturers: Massey-Harris Manufacturing Company Ltd., H.A. Lozier & Company, Welland Vale Manufacturing, Goold Bicycle Company Ltd., and Gendron Manufacturing Company Ltd. The amalgamated CCM manufacturers continued to produce bicycles under their own brands, and Welland Vale's Perfect Bicycle was the top-selling CCM bicycle in 1900.[31] However, St. Catharines' bicycle manufacturing days came to a swift end in May 1900 when a fire that started in the boiler room of Welland Vale's bicycle factory burnt the entire building and surrounding area to the ground. The other damaged parts of Welland Vale Manufacturing were rebuilt, but the bicycle plant was never re-opened in St. Catharines. CCM continued to manufacture bicycles under other brand names, but the Welland Vale bicycles were never manufactured again.

The Canadian automotive industry did not take off until the merger of McLaughlin Motor Car Company, Ltd., and Chevrolet Motor Company of Canada into General Motors of Canada, in 1918. Prior to this, automotive manufacturing was limited to smaller firms, like McLaughlin, most of which had their start in carriage or carriage-part production.

Before the popularity of the automobile, most road transportation was done using carriages and buggies that operated using horse or other pack-animal power. Niagara had several well-established carriage manufacturers in the 19th century, such as Augustine & Kilmer's in Port Colborne. Two of Niagara's biggest automotive manufacturers, Dana-Hayes and McKinnon Industries (General Motors) had humble beginnings in the carriage industry in the late 19th century.

Canada Wheel Works, founded in 1865 by E.H. Phelps at Lock 11 in Merritton,[32] manufactured carriage wheels and other horse-drawn buggy components. Following the automotive industrial boom in Canada, Canada Wheel Works moved into the auto-parts production industry, and in 1936 consolidated with 16 other automotive firms, including Hayes Wheel Company and Ontario Wheel Works, to form the Hayes-Dana Steel Company. Hayes-Dana opened more Niagara factories, including two in Thorold. During the Second World War, the company manufactured primarily military truck components and aircraft parts under a wartime contract. The war was Hayes-Dana's most productive time, and the Merritton plant alone reached over 1,500 employees.[33] Following the war, the company returned to building automotive parts for civilian vehicles and continued to operate well into the 1980s.

McKinnon Industries, founded in 1878 as "McKinnon and Mitchell Hardware" by L.E. McKinnon and F.F. Mitchell, first opened as a wholesale hardware store that manufactured wagon components and saddlery on St. Paul Street in St. Catharines. The company name was changed in 1888 to McKinnon Dash and Hardware Company, and, in 1900, the growing business moved to Ontario Street. The new factory housed an iron foundry and a drop forge, allowing McKinnon to produce more of their own carriage components.[34]

During the First World War, McKinnon produced saddlery for the Canadian and British troops, eventually moving into shell and fuse production in 1916.[35] Following the war, McKinnon entered the automotive industry in response to growing automobile interest and produced automobile radiators and transmission gears. Throughout the 1920s, McKinnon began producing more automotive parts, and was selling most of its manufactured parts to General Motors of Canada. In 1929, General Motors purchased McKinnon Industries and continued to grow the automotive divisions of the company. During the Second World War, McKinnon produced components for military vehicles that were built at General Motors' Oshawa plant. Following the war, McKinnon's Ontario Street plant continued to produce automotive parts at maximum capacity, leading to the construction of a second plant on Glendale Avenue along the Fourth Welland Canal. The plant was completed in 1952, and at the time of opening, it was the largest grey-iron foundry in the British Commonwealth.[36] McKinnon Industries remained one of St. Catharines' largest employers through the 1950s and 60s, producing parts for various General Motors vehicles under the brands Chevrolet, Pontiac, Oldsmobile, Buick, and GM. In 1965, the Canada-United States Automotive Trade Agreement, also known as the Canada-U.S. Auto Pact, allowed for integration of American and Canadian automotive industries, leading to higher production rates at the McKinnon plants. In 1969, McKinnon Industries was officially renamed General Motors of Canada, Ltd., along with the rest of the GM subsidiary companies. Both the Ontario Street and Glendale Avenue plants continued production through the rest of the 20th century.

The manufacturing of transportation equipment in Niagara evolved to fit the changing needs and interests of the Niagara and Canadian public. In the 19th century, Niagara was a hub for carriage and buggy manufacturing and bicycle production. Following the First World War, interest in automobiles grew and carriage manufacturers responded by expanding into this growing market. Consolidation of the automobile industry brought new factories and more jobs to the Niagara region.

Niagara Towns: attracting economic development

The access to cheap power, transportation services, water, and proximity to the United States were not the only benefits that attracted manufacturing businesses to cities in the Niagara region. Many Niagara municipalities created incentives to encourage new industries to settle within their borders. Tax exemptions, deals on natural gas or hydroelectricity rates, and industrial brochures were some of the tools Niagara municipalities used to recruit new industries. However, this recruitment naturally led to competition between the municipalities, especially between those along the Welland Canal corridor.

In 1892, the Municipal Assessment Act established legislation that allowed Canadian municipalities to grant bonuses in the form of tax exemptions to new manufacturing businesses for "the length of ten years renewable for the like term," except for public school taxes. This legislation was purposefully designed to allow municipalities to leverage incentives to increase industrial activity throughout Canada. St. Catharines had employed tax exemptions prior to the 1892 Act. However, a problem arose for St. Catharines in 1899 when all the available land with direct access to the Welland Canal was occupied by factories. To keep St. Catharines competitive with other Niagara municipalities along the Canal, the city had to increase available horsepower from the canal by constructing a hydraulic raceway.

Some Niagara municipalities, like Thorold and Merritton, adopted tax and other financial incentives early. In 1900, the Merritton business council published a brochure that stated, "Merritton is desirous of offering inducements for the establishment of Factories in her midst and is prepared to grant land free lying alongside the Railways; also, Free Taxes, Free Water for Domestic and Fire Protection, and Electrical Motive Power at a nominal cost per horsepower for a term of years."[37] Others, like Welland, refused to offer large financial incentives for years. In 1886, the City of St. Catharines offered M. Beatty and Sons, one of Welland's oldest and largest manufacturers, a 10-year tax exemption if they would relocate within the Garden City's borders.[38] M. Beatty and Sons threatened to move out of Welland, but ultimately remained there until it closed in 1920. However, until Welland adopted tax exemption incentives in 1924, the town missed out on attracting several possible industrial businesses.

Often, the system of financial incentives allowed prospective manufacturers to 'shop around' to find locations where they could get the best deals. In 1899, two industrialists from the United States, H.G. Marsh and C.F. Myers, visited possible industrial sites in Welland and Thorold to build a new wooden wares factory. The industrialists noted that they required a free site and a 10-year tax exemption. Thorold was willing to meet the requirements, so the factory opened there. Similarly, Welland missed out yet again in 1899 when Hamilton Iron Works settled in Port Colborne rather than Welland, thanks to a $25,000 cash bonus from the town.[39]

Following Welland's submission into granting tax exemptions to new manufacturing businesses, industry in the town grew. However, the competition between Niagara municipalities to recruit new industries through tax exemptions proved to have a significant impact on tax revenue. For example, after only two-and-a-half decades of tax incentives in Welland, the 1950 taxable assessment showed only 27 per cent of taxes were coming from industrial sources, while 28 per cent were commercial, and 48 per cent were residential.[40]

Niagara municipalities also competed for business by advertising to industrialists. Welland, Merritton, and St. Catharines all regularly published brochures and advertisements to attract new manufacturing businesses to their municipalities. All boasted about their shared benefits of cheap hydroelectric power, natural gas, access to the Welland Canal and several railway lines, proximity to the United States, and growing labour pools. Seemingly few differences can really be found between the competing brochures. In Welland's 1907 "Special Industrial Number" of the *Telegraph*, the Town boasted the cheapest lighting in Canada, and an almost complete lack of typhoid, as benefits for prospective factory builders. Merritton, in a 1900 pamphlet titled, "Manufacturers and Capitalists Wishing to Establish Industry in Merritton Ontario," bragged of being one of the most financially healthy municipalities in the entire Dominion of Canada, stating that it had the largest amount of wealth compared to indebtedness. In 1931, St. Catharines advertised its differences from other Niagara municipalities by boasting of its well-paved streets and extremely low fire insurance rates. In the 1950s, both Welland and St. Catharines published brochures that attempted to attract new manufacturing plants by advertising the highly skilled workforce, fresh water supplies, continued cheap hydroelectricity and natural gas, strong public education systems, and strong post-war economic booms.

The manufacturing industries of the Niagara region are often considered under one umbrella. However, there were clear distinctions and competition between various Niagara municipalities, especially those along the Welland Canal corridor from the late 19th through the mid-20th century. Although competition for industrial recruitment often put municipalities at odds with each other, the competitive market led to an enormous and prosperous industrial corridor.

Labour Development: unionization

Various levels of semi-organized and organized worker movements have existed in the Niagara region since at least the construction of the First Welland Canal. Canal workers experienced unsteady employment and worked long, grueling days doing dangerous and physically demanding labour, often in extreme weather conditions. It was common for the companies contracted to build the canal to pay their workers in vouchers, only valid at the company-operated store, or to flee without paying workers at all.[41] These conditions forced workers to organize themselves to fight for the right to work and for fair wages, fighting against their employers by organized refusal-to-work protests and parading in Niagara towns. At times, the workers' organized efforts were successful, like in 1843, when canal strikers won higher wages.[42] However, success was often short-lived as the collective strength of workers was not enough to fight against the joint efforts of employers and government who suppressed labour organization and striking, since it threatened to interfere with the flow of goods through the canal. From the mid-19th century onwards, labour movements continued to grow, as did tensions between workers and the often government-backed employers.

In the late 19th century, skilled labourers made up a significant portion of Niagara's manufacturing workers. They were trained to perform specialized duties in Niagara's factories, manufacturing paper, tools, bicycles, carriages, rubber, ships, and other goods. These skilled workers, such as stone masons, mechanics, carpenters, and electricians, were more likely to be organized and had more power over their positions, working hours, and pay. Many municipalities, including St. Catharines, Welland, Port Colborne, and Niagara Falls had their own branches of the International Typographical Union by the mid-1870s. By the early 1910s, most Niagara municipalities had branches of the Noble and Holy Order of the Knights of Labor, the United Brotherhood of Carpenters and Joiners, the Amalgamated Society of Carpenters and Joiners, the Amalgamated Society of Engineers, the Bricklayers, Masons and Plasterers International Union, and some form of established local trades-and-labour council. The number of unskilled labourers in Niagara factories grew as manufacturers mechanized factories during the early 20th-century industrial boom. These workers, primarily made up of women, children, immigrants, and racialized groups, were less likely to be organized and had little control over their working conditions and pay, since the employer could easily replace them.

Foundry workers in Welland. Courtesy Welland Museum.

Cigar workers in St. Catharines provide an example of the disparity between skilled, unionized workers and unskilled, unorganized workers at the time. St. Catharines' cigar workers were unionized by the 1880s. They worked eight-hour days and were paid weekly in cash. Significantly, the cigar workers were able to prevent the sale of cheap cigars made by child labour in Montreal and London, in favour of union-made cigars from the Niagara region.[43] This demonstrates the level of power that unionized workers could wield over their employers and the market. Welland labourers provide another example. In 1925, the firms contracted to complete the Fourth Welland Canal cut wages due to surplus labour. Unionized workers, limited to the plumbers and carpenters, remained at a wage of 90 cents per hour, working a maximum of nine hours a day, while the non-unionized labourers' hourly rates were cut from 45 cents an hour in 1924, to 30 cents an hour in 1925. Plus, they worked 10-hour days.[44]

However, unskilled labourers in the early 20th century were not entirely unorganized. The Noble and Holy Order of the Knights of Labor allowed unskilled labourers to join. This did not mean that they had access to the same kind of organizing as skilled labourers. Although the Order was, in principle, "open to all workers regardless of skill, gender or race,"[45] the reality was that women and racialized groups were exposed to racist and sexist policies that limited their actual involvement in the Order.

Following the First World War, Niagara's first regional, widespread, non-trades-based labour movement was formed through the Niagara District Trades Federation, established in 1918. Unlike earlier organized labour groups, the Federation actively recruited unskilled immigrant workers to play an active role in the labour movement.[46]

The Federation worked towards organizing unskilled workers against the Hydro Commission and the Federal Department of Railways and Canals, which were responsible for two of Niagara's major construction projects of Hydro Chippawa and the Fourth Welland Canal.

With the leadership and organization of the Niagara District Trades Federation, over 4,000 workers were united by 1919.[47] One of the Federation's main goals was to secure an eight-hour workday for unskilled labourers on both projects. Although they were ultimately unsuccessful, largely due to the combativeness of the government and contracted firms, the Federation's efforts to organize and mobilize Niagara's unskilled workers led to the introduction of "welfare capitalism" and "innovative schemes in an attempt to mute class conflict as well as reduce labour turnover."[48] These included a profit-sharing program for workers, providing rewards for long-term service to the company, and other worker incentives. American Cyanamid's free financial and legal service for workers, and Yale and Towne's worker-buy-in profit-sharing system were examples of such welfare capitalism.[49] These incentives were designed to quell worker dissatisfaction, discourage worker turnover, and encourage workers to take interest in the company's profits, while giving them a sense of control, without negotiating with unions or labour organizations.

The period of welfare capitalism seemed to be short-lived in Niagara, and organized workers and employers in the manufacturing industry continued to be at odds throughout the 1920s and 30s. The 1921 Beaver Wood Fibre Company strike in Thorold provides an exceptional example of the consistent struggle of organized labourers and the strength of government-backed employers. The first report of "labour troubles" at Beaver Wood Fibre came in the *St. Catharines Standard* on February 9 stating, "about 70 employees of the Beaver Board company are not working today as the result of trouble at the mill in Thorold. The men in their statement claim a lockout, while the company's officials call it a strike."[50] Officials at Beaver Wood Fibre insisted through interviews and newspaper articles that the Thorold strike was a "sympathetic strike" in solidarity with a concurrent strike at the plant in Tonawanda, New York, which the company owned in part.[51] Company officials advertised that the strike was unfounded, and placed blame on the union, rather than the union men, to gain public support.

By Sunday, Feb. 13, some 70 Royal Canadian Mounted Police (RCMP) had been called in to "control" the strikers and protect company property, while the provincial police and Special Constables brought in by the company responded with intimidation tactics near the Thorold factory. Throughout February, the *St. Catharines Standard* published contradictory statements from strike organizers and company officials. F.R. Barry, Vice President of Beaver Wood Fibre Company admitted in an open forum that the company had lied or made "mis-statements" about the connection between the Tonawanda and Thorold plants. Union leaders accused Beaver Wood Fibre of hiring American strike breakers and bringing in private detectives from a firm in Washington, D.C. to be sworn in as Special Constables, an illegal action under the Alien Labour Act. Company officials strongly denied this, but later investigations revealed that it was true.[52]

The company's and government's efforts to bring in armed police to control a peaceful strike "freed the police to busy themselves raiding immigrant working-class communities"[53] in an effort to create ethnic tensions within the union by pitting the two groups of workers against each other.[54] Thus, company and governmental intimidation through policing, and using ethnic tensions directed at Eastern European immigrants, allowed them to put a stop to the 1921 Beaver Wood Fibre Company strike.

The strike at Beaver Wood Fibre Company demonstrates the rising tensions between workers and government-backed companies. Additionally, it also serves to demonstrate how ethnic prejudices and racial tensions contributed to the weakening of Niagara's labour movement. The Beaver Wood Fibre Company and the provincial police were able to exploit prejudice to weaken the strike and create further divisions between workers based on ethnicity. However, the Beaver Wood Fibre strike also represents an unprecedented response by law enforcement in Niagara. Never had such tactics by a company, supported by the government, been used against a rather small and peaceful protest. This reinforces the serious tensions between workers and employers in the first half of the 20th century.

During the Second World War, labour shortages in Niagara allowed unions to leverage more control while negotiating with employers. It became harder for businesses to hire strikebreakers and limited the pool of "cheap labour". However, employers found new tactics for fighting against strikers by calling into question the workers' patriotism, implying that striking workers weren't doing their part to contribute to the war effort. The 1941 McKinnon strike demonstrates these wartime tactics. That September, the strike made front-page news in St. Catharines and garnered national attention for over two weeks. The strike was over wages, which the local unions argued was lower than those at the Oshawa General Motors, owners of McKinnon Industries. Strikers wanted a 10-per-cent wage increase and 15-per-cent wartime cost-of-living bonus.

Both the government and McKinnon officers tried to publicly shame strikers into returning to work.

The strike was called on September 11. That same day, federal Labour Minister Norman McLarty, who had called wartime strikes "naturally to be abhorred,"[55] was quoted in the *St. Catharines Standard*, calling the strike "a deliberate attempt to undermine the wage policy of the Dominion government."[56] The following day, Munitions Minister C.D. Howe gave a national radio address in which he accused union leaders of forcefully and coercively pushing workers to join unions. He attempted to rouse public opinion by comparing striking workers to "almost equivalent of desertion by a man in uniform in the face of the enemy."[57]

McKinnon Industries took out two full-page adverts in the *St. Catharines Standard* during the strike to state its case. In both adverts, McKinnon accused union leaders of hindering the defeat of the "Enemy of Democracy" and argued that strikes assisted and directly helped Hitler. The company publicly put the onus on the workers to stop striking by calling their patriotism into question, stating: "We firmly and solemnly believe that the clear and FIRST duty of every citizen of surviving free nations, during this war crisis, is for each of us to do his job to the utmost."[58] Government efforts to subdue strikers and unions resulted in a new governmental order because of the McKinnon strike. The order limited the rights of workers by making any wartime industry strike illegal, unless it was voted in favour by all affected workers in a strike vote conducted under the supervision of the federal Department of Labour.

The union's response was to put the blame back onto the company, rather than the workers. Robert Stacey, International United Automobile Workers of America representative argued that the union was prepared to negotiate, and that the plant continued to be closed because McKinnon authorities had not engaged in any discussion that would allow strikers to return to work. He argued, "Intimations and inferences that our members are disloyal and subversive citizens of Canada, not interested in the war against barbarism should be ignored. No one knows better than the worker the result of Hitlerism in Europe."[59] The public tug-of-war over which group was responsible for stopping McKinnon's wartime production caused major differences in public opinion. The government and McKinnon eventually won, and workers returned to work without a general wage increase.

Post-war economic prosperity for Niagara's manufacturing sector put workers in a much more comfortable position for bargaining with employers, which allowed unions to direct more of their attention towards combatting racism and sexism in hiring practices and manufacturing work. Unions worked to help secure the 1944 Racial Discrimination Act, which stated that no person could publish "any notice, sign, symbol, emblem or other representation indicating discrimination or an intention to discriminate against any person or any class of persons for any purpose because of the race or creed of such person or class of persons."[60] This limited outwardly racist hiring practices by banning job postings based on race, although it did not prevent employers from using racist hiring practices.

Union Meeting of Alliance Pulp & Paper (Workers Union 99), 1952. Courtesy of the St. Catharines Museum & Welland Canals Centre.

Racialized Workers

Workers of non-Anglo-Canadian ethnicities have played an important role as workers in Niagara's manufacturing industry from the late 19th century onwards. The Niagara region, which remained overwhelmingly populated by people identified as "of British race"[61] in the first half of the 20th century, had a highly racialized workforce. The City of St. Catharines boasted in its 1931 industrial recruitment pamphlet that "it is believed that St. Catharines has a better than average non-radical, English-speaking, contented class of laborers."[62] This demonstrates the racist and anti-immigrant sentiment consistent within Niagara's manufacturing sector. White men of British origin were significantly more likely to be unionized, salaried, and secured workers, while men and women of racialized groups worked the most demanding, dangerous, lowest-paid, and least-secure jobs in Niagara's manufacturing sector. Included in these racialized labour groups were Black and Indigenous people, Japanese-Canadians, and immigrants from Eastern Europe, all of whom were often forced to work and live on the margins of British-Niagara society.[63]

The second industrial revolution in the early-20th century led to the mechanization of the canning industry which allowed factories to produce more canned goods at a faster rate. This required more workers to produce larger quantities of products. Work in the canning factories was notoriously difficult and dangerous with long hours and incredibly low pay, and often only seasonal work was available. Additionally, an overwhelming percentage of workers in the canning industry were women.[64] In 1911, 80 per cent of Niagara's 623 wage earners in the canning industry were women. The conditions in canning factories were considered so low that Niagara women only worked in them as a last resort. The combination of higher production rates and poor working conditions led to a labour shortage, and Niagara canning companies began importing seasonal workers. These labourers consisted of Eastern European women and girls from Buffalo, and Indigenous families from First Nations reserves in Southern Ontario.[65]

Often, workers were transported in groups from their homes on reserves for seasonal work. Indigenous women were often hired by companies as strikebreakers. For example, in 1964, the women at Lanark Manufacturing in Dunnville (many of whom lived in Welland and Port Colborne) went on strike for fair wages. Rather than negotiate with the strikers, Lanark hired Six Nations women from the Grand River reserve as strikebreakers to keep the factory operational.[66] Lanark's choice to employ Indigenous strikebreakers demonstrates the attitude of manufacturing employers to only hire racialized groups as a last resort. Similarly, the willingness of the Six Nation women to work in the factory during the strike (and knowing they would only work until the strike was settled), demonstrates the lack of wage-labour opportunities for Indigenous people in the manufacturing sector.

Waste, Pollution, and Corporate Responsibility at the Start of the "Green" Era

Industrial pollution in Niagara is as old as industry itself. Smoke, dust, and aerosol chemicals pollute the air, while solid, semi-solid, and liquid industrial waste pollute the soil, ground water, and waterways around factories. Lumber and sawmills were the largest offenders in early Niagara, often dumping sawdust and pulp effluent into the waterways used for drinking water. Although there was legislation that attempted to regulate waste quality, such as the Public Health Act of 1884, many municipalities along Lake Ontario, Lake Erie, and other major waterways continued to have their waste output and drinking water intake near each other, believing that "dilution was the solution to pollution."[67] Additionally, pulp and sawdust waste dumped in the riverways through Niagara damaged marine ecosystems and harmed fish and other marine wildlife. Additional problems due to waste impacted the Welland canals: effluent polluted the drinking water for canal communities, but also often clogged the weirs and locks during seasons when the canal was shallow. At times, this became a major obstacle for incoming and outgoing vessels, ultimately putting the mills and shipping industries at odds with each other.

In the 1910s, public and governmental concern over pollution in major waterways led to the establishment of a joint commission between the United States and the Dominion of Canada to assess the pollution of boundary waters. Niagara's geographic location between Lake Ontario and Lake Erie made it a significant portion of the commission's investigation. In 1918, the commission's final report revealed that much of the boundary water was significantly contaminated, and that the Lower Niagara River was the most severely polluted, noting that "the effect of the pollution of the lower Niagara is to render the river water totally unfit for domestic uses unless purified."[68] The blame for water pollution was largely placed on marine vessels and human waste. The Commissioners seemingly did not consider industrial waste as a serious factor, noting that pulp and sawmill effluent had serious impacts on fish life, but otherwise concluded that "contamination from [industrial] sources is at present so limited and local in its extent that the commission did not regard it as of extensive scientific investigation."[69]

As the manufacturing industries in Niagara grew from saw and grist mills to textile plants, fine metal production, automobile manufacturing, metallurgic and chemical production, and more, the amount of industrial pollution in Niagara also grew. With little policy attention given to industrial waste in the early 20th century, manufacturers were able to legally dump untreated waste into the Niagara landscape.

The International Joint Commission was reformed in 1946, this time called the IJC Lakes Superior-Huron-Erie Advisory Board and the Lakes Erie-Ontario Advisory Board and was tasked with reassessing pollution along boundary waters. The Commission acknowledged that industrial and chemical pollution, largely ignored in the 1918 report, had significantly increased and required immediate attention. The report outlined the rapid growth of manufacturing in Niagara, both on the Canadian and American sides. In contrast to the 1918 report, the Commissioners concluded that the increase in manufacturing along Lake Erie, Lake Ontario, the Niagara River, and other freshwater tributaries, had led to a massive increase in industrial waste.

The Commissioners concluded that the varied nature of industrial waste made it difficult to establish one specific pollution control program to address all the problems.

Although the IJC report provided encouraging suggestions on how to combat industrial pollution, environmental regulations and legislation by Niagara municipalities and the Province of Ontario continued to have relaxed pollution control. Increased public awareness of environmental pollution, public health concerns, and the establishment of organizations like Greenpeace in the 1960s, led to a new wave of environmentalism that resulted in significantly stricter legislation on industrial pollution beginning in the late 1960s and through the 1980s. During this period, the earlier polluting activities of some of Niagara's major manufacturing companies were put into the spotlight by government committees, non-profit organizations, and the public.

American Cyanamid's Niagara Falls plant was found to have dumped approximately 200,000 tonnes of industrial waste, including 32,000 tonnes of cyanide, and an unknown amount of nitrogen substances into the neighboring Ontario Hydro property between 1930 and 1974. This waste, which could seep into the soil and contaminate groundwater, and flow into the Niagara River, was considered a major public health concern. The *St. Catharines Standard* reported that St. Davids residents, located just below the escarpment on the Niagara River, had concerns about Cyanamid's waste possibly leaking into their drinking water for years to come.[70] A study by the Ontario Ministry of Environment in the mid-1980s revealed that Cyanamid's hazardous pollution was not running into the Niagara River, and Cyanamid was tasked with spearheading the cleanup efforts on the Ontario Hydro property and surrounding area.

The Cyanamid chemical plant swimming pool in Niagara Falls was in operation from 1932–1971. This water was used by the plant for cooling purposes and was connected through a deep ditch via the hydro canal. Courtesy Niagara Falls Public Library.

GNB Batteries, located in Fort Erie, discharged effluent contaminated with lead into a 1,100-metre ditch draining into the Niagara River as early as 1950, until the plant transitioned to pumping waste to the Fort Erie sewage treatment plant in the late 1980s. In the decades between, GNB Batteries dumped enough hazardous waste into the ditch that 2,000 tonnes of contaminated mud from the area had to be removed by the company due to public health concerns.[71]

Between the early 1920s until the mid-1970s, Atlas Steel Company dumped over 6,000 tonnes of metal sludge waste into the Welland River via outfalls that ran off the factory property.[72] Studies completed by Atlas in the 1980s revealed that metals including lead, mercury, chromium, nickel, iron, and arsenic could be found within a one-kilometre range of the Welland plant. The waste had accumulated along the bottom of the Welland River, building into mounds as deep as two metres, totaling approximately 30,000 cubic metres of metal waste.[73] Following this discovery, Atlas spent millions of dollars and went to significant lengths to clean up the toxic effluent and dramatically decrease its polluting from the late 1960s through the 1980s.[74]

Other Niagara manufacturers had less severe, but still impressive, polluting habits. For example, the Grimsby Canning Company, founded in 1882 by Bevereley Nelles and consolidated into Canadian Canners' Consolidated Companies, Ltd., often disposed of fruit pits and ash over the edge of a large drop located beside the factory. After the factory closed, the Ontario Housing Corporation bought the property and, during a soil test and land survey, discovered more than five metres of peach pits beneath the soil in a section of the property.[75] The peach pits were not cleaned up, and the land eventually became a road, since it was unfit to hold the foundations for new housing projects.

The new wave of environmentalism beginning in the 1960s not only drew attention to the polluting habits of Niagara's manufacturing sector, but also created a sense of corporate responsibility over industrial pollution. Public health concerns from Niagara residents, coupled with publicity in the local newspapers encouraged companies like Atlas to reconcile their decades of pollution and invest in waste-management. New governmental regulations were put in place to restrict industrial pollution, which in combination with emerging corporate responsibility led to less industrial pollution in the Niagara region.

However, stricter regulation meant manufacturers had to spend more money on waste disposal, and not all Niagara businesses had the capital to adapt to these changes.

Garden City Paper Mill closed in 1970, putting 150 skilled labourers out of work because of obsolete equipment and an inability to meet new waste disposal regulations. The *St. Catharines Standard* reported,

> *Ever since the introduction of Ontario's new anti-pollution regulations it was expected that some of the province's least-profitable industrial operations may be shut down in preference to undergoing costly modernization programs. Indeed, this was a calculated risk the government-and all of us-took in insisting on a cleanup of the environment.*[76]

Garden City Paper Mill had long been known as a significant source of pollution in the First Welland Canal, and its inability to invest in modernized waste disposal played a large role in the closure of one of Niagara's oldest paper manufacturers.

Similarly, in 1971, Boese Foods, owned by Canadian Canners, made the choice to close its St. Catharines factory citing an inability to "economically provide pre-treatment sewage facilities at the Lakeshore Road plant"[77] due to new anti-pollution regulations. The closure impacted 30 full-time workers and up to 500 seasonal workers. Operations were moved to the St. Davids canning factory in 1975, which had the appropriate pre-treatment facilities.

New polluting restrictions, public awareness, and non-profit and governmental intervention beginning in the 1960s led to significant changes to the manufacturing industry in Niagara. Many companies developed a new sense of corporate responsibility for pollution control, and others folded under the financial pressures of investing in cleaner waste disposal. The establishment of the federal Department of Environment in 1971, along with various governmental programs including the Great Lakes Water Quality Agreement (1972), were largely inspired by these growing concerns over industrial waste, beginning in the 1960s. These restrictive but effective regulations and continued industrial investment in waste disposal at the beginning of the "Green" era paved the way for more sustainable business practices and stronger pollution control into the 21st century.

Conclusion

Niagara has a long and colourful manufacturing history. Early industrialists took advantage of Niagara's natural physical features to create a booming manufacturing industry that contributed to Canada's transition from a mercantilist system to capitalist economy.

The establishment of the Welland canal system and dependable railway lines provided an opportunity for Niagara to become one of Canada's manufacturing centres by the 20th century.

Niagara's manufacturing history in the 20th century is largely characterized by continual labour developments through strikes and unionization, regional and national amalgamations of major factories, and environmental pollution. However, Niagara's manufacturing sector is also responsible for helping build the Niagara communities we know today. With large manufacturing infrastructure came workers, who built schools, churches, and flourishing communities that contributed to the local Niagara economy.

By 1969, Niagara had been home to booming manufacturing industries including textiles, paper, canning, automobile and heavy industry, and chemical production. These industries had developed, thrived, and many had declined and/or disappeared in the nearly 200 years since Loyalist settlement. The constantly evolving nature of manufacturing increased technological advances, and globalization in the second half of the 20th century, has meant that the once all-important qualities of the Niagara region have become less important for manufacturers. Many Niagara manufacturers have closed or moved to more ideal locations that better suit modern needs, leaving many of the post-1969 headlines in Niagara filled with concerns for unemployment and fears of economic loss.

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Scotland, the farmer, Davey McLean, used his Rodden Fork to hold Hess at his farm until authorities arrived. This made headlines in Great Britain and Canada, making the Rodden Fork quite famous.

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