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ENGINEERING HISTORY PAPER #67

"Some Early Canadian Steamboats"

by Andrew H. Wilson
(previously produced as Cedargrove Series #43/2016 – September 2016)

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EIC HISTORY AND ARCHIVES

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Abstract

The first commercially successful steamboats 'arrived' in North America and Europe in the early years of the 19th century. From then until the early 20th century, steamboats sailing Canada's lakes and rivers progressed in numbers, size and technical sophistication. This paper discusses this progress, concentrating on the early ones in Eastern Canada during the first half of the 19th century and in Western Canada in the second half. It is an enlarged version of the oral presentation the author gave to the Canadian Society of Senior Engineers in Ottawa in June 2016.

Not all of the vessels that might be included have been mentioned. There were just too many, even among the early ones. To an extent, this omission may be covered by reference to the bibliography. Also, many of the details of their machinery, equipment and hull construction were not available from the source material and, in the case of the Eastern ones, there was also a lack of photographic evidence. The contrast between the designs and operating modes of eastern and western vessels has been discussed.

While the influence of British and American ship- and engine-builders has been acknowledged, it has not been discussed in detail since most of the vessels and many of their engines were built at or near the locations in Canada in which they operated.

About this Series

Principally, the Cedargrove Series is intended to preserve some of the research, writings and oral presentations that the author has completed over the past half-century or so but has not yet published. It is, therefore, the modern-day variant of the privately-published books and pamphlets written by his forebears, such as his paternal grandfather and grandmother and his grandfather's brother John.

About the Author

He is a graduate in mechanical engineering and the liberal arts and has held technical, administrative, research and management positions in industry in the United Kingdom and the public service of Canada, from which he retired 30 years ago.

He became actively interested in the history of engineering on his appointment to chair the first history committee of the Canadian Society for Mechanical Engineering in 1975 and served both CSME and the Engineering Institute of Canada in this capacity for varying periods until 2003. He has since researched, written and edited historical material for both organizations and for the Canadian Society of Senior Engineers. He is a past president of both CSME and EIC.

Preamble

This paper is about some of the early steamboats in Eastern Canada during the first half of the 19th century - ones that had side-paddles rather than propellers - and about Western Canadian stern-paddle steamboats, mostly in the second half of that century. It describes as far as possible their appearance and vital statistics, but has relatively little to say about their machinery or about their owners, captains or crews.

During the 19th century alone, there were hundreds of steamboats sailing Canadian lakes and rivers, many more than can be mentioned here. Those that are mentioned represent the early days of steamboating or vessels of particular historical interest. The sources mentioned at the end of the paper can be of some help in filling in these gaps.

The 19th century steam *boats* were usually flat bottomed, shallow draft, wooden-hulled, steam-powered vessels. The earliest ones likely also had sails, which they could use as needed as primary or secondary power sources. They used mostly wood as fuel for their relatively inefficient boilers. They carried both passengers and freight, and later mail. They also played a role in the settlement and development of new regions of Canada.

Steam *ships*, which arrived a little later, were deep-keeled and sailed the seas and oceans. Around the mid-to-late 1800s, they were usually iron-hulled, propeller-driven and used coal as fuel, although some of the earliest ones had auxiliary sails.

Prior to steamboats, on inland waters in Canada there were canoes of various sizes, bateaux, Durham and York boats (in the east and west respectively), schooners, sloops, brigantines and even horseferries. There were also other types of steam-driven vessels not discussed in this paper: tugs, dredgers and snagboats, as well as ferryboats. Steamboats also pulled and pushed broad-beamed, wooden, flat-bottomed barges and scows, some of which were made from the stripped-down hulls of former steamboats. Barges were of varying sizes, could carry people, sometimes quite comfortably, as well as freight and bulk cargoes. Some barges might even have sails, steam engines and accommodation for passengers as well as freight. Scows were essentially unpowered, more roughly constructed barges. Some had 'shovel' bows and hard chines.

The arrival of the steamboats changed a lot of things in the transportation business. The earliest ones also suffered from being built and operated before photography. So all we have of them pictorially are sketches, drawings and paintings, and these are not always true representations. And even written accounts of them can have inaccuracies.

An important aspect of the operation of steamboats (or, indeed, any kind of boat) in almost all Canadian waters has always been its limitation to the ice-free months of the year. In the west, in particular, seasonal problems have included low water levels, moving sandbars...and mosquitoes. And in both, climbing rapids could be a problem, solved in the east by building canals and locks, and in the west by

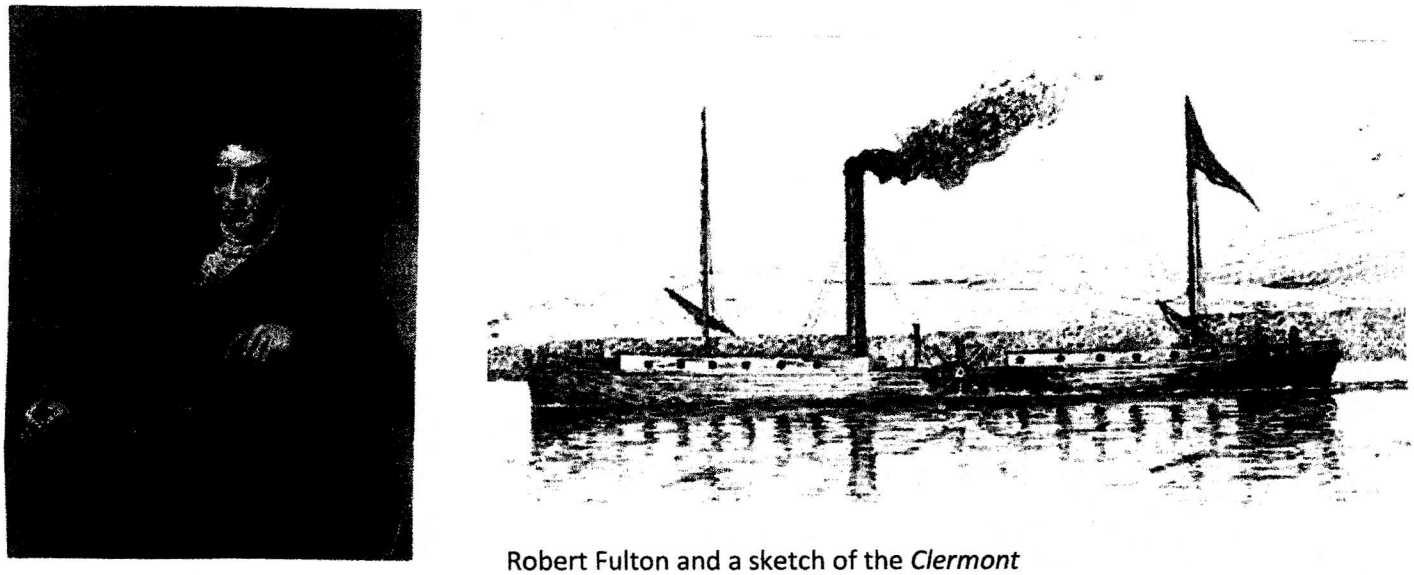
'warping' or some other technique, or by limiting steamboat travel.

During the later 18th century, attempts to develop steamboats in North America and Europe were hampered by inefficient and weighty engines and boilers. This was changed by the likes of Denis Papin in France, James Watt and William Symington in Scotland, Trevithick and Watt's partner Matthew Boulton in England, John Fitch and Oliver Evans in North America, and by the ability of steam-driven prime movers to convert vertical into circular motion.

The Very Earliest Vessels

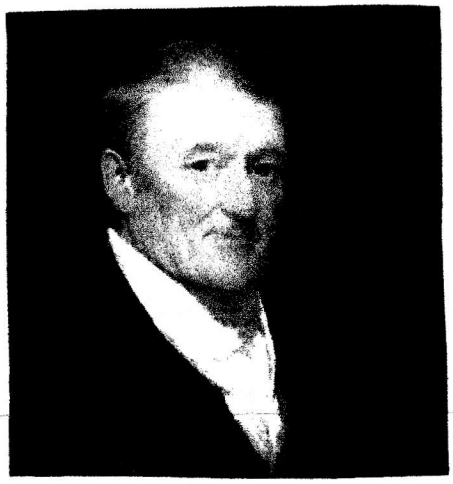
When considering the historical development of the vessels in the first half of the 19th century, we must remember that the Napoleonic Wars raged in Europe from 1800, and in North America from 1812, and lasted until 1815. In North America there was a seriously disruptive cholera epidemic in 1832 and a damaging economic recession in the 1850s. There were also rebellions in the two Canadas in 1837. These two provinces were subsequently joined into one in 1841.

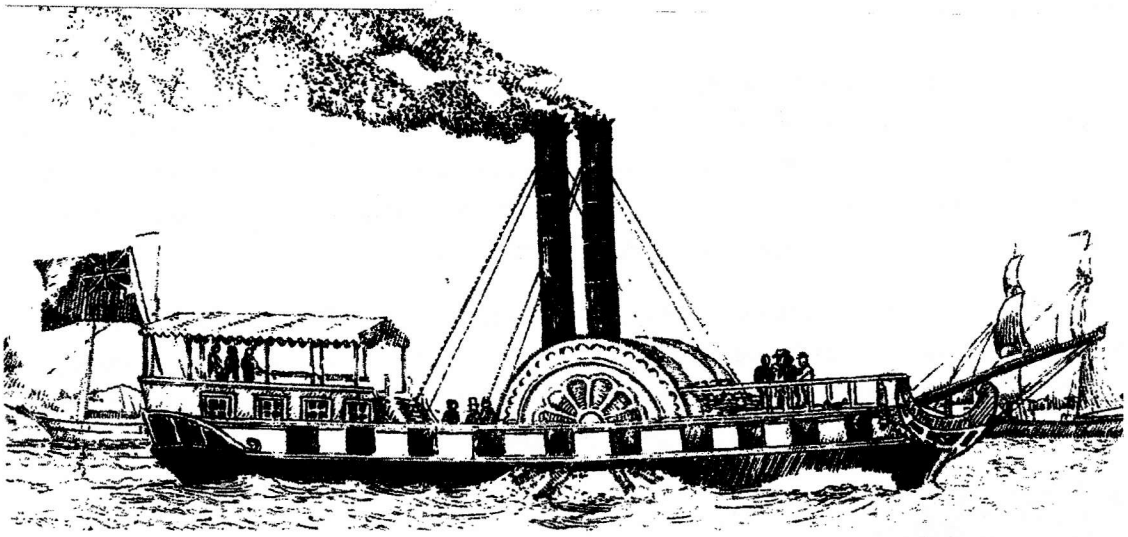
The first side-paddle steamboats with commercial potential were built very early in the 19th century. Robert Fulton's *Clermont* was launched in 1807 and established a regular service from New York to Albany on the Hudson River. It was 150 feet long, with a 16-foot beam (150x16), had a 19 hp engine built by Boulton & Watt (B&W), and a top speed of 5 mph.



Robert Fulton and a sketch of the *Clermont*

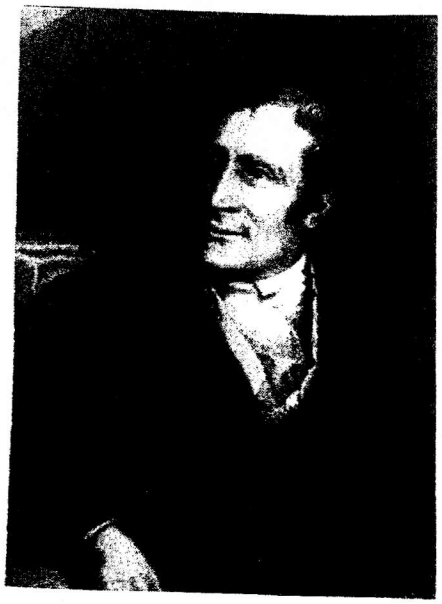
In 1809, the *Accommodation* (85x16), was launched for John Molson and in August began service between Montréal and Québec on the St. Lawrence. This vessel's hull and its 6 hp engine were built at Montréal by John Jackson and John Bruce. The engine was machined by George Pratt and Ezekiel Cutter using castings from Les Forges de St. Maurice.



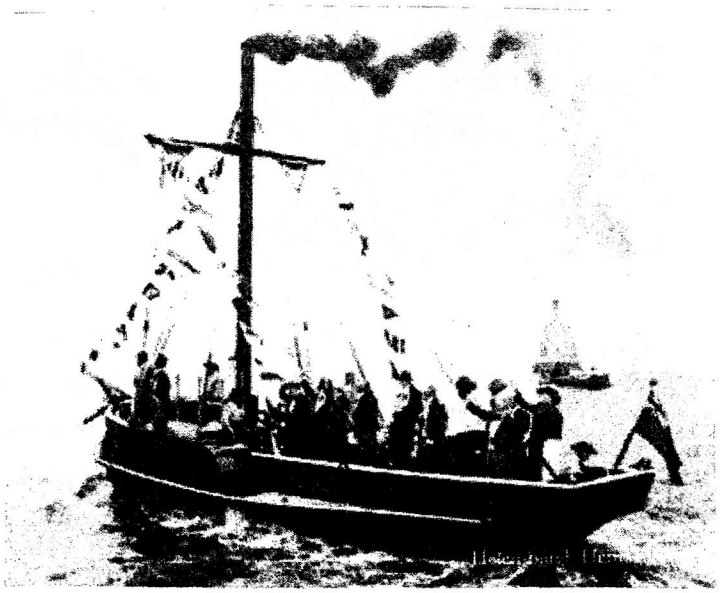


John Molson and a sketch of the *Accommodation*

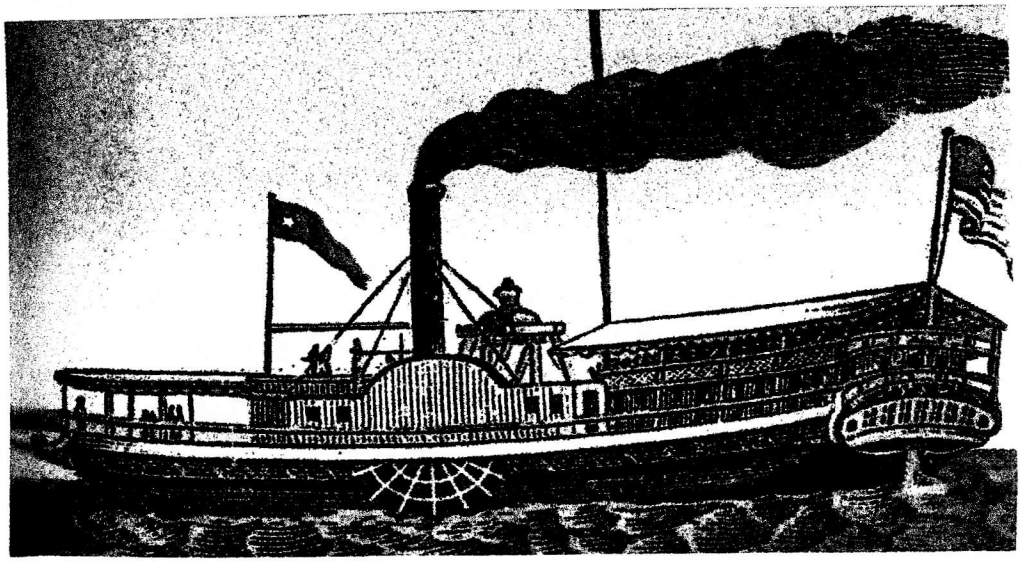
In 1812, Henry Bell's *Comet* (45x10), with two 3 hp engines built by Bell, began service on Scotland's River Clyde between Glasgow and the towns at the head of the river's Firth. The vessel was re-engined in 1819, and shipwrecked in 1820.



Henry Bell and photo of the 1962 replica of the *Comet*



A fourth 'inaugural' steamboat should be mentioned. This was the side-paddler *Vermont,* 125 feet long, powered by a 20 hp engine, and built by John and James Winans at Burlington, Vermont. It was launched on Lake Champlain in 1808. It travelled north on the Lake and up the Richelieu River, to St. Jean in Canada. After August 1809, it helped to connect Fulton's *Clermont* service, originating in New York, with Molson's *Accommodation* service to Québec.



Sketch of the Winans' *Vermont*

The gaps in the New York-Québec journey were filled originally by stagecoaches and by ferries across the St. Lawrence to Montréal. This service was interrupted by the War in 1812 but resumed in 1815. However, that same year the *Vermont* sank in the Richelieu and was abandoned.

The Next Molson and Competing Steamboats

The *Accommodation* was a disappointment technically and commercially and was scrapped after the 1810 season. Meanwhile, Molson had ordered engines for his next several vessels, all side-paddlers with masts and sails, from B&W in England.

His second steamboat was the *Swiftsure* (120x24). This vessel was launched and in service by 1811 and was subsequently rented out to carry troops and supplies during the War of 1812. Its hull turned out to be its weak point and the vessel was abandoned in 1817.

It was replaced in 1818 by the *New Swiftsure* (139x24), larger than the first, but using the machinery from it. In 1820, however, the *New Swiftsure's* engines had to be replaced by new ones from B&W. Meanwhile the Molson interests had also built the *Malsham* (155x30) in 1814, which remained in service until broken up in 1827. The *Lady Sherbrooke* (170x34) was launched in 1817 as the Molson flagship. It had two B&W side-lever engines. It served until 1826.

But real competition for Molson appeared when a Montréal syndicate launched the *Car of Commerce*

(163x30) in 1815. Part of the incentive for the *Car* (corruption of 'chariot') was the need for a vessel large and powerful enough to sail further upstream, beyond the St. Mary's Current that was limiting the reach of the Molson vessels, to Montréal's main docking area and beyond, to the ferry service at La Prairie. Three more vessels were soon added to the St. Lawrence competition by syndicates/partnerships: the *Caledonia* (134x30), launched 1817, rebuilt as a floating dock in 1824; *Telegraph* (85x28), launched 1818, retired 1824; and the *Québec* (131x31), launched 1818, broken up 1829. A truce in the 'steamboat wars' was reached in 1822, by the formation of a new company, which was led by Molson as the largest shareholder. Some of the ships were sold.

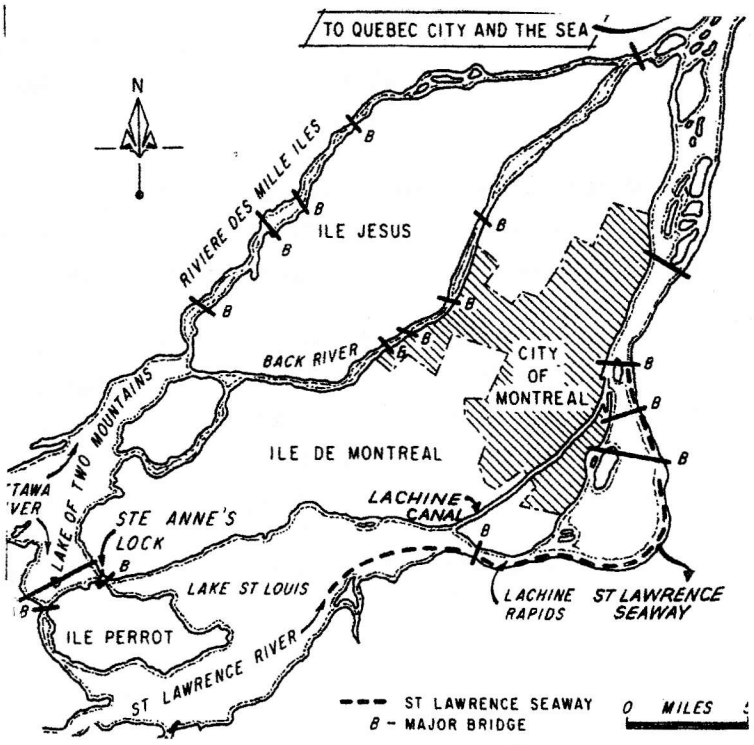
However, a new rival was formed later in 1822 - the Montréal Towboat Company. The following year it launched the *Hercules* (130x28), which had a 100 hp engine - probably, then, the most powerful vessel in North America. For the first time, it was able to tow an ocean-going vessel up river to Montréal. Molson's company retaliated with its own tow boats. The tugboat rivalry continued on the Lower St. Lawrence until 1833, when a merger was negotiated, again leaving Molson at its head.

The first bridge across the St. Lawrence at Montréal was the Victoria, formally opened by the Prince of Wales in 1860. Before then, the river from the city to La Prairie and the stagecoach (or, after 1836, railway) to St. Jean-sur-Richelieu and Lake Champlain was crossed by ferry. Several notable side-paddle steamboats served in this capacity. For example, the *Montréal* (76x19), built in 1819 and retired in 1831. It was to have had an English B&W engine but, instead, got one built by the John Ward's Eagle Foundry. Later in the 1820s, after enlargement, this vessel also participated as a ferry further upriver in Lake St. Louis, serving Lachine, Chateauguay and Beauharnois, along with such other vessels as the *Experiment* (74x12), launched at Québec in 1823, the *Cornwall,* launched at Côteau in 1823, the *St. Lawrence*, launched at Lachine in 1825, and the *St Andrews* (80x26), also launched at Lachine in 1825.

(Recent) map showing île Perrot,

Lake St. Louis, Lachine Rapids and Canal,

Montréal and Lower St. Lawrence



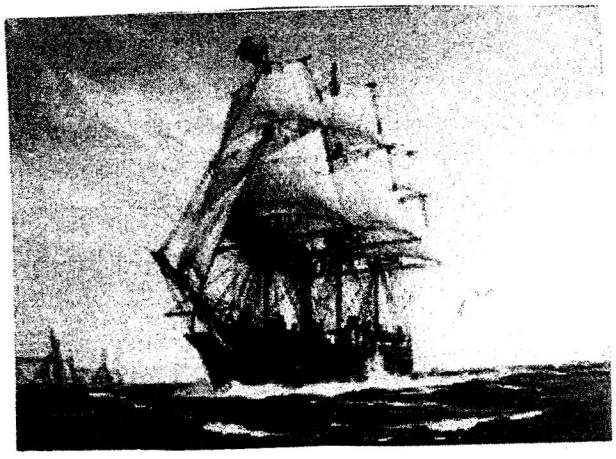
The Saint John River...and the *Royal William*

Shipbuilding was a traditional industry in the Atlantic Provinces during the first half of the 19th century. Its products were principally ocean-going merchant vessels, although some smaller, paddlewheel steamboats serviced the ports and harbours of the region.

The principal river on which steamboats flourished was the Saint John, its estuary and tributaries, in New Brunswick. They were mainly side-paddlers, with some stern-wheelers. The first side-paddler was the *General Smyth*, launched at Portland in 1816. It was 106 feet long, and served for almost a decade, providing service between Saint John and Fredericton. It was replaced by the *Saint George* (106x25), also built at Portland, in 1825. It was wrecked by ice in 1835. The *Saint John* (57x14), was built at Deer Island in 1826 and retired in 1832, the *John Ward* (114x20) at Carleton in 1831 and served for a decade, the first *Woodstock* (92x16) at Portland, New Brunswick in 1832 and served until 1836, and the *Fredericton* (110x19), at Portland in 1836 and retired in 1849, and the *Victoria* (89x21), built at Carleton in 1839. The *Reindeer* (130x14) was built at Fredericton in 1845 and served until 1860, when it was wrecked on the Saint John River.

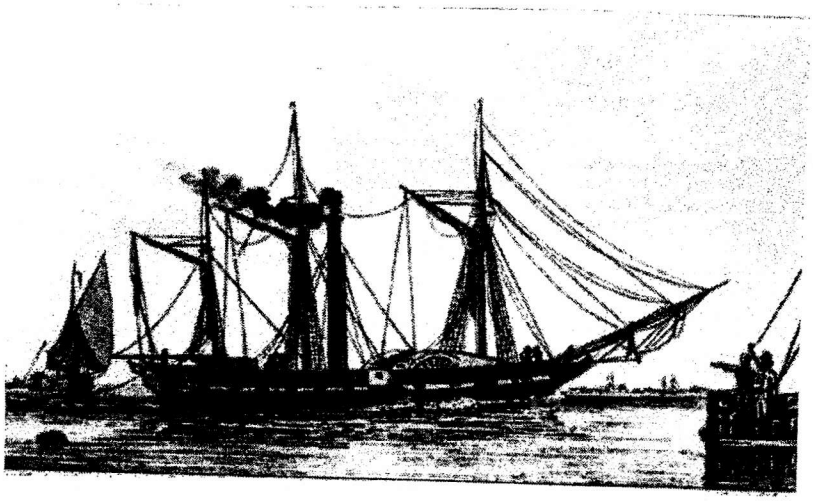
The large wooden-hulled, sail-equipped side-paddler *Royal William* was originally intended to serve on the St Lawrence and beyond, between Québec and the Atlantic ports. It was commissioned by John Molson and his fellow investors, built at Québec by J.S. Campbell and George Black, and launched in 1831. It was towed to Montréal, where its Scottish-built steam engines (51-inch cylinders, with five-foot strokes) were installed by Bennet & Henderson. With a gross tonnage of 1,370, it was 160 feet long, with a 44 foot beam and for the next six years was the largest passenger ship in the world. It made several trips to the Atlantic Provinces but its profitability was damaged by the 1832 cholera epidemic. So the owners decided to sell it in Europe, and it sailed there in 1833, in 25 days, using its steam engines, and coal for fuel. It was eventually sold to Spanish interests and its name changed.

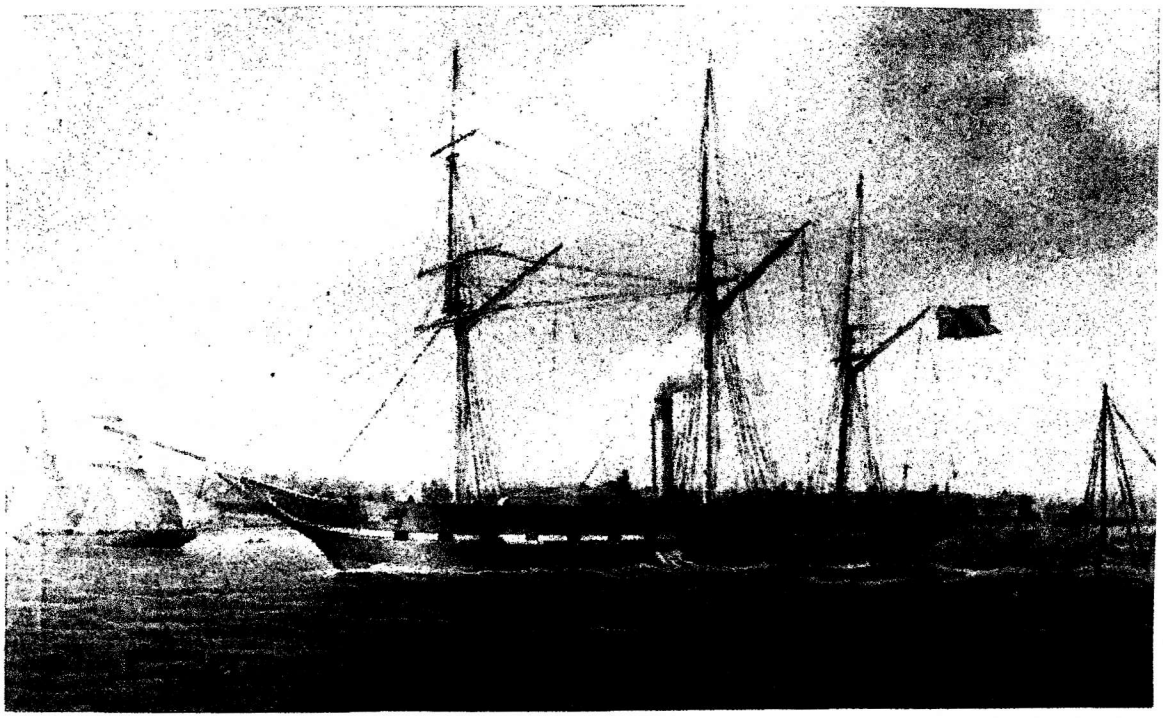
The *Royal William* is often credited with being the first *steamer* to make the Atlantic crossing, having done so under steam for the whole journey, except for a short period for boiler cleaning. However, another vessel sometimes credited with being the first to cross was the American *Savannah,* actually a hybrid sail-steam ship, built in 1818, which did a small part of the trip under steam in 1819. In fact, after its return to the United States, this vessel - as a commercial failure - was converted fully to sail. A third contender, which also sailed both ways, in 1827, was the British-built, Dutch-owned wooden-hulled steamboat *Curaçao.* It had two 50 hp engines, and is reported to have used these for 11 days on the outward trip and longer on the return.



Savannah

Sketch of *Curaçao*



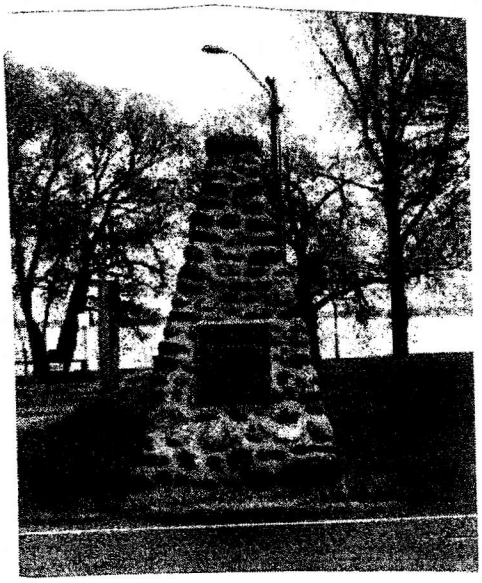


Sketch of the *Royal William*

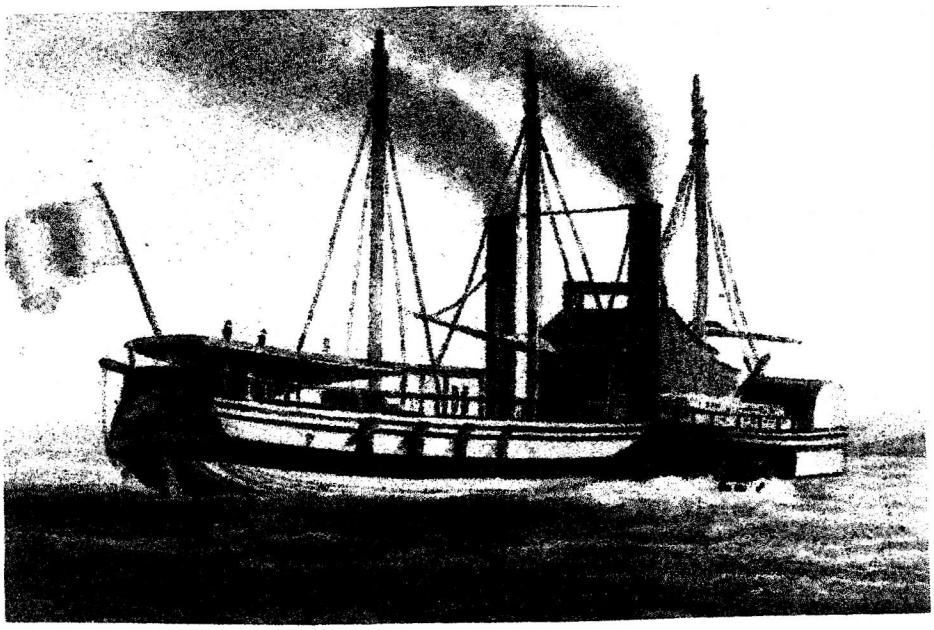
Early Ontario Vessels

At the end of the War of 1812, shipping on Lake Ontario was limited to sailing vessels until the appearance of the first two steamboats: the Canadian *Frontenac* and the American *Ontario.* Which was actually the first has been argued. The *Ontario* was not launched, at Sackett's Harbour, New York, until after the Canadian vessel, but entered service before it. The American vessel was also smaller, 110 feet long and 240 tons.

The *Frontenac,* launched in 1816 at Henry Finkle's boatyard at Ernestown (which was renamed Bath in 1819), did not enter service until 1817. Equipped also with masts and sails, it was 170 feet long and had a beam of 32 feet, two B&W engines, paddle wheels with a 40-foot circumference, and a gross tonnage of 700. Initially, it took nine days to complete the round trip from Kingston to York. The *Frontenac* remained in service until 1827, when it was destroyed by fire at Niagara. No formal drawings for the vessel have survived.



Ontario Historic Plaque honouring Finkle's Point boatbuilding yard, at Ernestown (Bath)



Sketch of the *Frontenac*

Built at Prescott between 1820 and 1822, originally for the Prescott-Kingston run carrying passengers and mail, the *Dalhousie* (76x32) was owned by the entrepreneur/forwarder Horace Dickinson. A side-

paddler, its cabins for ladies and gentlemen were described as 'commodious'. The long delay in launching was apparently due to mix-ups and delays in the arrival of its engine from England.

The first paddle-wheeled steamers to navigate the Bay of Quinte was the *Charlotte* (131x18), built at Finkle's Point in 1818. For the next 20 years, its route was from the head of the Bay to Prescott and, eventually, to places further down the St. Lawrence. The 145-foot long *Sir James Kemp* was launched in 1828 from the same yard. It had a 45 hp engine, and was retired in 1842. Other steamers of this period included the *Brockville* (145x33), built in 1833, but rebuilt as a schooner in 1848, the *Bay of Quinte* (154x24), built in 1852 and retired 27 years later, and the *Queen Victoria* (130x20), built at Niagara in 1838 and wrecked in 1851. The *City of Toronto* (147x32), built at Niagara in 1841 and abandoned in 1877, the *Princess Royal* (168x21), also built at Niagara in 1841, but wrecked in 1865, and the small *Wolfe* (80x13), built in 1835 at Kingston. It made regular trips between the Bay and Toronto.

By the mid-1820s there were at least five other paddle-wheelers regularly serving Lake Ontario from Prescott to York and Niagara, four of them Canadian: the *Frontenac,* the *Niagara,* built at Burlington in 1825, but rebuilt as a sailing ship in 1832, the *Queenston* (146x24), built at Queenston in 1825, and broken up in 1841, and the *Canada* (127x22), built at Toronto in 1826, but wrecked in 1836 and rebuilt as a sailing ship.

In 1828, Robert Hamilton built the *Alciope* at Niagara. In 1832 its name was changed to the *United Kingdom.* In 1830, John Hamilton of Kingston built the *Great Britain* (147x23) at Prescott, the first of the luxury steamboats on Lake Ontario. John Hamilton later owned the *Lord Sydenham* (197x25), an iron-hulled steamboat built in Scotland, dismantled, and brought to Prescott for re-assembly and launching in 1839.

The Niagara Dock Company became one of the principal builders of paddle-wheelers in the later 1830s, led by Scottish-trained Canadian Robert Gilkison. The *Traveller,* for example, was 145 feet long with a beam of 24 feet and a speed of 12 mph. The *Queen Victoria* was 130 feet long, with a beam of 24 feet and had a 50 hp engine.

The late 1840s saw the introduction of compound steam engines and propellers (which saved on fuel) in steamboats, as well as the increasing use of coal as their principal fuel. And as iron-hulled vessels became more common in the 1850s, the railways began to compete with them for freight, passenger and mail. The steamboats then turned their attention increasingly to the tourist/excursion trade.

The First Ottawa River Steamboat

The Hudson Bay Company used the Ottawa River as its transportation thoroughfare long before the coming of the steamboats. However, the Long Sault Rapids on the river between Grenville and Carillon (Québec) prevented the through-flow of steamer traffic between the Lake of Two Mountains and Ottawa until 1834 and the completion of the Ottawa River Canals. Even then, the relatively small dimensions of two locks at Grenville limited steamboat usage.

The hull of the first paddle-wheeler intended for service on the lower Ottawa River - also called the *Ottawa* - was built by John Bruce at Hawkesbury early in 1819. It was then run down through the Long Sault and Vaudreuil (île Perrot) Rapids to Lachine for the installation of the engine and machinery by Joseph Lough. The vessel did its trials on Lake St. Louis in October. No sketch of it appears to exist, and no information about it carrying a mast and sails, but it was reported to have a keel 70 feet long and a 20-foot beam, a draft of around three feet, and a 20 hp engine, possibly the second engine built in Canada. The schedule planned for the *Ottawa* for 1820 included a weekly trip from Lachine up river to Pointe Fortune, through the Vaudreuil Rapids on the west side of Île Perrot. It never did this, leaving the work to the Durham boats and bateaux that were already doing it. Instead, the *Ottawa* provided freight, passenger, towing and ferry services on Lake St. Louis.

After only one season with questionable commercial returns, the *Ottawa's* owners decided to sell the steamboat by (unsuccessful) auction and later by (successful) private sale. However, the new owner died and the vessel went on sale again, in March 1822. Having been tied up at wharfside for months, the vessel had deteriorated badly and had to be auctioned off in pieces. The engine went back up to Hawkesbury, to be put into the steamboat *Union,* then being built at Hawkesbury. For the hull, the end came in 1827, when the steamboat *Louisa* ran into its sunken hulk near the mouth of the Lachine Canal.

The *Ottawa* had, however, established the usefulness of a steamboat service on Lake St. Louis. To reinforce this, the *Perseverance* (80x15) was the first one built and launched at Lachine, in 1821. It longer but narrower than the *Ottawa* and had less than half the draft. Its engine, built by John Bennet, generated only 10 hp, but was supplemented with a mast and sails. The *Perseverance* also ascended the Île Perrot rapids at the entrance to the Lake of Two Mountains and the Ottawa River, successfully, at the Ste. Anne side of the island, using warping as well as steam power. It then went on to Pointe Fortune and the foot of the Long Sault Rapids at Carillon. After some celebrations, the *Perseverance* sailed back to Lachine, but it appears that it did not make this trip again.

Around this same time, Horace Dickinson introduced paddle-wheeler service to Lake St. Francis and from Prescott to Kingston, replacing trips previously taken by stagecoach. The *Dalhousie,* built at Prescott in 1822, with a 20 hp English-made engine, and the *Cornwall,* built in 1823 at Coteau, with a 16 hp engine, served these routes.

Early Canadian Engine-builders

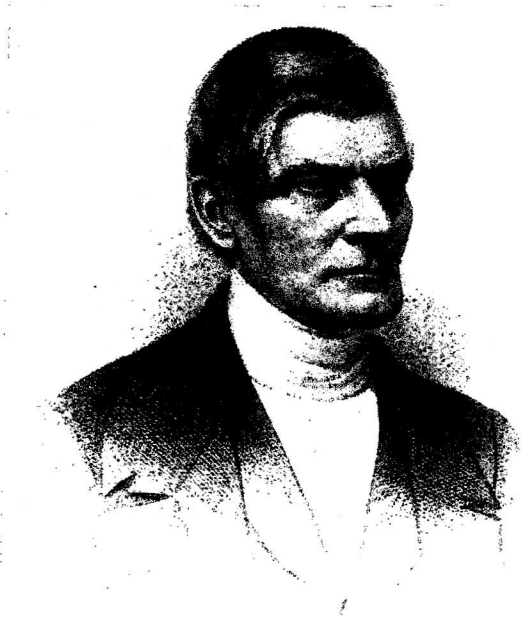
McNally and McQueen have noted in their CSME *Bulletin* article on the early Canadian marine steam engine founders that they were essentially craftsmen but provided a significant part of the foundation for the subsequent profession of mechanical engineering in this country.

As noted above, the relatively unsuccessful engine for the *Accommodation* was built in Montréal. As a result, Molson ordered engines from Boulton & Watt for several of his subsequent vessels. One of the men who came to install and operate these engines was John Bennet, who was employed by Molson from 1812 until 1819, after which he acquired partners to build them and later co-founded the Bennet &

Henderson engine foundry to build some more.

Another prominent Montréal engine founder was an American, John D. Ward, who with his brothers established what became the well-known Eagle Foundry that built many marine engines. The Foundry was sold to another American, George Brush, in 1842. However, competition from establishments that could build hulls as well as engines drove Brush into other businesses. In the later 1840s, the engine-building partnership of Gilbert, Milne & Bartley was formed, exploiting water power sources along the Lachine Canal. Gilbert was also associated with the Beaver Foundry and Bartley with the St. Lawrence Engine Works.

Bennet



Ward

At first, Montréal provided the engines for vessels built at Québec City. However, James Tibbets established an engine foundry and shipyard at Lévis in the late 1840s. His relative and associate, Benjamin Tibbets, designed and built the first Canadian vessel to have a compound steam engine. At Saint John, New Brunswick, the foundry firm of Harris & Allen was established in 1831. Some years later, George Fleming established the Phoenix Foundry.

On Lake Ontario, the *Frontenac* and the *Charlotte* both had foreign-built engines. In the case of the *Frontenac*, this was a B&W single cylinder engine rated at 50 hp. In 1835, George W. Yorker built an engine for the *Wolfe.* In the 1840s, the Kingston Foundry built several marine engines and even more during the 1850s. The engine was built at Niagara by the Harbour & Dock Company in 1835, and 21 others in later years. This company also built the first iron-hulled vessel in the Great Lakes in 1847, the plates having been prefabricated in Scotland. The foundry superintendent, John Lowe, had earlier worked for Bennet & Henderson.

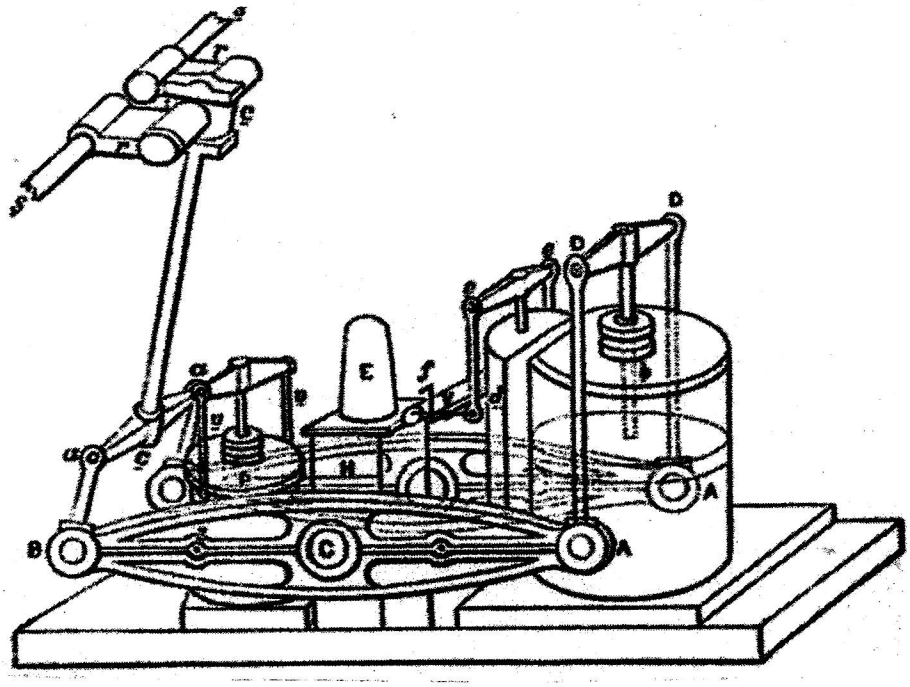
A number of foundries, machine shops and engine builders were established in Toronto between the 1830s and the 1850s, but none contributed significantly to marine engines. The railways became their principal customers. The most important marine-related company was the Polson Iron Works, which was not established until 1883, by William and Franklin Polson. The company also established a shipyard at Owen Sound where, in 1889, it produced the first steel ship in Canada, the screw-propelled *Manitoba* (303x38). The company failed in 1919, having over-expanded during . World War I.

As noted by McQueen and McNally in their CSME article:

> The side-wheel design was well suited to the St. Lawrence, being more efficient than either rear paddle wheels (for shallower water) or screw propellers (for deeper water). There were no gearboxes, the speed was controlled by the duration of steam admission and of suction from opening to the condenser at opposite ends of the cylinder. The steam was low pressure (6-10 psi, reducing leakages and the danger of explosions) and the condensing steam created a good vacuum. The boilers were initially cast with single or double fireboxes but later from wrought iron sheet, shaped in a 3-roll bender and hot riveted, providing pressure tightness and possibly with multiple pressure-welded fire tubes.

Types of Early Engines

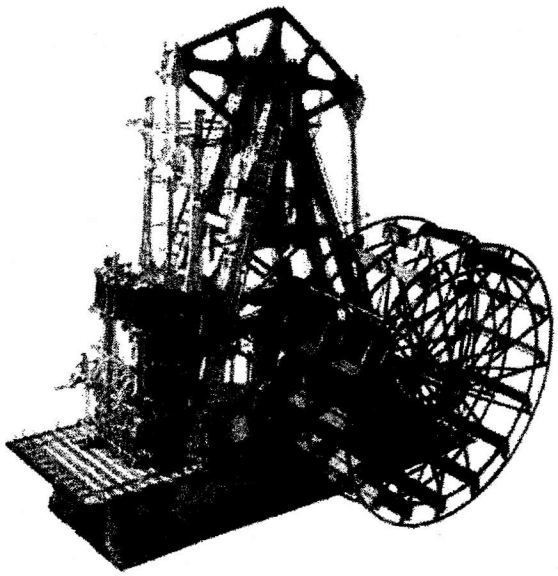
Two basic types emerged in the early years of steamboats: the side-lever type, favoured in Europe; and the walking-beam type favoured in the United States. Early Canadian steamboats used both.



Sketch of side-lever engine

The typical side-lever had a pair of heavy horizontal beams (or levers) secured to one another by a pin, which allowed the levers to pivot through a small arc. The cylinder stood vertically between the levers at one end of the engine. The piston rod was attached to a horizontal crosshead above it, whose ends were attached by vertical rods to the ends of the side levers. The other lever ends were connected vertically by linkages to a crosshead attached to the shafts driving the paddles on either side of the vessel. The advantage of the side lever engine was its low centre of gravity, which helped the vessel's stability in rough weather. It was, however, a heavy piece of equipment which could stress the hull considerably.

The other basic engine had a 'walking' (i.e. moving) beam, similar to the large beam found on an original Boulton & Watt stationary engine. Vertical rods from either end of the beam were attached to the cylinder at one end and, at the other, to a crosshead mechanism that translated vertical into horizontal motion and drove the shafts that turned the side paddles. Beams were usually diamond-shaped struts rather than solid metal and, in view of the overall height of the engine, could usually be seen rising from the vessel's superstructure. Walking-beam engines were favoured for vessels travelling potentially calmer, inland waters and were lighter than side levers. Their height, however, exposed the beam and the top of the rods to the weather.



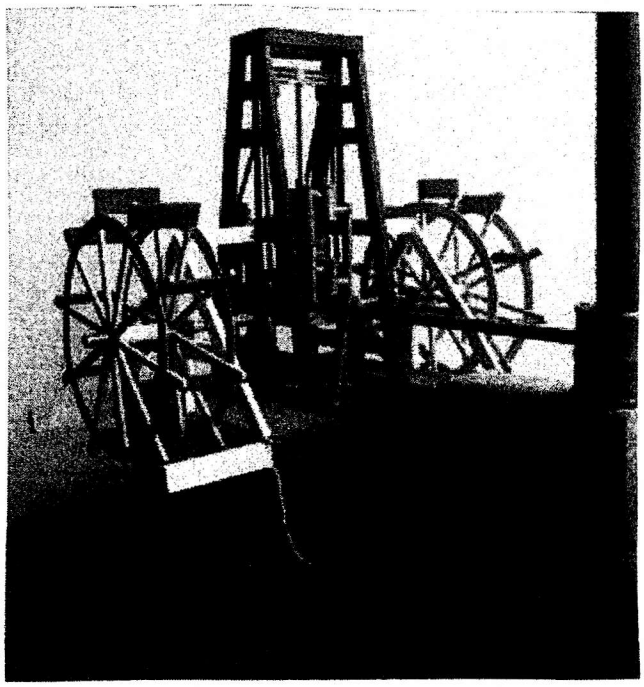
Model of walking-beam engine

The idea of using horizontal or inclined cylinders, with their lower centres of gravity, instead of vertical ones, was resisted for some time after the introduction of steamboats in Eastern Canada. It was thought that the lower halves of the cylinders and pistons would develop excessive wear. But with time, experience and higher steam pressures, this idea became acceptable.

Very occasionally, steamboats appeared in Canadian waters - more often in Eastern American ones - with 'steeple' engines. In these, the idea was to get rid of the walking beam and the side lever by using a vertical guide at the top with a crosshead, rod and crank below to turn the crankshaft, resulting in a more triangular top assembly, which was usually covered by a wooden housing. Steeple engines were

sometimes referred to as 'crossheads.'

Photo of later inclined engines and paddles



Model of steeple engine

The components of steamboat and stationary engines installed in Eastern Canada before the 1840s, regardless of origin, were not interchangeable, so each unit was 'custom-made' as far as replacement parts were concerned. Also, many were Canadian designed and built (usually on a British or American model). As Walter Lewis notes in part in his article (page 21):

> The ratio of stationary to marine production varied from foundry to foundry....The emphasis on marine engines in this era is not surprising. An abundance of mill sites still made water-powered mills more economical, while the demand for marine engines was expanding steadily. Nevertheless, although the percentage is unclear, a number of marine engines....ended their careers in industrial plants.
>
> There was a definite bias in favour of 'Canadian' engine builders in the region. To some degree, this may have been the product of the tariff on finished iron products, to which can be added the cost of transporting imports. This made British engines far too costly. One observer in 1831 added two other reasons for avoiding British engines, "principally the higher price demanded, and the chance of misunderstanding between the engineer and the builder of the boat."
>
> In consequence, Montréal foundries dominated the market between Québec and Niagara before 1830. The emergence of Upper Canadian foundries was not a real threat to Montréal's dominance until a talented Scottish and Montréal-trained founder, John Lowe, set up shop in conjunction with the shipyard at Niagara. Above the Falls, the Montréal presence was always negligible, with the initial demand being met by a number of relatively anonymous engines from small foundries in Buffalo and Cleveland.

Boilers

Information on the sources, types and manufacture of boilers for early steamboat engines appears to be relatively scarce. On the other hand, the work of Watt and others on steam engines apparently encouraged other engineers, early in the 19th century, to develop higher pressure boilers, for both railway and marine applications.

Suffice it to say that long, cylindrical 'wagon' boilers, which originated with Watt, were in common use in the early Canadian steamboats, when pressures were still low and leaks and other mishaps less common. As well, steam pressures rose in Canadian vessels much more slowly over time than, for example, those plying the Mississippi, where the unofficial races that were run between steamboats tended to result in excessive (and unregulated) boiler pressures...and explosions. Another problem from that river did not recur in Canada. There was no 'Mississippi mud' in Canadian lakes and rivers. And apart from the lower estuaries of the St. Lawrence and some B.C. Rivers, there was also no salt water either. The early steamboats also used fire tube marine boilers of the Scotch, Cornish and Lancashire types. The usual Canadian fuel was wood. There was plenty of it near at hand, but vessels had to refuel frequently, and 'wooding-up' could be a chore that involved passengers as well as crews. Coal was more efficient and required fewer refuelling stops.

Wooden Hulls

It is pertinent to note that, in the days of wooden hulls, when rot could develop after only a few years of operation, that a set of engines could be transferred from an old vessel to a new one, sometimes more than once. This happened, for example, to Molson's *Swiftsure* and *New Swiftsure.*

Wisdom on the construction of the wooden hulls of steamboats seems to be even scarcer than for boilers. However, an innovative description that appeared in Mackey's book on 'Steamboats' (page 86) has been attributed to shipbuilder William Annesley. The steamboat bearing his name was built at Montréal in 1824. He writes:

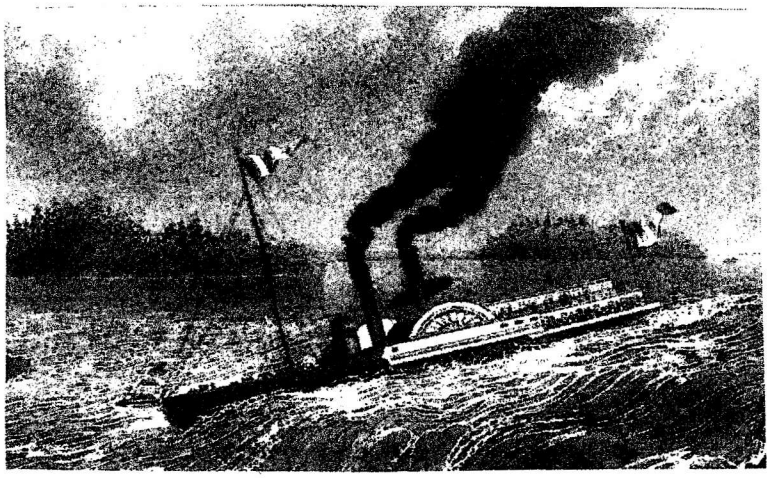
> ...in making the hull of the ship, boat or other vessel of three or more layers of planks, the direction of the grain of the alternate layers proceeding from bow to stern of the vessel, and the direction of the grain of the intermediate layer or layers passing from one gunwale around and under the vessel to the other gunwale without being cut or separated by the keel, the whole of these planks being well pinned, treenailed, or bolted together, without frame timbers, beams, knees, breast hooks, or stem; the thickness and number of the layers of plank must depend upon the strength required for the tonnage of the vessel and the service in which (it) is intended to be employed; for small boats, where great strength is not required, I sometimes make use of only two courses of planking, that is to say, one outside longitudinal layer, and one inner transverse layer.

During the first half of the 19th century, in Eastern Canada, the average age of hulls appears to have been 10 years and, for boilers, about the same.

Rapids and Other River Hazards

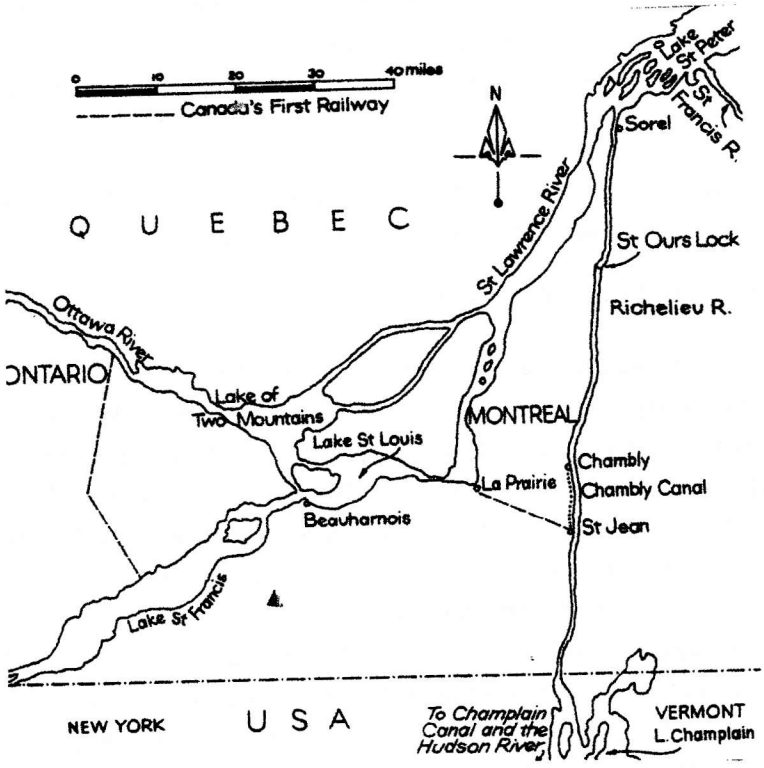
Major impediment to the growth and development of steamboat services in the St. Lawrence-Ottawa-Niagara regions were the various rapids on the three rivers. Running these rapids (except Niagara) downstream was often possible, given the right water conditions and skilful pilots, but getting vessels back up river was a problem, especially for the larger ones. As a result, canals, dams and locks had to be built. Even then, the lock sizes determined the vessels that they could accommodate, with the result that individual units in the system had to be rebuilt from time to time (the construction of the St. Lawrence Seaway in the late 1950s being the latest iteration of this). Another canal development factor in the region was the decision by the British Government in the 1820s, following the War of 1812, to construct a through passage by water between the St. Lawrence and Lake Ontario that avoided contact with American territory. And a third factor was the completion, in the United States by 1825, of the Champlain and Erie Canals that carried traffic by water from Lakes Champlain and Erie to the Hudson River and the ice-free port of New York. The one benefit these canals had for Canada was that many of the civil engineers who later built canals on the Canadian side were trained during their construction.

Historically speaking, the first canals and wooden locks in the St Lawrence region were very small, built in the late 1770s at the western entrance to Lake St. Louis to take bateaux and canoes loaded with military supplies. But the advent of steamboats radically changed the physical needs of the route from the Great Lakes to the Lower St. Lawrence and the sea.



Sketch of paddle-wheeler 'shooting' the Lachine Rapids in the late 1840s

Refer also to map on page 6 for Lachine Canal and Île Perrot Canals at Vaudreuil and Ste. Anne



Map of Chambly Canal

Lake St. Louis was the next body of water in the St. Lawrence above the Lachine Rapids, which also provided the junction between it, the Lake of Two Mountains, and the Ottawa River with its own rapids. And above Lake St Louis was Lake St. Francis, which had rapids, and further westwards still, there were the Long Sault Rapids at Cornwall and another series at Williamsburg before Lake Ontario was reached.

The first major canal on the St. Lawrence was built between Montréal and Lachine, to bypass the Lachine Rapids. Work was begun in 1821 and completed in 1825. However, the demand for its extensive enlargement became very loud in the late 1840s, but the work was not completed until 1862. As noted already, steamboats were often able to 'shoot' the Lachine rapids safely, but getting back up river was a different matter. This was made possible by the Lachine Canal.

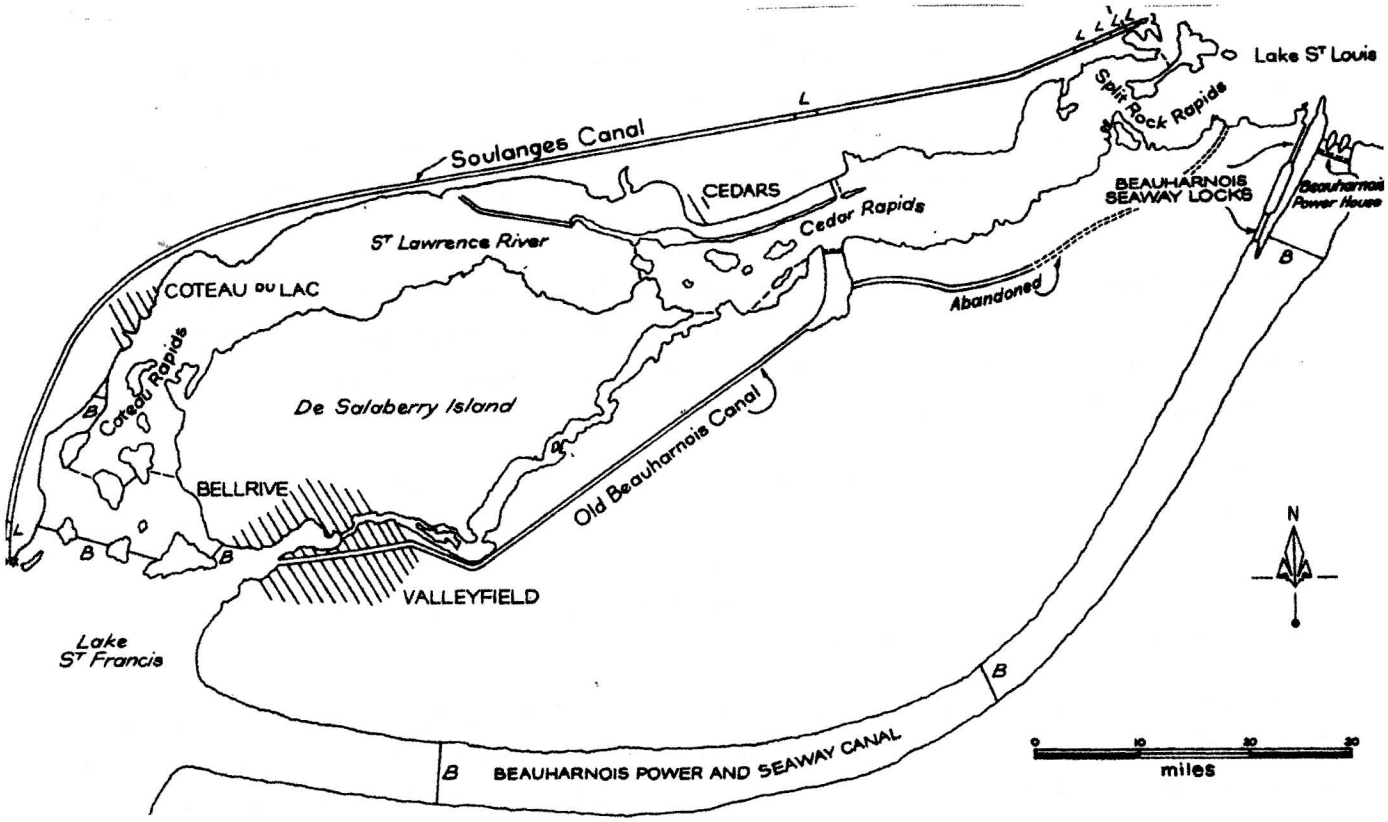
Île Perrot, which guarded the entrance to the Ottawa from the St. Lawrence, had rapids on either side of it. Again, downward passages could often be negotiated, but not so the upward ones. On the west side of the island, at Vaudreuil, a privately owned wooden lock was built as early as 1816, but the restricted access to it was bothersome. Consequently, the Government built a lock to the east of Île Perrot, at St. Anne, but it was not open to traffic until 1843.

The Champlain and Erie Canals also inspired the development of the Champlain-Richelieu River route to Sorel on the St. Lawrence, but work on the Chambly lock and canal were not begun until 1833 and completed ten years later, after the Union of the Canadas - and after the railway between St. Jean and La Prairie had been opened. The lock and dam upriver at St. Ours were completed in 1849.

The first set of rapids on the up-river journey from Lake St. Louis were known as the Cascades or as the Haystack and Split Rock Rapids. The second further upstream were Cedar Rapids and, at the beginning of Lake St. Francis, the Coteau Rapids. The first Cascades canal and lock were built in 1805 and could accommodate Durham boats. A larger canal and lock were built at Coteau in 1817. Both sets were rebuilt between 1842 and 1845, but as a single canal, 11 miles long - the Beauharnois - on the south shore of the St Lawrence. However, to provide an even deeper canal, the Beauharnois was replaced by the 14 mile Soulanges Canal on the north side of the river in the 1890s, by which time the St. Lawrence canals were all 14 feet over the sills.

Ottawa River canals and locks, which stretched for 15 miles, northeast to southwest, were built between 1819 and 1834 at Grenville, Chute à Blondeau and Carillon in Québec to circumvent the Ottawa's Long Sault Rapids. For many years, the size of two locks at Grenville limited the steamboats that could pass through them, with the result that larger ones from the south had to terminate at Carillon and new vessels begin the journey north-westwards from Grenville to Ottawa. However, Carillon and Grenville were linked on land by, first, a roadway and, later, by a railway. The Ottawa locks and canals were not rebuilt until the 1870s, when the one at Chute à Blondeau was eliminated.

The Rideau Canal was built between 1826 and 1832, between Ottawa and Kingston, and became the link that completed the triangle of strategic avoidance of American territory on the south shore of the St. Lawrence. The first steamboat to traverse this Canal, in May 1832, with Colonel By on board, was the *Pumper* (80x15), built at Kingston in 1829.

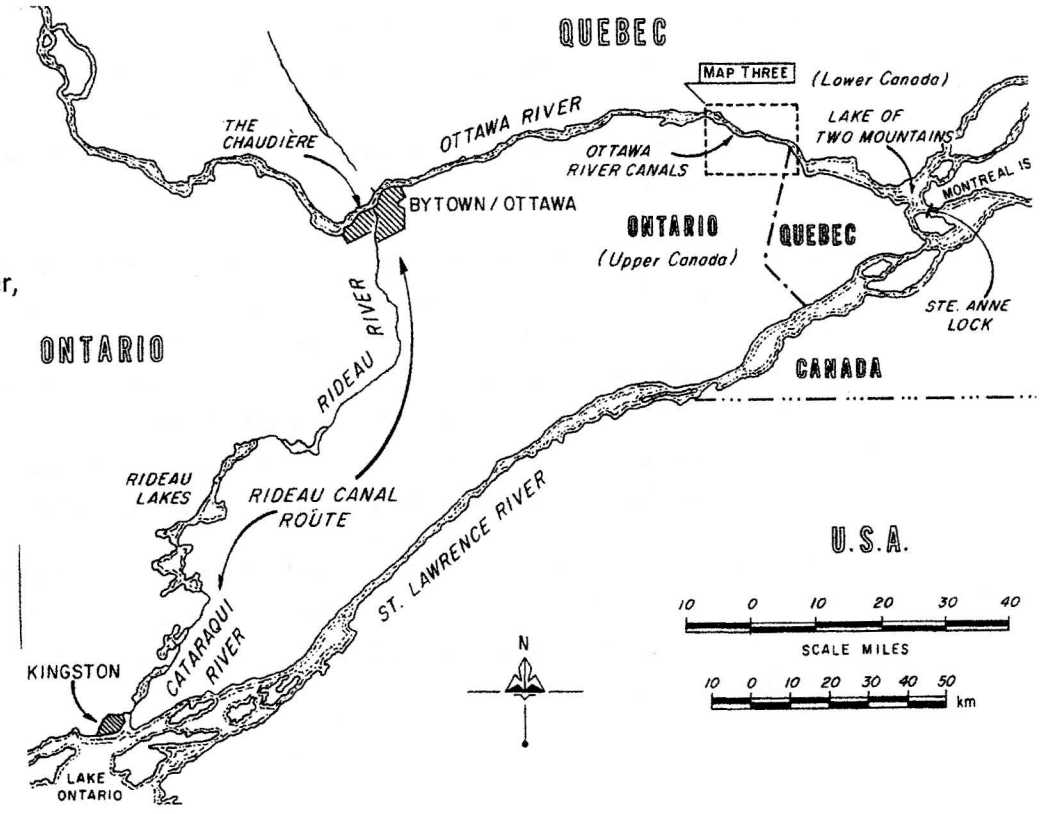


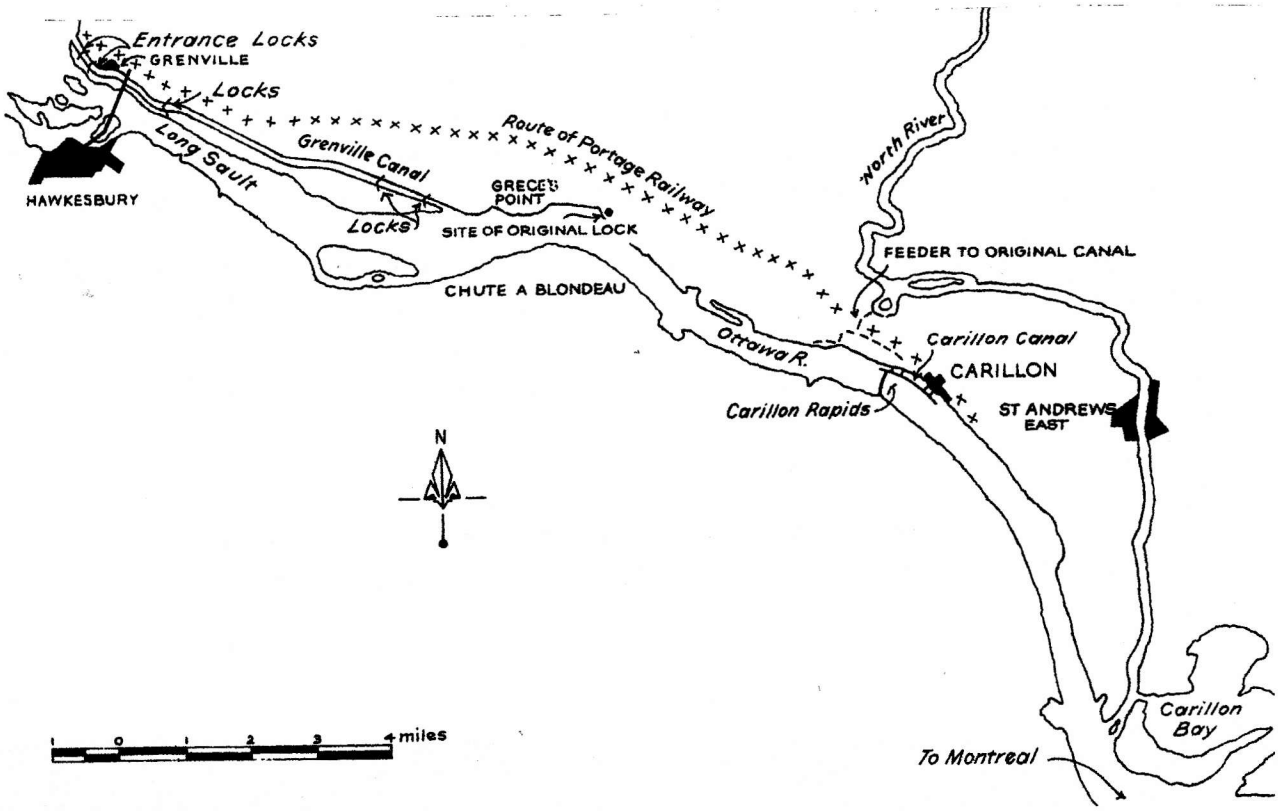
(Recent) map showing the old canals and locks between Lake St. Louis and Lake Ontario as well as

The present Seaway (Beauharnois) Canal

The St. Lawrence, Ottawa River,

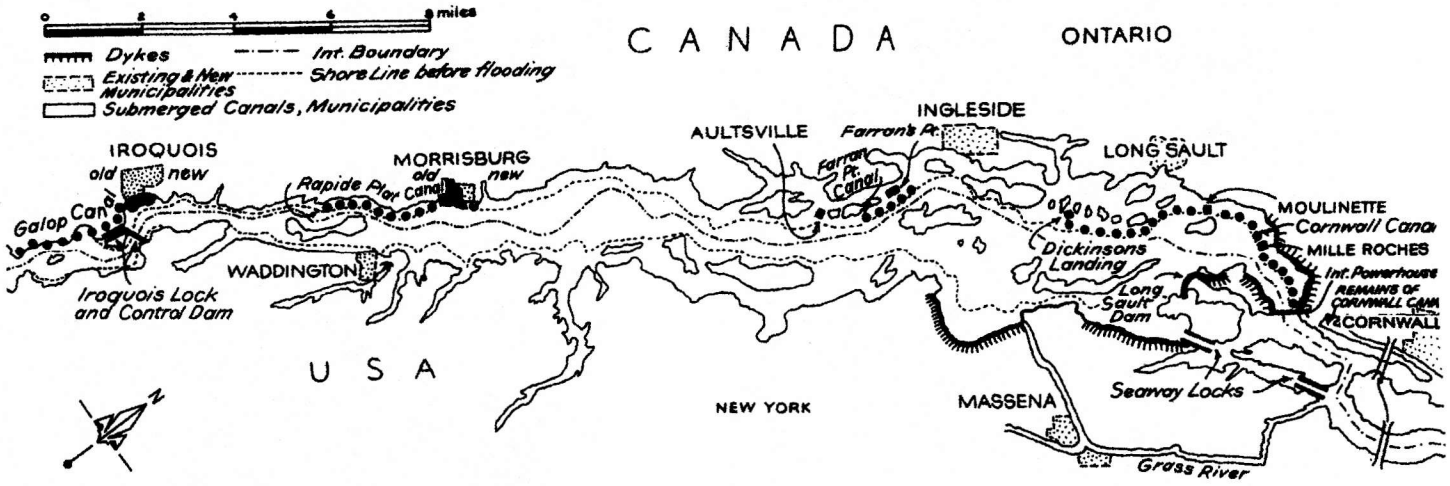
and Rideau Canal triangle





Map of the Ottawa River Canals

Eleven miles long and circumventing the St. Lawrence Long Sault Rapids, the Cornwall Canal was built beginning in 1842, having been delayed, as other riverworks were, by the 1837 rebellions in Lower and Upper Canada. Work on the Williamsburg canals began at Farran Point in 1844 and was completed at Galop in 1851.



Map of the Williamsburg and Cornwall Canals

The opening to vessels of the various canals between Lake Ontario and the Lower St Lawrence resulted in diminished use of the Rideau Canal for freight, passengers and mail destined for Lake Ontario towns and settlements and in the dredging of the river downstream from Montréal, which began in the 1840s.

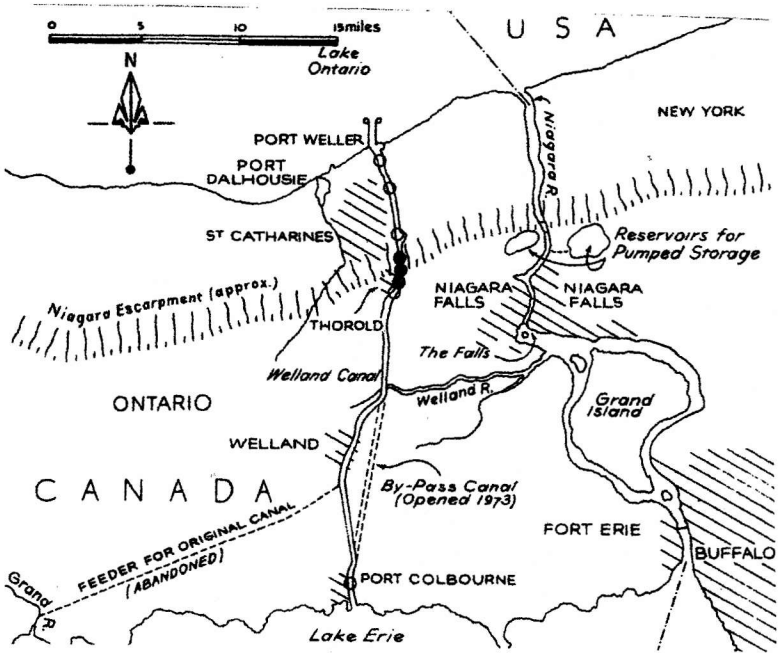
At the other end of Lake Ontario, work on 'William Merritt's Ditch' - the first Welland Canal - to overcome the barrier of Niagara Falls, began in 1824 and was completed in late 1829. Unusually, horses were used at first to pull vessels along some of this canal. Not surprisingly, the completion of the Erie Canal influenced the building of the Welland. Very soon, however, steamboats began to need a larger canal, and, after 1841, the new Union Board of Public Works agreed. So the rehabilitation that became the Second Welland Canal was completed in 1845.

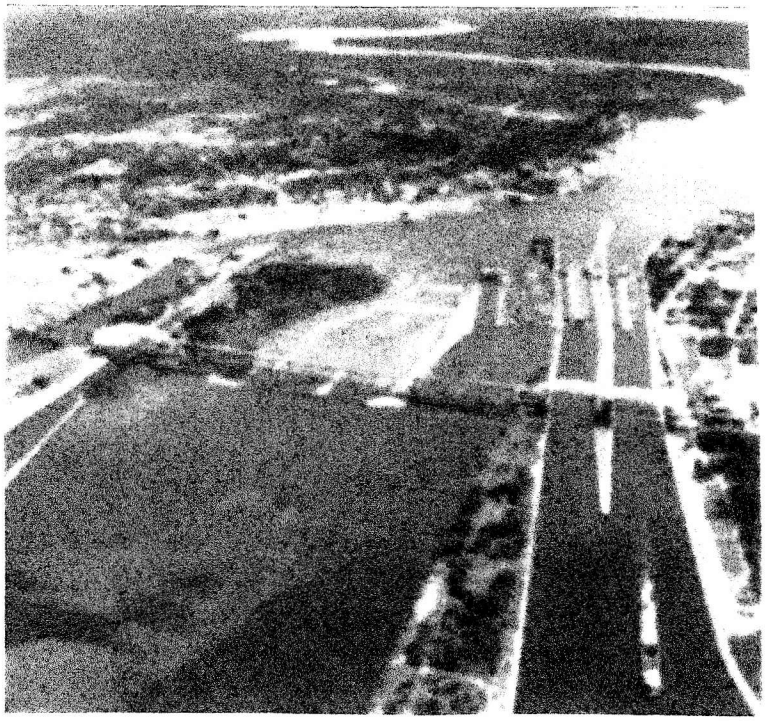
Significantly, the Union of the Canadas in 1841 accelerated the development of the St. Lawrence canals through its Board of Public Works, headed initially by two distinguished Canadian engineers, Hamilton H. Killaly and Samuel Keefer.

Killaly

Keefer

Finally, on the western Great Lakes, canals and the locks were built on the St. Mary's River at the junction of Lakes Huron and Superior, where the drop in water level between the lakes was around 20 feet, most of it at the present-day twin Canadian and American cities of Sault Ste. Marie. Here, the earliest (Canadian) canal and wooden lock were also built for canoes and bateaux - associated, this time, with the fur trade and the North West Company - at the end of the 18th century. They were partially destroyed during the War of 1812, but were rebuilt more substantially after it. Again, the coming of steamboats changed things. However, it was not until 1853 that work began on the American side to build two new, much larger locks in tandem. The work was completed in 1855 and the locks were used by vessels from both sides of the border. Improvements were made in 1871 and 1881. Between 1887 and 1895, the Government of Canada built the Canadian lock on its side of the border.





(Recent) map of the Welland Canal (Recent) photo of the Canadian and U.S. locks at S.S.M.

Upper Ottawa River steamboats

The lumber business, passengers and settlement there were largely responsible for the development of steamboat services on the Upper Ottawa River as far as Mattawa.

The steamboat *Union* was the second built at Hawkesbury, in 1822. This vessel was 120 feet long, with a beam of 30 feet and shallow draft. It used the 28 hp engine from the abandoned *Ottawa.* Its 'beat' for 11 years was between Grenville and Ottawa/Hull.

No locks were ever built at Ottawa's Chaudière Falls, although timber slides were. The next up-river trip would begin at Aylmer on Lac Deschênes and continue to the Chats Falls Rapids and Fitzroy Harbour. Above Chats Falls, there was open water to the Chenaux Rapids at Portage du Fort, and from there by stagecoach and boat over land, lake and river, by Cobden to Pembroke. From there, open water went north to the rapids at Des Joachims, and from above them to Mattawa.

The *Lady Colborne* (100x34), with a 34 hp engine, was launched at Aylmer in 1832 and served the river between Lac Deschênes and Fitzroy Harbour. In 1836 a second steamboat, the *George Buchanan,* was launched at Arnprior and served from above Chats Falls to Portage du Fort or, if the water was low, from the head of Chats Lake. For transfers between the two vessels at Fitzroy, a landing for the *Lady Colborne's* passengers and freight was added on an island in the river and a portage trail made up to Chats Lake. Later, a three-mile horse railway was built at Chats Falls to convey passengers and freight from one level to the next. In 1846, the *Oregon* (125x16) was launched for service on the Ottawa alongside the *Buchanan.* In 1846, an iron-hulled steamboat - the *Emerald* - was built and launched at Aylmer. It was 140 feet long with a beam of 19 feet, and was relatively luxuriously appointed. It gave over 30 years of service.

In the late 1840s an entrepreneur by the name of Jason Gould began a forwarding business linking Portage du Fort on the Ottawa River with Pembroke, overland, but taking advantage of both Muskrat Lake and the Muskrat River in the neighbourhood of Ross Township and the village of Cobden. The boats he used were usually oared but, in 1850 and in order to speed up his service, he devised a primitive stern-wheeled steamboat. It was based on two big rowboats fastened together side-by-side and decked over. A space was left between them at the rear for a stern-wheel paddle to be inserted. A small steam engine and boiler were attached to the deck to drive the paddle. This deck was then covered over by another. It was called the *Muskrat* and operated for two seasons. Apparently, Gould built a second vessel in 1852, the *North Star,* and a third, the *Jason Gould,* in 1862, which - after 1854 - connected on a regular schedule with the steamboat *Pontiac,* for the trip further up-river to Des Joachims.

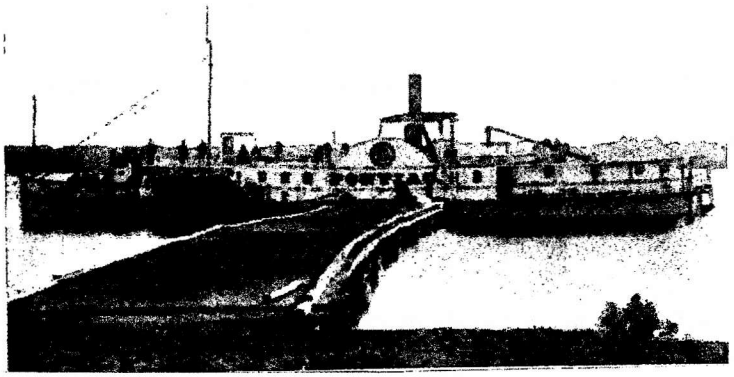


Photo of the *Pontiac*...note the walking-beam

Smaller steamboats took passengers and freight from above Des Joachims to Mattawa. From the Mattawa River, it was a short portage to Lake Nipissing, and from there down the French River to Georgian Bay - a route 300 miles shorter than the one by way of the St. Lawrence and Lakes Ontario and Erie.

Steamboats on Some Other Ontario Lakes and Rivers

Many steamboats were sailing other Ontario lakes and rivers by the middle years of the 19th century. For example...on the Trent-Severn Waterway, steamboats were used to carry or tow settlers to their new homes, and agricultural and forest products to market. This lasted into the late years of the century when the railways began to take freight and passenger business from the vessels, leaving them with what evolved into an active tourist trade.

The first lock in the system was built at Bobcaygeon in 1833, but it failed to provide the intended water link between Sturgeon and Pigeon Lakes. The first of the steamboats, the *Pemedash* (later the *Otonabee*), was launched at Rice Lake in 1832 to provide part of a service between Peterborough and Lake Ontario. In 1853, the side-paddler *Ogemah* was launched at Fenelon Falls to tow lumber from saw mills there to Port Perry. By 1858, when the railway arrived at Peterborough, there were several boats serving this lake. The numbers of vessels also grew on the other Kawartha Lakes.

In 1827, William Purdy built a dam at what is now Lindsay, which raised the water level in Lake Scugog, and increased its size, to create power for his mill. Navigation on the lake became easier. In 1838 the dam was destroyed and a smaller one built downstream. In 1844 the first lock was built at Lindsay. Sail and oar boats had been used up until this time to transport people and freight around the lake. In 1845 a horse-powered treadmill scow was built. Around this time a packet sailboat, the *Firefly,* was also built. The keel for a steamboat, the *Woodman,* a 100-foot side-paddler, was laid at Scugog Village in 1850. It was launched the following year. On its maiden voyage, the vessel reached Lindsay amid celebrations. Its top speed was 8 mph. It later followed a regular sailing schedule between Lindsay and Port Perry. The *Woodman* caught fire in 1854 at Port Perry. After this, it was sold to George Crandell, who rebuilt it and went into the freight/passenger business between Lakes Scugog and Sturgeon. And so began the Crandell steamboat empire of the Central Lakes....as well as the 1857 rebuilding of the Bobcaygeon lock.

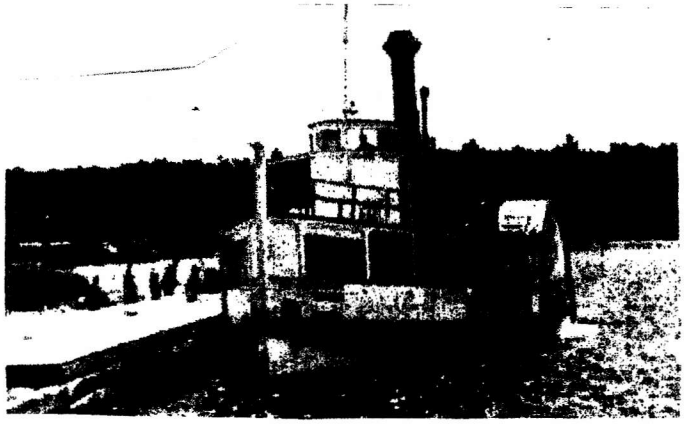
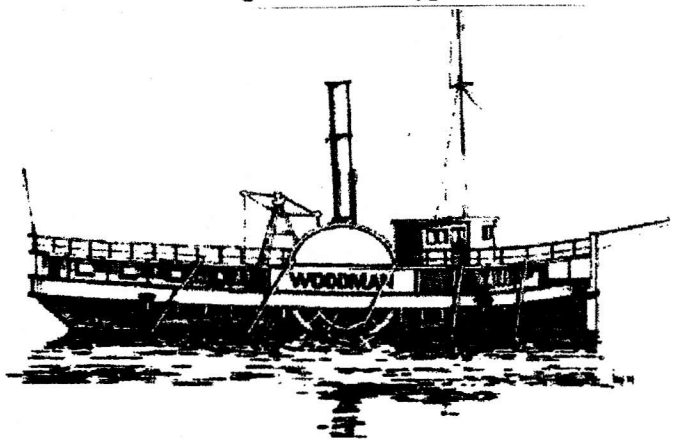


Photo of the *Ogemah*



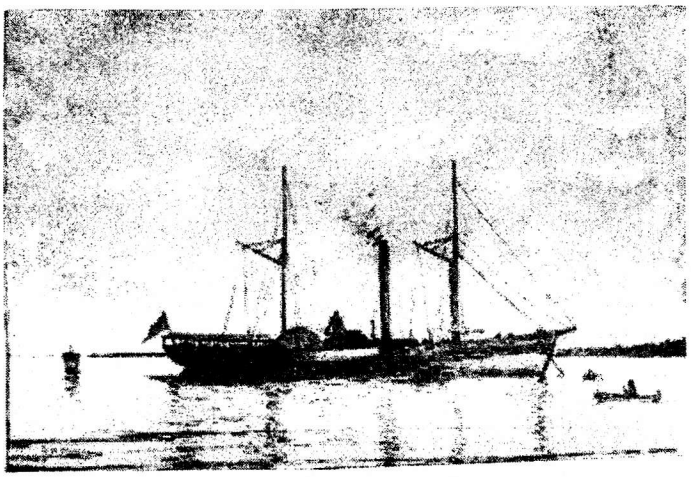
Sketch of the *Woodman*

The Muskoka Lakes were a little later in acquiring steamboats. The *Wenonah* was not launched until 1866. It was built at Gravenhurst by A.P. Cockburn, and both are associated with the subsequent growth of the steamboat fleet in these lakes. And it was Cockburn who persuaded the Ontario Government to build a lock at Port Carling linking Lakes Muskoka and Rosseau.

Lakes Erie, Huron, Michigan and Superior

In the contexts of the first half of the 19th century, early side-paddlers, and Canada, there is not much that can be said about these lakes. The first steamer on Lake Erie was the *Walk-in-the-Water,* U.S.-built in 1818. Others followed. The first Canadian-built Erie side-paddler was the *Adelaide* (120x40), launched at Chippewa in 1832. Its engines had formerly been in the *Frontenac.* It became a U.S. vessel in 1838 and was renamed the *Alliance.*

Until the Second Welland Canal was opened in 1845, there was little steamboat traffic through the first one. In Lakes Huron, Michigan and Superior, sailboats dominated and, when steamboats appeared in numbers after mid-century, they were predominantly American-built and owned, made use of propellers instead of paddles, and many had iron hulls.



Sketch of *Walk-in-the-Water*

Final words on Early Eastern Steamboats

Mackey, in his book 'Steamboat Connections', has this to say about them (page 36):

> Every one of the early steamers was an experiment. Engineers sought to pack more power into ever-lighter, more compact and fuel efficient engines; shipbuilders and others played with hull shapes and sizes and the size and placement of water wheels to find the design best suited to the waters in which a boat was to run. The trial-and-error factor helps to account for the monopolistic tendencies of the steamboat owners after spending large sums for a boat that could turn out to be slow, unwieldy and costly to operate, they

worried that a rival might launch a vessel which would outclass theirs and, by drawing away business, prevent them from recouping their investment, let alone making a profit. Of course, the experimental nature of the boats also deterred all but the most determined challengers...

A brief word about some features of steamboats in Eastern Canadian waters after the 1850s.

Around 1850, the use of paddlewheels slowly gave way to propellers and wooden hulls to iron ones which, as well, helped accommodate the additional stresses resulting from the use of propellers. Many of the early Canadian-built iron hulls were first assembled and tested in Scottish or American shipyards before being disassembled for the journey to Canada, where they were reassembled and their machinery, whatever its origin, installed.

Many of the early engines were, or were copied from, B&W side-levers. After 1840, walking-beam engines became common and were easy to spot. Their solid or diamond truss-like beams were clearly visible amidships. Some steamers had horizontal or inclined cylinder engines, especially the stern-wheelers. Eventually, compound and triple-expansion steam engines became more common. Also eventually, railways put the steamboats out of most of their businesses.

One side-paddler that had not one, but two, solid walking-beams - one for each engine - was the *Algoma* (163x22), which began life in 1841 at Niagara as the *City of Toronto,* but was rebuilt in 1864

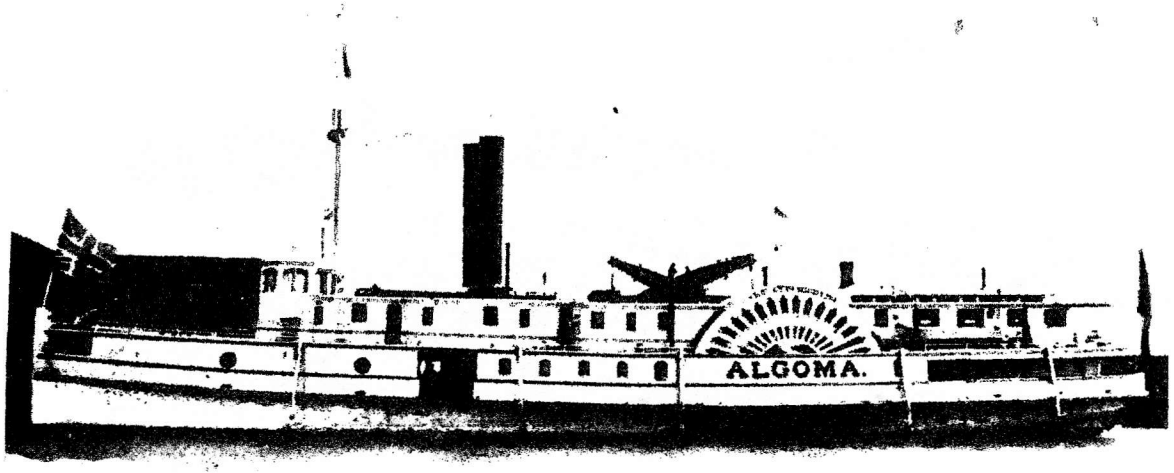


Photo of solid walking-beam paddle-wheeler *Algoma*

The *Cumberland* (205x26), built at Port Robinson, Ontario, in 1871 had a single truss walking-beam.

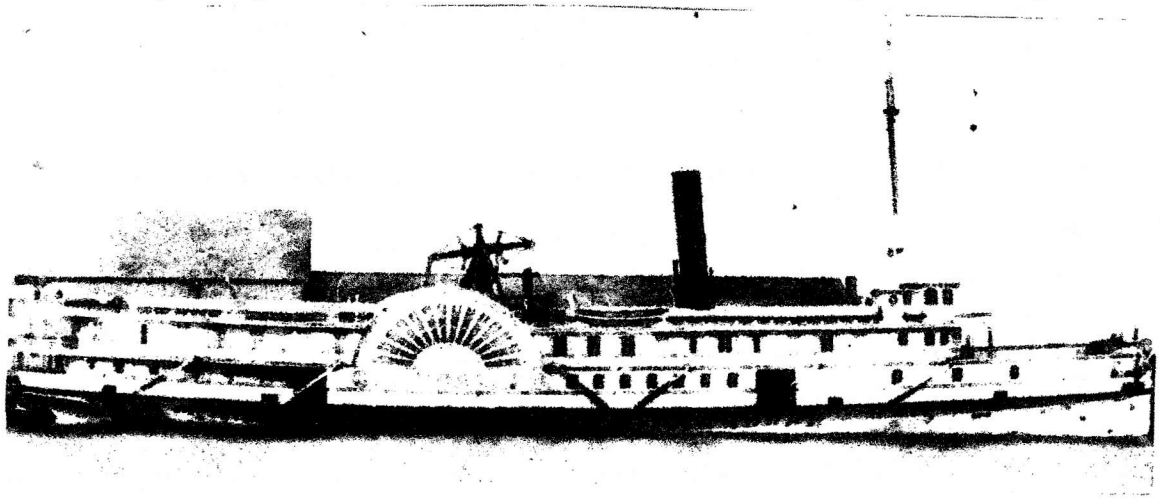


Photo of diamond walking-beam paddle-wheeler *Cumberland*

As mentioned above, following a serious shipwreck or the burning or rotting of a steamer's wooden hull, it was not unusual for the machinery from the wreck to be transferred to new vessel. Nor was it unusual, after less serious wrecks, for a steamer to be rebuilt (with the same machinery) and given a new name.

One long-surviving example of this was the *iron*-hulled *Kingston* (174x27), built at Montréal in 1855 by Bartley & Dunbar, with a beam engine and 26-foot diameter paddle wheels. It was assigned to the Toronto-Montréal service, running the rapids going down river and using the canals coming back up.

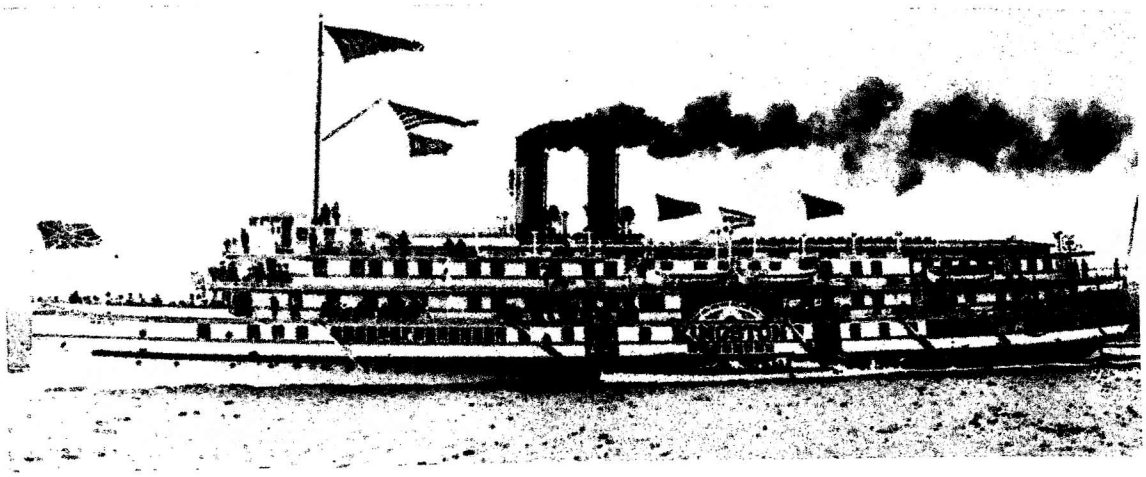


Photo of the original *Kingston*

During a trip on June 11, 1872, there was a fire on board and the vessel was beached on Grenadier Island. The hulk was salvaged, towed to Kingston and the vessel rebuilt, with the same engine...and renamed the *Bavarian* (176x27). On November 7, 1873, another fire occurred. The hulk was again

salvaged, towed to Kingston, rebuilt and launched as the *Algerian* (175x27), with a new engine. In 1904, the hull was rebuilt and the name changed to *Cornwall.* In 1913, the hull was lengthened by 27 feet, but the vessel was not renamed. It was finally scrapped in 1930.

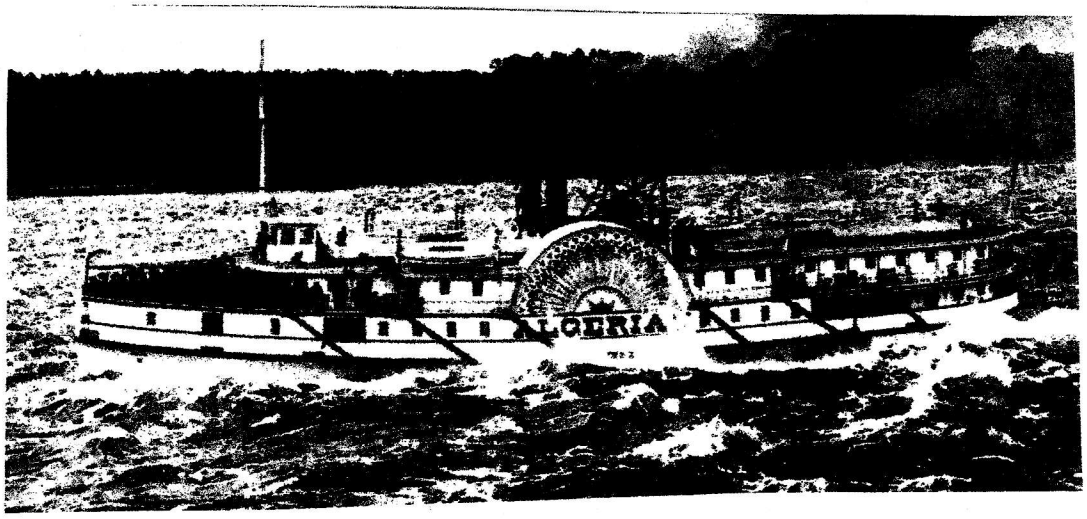


Photo of the *Algerian,* in rapids, diamond walking-beam visible

Towards the West

Moving westwards to Manitoba and the other Prairie Provinces, British Columbia and the Yukon during the second half of the 19th century...the historical developments that should be borne in mind during this period include: the American Civil War, the recessions of the 1870s, the Gold Rushes from California to British Columbia and the Yukon, the North West Rebellions, and the evolution of the Canadian Confederation from 1867 to 1905.

Steamboats, and stern-wheelers in particular, played an essential part in the settlement of Western Canada and in the continuing development of its transportation systems. They were powerful and easy to build. They were used on most of the navigable waterways in the region prior to, during, and after the coming of the railways and, later, of the highways, and especially in mountainous and remote regions through which rivers ran.

Prior to the arrival of steamboats, the river users of the western region of the country were thoroughly familiar with the various types of canoes and with oar or sail-driven York Boats of the fur trade. When the steamboats arrived, they were predominantly stern-wheelers, more suited to the shallow lakes and rivers. As Charlebois writes (page 100):

> The interruptions of the rivers by frequent shallows, waterfalls and rapids made it impossible for any boat as large as those which plied the Great Lakes to go from one end of a Prairie river system to the other. Freight boats were limited to certain parts of specific *rivers*, and freight often had to be portaged

or trans-shipped by oxcart between them. And of course, even this limited passage was only possible during the short Prairie summer.

The vessels were usually relatively simple technically, most were unpleasing to the eye but, as noted already, their hull and stern-wheel designs reflected the needs of the waterways along which they travelled. They could, for example, nose up to riverbanks to load or unload freight and passengers. They were more suitable for the shallow rivers and lakes and could deal with the many sandbanks, rocks and shoals. In B.C., they also had to deal with narrow canyons. Their locomotive-style boilers burned wood, but could also use coal when it was available. Their hulls were usually wooden, sometimes sheathed with metal. Some later hulls were of iron or composite materials. The flexibility of wood and hard usage often combined to give hulls relatively short lives. Some B.C. steamers travelled salt as well as fresh waters.

Generally, their designs reflected Mississippi/Missouri practice, rather than their Eastern Canadian sister ships, although many had single smokestacks. They were usually narrower than side-paddlers of the same length. The boats on the Prairies, if not always in British Columbia, were usually smaller than those back East. They usually had three decks. Basically, the first was enclosed and used for the engines and boiler, freight, and passengers with little money who ate their own food and slept on the deck. The second had a few private cabins and dining and dormitory areas. The third deck had the captain's quarters and the wheelhouse. The rudders were located in front of the stern-wheels. The majority of the vessels had two horizontal non-condensing engines driving the stern-wheels, with locomotive-type boilers located farther forward. They were usually well equipped with lifting and towing gear. Barges and scows, pulled or pushed by them, were used extensively throughout the West.

The later years of the period covered by this western section of the paper saw the beginning of the transition from stern-wheeled vessels to those that were screw-driven.

In contrast with the earlier situation back East, there are plenty of photographs of western steamboats available!

The First West Coast Steamboat

It was called the *Beaver,* the first of many paddlers to be registered with that name. It belonged to the Hudson's Bay Company and arrived on the Pacific coast of North America in 1836.

Wooden-hulled, it was built in England and made the journey under sail, by way of Cape Horn, to the HBC post near the mouth of the Columbia River in U.S. territory. On arrival, the paddles were fitted and the two side-lever engines (each 35 inch bore, 36 inch stroke, built by B&W) and the boiler connected. The vessel's hull was 101 feet long with a 22-foot beam over the paddle boxes. The paddle wheels were 13 feet in diameter. Its gross tonnage was 159, and top speed nine mph. Because of its exposure to both salt and fresh water, the *Beaver* was given a new boiler several times during its working life.

In 1853, a sister ship, the screw-propelled *Otter* (122x20), arrived from England.

The *Beaver* was used to chart the coast of B.C. and to serve the HBC trading posts along it. It was active in the Lower Fraser River during the Gold Rush of 1858. In 1874 it was sold and transferred to the port of Victoria, where it was employed as a tug and in freight transfers. It was wrecked on rocks at Vancouver's Stanley Park in 1888.

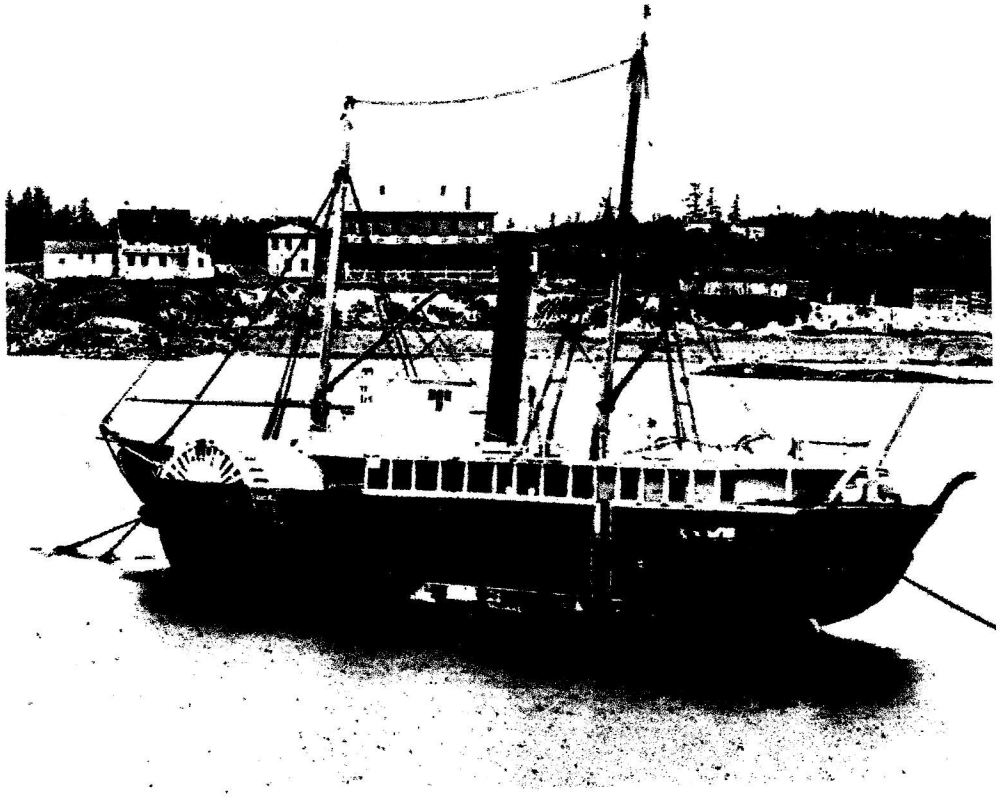
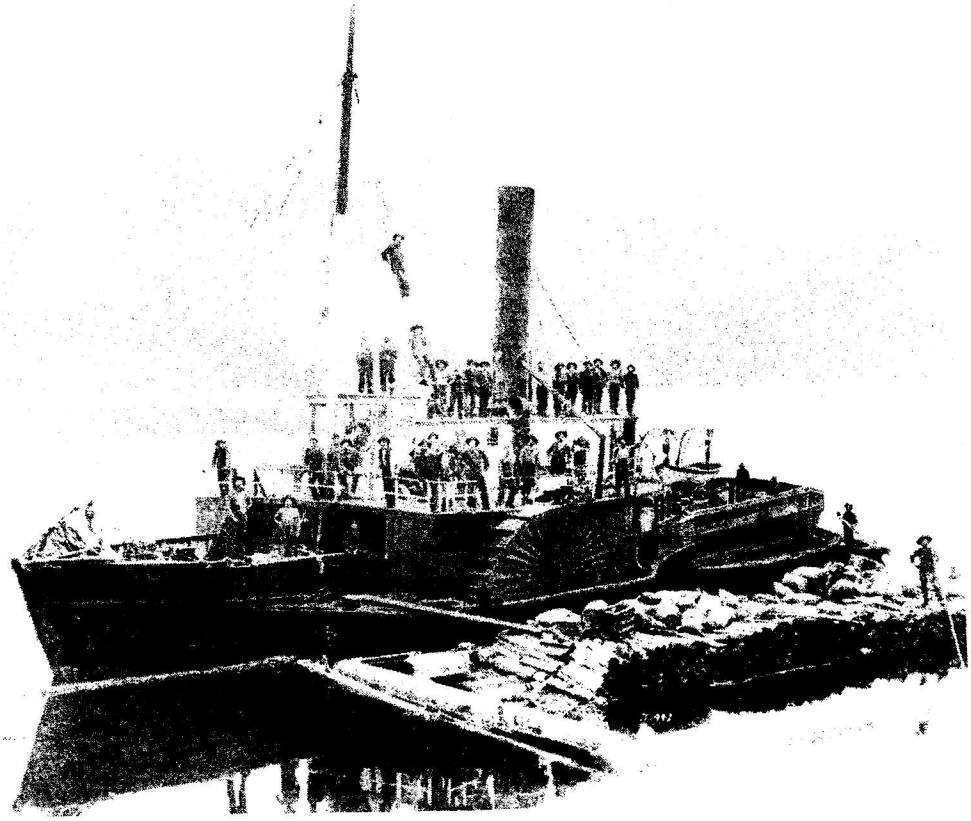
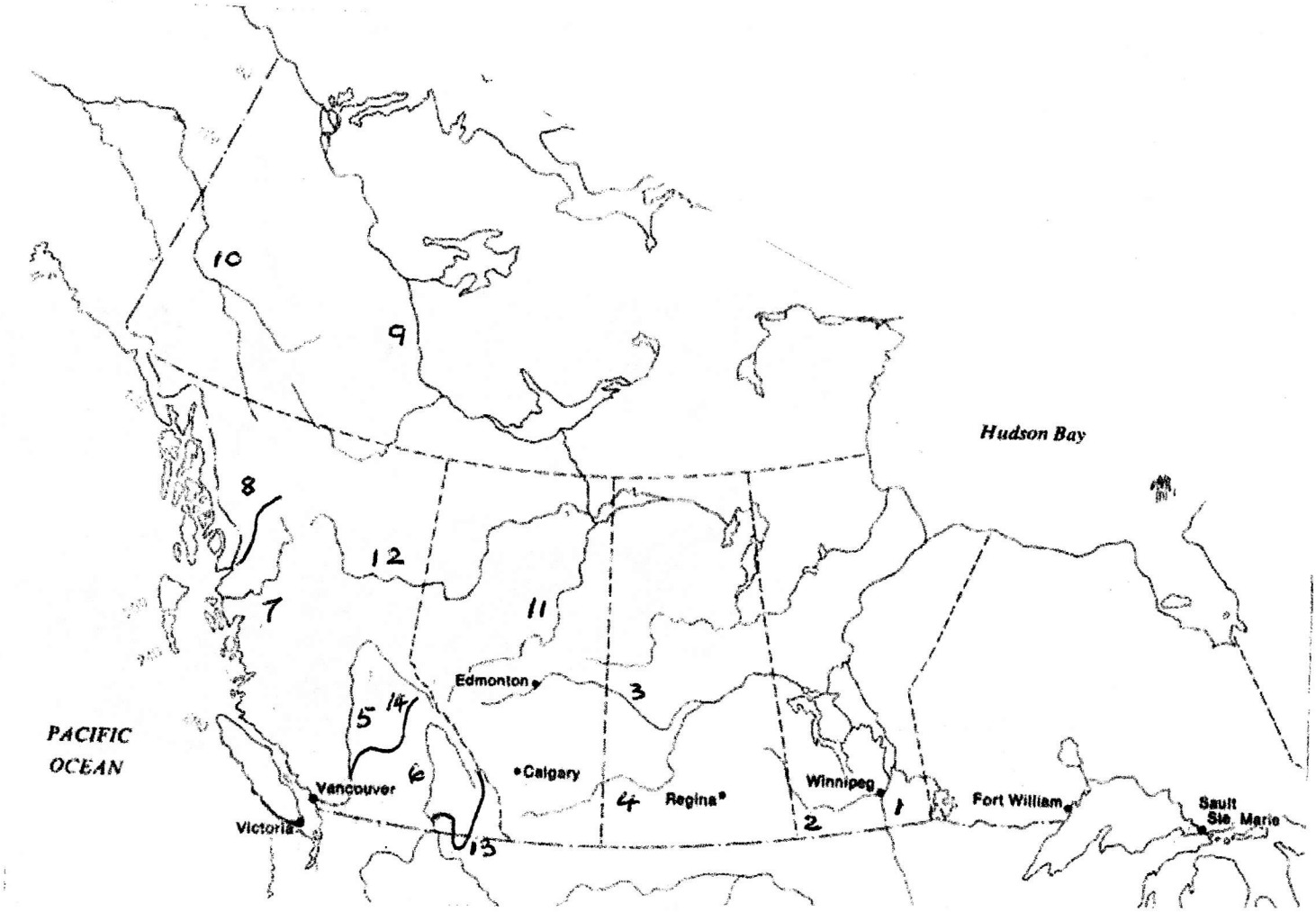


Photo of the *Beaver* circa 1870...



...and in 1888

The rivers of Western Canada...



1. Red; 2. Assiniboine; 3. North Saskatchewan; 4. South Saskatchewan; 5. Fraser; 6. Columbia; 7. Skeena; 8. Stikine; 9. Mackenzie; 10. Yukon; 11. Athabasca; 12. Peace; 13. Kootenay; 14. Thompson

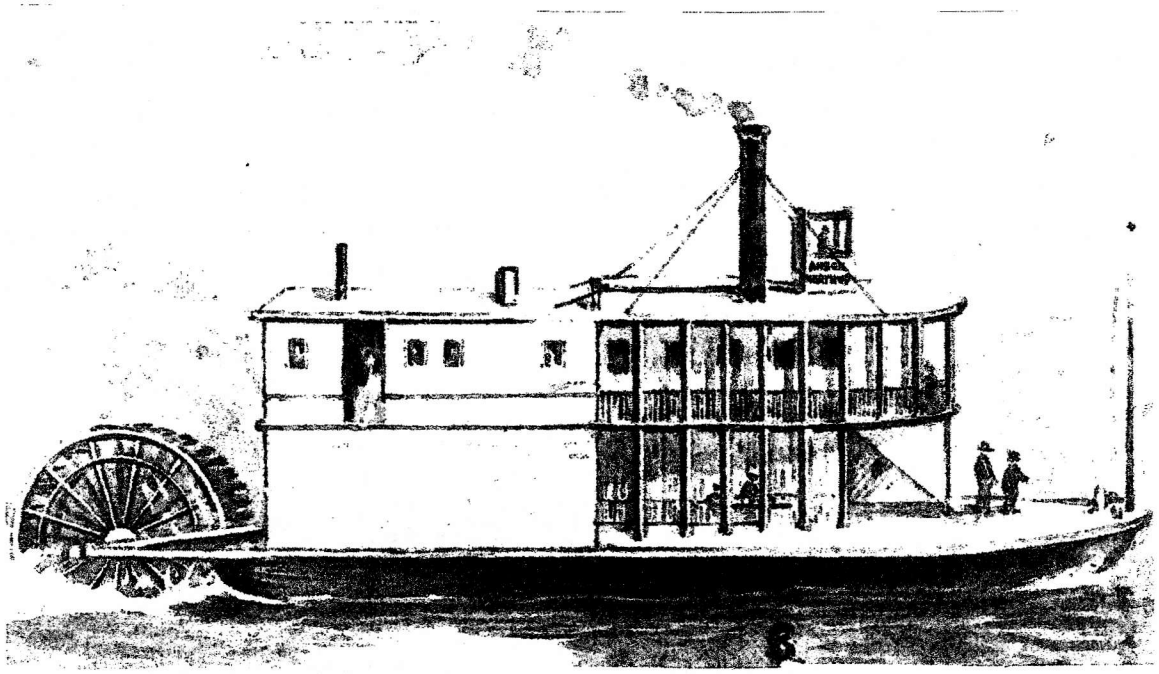
Manitoba

Ted Barris notes in his book on steamboats in the Prairie Provinces that, when they first arrived there, steamboats were called 'fire canoes' by the aboriginal people.

Incidentally, following Mississippi/Missouri practice, and since many of the Manitoba vessels were built in the United States, they usually had two smokestacks.

By the mid-19th century, the Red River in Manitoba had become the principal conduit for western trade between this colony and the mid-western States. With American trade came steamboats. The first such

vessel to travel the Red up into Canada and Fort Garry was the U.S.-owned stern-wheeler *Anson Northrup,* in June 1859. The Hudson's Bay Company (HBC) bought it, rebuilt it, and renamed it the *Pioneer.* It was relatively small - 90 feet long, with a beam of 22 feet.



Sketch of the *Anson Northrup/Pioneer*

In 1862, the *Pioneer* was crushed by ice, the same year that the American-built stern-wheeled *Freighter* was acquired by the Hudson's Bay Company and rebuilt as the *International* (137x26). It had two boilers, ferocious wood-consumers, that provided steam to the pistons connected to the stern wheel. For some years, it was the only steamboat on the Red River carrying HBC freight. Interestingly, at this time, the slower Red River carts were still bringing the bulk of the manufactured goods into Winnipeg - because they enjoyed a longer annual working season. However, for the majority of the 1860s, the American Civil War and its aftermath discouraged steamboat activity on the Red River and the situation was complicated by the entry of Manitoba and the Northwest Territory into the Canadian Confederation.

The dominant company in the early American-Canadian Red River steamboat trade was a U.S. company, since the rights to U.S. waters were granted only to U.S. companies. Denied these rights, a Winnipeg-based company went into competition, acquired vessels, but was not successful. More successful was the HBC which, in the late 1860s, went into partnership with the American, Norman Kittson, in the Red River Transportation Company. By 1875, it had control of shipping on the river, with ten vessels: the *International;* the *Selkirk,* 108 feet long, built in Minnesota in 1871; the *Dakota* (92x23), also built in Minnesota in 1872; the *Cheyenne* (120x21), built in North Dakota in 1875; the smaller *Alpha* (103x22), built in Minnesota in 1873; the even smaller *Prince Rupert* (75x10) - the first to be built in Manitoba in 1872 - a paddle-wheeler with two engines; the still smaller *Maggie* (50x16), built in 1873; and the *Swallow,* built in Iowa in 1868; plus the *Manitoba* (128x31), built in Minnesota in 1875, and the

Minnesota (128x32), also built in that State in 1875 but acquired from Winnipeg competitors.

In 1875 the *International* and the *Manitoba* were involved in an accident, as a result of which the *Manitoba* sank. But both vessels were repaired and returned to service. In 1877, the *Selkirk* delivered the barge to Winnipeg that brought the 'Countess of Dufferin' - the first locomotive to be used on the Prairies. That same year, the *Minnesota* and the *Colvile* (108x20), owned by the HBC, carried the Governor General's party on its first formal visit to the new province. The latter vessel was unusual in that it was steam-driven but screw- propelled, and had inherited the engine from the ill-fated *Chief Commissioner* (see below). Its hull was built in North Dakota and its machinery installed at Lower Fort Garry, in 1875. It was the first steamboat to sail round Lake Winnipeg. One of the passengers on this trip was William Robinson who, like Peter McArthur, would play a leading role in the development of Manitoba steamboats.

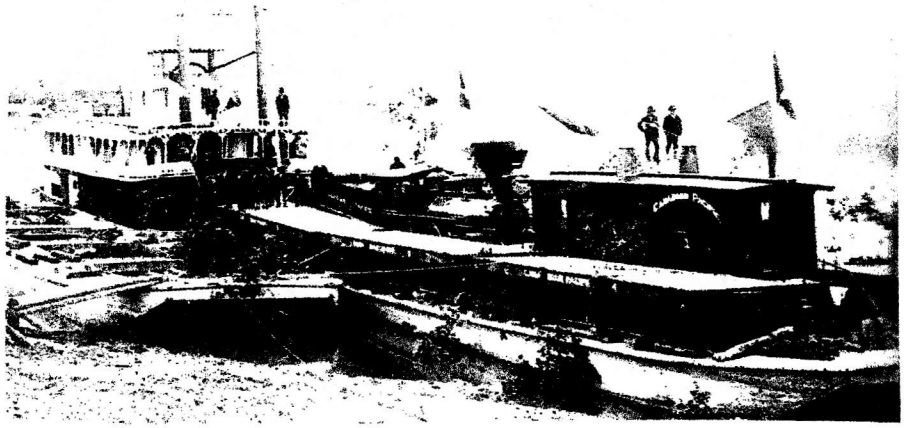
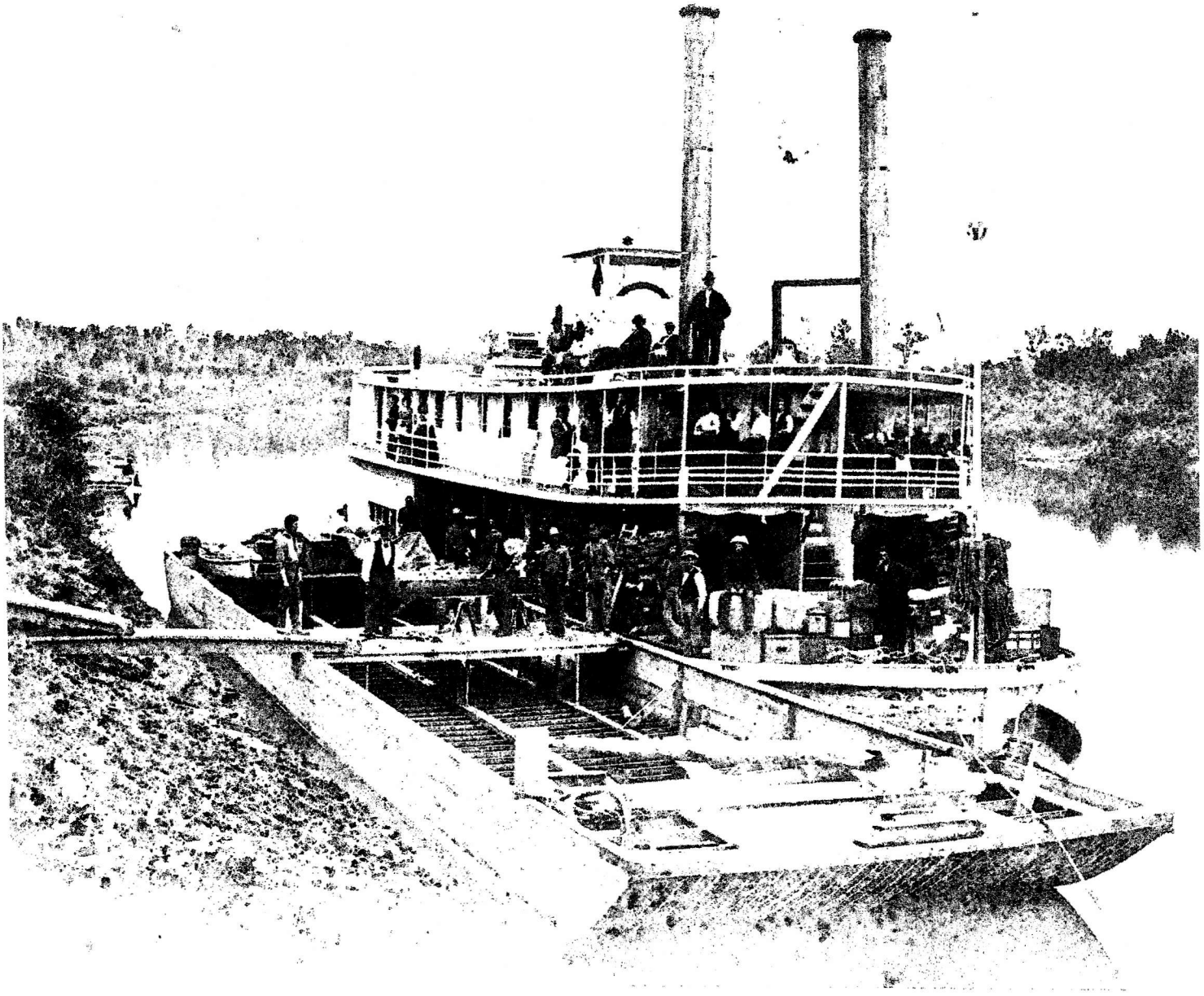


Photo of the *Selkirk* with the 'Countess of Dufferin'

But by this time, 1875, the northward expansion of the St. Paul and Manitoba Railroad to the south of the U.S.-Canada border, and of the Canadian Pacific Railway to the north, as well as that of the CPR from the Ontario border to Winnipeg, had begun to take business from both the ox carts and the steamboats on the Red River. Wheat was also becoming a major business for the transportation system. By the end of the decade, Kittson himself was gone to other enterprises and his Red River monopoly was history. Steamboat interests were moving northwards to Selkirk, Lake Winnipeg and the connection to the Saskatchewan River system at Grand Rapids, as well as westwards to the other Manitoba lakes and along the Assiniboine River and into Saskatchewan.

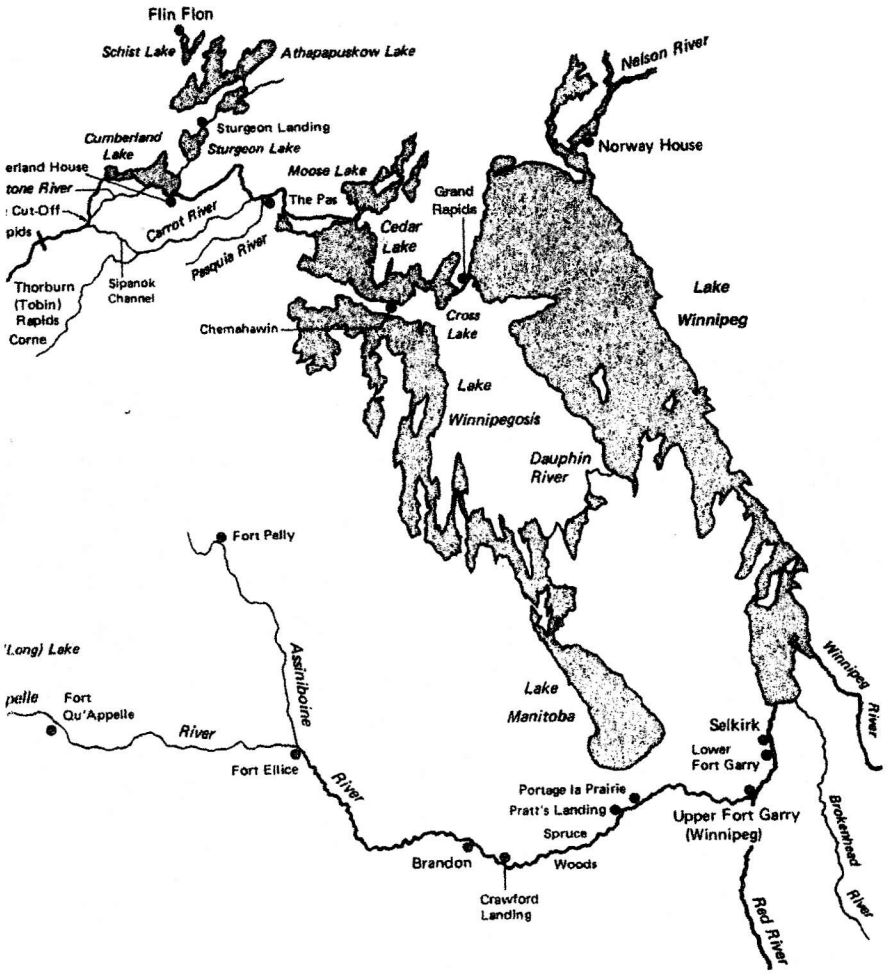
In the spring of 1873, the *Dakota* had sailed 10 miles up the Assiniboine - the first to do so. Hopes were raised that navigation on this river could be extended several hundred miles farther west to Fort Ellice, at the junction of the Assiniboine and Qu'Appelle Rivers, to service immigrant farms, grain and lumber production. Peter McArthur took up this challenge using his small, two-engined side-wheeler, *Prince Rupert* (75x10), launched on the Brokenhead River in 1872, and already mentioned above. In the spring of 1877, this vessel got as far as Pratt's Landing, and returned to Winnipeg with a cargo of wheat, oats and flour, inaugurating river trade on the Assiniboine.



The *Dakota,* with barge, on the Red River, 1873

In 1879, McArthur added the Minnesota-built stern-wheeler *Marquette* (128x29) to this river. It inaugurated service to Fort Ellice, having taken eight days to climb the two miles of rapids above Crawford's Landing, using the buried 'deadman' technique since there were no trees available for warping. The downstream trip took only minutes!

Map of Manitoba lakes, the Assiniboine, Brokenhead and Red Rivers, and the Saskatchewan River to Grand Rapids at Lake Winnipeg



In 1877, William Robinson launched an experimental steamboat named after him, which he used for freighting Lake Winnipeg, out of Selkirk. The HBC's *Colvile* handled passengers and freight round the Lake, as far as Grand Rapids, including taking the prefabricated iron hull sections for the Saskatchewan River's vessel, the *Lily,* which had originated in Yarrow's Yard at Glasgow, Scotland.

By 1879 the Winnipeg & Western Transportation Company (W&WTC), backed financially by the HBC, had displaced Kittson's company as the dominant one in the region. Its first target was providing service on the Assiniboine to Portage la Prairie and on the Red between Selkirk, Winnipeg and Emerson. It bought the former Kittson steamboats *Cheyenne, Alpha, Manitoba* and *Minnesota,* the latter two being sent in 1881 to the shipyards at Grand Forks, North Dakota, to be enlarged by 50 feet, and the *Minnesota* being renamed the *City of Winnipeg.*

In September 1881, the *City* was in trouble. As Barris notes (page 57):

> Flaws - mechanical shoddiness, and weakness in the hull created when the ship was lengthened - first appeared in August when the heads of her cylinders blew out. She limped in tow back to the Red River and then to Selkirk, where her machinery was partly removed and her hull loaded with 42,000 board feet of lumber.

The *City* was then towed by the *Princess* north on Lake Winnipeg. The vessels ran into several storms, during the last of which the tow rope was cut and the *City* drifted on to rocks and was wrecked.

The side-paddler *Princess* (153x24) had been launched at Winnipeg in 1881 and belonged to Robinson's Northwest Navigation Company. It had two funnels 60 feet high. It operated first on the Saskatchewan River system but was soon moved back to Lake Winnipeg and the Grand Rapids-Fort Garry run. It could take the largest passenger loads on the Lake - 600 people.

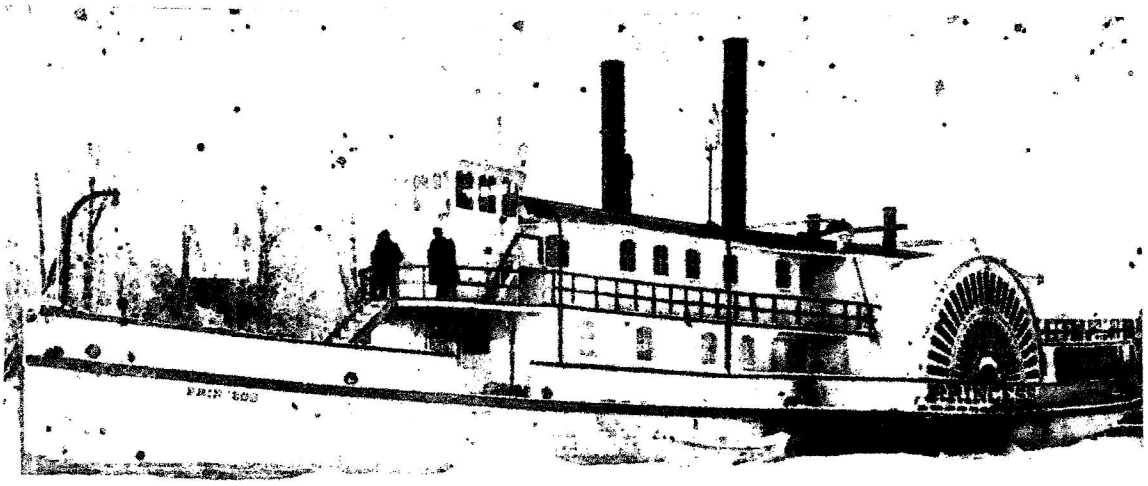


Photo of the *Princess*

The W&WTC was McArthur's rival on the Assiniboine. However, the CPR was also a rival, reaching Brandon in the early 1880s, but still leaving the upper river to the steamboats. Even so, McArthur had the large stern-wheeler *North West* (200x33) built in Minnesota in 1881, the largest vessel to date. Its engines had 16-inch cylinders and five-foot strokes. Its two boilers were made of steel and each had 10 flues. It was also the first steamboat to have a piano. But instead of going to the Assiniboine, the *North West* travelled north from Winnipeg to Grand Rapids and the Saskatchewan (see below). Also in 1881, McArthur retired the *Prince Rupert* and sent the *Marquette* further up the Assiniboine to Fort Pelly.

With low water and activity on Prairie rivers in 1884, the British were able to recruit four Prairie steamboat captains to assist in their Nile River attempt to rescue General Gordon at Khartoum. They were Captains Russell, Segers, Robinson and Webber. They performed well on the Nile, but the rescue failed.

Peter McArthur had had a number of Manitoba 'firsts.' He was the first to supply the young city of Winnipeg with lumber, to build the first Manitoban steamboat, to bring grain from the Assiniboine settlements by water, to assemble the first Assiniboine fleet and to navigate Hudson Bay steamers up the Grand Rapids to the Saskatchewan River (see later). But in 1882, he lost his Hudson Bay connection for refusing to ship whisky up the Saskatchewan, and was edged out of his Northwest Navigation Company directorship by William Robinson.

So he took a farm at Westbourne, on the Whitemud River, just south of Lake Manitoba, possibly the shallowest large lake on the continent. He surveyed the shorelines of that Lake and Lake Winnipegosis to the north of it for their timber resources. He built a mill at Westbourne to plane timber from his saw mill at Fairford, at the head of Lake Manitoba. To haul it, he built the side-paddler *Saskatchewan* (136x26) at Westbourne in 1883. It had a six-foot deep hull, two steam engines, two smokestacks, a 10-foot diameter boiler...and a rosewood piano. It could carry passengers as well as freight and could pull timber barges.

The *Saskatchewan* was the second Lake Manitoba steamboat, the first bring the small *Lady* Blanche (70x16), a screw-propeller, built in 1879. The third was the stern-wheeler *Petrel* (120x26), launched at Westbourne, much later, in 1899. None of them, apparently, were commercial successes.

In 1893, the planing mill at Fairford burned down and a second blaze consumed a barge and its lumber. The *Saskatchewan* also caught fire and sank. To replace it, McArthur bought the *Lady Blanche* and rebuilt it at Westbourne as the *Isabelle,* in 1895. Barras has a quotation about the *Isabelle's* engine (page 244):

> (It) was an old-timer, a big upright engine, bolted and braced to the floor to keep her from tipping in a storm...That old steam engine, she must've worn out three or four different boats.

In 1897, McArthur went into the fish business and used the steam tug *Victoria* (55x12) and a barge to collect the catches from around the lake for freezing and storage.

In 1898, McArthur established sawmills at the town of Winnipegosis, previously an HBC trading post, on the Lake to the north of Lake Manitoba, the first such operation on it, and moved his family and the *Isabelle* north. The low water of the Water Hen River between the lakes made the passage of the vessel difficult and it had to be given added buoyancy by two empty barges, lashed to it, to reach Winnipegosis. Competition from forest and fish companies soon arrived on the Lake and brought with them the stern-wheeler tugs *Lady Ellen* (46x20), *Osprey* (49x11) and the *Lottie S* (56x13), and the steamboat *Mockingbird* (72x12) from the Lake of the Woods. McArthur added the rebuilt tug *Ida* (50x9) and, in 1899, imported the *Iona* (58x12) by rail from Ontario.

In 1900, McArthur had his lumber towing operations changed from booms to rafts, as was the practice in Eastern Canada. They could carry freight and even livestock.

That same year, the Booth Company added the two-engined, screw-propelled steamer *Manitou* (93x19), built at Winnipegosis, to the fishing fleet. The engines had been made in Goderich, Ontario. The vessel could travel at 12 mph unloaded. It also acquired something of a reputation. Barras writes (page 254):

> The *Manitou* survived many near misses, some of which brought her within inches of disaster. Somehow she survived nearly two decades of navigation on Winnipegosis. Her frame had become grossly twisted out of shape - when her forward decks were level, the engine room astern had a decided slope to it - but the crew could usually improvise by loading her cargo and cordwood fuel so as to keep the boiler and machinery level. The steamer's two upper decks and pilothouse made her top heavy as well.

While Peter McArthur may have held sway on Lake Winnipegosis, William Robinson dominated fishing and lumber activity on Lake Winnipeg through his Northwest Navigation and other companies. Lake Winnipeg was known at home and abroad for its whitefish, goldeye and sturgeon. Robinson supplied the markets in New York, Chicago and elsewhere from his base at Selkirk.

Robinson was on the Nile in 1884. He returned to Selkirk the following year. By then, he owned freezing plants at Selkirk, a boatyard, both sailing and steamboats, including two large veterans, the *Marquette* and the *Princess.* He also owned a number of tugs. By 1893 his lumber interests had added the *Fisherman* (67x15), the *Idell* (70x17), and the *City of Selkirk* (104x23), all screw-propelled, all built at Selkirk. He now owned the old *Colvile*, but lost it in a fire at Grand Rapids in 1894. The *City of Selkirk* was rebuilt and lengthened by 40 feet in 1896. The *Premier* (126x23) was also added that year, and the *Lady of the Lake* (105x19) in 1897.

Photo of the 'old' *Colvile*

After the turn of the century, on Lake Winnipeg, the fishing and timber trade began to decrease and the excursion business to increase. To better participate in this trade, the Winnipeg Navigation Company

purchased the stern-wheeler *Alberta* (130x31), built in 1904 at Prince Albert and lying there idle two years later. Barras says in his book, in regard to this vessel (page 281):

> A fast-water design...the *Alberta* was a staunch craft, comprised of twelve watertight compartments, a lower or main deck, cabins on her second or boiler deck, and a hurricane deck with captain's quarters and pilothouse on the top level. An eighteen-foot-long boiler powered her engines through a four-foot horizontal stroke, which rotated her sternwheel at a top speed of fifteen miles per hour.

The vessel had to make a 1000-mile journey from Prince Albert to Winnipeg. A specially-selected crew was hired for the trip, and their several adventures began at Cole's Falls, only 20 miles downstream from Prince Albert. Its hull was punctured by a rock during the dangerous whitewater descent at Grand Rapids. With regard to this, Barras writes (page 284):

> (the men) quickly constructed a bulkhead around the large break in the *Alberta's* hull; then filled the gap with blankets, clay and sods. Syphoning followed. But the longest delay was for the weather to clear. Nine days after shooting the rapids, Captain Bellefeuille brought aboard a new mate to guide the *Alberta* south across Lake Winnipeg...

The vessel arrived at Winnipeg on June 19...

In the reverse direction, so to speak, went the *Princess.* It had been rebuilt in 1904, its length increased to 160 feet and staterooms sacrificed for cargo space. The side-wheeler assemblies had been removed and replaced by a steeple-type compound steam engine and a propeller. But in 1906, suffering from many earlier years of beached idleness and old age, the vessel was ripped apart by rocks , wrecked in a storm, and sank into Lake Winnipeg.

Speaking of rapids, canals with locks were built in Eastern Canada to circumvent them. Only two canals were built in the West: in 1889, the Baillie-Grohman Canal in British Columbia, which is discussed below; and in 1910 the St. Andrews Lock, bypassing rapids between Winnipeg and Selkirk, for the benefit of the excursion vessels then servicing such locations as Victoria Beach on Lake Winnipeg.

National Historic Plaque

Honouring the St. Andrews Lock

and Dam

Saskatchewan/Alberta

...plus the northwest corner of Manitoba, above Grand Rapids and around Cedar Lake and The Pas, because it begins the westward journey of the Saskatchewan River system.

This first part begins at Grand Rapids, and the town of that name, located on the northwestern shore of Lake Winnipeg. There, the Saskatchewan River enters the Lake, after falling 75 feet in less than three miles. In the HBC days, it was on the main canoe and York boat route to the West. The rapids themselves were one of only a few significant obstacles on the Saskatchewan River water route to the Rocky Mountains. Vessels could run down these Rapids, usually at half load. Getting up was a different matter. York boats were usually 'warped' using upstream trees, ropes and horse or human-power, or on a log road with rollers. From 1877, a horse-powered narrow gauge railway for passengers and freight was built around the rapids. It remained in use for 30 years.

In 1872, the first HBC steamboat destined for service on the Saskatchewan was launched at Lower Fort Garry. But the propeller-driven, deep draft, 100-foot long *Chief Commissioner* was unsuited for the task. It was dismantled and its parts distributed to other, more suitable vessels, including the *Colvile*. The second steamboat, a 142-foot stern-wheeler, also built at Grand Rapids, in 1873, was wrecked during its attempted climb up the Rapids to the Saskatchewan River.

The third attempt was successful. The twin-smokestack stern-wheeler *Northcote* (150x29), with 40 hp engines salvaged from another vessel, was built and launched at Grand Rapids in 1874 and warped up to the Saskatchewan. The *Northcote's* maiden voyage took it to Carlton House. It was also the first steamboat to travel all the way from Grand Rapids to Edmonton. Its main employment was delivering freight to destinations on both the North and South Rivers.

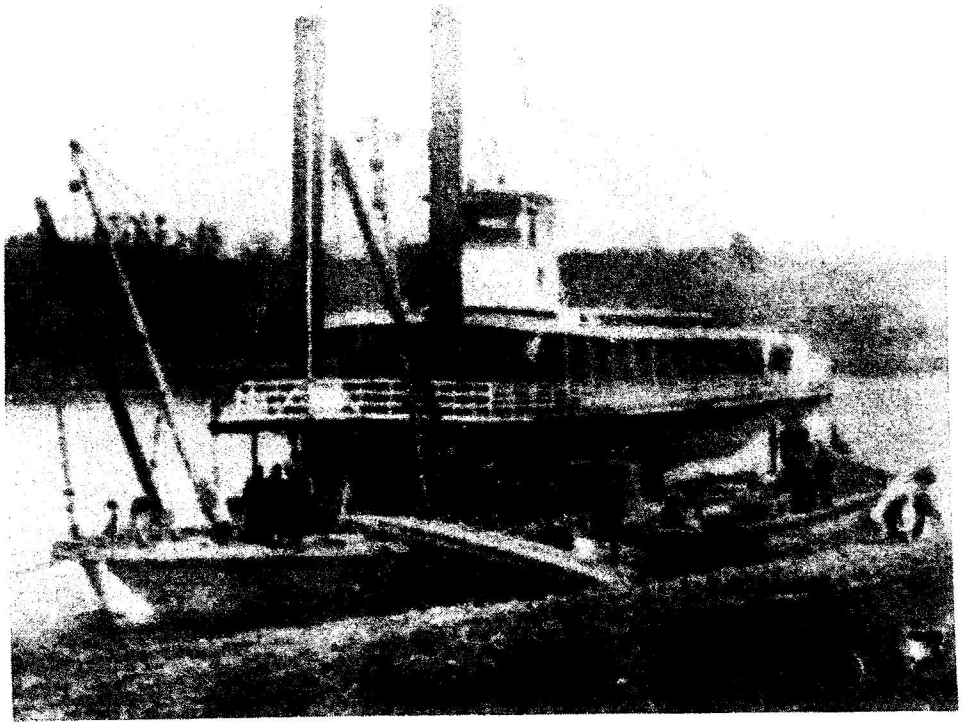


Photo of the *Northcote*

The *Northcote* was the first stern-wheeler to pioneer the technique of 'grasshoppering' over obstructing up-river sandbars. This involved lifting the bow of the vessel using spars driven into the riverbed, plus hawsers, pulleys and capstans, to allow the flow of water to remove sand from underneath it and, at the same time, using the stern wheel to push it forward a few yards at a time. Another, simpler technique for removing sandbar obstructions involved reversing the vessel and using the stern wheel itself to cut a path across the bar. This technique could also be used to clear the way through thin fall and spring ice. But its use could also damage the individual paddles. Vessels on the Western lakes and rivers were usually beached during the winter snow and ice season.

As noted earlier, in 1877 the *Colvile* brought to Grand Rapids the disassembled iron hull of the stern-wheeler *Lily* (100x24) to Grand Rapids, where the vessel and its machinery was reassembled and began service on the Saskatchewan.

In 1881 a Winnipeg company bought the stern-wheeler *Manitoba* (128x31), rebuilt it at Grand Rapids, adding 40 feet to its length. It travelled the Saskatchewan River to Prince Albert and Edmonton.

In 1882, the stern-wheeler *Marquis* (201x34), named after the Governor General, the Marquis of Lorne, was built at Grand Rapids for Canadian owners. Charlebois describes its machinery this way:

> There were two high pressure horizontal engines, rated at 83 horsepower, which could drive the vessel at 16 miles per hour. Steam was produced by three boilers, each generating 125 pounds pressure. Each steam cylinder was 19 inches in diameter, the piston stroke was six feet. The *Marquis* had four rudders in front of the paddle wheel...

It joined a five-vessel steamboat fleet on the Saskatchewan that then included the *Manitoba,* the Minnesota-built *North West,* the *Northcote* and the steel-hulled *Lily.*

As mentioned above, the *North West* was intended initially for service on Assiniboine but in the spring of 1882 it crossed Lake Winnipeg in a perilous storm. At Grand Rapids, it did not have enough power to ascend to the Saskatchewan River. But it did so using warping. A half-mile-long rope was tied to one large tree after another, in advance of the vessel. The other end was tied to the capstan in the bow and a donkey engine would the rope round the capstan, pulling the vessel forward.

In July 1882, the *Northcote* unloaded at Edmonton material for the building of a sternwheeler at Fort Chipewyan for Lake Athabasca. This material was then moved in wagons and carts by land to Athabasca Landing, on the Athabasca River, where it was put into scows and towed to Fort McMurray and Lake Athabasca. When built, the vessel was 200 feet long, with a 24-foot beam and a hull depth of four feet. It was designed to carry 200 tons of freight. Construction was completed in 1883. By June 1885, the *Grahame* had become the pride of Lake Athabasca because of its performances against the current of the Athabasca River. *En route* past what became the tar sands, its engineers threw chunks of tar into the furnace to make it hot faster. The *Grahame* also took prospectors on their way to the Klondike. It served

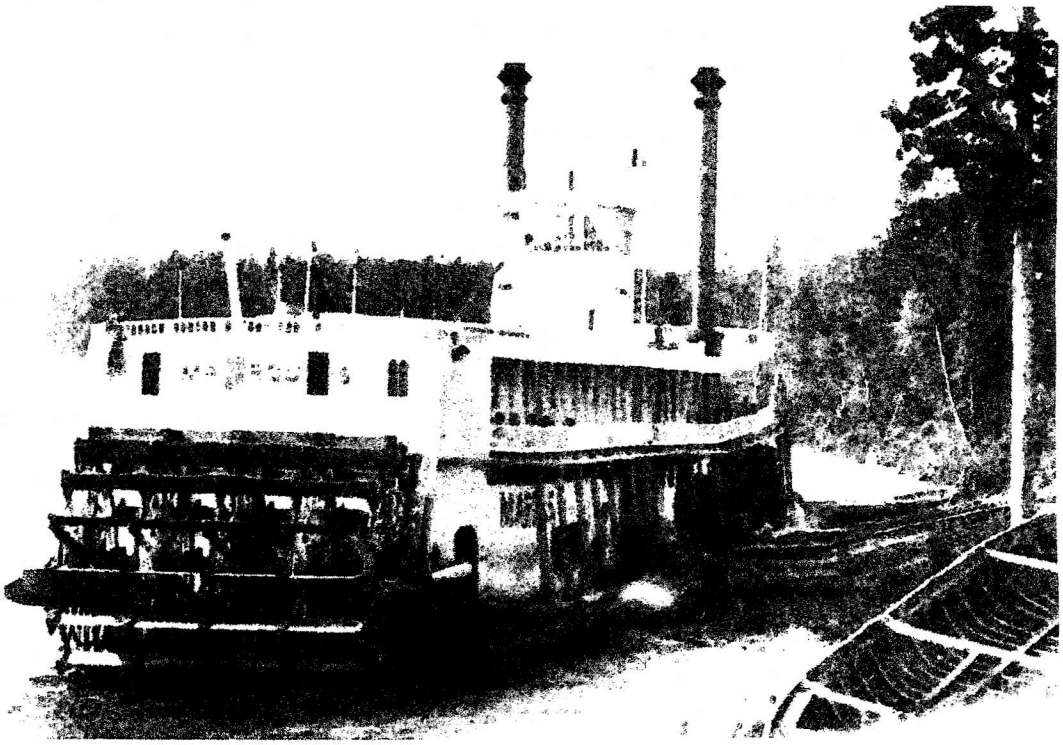
until 1914, when it was permanently beached. Some years later, its engines provided the power for the sternwheeler *Athabasca River.*

In 1882 the *Lily* was assigned to explore the navigation possibilities on the South Saskatchewan River as far as Medicine Hat. From Prince Albert, in mid-July, the vessel travelled slowly upstream to Saskatoon towing a freight barge at four miles per hour and running aground once on a sandbar. It reached Medicine Hat on 3 August. Having loaded up, the *Lily* began its return journey on 29 August. Forty miles downstream, at Downing Ford, with the water level well below what it had been on the upward journey, the vessel scraped a rock just below the surface and tore an eight-foot gash in its iron hull. The fast downstream current brought further damage and the *Lily* sank in three feet of water. There were no casualties, and some of the cargo was salvaged, but the vessel was a wreck.

The *Northcote* carried the Governor General, the Marquis of Lorne, on a Western trip in 1881. The vessel also fought, and lost, the first Canadian naval battle in May 1885 at Batoche. In 1886, it was abandoned at Cumberland House and left to the mercy of vandals.

The *Marquis* was also to be involved in the Battle of Batoche, as was the *Manitoba,* but both were critically damaged by ice before this could happen. The *Manitoba* was wrecked but the *Marquis* was repaired and subsequently served as a headquarters during the remainder of the campaign, after which it reverted to commercial use. The following year, however, it was damaged climbing the Thorburn Rapids and sank in four feet of water. The attempt to salvage it failed and the vessel was eventually abandoned and allowed to disintegrate.

Photo of the *Marquis*



Coal was discovered near Lethbridge on the Belly (Oldman) River. Plans to transport it to market by water were made in 1883 by members of the Galt family and their partners since the CPR had only reached Medicine Hat. Between then and 1884, two stern-wheelers were built for this service, along with a number of barges, which they would tow. The first was the *Baroness* (173x31), built at Lethbridge in 1883, and the second, the *Alberta* (100x20), with two 30 hp engines, was built at Medicine Hat in 1884. It could tow 16 barges. A third, the *Minnow* (73x10), arrived by flat car at Medicine Hat from Kenora, Ontario, in time for the 1885 season but too late to participate. Water levels had been particularly low that spring and shifting sandbars particularly troublesome. The decision was made to transfer the coal to the Hat by rail in future. All three vessels were given other employment on the Saskatchewan system. The *Baroness* was wrecked at Bow Island in 1886. The *Alberta* continued to pull barges, including military ones during the 1885 Northwest Rebellion, and was also used as a hospital ship. But river traffic had decreased significantly by 1886 and it was abandoned. The *Minnow* had a longer working life, until 1901.

In 1886, the *North West* had a bad accident after which it was repaired at Prince Albert. It was beached between 1886 and 1888. It had another serious accident in 1899 and was scrapped in 1903.

The first of the sternwheelers to be called *Athabasca* (146x28) was built by the Hudson's Bay Company at Athabasca Landing, on the Athabasca River, in 1888 to service the Lesser Slave Lake and River area. It was equipped with spars to help it 'grasshopper' over sandbars. It hit a rock on its first trip down-river to the Lake and had to be extensively repaired, and did not get into the Lake to operate until 1893. Among its passengers in later years were miners en route to the Klondike goldfields. It was condemned in 1903, but it was not until 1920 that its engine, machinery and passenger accommodation were removed and the vessel rebuilt as a scow.

Now the tales of three independent 'steamboating' enterpreneurs...

Orcadian John Walter spent something like 20 years building York boats, barges and scows for the Hudson's Bay Company at Edmonton, on the North Saskatchewan and at Athabasca Landing. In 1882 he set up the first cable-operated ferry on the North Saskatchewan, between Edmonton and Strathcona. He opened his own sawmill in 1893, and acquired timber rights at Big Island, upstream of Edmonton. His customers included the HBC, the Dominion Government, and gold dredgers. He built a steam ferry system for Battleford. For himself, he built his original cable ferry, the *Belle of Edmonton.*

Walter built his first steamer in 1896. It was the screw-propelled *Lillian Bee* (40x7). In 1903, in association with Captain Abe Pearce, he built the *Strathcona* (95x22) as a paddle-wheeler for his own use. It was rebuilt and enlarged it as the *Scona* (120x22) in 1910 and as a stern-wheeler. The *City of Edmonton* (136x34), a stern-wheeler, was built in 1909. His vessels were used principally for hauling lumber from up river to his mill at Edmonton, and freight for settlements downriver, during the week and for pleasure excursions on the North Saskatchewan at weekends and holidays. It was on one such holiday excursion in 1914 that the *City* hit a rock near Fort Saskatchewan and had to be rescued by the

Scona. Walter was successful, and generous, as a businessman, but he began to lose most of his business when World War I began in 1914 and his markets disappeared. But he lost everything in June 1915 when the rapidly-rising waters of the North Saskatchewan flooded his mills, workshops and barns and sent the piles of sawn lumber downstream. They destroyed the power station he had built. While the two steamboats - his least profitable assets - survived the flood, their activities dwindled to nothing. They were abandoned in 1918.

In the late 1890s and early 1900s, barges, scows and York boats were being built in large numbers at Athabasca Landing, 100 stagecoach miles north of Edmonton, for service - mostly by the HBC - on the Athabasca and Lesser Slave Rivers and in conveying miners to the Klondike while the Gold Rush lasted. Closely associated with promoting the settlement and development of the Athabasca-Slave-Peace River regions of northern Alberta (and British Columbia) was J.C. Cornwall, who served in the Alberta Legislature after 1905, and brought political as well as business skills to the job. He successfully persuaded settlers to overcome the mud, mosquitoes, deer flies, blackflies, hoof rot and fever that made life difficult there each spring and summer! He was also associated with the Northern Transport Company which built, at Athabasca Landing, a small fleet of steamboats for the two rivers and Lesser Slave Lake.

The 11-foot diameter, 11-foot long boiler for the first steamboat, the stern-wheeler *Midnight Sun,* missed its scheduled mid-winter shipping from Edmonton to Athabasca Landing and had to be rolled the whole way, encased in wood planks (as the Egyptians did with large stones for the pyramids), and drawn by horses. The *Sun* was in the water in the spring of 1906. That same year, the *Northern Trader* and the *Northern Light* (85x23) were launched and, in 1907, the *Northern Sun* (103x17). All were stern-wheelers, although the *Light* was rebuilt in 1909 with a screw propeller. The *Sun* had electricity and the beginnings of the use of wireless in the Northwest. All four ships served until the middle of World War I, by which time the railway, and the telegraph, had reached the region - with Cornwall's blessing.

One of the most colourful owners/captains of Canadian steamboats was H.H. Ross, the son of a Scottish knight, as well as an adventurer, entrepreneur and socially active *bon viveur,* whom Barris called in his book 'the Laird of the Saskatchewan.' He began in Medicine Hat, where he ran a hotel before building and operating steamboats. The first of them was the stern-wheeler *Assiniboia* (73x19), built at the Hat, that began its putative career as a freighter in 1903. It was wrecked two years later, after a winter layover at Cedar Lake, Manitoba.

Back at Medicine Hat, Ross - with help from a Scottish boatbuilder named McQueen - built the stern-wheeled freighter *City of Medicine Hat* (120x25) in 1907. It was employed carrying settlers' supplies, gas drilling equipment and other freight and, at weekends, became a party vessel. Thanks to unseen telegraph cables hidden by the flooding river water, the loaded vessel came to grief spectacularly against the Victoria Bridge in June 1908 on the South Saskatchewan at Saskatoon, where high spring water, several bridges, and a hung-over crew had complicated its passage through the city. No lives were lost, but the cargo of flour wound up in the river. There was no salvage operation and the *City* was

allowed to disintegrate.

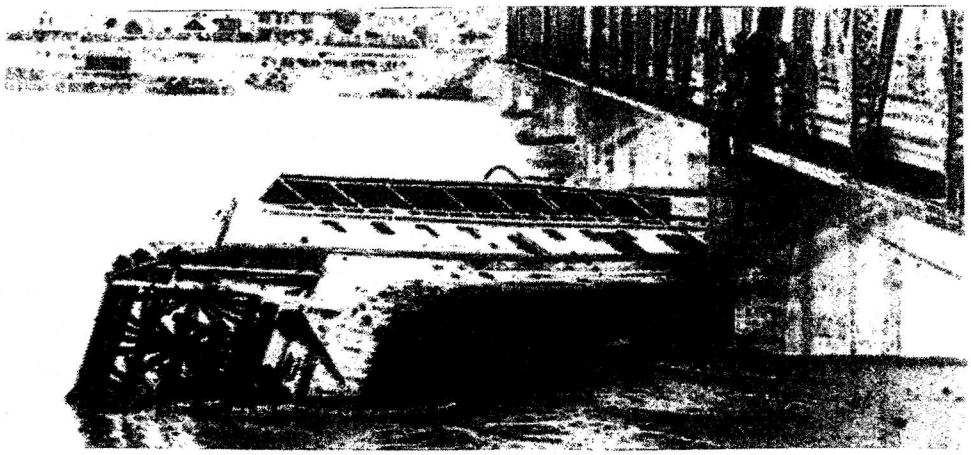


Photo of capsized *City of Medicine Hat* at Saskatoon

Ross went to Ottawa to seek compensation for the loss of his vessel. Instead, he accepted appointment as Fisheries Inspector at The Pas where, with the arrival of the railway, it had become a commercial hub and mining was being developed in the region. On his way west, he stopped in Collingwood on Georgian Bay and purchased the small propeller-driven vessel, *Sam Brisbin* (48x11), whose equipment included a telephone system.

Settled at The Pas, Ross's new inspection and other businesses prospered. He returned to Collingwood in 1910 to purchase another steamer, *Le Pas.* That same year, he bought his third small propeller-driven steamer, the *O'Hell.* Barges and scows were also being acquired.

The Ross Navigation Company was formed at The Pas, to preside over Ross's evolving monopolies of the ore, log boom, freight and excursion businesses in this region of the Saskatchewan in Manitoba, abetted by the reluctance of the railways to extend their lines through The Pas to Hudson Bay.

Speaking of railways, in 1907 at Prince Albert, a railway swing bridge was built, allowing steamboats interrupted passage along the river.

Ross's next vessel was the *Minasin* (60x13), built at The Pas in 1911. The *Notin* (48x10) was built at Winnipeg in 1913. Both had screw propellers. In between, he acquired the larger stern-wheeler *George V* (110x27), built originally at Prince Albert in 1911. It was rebuilt at The Pas in 1914. Ross built more vessels and had more adventures during and after World War I. He died in a gun accident in 1925.

Walter

Ross

Cornwall

British Columbia

More than half the rivers listed on page 32 are in British Columbia. There are also several substantial lakes - Okanagan, the Arrows, Kootenay, Shuswap - that 'hosted' steamboats in years past.

In most cases, the rivers were not navigable throughout their entire lengths, only in stretches of a few hundred miles. Overland links had to be developed, at first by stagecoaches, later by trains.

The steamboats often had to deal with rapids, fast-flowing, very shallow or low water, bottom gravel ridges formed by spawning salmon, rocky rather than sandy bottoms, rocky outcrops and narrow canyons. The thicknesses of winter ice varied from north to south.

The steamboats got their start on the Lower Fraser River of B.C. in the Gold Rush of 1858. The early days of these vessels in the southern parts of the province were tempered by concern over the influence of steamers and their owners from south of the border, both on the Pacific side and farther inland. As a result, the reverse of the situation on the upper Red River occurred. American registered steamboat traffic could not operate on the Fraser, so that vessels had to be built locally or be changed to British ownership.

The principal jobs done by the steamboats in British Columbia were the same as elsewhere in Canada: the carriage of freight, passengers, including settlers, and mail. They also took prospectors into goldfields...and brought them out again. Latterly, they provided excursions. In B.C., steamboats also contributed significantly to the development of mining in the southeast of the province and to the construction of their competitors and successors - the railways.

The B.C. steamboats were predominantly stern-wheelers. The designs of the Mississippi/Missouri and California stern-wheelers were largely copied, except that the vessels quite often had single smokestacks. They quite often had covers over their stern-wheels. They most often used pairs of non-

condensing engines to drive these wheels. There was also more racing between vessels, and more boiler explosions, than in the Prairies or the East.

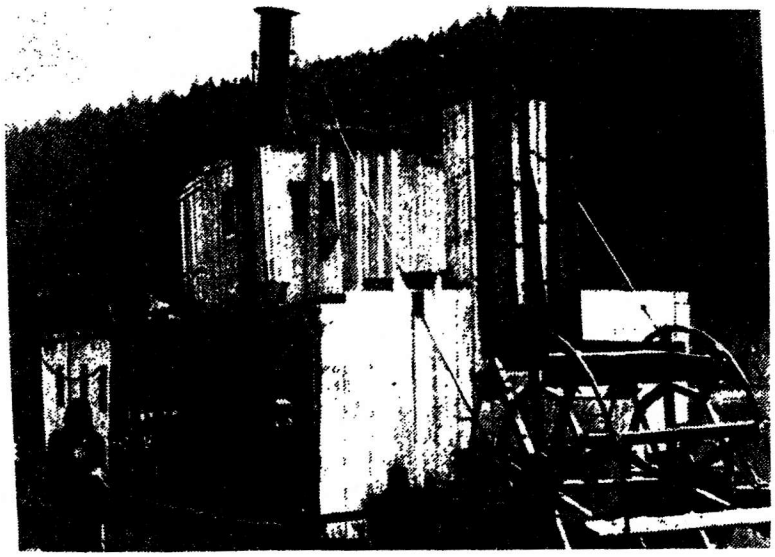
As in the Saskatchewan system, where there were fewer wharves than ports-of-call, stern-wheelers with their shallow draft were more effective from the operational point of view than paddle-wheelers in the shallow waters of B.C. rivers. Their narrower beams also helped in regard to canyons and channels between sandbars and rocks.

Art Downs writes in his book on 'Sternwheel Days in British Columbia and the Yukon,' that:

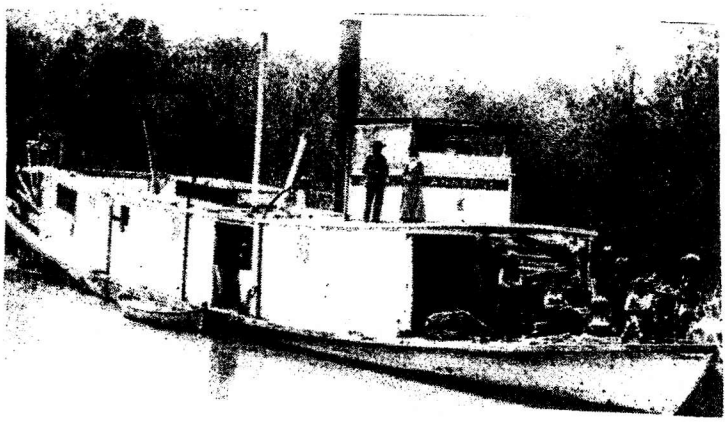
> Sternwheelers evolved into perfect craft for frontier waterways. Tough, powerful, and easy to build, they could carry 100 or more tons of freight plus passengers in water little deeper than required by a canoe, yet regularly challenged rapids and canyons where canoes needed portaging.

This 'going up' challenge for rapids was met in familiar ways, by 'warping' using upstream trees or buried 'deadmen,' the muscles of deckhands and passengers, as well as capstans and the skills and experience of pilots, captains and wheelmen. The 'going down' challenge relied on the latter. For B.C.'s canyons, skill and experience certainly counted. But in some cases, a technique that made use of ring bolts embedded in rock walls ahead, plus hawsers and steam-driven capstans, had to be used.

Not all B.C. steamboats were large - or even good looking. For example, the first *Duchess* (60x17), which sailed the Upper Columbia in the late 1880s, and the U.S.-built *Annerly,* on the Upper Kootenay River, were small and ugly.



Photos of the first *Duchess....*



...and the *Annerly*

There was also at least one other small, privately owned, odd-looking steamboat - the *Despatch.* It was used on the Arrow Lakes by, for example, the well-known Dr. G.W. Dawson when surveying these Lakes. The only catamaran stern-wheeler to appear in B.C., the *Despatch* was built at Revelstoke in 1888. Its two hulls were 54 feet long, with the paddlewheel positioned between them, and its beam only 11 feet. It had two engines and a boiler with a large wood consumption that reduced its freight-carrying capacity...and profitability. It was abandoned in 1892.

Also of interest was the American-built, 300-passenger, side-paddler *Wilson G. Hunt,* built at Coney Island, New York, in 1849. It sailed to California in 322 days during its Gold Rush, then came up to the Fraser in 1858. It spent the next 20 years in both American and Canadian waters until bought by Captain Irving in 1877 and put to work on the Victoria-New Westminster route. It was one of very few vessels in Canadian waters that had a covered steeple engine.

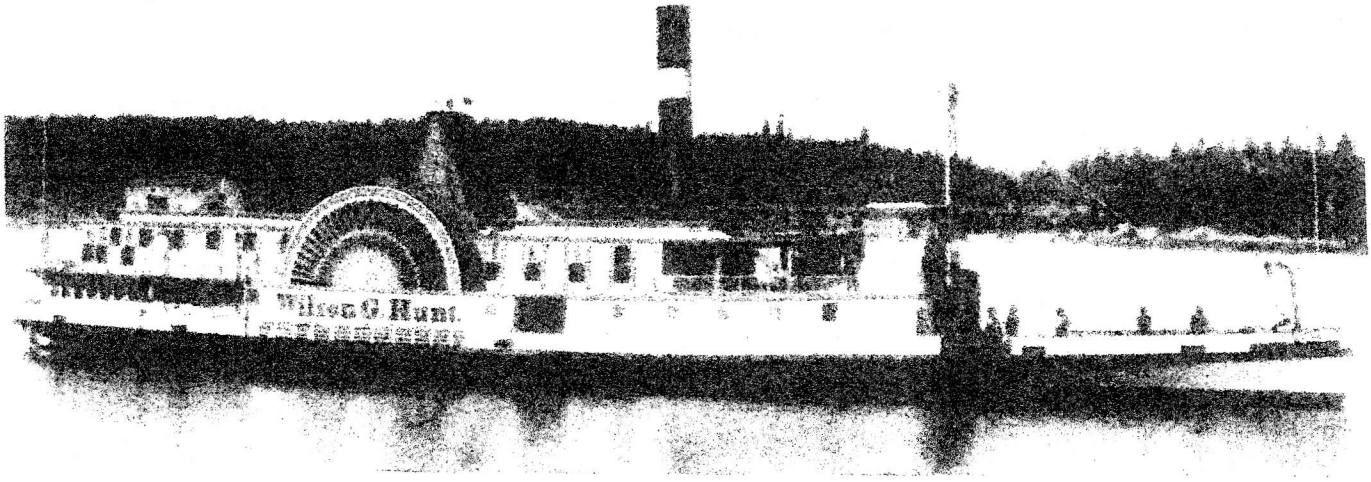


Photo of the *Wilson G. Hunt*

We must not forget the barges, scows, tugboats, dredgers and snagboats, some steam-driven, that supported the stern-wheelers. And while U.S.-built vessels were used in Canadian waters, their histories have not been researched for this paper.

As elsewhere in Canada, there were rivalries and competitiveness between companies and captains on B.C.'s waters. Among the former were the Hudson's Bay Company, the Canadian Pacific Railway, the British Columbia Steam Navigation Company, the Columbia and Kootenay Steam Navigation Company, and among the latter were Captains Irving, Moore, Parsons, Fleming, Armstrong, Estabrooks, Blakely, Bonsell, Weeks..... Most worked steamboats on more than one B.C. river or lake. Many were American and returned to the U.S. to retire. Competition was usually beneficial. It could lower the costs of transportation.

As already noted, steamboats got their start on the inland waters of British Columbia around 1858, during the Gold Rush on the Lower Fraser River which, with the later Cariboo Rush, lasted roughly until 1865. Thereafter, the surviving steamboats served the various communities along the river and, later, the needs of those contractors building the CPR railway to the coast.. The principal boat-building yards of that time were at Victoria on Vancouver Island.

To reach the Fraser, the new vessels had to cross the saltwater passage to the, then, mainland terminal at New Westminster. The Fraser itself was navigable to Yale, a distance of 120 miles, just below the Canyon and Hell's Gate. To reach the Cariboo and Big Bend country to the north, vessels could detour using the Harrison River and Lake as far as Port Douglas. Then the Cariboo Road took over.

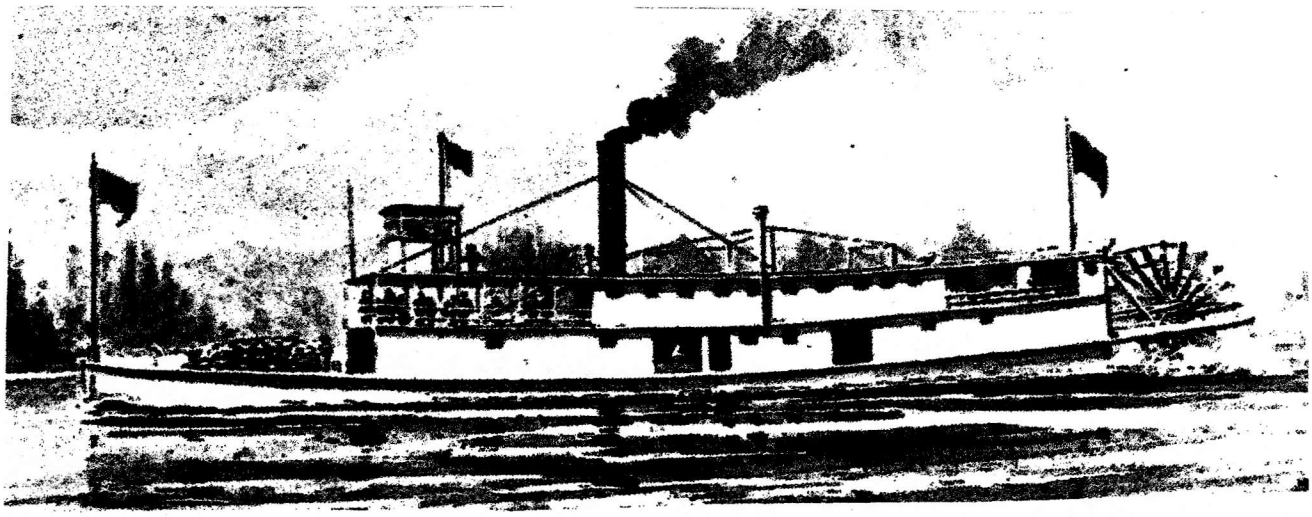
Many of the early Fraser steamboats were American - for example, the stern-wheeler *Umatilla,* which pioneered the Fraser and Harrison Rivers and was the first vessel to reach Yale, in 1858. But it was in Canadian waters for only two months and was replaced by another American vessel, the *Maria.* Others included the side-paddler *Surprise,* and the *Enterprise.*

On the other hand, the stern-wheelers *Governor Douglas* (145x26) and the *Caledonia* (100x19) were built at Victoria in 1858, as were the *Colonel Moody* (145x27) and the *Henrietta* (73x14) in 1859 (the latter rebuilt and enlarged in 1861), the *Flying Dutchman* (92x18) and the *Hope* (95x18) built in 1860, the first *Reliance* (126x26) in 1862, the *Alexandra* (167x30) in 1863, and the *Onward* (121x24) in 1865. The *Prince of Wales* (115x20) was built in 1863 at Lillooet Lake (above Harrison Lake). Typically, most of these vessels had working lives of between five and ten years.

But while the Cariboo Gold Rush was still in progress, small, privately owned sternwheelers were built in 1860s for lakes that bypassed the Fraser Canyon, the *Marzelle* (65x14) at Lillooet Lake for service on it, the *Lady of the Lake* (70x15) at Anderson Lake for service on it, and the *Champion* (50x14) on Seton Lake for service on it.

A political event began to influence steamboat operations in 1866, when the colonies on Vancouver Island and on the Mainland were persuaded to become a single colony. Another occurred in 1871 when

the Province of British Columbia joined the Canadian Confederation, with the promise that the Canadian Pacific Railway would link Central Canada with the Pacific Coast. Action on this promise was not consistently pursued, especially during the years of the Mackenzie administration, from 1873 to 1878, in Ottawa. It was not until 1886 that the first transcontinental train from Toronto reached Port Moody. Ashcroft replaced Yale as the entry point to the Cariboo. The new city of Vancouver ended the fight for top management position waged between Victoria and New Westminster.

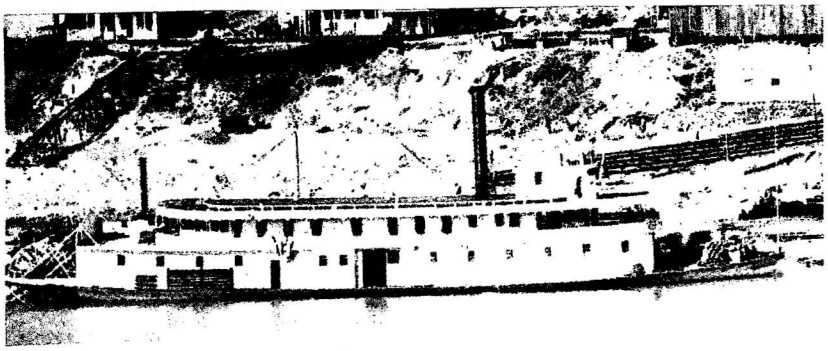


Sketch of the *Colonel Moody*

The next generation of Lower Fraser stern-wheelers arrived after 1870. Among them were: the *Glenora* (103x20), built at Victoria in 1874 and wrecked at Harrison Lake in 1879; the *Royal City* (128x26), built at Victoria in 1875, but wrecked on the Fraser in 1882; the second *Reliance* (122x23), built at Victoria in 1876, designed for the Stikine but served on the Fraser until broken up in 1892; the *Western Slope* (156x27), built at Victoria in 1879, spent some time on the Stikine River, was rebuilt as a barge in 1891 and broken up in 1911. The *Cassiar* (131x26), was built originally at Seattle in 1879, began Canadian service in 1880, was rebuilt at Victoria in 1882, but wrecked near Hope that same year. The New Westminster shipyard produced the *Adelaide* (95x17) in 1882, which served the canneries and communities springing up all along the Lower Fraser for ten years.

The *William Irving* (166x34), which replaced the *Glenora,* was built at Vancouver in 1880 and spent 14 years on the Lower Fraser run to Yale before being wrecked at New Westminster. Its engine cylinders were 18 inches in diameter and the stroke six feet. They each developed 74 hp. Its capacity was 300 tons. Its unloaded draft was 15 inches, and fully loaded was three feet six inches. It was the largest stern-wheeler to sail the Fraser.

Photo of the *William Irving* at Yale around 1881



The *Elizabeth J. Irving* (165x34), built at Victoria in 1881, may well have been the first Western stern-wheeler to have electric light. It also had 25 watertight compartments, a laden capacity of 350 tons, and a laden draft of three feet. Yet it had a very short career, catching fire at Hope later in 1881.

A third Irving vessel was the *R.P. Rithet* (117x34), product of Victoria in 1882, and described by the press as 'truly a floating palace.' In 1909 it was renamed the *Baramba,* rebuilt in 1910 at Victoria, and rebuilt again in 1917 as a barge.

Of special interest was the stern-wheeler *Skuzzy* (127x24), built and owned by CPR contractor Andrew Onderdonk, and launched at Spuzzum on the Fraser in 1882. Onderdonk was determined that the vessel would be the first to transport railway supplies through the upriver gorge of the Fraser Canyon, by way of Hell's Gate, to Boston Bar - thought up until then to be impossible. The *Skuzzy* went into the current in mid-May and, after a series of attempts interspersed with long delays, changes of captains and tactics, disappointments, and the 'pull' of 150 Chinese labourers, reached its objective in late September.

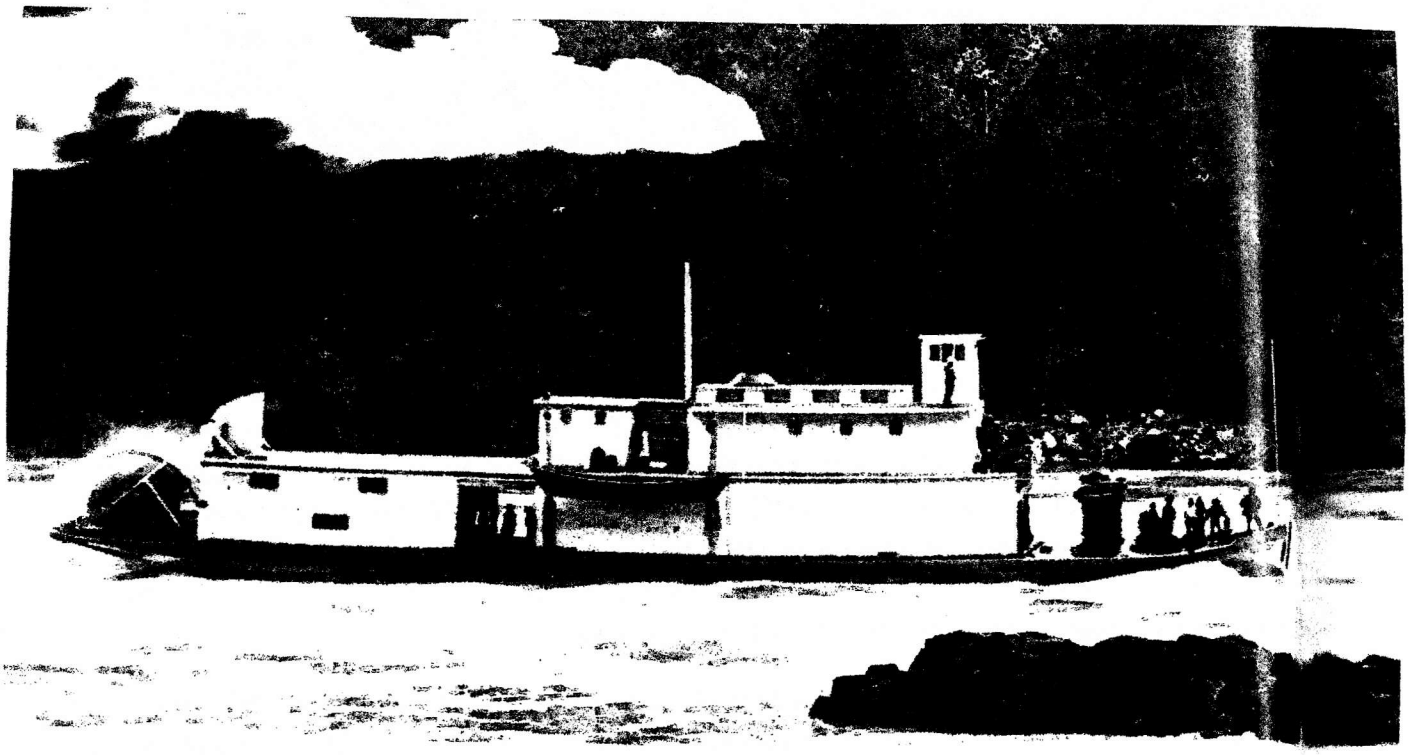


Photo of the *Skuzzy*

The Upper Fraser River stretch of navigable water began at Soda Creek, passed through Fort (Prince) George, and ended at Tête Jaune Cache near the Alberta border, with diversions up the Nechako River and the Stuart as far as Takla Landing. For most of the 19th century, it was a sparsely populated section of the Fraser, but this changed as the 20th century - and the railways - approached. . Between 1863 and the years before World War I, only around a dozen stern-wheelers sailed this section of the river.

The first one, the *Enterprise* (110x18), was launched in 1862 near Alexandria, having been built there by James Trahey. It was owned by the Wright Brothers and ran between Quesnel and Soda Creek from 1863 to 1871, when it was taken to Takla Landing for use in the Omineca Gold Rush, after which it was abandoned. Trahey and the Wrights also built and owned the second steamboat, the *Victoria* (115x23), built in 1869 at Quesnel. It was used, for the next 17 years, between there and Soda Creek.

There was then a 10-year gap, until 1896, when the *Charlotte* (111x21) was built by Alexander Watson for the North B.C. Navigation Company. It was the only steamboat on the Upper Fraser until 1909, when the *Quesnel* (70x16) was built there - soon to be renamed the *City of Quesnel* This steamboat would be the first to navigate the treacherous Grand Canyon of the Upper Fraser. The *Nechacco* (80x16) - soon to be renamed the *Chilco* - followed. It was built by Donald McPhee at Quesnel, in 1909. Its career was short. It was lost in ice in Cottonwood Canyon in April 1911. In 1910, the small *Fort Fraser* (56x12) was built at Soda Creek. It pioneered the route eastwards to Tête Jaune Cache. These vessels were all relatively small. In 1910, McPhee built the larger *Chilcotin* (135x24).

After the turn of the century, it was not uncommon for scows, with a crew of six, to drift down the Upper Fraser from Tête Jaune Cache to Fort George - a distance of 315 miles - in around five days, each carrying 20 tons of freight.

As the railway was built across the Soda Creek-Fort George-Tête Jaune Cache area of the Upper Fraser in the 1890s and later, the possibilities for significant settlement and economic activity increased. With this in mind, the BC Express Company decided to build two large luxury, wood-burning stern-wheelers to operate in this section of the river. Both were built at Soda Creek. The *BX* (128x28) was launched in May 1910 and could carry over 100 tons of freight and 130 passengers, and the marginally smaller, and slightly different, *BC Express* (121x20) in 1911 . The *BX*, for example, had a covered paddle wheel and no backsplash. The *BC Express* did not. The *BX* worked the Soda Creek- Fort George run. The *Express* began with the Fort George-Tête Jaune Cache run from 1911 until 1913, when it joined its sister ship. Both vessels were involved in the construction of the Pacific Great Eastern Railway. Charlebois has this to say about the *B.C. Express:*

> When operating in the Grand Canyon area, going against the current of the Upper Fraser River, the roaring furnaces of the *Express* would gobble up five cords of wood an hour, belching black smoke and live steam from its stack as it made a mighty surge of power against the current.

The last three pre-World War I Upper Fraser sternwheelers were the *Operator* (142x35), rebuilt at Tête Jaune Cache in 1912, sister-ship the *Conveyor* (142x25), rebuilt there the same year, and the *Robert C. Hammond* (101x22), built at Fort George in 1913. The first two had originally been built at Victoria in 1909 and had worked on the Skeena River. Both had been sailed back to Victoria, been dismantled and their pieces hauled to Tête Jaune Cache for rebuilding and use during the construction of the Grand Trunk Pacific Railway to Prince Rupert. When this work was finished, their machinery was recycled and the hulls left to rot on the shores of the Fraser.

To the north and east of the Upper Fraser was the Upper Peace River, 500 miles of which was navigable, from Vermillion Chutes to Hudson's Hope. The first stern-wheeler on the river was the small *St. Charles* (60x12), built in 1903, which served a Catholic Mission at Fort St. John for several years. In 1905, the HBC added the *Peace River* (110x24) and 40 tons capacity, built at Fort Vermillion in 1906, which served until 1915. In 1916, the privately-owned, much larger *D.A. Thomas* (162x37) appeared on the Peace. It was later bought by the HBC and, eventually taken down to the Lower Peace.

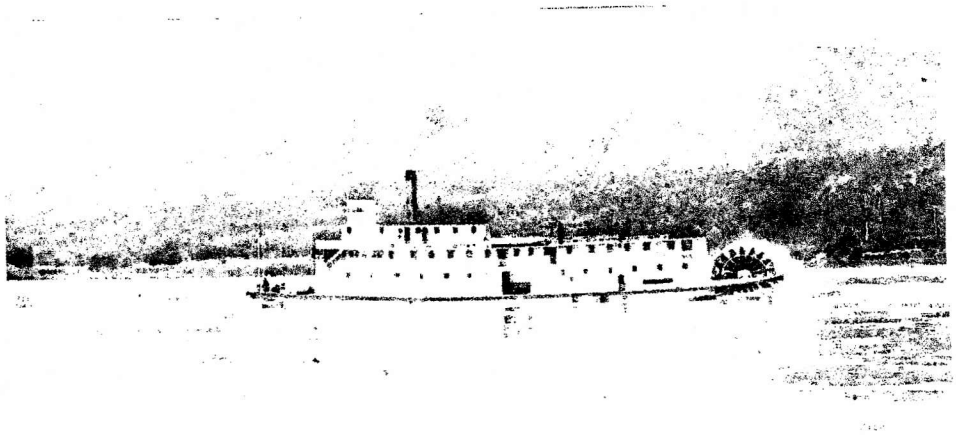


Photo of the *D.A. Thomas*

South now to the Upper Columbia and Upper Kootenay Rivers, which met at Canal Flats, where Columbia Lake was joined to the Kootenay, after 1889, by an undersized lock and canal.

It was a 300-mile waterway stretching from Golden, B.C., in the north to Jennings, Montana in the south and to the notoriously dangerous Jennings Canyon. The Upper Columbia part was a shallow, winding river, with salmon gravel ridges and sandbars, and choked by snags - sunken logs stuck in the river bottom. Snagboats equipped with hoists and winches were active. It included the Columbia's tributary, the Spillimacheen. The Upper Kootenay part ran through the region's growing mining industry which, in the 1880s and 1890s, was attracting expanding railway systems and settlers. Fort Steele became the hub of this part.

As noted above, the first steamboat to sail the Upper Columbia was the first *Duchess* (60x17), a stern-wheeler built at Golden in 1886 using odds and ends of lumber from an abandoned sawmill and old machinery, which included engines that had been salvaged after a half-century of service on a St. Lawrence ferryboat. It was broken up two years later. The second, the *Clive* (31x9), launched in 1887, was apparently not much better. Its hull was originally a railway barge, its boiler stood upright and was formerly part of a Manitoba steam plough. It was wrecked on its second trip. The *Annerly,* mentioned above, also sailed the Upper Columbia.

The story behind the building of the second lock/canal in Western Canada involves a European adventurer with the surname of Baillie-Grohman who, among other things, wanted to develop a

potential agricultural area at the foot of Kootenay Lake, near the border at Bonners Ferry, but it was regularly flooded by the river. The solution, he felt, was to lower the river level by diverting water into the Columbia at Columbia Lake, where the two rivers were close neighbours and the difference in their water levels only 11 feet. The provincial government would not allow this, because of its potential effect on downstream water levels and on railway lines then under construction. However, it granted Baillie-Grohman an alternative concession provided, among other things, he built a shipping canal and a 100x30 foot lock to connect the two rivers. The work began in 1886 and lasted for three years. But the lock, as built, was too small for the potential traffic and was only ever used three times. More about this in a moment.

There was relatively little through traffic between Jennings, Montana, and Fort Steele, B.C., on the Upper Kootenay because of the significant hazard in the Montana section of the waterway, at Jennings Canyon - rock-strewn, 70-foot wide, and with an elbow bend. No more than seven steamboats passed through this canyon, of which only two - the U.S.-built *Annerly* and *Libby* - were not wrecked in it.

The first was the American stern-wheeler *Rustler,* which the canyon destroyed in 1896 after only six weeks of service. However, its machinery was salvaged and used in the *North Star* the following year. This vessel survived around 20 round trips through the canyon. The Canadian *Gwendoline* and the American *Ruth* were involved in an incident in the canyon in 1897. The *Gwendoline* was seriously damaged, the *Ruth* more so. They were both repaired and returned to service. The American *J.D. Farrell,* the largest steamboat on the Upper Kootenay, was badly damaged in the canyon in 1898, but survived.

The hull of the *Gwendoline* (64x19) was built near Fort Steele in 1894 and taken through the Baillie-Grohman lock with some difficulty to Golden for fitting out. It then returned to the Kootenay through the lock, making it the only one to make the transit both ways - once. The vessel was intended originally to provide service between Fort Steele and Golden, but spent its time on the Upper Kootenay. In 1899, the then owners of the vessel decided to move it by rail to Kootenay Lake, on three railway flat cars. Not far into the trip, while attempting to squeeze the cars and the boat past an obtruding rock face, the vessel shifted , overbalanced, fell 50 feet into the river below and was smashed to pieces.

Other Columbia/Kootenay waterway vessels included the side-wheeler *Pert,* converted from a 50-foot bateau in 1887. In 1899, it was rebuilt as a propeller-driven vessel. Its service ended in 1903. The second *Duchess* (82x17), a larger and much better looking stern-wheeler than its namesake, was built at Golden in 1888 and was in service for 14 years. The little stern-wheeler *Marion* (61x10), also built at Golden in 1888, was transferred by rail to the Kootenay Lake in 1889, and broken up in 1902. The short-lived *Fool Hen,* built in 1894, had machinery too large for its hull and no room for freight, and its paddles were made from packing cases. Its machinery was quickly transferred to the new vessel whose hull was too big for the machinery.

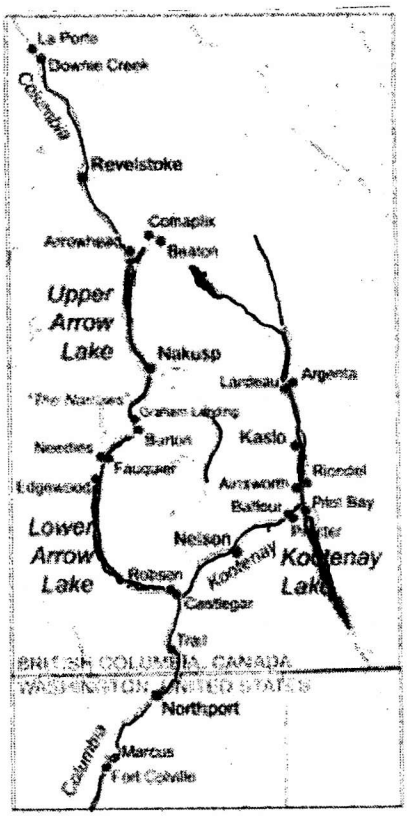
Steamboating on the Upper Kootenay ended effectively in 1901 when the *J.D. Farrell* was dismantled and shipped to a U.S. lake. Sold to Canadian owners, it was decided to take the *North Star* north to the

Upper Columbia. So in 1902 it made the third and last transit of the Baillie-Grohman Canal. With a length of 130 feet, the vessel was too long for the lock. It was also inches wider than it, almost too deep for the shallow Columbia, and unable to pass under a bridge over the river. It took two weeks to get the vessel through the lock. The gates had to be removed and temporary ones of ore sacks substituted. The side guard rails of the vessel were trimmed, and it was literally 'blown by dynamite' through the lock. It often scraped bottom on the way up the Columbia. The interfering bridge was temporarily hoisted out of the way. While based at Golden, the *North Star* made several trips but was, basically, too big for the river. In 1903 a problem arose over its American origin. So it was left tied up at Golden. Over the years, bits of it were 'borrowed' for other vessels.

On the dismantling of the second *Duchess,* its engines went to the *Ptarmigan* (110x21), which was being built at Golden in 1903. It had a blunt foredeck and was much used as an ore carrier. It was broken up in 1909 and replaced by the *Isabell* (95x19), also built at Golden, one of the fastest vessels on the waterway, but its service life was only two years. The *Klahowya* (92x19), whose framework was built at New Westminster in 1910 and shipped to Golden, where it was completed...on ice. When it was 'launched,' the ice around it was cut and the vessel allowed to sink into the water. Its machinery came from the *Ptarmigan,* and its pilothouse and capstan from the *North Star.* It was retired in 1914. The *Nowitka* (81x19) was built in 1911 at Golden, but did not make its last trip on the Upper Columbia until 1920. The *F.P. Armstrong* (81x20), built on the Spillimacheen in 1913 served for only a year.

Photo of the *Klahowya*

Moving westwards...to the Arrow and Kootenay Lakes, and Slocan Lake in between...



Apart from settlement and various branches of agriculture, the principal industrial developments taking place in the Arrow and Kootenay Lakes region of British Columbia during the final decades of the 19th century were in mining, smelting and forestry. Railway construction was also in high gear, fuelled principally by the rivalry between the CPR and its affiliated companies and the American Great Northern Railway (GNR), anxious to gain a strong foothold in Southern B.C., as well as south of the border, a rivalry that extended to its waterways. Another important vessel owner on these lakes was the independent Columbia & Kootenay Steam Navigation Company (C&KSN), until it was bought by the CPR. And on these waters, steamboats raced.

Travel on these lakes was established between Revelstoke (on the Columbia River) and Arrowhead in B.C. and Colville land Little Dalles (now Northport) in Washington State, in the case of the Arrow Lake, and between Argenta and Lardeau in B.C. and Bonner's Ferry (on the Lower Kootenay River) in the State of Idaho, in the case of the Kootenay Lake. Two important shipyard towns became established in Canada on the Arrow and Kootenay Lakes: at Nakusp and at Nelson. Vessels were also built at shipyards in the U.S.. In what follows, many - but not all - of the sternwheelers that sailed the Arrow and Kootenay Lakes in the late 19th and early 20th centuries have been included.

The little *Midge* was the first steam vessel on the Kootenay, although not a stern-wheeler. It was brought in by Baillie-Grohman in 1884 to help with his agricultural project, having been carried in pieces over 40 miles of trail from Sandpoint, Idaho, to Bonners Ferry. In 1889, the *Marion* was brought by rail from the Upper Columbia to Kootenay Lake. It sank at Kaslo in 1901.

The *Nelson* (132x26), with a six-foot hull depth, was launched at Nelson in June of 1891. It was the first stern-wheeler/major steamboat to serve Kootenay Lake. It operated mainly between Nelson, Kuskanook and Kootenay Landing during the construction of the railway through the Crowsnest Pass. Later, it partnered the *Moyie* (see below). It was lost in a fire in 1914.

The *City of Ainsworth* (84x21) was built at Ainsworth in 1892. A modest, 50 passenger vessel, it became part of the highly competitive CPR/GNR steamer-rail competition on Kootenay Lake in the early 1890s.

Caught in a gale on its way to Bonners Ferry in late 1898, the *Ainsworth* caught fire and foundered with loss of life. It later sank while under tow.

The small stern-wheeler named the *Kaslo* (62x14) was launched for service on Kootenay Lake in 1892. It was used mainly for freight and as an ore-carrier. It caught fire at Nelson in 1900 and was destroyed. The second, much larger *Kaslo* (174x27), and 765 capacity tons, was launched at Kaslo in September 1900 by the GNR to provide competition for the CPR. But the necessary passengers and freight did not materialize and the railway had to reduce its Kootenay Lake service. However, the *Kaslo* remained in service until wrecked at Ainsworth in 1910.

The sternwheeler *Kokanee* (143x25) was launched at Nelson, B.C. in 1896 for service on Kootenay Lake. Its hull depth was 6 feet. It could make 18 mph fully loaded, and took part in races with other vessels. It served until after World War I.

Originally, the *Moyie* (161x30) and its sistership, the *Minto* (see below), were intended for service on the Stikine River in support of the 'All Canadian Way' to the Klondike gold fields, but the cancellation of the 150-mile railway part of this project led to both vessels being assigned for service on the Kootenay and Arrow Lakes. The steel hulls and machinery for both vessels were prefabricated in sections at the Bertram Ironworks in Toronto and shipped west by rail. The *Moyie* was launched at Nelson in October 1898. Of 835 tons capacity, and described as 'elegant,' it could carry 400 passengers. It operated on all the Kootenay Lake routes on schedules connecting with those of the railway depots around the lake. It also hauled barges. Thanks to its steel construction, it was the last passenger stern-wheeler in Canada, remaining in service until 1957. The *Moyie* has been preserved at Kaslo at what has been designated a National Historic Site.

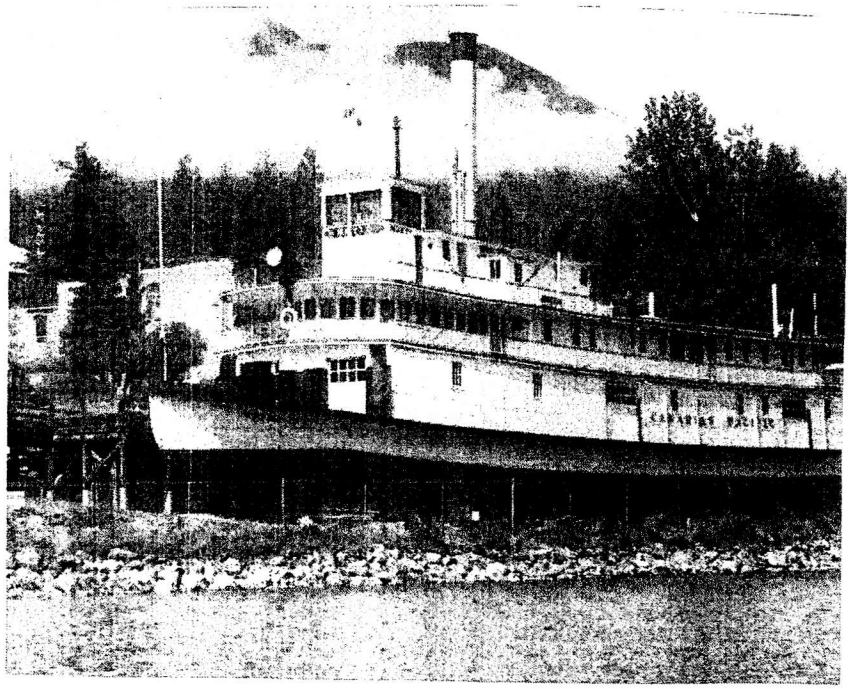
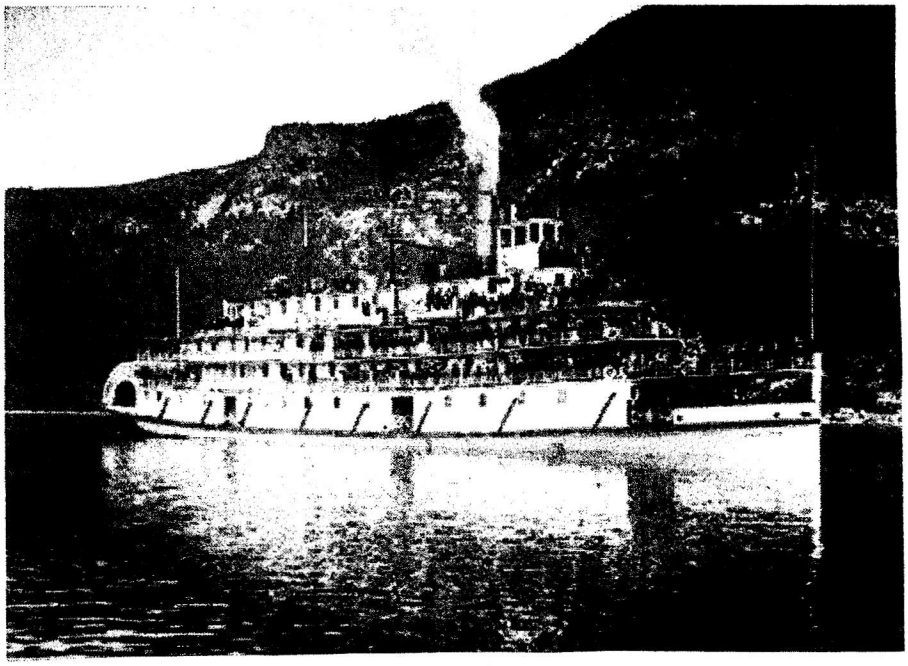


Photo of the *Moyie* on display at Kaslo

The wooden-hulled stern-wheeler *Kuskanook* (196x31) was also prefabricated in Eastern Canada, assembled at Nelson and launched in 1906. It served until retired in 1931. Its 'beat' was Kootenay Lake. Over 1000 tons gross, with a passenger capacity of 450, a crew of 35, and a coal-burner, it was the fastest vessel to appear on the lakes up until that time. It could reach 22 mph, and raced frequently.

The *Nasookin* (200x40) was one of the three largest stern-wheelers ever built in British Columbia, the other two being the *Bonnington* and the *Sicamous* (see below). Its hull was prefabricated at Port Arthur and assembled and launched, somewhat shakily, by the CPR at Nelson in 1913 for service on Kootenay Lake,. The flagship of the CPR fleet, with a capacity tonnage of 1870, it could carry 550 passengers. Like the other two, it had four decks, instead of the more usual three. It came into service on Kootenay Lake at the time that passengers, excursions and support for resorts had become the main businesses of the B.C. lake steamboats. Unfortunately for the vessel and its owners, World War I, the railways and the newer trucking industry negatively affected these businesses. During the Depression of the 1930s, the *Nasookin* was converted by the B.C. Government into a car ferry on Kootenay Lake. After being broken up 20 years later, the 'front end' became someone's land-based summer home!

Photo of the *Nasookin*



Over at the Arrow Lakes, in 1866, the American-built *Forty-Nine* was the first steamboat on the Arrows. It was 114 feet long, with a beam of 20 feet. It brought miners 300 miles north, as far as the foot of Death Rapids, on the Columbia north of Revelstoke, to the Big Bend Gold Rush. Damaged accidentally, after its third trip with miners, the vessel was repaired and returned permanently to Colville. In 1885 the U.S.-built stern-wheeler *Kootenai* arrived on the Arrow Lakes. Its engines were actually third-

hand, having originated at Portland, Oregon, in 1877. Its first trip north brought construction supplies for the CPR at Revelstoke. It was laid up between 1886 and 1890, but then worked until 1895, when it hit a rock in the Upper Arrow, was towed to Nakusp and dismantled. Its machinery was used in the stern-wheeler *(City of) Trail* (165x31), then being built at Nakusp by Thomas J. Bulger, having been designed as a freighter and barge-pusher. It served until 1900, when it caught fire at Robson and was destroyed.

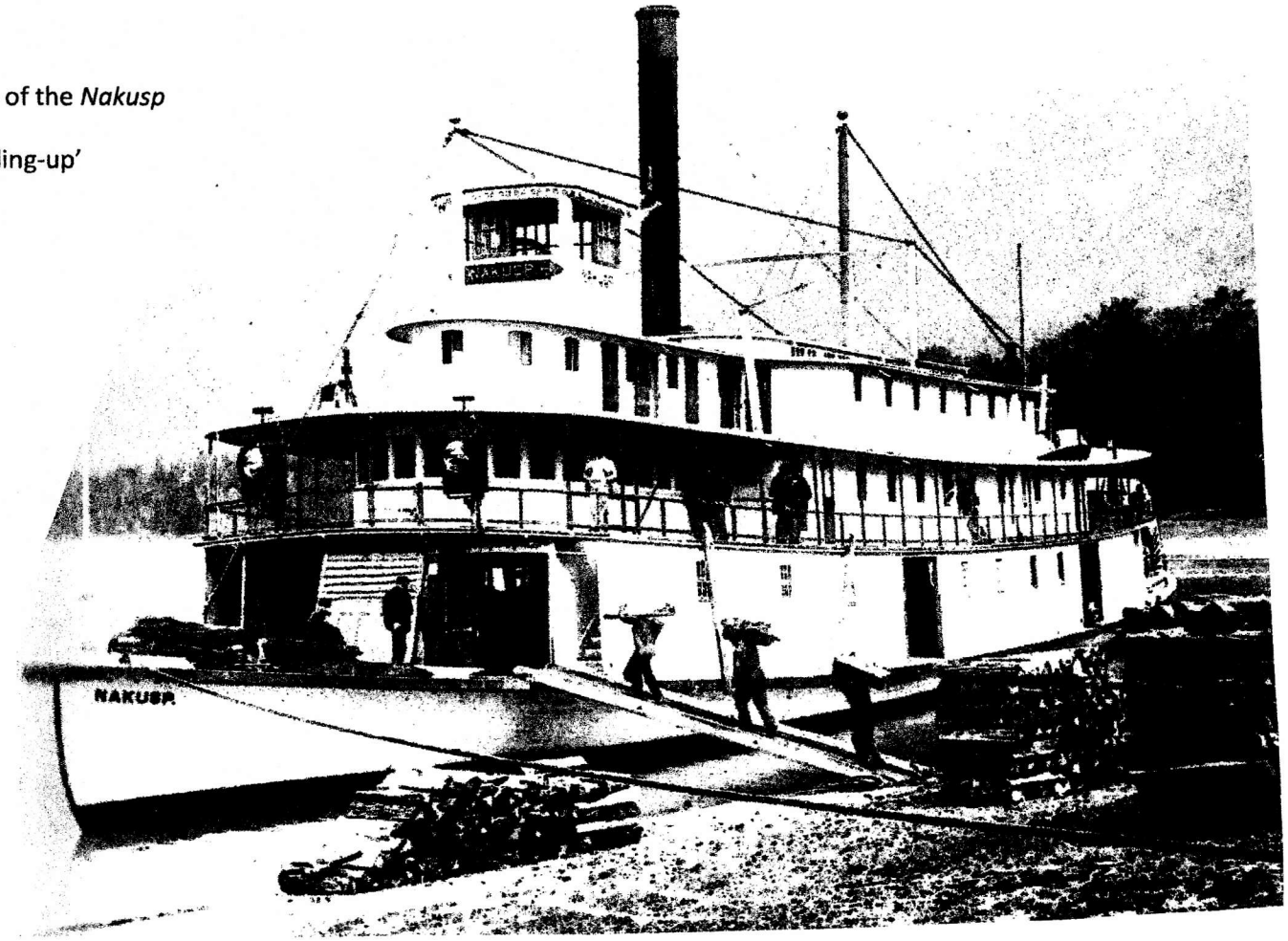
As noted above, the *Despatch* sailed the Arrow Lakes between 1888 and 1892. It was dismantled and its engines installed in the new stern-wheeler *Illecillewaet.* Launched in 1892 at Revelstoke, this vessel(75x15) had a ten-year career on the Arrow Lakes before being converted into a barge.

The 450 gross ton stern-wheeler *Lytton* (135x26), with a hull depth of almost five feet, was built by Alexander Watson at Revelstoke in 1890. Its two engines had cylinder diameters of 16 inches and strokes of five feet. It was basically a freighter, moving ores and construction equipment. It was dismantled around 1902.

The stern-wheeler *Nakusp* (171x34) was launched in July 1895 at its namesake town. Another freighter, with just over 1000 tons capacity, it also had comfortable quarters for passengers, including electric light and steam heat. However, its life was short. It caught fire and was lost at Arrowhead in 1897.

Photo of the *Nakusp*

'wooding-up'



The *Kootenay* (184x33) was built by Thomas J. Bulger and launched at Nakusp for the CPR in 1897. Another 1000-tonner, its engines had 18 inch diameter cylinders and six feet strokes. It serviced the Arrow Lakes and the Columbia River as far as Trail until 1919, when it was rebuilt as a houseboat.

The *Rossland* (183x29), with a seven-foot deep hull, was built at Nakusp, B.C., in 1898 and served mainly on the Arrow Lakes. It could reach a speed of 20 mph when fully loaded. It foundered in a heavy storm in 1917 and sank. It was raised and salvaged, but found unsuitable to continue as a stern-wheeler and was converted to a barge.

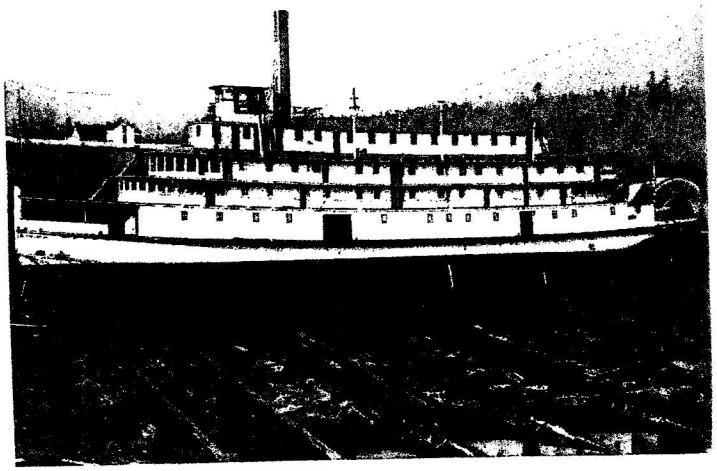
The disassembled pieces of the hull and machinery for the 830 capacity-ton *Minto* (162x30), the sistership of the *Moyie*, which also came from Toronto, were reassembled and launched in 1898 at Nakusp. Its engines had 16 inch diameter pistons and six feet strokes. While the *Moyie* served on Kootenay lake, the *Minto* served on the Arrow Lakes. The life of this long-serving and much admired vessel ended sadly in 1968, after many years of inactivity, when it was deliberately burned on the Upper Arrow Lake.

The *Revelstoke* (127x23) was launched at Nakusp in 1901 - a sleek, but smallish, stern-wheeler with a capacity of only 300 gross tons. Its engines had 12 inch diameter pistons and five-foot strokes, but delivered twice the power of similarly-sized earlier vessels. Designed for turbulent water, it drew only 22 inches unloaded and was assigned, for example, to the tricky Columbia River stretch between Revelstoke and Death Rapids. It was also used for excursions, which had become popular in the late 1890s. It was destroyed by fire in 1915.

The four-decker *Bonnington* (209x39), 1700 tons gross and with a draft of only three-and-a-half feet, was reputed to have been the largest stern-wheeler in the Pacific Northwest. It could carry over 400 passengers and a crew of 30. Its steel hull was first built at the Polson Iron Works in Toronto, where its engines were also built, and shipped west to Nakusp. Its superstructure was of wood, and there were 20 watertight compartments in the hull. The stern wheel was 25 feet in diameter, and there were 20 paddles. It was launched - sideways - in 1911. The engines were compound steam, the first in B.C., each generating 98 hp, with 16 inch HP cylinders and 34 inch LP cylinders and a stroke of eight feet. Its maximum speed was 16 mph. The boiler was of the locomotive type, nine feet in diameter and 28 feet long, the steam pressure 200 psi. Coal-fired, the *Bonnington* could use as much as 3,300 pounds of fuel an hour. The vessel served 20 years on the Arrow Lakes, succumbing to the effects of the Depression.

Photo of The *Bonnington*

prior to launching



In between the Arrow and Kootenay Lakes lies Slocan Lake, which was also host to several steamboats. The first was the small, propeller-driven *William Hunter* (59x13), built at the lake in 1892. Its planking was hand-sawn there and its boiler and other machinery brought to the lake by packhorse from Nakusp. It was condemned in 1901.

The sternwheeler *Slocan I* (156x25) was owned by the CPR and launched in 1897 at Rosebery on Slocan Lake. Slightly bigger than the *Kokanee,* it was scrapped in 1905 and replaced by the Rosebery-built *Slocan II* (158x28), which served until retired in 1927.

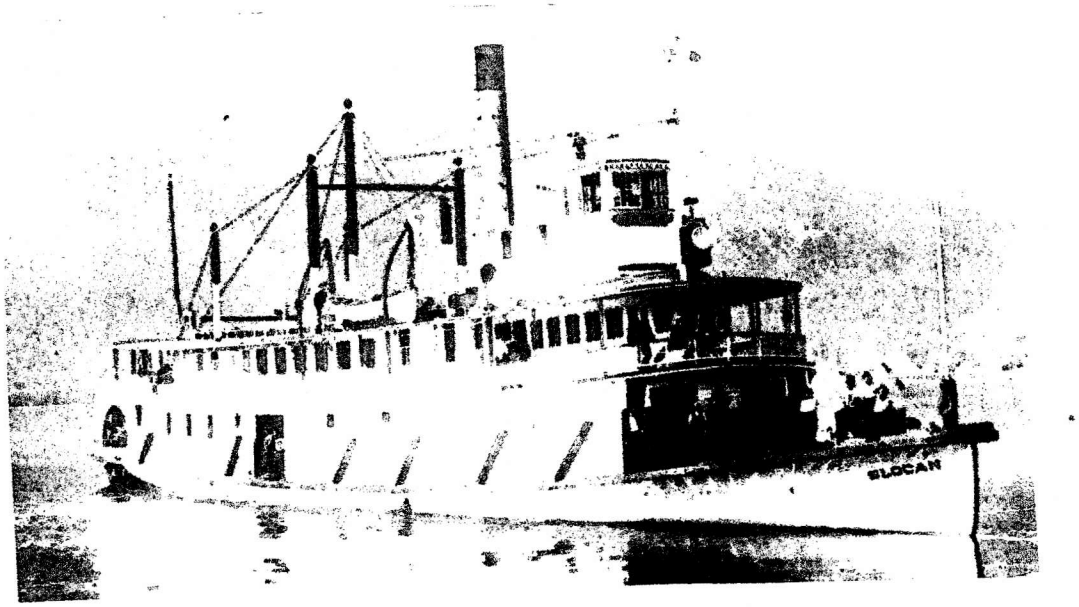


Photo of *Slocan II*

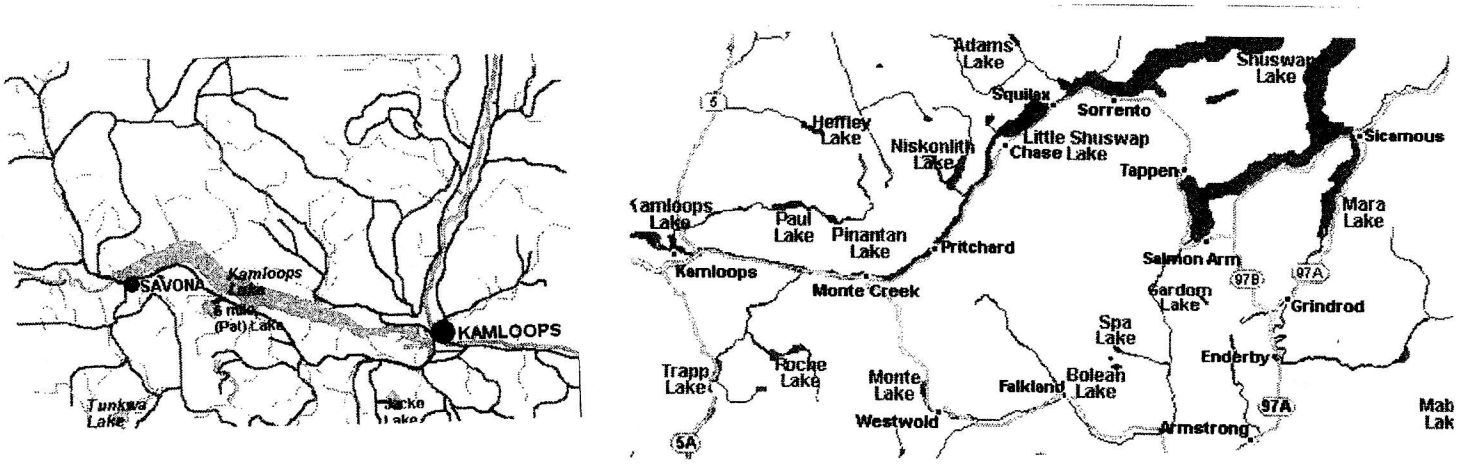
Trout Lake, upstream from Kootenay Lake, had the stern-wheeler *Victoria* (75x15), a rather ramshackle vessel, built there in 1899 but broken up only seven years later.

Moving west to the Shuswap Lake-Thompson River- Kamloops region...

The first stern-wheeler in the region was the *Marten* (125x25), whose hull was built on Shuswap Lake and floated down the Thompson to Kamloops Lake to Savona's Ferry for its engines. It was completed in late May 1866, as the Big Bend Gold Rush was fading. It remained tied up at Fort Kamloops until purchased by several businessmen in 1875. Three years later, after some irregular and undistinguished service, and an accident, the vessel was beached and left to rot at Kamloops Lake.

The first, small *Kamloops* (57x13) was built at Savona's Ferry in 1872 by pioneering businessman John Adams. A paddle-wheeler, for power, it used a 4 hp engine first installed in a flour mill at Soda Creek. Apparently, it drew only eight inches of water, could do 10 mph, had a one-man crew, and handled both freight and passengers. It took the first woman settler up the Spallumcheen River in 1874. The vessel was dismantled in 1878. Its little engine was installed in a new vessel, the *Spallumcheen* (80x17),

another paddle-wheeler, built at Kamloops for the Kamloops Steam Navigation Company and service on the very shallow river of the same name. It was designed to operate in inches of water. Later that same year, yet another paddle-wheeler appeared - the shallow draft 100-ton *Lady Dufferin* (87x16), launched at Tranquille for William Fortune and served until 1891. It became very popular with Shuswap Lake pioneers. For several years, these little steamboats did yeoman service in the region but they gradually, but not completely, lost their market as the railway took it over.



Maps of Savona to Kamloops and Kamloops-Shuswap Lakes and Enderby

The KSNC built the *Peerless* (133x26), a stern-wheeler, at Kamloops in 1880 to take advantage of the construction supply business. Its hull had 16 watertight compartments and its engines provided a top speed of 15 mph. Loaded, it needed only 18 inches of draft. Its travels on the North Thompson River exposed it to the dangerous rocks and rapids in the Black Canyon. The vessel survived until 1893.

The second *Kamloops* (126x27), a stern-wheeler, was built at Kamloops in 1885.

The second *Skuzzy* (133x28) was built in a record 44 days at Savona's Ferry for CPR contractor Andrew Onderdonk. Its engines came from the first *Skuzzy*. When the construction work ended, so did the second *Skuzzy*.

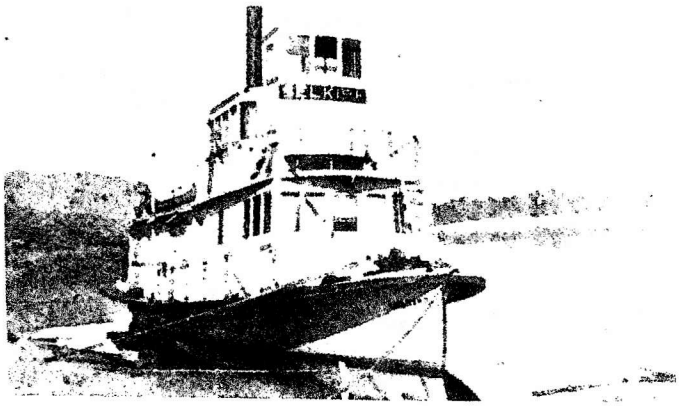
But as construction waned, the timber industry in the region began to grow and the steamboats took advantage of this. Several new vessels appeared. The stern-wheeler *Queen* (70x13) was built for a private owner, was launched at Kamloops in 1894, but was destroyed by a boiler explosion only months later, with loss of life.

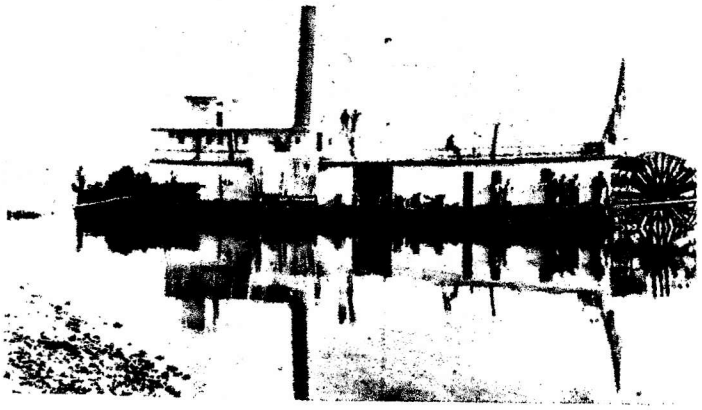
The privately built stern-wheeler *Selkirk* (62x11) appeared at Kamloops in 1895. In 1898 it capsized suddenly during a trip and ended up on a sandbank, from which it was refloated three months later. But, almost immediately, it capsized again.

The *Thompson* (94x19) was built at Salmon Arm, also in 1895, and had a working life of ten years. The *Ethel Ross* (84x14), which was renamed the *Scud,* was built in 1897 by Captain Ward, a shipbuilder

originally from the Maritimes, at Kamloops. It had a 15-year career.

During the first decade of the 20th century, several new locally built vessels appeared, primarily for the lumber industry, among them the *Florence Carlin* (98x20) and the *C.R. Lamb* (91x20), which was the last vessel to survive in the Shuswap region. The last vessel to be built there was the relatively large *Distributor* (143x35), which appeared at Kamloops in 1912, but was converted to a barge in 1918.



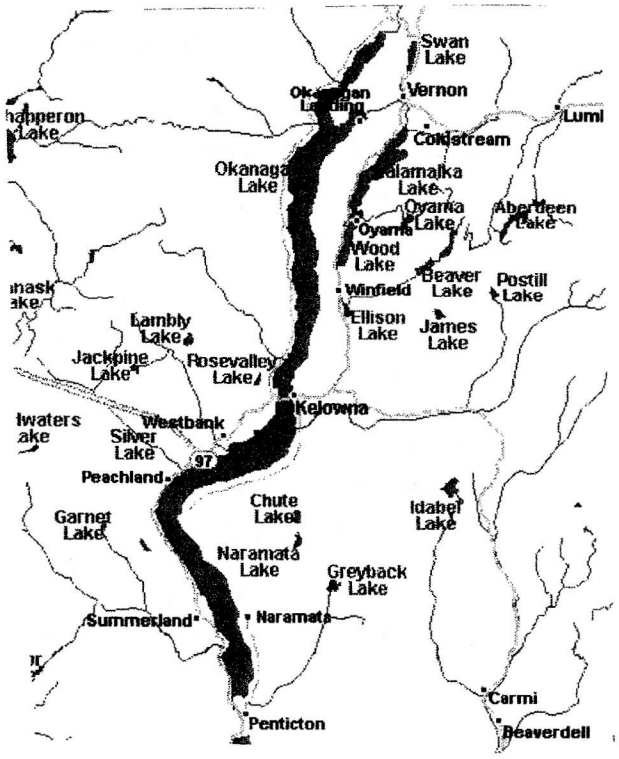


Photos of the *Selkirk*... ...and the second *Skuzzy*

Farther south a little, to 69-milelong Okanagan Lake...

Of all the regions of British Columbia that hosted stern-wheelers and other steamers, Okanagan Lake was perhaps the most peaceful. No sinkings or explosions and only a couple of fires.

The very first steamboat was the tiny *Mary Victoria Greenhow* (32x5), launched at Okanagan Landing in 1886, with a supply-short coal oil burning engine and owned by Captain T.D Shorts, who provided variable schedule Lake service over the years using a variety of boats, some with oars. His next steamboat, the *Jubilee,* used wood as fuel, but this also gave rise to supply problems. The boat perished in spring ice in 1890. Then followed the *City of Vernon* and the very much larger but unlavish *Penticton* (70x16), launched in 1890 at Okanagan Landing. The *Vernon* was sold and its engine - the original coal oil one - was put into a new hull called the *Wanderer,* which later operated as the *Violet.*



Map of Okanagan Lake

Around this time, the main industry of the Okanagan was changing from ranching to fruit-growing. Settlement accelerated. Also growing were the railways, including the Kettle Valley Railway (KVR), and the excursion era was beginning. There was also mineral development.

The first, small Okanagan Lake stern-wheeler was the *Red Star* (57x14), built for R.P. Rithet in 1888 on the Spallumcheen (now Shuswap) River north of the Lake. Its service included bringing supplies for railway construction from Sicamous to Okanagan Landing in the early 1890s. Its working life ended not long afterwards.

In May 1893 the region got its first 'full-size' stern-wheeler when the well-furnished, 500 gross ton *Aberdeen* (146x30) was launched for the CPR at Okanagan Landing. It could carry 200 tons of freight and provided regular service between Okanagan Landing and Penticton and elsewhere around the lake, some of these places having no wharves, until the end of World War I.

The *Aberdeen* was not alone on the Lake. In 1894 the privately-owner stern-wheeler *Fairview* (55x15) was launched at Okanagan Landing, but its career was short. It burned at the Landing in 1897. It was replaced by another larger, privately-owned stern-wheeler, the *Greenwood* (89x17), launched at the Landing in 1897. Two years later, it also burned - at Okanagan Falls.

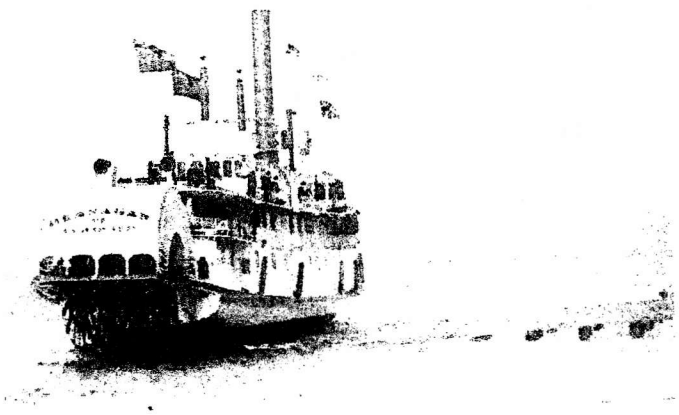
In 1907 the CPR launched (sideways) - again at Okanagan Landing - the large, fast stern-wheeler *Okanagan* (193x31) to assist the *Aberdeen.* It could carry 250 passengers and was well fitted out. In 1910, the CPR added yet another vessel, the *Kaleden* (94x18), again at the Landing. Intended for service between the Okanagan and Dog Lakes on the Okanagan River, a tributary of the Columbia, it experienced difficulties on its maiden trip with sandbars and mudbanks, in spite of having minimal draft, both downstream and upstream. It was the vessel's last trip on the River! Thereafter, it stayed on the Lake and did good work serving the needs of the constructors of the KVR.

The *Sicamous* (201x40), 1787 gross tons, was launched in 1914 at Okanagan Landing. The third of the largest B.C. stern-wheelers, it also had four decks, a steel hull with 20 watertight compartments, a wooden superstructure, and could carry 500 passengers at a top speed of 15 mph. It became the showpiece of Okanagan Lake and participated in war service from 1914 until 1918.

With the Peace of 1918 and the completion of the KVR, the *Aberdeen, Okanagan* and *Kaleden* were laid up, leaving the *Sicamous* to serve the Lake. By 1931 the CPR had terminated the stern-wheeler service. The three smaller vessels had a variety of 'deaths.' The *Sicamous* eventually became a museum moored at Penticton.

Photo of the *Okanagan*

launching...sideways



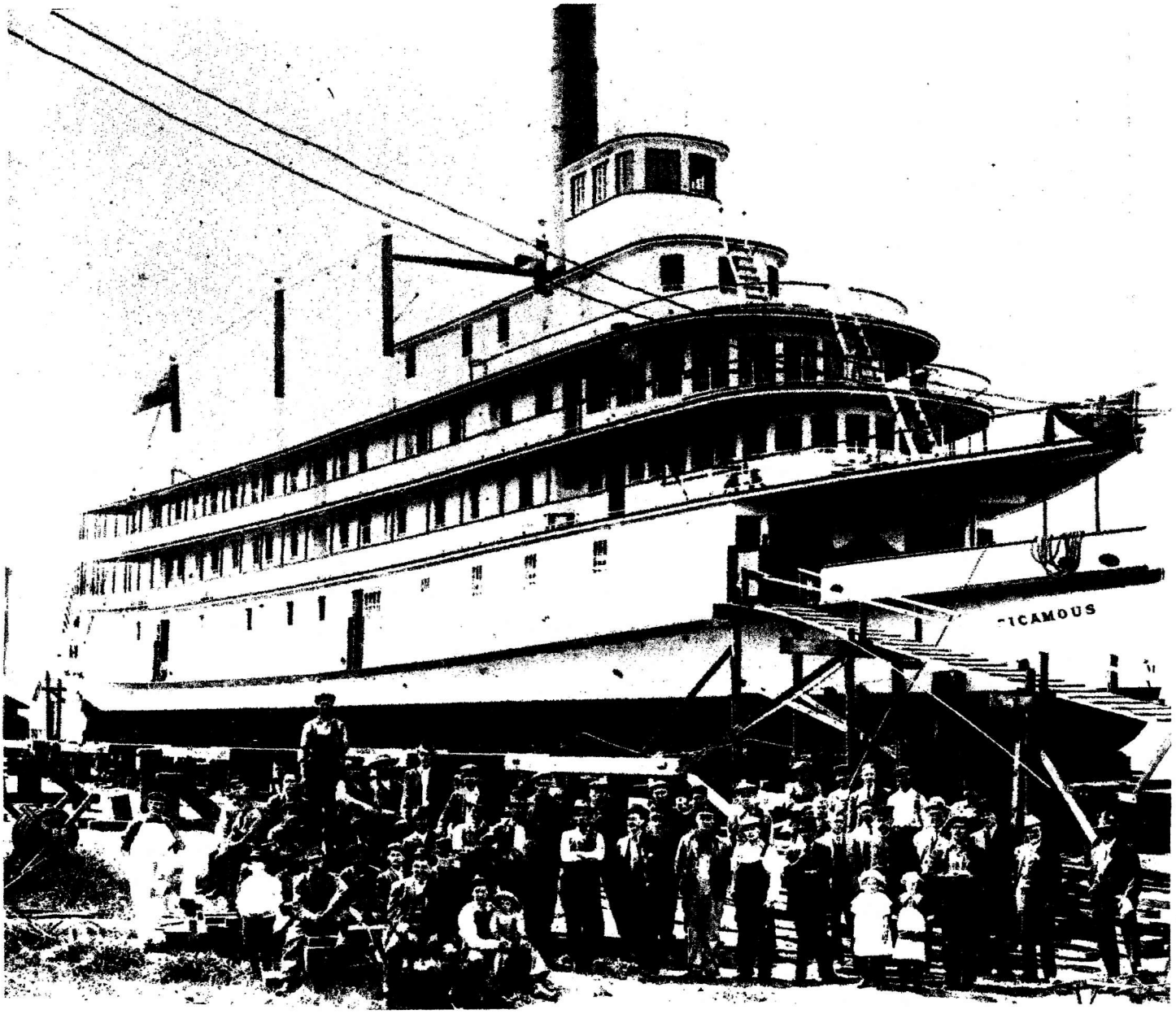


Photo of the *Sicamous* prior to launching

To the northwest corner of British Columbia, to the Skeena and Stikine Rivers...

The objects of travel on the Skeena River between the 1860s and the 1890s were to support the building of the Collins Overland Telegraph Line, the building of the Grand Trunk Pacific railroad to Prince Rupert, the Omineca and the Klondike Gold Rushes, and getting supplies to the town of Hazelton, 180 miles upriver from the Pacific Ocean. Unfortunately the Skeena, with its rock-strewn rapids and canyons and relatively large fluctuations between high and low water levels, was about the toughest in Canada for stern-wheeler traffic. So the vessels, too, had to be tough, and especially since racing between stern-wheelers also erupted on this River.

The first stern-wheeler on the Skeena was the 60-foot-long *Union*, built in 1861 at Victoria, which could only carry 20 tons of freight and 4 passengers. It made the trip in 1864, by sea from Victoria, under charter to Collins Overland. But being underpowered, it could only travel part way up the River. The *Union* tried again in 1865, but still only covered the first 90 miles. The second was the *Mumford,* built and owned by Collins Overland, which made the trip by sea from Victoria in 1866, but travelled upriver as far as present day Terrace. The Collins work across Northern B.C. came to an end with the successful laying elsewhere of the transatlantic cable.

In 1869 the Omineca Gold Rush, reached from Hazelton, stimulated travel on the Skeena, but no steamboats were involved.

In 1891 the stern-wheeler *Caledonia* (100x25), built that year at New Westminster and owned by the Hudson's Bay Company, made its first Skeena trip, reaching Hazelton where the HBC had a post. In 1895, it was rebuilt at Port Simpson, on the coast near the mouth of the Skeena, and a 30-foot section was added to its hull. In 1898, it was wrecked on the coast and replaced by a second vessel called *Caledonia* (142x30), also built at New Westminster using the engines from the first vessel. This one was sold in 1908, but soon after was wrecked on the Skeena. The engines and other machinery from it were put into the *Omineca* (138x31), built at Victoria in 1909.

The next Skeena vessel, in 1898, was the HBC stern-wheeler *Strathcona* (140x30), built that year at Vancouver, coinciding with the height of the Klondike Gold Rush. It made only one trip up the Skeena, after which it was sold and moved to the Gulf Islands. Meanwhile competitor Robert Cunningham had brought his U.S. built stern-wheeler *Monte Cristo* to the Skeena and a dangerous racing started between his vessels and those of the HBC. In 1901, Cunningham had a new vessel, the *Hazelton* (134x24) launched at Victoria. The HBC's *Caledonia* could not compete, so the Company answered with the *Mount Royal* (130x28), built at Victoria in 1902. In 1904, a race up the Skeena between it and the *Hazelton* resulted in legal action against both captains. It also resulted in a truce between the rival companies and the retirement of the *Hazelton* to Port Essington at the river's mouth. In July 1907, the *Mount Royal* struck a large rock on its way down the Kitselas Canyon and was wrecked with loss of life.

Meanwhile, the small, underpowered *Pheasant* (112x17), a product of New Westminster in 1904, was wrecked at Redrock Canyon in 1906. The *Casca* (140x31) made only one trip on the river, in 1899 before returning to Vancouver. The small *Craigflower* (62x12) was used as a water taxi around the river's mouth.

The stern-wheeler *Port Simpson* (137x30) acquired the reputation as the 'Queen of the Skeena' for the quality of the accommodations it provided for its passengers...h & c running water and steam heat in the cabins. An HBC vessel, it was built at Victoria in 1908 and served on the Skeena until 1912, when it was sent for a three-year stint on the Stikine, after which it was eventually abandoned and left to rot.

Other stern-wheeled vessels on the Skeena during the early 1900s included the *Distributor* (130x30), a

cargo-carrying sistership to the *Port Simpson,* which had only a three-year career, and the freight boats, the *Operator* (138x31) and the *Conveyor* (138x31).

The *Skeena* (121x27), owned by meat and vegetable supplier P. Burns & Company, was built at Vancouver in 1908. It had iron sheeting on its bow and could work on the river in winter. Sold in 1911, it was transferred to the Lower Fraser River and worked there for the next 15 years. It eventually became an oil barge.

The *Inlander* (136x29), a 1910 product of Victoria, was the last vessel to arrive on the Skeena, and the last boat to leave, in 1912. The lavishness of the facilities it provided for passengers - including a piano - exceeded those of the *Port Simpson*! It apparently ended its days rotting at Port Essington alongside the *Monte Cristo.*

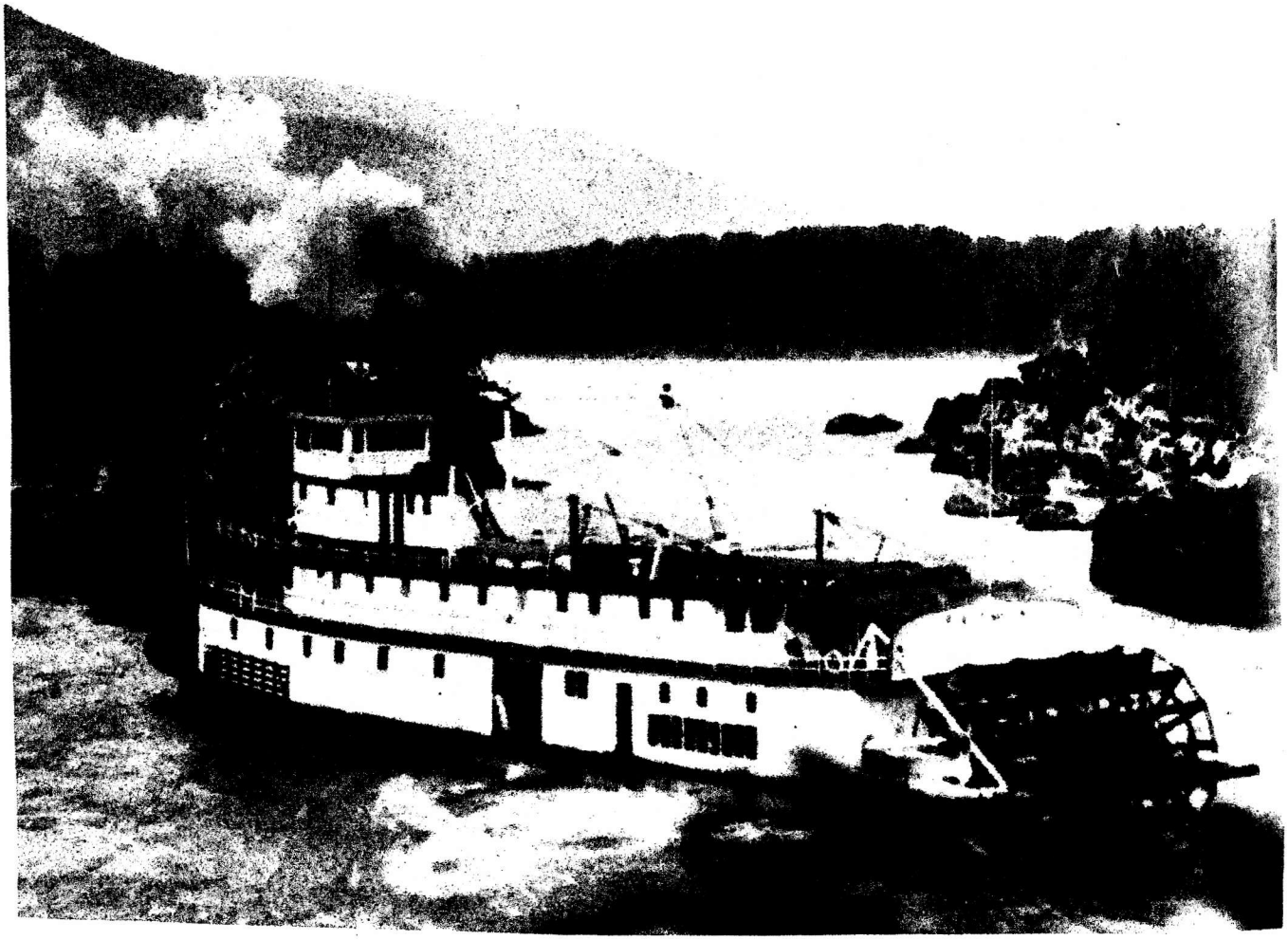


Photo of the *Port Simpson* in the Kitselas Canyon...it served on both the Skeena and the Stikine

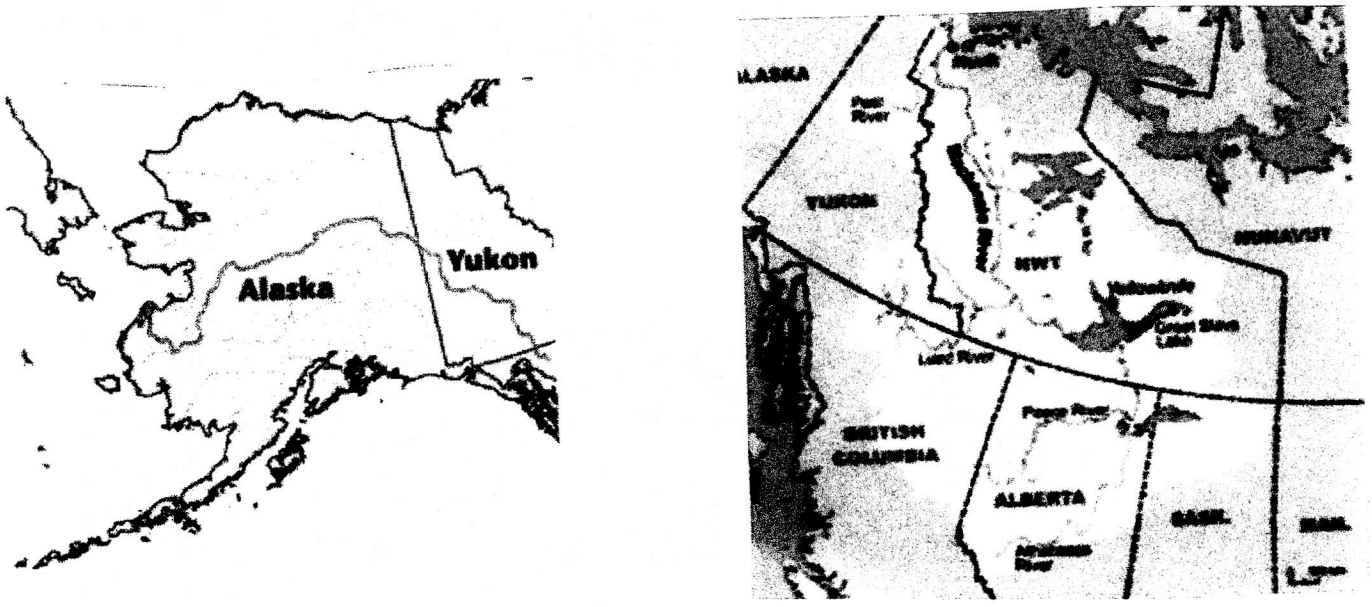
Like the Skeena, the Stikine River was accessed from the Pacific Ocean and vessels coming to it had to make the long trip north by sea, often from Victoria or Vancouver. The river was navigable for 130 miles, to Glenora, just short of Telegraph Creek. The vessels assisted prospectors to access new goldfields: the Stikine itself in the 1860s, the Cassiar and Dease Lake in the 1870s, and the Klondike in the late 1890s. The HBC also had a trading post on the river. And steamboat possibilities encouraged adventurous captains from the Lower Fraser and other southern rivers to seek opportunities on both the northern rivers.

The first stern-wheeler on the Stikine, in 1862, was the *Flying Dutchman* (92x18), built at Victoria in 1860. The *Mumford* came from the Skeena in 1866, several more in the 1870s, including the *Western Slope*, and during and after the *Klondike* years - some briefly - such as the second *Caledonia,* the *Casca,* the *Distributor,* and the *Hazelton.*

The Klondike Gold Rush attracted most attention, especially when the 'All Canadian' route was proposed. Around a dozen new vessels were planned for the Stikine in support of this, but these plans were dropped when financial support for the rail part of the route went to the White Pass & Yukon Railway instead. As mentioned above, two of the dozen - the *Moyie* and the *Minto* -were completed but assigned to the Kootenay and Arrow Lakes.

The *Port Simpson* spent from 1913 to 1916 on the Stikine, servicing the HBC post.

Yukon

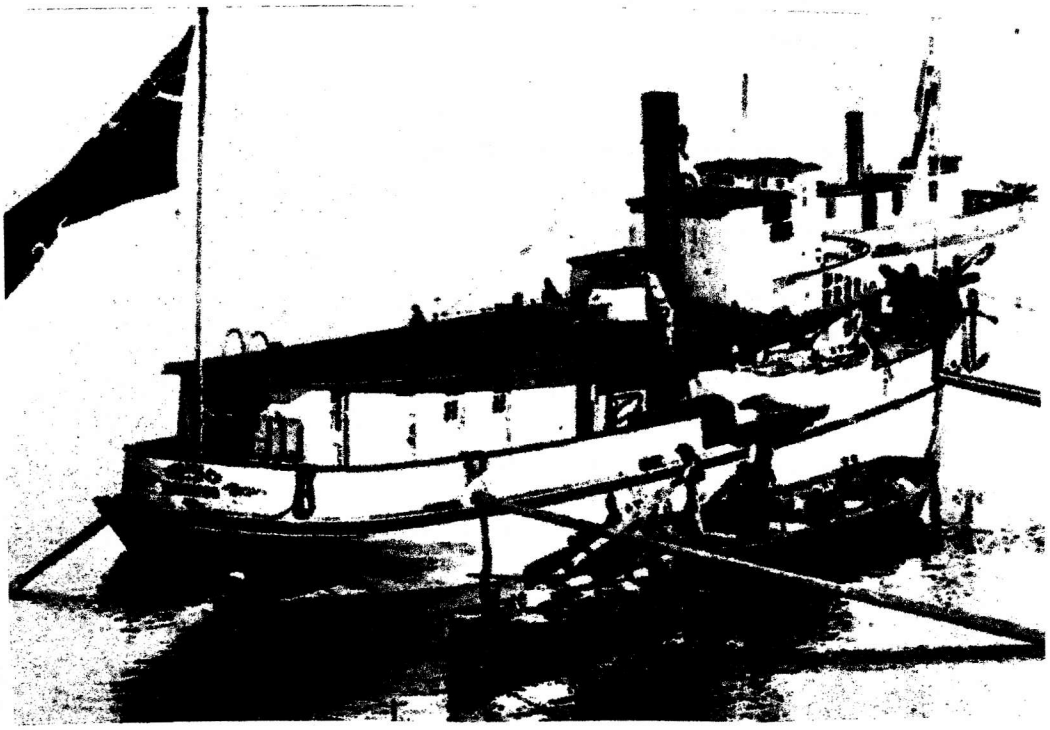


Maps of Yukon River and Mackenzie Watershed

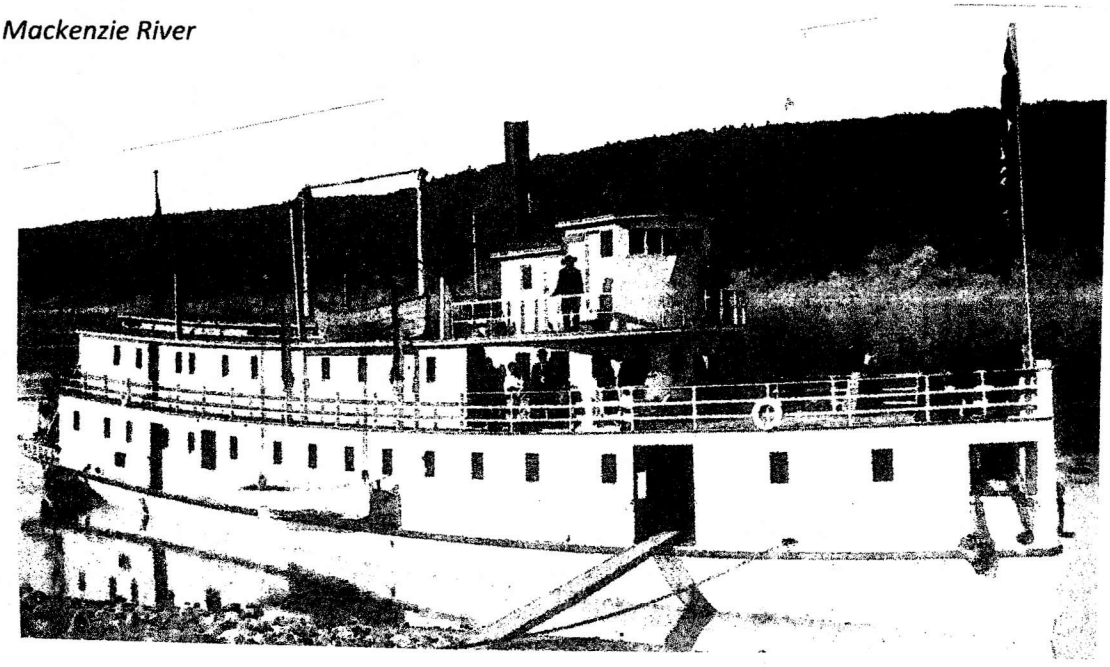
The Mackenzie River watershed was a vital part of the fur trade. The first steamboat on it was the stern-wheeler *Grahame* (mentioned already), on the Athabasca River in the 1880s. It operated between

Athabasca Landing and the Slave Lake Rapids, the only significant obstacle on the way to the Mackenzie. In 1886, the screw-driven steamboat *Wrigley* (83x15) was launched by the HBC at Fort Smith, on the other side of these rapids and portage trails were developed around them. It operated on the Mackenzie as far north as Aklavik on the delta. In 1911, the HBC launched the shallow-draft stern-wheeler *Mackenzie River* (126x26) at Fort Smith.

Photo of the *Wrigley*...



...and the *Mackenzie River*



The Mackenzie was promoted as an alternative route to the Klondike during the Gold Rush and some private vessels were used for this purpose.

The story of steamboats on the Yukon River is largely the story of the Klondike Gold Rush, one that has often been told, beginning with the discovery of gold by Carmack, Sookum Jim and Henderson at Bonanza Creek in 1896. But just three short years later, the Rush had all but disappeared. During it, several thousand stern-wheelers, barges, and craft as small as rowboats were built for, and sailed on, the 2100 miles of the Yukon River, between Teslin Lake and the Bering Sea.

But steamboats had travelled the Alaska portion of the Yukon River in the years before the Gold Rush. In 1892 for example, the 175-foot long *Portus B. Weare,* of 400 gross tons and built at St. Michael, Alaska, on the Bering Sea, sailed 80 miles up-river in salt water before reaching fresh water. Before proceeding further, all the salt water had to be pumped out of the engine and boiler and replaced by fresh water. Also on this lower part of the river, the only available wood for boiler fuel was driftwood. The frequent wooding-up that was needed by the *Weare* and the other steamboats was made more unpleasant by the mosquitoes and blackflies. And there were many shallow portions of the river where a vessel had to reverse into sandbanks so that its stern wheel could cut a way through them, or where ice could form quickly and thickly as the eight-month long winter began. And river currents around the Dawson-Whitehorse area could be swift, littered with rocks and narrowed by dangerous canyons, such as the Miles Canyon near Whitehorse.

Also because of the shallowness of the River, many of the steamboats working in the neighbourhood of Dawson City during the Gold Rush were quite a lot smaller than the *Weare.* Many were built in the United States, some in Canada. A handful were transported in pieces by horses, mules and men to the River over the White Pass, but not the Chilcoot, although it was a longer trip to the river and the first wood supplies were farther away.

As mentioned earlier, the Stikine River was intended to provide access to the Yukon River, but failure to build the railway part of the 'All-Canadian' route from Telegraph Creek ruled it out.

The transportation situation to the Klondike improved when the 110-mile long White Pass & Yukon Railway (WP&YR) was completed between Skagway and Whitehorse in 1900...too late for the Rush. By then, many of the steamboat owners serving Dawson and Whitehorse were bankrupt or otherwise out of business, and many of their vessels had been left to rot along the banks of the river. The following year, the WP&YR entered the steamboat business on the Yukon River and formed the British Yukon Navigation Company for this purpose. It also built three new vessels, at Whitehorse, all sternwheelers: the *Dawson* (167x34); the *Selkirk* (167x34); and the *Whitehorse* (167x35). All of them served on the River past World War I, after Whitehorse replaced Dawson as the Yukon's administrative capital.

These were among the other vessels built at the time of the Klondike Gold Rush for service on the Yukon River:

Anglican: (85x21) built in 1898 at Teslin, Yukon, for the Teslin Transportation Company; its machinery was hauled the 150 miles from Telegraph Creek to the lake by sleigh; it was acquired by the WP&YR in 1901 and last used by it that same year; finally broken up at Whitehorse many years later

Clifford Sifton: (120x24) built in 1898 at Bennett, B.C., for the Dominion Steamboat Line; acquired by the WP&YR in 1903; converted to barge; demolished in collision at Dawson in 1905

Columbian: (147x33) built in 1898 at Victoria, B.C., for John H. Todd; acquired by WP&YR in 1901; destroyed in explosion at Eagle Rock, Yukon, in 1906

Hamlin: (146x31) built in 1898 at Vancouver, B.C., for the CPR; acquired by WP&YR 1901; sold and resold several times; foundered in the Fraser River in 1918

Tyrrell: (142x30) built in 1898 at Vancouver, B.C., for the CPR; sold and resold several times; acquired by WP&YR in 1906; broken up at Dawson in 1918

Gleaner: (113x25) built in 1899 at Bennett, B.C., for the John Irving Navigation Company; acquired by WP&YR in 1901; last used in 1923 and eventually scuttled at Nares Lake, Y.T.

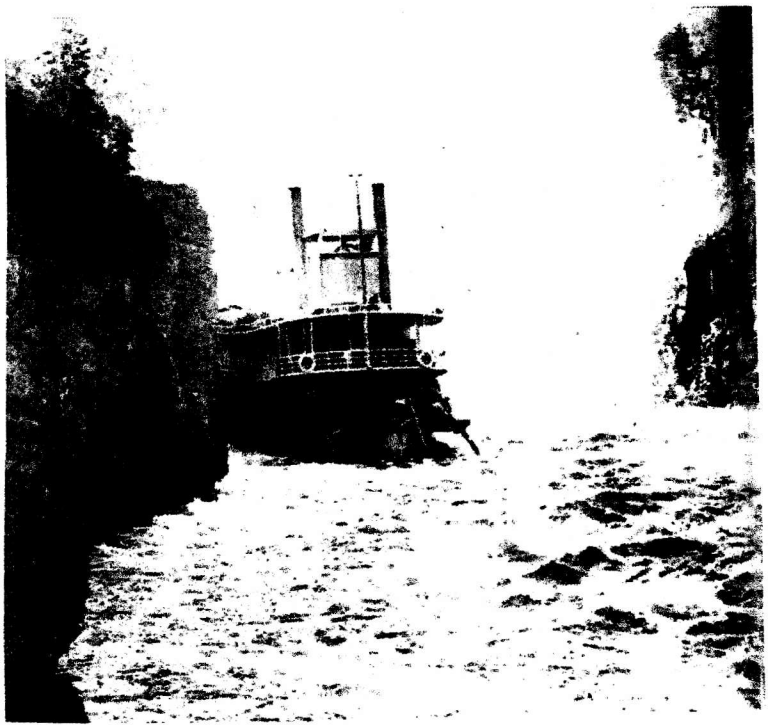


Photo of the *Clifford Sifton* in Miles Canyon, YT

Two post-Klondike and post-World War I stern-wheelers from the Yukon River have been designated by the Historic Sites and Monuments Board of Canada as national historic sites: the *Keno* at Dawson, and the *Klondike II* at Whitehorse. The *Keno* (130x29), and 1363 tons gross, was built at Whitehorse in 1922 to transport ore from mines on the Stewart River. The *Klondike II* (210x42) was also built at Whitehorse, in 1937, eight years after *Klondike I* was built and a year after it was wrecked, to carry freight and passengers between Whitehorse and Dawson. It had two compound jet-condensing steam engines generating over 500 hp. The engine for Molson's *Accommodation* generated horsepower in single digits!

To conclude, briefly

This paper may seem like a blurr of steamboat names and origins and capsule versions of their careers, with comments on some of their eventual fates. Nevertheless, it helps demonstrate the significance of steamboats in the development of all of Canada throughout the 19th century.

As the years passed, larger and more powerful vessels were built but, in general, their lengths were limited by wooden hulls and by the constraints of the waters in which they travelled. The beams of the side-paddlers were usually wider than those of the stern-wheelers of the same length. Their engines differed as well - condensing in the east, non-condensing in the west - and became more powerful, and their boiler pressures increased with time. But while Western Canadian vessels usually adopted American designs, there were fewer boiler explosions...and less racing between vessels. Eastern Canadian steamboats resembled their sea-going sisterships more closely. The very largest western vessels were impressive physically, more like their Mississippi contemporaries, but they arrived towards the end of the active steamboat era, just prior to World War I. They were also lakers. They challenged no river rapids!

There are many sources of information on 19th century Canadian steamboats, some of which have been used for this paper. But, generally, more information was provided in them on the ownership, operations and passenger facilities of these vessels than on details of the engines and other machinery.

Not much has been said in this paper about captains who commanded the steamboats, and even less about the pilots, whose skills in descending and climbing rapids and finding ways through changing channels were essential elements in the success these vessels, especially on Canada's rivers.

By 1900, the steamboat era in Canada (and elsewhere) was passing, yielding to steel hulls, internal combustion engines, the railways, trucks, automobiles, airplanes, and the telephone. But by then, several thousand of these *boats* had sailed Canada's inland waters.

Acknowledgements

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Steamboats of the Mackenzie River; Steamboats of the Lower Fraser River and Harrison Lake; Steamboats of the Upper Fraser River; Steamboats of the Ottawa River; List of Steamboats on the Yukon River; Steamboats of Lake Okanagan; Steamboats of the Arrow Lakes; Steamboats of the Upper Columbia and Kootenay Rivers; Steamboats of the Skeena River; Steamboats of the Stikine River; Slocan Lake; Big Bend Gold Rush; The First Canals; Lachine Canal; Chambly Canal; Erie Canal; Soulanges Canal; Beauharnois Canal; Cornwall Canal; Wlliamsburg Canals; Sault Ste. Marie Canal; Baillie-Grohman Canal.

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