

Just A. Ferronut's April 1996

Railway Archaeology

Art Clowes

In our January-February Column we spoke of some of the various railway crossings along the St. Lawrence River. My lack of knowledge on the marine aspects relating to these river crossings left a number gaps about the train-ferries used. Our members Dana Ashdown and Sandy Worthen have come to my rescue. So, based on their data, a few more lines to help round out the story of these railway crossings.

I had mentioned the steamer *Leonard* that had been operated by the National Transcontinental Railway between Québec City and Lévis prior to the opening of the Québec Bridge. Both gentlemen highlighted the oddities of this train-ferry. In comparison to the common operating concepts used today by most train- or rail-car ferry operators for rail car transfer, I would have to agree.

First, a little physics. Anyone who has paddled around in a canoe quickly learns the effects of moving around in the canoe while afloat. Well, moving rail-cars on and off a train-ferry creates the same problems of balance or trim of the ship, as well, the changing weight from adding or removing a rail-car, changes the draft, or for our purpose the height of the deck of the ship above the water level. Another problem the ferry operators face is changing water levels, and while in lakes and most rivers, it is only the slower seasonal changes, but in places like Québec City and especially at ocean terminals, these changes occur twice a day as what we know as tides.

Rail-cars for most train-ferries are moved from land to the ship over a moveable bridge, called a transfer bridge. This bridge is fixed on the land end and is designed to move up and down at the outer, or ship's end. The length of these bridges is proportional to the height of tides they operate in, i.e. the greater the tidal range the longer the transfer bridge. Rail-car transfer bridges at terminals with large tides may have two or three spans, since the grade on the bridge cannot exceed that which your motive power can handle. These transfer bridges can be supported in different ways, suspended by cables with screw-type hangers from an overhead gantry & tower system, shorter towers that simply cap pile clusters, or even on floats. The outer span next to the ship is called an apron span. Should the transfer bridge be a multi-span structure, then any of the intermediate joints between the shore and the apron must be supported in a manner to both carry the weight of the span plus the live load of the train passing over it. In this type of operation, the train-ferry is brought into the wharf. The apron this then lowered onto the rail-car deck of the ferry. The transfer bridge operating machinery permits some of the weight of the apron to be carried by the ferry. Not only does this provide a support for the apron, but it permits the outer end of the apron to move up or down as the weights on the ferry change its draft. If the apron was fixed, any movement up or down of the ferry would cause the rails to be at a different elevation on the apron from those on the ship. In practice when a string of rail-cars are moved onto the ferry their weight first starts to push the apron down, this then starts to push the ferry down, and soon the ferry is carrying the weight of the rail-cars.

When you were canoeing, any movement sideways caused it to roll or list. Well the same thing happens with the

train-ferry. The major effects of this are controlled by the sequence used in transferring the rail-cars. Working with a loaded multi-track ferry, it is normal to pull an outer string of rail cars and then replace it, repeat the same at the other side and work to the middle. This method keeps the amount of listing to a minimum. But regardless, there is list and this adds another dimension in the complicated life of a train-ferry operation. To overcome this, the designers of the transfer bridge basically omit much of the bracing normally used in fixed bridges. This permits the bridge to remain horizontal at the shore end but to take on a cross-slope at the outer end to follow the list of the train-ferry. While this may sound complicated and it does create problems for stress transfer in design, it is quite simple. The best example is to take a piece of cardboard and tape one end to a flat surface and then move the other end around as if it was resting on a ship moving up and down as well as listing to the side. Now, if I haven't put you to sleep, let's go back to the *S. S. Leonard*.

Only in Canada, you say! A pity, well not in this case. As we mentioned, the *Leonard* was quite unusual. Instead of using a shore based rail-car transfer facility, it was equipped with an on-board car transfer system.

First a quick look at why the *Leonard* was built. The underlying cause was unwittingly initiated on June 29, 1903, when the Dominion Government signed an agreement with the Grand Trunk Railway for the construction of a new government supported transcontinental rail line. Because of the route selected east of Winnipeg, construction was slow during the initial years. However by 1907, things were looking up, then on August 29, the next step towards a need for the *Leonard* occurred when the Québec Bridge collapsed with the death of 75 workers. This caused the Government to step in to assist with the replacement of this fallen bridge. Concerns about the safety of the new bridge delayed the start of re-construction, as the design was checked and rechecked. Meanwhile, rail construction was moving ahead on schedule. It was soon realized that the rail line would be completed before the new bridge would be completed. Faced with this dilemma, the Laurier government decided, especially in light of the growing political problems over the National Transcontinental and Grand Trunk Pacific Railways, that it could not wait for the bridge to put the line in service. So, in 1912, the Cammell Laird & Company, Birkenhead, United Kingdom, was engaged by the Canadian Government to build it a ship for transferring rail-cars across the St. Lawrence River.

Cammell Laird & Company's designers went to work, and designed, perhaps as Sandy says, "the most unique train-ferry ever built." Dana describes it as: "She resembled a barge with a boxy steel framework on top, the purpose of which was to support/guide the movable train deck, which could be raised or lowered in order to compensate for local tidal conditions. The wheelhouse sat on top of the superstructure at the bow, while the two smoke stacks were located on the starboard side."

The ship as launched on January 17, 1914 by Cammell Laird & Company had a length of 313 (or 326) feet, a beam (width) of 65 feet, and draft of approximately 15 feet. Her design tonnage was 3,365 tons and carried Cammell Laird's design Number 797. She was a coal fired, steam powered vessel,

with screw propellers. The *Leonard* had a propeller at the bow, to help in manoeuvring around the docks, as well as to help in any river ice.

The boxy steel framework on this unique ship had ten three-legged towers about 35 feet tall, along each side. These legs were braced with lattice bracing and had a steel frame at the top to tie them together. This frame also supported the pilot house (bridge) at the bow. This boxy frame guided the moveable train- or tidal-deck, that was capable of being raised to a maximum of about twenty feet above its resting position on the main deck. The train-deck had three tracks with a usable length of about 272 feet each. Ten sets, one on each side of the ferry, of vertical lifting screws were used in raising or lowering this train-deck. Unlike the more normal shore based system, this one had be able to lift and lower the weight of both the train-deck and the rail-cars.

After its construction, the “*S. S. Leonard*” crossed the Atlantic under her own power. She was entered in the *Registry of Shipping* for the Port of Québec, September 20, 1915, with a registered tonnage of 3,348 tons and Canadian Registry Number: 138088.

She then undertook her mundane task of crossing the St. Lawrence River carrying about 15 freight cars or one passenger train per trip. It appears that fate had led to her construction, and it could be said that fate extended her service at Québec. This extension came as the result of the September 11, 1916 failure of a lifting link that caused the loss of the centre span of the new Quebec Bridge. This accident kept the “*S. S. Leonard*,” in service for about an extra year, until she was finally withdrawn from service on December 3rd, 1917.

This train-ferry listed as a “naval novelty” apparently carried the name *S. S. Trammere*, during her sea trials. On this side of the ocean, the first plans were to name this vessel the “*Ottawa*”, but was christened the “*S. S. Leonard*” probably in honour of the government’s member on the National Transcontinental Railway Commission, Lieutenant-Colonel R. W. Leonard, soldier, engineer and author.

While this was the end of this unique train-ferry in Canada, it is probably worth adding a few extra comments on the rest of her life. Early in 1918 the *Leonard* made a return trip to Britain to help with the urgent task of ferrying war supplies to the Continent from England. The *S. S. Leonard*, was renamed “*T.F. 4*” and started her cross England Channel service between her hastily built docks on November 6, 1918 only days before the November 11, Armistice. This operation ceased in March 1919, although her docks were not dismantled until 1927.

The “*T.F. 4*” was then sold to the Anglo-Saxon Petroleum Company and served until she was finally scrapped in 1932 as an oil tanker carrying the name *S. S. Limax*.

Moving up river to the Montréal area, Dana has again supplied some details to help round out the train-ferry operations on the St. Lawrence River. While I had mentioned the existence of pre-railway ferries on the river, and that I understood that none of them were or could be converted to rail-carrying use. I had totally forgotten about one train-ferry service in the area that I mentioned in our April, 1993 column, as well as the ferry operations of the “ice railway” when they had no ice.

The Montréal & Lachine Rail-Road built a wharf at Lachine above the rapids on the north shore of the St. Lawrence River. In 1850 the Montréal & New York Rail-Road took over the above railway as well as the Lake St. Louis and Province

Line Rail-Way and its line from Kahnawake to Mooers, New York. The break in this line was across the St. Lawrence from Kahnawake on the south shore to Lachine.

Dana forwarded the following based on the Montreal & New York’s 1852 annual report, “that the *Iroquois* was ordered from Augustin Cantin in 1852, with delivery expected in June 1853. She was 160 feet by 44 feet, overall, and powered by two 40 h.p. oscillating engines made by E. H. Gilbert of Montréal. Fitted to carry cars, freight and passengers, the cost of the *Iroquois* is stated to be about £6,000; the slips, about £500.

John M. Mills notes on the *Iroquois* state: Launched, Montreal 1853; Length, 147 feet; Beam, 24 feet, Propulsion, steam engine, side paddle wheels. Rebuilt in 1866 with a length of 155 feet and a Beam of 27 feet, and a displacement of 351 tons. The *Iroquois* burned in March 1871 at Caughnawaga (Kahnawake).

The 2nd edition of John Lovell’s 1856 book *MONTREAL IN 1856. A sketch Prepared for the Celebration of the opening of the Grand Trunk Railway of Canada* refers to the *Iroquois* as follows: “This, it may be remembered by the way, is the only Steam Ferry in Canada East, which is open every day of the year. The crossing is made with a powerful steamer, which has been built with a Railroad track on its deck for the purpose of connecting the two divisions of the Montreal and New York Railroad without breaking bulk. The *Iroquois* crosses the St. Lawrence with a locomotive and tender, and three loaded cars at a time, and this work it is capable of repeating every fifteen minutes, if necessity requires it.”

The South Eastern Railway had its cars for Montreal handled on the end of Grand Trunk Railway trains, first by way of Saint-Jean, and after 1877 by way of St. Lambert. By 1879, the Grand Trunk had become very unfriendly, mainly due to the C.P.R.’s attempts to penetrate southern Québec and the changing railway alliances. South Eastern trains were delayed deliberately and the connection became so unsatisfactory that the South Eastern Railway decided to find some other way of getting into Montreal. A considerable amount of the South Eastern Railway’s traffic was destined for the Quebec, Montreal, Ottawa & Occidental Railway in Montréal.

The result of this inconvenience was that the S.E.R. and Q.,M.,O.& O.R. jointly character the La Compagnie du Traverse de Chemin de fer d’Hochelaga a Longueuil, (the Hochelaga and Longueuil Railway Ferry Company). This new company set up shop a couple of miles downstream from the Victoria bridge with docks in Longueuil (on the south shore) and Hochelaga (on Montréal Island).

La Compagnie du Traverse de Chemin de fer d’Hochelaga commissioned Augustin Cantin of Montreal to construct a train-ferry. This ship, launched in 1881 was 182 feet (or some sources state 185 feet) long, with a 30 foot beam, and weighed 395 tons. Its Canadian Registry Number was 80690. At the time of her launching she was named the “*S. S. ABC*” (named for A. B. Chaffee, Secretary Treasurer of the South Eastern Railway). This train-ferry could carry five cars and was moved by screw propellers driven by her steam engines started service in the summer of 1881 and was generally used only during the months of April to December. The “*S. S. ABC*” was renamed the *S. S. South Eastern*, and continued moving rail-cars across the St. Lawrence at Montréal until after the 1887 completion of the C.P.R. bridge at Lachine. The *South Eastern*, was touted as being able to carry up to four hundred cars per day.

Once the South Eastern's traffic was moving on CP's bridge, the *South Eastern* was sold to the Richelieu & Ontario Navigation Company. In 1890, she was sold to the Canadian Pacific Car & Passenger Transfer Company. This company operated it between Prescott and Ogdensburg, New York. In 1897 the *South Eastern* burned and was rebuilt as the *International*, which was later sold in 1909 and reduced to a sand barge. She was broken up in 1914.

As mentioned I must thank Sandy Worthen and Dana Ashdown for forwarding most of the above information that included data from the following:

The Quebec Train Ferry of 1914, by S. S. Worthen as published in the October 1972 issue of the CRHA's *Canadian Rail*.

The Ice Railway, by R. R. Brown as published (n.d.) in the CRHA's *Canadian Rail*.

Railways of Southern Quebec, Volume I, by J. Derek Booth, published by Railfare, 1982.

Canadian Coast and Inland Steam Vessels, 1809 - 1930, by John M. Mills as published by The Steamship Historical Society of America, 1979.

MONTREAL IN 1856. A sketch Prepared for the Celebration of the opening of the Grand Trunk Railway of Canada, by John Lovell, Montreal, 1856.

Where To File It?

While we are on the subject of ships, this may be a good spot to cover a little story that Lewis Swanson has forwarded. However, I will let you decide whether you want to call this a ship story, or file it with your locomotive rosters.

Lewis wrote that while going through the book *THE NORTHWEST PASSAGE*, by Brenden Lehane, one of the Time-Life series, *THE SEAFARERS*, he came across this item on Franklin's ship the *H.M.S. Erebus*.

Sir John Franklin was an English naval officer and Arctic explorer, who did considerable mapping or charting of the eastern Arctic Ocean as his part in the British search for the North-West Passage. Today, we remember Franklin probably more for the search for him and his 1845-1848 expedition that was lost after being locked in the ice for three years. This story relates to one of the two vessels used in this ill-fated expedition.

Franklin on his last expedition had two ships, both former bomb-vessels, or platforms for mortar launching, that had been strengthened for polar service. The second vessel was the 340 ton *HMS Terror*, the lead ship, under Franklin's command was the 370 ton *HMS Erebus*.

The *Erebus* had been refitted in 1845 with a steam engine to provide an auxiliary propulsion system. This engine was the 15 ton, 25 horsepower locomotive from the London & Greenwich Railway, a 2-2-0. The locomotive was placed crosswise, deep in the hull and the front wheels had been removed. A shaft was coupled to the left driver of the loco that drove the ship's auxiliary propeller. This propeller could be lifted out of the water when not in use.

It is not clear whether the *Terror* had been fitted with an auxiliary engine of this rather weird type or not.

These ships, having been locked in the ice for three years off King William Island, were abandoned by their crews. So these vessels still rest on the bottom on Arctic water, where, as Lewis mentions, they are no doubt safe from acquisitive rail fans!

Station News

This is probably a good chance to clean up a few station items that have been piling up over the last couple of months.

Back in December I had commented about the conversion of the Canadian Northern suburban station at Mount Royal, Québec into a café-restaurant, called "*Le Torréfacteur de la Gare*." My comparison of the treatment of interior of this station to the former TH&B station in Brantford, Ontario, brought a response from Bill Deryshire on the current status of that station. After an earlier fire, this station had been rebuilt and as we mentioned in our May and November 1991 columns was operating as the Iron Horse Restaurant. Bill advised that this restaurant had closed last year and the building was put up for sale. Bill's February letter advised the "For Sale" sign on this station-restaurant, had been removed. He further advises that while the windows are covered, a new sign states that it is undergoing renovations. At this point hopefully this means another opening, and perhaps Bill will keep us posted. This station had not been fully restored inside, but it could give one the feel of being on a dining car by sitting inside the replica of a rail car that had been constructed inside.

A St. Patrick's Day trip along the old Canadian Northern line from Montréal to Ottawa, revealed that the two-story station at Hawkesbury, Ontario has been demolished.

During a recent discussion with Allan Maitland, he told me a couple of stories about the old Temiscouata Railway. He also mentioned that we should look at doing a article on this line. So, to help refresh my memory of this line, I took trip along this line from Rivière du Loup to Edmundston. From Cabano south, the old road bed has been converted into a hiking/snowmobile trail. This inspection revealed a couple of station-like buildings, on station sites. I put them in that category until I can check on their history. The first one was a single storey frame structure at Degelis, operated as a drop-in centre for seniors. This building gives the appearance of a replica, but! The real question about the authenticity arose when I arrived at Cabano. The old station there was a 2 storey "plain jane" frame structure, and in the years I recall it, was covered with imitation brick siding. Presently the building appears to be about the same size, 2 storeys, but of course is now clad with a clap-board style siding. The simple lines of this station provided little trim to inspect, so it had to raise questions in my mind. Perhaps some of our readers can shed some light on these buildings.

A Couple of Odds & Sods

Our December item on Courtauld's Canada Limited and the Cornwall Street Railway Light and Power Company Limited reminded Sandy Worthen of the efforts of a number of rail & transit fans and their efforts at Cornwall, Ontario.

Sandy with verification from Tony A. Clegg sent along a brief outline of the attempts some forty-five years ago to establish Canada's first operating tramway museum in Cornwall.

Back in 1949, shortly before the abandonment of the CSRL&P's passenger operations, the Cornwall Electric Railway Society (CERS) was established. This was a group of streetcar enthusiasts primarily from Montréal and Ottawa with the goal to create an operating museum using some of the CSRL&P's electrified trackage.

The CERS held its first fan-trip using CSRL&P Car No. 23 on March 13, 1949. Subsequent to the July 27, 1949 abandonment of rail passenger service, Car No. 29 was the only streetcar available for Society excursions, although a few trips

used the Company's electric locomotives.

Selected as the first car for restoration and preservation was CSRL&P No. 29, a car built by the St. Louis Car Company, St. Louis, Missouri, USA in 1930 for the Northern Texas Traction Company of Dallas/Fort Worth, Texas, USA. Its road number there is unknown, but it was one of four NTT 250 series cars bought by the CSRL&P in 1939 after the NTT terminated operation in 1934. No. 29 was a modern, lightweight, double-ended car, mounted on roller-bearing trucks and was in good condition still in 1949.

The museum project proceeded with a ceremony at the Cornwall carbarns in August 1949, where CSRL&P's car No. 29 was donated to the Cornwall Electric Railway Society.

The transfer of a key organizer slowed CERS plans. The formation of the Canadian Railway Museum at Delson/Saint-Constant, (Montréal), QC, changed the focus for an operating streetcar museum, and diluted the pool of available volunteers necessary to sustain a museum.

The end of this endeavour came with genuine disappointment and regret that Messrs. Omer Lavallée, Ronald S. Ritchie and Allan Toohey made an appointment with the CSRL&P management in 1952 and returned reluctantly Car Number 29 to the Company, thus terminating the plan to create Canada's first Operating Streetcar Museum.

Date: 06-Mar-96 00:57 EST
From: Pat Scrimgeour [73112,1037]
Subj: Some material

These are both from the Usenet newsgroups, and might be worth mentioning in upcoming Ferros:

From Norman Helm, via alt.railroad:

One of Canada's most popular railway books is now being updated for re-issue this summer. My *IN THE SHADOW OF GIANTS: THE STORY OF THE TORONTO, HAMILTON AND BUFFALO RAILWAY* can be ordered now through Preston House Publishers – fax (416)503-1884 – or at this e-mail address.

In this updated version, I have completed the TH & B story from where I left off in 1977 when CP Rail wholly acquired the line, through nine years of CP management to integration with the trans-continental parent in 1986. What happened or what is happening to the TH & B's property and equipment is detailed. I'm also including historic information omitted from the original version as well as more than 250 photographs and other graphics – many previously unpublished anywhere! An entire chapter is being devoted to the resurrection of the TH & B Hamilton station as that city's new GO Transit Centre. If you're a fan of Canadian short-lines, even if you have *IN THE SHADOW OF GIANTS* original version, you won't want to miss this one. Be sure you're on the list. Get your order in today!