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PEI's RAILWAYS BY JAF Col. JERSEYVILLE

# Prince Edward Island's days with a dual gauge railway

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The recent items on the Prince Edward Island Railway reminded me of some of the data I have and the intrigue I always had about the logistics of regauging this railway during the 1920s while it continued to be operated.

In my files, I have a copy of an article on this major 14 year regauging project, from conception to the operation of the final narrow gauge train, as reported in the July 1927 *Railway Engineering and Maintenance* magazine. Since this article was written from an engineering perspective, I have taken the liberty of deleting some of the engineering details, but most of what follows is excerpted from the article.

Prompted by the need of better transportation facilities and a closer and more direct contact with the rest of Canada, the railway of Prince Edward Island underwent a most interesting transformation during the nine years between 1918 and 1927. This was brought about by the gradual but consistent work of standardising the gauge of the tracks on the various subdivisions so as to make it possible to operate through trains from the mainland to all of the principal towns and cities on the island.

This regauging work, which was begun in 1916, had by early 1927 extended to over 224 of the remaining 276 miles of main and branch lines on the island. (P.E.I. had a total of 280.26 miles of railway opened for traffic between 1875 and 1924. Operation was discontinued on 1.41 miles of the Alberton Subdivision on December 31, 1901. The railway dismantled 1.19 miles of this subdivision in 1927 with the other 0.22 miles retained as siding. Also, with the opening of the new ferry terminal in Port Borden in 1917, the 2.62 mile line from mile 9.38 Borden Subdivision to Cape Traverse was abandoned and dismantled.)

In addition to the actual widening of the gauge, the necessary work related to the widening of the roadbed, lengthening culverts, replacing and strengthening bridges as well as altering or replacing many roadway and shop facilities was completed.

With all of the work involved, standardisation of the entire line, under the conditions that existed, was too large a project to undertake at one time, so the work was split into four distinct projects. Three were completed as the 1927 article was prepared. The first was the central section of the railroad connecting the main port of entry, Port Borden, with the principal cities and towns of the island. It was deemed advisable to provide both standard and narrow gauge operation at the same time so that full benefit of standard gauge operation between points on the mainland and principal shipping centres on the island could be realised at once and at the same time not interfere with narrow gauge operation on the island until the gauge of the remaining important lines could be standardised. In accomplishing this, about 60 miles of third rail was laid in conjunction with the existing narrow gauge tracks, and many interesting combination standard and narrow gauge turnouts were installed.

When this work was completed there yet remained the standardising of the gauge of the tracks at the west and east ends of the island. In handling the work in these territories, direct changeovers from narrow to standard gauge were made without the third rail construction and the work was completed in each case by special forces within 13 to 15 hours.

Prince Edward Island, which has a maximum length of about 150 miles and a breadth varying from 4 to 34 miles, is separated from the mainland of New Brunswick by the Northumberland Strait which varies from about 9 to 30 miles in width. As mentioned in the May Ferrophiliac Column, by 1873, P.E.I. was constructing a railway with 3'6" gauge westward from Charlottetown to Tignish in the extreme northwest end of the island. The rail lines eastward were being constructed towards Georgetown and Souris. This grossly underfunded and underplanned railway became the property of the federal government on July 1, 1873. The first 196 miles was completed by the Canadian Government and officially opened to regular traffic on January 4, 1875. The 12 mile line from Emerald Junction to Carleton Cove was opened on January 22. 1885. The line from Charlottetown to Murray Harbour was opened on November 1, 1905, followed by the construction of the Elmira Subdivision in 1908. By 1927, the Island Division of Canadian National Railways was 276 miles long and served all of the important cities and towns on the island.

While this road had afforded adequate intra-island transportation, it did not have any direct connection to the mainland, the only means of communications being the steamships that ran between Point du Chene, New Brunswick, and Summerside, P.E.I., and between Pictou, Nova Scotia, and Charlottetown and Georgetown on the island. This was a very unsatisfactory means of communications at the best of times, but even worse during the winter and spring seasons when ice conditions in Northumberland Strait either seriously disrupted or totally cut off this connection.

With these conditions and the growth of traffic to and from the island, the need for a better service became apparent. To meet this growth, a car ferry, the *S.S. Prince Edward Island*, a 2795 ton, strongly constructed ice breaker with accommodation for 12 standard gauge freight cars was constructed and put in service in 1915 from Cape Traverse, on the Carleton Cove line.

Two years later, on December 12, 1917, a new ferry dock at Port Borden was opened to replaced the older one. With the *S.S. Prince Edward Island* in service, regular intercommunication between the island and the mainland, at Cape Tormentine, New Brunswick, was maintained with little interruption, in spite of the bad ice conditions which occurred yearly.

While this ferry service improved the connection, it did not address the problem of different rail gauges at the island terminal. This difference resulted in the need to transfer all freight at Port Borden to the proper gauged cars. This transfer required considerable manpower and the construction of extra transfer sheds and elevated transfer platforms for the purpose. Passengers were also inconvenienced by the need for this transfer. Not only was there the problem of handling baggage, etc., there was the matter of the smaller size and capacity of the narrow gauge equipment.

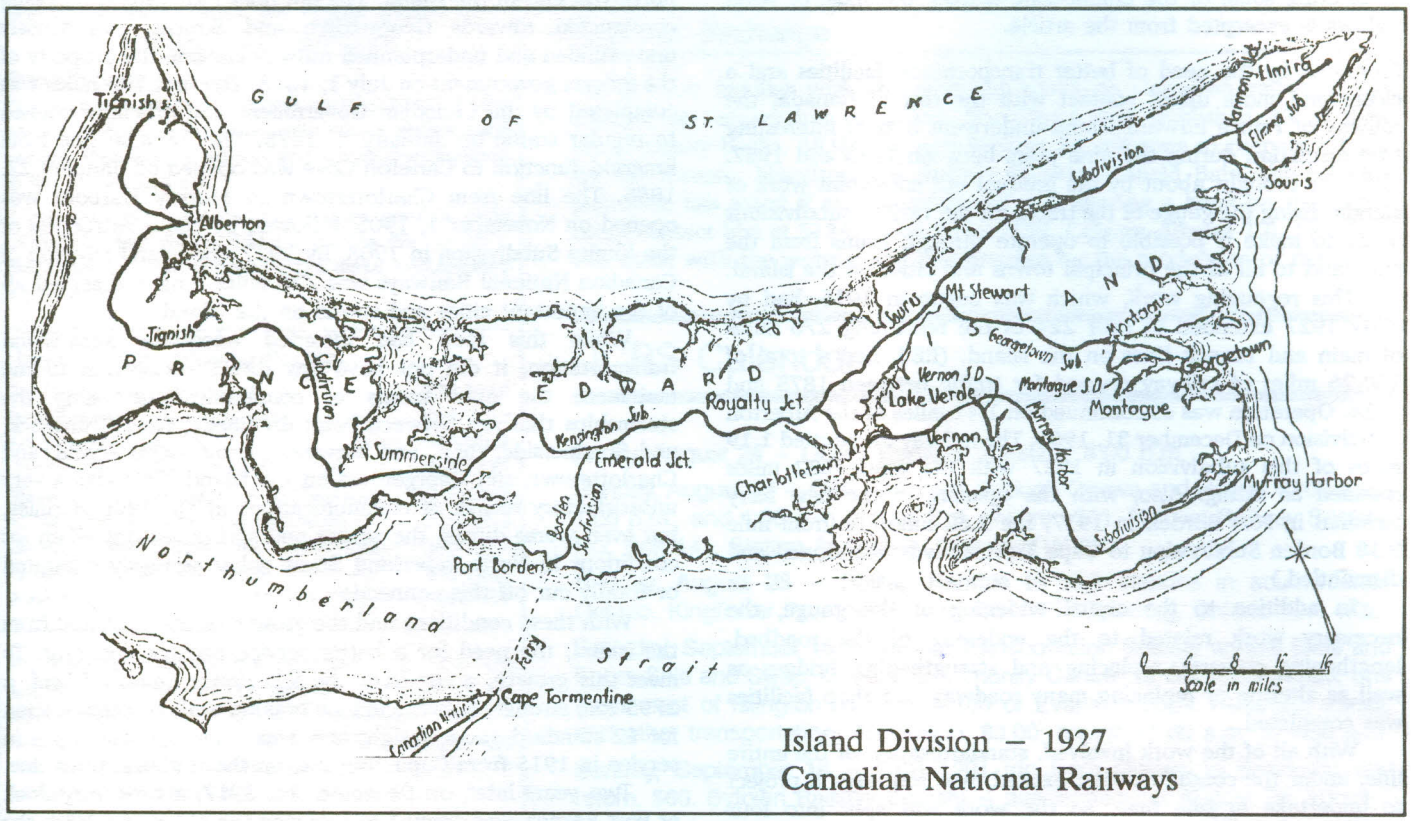
The largest narrow gauge locomotives used had a tractive power of between 10,000 and 15,000 pounds, equivalent to the lightest standard gauge engines of the period. While larger narrow gauge engines could have been purchased, it did not

make economical sense to do so. The freight cars on the island were also a limiting factor with their 17 to 20 ton capacity, and in addition, there were no narrow gauge refrigerator cars on the island to handle the considerable quantities of fresh vegetables shipped from yearly. With these handicaps, which kept growing and becoming more costly as passenger, express, and freight traffic increased, it became apparent the solution to this dilemma was to standardise the gauge of the island railway to permit the heavier loading and the through operation of Canadian National's mainland trains.

Recognising this, a program was mapped out, and starting in the spring of 1916 with all tie renewals being to mainland standards, the conversion started. The push for the first phase of this conversion would be the 48 miles of trackage between Charlottetown and Summerside as well as the 12 mile line from Emerald Junction to Port Borden. All of the ties on these sections were replaced by August, 1918. Along with this work would be of insufficient strength to carry the standard gauge equipment. The new third rail was 67½ lb. rail, which resulted in the need to relay the outer rail of the narrow gauge track with 67½ lb. steel. This relay program resulted in the second rail for narrow gauge operation about an inch lower than the new rails. This problem was overcome by shimming the lighter rail, so the tops of all three rails were in the same plane.

While this arrangement worked satisfactorily in providing for standard and narrow gauge operation over the same roadbed, it presented some difficulties. The most important were holding the shimmed rail to gauge, the replacement of worn shims, the removal of snow from the track, and the unequal thawing of the track owing to the greater shade on the side where the two rails were close together. These difficulties were overcome and with careful maintenance there was little trouble.

With such a dual gauge layout, special trackwork through the turnouts was necessary and in some cases quite complicated.




Island Division – 1927
Canadian National Railways

was the widening of the embankments and cuts, as well as the lengthening of existing culverts. Widening of the cuts and the construction of new ditches was carried out by means of a ditching machine mounted on a standard flat car body with narrow gauge trucks, the excavated material was used to widen fills and to strengthen the roadway.

With this roadbed work out of the way, all was in readiness for standardising the gauge of the tracks between Summerside and Charlottetown. This was accomplished by laying a third rail in all the tracks between Port Borden and these points so that both narrow and standard gauge equipment could operate directly. The third rail was placed outside the narrow gauge track to provide standard gauge between one of the narrow gauge rails and the new third rail. This work was carried out without much difficulty and without interference to traffic. The rail as existed at the start of this work consisted of 38 miles of 56 lb. and 22 miles of 50 lb. rails, both of which sections The problems were worked out for the different combinations but most did require the use of extra switch points and different sizes of frogs. Some combinations required extra rods to interconnect the switch points and movable point frogs. Dual gauge wyes were interesting in that they required extra switch points to change sides for the standard gauge rail. The three rail track system between Port Borden, Summerside and Charlottetown was entirely completed by August 1919.

With this phase behind them, the next step was to standardise the gauge of the track from Summerside westward the 68 miles to Tignish. Work on this section began in July 1922, and, as in the first phase, the preliminary work was the widening of the roadbed, lengthening culverts, and replacing the few light and narrow bridge spans with new ones suitable for the heavier and larger standard gauge equipment. Other preliminary work in this territory included the alterations and enlargement of the engine house at Tignish, as well as the

raising of the coaling chute. The water tank at Alberton was raised. Wye tracks were constructed at Tignish and Summerside to replace the old turntables at these locations, which were unsuitable for conversion to standard gauge. All freight sheds and platforms on the line had to be moved back to afford proper clearances.

The narrow gauge track between Summerside and Tignish was for the most part 50 lb. rail. It was decided that about 37 miles of this line should be replaced with second hand 67½ lb. rail for the standard gauge operation. Where this was done, the heavier rails were laid to standard gauge outside the narrow gauge ones, and were spiked in position ready to be connected to the balance of the track when it was widened.

Following the preliminary work, the date of August 1, 1923 was selected for the complete changeover of gauges. With eleven gangs distributed over the line, the entire change was made in 13 working hours. As the completed work provided standard gauge track from Port Borden westward to Tignish, and eastward to Royalty Junction and Charlottetown, the dual gauge operation within that territory ceased and the narrow gauge equipment was moved off and all the third rail was taken out except for the 5½ miles between Royalty Junction and Charlottetown that was left to provide a connection to the narrow gauge lines in the northeast of the island.

By August, 1924, all was in readiness to undertake the widening of the gauge on another large section of the island railway, so preliminary work was started on the Souris Subdivision, from Royalty Junction to Souris, 55 miles; on the Georgetown Subdivision, from Mount Stewart Junction to Georgetown, 24 miles; and on the Elmira Subdivision, from Montague Junction to Montague, 6½ miles; and on the Elmira Subdivision, from Harmony Junction to Elmira, 10 miles. Over this total distance of 95½ miles, the first work was again to enlarge and strengthen the existing bridges, etc., to take the standard gauge equipment. This was the largest part of the preliminary work on this section, as compared to the earlier sections where the bridge work had been minimal. A number of the old light truss bridges were replaced by girder spans, others were strengthened and fitted with concrete slab ballasted decks, and still other bridges of various types were replaced by either short reinforced concrete spans or with culverts and fill. Many of the bridges on this section had old weak pile or masonry abutments and piers that showed the results of 50 years in or near salt water and had to be replaced with new concrete ones. Many of the more exposed new ones were faced with granite blocks to protect them. This work, while it took considerable time and effort, presented no real problems since these bridges were all relatively light and short.

In May, 1926, track work preliminary to actual gauge widening was begun. This was carried out in a manner similar to that on the Summerside to Tignish section. A considerable amount of light rail, including the entire Montague Subdivision, was replaced with 67 lb. rail, as well as 4 miles of track east of Royalty Junction on the Souris Subdivision was relaid with 80 lb. rail. Standard gauge switch material was distributed and on those sections where the existing lighter rail was to be kept, the outside spikes were placed in the ties for the standard gauge to speed up the changeover. This spiking work was carried out by a gang of about 12 men using a special template to place the spikes in their proper position.

While the spiking work was going on, five gangs of about 18 men each were engaged in preparing split switch turnouts (today's standard type with switch points) to replace the narrow gauge stub switches (switches that had the rails butting and the approach rail was moved back and forth to align with the track wanted). By Saturday, August 21, 1926, all of the preparatory work was completed ready for the actual widening of the gauge. At this point all of the narrow gauge equipment except for two trains were moved off of this narrow gauge territory. The two narrow gauge trains, which were from Charlottetown, arrived at Georgetown and Souris at 9:00 and 9:30 p.m. respectively on the evening of the 21st. While their scheduled departures were Monday morning, August 23, they were hurriedly returned Saturday night to Charlottetown to get them off the territory before the gauge widening on Sunday, August 22, 1926.

With the tracks thus cleared, the actual gauge widening started at 5:30 a.m. on Sunday, with special track forces which had been organised previously for the work. These forces consisted of 14 gangs of from 35 to 45 men each, which assembled at designated points along the line and worked continuously to the east or west until they met an opposing gang or closed in with the widened gauge started by the gang ahead of them. As lined up, each gang was assigned from 3 to 7 miles of track, depending largely upon the amount of switch work that had to be undertaken. The 14 gangs covered the 85 miles of track on the Souris, Georgetown, and Montague Subdivisions, widening the gauge throughout as well as completing the installation of wyes and turnouts at Harmony, Mount Stewart and, Montague Junctions and standardising the gauge of important sidings at a number of points. Three of the gangs completed their work by 3:00 p.m., while the other eleven gangs finished at between 5:00 and 6:45 p.m.

Thus, within about 13 hours the complete changeover was made from narrow to standard gauge on 85 miles of line. With the exception of minor work at the larger terminals, the tracks were ready for the operation of standard gauge trains. That such was the case was evidenced by the fact that even before the last rails had been thrown to the new gauge, standard gauge trains had left Charlottetown for Souris and Georgetown, arriving at their respective destinations by 8:35 and 9:00 p.m. ready to make their scheduled runs westward on Monday morning.

While the standardisation of the track gauge on the 10 miles of the Elmira Subdivision had been included originally in the changeover program of August 22, a lack of material made it necessary to delay that changeover until the following week.

With this work out of the way, all of the mileage of the Prince Edward Island Railway, or the Island Division of the Canadian National Railways, with the exception of the 52 miles of the Murray Harbour and Vernon Subdivisions was standard gauge. The remaining 52 miles was converted to standard gauge on September 29, 1930, following the arrival on September 28 of the last narrow gauge train mentioned in the May NEWSLETTER. This standardisation solved the long standing transportation problem of the island and permitted standard gauge equipment to move freely between the mainland and all points on the island.

The only branch line track construction to take place after the regauging project was the construction of a 10 mile diversion line from Maple Hill on the Montague Subdivision to the original Murray Harbour Subdivision east of Lake Verde Junction. This diversion permitted the abandonment in 1951 of the Hillsborough River Bridge on the old Murray Harbour line at Charlottetown.

The *Railway Engineering and Maintenance* article ended with thanks for the information to Mr. C.B. Brown, chief engineer, operation department of the Canadian National Railways, under whose direction the gauge widening operation was carried out. ■