BULLETIN

OF THE

CANADIAN RAILROAD HISTORICAL ASSOCIATION

Number 2 August,1937

Chateau De Ramezay

Montreal

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The first number of the Bulletin of the Association appeared in April, 1937. It was frankly experimental in nature. The fact that it was favourably received and that it appears to be firmly seated among the activities of the Association would seem to make it desirable for the Chairman of the Editorial Committee to offer to the members a statement of its policy.

Since the birth of the Association in the Spring of 1932, the desirability, even necessity, of issuing a bulletin has been apparent to all. It was rightly expected that it would serve to preserve lectures, articles, and reports of the society's activities, and to contact members unable from distance, or other reasons, to attend the regular meetings. The Railway and Locomotive Historical Society, after which our Association is patterned, has published a bulletin since 1921, one year after its founding. However, it was not until this year that we have been able to follow suit. In February, the Secretary reported that a mimeograph was available, and in March he was authorised to prepare the first issue, which would form a basis for discussion. Bulletin No. 1 appeared a month later. It was found acceptable and at the May meeting he was chosen to head a three-man Editorial Committee. The Committee was voted funds for the first year.

It is planned that the Bulletin will appear four times a year, probably in February, June, September, and December. For the present its size will be confined to six or eight pages, and the circulation to about seventy-five.

As has already been remarked the Bulletin will publish articles submitted by invitation, the more important lectures delivered at the meetings of the Association, resumés of the minutes, reports of excursions, general news items, locomotive lists, and so forth. For the present it will be mailed to all classes of members without charge. With the coming year, however, it would appear to be necessary to revise this method of distribution, and Out-of-town Members may be charged a nominal sum. Copies will be sent to the Archives of the Canadian National and Canadian Pacific Railways, to the more important libraries, to associated societies, and to contemporary journals for review.

Members outside the Montreal Postal District are earnestly requested to inform the Editorial Committee on receipt of this Number whether they desire further issues to be sent to them. The budget is so confining that it is necessary to reduce the issue to a size as small as is consistent with full coverage, and also it is desirable to revise our mailing lists.

Comments, criticisms, and suggestions regarding the Bulletin will be received with interest.

R.V.V.N.

THE BROADGUAGE AND THE GREAT WESTERN RAILWAY

by

W. M. Spriggs

Note: This article is condensed from a lecture of the same title, delivered by Mr. Spriggs before the Association, on November 18th, 1936.

To begin with it may not be amiss to refer to the possible reasons why the G.W.R. together with other leading railways of Canada used the rail gauge of five feet six inches.

Some sources state that the use of the 5ft.6in. gauge was caused by an attempt on the part of the legislatures of Upper and Lower Canada to render more difficult an invasion of Canada by the United States, but on the other hand it is stated that when the two railways namely the Canadian St.Lawrence & Atlantic and the American section of the Atlantic & St.Lawrence to Portland, Maine, were being promoted, the Portland supporters of the scheme were so anxious that their city should have a monopoly of transportation between Montreal and the Atlantic, that they urged the 5ft.6in. gauge to prevent Boston from sharing in the business. (Boston, I believe, at the time was already served by some local lines of the 4ft.8-1/2 in. gauge.)

Personally I agree with the opinion expressed by Mr. Loye in his interesting articles on the Grand Trunk Railway in Bulletins Nos. 18 and 25 of the Railroad and Locomotive Historical Society, in which he intimates that from particulars on record the views of the British military element carried considerable weight with the Government, and their idea evidently was that a break of gauge would materially hinder any attempt at invasion of Canada by the United States. He says, "The British Authorities adopted the 5ft 6in. as the Canadian gauge, because it was a well defined medium between the prevailing gauges in the United States at the time of the issuance of the Charter of the St.Lawrence & Atlantic Railway, 1845. The American gauges were the 4ft.8-1/2 in. touching Eastern Canada's frontier, and also coming into Detroit, and the 6 ft. of the Erie coming into Buffalo." This idea of invasion which to us seems so unfounded was not so at that time, as the international feeling was none too good. The fact that the United States portion of the line was laid by the Americans also to the 5ft. 6in. gauge did away entirely with the protective possibilities of the 5ft.6in. gauge to Canada.

It seems probable that this question of a new gauge being brought into prominent notice, may have been the cause of the appointment of the Committee in 1845 by a Royal Commission to enquire into what would be the most suitable gauge for Canadian railways.

It may be noted that this year 1845 was the same year in which the Charter was granted to the St. Lawrence & Atlantic Ry., the inauguration of the line was in 1846 and although the junction with the American section the Atlantic & St. Lawrence Ry. at Island Pond did not take place until 18 June, 1853, I believe I am correct in stating that the two railways were in working order for some distance inland from their terminal points about 1848, in which year the important bridge over the Richelieu River at Beloeil was completed and a number of locomotives were delivered to both railways.

Apparently it took this Committee six years from 1845 to 1851 to do anything and in that year a large number of professional men Engineers and others, were called up before the Committee to state their views

and opinions.

Tackabury in his "Atlas of the Dominion of Canada" 1877, quoting from the "Railways of Canada" by J.M. and E.Trout, in referring to the Committee appointed by the Royal Commission of 1845, to report on the most suitable gauge for the railways of Canada, says:- "Many of the persons examined before the assembly Committee in 1851 were not in a position to form the best opinion as to the relative values of different gauges. Mr. Harris, President of the Great Western Railway must be presumed to have given the question some consideration and he gave his opinion in favour of the narrow gauge, which the Great Western Ry. had then adopted. He said that all their calculations, plans and specifications were then based on a four feet eight and a half inch track, and he gave the following as his reasons for its adoption. First: Its established character. Second: The saving of money in the superstructure, ties and rails requiring extra strength for the broader gauge. Third: saving of expense in running machinery for all time to come. Fourth: To form an easy and economical junction with the railroads of Michigan and New York from which the Company expects to receive very large additions to the traffic on their road, a considerable portion of which is expected to follow a Grand Trunk Line through the Province to Montreal. He added,- "I consider the adoption of a broader gauge than 4ft.8-1/2in. would prove injurious to the interests of the Great Western Ry.Co., as well as to the Main Trunk Line as far as Montreal because I feel that every inducement possible will require to be made to secure the principal part of the travel from Chicago, etc., through Canada, in preference to the various channels now being opened on the South side of Lake Erie; and I feel convinced that any gauge that will not admit of the baggage cars of the roads joining the Great Western Ry., on either side being carried across it, will deprive Canada of the greater part of said travel."

Tackabury continues, - "There is something prophetic in some of these reasons. The Great Western Ry. which was practically compelled by the Legislature to adopt a 5ft. 6in. gauge was obliged to reduce it by means of a third rail to enable American cars to pass over their line. The section of the Main Trunk Line east of Montreal had been commenced with a broad gauge and that circumstance may have had some influence in determining the decision of the Committee.

And so with all the evidence before them and all the circumstances to be considered the Railway Committee on the 31st July 1851 decided in favour of the five and a half feet gauge."

Of course a great deal more evidence both for and against the 5ft. 6in. gauge was brought before the Committee, than what I have quoted, but it seems to me that the balance of opinion was in favour of the 4ft. 8-1/2in. gauge.

In spite of the fact that two railways between Canada and the United States, the 5ft.6in. gauge line between Montreal and Portland and the 4ft.8-1/2 in. line Montreal to New York were in full operation and that either of these routes on which there was no break of gauge would have been available for invasion purposes, I still believe that the fear of invasion loomed large to the military authorities and this together with the fact as mentioned above that not only on the railway to Portland but on the Main Trunk Line east of Montreal the 5ft.6in. gauge was already established, led the Committee to decide in favour of the 5 ft.6in. gauge, even in the face of the obvious drawbacks of change of gauge during transportation.

Whether the foregoing opinion is correct or not may be open to question, but the Government made its decision in 1851 that the National railway gauge of Canada should be

5ft.6in., much to the annoyance of the Directors of the Great Western Ry., who had evidently made all their plans for a railway of the 4ft.8-1/2 in. gauge.

Although this law did not affect some of the earliest railways in Canada, such as the Champlain & St. Lawrence, The Montreal & Lachine, The Lanoraie and the coal railways of Nova Scotia, which were 4ft. 8-1/2 in. gauge it may be noted that after the lawwas passed a great many lines were laid to the 5ft.6in. gauge in Nova Scotia, New Brunswick, Quebec and Ontario and some of the smaller ones had to be subsequently assisted financially by the Dominion Government when the Dominion Government repealed the 1851 law, which it did in 1870.

The Great Western Railway owing to its geographical position was from the first very dependent on through traffic from and to different points in the United States, in fact the railway practically formed a link in the East and West traffic of that country. Now, none of the United States railways directly connected with the G.W R. were of the 5ft.6in. gauge, most of them being of the 4ft.8-1/2 in. gauge, which was already at that time rapidly becoming the standard. An exception however was the Erie Ry. which was directly concerned with the G W R at Niagara Bridge, but as this line and its connections was laid to a gauge of six feet the break of gauge difficulty was equally bad if not worse.

As can be imagined the transfer of all goods from the American gauge trains to the 5 ft.6in. G W.R. trains at Niagara Bridge, and the retransfer from G W R. to American trains again at Windsor or Detroit was an endless source of confusion, breakage delay and dissatisfaction to everyone concerned, and the United States lines at last took up the question of an alternative route through United States territory on the 4ft.8-1/2in. gauge to avoid this trouble.

The fear of losing this valuable American business drove the Directors of the G.W.R to petition the Canadian Government for permission to change the gauge, and in the meantime they gradually mixed the gauge or in other words laid down on most of their track a third rail to accommodate the 4ft.8-1/2 in. cars of the United States railways, so that they could pass from one point to another of the United States over the G.W.R. without change.

It is interesting to note the gradual way in which this change of gauge took place on the Great Western Railway, and it was rather unique in this respect compared with the numerous changes of gauge which have taken place in various parts of the world. In most instances, once the work of change was put in hand, it was carried through as quickly as possible, the operation after considerable time spent in preparation was only a matter of a few days, sometimes only hours, whereas on the G.W.R. it was a matter of years. The Great Western Railway of England had a somewhat similar experience with regard to mixing the gauge on a large part of their road but when the change of gauge came they had to close a large part of their main line, which the G.W.R. of Canada did not have to do, the only part of the line actually closed was the branch line between Hamilton and Toronto which was closed for eight hours, as shall be mentioned later on.

The following are notes extracted from the half-yearly reports of the Great Western Railway.

The Great Western Railway of Canada was opened on 18 Nov. 1853 with a rail gauge of 5ft.6in. in accordance with the law passed by the Canadian parliament in 1851 to that effect.

Nearly eleven years later at a meeting of the Company held on 24 Feb. 1864, the President, Mr.Thomas Dakin, in referring to the delay and loss incurred owing to the break of gauge between the American railroads and the G.W.R., recommended

that the G W R should at once lay an intermediate, or third rail of 4ft.8-1/2in. gauge to accommodate American cars, which would then run over the G.W.R. without change. Cost estimated to be $700,000. A year and a half later on 26 March 1866, The President refers to the narrow gauge track about to be laid down on the main line and in August of that year, Mr. G.L. Reid, the Company's engineer, reports that 50 miles of N G rails are laid.

The President on 28 March 1867 says that the N.G track is completed between Suspension Bridge and Windsor, that it came into operation on January 1st last, and that the new car ferry boat, which will take 14 or 16 cars, also ran on that date. Further mixed gauge sidings were badly wanted.

Mr. Robinson, the Company's mechanical superintendent, reports at the same time that 198 N.G. cars of all kinds are now in use out of a total of 1511, and that 2 of the new Palace Sleeping Cars, built by the Pullman Company, are at work and others are in hand.

From now on the work of converting the cars from broad to narrow gauge went steadily, though the locomotives did not seem to be taken in hand until the Spring of 1870. The President on 28 Sept. 1870 says that the traffic has been handled by broad gauge locomotives, but the system of working on a mixed gauge has been found to be unsatisfactory and expensive. Preparations are now, therefore, being made to take up the outside rail - Parliament having sanctioned the change of gauge - and it is proposed to purchase some narrow gauge locomotives. It is also proposed to retain the broad gauge only so long as it is necessary to obtain sufficient N.G locomotives.

The Pacific Railroad in the United States is spoken of on 13 Oct 1869 as an important source of through traffic for the G.W.R now that the narrow gauge is available, but more mixed sidings are wanted, and the use of Bessemer steel rails was just commencing in November.

Mr. Robinson says on 23 Aug. 1870 that the first two narrow gauge freight engines are already at work and that more are in hand. Some B.G. engines are being sold, some broken up and one small one converted into a N.G. shunting tank engine. Mr. Reid reports on 28 Feb. 1871 that the third rail had now been removed from 100 miles of the main line and from station sidings between Windsor and Komoka, and also that in December last the track of the Toronto branch, 38 miles, was successfully changed from broad to standard gauge by an organized force of trackmen under Mr. Weatherton with an interruption to traffic of only eight hours.

On the same date the Locomotive Superintendent explains that the alteration of the gauge being put in hand more rapidly than anticipated has left him with a shortage of N.G. engines. The Company is buying a large number of these locomotives, both freight and passenger, from the Rhode Island Locomotive Works and he is converting G.W.R. B.G engines to narrow gauge at the Company's works as rapidly as the facilities will allow. But this conversion of the locomotives was attended with difficulties for Mr. Robinson remarks, "Many of the engines which were considered worth reconstruction with new boilers on their present gauge are found unsuitable to convert to N.G., while others, notably the Norris class, originally considered not worth reconstruction, are the most practical to convert to N.G." For these reasons it is now intended to reconstruct the six Norris engines, numbered 17 to 22 inclusive, with new boilers and cylinders, make them N.G., and select good tenders for them from other engines, which on account of age and difficulty of conversion will be broken up. Five Slaughter engines, Nos.65,66,68,69, and 72, and the Fairbairn engine, No.32, all being too old and worn out to be worth conversion to N.G. are being broken up.

Note by W M S.: According to the 1862 list the six Norris engines were, No.17, "Venus," No.18, "Minerva," No.20, "Jupiter," No.21, "Mercury," No.22, "Mars," and the five Slaughter engines were No.65, "Python," No.66, "Lion," No.68, "Tiger," No-69, "Tigres," and No. 72, "Vulcan," The Fairbairn engine was No.32, "Spitfire."

The Report continues - "The engine stock has been increased by five new N.G freight engines built in the Company's shops. The remaining portion of the engine stock has been somewhat altered during the half year both in point of numbers and gauge. In addition to the two shunting engines (Nos. 91 and 93) as sold and one shunting engine, No.92, as having been converted to N.G. in last half year's report the following alterations and temporary additions have been made - One freight engine, No.54 ("Titan" from Birkenhead) and one passenger engine, No.5 ("Windsor" from Schenectady) have been sold. Four shunting engines, No.86, "Ontario," No.88, "Superior," No.89, "Michigan," No.90, "St. Lawrence," from the Globe Works, Boston, have been converted to N.G. One shunting engine, No.87, "Erie," is in hand being converted. Thirteen new N G Passenger engines and nineteen freight engines have been purchased from the Rhode Island Locomotive Works and also one shunting engine from Baldwins." The stock of engines at present is as follows - 77 B G., 43 N.G., 13 being converted, total 133.

In consequence of this temporary shortage of locomotives, the Directors were obliged to change their plans somewhat and to retain the mixed gauge between Hamilton and London so that narrow gauge trains could be operated by broad gauge locomotives The Directors report in April 1872 that by 31 January the whole of the Company's car stock had been converted to the standard gauge, but that the broad gauge is still kept between London and Hamilton on which to run the remaining broad gauge locomotives. Mr. Robinson on 28 Feb. 1873 reports that only 24 B.G. engines now remain out of a total of 177. The Report of 26 March shows that the supply of locomotives is still insufficient and that the outer rail between Hamilton and London must be continued for the present. The new steel rails are giving great satisfaction both in use and in decreased track expenditure. The Directors in their report of 16 October announce that at last this outer rail has been removed at the end of June, that the system is now entirely of standard gauge, and that at the close of the previous year only 30 miles of iron rails remained on the main line. It is mentioned in the same report that freight trains of 27 cars are now run on the main line whereas 24 cars were formerly the maximum and then extra engine help was often required. By 1874 the Westinghouse Atmospheric Brake was beginning to be installed.

To conclude I may again refer to the process through which the Great Western Railway went during the period of the change of gauge - First, the laying down of the narrow gauge rail primarily to accommodate the American cars, at that time there being no narrow gauge stock on the G.W.R. N.G. rail Niagara to Windsor, in operation, 1 January, 1867. Second, the gradual conversion of the G.W.R. cars both passenger and freight. First N.G cars running Spring, 1867. Third, the conversion of the locomotives. First N.G.engine, a shunter, was not running until the Spring of 1870.

Locomotive List, I.

Broadgauge Locomotives of the Great Western Railway of Canada, Compiled by W.M. Spriggs

Class[1]	Type[2]	Cylinders	Dia.Drivers	Builder	Date
None[3]	4-4-0P	16x22"	72"	Lowell	1853

1[4] (24)[5] Canada[6], 2 (27) Niagara, 5 (28) London, 6 (25) Hamilton[6].

4	4-4-0PF			G.W.R.	1862-3

(28) London, (27) Niagara, (26) Samson, (94) ?

None	4-4-0P	16x22or24"	72"	Schenectady	1853

3 (23) Hercules[6], 4 (26) Samson.

14	4-4-0S	15x20or22"	56or60"	Globe	1853-4

7 (86) Ontario, 8 (87) Erie, 9 (88) Superior, 10 (89) Michigan, 11 (90) St. Lawrence, 12 (91) St. Clair, 13 (92) Huron, 14 (93) Simcoe.

None[7]	4-4-0P	14x22"	66"	Lowell	1853

15 (11) Essex, 16 (12) Kent, 17 (13) Elgin, 18 (14) Norfolk, 19 (15) Brant, 20 (16) Wentworth.

2	4-4-0F	16x24"	60or66"	G.W.R.	1867-8

(11) Sir Thomas Dakin, (12) Sir Thomas Faulconer, (13) Sir William Weir, (14) Brackstone Baker, (15) Brant, (16) Wentworth.

3	4-4-0P	16x24"	72"	Norris	1853

21 (17) Venus, 22 (18) Vesta, 23 (19) Minerva, 24 (20) Jupiter, 25 (21) Mercury, 26 (22) Mars.

None[8]	4-4-0P	16x22"	72"	Amoskeag	1853-4

27 (44) Reindeer, 28 (45) Elk, 29 (46) Gazelle, 30 (47) Stag, 31 (48) Antelope, 32 (49) Greyhound.

7	4-4-0P	16x22"	69"	G.W.R.	1868-9

(44) Reindeer, (45) Elk, (46) Gazelle, (47) Stag, (48) Antelope, (49) Greyhound.

1	4-4-0P	15x22"	66"	Schenectady	1853-4

33 (None)[9] Oxford, 34 (1) Middlesex, 35 (2) Lightning, 36 (3) Detroit 37 (4) Lincoln, 38 (5) Windsor, 39 (6) Chatham, 40 (7) Paris, 41 (8) Woodstock, 42 (9) Welland, 43 (10) St. Catherines, 44 (None) ?.

11	0-6-0F	16x24"	60"	Slaughter	1854

45 (58) Atlas, 46 (59) Pluto, 47 (60) Milo, 48 (61) Elephant, 49 (62) Rhinoceros, 50 (63) Buffalo, 51 (64) Bison, 52 (65) Python.

6	2-4-0P	16x24"	72"	Fairbairn	1855

53 (32) Spitfire, 54 (33) Firebrand, 55 (34) Fireking, 56 (35) Firefly, 57 (36) Hecate, 58 (37) Hecla.

5	2-4-0PorF	16x24"	66"	Birkenhead	1855

59 (53) Ajax, 60 (54) Titan, 61 (55) Minos.

11	0-6-0F	16x24"	60"	Slaughter	1855-6

62 (66) Lion, 63 (67) Lioness, 64 (68) Tiger, 65 (69) Tigress, 66 (70) Leopard, 67 (71) Panther, 68 (72) Vulcan, 69 (73) Etna, 70 (74) Stromboli, 71 (75) Styx, 72 (76) Castor, 73 (77) Pollux.

9	2-4-0PorF	16x24"		Birkenhead	1856

74 (29) Mazeppa, 75 (30) Medusa, 76 (31) Medea.

6	2-4-0P	16x24"	72"	Fairbairn	1856-7

77 (38) Gem, 78 (39) Ruby, 79 (40) Emerald, 80 (41) Sapphire, 81 (42) Diadem, 82 (43) Diamond.

8	2-4-0P	16x24"	72"	Stephenson	1856

83 (50) Ariel, 84 (51) Oberon, 85 (52) Prospero.

12	F				1856

86 (78) Erebus, 87 (79) Cyclops, 88 (80) Ixion.

10	0-6-0F	16x22" ?	60"	Gunn	1857

89 (56) Achilles, 90 (57) Bacchus

13	0-6-0F	16x24	60"	G.W.R.	1860-2

67 (81) George Stephenson[10], 90 (82) Scotia, 91 (83) Erin, 92 (84) Sarnia, 93 (85) Saxon.

None	4-4-0F	17x24"	60"	Kingston	1868

(95,217)[11] unnamed, (96,218) Unnamed, (97,219) Unnamed, (98,220) Unnamed, (99,221) Unnamed.

Notes:

1. This classification appears in the Official List of 1869.
2. P - Passenger, F - Freight, S - Shunting.
3. Locomotives "Niagara", "London", and "Samson" replaced in 1862.
4. Original number.
5. Number as it appears on Official Lists of 1862 and/or 1869.
6. Rebuilt by G.W.R. during the period, 1861-6.
7. Removed from service in 1867. "Hercules" became locomotive fire engine.
8. Removed from service in 1869.
9. "Oxford" was involved in the Desjardins Canal Accident, March 12, 1857. It was probably scrapped.
10. What locomotive, first of the coalburners, this replaced in 1860 is uncertain. It may have been No.67, "Panther," but this appears in the 1862 List.
11. These locomotives were renumbered soon after purchase.

Memoranda:

Special Supplement: Through the courtesy of Mr. Freeman H. Hubbard, Editor of "Railroad Magazine", we are able to mail to the members with Bulletin No.2 a reprint of "The Railroad Fan Movement", an article which appeared in the July issue of "Railroad Stories."