

# Canadian Rail

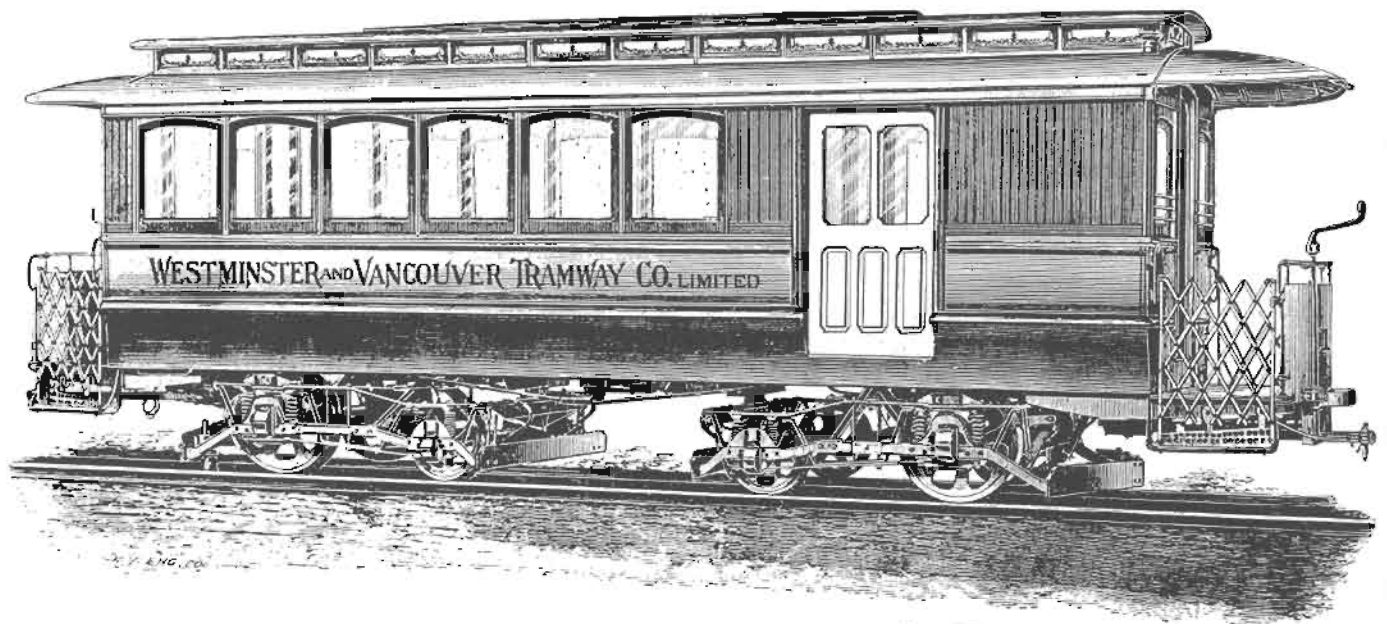


**No. 396**  
**JANUARY-**  
**FEBRUARY 1987**





25-Foot Closed Electric Motor Car No. 539.



Combined Passenger and Baggage Car No. 574.

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# CANADIAN RAIL

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FRONT COVER:

*High above the old B.C. Electric right of way, the new Skytrain carries passengers swiftly and smoothly between Vancouver and New Westminster. This view, taken on May 27 1986, shows the B.C. Hydro line (directly beneath the second car of the Skytrain) as well as the overhead wires for Vancouver's trolleybuses.*

*Photo by Mark Paul.*

INSIDE FRONT COVER:

*One hundred years ago the first train arrived at the newly-founded city of Vancouver British Columbia. Within five years an electric interurban line was in operation between that city and New Westminster. These wood-cut drawings of 1892 show in considerable detail the type of cars which began the service on the Westminster and Vancouver Tramway Company, the predecessor of the B.C. Electric and the ancestor of the Skytrain which now runs over much of the original interurban right of way.*

# Travellers' Lament at Brockville

By: Douglas N. W. Smith

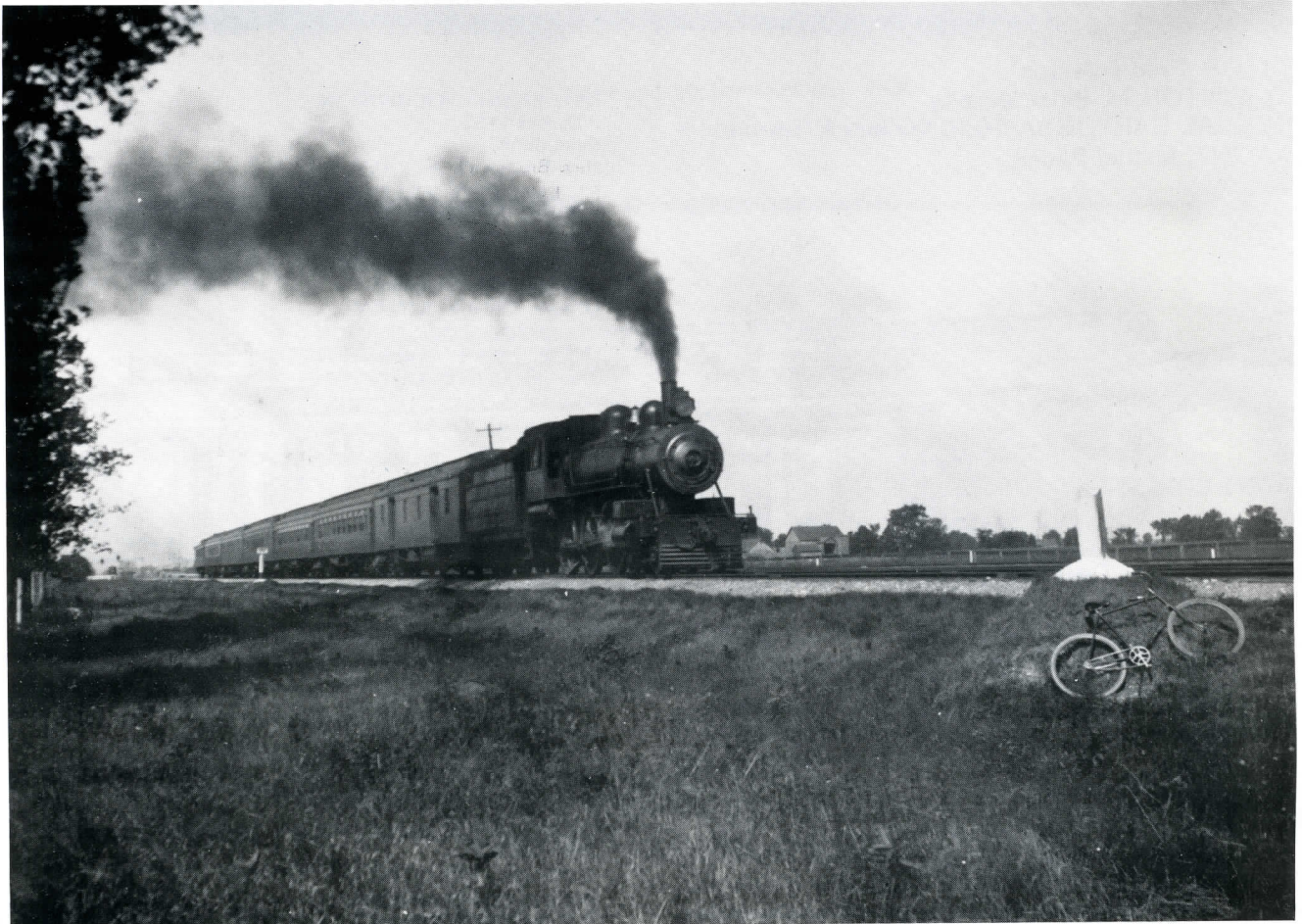
IN THE LATTER PORTION OF THE NINETEENTH century, the Honourable Edward J. Phelps composed a piece of doggerel, entitled "The Lay of the Lost Traveller", lamenting the fate of the passenger whose attempt to change trains at Essex Junction, Vermont ignominiously failed. At this small village the Central Vermont Railway's Montreal-White River Junction main line and Burlington-Lamoille Junction branch line intersected.

Within the small town at Essex Junction, the traveller could be confronted by up to four trains. The unwitting could step aboard a train only to find himself heading off in the wrong

direction. One memorable day, Mr. Phelps, who had left Burlington on a trip to Boston, found that having mixed up the trains at Essex Junction, he was back on the "Shuttle" returning to Burlington. Giving full vent to his frustration, Mr. Phelps ended the last two verses of his poem with the following immortal lines:

"I hope in hell,  
His soul may dwell,  
Who first invented Essex Junction."

These lines formed an epitaph for all those early patrons of the rail whose journey ran afoul at the myriad of railway



The passing of the "Atlantic Express" across southwestern Ontario was recorded by John Boyd in this September 1906 view. Grand Trunk 4-6-0 No. 958 is wheeling train No. 4 towards Toronto. Renumbered 340 by the Grand Trunk in 1910 and to 1573 by Canadian National in 1923, the engine was scrapped in February 1936.

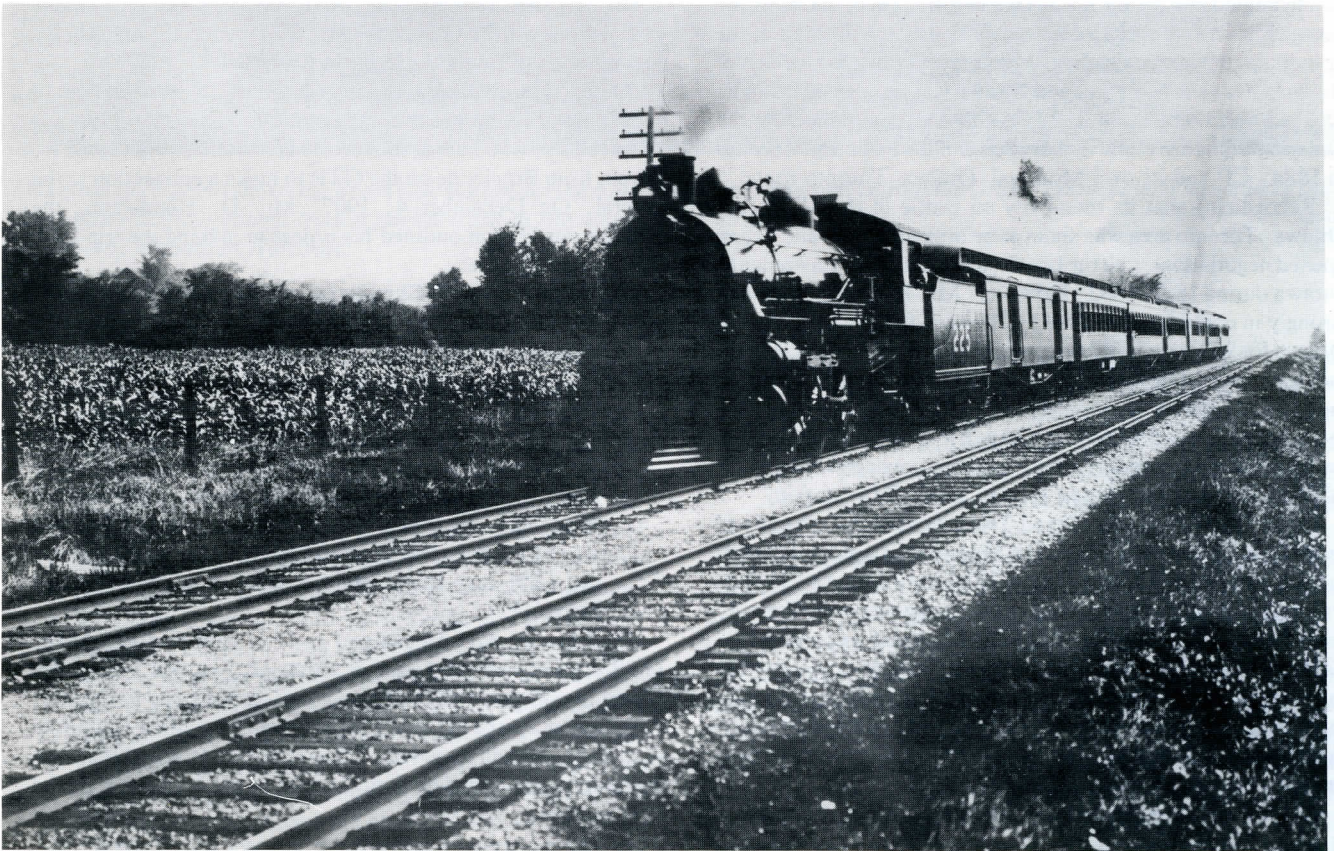
Photo: Public Archives of Canada, Photo PA-60693.

junctions in North America. While it did not become as famous as Essex Junction, in 1907 Brockville became celebrated as a point to bring despair to the traveller desiring to transfer from the Grand Trunk to the Canadian Pacific. Rather than compose a rhyme for the popular press, George Taylor, MP for Leeds, took his complaint to the House of Commons and the pages of Hansard. As the travel of many of the Dominion's highest politicians was affected, the demand for better service fell on attentive ears.

Unlike today, when four trains per day whisk passengers between Toronto and Ottawa without a change of trains, the traveller in 1907 found himself with very limited options as rail service was limited to two round trips per day. While no through trains were operated, CP's Toronto-Montreal overnight train included an Ottawa-Ottawa sleeping car which was switched out at Smiths Falls. Coach passengers had to physically change trains. The single day schedule between these points required a transfer at either Smiths Falls to CP's Montreal-Detroit trains or at Brockville to the GTR main line trains. Due to the limited frequency of service, any daubing with the schedules of these trains was a very serious matter to anyone having business in Ottawa.

While the GTR had completed the first line between Montreal and Toronto in 1856 and had subsequently developed an extensive network of lines in southern Ontario, the GTR was unsuccessful in securing its own access to the capital until after the turn of the century. It was not until 1905, when the GTR acquired the Canada Atlantic, that it finally reached Ottawa over its own rails. The CPR outflanked the GTR during the 1880's and secured a firm grip on Ottawa-Toronto travel until the completion of the Canadian Northern's direct line in 1915.

Prior to the advent of the CPR, the GTR had a monopoly on rail service between Montreal and Toronto. Two small and financially shaky lines, which were built to connect the St. Lawrence River to the lumber stands of the Ottawa Valley, provided convenient links between the GTR and Ottawa. The first rail line to reach the nation's capital, the Bytown & Prescott, arrived in 1854. Built to what was then a "narrow gauge" of 4 feet 8½ inches, the Bytown & Prescott could not interchange cars with the broad gauge GTR. The Bytown & Prescott acted as a feeder for the Northern Railroad of New York. A car ferry across the St. Lawrence River connected the two systems. The line was renamed twice following reorganiza-



*The Grand Trunk's premier train, the Montreal-Chicago "International Limited", sweeps through Lachine Quebec in this circa 1912 view. Pacific 225 was new having been built by the Grand Trunk in 1912. Renumbered 5561 by Canadian National in 1923, the locomotive would remain on the roster to the end of the steam era being scrapped in June 1961.*

*Photo: Canadian National.*

tions. It became the Ottawa & Prescott in 1855 and the St. Lawrence & Ottawa in 1867. After the Grand Trunk standard gauged its line in 1873, both lines co-operated to provide through sleeping car service between Ottawa and Toronto.

The second line to reach the capital was the Brockville & Ottawa — Canada Central Railways which completed their Brockville-Carleton Place-Ottawa route in 1870. Built to broad gauge, the system interchanged cars with the GTR until the GTR standard gauged its line. Due to its poor financial position, it was not until 1880 the money was available to start standard gauging the Canada Central.

In 1881, the syndicate which would successfully complete the Pacific Railway took over the faltering transcontinental project from the Dominion government. They early recognized the importance of developing a network of lines in the industrialized eastern portion of the nation. The earnings from the eastern lines would generate the funds to carry the transcontinental line until the prairie provinces became settled and traffic built to remunerative levels. During the latter portion of the 1870's, Duncan McIntyre, a member of the syndicate, had acquired the controlling interest in the Central Canada and in the early 1880's in the St. Lawrence & Ottawa. The Canada Central, which had almost reached Mattawa in 1881, was amalgamated into the CPR that year to form part of the main line between Montreal and Vancouver. The western division of the grandiloquently titled Quebec, Montreal, Ottawa & Occidental Railway between Montreal and Ottawa was purchased from the Quebec Government in 1882. With the completion of the Ontario & Quebec Railway between Smiths Falls and Toronto in 1884, CP had its own Montreal-Ottawa-Toronto route.

Recognizing that its monopoly on traffic in the Montreal-Ottawa-Toronto area was about to be broken, the Grand Trunk opened negotiations with the bondholders of the St. Lawrence & Ottawa during 1882-1883. However, Mr. McIntyre remained strongly in control and in 1884, CP leased the St. Lawrence & Ottawa for 999 years. While it paralleled the Canada Central, the lease provided CP with complete control over terminal facilities in Ottawa and would prevent the GTR from securing the line to access the capital. Once CP took over the line, it rescheduled the passenger trains to avoid connections with the GTR at Prescott and ceased to stop at the GTR station.

In the fall of 1907, the Grand Trunk revised the schedule of local Train 6 between Toronto and Montreal. To promote better service to the smaller communities of eastern Ontario, Train 6 was detained at Kingston to permit connections with Train 4, the "Atlantic Express" a Chicago-Montreal express train. Passengers who boarded Train 4 west of Kingston could transfer to the express to complete their journey to Montreal thereby saving over an hour's travelling time. As well, passengers from Toronto could change to Train 6 to reach small communities in eastern Ontario.

This step, which shortened trip times along the GTR's Montreal-Toronto main line, should have been well-received. However, the move adversely affected those passengers travelling from points on the GTR line west of Brockville to Ottawa. Formerly, Train 6 arrived at Brockville at 2:15 pm.

allowing a reasonable connection to the Canadian Pacific Train 80 which departed at 2:40 pm. for Smiths Falls, Carleton Place and Ottawa. At Smiths Falls, Train 80 made connections with CP's Train 4, a Detroit-Montreal train which included in its consist a Chicago-Montreal sleeping car, thereby offering an alternative to the GTR Montreal-Chicago trains. Needless to say, those travelling from southern Ontario over CP were guaranteed a firm connection to the capital!

To the chagrin of the GTR, CP chose that fall to reschedule Train 80 to leave Brockville at 2:20 pm. which eliminated the connection to any GTR train. Under the new schedule, the GTR Train 4 would arrive in Brockville at 2:30 pm. some ten minutes after the CPR train had steamed out from the north side of the Brockville station towards the nation's capital. Supposedly the CPR would hold No. 80 for ten minutes if they were informed there were passengers aboard No. 6 for Ottawa. Seemingly some things never change, as the GTR train was quite often more than ten minutes late which meant the CPR train was gone by the time the GTR train made its belated arrival. Thus the mail from points east of Toronto often had to spend the night in Brockville awaiting the first departure of a CP train the following morning. As Train 80 was the last train of the day to Ottawa, the unfortunate passengers had the choice of a hectic eastward journey along the Grand Trunk hoping to make connections with an Ottawa bound train at one of the intervening junctions or spending the night in Brockville.

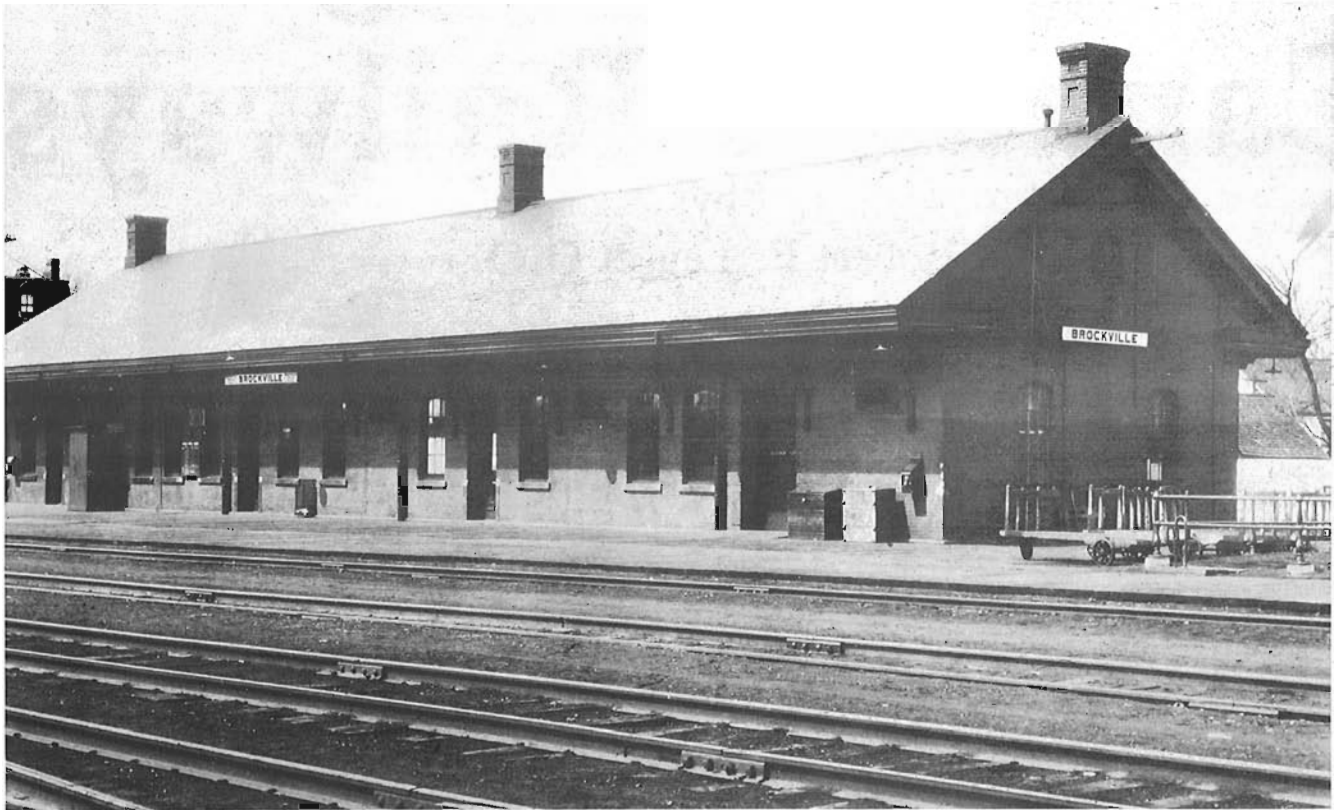
Detailed in the august pages of Hansard for all members of the House of Commons to contemplate, is the tale of two groups of travellers, who having missed the connection with the CPR, set out from Brockville on the GTR to make a connection to the capital. On December 4, 1907, Mr. D. Henderson, the member for Halton outlined his ordeal in making the trip from Toronto to Ottawa:

"... the [CP] Chicago train for Toronto was upwards of an hour and three-quarters late, [so we] preferred to go on by the Grand Trunk. We left twenty-five minutes late and made up twenty minutes between [Toronto] and Brockville. There were about eight passengers for Ottawa, and the conductor of the Grand Trunk train was good enough to wire to Brockville to ask them to hold the train, at least that he told me that he did so... We reached Brockville, according to my watch, about five minutes late by the schedule time and on alighting we discovered the CPR had pulled out ten minutes previous to our arrival."

Undaunted, Mr. Henderson and his wife returned to the GTR train to make the dash to Cornwall Junction where they hoped to connect with the New York Central train to Ottawa. An accident on the GTR at Cardinal prevented their train from reaching Cornwall Junction. The couple had to spend the night at Prescott and complete their journey on the Prescott local the next morning.

A little more than a month later, on January 17, 1908, Mr. Taylor related his travails on his recent trip from his home in Gananoque to Ottawa:

"When we [Mr. Taylor, and the MP's for Brantford,



*This circa 1920 photo shows the Brockville station during a lull in activity. The view is from the Grand Trunk side. The trains of the Canadian Pacific operated from a pocket track at the rear of the station.*

*Photo: Canadian National.*

Toronto Centre, and Belleville] arrived at Brockville at three o'clock we found that the CPR train had left on its schedule time, although they had been telegraphed to hold their train. . . . On our train was a friend of the member for Kingston. . . . who had bought a return ticket to Ottawa via Brockville. When he got to Brockville he asked the station master how he could get to Ottawa and he was told they were making arrangements for No. 4 to leave Brockville and connect for Ottawa at Cornwall Junction. Mr. Sullivan bought his ticket to Cornwall Junction, but the engine of No. 4 train which we were on broke down near Prescott and we stayed on the track for an hour until No. 6 came along and shunted us into Morrisburg. I telegraphed from Morrisburg to Cornwall to know if the train would be held as there were twelve passengers on board, but I got a reply that they would not wait for us. The engine of No. 6 was put on No. 4 and we started for Cornwall and when the conductor came [Mr. Sullivan] told him he had a ticket for Cornwall Junction to go to Ottawa, but the conductor said he would have to buy

another ticket from Cornwall to Coteau. This gentleman then had to pay 90 cents for another ticket, and when he got to Coteau he had to pay \$2.10 for his passage to Ottawa, thus purchasing three sets of tickets to reach here. Those who were on board that train arrived in Ottawa at 10:30 pm. that night. I say that is a gross injustice."

While the members of the public had to keep digging into their wallets as the trip to Ottawa became more and more circuitous, the fortunate MP's simply had to show their railway passes — a perk they receive to the present time.

The matter was brought to the attention of the recently formed Board of Railway Commissioners for Canada. On December 10, 1907, the Board ordered the GTR and CP to organize their schedules such that a reasonable connecting time would be allowed at Brockville effective January 1, 1908. Matters remained at an impasse for a while longer as CP requested and received two extensions. The matter was soon cleared up and Mr. Taylor could once again reasonably expect to find his train waiting at the junction.

# The beginnings of Canada's Railways

by

Robert F. Legget O.C.

THE SUBSTANCE OF AN ADDRESS DELIVERED AT a dinner of members of the Canadian Railroad Historical Association, held at McGill University on Friday 18 July 1986, as a part of the Association's celebration of the 150th anniversary of the first journey by a passenger train in Canada.

Let us, in this quiet evening hour think again of the historical setting of the great event that we are celebrating this weekend. How better to start than to say that, a few months ago, some of us in this room were privileged to be members of the relatively small party assembled by C.P. Rail to attend the centenary of the driving of the last spike on the C.P.R. at Craigellachie, in the heart of the snowclad mountains of the Monashee Range in British Columbia. You have all read about the proceedings in the excellent account published in **Canadian Rail**.

Despite the fact that it was a celebration of Canada, as well as a significant railway event, it received little attention in the media, so neglected are railways today in the public view. But it was indeed a celebration of Canada, the linking of the small colony on the West Coast with the four fledgling Canadian provinces in the East, by that thin line of steel, ensuring that the Dominion would indeed stretch "from sea to sea and from the river unto the ends of the earth", to remind you of those fine words from Holy writ – verse 8 of the 72nd psalm – which gave us the noble name *Dominion*, but which today are so seldom remembered...

As we stood there, surrounded by hillsides of evergreens, lovely with their first dusting of snow, the mists swirling above – exactly the same weather as on the original day one hundred years before all of us were moved in a quite mysterious way, difficult to express in words. One of my CPR friends put into my hands a small red leather-bound note book. I opened it and found it to be the field note-book of H.J. Cambie, one of the engineers on the pioneer line, beautifully written up a century before. As I read his brief notes, I wondered what thoughts were in his mind as he stood on the self-same spot to see Donald Smith hammer in the original last spike. The spirits of those men were with us that day, I felt sure. I thought especially of Sandford Fleming.

Yes! He was there, now as a Director of the Company, despite his earlier dismissal by the Government of Alexander Mackenzie. You can recognise him with his magnificent white beard, in the famous photograph, just behind and to the right of Donald Smith. He must have thought back to his own remarkable trans-Canada journey of 1872, searching out the



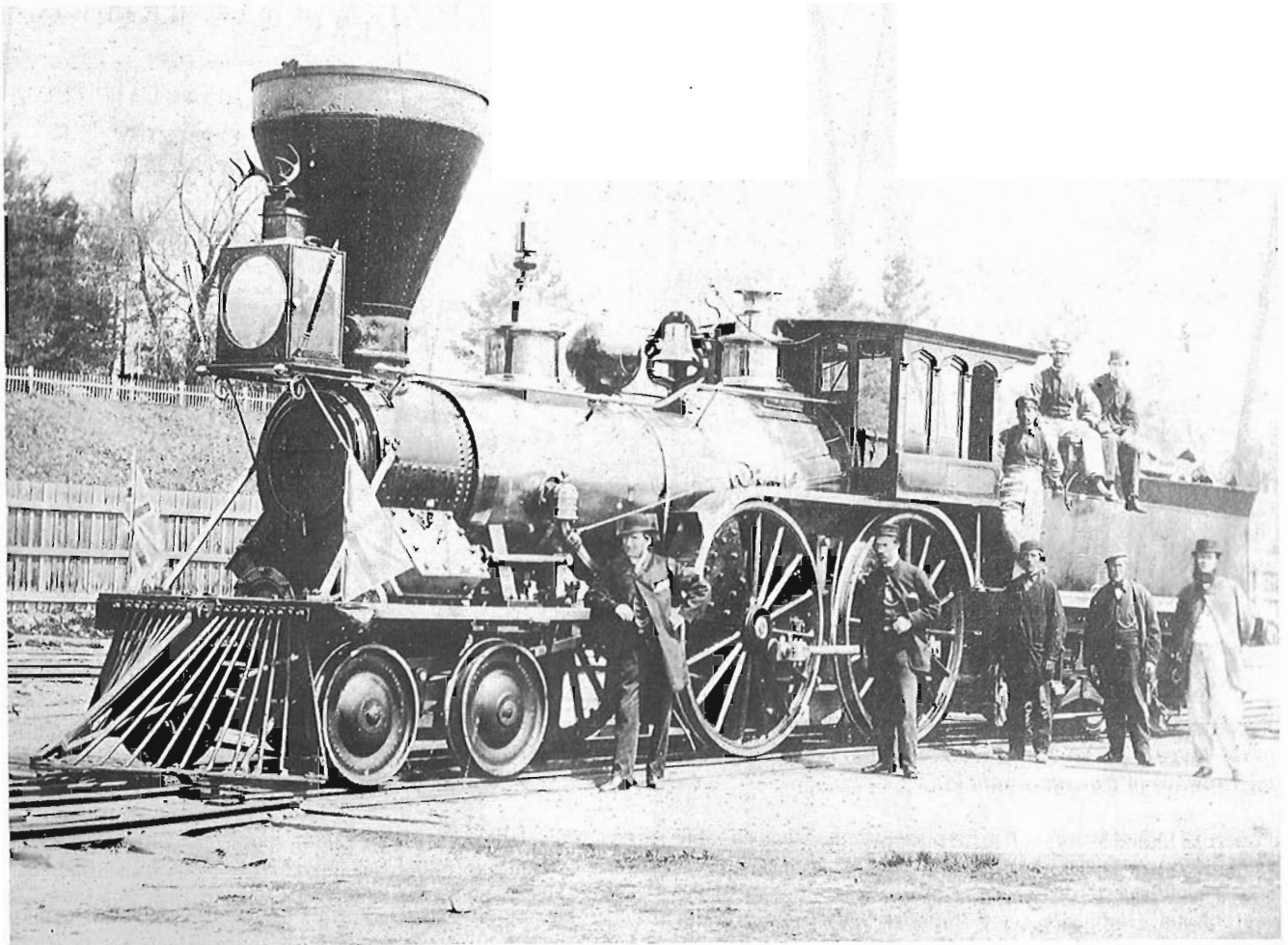
*Dr. Legget delivers his address to those attending the dinner held by the C.R.H.A. at the Sesquicentennial convention on July 18 1986.*

*Photo by Fred Angus.*

route that the new railway should follow. And I felt sure that at least a passing thought crossed his mind about the remarkable Royal Commission that investigated his work, in which he was so unjustly criticised. (His devastating reply to the Report was printed and published as a Blue Paper by order of the next Parliament, the only such officially printed reply to a Royal Commission Report of which I have ever heard).

Fleming's thoughts would have gone back much further than that, however – to his work on the Newfoundland Railway assuredly, and especially to the building of the Intercolonial Railway, linking Halifax with Montreal, which he had completed in 1876. It is passing strange that this historic line has been so over-shadowed by the building of the Canadian Pacific line to the West since it, too, linked two widely separated parts of the new Dominion. It is the railway that is mentioned in Section 145 of the British North America Act, surely the only railway in history to be enshrined in the original constitution of a major country? It was a magnificent piece of early railway





*One of the earliest locomotives of the Ontario Simcoe & Huron was the "Josephine", built in 1853 and shown here at the end of its career about 1880.*

*Photo: Canadian National.*

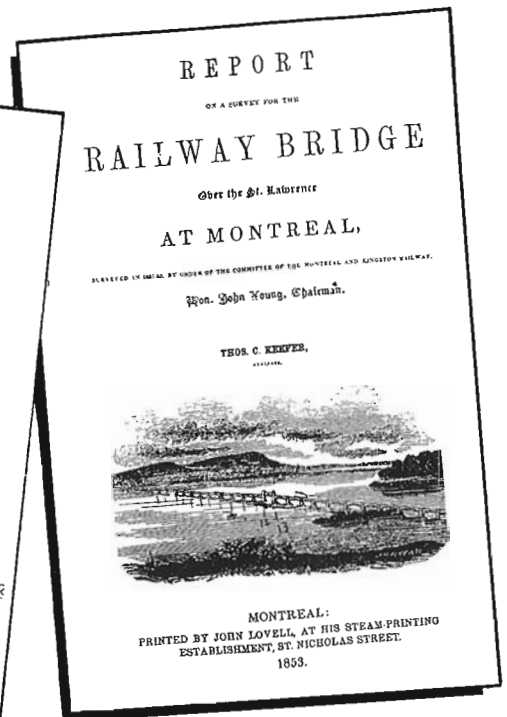
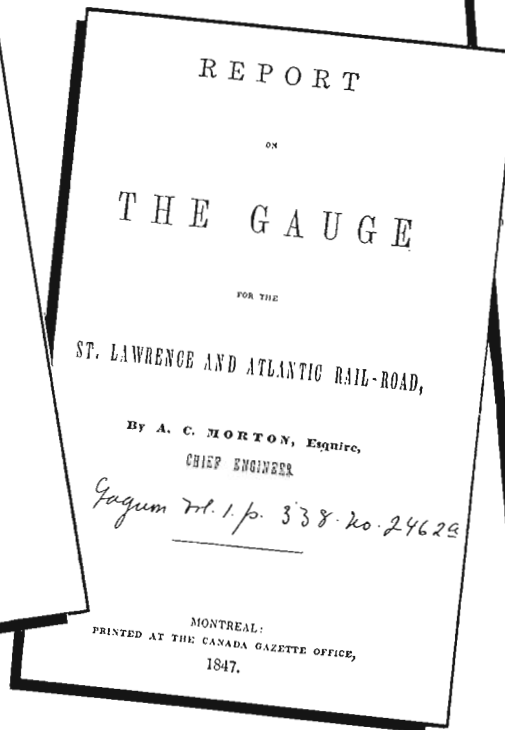
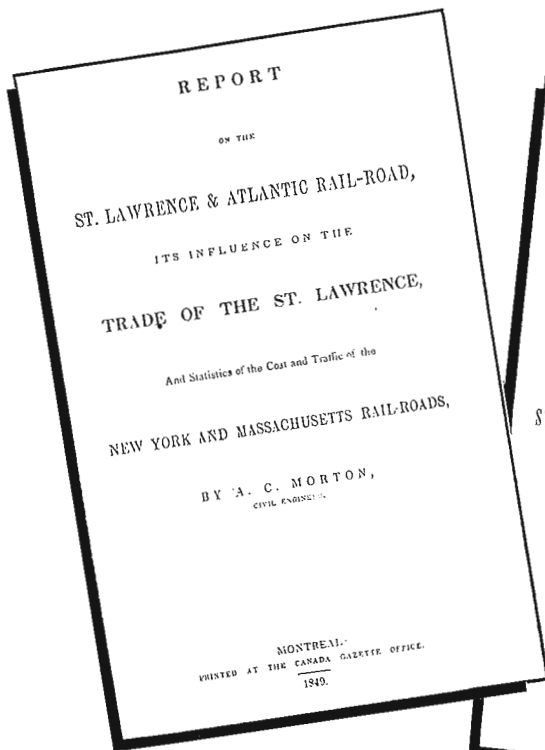
engineering, still serving its intended purpose, its original well-maintained masonry structures still serving admirably after more than a century. Together with the C.P.R., their combined thin line of steel did indeed stretch from sea to sea, from Atlantic shores to those of the Pacific.

Fleming had gained his early railway experience on yet another pioneer line, more modest in scale but equally significant to the area it served. This was the first railway in Upper Canada. This was not the Grand Trunk or the Great Western, as is often popularly imagined, mention of the construction of the Grand Trunk bringing in to this hasty survey the distinguished name of Casimir Gzowski. Several years before its completion, however, a little train steamed out of Toronto and went as far as Aurora on what became the Northern Railway of Canada. This was on 16 May 1853, almost twenty years after the event that we are celebrating this weekend. There is a fine bronze plaque commemorating this event on one of the column bases outside Toronto's Union Station but, when last I

saw it, it was badly stained and almost hidden by shacks.

All that I have said so far will be generally familiar. But did you know that the Chief Engineer of the Northern Railway, responsible for its building, was Frederick William Cumberland? If you have heard this name before, you will probably have heard it from an architect since the architectural profession regard Cumberland as one of their great early practitioners. He was a good architect but he was primarily an engineer, trained in England as a pupil of the great Isambard Kingdom Brunel. Once I was privileged to examine some of Brunel's early notebooks, now in the custody of Bristol University. The superb draftsmanship and intricate detailing of all Brunel's sketches of railway buildings showed me clearly how Cumberland had acquired his architectural skill. Let us not forget that he was essentially an engineer, a railway engineer too, playing an important role in the story of Canada's railways. And Sandford Fleming was one of his two assistant engineers.

Fleming had arrived in Canada from Scotland in mid-



*Some mid-century publications that pointed to the growing awareness in Canada of the railway development. While some, such as the gauge of the St. Lawrence & Atlantic, were retrograde steps, others like the Victoria Bridge foresaw the magnitude to which the railways in Canada would grow.*

summer 1845 and he was still in his mid-twenties when he came under the influence of Cumberland, who must have been a good teacher and an inspiring leader. I like to think of some of the great Brunel's influence on Cumberland rubbing off on to Fleming. His remarkable ability was well shown by his appointment (now in his early thirties) as Chief Engineer of the Northern Railway when Cumberland had to resign (because of his architectural activity!). But we must not forget that the actual building of the Ontario, Simcoe and Huron Union Rail Road (its original name) was late in the field compared with the Champlain and St. Lawrence line, so dominant in our minds today.

It is not in my province to say more than a passing word about this most significant pioneer line. All of you know at least the outlines of its story. Let me just say that I find special delight in the association of famous Montreal names of today – such as McGill and Molson – associated with this far-sighted venture of 150 years ago. The Honorable Peter McGill was the President of the Company at the time of the official opening; he served later on the Board of the St. Lawrence and Atlantic Railway Company, precursor of the Grand Trunk. John Molson the first died just six months before the line was opened but John Molson the second was an active participant in its affairs. And Louis Joseph Papineau was one of the honoured guests at the opening. All three men spoke at the opening ceremony. I wish I could have heard Papineau, in particular, such was his reputation as an orator.

We must not, however, get too starry-eyed about this event of 150 years ago, significant though it was. The initial trip to St. Jean went well, as did the return trip to Laprairie, even if somewhat slowly because of the trouble experienced with the tubes of the locomotive. At seven in the evening, the great company that had come over from Montreal for the event embarked again on the new steamer *Princess Victoria* for the return journey to Montreal. Just after leaving the wharf at Laprairie, the vessel ran aground and it took more than an hour to get her free. Another start was made but about a mile from shore one of the guests fell overboard and it took so long to rescue him that darkness had fallen when he was saved; the Captain decided to return to Laprairie. Somewhat naturally there was not enough accommodation in the small village for the large party, many of whom spent a very uncomfortable night, some dancing away the tedious hours.

More remarkable, however, is the fact that, but for a slight turn in Fortune's wheel, the Champlain and St. Lawrence Railroad would not have been the first railway in Canada but the second. And if the second, it would have achieved little fame and we would not be here this evening. It is a strange story that may be new to some.

In those days, Toronto was still the village of York – "Muddy York" as it was often called – but there, in the summer of 1832, a meeting was held to discuss the possibility of building a railway between York and Lake Simcoe, around which some settlement had started. The discussion was abortive but the idea

was resurrected two years later. On 23 June 1834 a meeting was held for a similar discussion in the village of Newton when settlers around Lake Simcoe again advanced the idea of a railway but this time from Lake Simcoe to Lake Huron. This revived the original idea of a line from Toronto (as York had now become) to Lake Simcoe. Another meeting was held in Toronto on 26 July 1834, attended by Toronto businessmen, some of whom had been at the meeting in Newton.

William B. Jarvis was appointed Chairman of the meeting and James Newbiggin the Secretary – and I give you these names to add a little corroborative detail to the tale I am telling! It was decided at this meeting to build the Simcoe and Ontario Railway. Nineteen of those present each subscribed £1-5-0 on the spot, in advance of stock purchases, to help to pay for the necessary survey which was estimated to cost £50. And a man called Thomas Roy was appointed to conduct the survey – which he did. His instructions were dated 23 September 1834 and they included the statement that he was to select a line “upon such an inclination as will admit of the use of Locomotive Engines upon a railway.”

Will you kindly bear with me while I say a few words more, of relevance I assure you, about this remarkable man? Not only was he a very good civil engineer but he was also a geologist, a good combination, being realised only in these modern days for its full potential. While carrying out his survey work up to Lake Simcoe in 1834-35, Roy noticed and recorded the succession of raised level areas at increasing heights above the level of Lake Ontario, which distinguish the topography all round that great expanse of water. Not only so but he deduced, quite correctly, that they were raised beaches, formed on Lake Ontario when its level was at successively higher elevations than it is today. Our current knowledge of glacial action readily explains how the beaches were formed but Roy had nothing to guide him but his own intuition and yet, apart only from not knowing that blockage by ice was the cause of the successive levels of the Lake, his explanation is entirely in accord with modern geological thinking. He wrote a paper summarising his observations and deductions. It is entitled “The Raised Beaches of Lake Ontario” and it was presented to the even then venerable Geological Society of London on 22 March 1837 and thoroughly discussed.

Roy was not present (although I think that he did once visit England) and so the paper was presented to the Society on his behalf by Mr. (later Sir) Charles Lyell, one of the acknowledged founders of the modern science of Geology. When, in 1842, Sir Charles visited the Niagara Falls area, in the course of his wide travels in North America, it was but natural that Thomas Roy, the civil engineer, should have been his guide, as he was also when they came to Toronto and examined the raised beaches. This all has a modern ring to it but please recall that this joint visit was in 1842, the year in which Roy died. So also were his discussions with James Hall, the distinguished Director of the New York State Geological Survey who also recognised Roy’s ability.

I knew of this friendship through my study of Roy’s life but I must leave to your imagination my delight when a distant friend

of mine, in Albany, New York, came across – almost by accident – the originals of four letters written by Roy to Hall in the years 1838 and 1839. You will be wondering by now why I have made this long excursion into geological studies of so long ago but this is because, in a letter dated from Toronto on 16 May 1838 (from Roy to Hall), occur these words:

“You may be surprised that I am not better informed concerning that opening at the Head waters of the Connecticut and St. John’s Rivers but the fact is this Major Yule of the Royal Engineers conducted the survey for the New Brunswick and St. Lawrence Railway (which was to pass through this opening) under the auspices of the British Government; his operations were carried on until late in the season; he was thus compelled to proceed to England before he had time to make his report. Copies of the report were sent to the provincial governments but the section, etc., are in England and I had no opportunity of procuring any information from himself; from what I can gather from the report, etc., the elevation is much the same as that of the Chemung Valley.”

Roy’s survey was completed in January 1835 and his estimate of the total cost of construction was in excess of £100,000. This was more than the Toronto group had expected and so their project collapsed. Roy’s plans were, however, quite complete and so one of the “ifs” of Canadian railway history is to ask *IF* the Toronto group had the courage of their convictions, and had built the line so well surveyed by Thomas Roy, what would have been its effect on our railroad history? Later, the idea of a line to Lake Huron at Georgian Bay instead of Lake Simcoe was raised; two United States surveyors were engaged to make the survey but hopes were again deferred and, as we have seen, the line so long in the planning was not built until the 1850s.

Thomas Roy was clearly one of our pioneer railway surveyors. Not only was he a remarkable man but a man of sterling character, as his letters to the Toronto group, while engaged on the survey, so clearly show. I wish that I could give you a quick summary of his life but this I can not do because, so far, he remains a man of mystery. We know that he came to York in 1834 and that he died there, quite suddenly, on 28 July 1842, after having undertaken a variety of engineering works, finishing up as the equivalent of the City Engineer of Toronto. But diligent search has to date failed to reveal his origins. In summary of many hours spent on this search, I can just say that I think he was the son of Scottish settlers of about 1780 on the Miramichi River in New Brunswick and that he gained his early experience as a Deputy Surveyor of the King’s Forests in northern New Brunswick.

The brilliance of this early engineer is well shown by a small book that he wrote. Published in Toronto in 1841, it is entitled “Remarks on the Principles and Practice of Road Making as applicable to Canada.” Forty two pages long, printed in octavo size, the little book is rare indeed. I know of only one copy still existing but of this I am privileged to have a photo copy. On occasion, I have read extracts from the book to gatherings of engineers expert in foundation work, asking my hearers to

suggest a date of publication. 1930 is about the earliest that is ever suggested, so wise was the author, so sound his principles of proper foundations for roads—especially about drainage—that even today they are regarded as the best of modern practice.

But why do I mention this little publication this evening? Because on page 8 Thomas Roy has this to say: “It is often said why lay out larger sums upon common roads; they will soon be superseded by railways.” This was in 1841. Roy goes on to discuss this question in a most interesting way but finishes by raising the further question of the probability that railways may be rivalled by steam carriages upon common roads” . . . This is no chimerical idea . . .” And when oil supplies start to decline, his idea may yet come to pass. Very clearly, discussion of railways was in the air in those far off days.

This further early railway survey must have been carried out no later than 1836 or 1837, but possibly earlier; time has not yet permitted following up this tantalising reference to yet another proposed railway contemporaneous with the event we are celebrating this weekend.

I do, however, have an even more interesting clue as to why this survey of Major Yule was initiated but to explain it adequately I must ask you all to take your minds back to what you once learned about the War of 1812, “Mr. Madison’s War” as it is often quite correctly described, “The Second War of Independence” as it sometimes preposterously is called south of the border! This is the war which Colonel C.P. Stacey, our well known military historian, has described in these words:

“It is one of those episodes in history that makes everybody happy, because everybody interprets it in his own way. The Americans think of it as primarily a naval war in which the pride of the Mistress of the Seas was humbled by what an imprudent Englishman had called ‘a few fir-built frigates, manned by a handful of bastards and outlaws’. Canadians think of it equally pridefully as a war of defence in which their brave fathers, side by side, turned back the massed might of the United States and saved the country from conquest. And the English are happiest of all because they don’t even know that it happened.”

It was, however, a fierce and ugly conflict while it lasted. Kingston was the key fortress for the British forces on land and water. All supplies had to be brought up to Kingston from Quebec and Montreal up the St. Lawrence River, with all its turbulent rapids, the last one hundred miles an international waterway. Only once, however, was a British supply flotilla ambushed in this section; U.S. forces had no access roads up to their bank of the great river. But British military commanders knew that, when hostilities broke out again (as they were fully expected to do) they would not be so fortunate and so an alternative route between Montreal and Kingston had to be found. It was, up the Ottawa, then the Rideau and Catarqui Rivers and so were built the Ottawa River Canals and the Rideau Canal to convert this tri-river route into a navigable military waterway, leading, incidentally, to the founding of Bytown which, as Ottawa, is now our nation’s capital city.

These water canals, however, and not railways, even though at least one tramway was used during the construction of the

Rideau Canal, as Dr. Nicholls has so interestingly told us. There were, however, many delays following the end of the War before the building of the Rideau Canal was started in 1826. The great Duke of Wellington, when Master General of the Ordnance (a Cabinet post in Great Britain at that time) finally got things moving by sending a group of three officers of the Corps of Royal Engineers to British North America in 1825 (please note that date) to investigate the entire question of the defence of British North America, which the Duke himself never visited, despite his interest. Headed by Major General Sir James Carmichael Smyth, the two other members being Lt. Col. Sir George Hoste and Captain J.B. Harris, this small Commission was one of the most remarkable groups ever to study any major Canadian Problem.

They got their instructions in London on 11 April 1825; they sailed from Liverpool in an American Packet on 17 April and landed in New York on 17 May. Proceeding to Quebec, they reported on 25 May to the Acting Governor, Sir Peregrine Maitland. They then set out, by early steamboat to Montreal but thereafter by canoe or on foot (apart possibly from another short journey by steamboat on Lake Ontario), and inspected every British defence work all the way from Drummond Island (near Sault Ste Marie) to the Citadel at Halifax, nothing that only bad weather had prevented them from visiting also Prince Edward Island and the island of Grand Manan in the Bay of Fundy. In Halifax they wrote their Report, which is about 50,000 words long, and signed it on 9 September 1825, less than five months after they got their instructions in London. Even today that would be a speed record! Twenty five copies only of the Report were prepared in view of its confidential character; they are now rare indeed.

And what has all *this* to do with railways, you will be wondering. Well, when first I held in my hands one of the original copies of this great Report, I read it with growing wonder—that these three officers had seen so much, travelled so far, and developed such sound ideas on the defence of this country, all in so short a time. And then on page 103, I read this, in the discussion of the essential linking of Fredericton with Quebec:

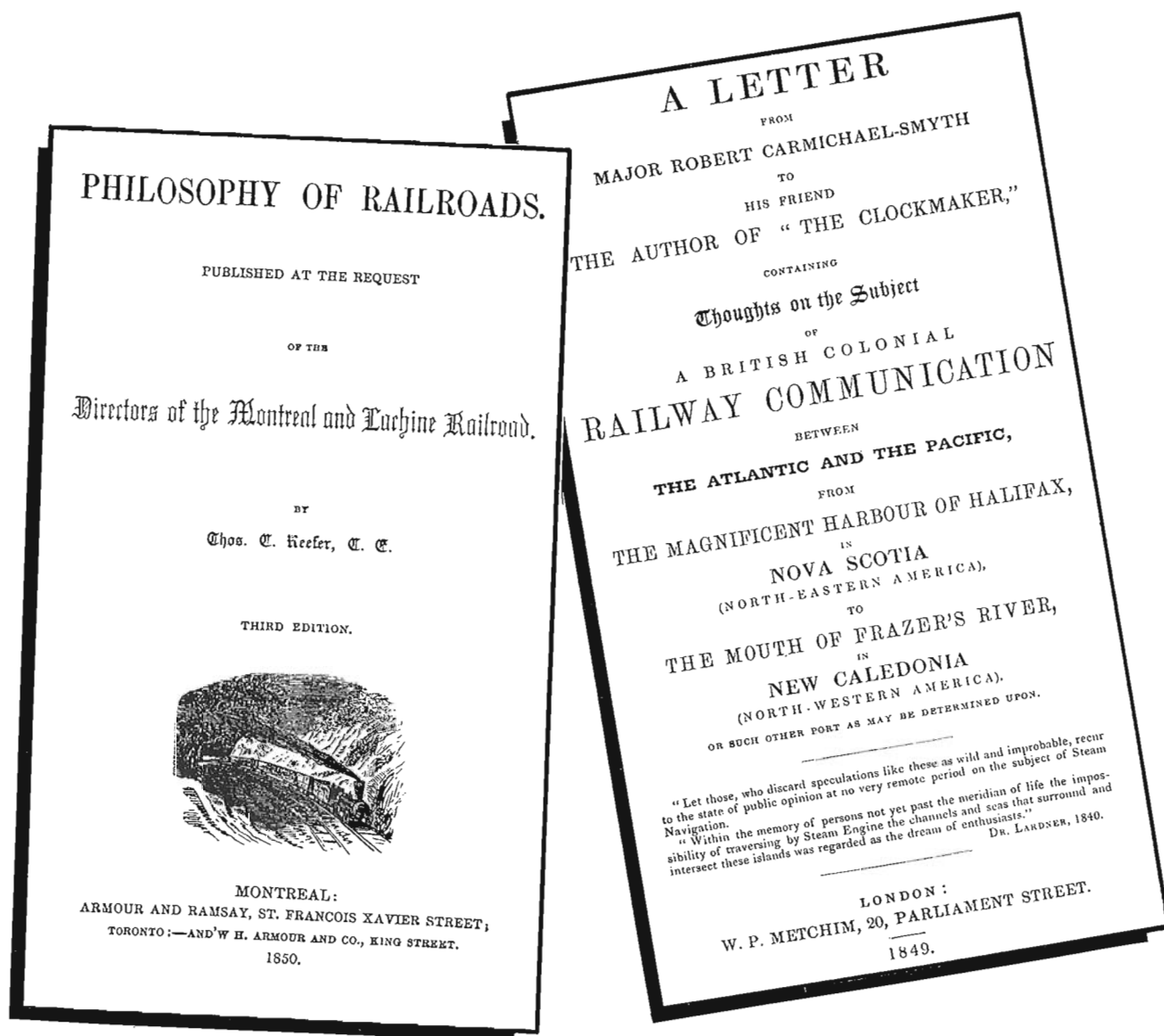
We turned our attention to the possibility and convenience of establishing a Rail Road for 36 miles from Temiscouata to the St. Lawrence.

They proceeded to give estimates of cost of a canal (£1860 per mile), and a Rail line (more than £3,000 per mile) and compared these figures with the cost of a good military road at £250 per mile. And this was in 1825.

These were far-sighted men in those early days. And there were others, too. Let me just mention four, very briefly. A man named Peter Fleming wrote a letter to the *Quebec Mercury* in December 1830 advocating a railway from Montreal to Lake Huron, five years before the Champlain and St. Lawrence Railway was a reality. A merchant named William Fitzwilliam Owen was one of the main supporters of the St. Andrews and Quebec Railway, advocated at a public meeting in 1835 but not activated until 1846. Peter Perry was a member of the Legislature in 1836, the year we are commemorating, and in that year he tried to have the railway charters, then being

considered, amended so that the Government could purchase the lines in fifty years – clearly a man gifted with second sight. And did you know that John Smyth published, in 1837, in Toronto, a “Map of Upper Canada, showing the proposed route of rail roads, for the purpose of extending the trade of the province”? And in 1845 he published a short essay on “Railroad Communication” urging an all-Canadian railway along the north shore of Lake Superior.

Talk and writing about railways was therefore in the air in these early days of our history. The Champlain and St. Lawrence was, however, the first to be translated from theorising into actuality. And it is that great event that we are celebrating. How good it would be if we knew what was in the minds of these pioneers. But they left records; they were doers and not writers – with one fortunate exception. This was Thomas Coltrin Keefer, the younger of two famous half-



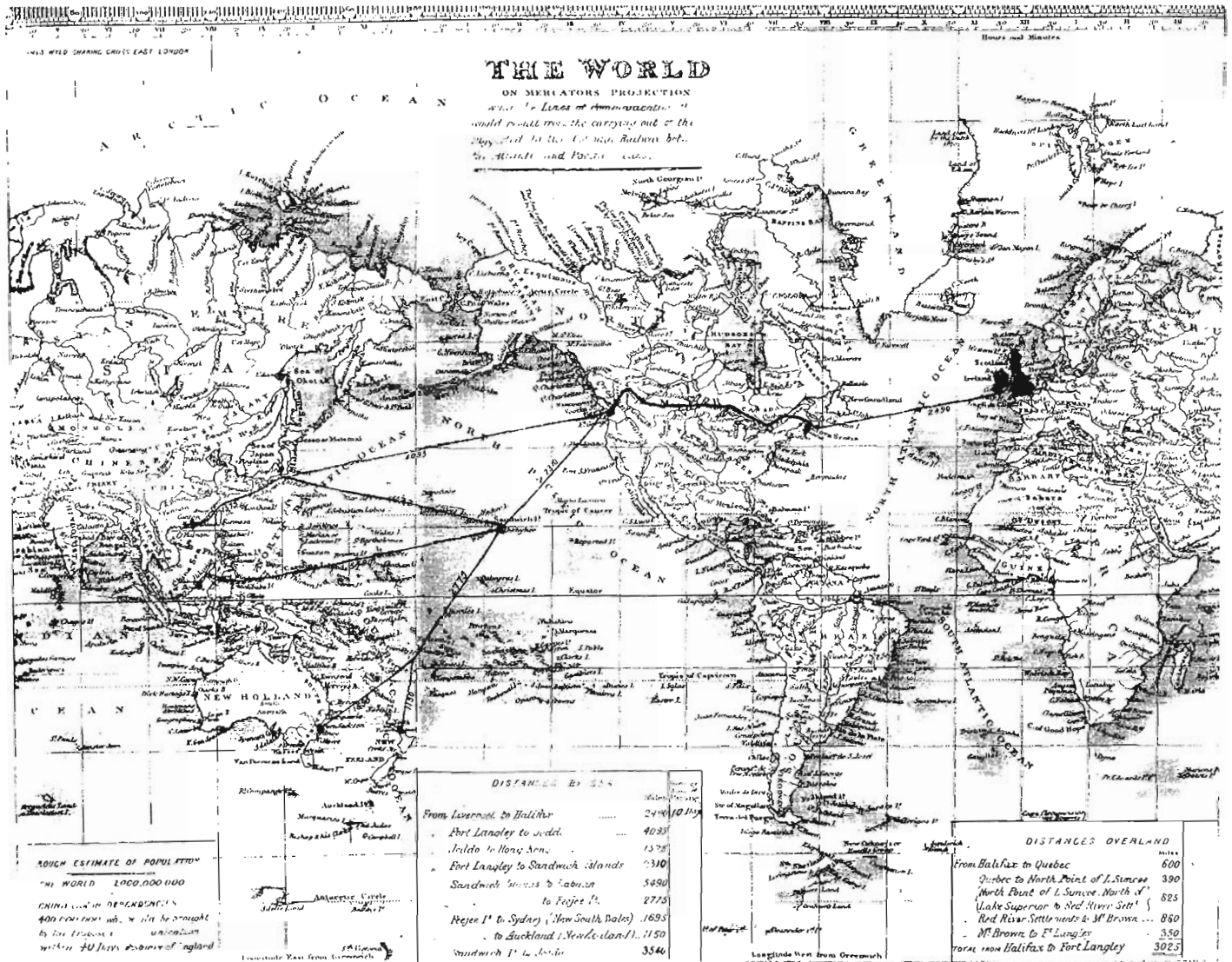
The title page of Thomas C. Keefer's "Philosophy of Railroads" as published in Montreal in 1850.

An early advocate of a transcontinental railway was Major Robert Carmichael-Smyth who published this extremely foresighted pamphlet in 1849.

brothers who contributed so greatly to early engineering work in Canada. Thomas had the gift of words. One of his legacies to us is a small pamphlet entitled *Philosophy of Railways* which he wrote at the request of the Directors of the Montreal and Lachine Railroad. The second edition was published in Montreal in 1850, so the original was probably dated in the 1840s, not too long after the event which we are celebrating this weekend. The text fills 28 octavo pages, appendices 12 pages more. It is all written in rolling Victorian prose. Here is a typical example: "As a people we may as well in this present age attempt to live without books or newspapers as without Railroads. A continuous

Railroad from tide water to Lake Huron upon the north side of the St. Lawrence . . ." and the rest can be easily imagined.

But to capture the visionary views of those who, like Thomas Keefer, saw what railways could do for Canada, and so illustrate what must have motivated that small group of Montreal businessmen one hundred and fifty years ago, let me conclude with the magnificent concluding paragraph of Keefer's introduction to his discussion of the *Philosophy of Railroads*. Here are his words, from almost the time of the start of railroading in this country:



This map looks almost exactly like those published by the C.P.R. around the turn of the century. The transcontinental railway is there, as are the world-wide connecting steamship lines; all shown in bright red. However this is not a C.P.R. map, it is the map drawn in 1849 to illustrate Major Carmichael-Smyth's report. Predicting such a system in 1849 must have seemed almost irrational, yet within much less than half a century it was all there just as Major Carmichael-Smyth had envisioned.

Old Winter is once more upon us, and our inland seas are "dreary and inhospitable wastes" to the merchant and to the traveller; - our rivers are sealed fountains, and an embargo, which no human power can remove, is laid on all our ports. Around our deserted wharves and warehouses are huddled the naked spars, - the blasted forest of trade, - from which the sails have fallen like the leaves of the autumn. The splashing wheels are silenced, - the roar of steam is hushed, - the gay saloon, so lately thronged with busy life, is now but an abandoned hall, - and the cold snow revels in solitary possession of the untrodden deck. The animation of business is suspended,

the life blood of commerce is curdled and stagnant in the St. Lawrence - the great aorta of the North. On land, the heavy stage labours through mingled frost and mud in the West, - or struggles through drifted snow, and slides with uncertain track over the icy hills of Eastern Canada. Far away to the South is heard the daily scream of the steam-whistle, - but from Canada there is no escape: blockaded and imprisoned by Ice and Apathy, we have at least ample time for reflection; and if there be comfort in Philosophy, may we not profitably consider the PHILOSOPHY OF RAILROADS.

# The Paper Money of the Champlain and St. Lawrence Rail Road An Update

By: Fred Angus.

IN THE RECENT PUBLICATION TO COMMEMORATE the sesquicentennial of the Champlain and St. Lawrence Rail Road there was an article on the paper money issued by the railroad in 1837. In the discussion of these pieces of paper money one question was not fully answered. That is whether the notes actually circulated or were prepared for use but never

actually issued. This question arises because almost all known examples of this issue are unsigned and un-numbered, often still in the form of uncut sheets as delivered from the printer (but NOT proofs as is sometimes believed).

Two signed notes were illustrated by courtesy of the Bank of Canada Currency Collection. One was considered doubtful in

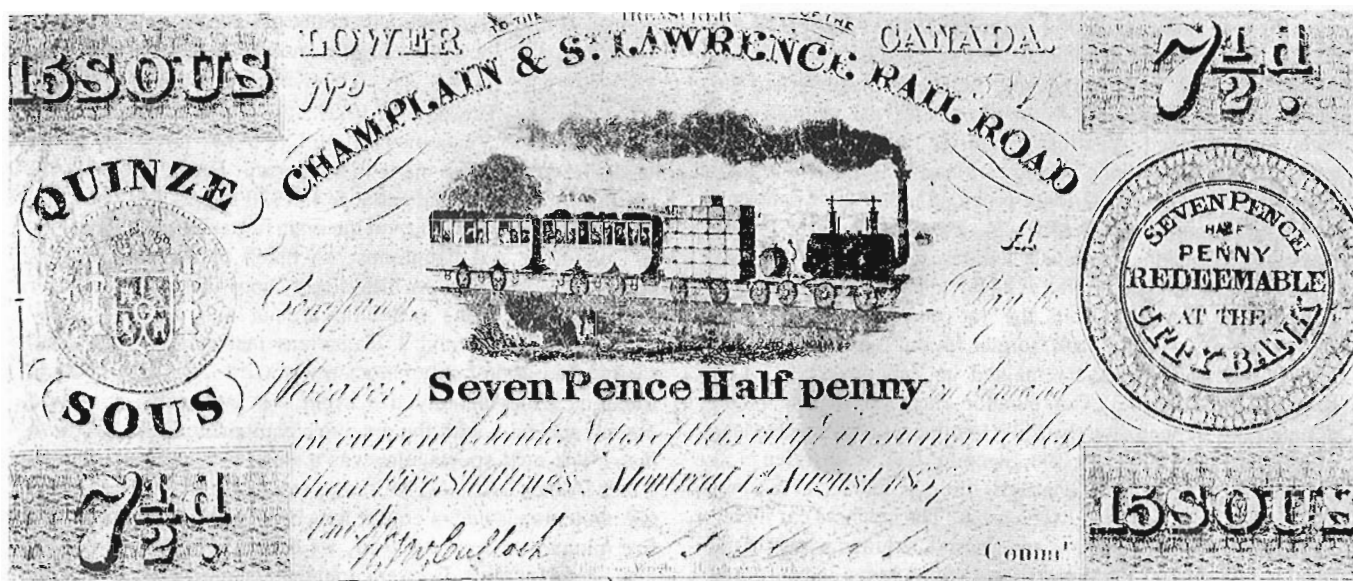


Photo courtesy of: National Currency Collection, Bank of Canada, Ottawa.  
Photographer: James Zagon.

the extreme while the other one "has the look of authenticity about it". Now, thanks to research by John Thompson, the story is much clearer, and it looks as if the conclusions drawn in the article (that the notes did circulate for a limited time) are indeed valid.

Mr. Thompson has identified the signatures on the 7 1/2 note illustrated (No. 5896) and has thereby confirmed its authenticity. One signature is that of William McCulloch who was the bookkeeper of the company from 1836 to about 1841, while the other is no less than that of William Dubic Lindsay the Commissioner (equivalent to General Manager) of the company. Lindsay's signature occurs above the printed abbreviation "Commr" on the note and is undoubtedly genuine, so confirming the authenticity of the note.

To settle matters, Mr. Thompson has located the following letter published in the Montreal Herald of October 24 1837:

"From Montreal to St. John's there was nothing worthy of notice but the railroad company's usual

abundance of regularity, speed and politeness. By the by, why are so few of its small notes circulated in our city? They are by far the handsomest and most characteristic of the tribe, and on the other side of the river are not less current than the cars. (Adam Thom)."

So there you have it. The notes DID circulate late in 1837, but mostly in the Laprairie-to-St. John's area and little in Montreal. Evidently the issue was halted long before the existing supply was used up (since so many unissued notes still exist) and they were then called in and paid off, subsequently being destroyed. The very few that survived are among the rarest in Canada, But No. 5896 (in the Bank of Canada collection) is one of them. The letter quoted above is the only contemporary account of the notes to come to light so far, but that is understandable if the notes were not often seen in Montreal. However it is enough to prove the case and answer this puzzling question.

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# The Trans Canada Limited Comes Home

By: Mike Westren

## THE MOVEMENT CONVEYING THE RESTORED 1929

Trans Canada Limited to Vancouver to keep its appointment with Expo 86 was described in Issue 393 of CANADIAN RAIL. The World's Exposition is over now, and the historic luxury train has been returned to its home tracks in Cranbrook. This short piece is intended to conclude the extraordinary working.

During the 5 1/2 months of Expo, the Trans Canada Limited was visited by over 86,000 people. When parties of 20 maximum can be accommodated, that translates into a lot of conducted tours. Several special events took place aboard the train, CRHA and WCRA functions, private dinners and receptions included. Visiting dignitaries ranged from cabinet ministers, to high ranking industry officials and NATO foreign ministers. The Expo experience provided remarkable exposure for the Cranbrook Railway Museum, and it is to be hoped much lasting benefit and support will accrue.

The Trans Canada Limited exhibit had grown to seven cars in Vancouver. In order from the far end were: (1) Open Observation Car or hay rack, former Mount Garibaldi, loaned by WCRA. This vehicle remained in Vancouver; (2) Full Baggage Car 4481; (3) Combination Baggage Sleeper 4489, donated and shipped directly from Hamilton, Ontario, courtesy of Dofasco and CP Rail; (4) Sleeping Car Rutherglen; (5) Dining Car Argyle; (6) Solarium-Lounge Car River Rouge; and (7) Business Car British Columbia. The business car served as supervisory staff quarters, and was not included as part of the regular guided tour. Various artifacts, furnishings and parts had been donated to and purchased for the Museum during the

sojourn. Among the items accumulated were six car end diaphragms, and a square drumhead tail sign light box.

On Monday morning 86.10.20, a minor time warp occurred in Vancouver VIA station. One has to ignore it being the CN and not the CP station, but otherwise we slipped lightly back to 1929 as the Trans Canada Limited was reversed into Track 4 ready for departure for points east. The business car had been dropped off, thus the tail end was properly brought up by the River Rouge. A film crew frantically reeled off footage, or should it be meterage, as the consist was moved in and out of the station.

At 0722 on Tuesday 86.10.21, the Trans Canada bade a fond farewell to Vancouver. With CN SD40 no. 5126 at the head, the transfer was made to Sapperton. Here CP GP38 AC no. 3004 took over, and caboose 434326 tagged along behind. Programmed maintenance on the main line caused day layovers in Coquitlam and Kamloops, so much of the journey was accomplished at night. An historically impossible triple passenger train meet took place at Squilax around 0200 on Wednesday 86.10.22. Nos. 1 and 2 Canadians met at this point, and sandwiched improbably between was the 1929 Trans Canada Limited. Unfortunately this event was impossible to record photographically with the available equipment at this predawn hour. The next spectacular was a stop on the famous Stoney Creek Bridge. Nicholas Morant's wooden structure for official CP photographs had of course long been dismantled, and in the five minutes we were allowed, we didn't have time to build a new one! However, we were nonetheless quite thrilled with the shots we were able to capture. At Golden a change of road





*(1) 1929 Trans Canada Limited, with markers and tail sign, ready to leave Track 4, Vancouver Station 86.10.20.  
(Photo: Helene Westren.)*



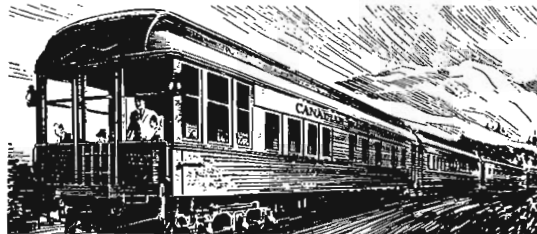
*(2) Consist from baggage car end, Kamloops, 86.10.22.*

engine was made. No. 3004 came off and GP38-2 no. 3057 was substituted. Towards evening Thursday 86.10.23, the train was approaching home on the Windermere subdivision. At Fort Steele the train was wyed, in order to get the cars the right way round for replacing on the Cranbrook Railway Museum site. So it was, that at 2141 on Thursday 86.10.23, the Trans Canada Limited tied up in Cranbrook, 62 hrs 19 mins after departing Vancouver.

We weren't quite finished yet. On Friday 86.10.24, taking advantage of being out on the main line, CP Rail was persuaded to split the train apart so the diaphragms could be fitted. Local switching in Cranbrook yard was done by CPgu no. 1627. Temporary tracks were laid across to the Museum site Monday 86.10.27, and the train safely returned to its home base.

The train set out with five cars, came back with six. The whole exercise was a marvellous adventure, and one that gave the project significant exposure at Expo 86. Remarkably little wear and tear was apparent in the display cars. There are no plans to move the train again now it is back on permanent display in Cranbrook. By late November, the dining car Argyle was hosting gala dinners once more. This truly is a living museum, and refreshingly so.

ON PERMANENT DISPLAY AT THE  
**CRANBROOK RAILWAY MUSEUM**



**The TRANS-CANADA**

MONTREAL - TORONTO - VANCOUVER  
IN SERVICE MAY 12 TO SEPTEMBER 28

**CANADIAN ROCKIES BY DAYLIGHT**

**New Solarium-Lounge Car**  
With health-giving Vita Glass Sun Parlors, Shower Baths, Ladies' Card and Smoking Rooms. There are two Bath and Shower Rooms to refresh the Traveller... one for the ladies and one for the gentlemen.



**New Sleeping Cars**  
Designed for greater comfort by day and peaceful slumber by night.  
**New Dining Cars**  
Specially appointed and staffed by renowned Canadian Pacific Chefs.

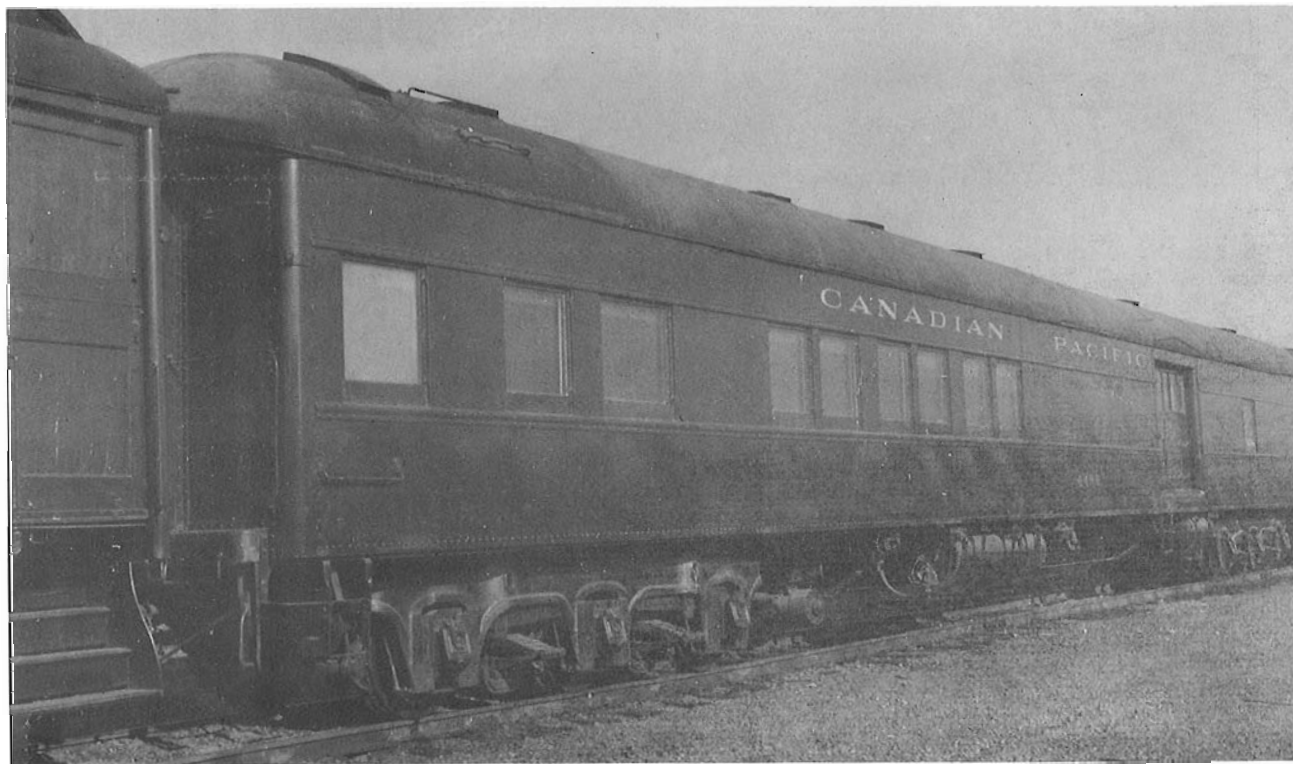
Complete Time Table On Reverse

**TIME TABLE 1929**

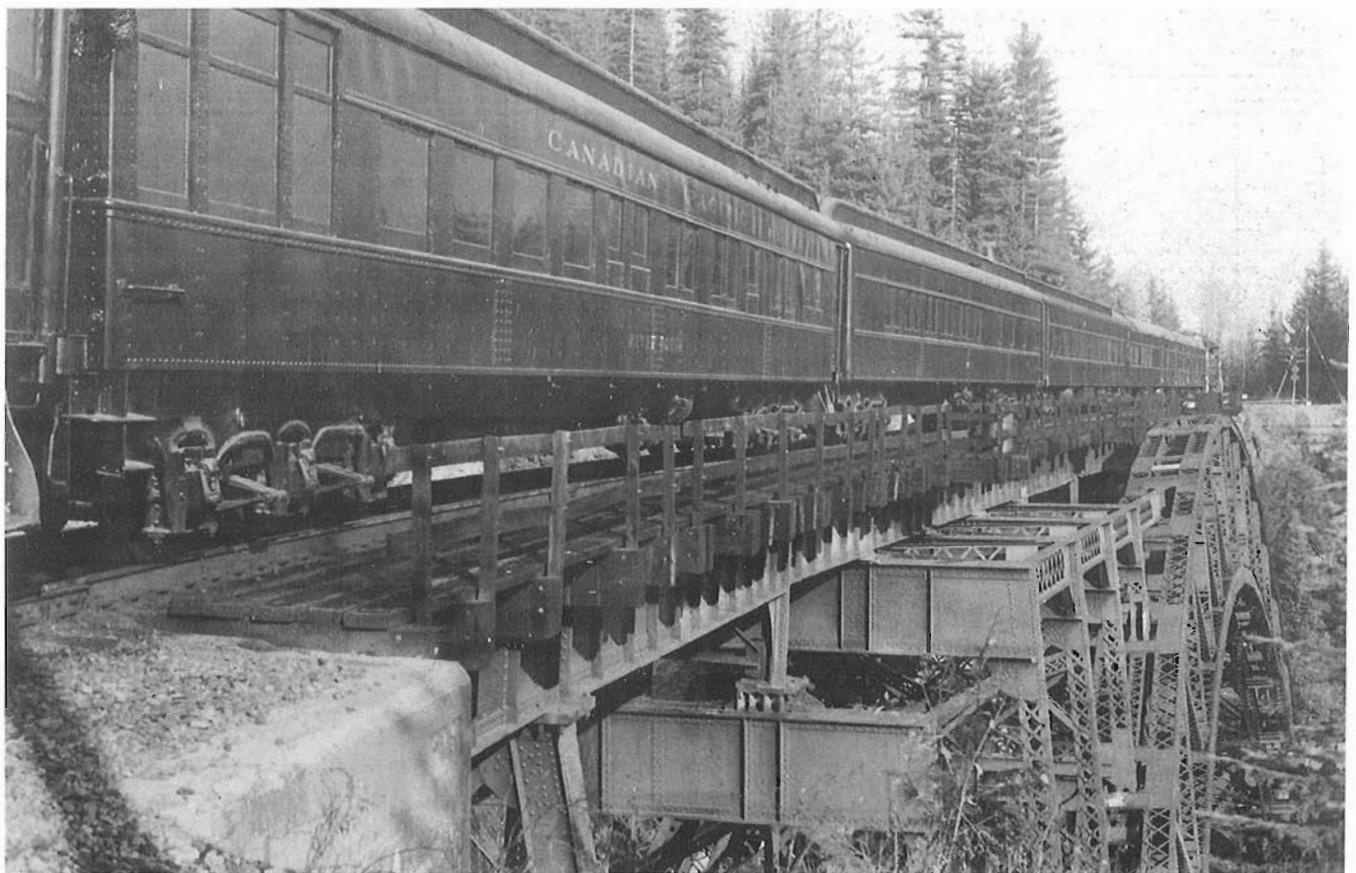
WESTBOUND				EASTBOUND			
Montreal to Vancouver, 82 hours 45 min.				Vancouver to Montreal, 87 hours			
Toronto to Vancouver, 84 hours 10 min.				Vancouver to Toronto, 82 hours 10 min.			
111	Fr. Montreal	8:15 p.m.	M.T.	129	Fr. Vancouver	8:20 p.m.	P.T.
112	Fr. Quebec	9:20	"	130	Fr. North Head	10:15 "	"
113	Fr. Montreal	9:45 a.m.	"	131	Fr. Toronto	8:15 a.m.	"
				132	Fr. Hamilton	7:45 "	"
				133	Fr. Lake	1:45 p.m.	"
				134	Fr. Lake Louise	8:15 "	M.T.
				135	Fr. Lake	8:15 "	"
136	Fr. Calgary	1:00 p.m.	"	136	Fr. Calgary	7:35 "	"
137	Fr. Edmonton	11:30 a.m.	"	137	Fr. Calgary	5:35 "	"
138	Fr. Fort McMurray	11:35 "	"	138	Fr. Calgary	4:50 "	"
139	Fr. Medicine Hat	10:15 a.m.	M.T.	139	Fr. Calgary	4:00 a.m.	M.T.
140	Fr. Winnipeg	10:15 "	"	140	Fr. Winnipeg	2:00 "	"
141	Fr. Regina	8:30 a.m.	"	141	Fr. Fort William	8:00 a.m.	P.T.
142	Fr. Brandon	8:30 a.m.	"	142	Fr. Fort Arthur	7:25 "	"
143	Fr. Winnipeg	8:30 a.m.	"	143	Fr. Port Arthur	7:00 "	"
144	Fr. Regina	8:30 a.m.	"	144	Fr. Port Arthur	7:00 "	"
145	Fr. Brandon	8:30 a.m.	"	145	Fr. Port Arthur	7:00 "	"
146	Fr. Winnipeg	8:30 a.m.	"	146	Fr. Port Arthur	7:00 "	"
147	Fr. Regina	8:30 a.m.	"	147	Fr. Port Arthur	7:00 "	"
148	Fr. Brandon	8:30 a.m.	"	148	Fr. Port Arthur	7:00 "	"
149	Fr. Winnipeg	8:30 a.m.	"	149	Fr. Port Arthur	7:00 "	"
150	Fr. Regina	8:30 a.m.	"	150	Fr. Port Arthur	7:00 "	"
151	Fr. Brandon	8:30 a.m.	"	151	Fr. Port Arthur	7:00 "	"
152	Fr. Winnipeg	8:30 a.m.	"	152	Fr. Port Arthur	7:00 "	"
153	Fr. Regina	8:30 a.m.	"	153	Fr. Port Arthur	7:00 "	"
154	Fr. Brandon	8:30 a.m.	"	154	Fr. Port Arthur	7:00 "	"
155	Fr. Winnipeg	8:30 a.m.	"	155	Fr. Port Arthur	7:00 "	"
156	Fr. Regina	8:30 a.m.	"	156	Fr. Port Arthur	7:00 "	"
157	Fr. Brandon	8:30 a.m.	"	157	Fr. Port Arthur	7:00 "	"
158	Fr. Winnipeg	8:30 a.m.	"	158	Fr. Port Arthur	7:00 "	"
159	Fr. Regina	8:30 a.m.	"	159	Fr. Port Arthur	7:00 "	"
160	Fr. Brandon	8:30 a.m.	"	160	Fr. Port Arthur	7:00 "	"

E.T.—Eastern Time. C.T.—Central Time. M.T.—Mountain Time. P.T.—Pacific Time.  
The last set of these restored Canadian-made luxury cars are on display at this museum. Open for viewing year-round.  
Displayed at the 1986 World Exposition, Vancouver, Canada as part of The VIA Rail Pavilion

Cranbrook Railway Museum, Box 400, Cranbrook, British Columbia, Canada, V1C 4H5 (604) 489-1918



(3) Combination baggage-sleeper no. 4489, Kamloops, 86.10.22.



*(4) On Stoney Creek Bridge, 86.10.23.*



*(5) Exchanging GP38-2 no. 3057 for GP38 AC no. 3004 at Golden, 86.10.23.*



(6) A classic train returns to Cranbrook, seen on the main line 86.10.24. In this timeless scene, the telegraph poles for once enhance the picture!



(7) The 1929 Trans Canada Limited is back on its home tracks, the Cranbrook Railway Museum site, 86.11.01.

(Photos 2/—/7: Mike Westren.)

# CN's TEST cars: An international first for monitoring track conditions

Using the latest technological developments, CN's Track Evaluation Systems (TEST) program provides precise track information for improved maintenance, higher efficiency and safer operations.

by Bill Palmer

CN HAS LAUNCHED ANOTHER HIGH-technology first in railroading: a special computerized dual-car rail unit to test track conditions under the varying weight of a fully loaded moving freight car.

Success for this accomplishment has been due to the contributions of many employees in a number of CN departments:

Engineering developed and coordinated the project and will tie the unit into its scheduled maintenance plans.

Technical Research Centre staff designed and custom-made all of TEST's highly specialized equipment.

Information Services developed the computer firmware and software installed on the TEST cars.

The CN Car Equipment Department and Pointe St. Charles shops redesigned and constructed the rail cars.

Transportation developed the implementation techniques for testing, and assures operational safety over the designated route of the car.

The TEST program is being used primarily to plan and manage CN's \$500 million annual track maintenance expenditures, and will complement the regular track inspection program.

With this new technology, CN is better able to forecast long-term wear on track components, and to significantly reduce costs by developing and implementing programs that can assist track and roadway personnel to maintain high-quality track structure. Local maintenance supervisors can also use the TEST information in planning long-term work programs or short-term maintenance repairs.

A first-class maintenance program provides CN with better track utilization, a more responsive system for freight customers and for train passengers, reliable train schedules, and reduces possible damage to equipment — and to cargo.

The introduction of TEST is making it possible to determine what the maintenance priorities are, and make possible more frequent inspections in the areas where they are most needed.

The TEST cars are outstanding for their high technology, performance, durability, reliability, and compatibility from one TEST unit to another, and with other computer systems within the company.

## A history of innovation

These two new second-generation TEST units are part of an evolution to find the best methods of monitoring various track conditions — or what the specialists call track geometry.

*Movin* talked first with Pierre Berthiaume, assistant chief,

technical research, and Ray E. Kalita, senior research engineer, both at CN's Technical Research Centre in Saint Laurent, a Montréal suburb.

CN's Technical Research Centre is the second largest in North America and is responsible for development of sophisticated railroad technology.

Traditionally, required track maintenance was based on measurements made with such simple devices as level boards, and strings and blocks. In the early 1960s, that changed when Dr. Robert Cass and Dr. Nelson Caldwell of the Technical Research Centre began a search for ways to better evaluate track conditions on the system. Dr. Cass is now chief of Technical Research; Dr. Caldwell, assistant chief — mechanical and civil engineering.

The result was the development of a seismic reference mass used in measuring vertical track perturbations — in effect, the spacial movement of the axle was determined, demonstrating that non-contact measurement methods could be used to measure track parameters.

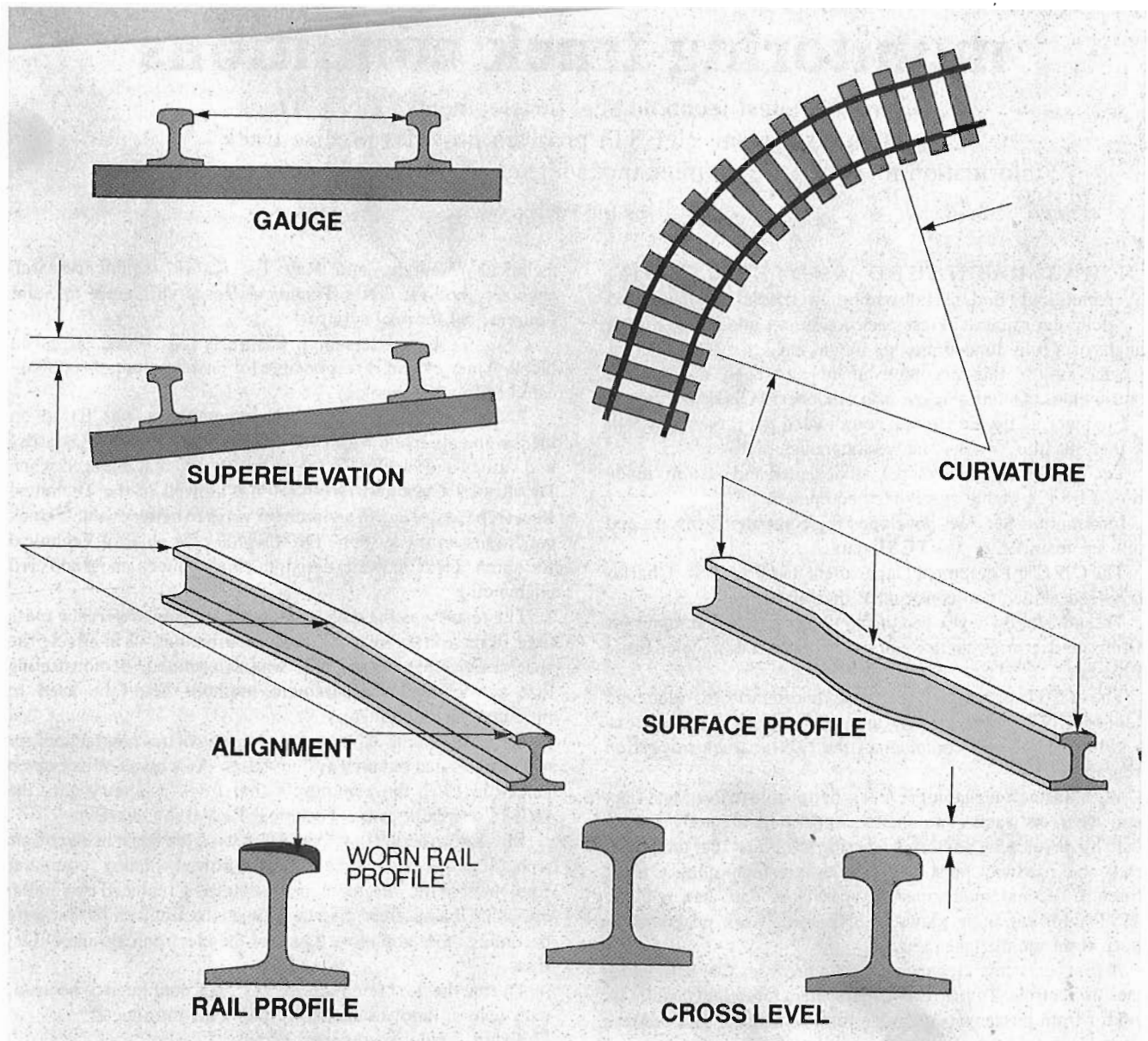
Mr. Berthiaume explained that testing of this new technology was also carried out on a system basis. As a result of its proven value, in 1967 the company's first track geometry car, the 15018, was built at the Technical Research Centre.

Mr. Kalita added that Car 15018 used the latest in electronic technology at that time. This allowed analog computer equipment in the development system to be replaced by smaller operational amplifiers, and the new microcircuit chips that were becoming more and more a part of the electronic design of Dr. Cass.

During the next few years, Car 15018 continued to be used, with several innovations and refinements introduced:

- Cross-level measurement added.
- Surface profile modified for improved accuracy.
- Magnetic gauge system added.
- Quarter-mile printout of surface roughness, cross level, gauge and speed.
- A pen chart recorder installed, which showed instantaneous variations in measured track parameters.

Mr. Berthiaume emphasized that the technology that had been developed by CN was the first inertial, or non-contact, method developed in the industry to measure track geometry. A number of contact methods have been designed, but they are not suitable where 64 000 kilometres (40 000 miles) of track must be inspected yearly. The reason? Contact systems lead to wear on the measurement elements, and are subject to frequent re-calibration.



Details of CN's innovation were published, and as a result, both British Rail and the Netherlands built their own non-contact systems. Later, Canadian Pacific and the Quebec North Shore Railway also purchased this system.

The 15018 successfully continued to provide information on track geometry, with its on-board computer analyzing and reporting measurements to provide rail profiles, Mr. Kalita added.

### Meet TEST

□ TES<sup>™</sup> is a dual-car unit, with a coach car and a ballasted freight car.

□ The coach car contains sensors, computers, monitors, printers, recording equipment, an observation area, and living quarters for the operating staff.

□ The unique ballasted freight car has four water tanks that can be used to vary the weight of the car up to the maximum allowed on the track structure. The car also carries electric power generators.

□ The TEST units are based on three component systems: *sensors* to monitor various vertical, horizontal and lateral deviations in track geometry; *interpreters* to process information from these sources; *recorders* to produce reports to identify areas needing attention.

□ The sensors provide information on surface profile of the track, gauge, cross level, superelevation, curvature, and track twist.

□ The recorders provide five types of reports interpreted by the computers:

Track feature locations (turnouts, mile boards, level crossings, etc.).

Location, magnitude, and maintenance priority of track needing repair.

Current track quality for each quarter-mile (400-metre) section compared with previous evaluations.

Mileage at which curves begin and end, and degree of curves and amount of superelevation.

Record of all instrumentation signals produced by TEST.

□ The dual-car units can travel up to 100 kilometres (60 miles) an hour.

□ One dual-car is being used for track monitoring in Western Canada, for ultimate use in CN's Mountain Region. The second dual-car unit has also traveled west, to Expo 86 to demonstrate this new technology; it will ultimately be used in the Prairie provinces.

□ The original track geometry car will be used in Eastern Canada, although the dual-car units are also expected to be used in other regions as needed.

### Time to upgrade

However, since the introduction of the 15018 there had been several important technological advances. In addition, the car itself was in need of renovation. So beginning in 1972, the original track geometry car was replaced with a newer car, CN 15000, which received a number of innovations over the next few years:

- The curvature system was modified.
- Superelevation measurement was added.
- Hewlett Packard computer was installed.
- First track geometry comparative histograms were printed in CN System Headquarters.
- The MK II computer was replaced by the MK III.

The responsibility for these changes was carried out by Technical Research Centre staff, Mr. Kalita added, including, in addition to Dr. Cass and Dr. Caldwell, Laurent St-Louis, Richard Proulx, Bill Bowler, Mr. Berthiaume, and Mr. Kalita himself. Bill Lane was supervisor of this car during its testing and, later, its operations.

### The next generation

In 1981, CN's Engineering Department was asked to examine its maintenance programs to find ways to increase productivity and to reduce costs. That request was met on two fronts. The first was the establishment of the Track Force Rationalization Program; the second was a comprehensive international evaluation of track geometry systems. Heading that overview was Don Holfeld, system engineer, technology, Operations. Working with him were Ray Kalita, Bill Lane, and Glenn Chafe, project engineer, TEST Project, Operations.

Mr. Holfeld explained that "we began with a survey by letter, asking roads — in the United States, Europe, Australia

and Japan — what track geometry equipment they were using. In addition, a literature survey was conducted."

The letter/literature survey was followed by technical visits to railroads in the United States and in Europe by Mr. Holfeld and Mr. Kalita, to evaluate first-hand the track geometry technology in those countries. They were by no means simple social visits; they included train trips of some duration, many miles of track inspection, and marathon discussions with foreign railroad representatives to evaluate more accurately the systems in use.

The result? Basically, CN's technology for track geometry measurement was among the best available. And with some upgrades and modifications could meet CN's present and future needs.

In 1982, a report was presented to senior management incorporating the results of the Track Force Rationalization study, as well as an innovative recommendation for monitoring track geometry developed by Mr. Holfeld's team. That idea: The use of a dual-car unit, one of those, an instrumented and ballasted freight car that could vary from 177 000 pounds (80 000 kilograms) to 263 000 pounds (120 000 kilograms); the second, an analysis and observation coach car, utilizing computers, high-technology equipment, video-recording and playback units, as well as living quarters for the operating staff.

Included in that recommendation for the dual-car concept was a second suggestion for replacement of the original chart recorders by easily understandable and useful computer printouts of track exceptions and information. Mr. Holfeld explained that "because of time restraints, those original charts — which required considerable study — simply were not always fully utilized." On the other hand, the computer printouts give immediate, easy-to-understand information.

1982: Authorization to build two dual-car units was received.

### The green light

With the green light, various CN departments went full speed ahead with the construction of the cars themselves and the technology needed. CN's Pointe St. Charles shops modified two VIA coaches and two freight cars for the two dual-car units needed. Installed in the coach cars were new improved instrumentation, underbody cameras, TV monitors, equipment to videotape various track views, a voice synthesizer, an overprint of information on the TV monitor, a clear observation area — and comfortable quarters for the operating staff.

Also at the shops, an innovative system called ORIAN was installed. ORIAN (Optical Rail Inspection and Analysis) was designed and constructed by a United States firm especially to meet CN requirements. With information from ORIAN, Engineering will be able to forecast rail requirements many years in advance, to direct rail gang work, and to determine accurately areas requiring rail transposing far in advance of critical deadlines.

As well, a number of modifications were deemed necessary; one of them, an improved gauge measurement system which

would allow development of a system to measure track alignment.

Three approaches were reviewed — FRA, British and Dutch. CN chose the latter, which uses a controlled laser beam to measure the position of both the right and left rails.

“We purchased the plans and documentation from the Netherlands railroad but had our own Technical Research Centre make the necessary modifications to meet CN needs,” Mr. Holfeld said.

Another modification has been in a new method of measuring superelevation, now accurate to 1/16” — considered the best in the world.

And the future? Mr. Holfeld pointed out that CN’s search for a second-generation track geometry car has encouraged other railroads to review their own track-geometry inspection systems. Only recently, a new committee of the American Railway Engineering Association has come into being. Its goal: Improving the collection and distribution of information about track geometry technology. Mr. Holfeld is secretary.

Through the discussions and sharing of ideas that take place within the operating and innovative technology and equipment are being developed. One such innovation that is just around the corner is a robotic tamper car, that will take the information from a track geometry car, pass it through its own computer, and automatically realign the track with no operator input.

In the not too distant future, laser technology, robotics and artificial intelligence may all be buzz words used to describe track maintenance.

### The computer connection

TEST is the most sophisticated of its kind in the world, said Ian Kearvell, CN senior programmer analyst, CAD/CAM and Graphic Systems. “It combines many years of experience in track inspection technology with custom hardware and software designed and developed by the railroad to meet its specific needs.”

TEST measures track geometry using sensors mounted on the car’s exterior to provide raw signals for on-board computers to monitor, analyse and report. The main computer converts analog measurement data into digital form and then produces reports in real time. It also controls the operation of the TEST car.

The raw analog signals generated from the sensors are pre-processed by a CN-designed MK III computer. After this processing, the analog output is sent to the main computer for further processing.

The processed data are then analyzed and a series of reports immediately printed:

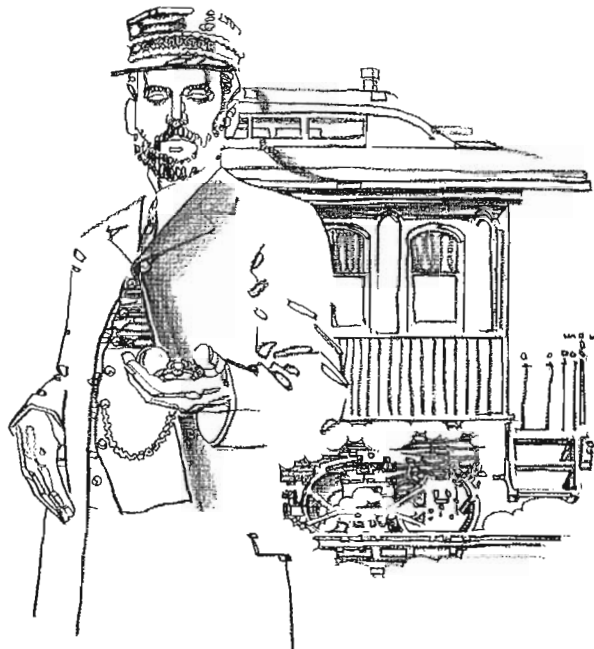
- An exception report specifying the exact location of a defect.
- A sensor report giving a graphical interpretation of the track geometry.
- A curve analysis report.
- A track summary statistics report.
- A rail wear exception report from ORIAN.

A microprocessor called the Pulse Processor, another CN Technical Research Centre-designed system, regulates the timing pulse, generated by an odometer, that is used to determine car location and speed.

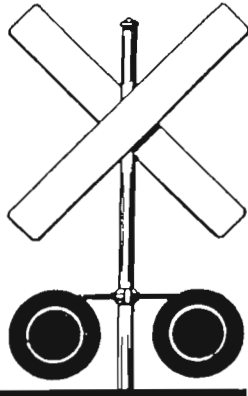
A Sony Genlocker takes information, such as car location, speed, and geometry data, and overlays it onto video monitors in the observation area to keep operating personnel onboard informed of all track situations.

“The custom designed software packages developed for TEST are what set it apart from existing track geometry technology,” Mr. Kearvell said. “One of TEST’s capabilities is its ability to know where it is located along a particular track. Switching to another track is also automatically detected by the TEST sensors and software.”

Re-printed from *CN Movin*.







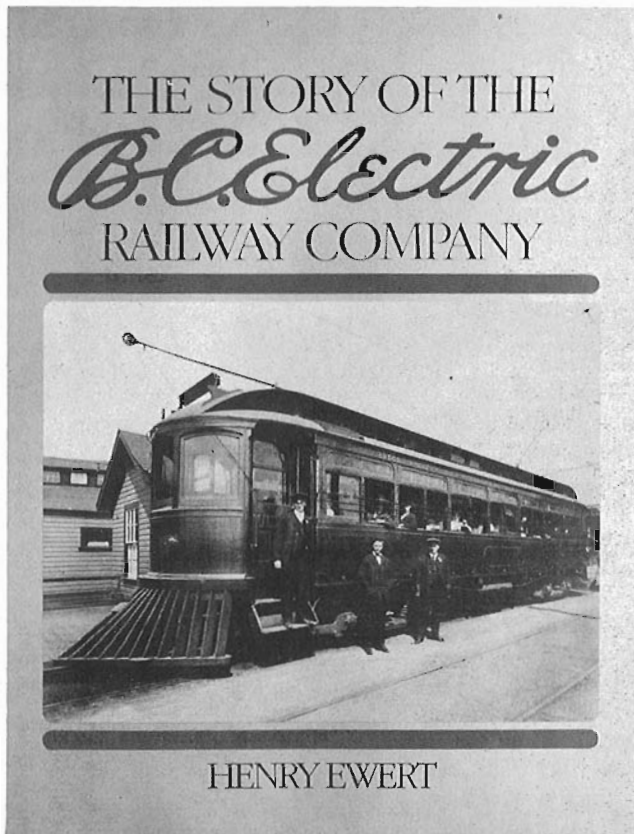
# Book Review

## “ The Story Of The B. C. Electric Railway Company ”

By: Henry Ewert

Published by Whitecap Books  
1086 West 3rd Street  
North Vancouver, B.C.

Price \$39.95



THE BRITISH COLUMBIA ELECTRIC RAILWAY operated the largest interurban system in Canada as well as the street car systems in Vancouver and Victoria. Electric traction had come to British Columbia in 1890, only four years after the opening of the transcontinental railway. In 1897 the

various electric companies became the B. C. Electric Company, and until 1958 electric passenger rail service continued. At one time there were 111 route miles of street car operation and 141 route miles of interurbans. In 1910 the system carried 40 million passengers, and the total peaked at 146 million in 1947. Even today B. C. Hydro, the successor to B. C. Electric, still operates freight service over much of the old interurban trackage, while the city of Vancouver has a large fleet of modern trolleybuses as well as the newly-opened Skytrain system, much of which runs over the old B. C. Electric right of way.

Despite the great importance of the B. C. Electric system, there has never been a full comprehensive history of the whole operation. That is, not until 1986. Now, thanks to the great work of Henry Ewert, we have one of the most interesting, if not *the* most interesting, book ever to be written on a Canadian electric railway system. The Story Of The B. C. Electric Railway Company is a massive book containing 336 large (8½ x 11) pages in a hard cover binding. From the very earliest plans in the late 1880's the reader is led through a fascinating world of history, technology, politics and drama as the early systems in Victoria and Vancouver struggled to get running. They were the first transit lines in Canada to start with electric power, never having run horse cars, and one can feel the agonizing decisions that had to be made in committing the undertaking to this new technology.

Passing on to the twentieth century, we read of the spread of the great interurban network, the upgrading of the city lines and watch the development of Canada's west coast cities, a development helped in no small way by the B. C. Electric. Then we see the decline of the electric railway, the disappearance of the street cars and the interurbans as rubber-tired transit took over. Finally we see the reincarnation of the interurban as the new Skytrain rapid-transit system and we realize that electric traction is still prominent in B. C. for the Skytrain is just as up-to-date in 1986 as the electric cars were in 1890.

The Story Of The B. C. Electric Railway Company is much more than a simple history. It contains hundreds of photographs ranging from the earliest views in 1890 to the latest in 1986. Maps and drawings abound including detailed scale drawings of no less than FIFTY different types of street cars and interurbans. There are also pictures of a wide variety of tickets, transfers and other ephemera produced by the B. C. Electric, not to mention a detailed roster of the rolling stock owned by the company over the years.

In reading this book one feels that he is reading the whole story of city and interurban traction, for there was a bit of almost

everything here. There were some of the earliest electric cars (1890), early double-truck cars (1892) including the first interurbans to New Westminster that were featured in a J. G. Brill advertisement in 1893! Then there was stark tragedy as we read of the Point Ellice disaster of 1896 when 55 people lost their lives as Victoria car 16 (a double truck car similar to Boston's 25-footers) plunged through a bridge. Soon there is a new company formed and an aggressive management builds a great system. Here we can really experience the flavour of the electric railways for there are so many detailed accounts and stories to interest the reader. From the big interurban trains to Chilliwack to the local Birney cars, not to mention the observation cars, it is all here to be read and enjoyed. If you only buy one book on a Canadian electric railway system this is the one to get.

Reviewed by Fred Angus.

# Canadian Railway Freight Pricing

## Historical and Current Perspectives, 1836-1983

THIS BOOK TRACES THE DEVELOPMENT OF Canada's railway freight rate structure from its earliest origins until the mid-1980s, including the settlement of the "Crow" debate with the passage of the Western Grain Transportation Act. It covers many new freight rate developments that have arisen since Howard Darling wrote *The Politics of Freight Rates* and also reviews the economic content of these issues, thus setting the background for the coming debate on the government's proposed changes to the Transportation Act.

The author, W. G. (Bill) Scott, is a well-known transportation economist who recently retired from CP Rail where he was General Manager of Pricing Economics. Mr. Scott provides a carrier perspective on this controversial subject.

Key issues such as legal "equity" versus economic "efficiency" associated with differential railway pricing practices; variable freight rates based on differences in "costs" and "demand"; and "general" versus "selective" rate increases are highlighted.

474 pages, 22 tables, 27 figures  
ISBN 0 88911 262 2 (6 x 9, soft cover)  
Available: September, 1986  
\$21.95 (Cdn.), postage paid

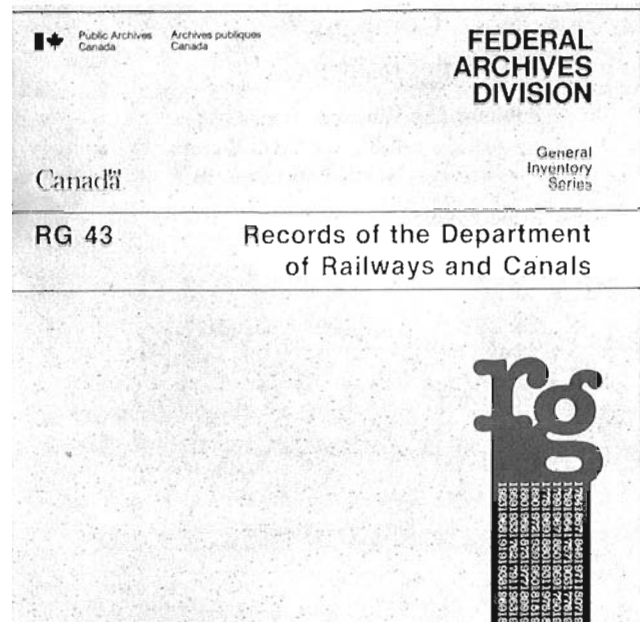
Also Available from CIGGT:

Howard Darling's *The Politics of Freight Rates* (\$17.95)  
*A Statutory History of Canadian Railways, 1836-1983* (\$35.95)

**Canadian Institute of Guided Ground Transport**  
Queen's University, Kingston, Canada K7L 3N6  
(613) 545-2810

### INVENTORY OF THE RECORDS OF THE DEPARTMENT OF RAILWAYS AND CANALS

By: Glenn T. Wright.

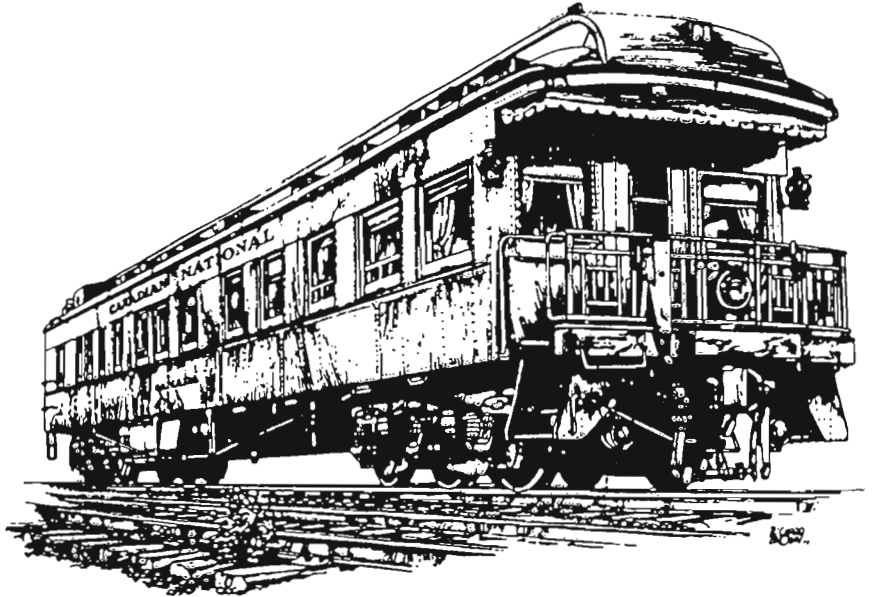


This publication of the Federal Archives Division of the Public Archives of Canada is, as its name suggests, an indication of what material is available to the researcher looking for information in the records of the Department of Railways and Canals in the Public Archives. Starting with a table of contents, the book then has a valuable history of the department and how the records were preserved during the period from 1879 to 1936. Then follows the "meat" of the book: a listing of the holdings under major categories. One can read for example such headings as "Quebec Bridge 1885-1916", "Subsidies to Railways 1883-1901", "Canadian Pacific Railway 1875-1892", "Office of the Chief Draftsman 1893-1905", "Lachine Canal Commission 1821-1842", "Welland Canal Company 1824-1843" and many more.

The serious researcher into the history of Canada's railways and canals will find this book invaluable. It is bilingual, and is available FREE OF CHARGE from:

Publications Services  
Public Archives of Canada  
395 Wellington Street  
Ottawa, Ontario  
K1A 0N3

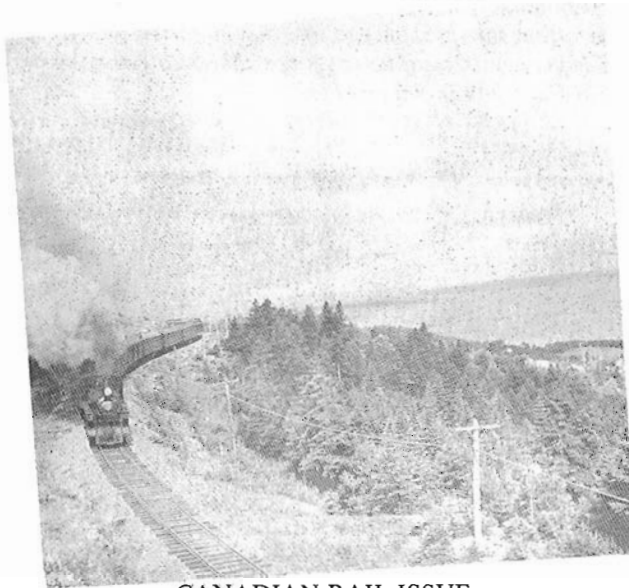
# The business car



Canadian Rail



No. 388  
SEPTEMBER-  
OCTOBER 1985



CANADIAN RAIL ISSUE  
NOMINATED FOR AWARD

THE RAILWAY AND LOCOMOTIVE HISTORICAL Society announced the winners of its annual Railroad History awards last May at its national convention in Sacramento California. One of the nominees for the "Railroad History Article Award" was the article on the Newfoundland Railway in the September-October issue of Canadian Rail.

This article, written by Mike Wragg of Burin Newfoundland, was nominated in this category "For an outstanding article of lasting significance to the interpretation of North America's railroading history".

This is the first time that an article in Canadian Rail has been nominated for such an award. It was in such company as articles from Trains magazine, Railfan & Railroad, Business History Review and Railroad History. Final winner was Jim Boyd for the article "The Men Who Styled the Streamliners" in Railfan & Railroad.

Mike Wragg and his associates in Newfoundland are to be heartily congratulated for their great contribution to the recording of railway history.

## COG RAILWAY — ABOUT 150 PEOPLE GATHERED

at the base of the White Mountain Cog Railway in New Hampshire recently for the dedication and christening of three newly renovated locomotives. In celebration of event, Gov. John Sununu, dressed in appropriate railroad attire, engineered one of the three new locomotives up the shuttle train track. In welcoming the invited guests to the Cog Railway, Wayne Presby, one of the owners, commented, "In 1866, Sylvester Marsh began building the Cog Railway, and in 1986, we've begun rebuilding it."

According to General Manager Brad Williamson, in the renovation of the three locomotives, Cog employees used the existing frames of the engines. New boilers were installed as well as new locomotive cabs and the running gear also was rebuilt. "The boilers that were replaced were built in 1890," stated Williamson, and after 90 years of service, they were ready to be replaced.

Also in progress at the Cog this year, is extensive track work on the mountain. The Cog has a total of eight locomotives, and the next phase of work will include the rebuilding of two more as well as more extensive track work.

S. The 470.

### 1986 COINS AND STAMPS SHOWING RAILWAYS



1986 was a year in which Canada issued an unprecedented number of coins and stamps depicting railway subjects. First there was the beautiful silver dollar coin, commemorating the 100th anniversary of Vancouver, which depicted a C.P.R. train of 1886 against the skyline of 1986 Vancouver. This coin was illustrated in the May-June issue of *Canadian Rail*.



The 68¢ EXPO-86 stamp showed the old and new means of transport in Vancouver; the "old" was a B.C. Electric interurban while the "new" was the monorail at the Expo grounds.



The 119th anniversary of Confederation was commemorated by a set of four stamps showing Canadian inventions in science and Technology. One of these stamps showed a rotary snow plow; a Canadian invention (1869).



November 4 saw the issue of a stamp to commemorate John Molson, and in the upper right corner of the stamp was a view of a train of the Champlain and St. Lawrence R.R. hauled by the "Dorchester", Canada's first locomotive.



Finally on November 21 came the last of four sets of four stamps depicting historic Canadian locomotives. Thus the locomotive series has shown 16 locomotives since the series began in 1983. This time one diesel (C.N.R. 9000) was included as well as three steam locomotives.

While it is unfortunate that there was no stamp which commemorated directly the 150th anniversary of Canada's railways, one cannot feel too sorry, for railways were certainly well represented both numismatically and philatelically, and the commemoration of Canada's railway heritage is richer as a result.

THE RAIL AND DIESEL PRODUCTS DIVISION OF Bombardier Inc. of Montreal is trying to revive its locomotive business.

The company said recently it has agreed to a general partnership with Hitachi Corp. of Japan to allow the two companies to submit joint proposals for the design and manufacture of diesel electric freight and passenger locomotives.

Roland Gagnon, president of the rail and diesel products division, said in a telephone interview yesterday that the locomotives would be equipped with diesel engines from Bombardier and electrical systems from Hitachi.

Gagnon said the agreement permits the two companies to pool efforts and know-how to obtain a larger share of the world rail products market.

"The market looks good in Africa and the China market will open with time," Gagnon said.

Last year, Bombardier stopped making freight locomotives and laid off 350 workers after failing to win a \$90-million contract from Canadian National Railways.

The company's last passenger locomotive contract was for the LRC train for Via Rail Canada Inc., the federal rail passenger agency.

Bombardier said 60 diesel-electric locomotives being delivered to Pakistan by Hitachi are equipped with Bombardier diesel engines.

Gagnon said the Hitachi accord gives his company access to the latest technology. Locomotives previously made by Bombardier used electrical systems supplied by Canadian General Electric Co. Ltd.

Gagnon added that the agreement means that both Bombardier and Hitachi will share, not only the responsibilities, but also the risks.

S. Montreal Gazette.

#### CORRECTION

In the article "Electric Traction 1886-1986" in the November-December issue it was stated that the electric railway at the Toronto Exhibition had been built, using the Van Depole system, in 1884. Our Member Mr. Ray Corley, informs us that this railway was actually built and operated in 1883, and was rebuilt by Van Depole in 1884. Evidently it was re-equipped again in 1886 as was reported in "The Electrical World" of that year.

Mr. Corley also points out that the cover photo, which was the basis for the cut on page 184, was taken in 1885, not 1886. This stands to reason since the illustration appeared in "The Electrical World" on August 14, certainly too early to have been an illustration of the 1886 exhibition.

The author of the Esquimalt & Nanaimo article on page 202 of the same issue was Ian Baird, not "Raid" as shown. The editor regrets this error.

## MAP UPDATE SOUGHT

Mr. H. Arnold Wilder of the Railway and Locomotive Historical Society writes:

“As a long-time CANADIAN RAIL Enthusiast, I should like to report that I particularly enjoyed your issue #390, January-February, which had two fine maps showing the rail lines west of Winnipeg.

Because in recent years, so many of those lines represented have been declared redundant and taken up, I should like to enquire if there is any source which will reveal just which lines are thus affected, with the thought that we might update these fine maps.”

Mr. Wilder's address is: P.O. Box 1418  
56 Coldspring Road  
Westford, MA 01886  
U.S.A.

Any help that our members can give on this subject would be most appreciated, both by Mr. Wilder and your editor, and, in time, we hope to produce an updated version of the map.

**THEY'VE FINALLY UNLOADED THE BOX THE MAC** came in, but to the casual passerby, 'precious little else seems to be happening with the grande dame of Edmonton hostelry.

The Hotel Macdonald is celebrating its 71st year, and its third year with a 100 per cent vacancy rate. But, unseen by outsiders, workers are laboring on room renovations and installing new windows on the upper floors as they attempt to restore the chateau-style hotel to its original elegance. A 16-storey rectangular wing, which opened in 1953, was demolished earlier this year.

The Mac was Edmonton's pre-eminent hotel for at least 50 years and it played host to all kinds of notables including royalty, politicians and show business personalities. Among them, just to name a few, were King George VI and Queen Elizabeth, Prime Minister John Diefenbaker, Bob Hope, Jack Benny and Zsa Zsa Gabor.

The city's contribution to chateau-style railway hotel architecture — named for Canada's first prime minister, Sir John A. Macdonald — was closed for renovations in July 1983. But, like an unwanted locomotive, it was shuttled about and sidetracked for some time.

#### 'Heartbreak hotel'

The foot-dragging by its owners, Canadian National Hotels, caused anxious city fathers to tear their hair out in frustration and others to call the Macdonald "heartbreak hotel" or our "lady in waiting."

The renovations only began a year ago after CN Hotels

discontinued discussions to sell the Macdonald and purchase the Four Seasons Hotel.

So, instead of the original 12 months it was to take to refurbish, it will take almost five years for the hotel to open again. Its rebirth is scheduled for early 1988.

The renovations had been planned for some time, and CN Hotels even entertained discussions for part-ownership with local entrepreneur Peter Pocklington before entering a partnership with the Nu West Group Ltd. of Calgary. But, with the city deep in a recession, CN Hotels severed its ties with Nu West almost three years ago.

The first plans for the rejuvenated Mac were most impressive — office towers of 28 and 39 storeys, plus a architecturally compatible hotel wing to the south at a total cost of about \$200 million.

Today's more modest plans call for a glassed restaurant with a swimming pool below on the south side, and a gallery lining the northeast side.

Both will be architecturally compatible to the hotel, says David Kraatz of the IBI Group, the architectural firm supervising the renovations.

The toned-down renovations will cost \$24 million, with the Mac having 190 rooms with classy modern amenities in a traditional setting. The Wedgwood Room and Empire Ballroom will be restored to their former glory, and there will also be a bar, a restaurant, and various meeting and banquet rooms.

Kraatz says the selective demolition has uncovered "a pile of horrendous renovations which probably made sense then, but did nothing for the character of the building. Still, we were surprised that there was as much left as there was."

While it is planned to restore the Mac as much to its original form as possible, there will be some changes. As well as the exterior additions, the kitchen will be moved to the main floor from the basement.

#### Cost \$2.2 million

"You cannot restore it exactly as it was in 1915 — the modern traveller won't accept that," Kraatz says, "For example, in 1915 you had a separate ladies entrance, very few ladies' washrooms, and 50 per cent of the suites didn't have bathrooms — just a sink. So some changes will have to be made."

The original 10-storey hotel had 175 rooms and was built for \$2.2 million at the end of one of Edmonton's first economic booms. It has almost always occupied a soft spot in the hearts of most city folk, not to mention a prominent spot on the city skyline that leaves competitors green with envy. And, indeed, it was one of the city's three tallest buildings until the early 1950s.

The hotel was built by the Grand Trunk Pacific Railway on land selected for its proximity to the business district and its prime southern view of the meandering North Saskatchewan River and the greenery of Mill Creek Ravine. Perched on the brow of McDougall Hill, the Mac had a precursor on that spot — the Grandview Hotel, a name whose origins should be self evident.

Today, the hotel's origins with the Grand Trunk Pacific Railway are retained — the original doorknobs are emblazoned with the GTP logo.

The exterior of the building, which was designed by the Winnipeg and Montreal architecture firm of Ross and MacFarlane, was finished in Indiana limestone with a copper roof now blackened with age. Its interior featured steel frame construction, reinforced concrete flooring, gypsum rock walls, and terra cotta interior partitions.

The hotel was built so solidly that there are no problems with the structure, Kraatz says. But during the time of construction, concerns were voiced about the stability of the river bank.

The Mac was formally opened on July 6, 1915, when 420 people attended a ball. The Edmonton Daily Capitol described the gala affair as the most important social event in the city's history.

"Another mile-post in the social life of Edmonton was passed last night when the Macdonald Hotel made its formal debut as an operating hostelry," the paper boasted. "The splendid structure was the mecca of society and upwards of 420 Edmontonians can lay claim to having feasted in the magnificent dining room on the night that the portals of the Macdonald were thrown open to the public.

### Groin ceiling

"It was perhaps the most brilliant social event in the city's history, for never before has it been possible to carry out a similar function upon so colossal a scale."

Some of the hotel's features included the octagonal Palm Room which in later years became known as the Wedgewood Room because of its groin ceiling with Wedgewood design plaster sculptures. The rotunda and corridors were paved in Lepanto marble.

The Confederation Room, with its two-storey ceiling and arched doorway to the south patio, included a massive nine by 18-foot canvas painting of the Fathers of Confederation. The 1915 painting by Frederick S. Challenger remains where he supervised its hanging, protected from the rigors of contemporary renovation by a plastic sheet.

The ballroom occupied the entire end of the east wing. Two-storeys high, and known as the Empire Ballroom, it features plaster sculptures of hunting scenes in the ceiling. This prompted some to name it the Hearth and Hound Room.

The mezzanine floor overlooked the rotunda, and had a ladies drawing room, later converted to administration offices.

The hotel had a long history of seeking tax concessions from city council. Tax concessions were wrested before it was built in 1910, including paying cost only on water and power for 20 years, and no taxation on property above \$50,000.

In a heart-rendering oration to council in 1918, closure of the hotel was threatened unless its tax load was further lessened. Company representatives claimed that the average occupancy was 81 rooms a day in 1916 and 76 in 1917. Hotel losses reached \$39,000 in 1917.

### 'Box' addition

The building of the 300-room "box" addition many years later cost \$4.5 million and concessions were again granted. With the city experiencing a boom after the Second World War and the discovery of oil at Leduc, more hotel rooms were badly required. So, council bowed again, reducing the hotel's tax rate to \$75 a room from \$338.

CN Hotels was so happy with the addition that the company's then president, Donald Gordon, said the old wing of the Mac might be replaced by a modern addition to conform to the style of the new tower.

But even before the new wing was built, a 1949 editorial in The Journal defended the gracious lines of the old Mac.

"The new wing, as the CNR hotel officials pointed out, will become the hotel and the present Macdonald will be the wing in reality," the paper said. "This is too bad. The Macdonald is a beautiful building and while it will still be beautiful when it becomes a mere 'wing,' it will be overshadowed by the far from beautiful 16-storey rectangular mass."

Finally, in 1983, council made its latest concessions. For the pleasure of designating the Hotel MacDonald as the city's first and only municipal historic resource a year later, the city agreed to \$3 million in concessions, including a freeze on tax assessments in the first five years of operation.

S. Edmonton Journal via Lon Marsh

THE RISKS OF IMMEDIATELY GOING AHEAD WITH a high-speed rail link between Edmonton and Calgary outweigh the benefits, says a report to Economic Development Minister Larry Shaben.

"The economics are such that it's impossible for me to recommend it to my colleagues," Shaben said in reviewing the report.

But he insisted the idea is still alive — and the province may take the precautionary step of acquiring the necessary right-of-way.

The group of Edmonton and Calgary businessmen that prepared the latest report is gloomy about fare prospects in the short term.

It predicts the 1.2 million annual trips needed to support the system wouldn't be achieved until the late 1990s "at the earliest."

Shaben said government subsidies of \$600 million to \$700 million would be needed in a total project cost of \$1.3 billion.

"Ridership is the key to the viability of the project," Shaben said.

But committee co-chairman Gerald Pearson said predicting future ridership is so uncertain it requires a "crystal ball."

Other factors — such as the decision whether to close Edmonton's Municipal Airport eventually — would also have a big impact on the project.

Neither Edmonton nor Calgary had shown much interest in giving their input to the committee's work, said Pearson.

Mayor Laurence Decore said yesterday he is "delighted they put this thing on the back burner."

Decore said the idea of the high-speed link "may have merit during boom times, but it certainly doesn't have merit now."

"There are many bigger and better priorities that face Edmontonians — repair of water and sewer lines, getting the LRT within the city of Edmonton concluded, getting the outer ring road done."

Shaben said he was "surprised" the high-speed rail issue hadn't earned a higher profile in either city.

S. The Edmonton Sun via Lon Marsh

THE SKY TRAIN AT EXPO 86 IS TYPICAL OF MANY world-of-tomorrow exhibits: the futuristic commuter train glides over its 21-km track at the sole command of central control, with all instructions and directions conveyed electronically from a main computer to ones built into the individual trains. Technology controls the entire system: only one human head and hand is needed to do the thinking, send the signals, process the data, and make the decisions.

In the more complex world of freight trains, however, many more heads and hands are needed. But the speed, efficiency, and accuracy of computers are making constant and significant changes to the way these trains are operated. According to W. J. Moore Ede, manager of advanced control systems: "The data systems now being developed and in some cases ready for testing will provide us with a powerful new tool for controlling the flow of train traffic across the system. Better still," he continues, "the new generation of smart locomotives now being built will substantially reduce our cost of operations."

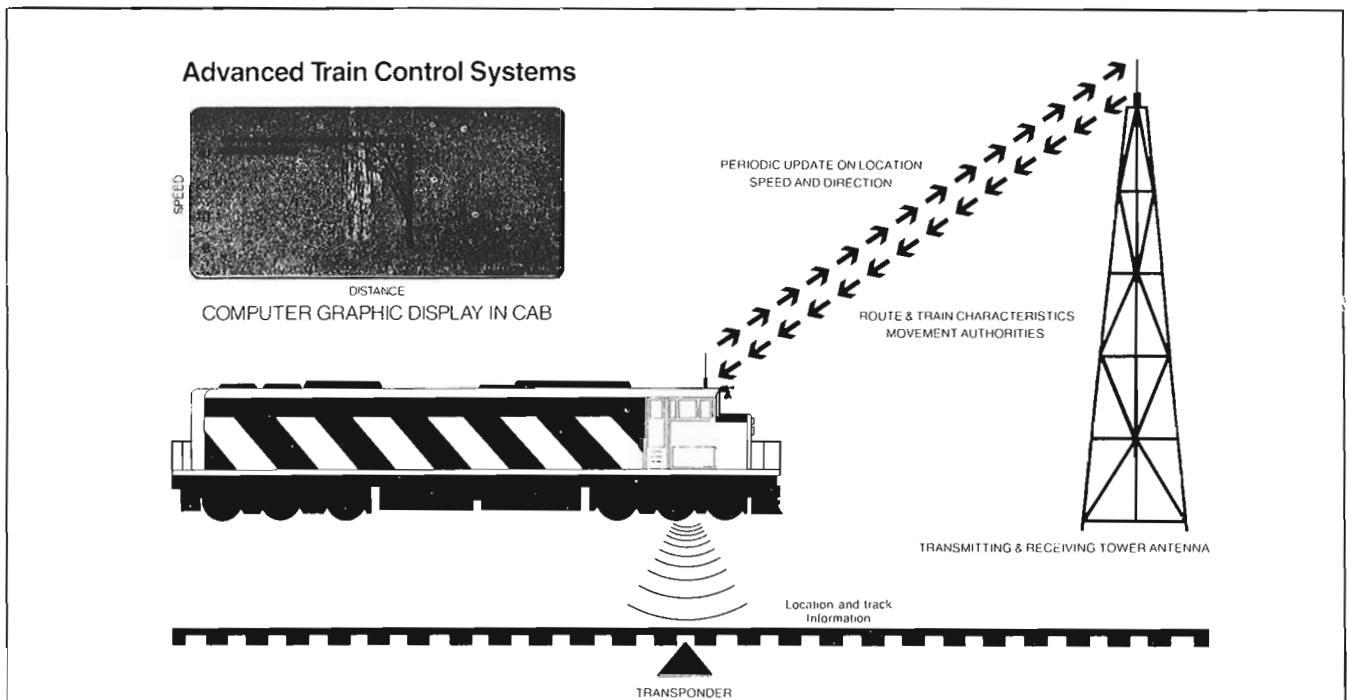
Among the many technologies currently making modern rail-roading safer and more efficient, few have implications as fundamental and far reaching as the advanced train control systems (ATCS).

### Computers communicate

ATCS uses electronics, computers, and telecommunications to direct train movements from central control points located across the system. Computers at these points communicate with other computers on board locomotives to manage train speed, precisely determine train location, issue movement instructions, and enforce compliance with those instructions.

How does ATCS work? Mr. Moore Ede explains: "The central computers and the locomotive computers communicate with each other via coded radio messages transmitted by wayside base-stations, in most instances the same ones now used for voice radio communication. The central computer receives information from the locomotive on its location, speed, and operating status, and then uses this information to tell the locomotive what it should do given the track and operating conditions facing it down the line."

For example, locomotive A is travelling at 50 Kph, pulling 5,000 tonnes of lumber. Up ahead, and out of the engineman's visual range, is a work crew, an on-coming train, and a sharp curve. From information transmitted to it by the track-side transponders and the locomotive computers, the central computer knows where each train is, the precise locations of any work crews, and exact track configurations. Using all this information, the central computer tells the locomotive computer the speed limit and movement authority information it needs to safely pass the work crew, meet and pass the on-coming train, and negotiate that curve.





### Enforces speed limits

ATCS can also enforce train speed at those levels computed to be the safest and most cost effective, a feature which, Mr. Moore Ede says, "will lead to substantial fuel savings, improved ability to handle traffic, and better equipment utilization." And while the engineman will still be responsible for the safe and efficient handling of the train, ATCS can, on its own, bring the train to a safe stop in the event of an emergency.

Centralized train control makes a lot of sense from many different angles. In fact, says John Reoch, assistant vice-president operations, "given the nature of the railway, some form of centralized control is not only natural, it is an absolute necessity." CN already enjoys a certain level of centralized electronic surveillance of train movements, not only through conventional CTC systems, but also through its management information systems such as TRACS, YIS, and REPAIRS, and through the existence of such electronic equipment as hot box and dragging equipment detectors, and such innovations as its track geometry (TEST) car. "All these computer-based systems lead to much more effective control and utilization of all the railway's major assets, particularly its cars and locomotives," says Mr. Reoch.

Because ATCS is computer-based, it can interface directly with CN's other computer systems to the point where, says Mr. Reoch, "we will eventually be able to integrate all railway control and business information."

### How people fit in

Technologically there is no question CN would benefit in many important ways from the implementation of ATCS. But the question arises, where do people fit into the scenario. Are we actually looking at a railway that will soon be like a model train set, with one busy button-pusher in one lone office controlling the entire system and its operations?

Mr. Moore Ede is emphatic in his response: "People will always have an indispensable role in the business of railroading," he stresses. Enginemen will still ride in locomotive cabs, and will retain all their current responsibilities. All movement authorities and track occupancy will still be controlled by the dispatcher. The difference ATCS will make is that it will give the people running the train significantly better tools with which to do their work.

It is no secret, however, that the same technology needed to keep the railway in business will eventually result in an overall workforce smaller than was needed in a less-efficient, pre-computer era. "One of the major challenges we face right now," confirms Mr. Reoch, "is dealing constructively with the effect on our employees of technology such as is represented by ATCS. But our long-range viability, our very survival as a company in fact, depends on our continued ability to meet this challenge well."

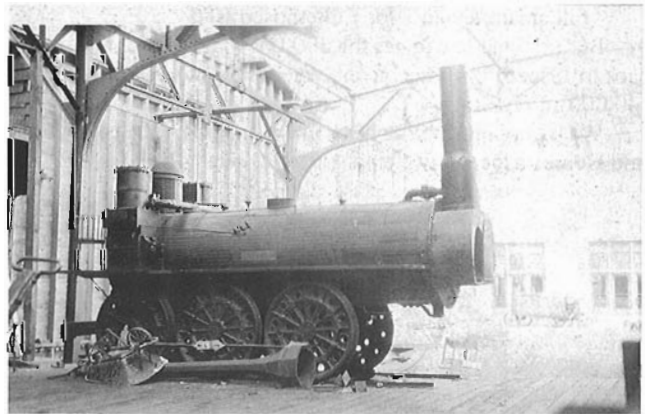
S. Keeping Track

IT IS THE EVE OF A CENTURY AND A HALF SINCE the first railway in Nova Scotia was built. The Nova Scotia road, six miles in length, ran from Albion Mine, now Stellarton, to the loading ground on the East River near where it joins Pictou Harbour. The coal from there was shipped by water to markets along the coast of Nova Scotia, to Quebec and Montreal during open navigation, and to the United States. Before the railway was built coal was conveyed to the loading ground in lighters.

At that time, there were few construction engineers and not one was available to build the proposed line. A government land surveyor was prevailed upon to undertake the task. His name was Peter Crerar, and he made a complete success of surveying the line and making the plans. So the railway was built under his supervision.

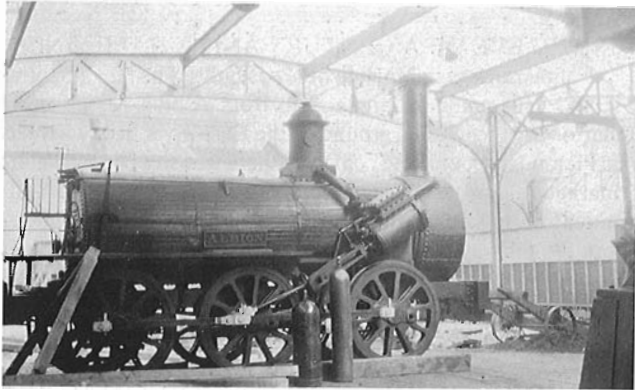
When completed, it was in every way equal to England's first steam railway; a remarkable feat, in view of the fact that Crerar had never seen a railroad. The line, six miles in length, was so nearly straight that the least radius of its curves was 1,300 feet. The estimated quantity of excavation was 400,000 cubic yards. At the water terminus, there was a wharf 1,500 feet long by 24 feet wide, commanding a fall of 17 feet above highwater level at the shoots. The masonry, bridges, and culverts were of cut freestone, the latter obtained in a nearby quarry. The total cost of construction was \$160,000.

The building of the Albion railway was begun in 1836, and the road was opened for traffic in 1839. While the railroad was being constructed three locomotives were being built in England by Timothy Hackworth. These were landed at Pictou and brought up the East River to Albion on lighters towed by the



company's steamships. These three first locomotives were "The Samson," "The Hercules," and "The John Biddle." They were slow running but powerful locomotives and their coal consumption was moderate.

The Albion locomotive, built later, was of neater design and faster, but perhaps not as powerful. The cars were coal hoppers, or wagons, holding a ton or perhaps two tons of coal. They had trap-door bottoms for rapid unloading into the chutes at the loading ground. There was a public opening of the line in which all three of the locomotives and all of the coal wagons took part. It was a gala day throughout Pictou County, and attracted



interest throughout British North America, and in the British Isles. People flocked into Albion from the four points of the compass, afoot, on horseback, and in one-horse chaises. One thousand persons came up the East River from Pictou and vicinity in lighters, towed by the company's steamers.

It was on this railway that Nova Scotia's first fatal railway accident occurred. There was a picnic down the East River, at Abercrombie, the end of the track, and the locomotives, with coal cars made suitable to carry people, were utilized. There were a dozen persons or so riding in the caboose, which was on the rear of the first engine, when another engine crashed into it. One passenger was fatally injured and several were quite seriously hurt.

S. Keeping Track

IF HARRY HOME'S PLAN WORK OUT, IT WILL BE "full steam ahead" for Buletnosed Betsy.

But first, he has to get the 300,000-kg steam locomotive back to Jasper from Vancouver, where she's undergoing about \$40,000 in repairs.

"We're hoping to bring her home sometime in December," said Home, a locomotive engineer who bought the former CNR

steam engine in 1962 and restored it to running condition with financial help from the provincial government.

The steam engine was nicknamed Buletnosed Betsy by rail workers in 1944, the year it was commissioned.

Beginning next year, Home's plan for the old 6060 steam engine calls for excursion runs out of Jasper to Vancouver and throughout Alberta, a run to the southern United States to promote the 1988 Calgary Winter Olympics and a possible role in a Walt Disney movie.

Meanwhile, there's the problem of getting Betsy's work capacity back on track. A guest appearance at Expo in early June took the steam right out of her. Now, she needs new springs, work on her combustion box and a myriad of small repairs.

"We're in a position to continue work on her," said Home. "And, we're working toward a reasonable solution for further funding."

If Home's negotiations are successful, Betsy will also make a run to Hanna to help the small, central-eastern Alberta town celebrate its 75th anniversary.

But, without doubt, Betsy's biggest coup would be winning a role in a Walt Disney production in which she would run serum to Alaska in sub-zero temperatures to combat an influenza epidemic.

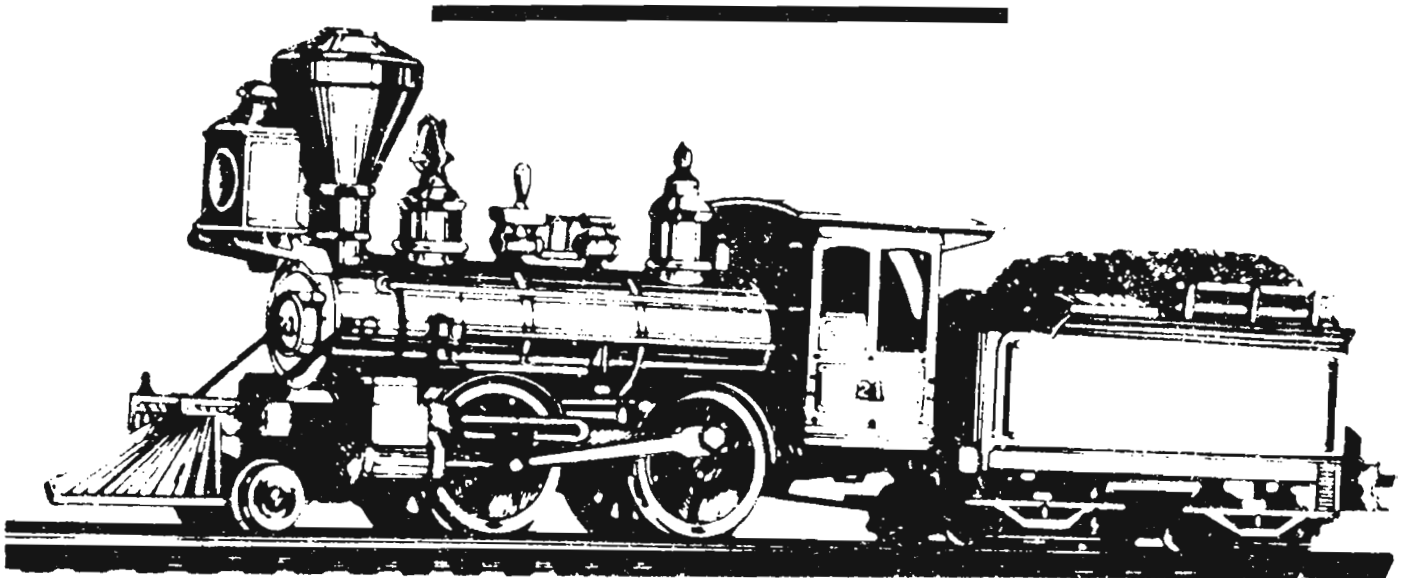
"We've been approached by representatives for Walt Disney about a scene where the train is shown in wide-open spaces to simulate a cold winter scene in Nome, Alaska," said Home.

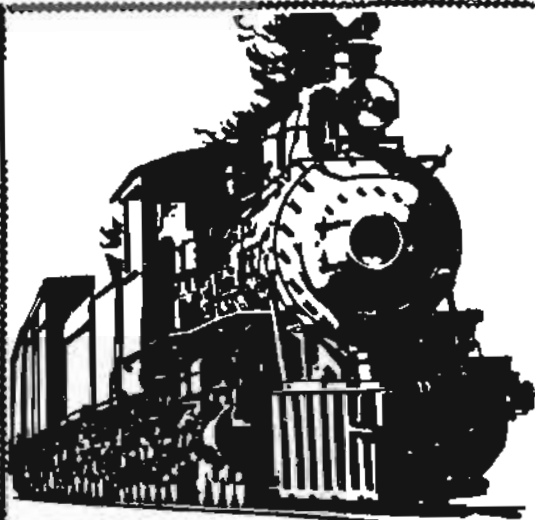
He said the scene, which would be shot near Jasper, would show Betsy delivering the serum to the last stop on the train run, after which it would be relayed by dog team.

"We have the engine to do this for them, and we have people here who have dog teams, so we have the capabilities," he said.

Home said the Rocky Mountain Rail Society has received tremendous response to the concept of the steam train as a result of an Oct. 2 half-hour CBC documentary entitled *Lady From The Past*.

S. Edmonton Journal via Lon Marsh





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*VIA train No. 49, the overnight "Cavalier" from Ottawa to Toronto via Brockville, passes through Smith's Falls at ten minutes to 1 A.M. in the early morning of August 1 1986.*

*Photo by David Morris.*

# Canadian Rail

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