

# Canadian Rail



No.346  
NOVEMBER 1980





CARDIGAN  
FEED SERVICE



# CANADIAN RAIL

ISSN 0008-4875

Published monthly by The Canadian  
Railroad Historical Association  
P.O. Box 22, Station B  
Montreal, Quebec, Canada H3B 3J5

EDITOR: Fred F. Angus  
CO-EDITOR: M. Peter Murphy  
BUSINESS CAR: Dave J. Scott  
OFFICIAL CARTOGRAPHER: William A.  
Germaniuk

LAYOUT: Michel Paulet

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#### FRONT COVER:

FORMER C.P. RAIL RDC4 No. 9251 is pictured at Sudbury Ontario in September 1980, about to depart for White River on VIA train 185. One week later, on September 29, this train was discontinued, as train No. 1, The Canadian, now follows this daytime schedule. Photo by Scott B. Anderson.

#### OPPOSITE:

CANADIAN NATIONAL LOCOMOTIVES 40 and 41 are seen on the Montague to Georgetown branch at Cardigan, Prince Edward Island. This photo was taken in August 1974, but three of these G.E. 70-tonners are still in service on the Island. Photo by Bruce Ballantyne.

# CN's Prince Edward Island Railway

By Bruce Ballantyne

"A visit to the Prince Edward Island Railway is a must for any railfan". Such an expression may seem like a cliché, but that is the only way to put it. For the Island has a charm all its own that gives one the impression he has stepped back 50 years ago and is observing a branchline operation of that period -albeit without steam! Better hurry though, for there is continued talk of total abandonment and the railway is too picturesque and unique to miss (as is the whole province).



RAILWAY SHOPS IN CHARLOTTETOWN. The three stalls in the main building are the areas where repairs are done.

Photo by Bruce Ballantyne 1974.

## 1. HISTORY

The railway's present operations may be colourful, but so is its history. Although Canada's smallest province developed a chronic case of "Railway Fever" late compared to other regions of the country, it did not prevent the Islanders from making the same mistakes. According to G.R. Stevens in his book "Sixty Years of Trial and Error" the problems of building the railway were a contributing factor in Prince Edward Island joining Confederation.

When P.E.I. finally caught the disease, it did so with gusto. In April 1870 a Railway Act was passed, tenders were called in the summer and the first sod was turned in October. It was immediately decided that the gauge of the railway should be 3'-6", this being more economical than a broader gauge. However when ferry service was introduced it meant, of course, that mainland cars could not run on the island system.

As often occurs when politicians are involved, the building of the railway was plagued with problems. Members of the Provincial Legislature used their influence to affect the route and alter it, in order to satisfy the voters. Contractors wishing to avoid major excavations (it was easier to go around a hill rather than through) put pressure on the politicians as well. Consequently the mainline meanders across the island for 147 miles between Alberton and Georgetown while the island is only 120 miles from tip to tip.

The actual construction of the railway was a blunder itself, as emphasis was put on building the railway line specifically and no provision was made for constructing shops, fuel facilities, storage areas, etc. To make matters worse the builders had insufficient pieces of rolling stock and had to build in small sections on a piece-meal basis.

As construction "progressed" a minor panic occurred when several influential citizens became concerned that the cost of building the railway was becoming a burden on the provincial treasury. The resulting unnecessary crisis forced Prince Edward Island to do an about-face and to join Confederation. The federal government would then be saddled with an expensive inoperable railway.

The Canadian government could say little about assuming ownership, since the take-over was part of the bargain. After all, how could it refuse the request, when, at the same time, it was helping push the transcontinental railway through to the Pacific Coast as part of British Columbia's agreement to join Confederation.

In taking over the railway, the federal government dispatched T. Swinyard, Chief Engineer of the Department of Public Works, to survey what the government had acquired. Swinyard became involved in a frustrating situation in which the provincial government and railway contractors attempted to keep the truth from the chief engineer. The railway was in terrible condition and Swinyard believed it advisable to consider the line unfinished and to take it over "as is" before the contractors did any more damage. However, the provincial government and the contractors wanted to have the line certified as completed so the railway could be handed over to the Canadian government and the contractors paid.

Eventually the provincial interests prevailed and on December 29, 1874, the Canadian government became the owners of a "half-baked" railway. The new owners worked quickly to put the system into operation and by the summer of 1875, the railway was in full operation.

By this time most of the railway as we know it today had been built. The operations have never been money-makers, so the idea of expansion and upgrading has never been considered. The only extensions to the system occurred between 1905 and 1912 when the Murray Harbour, Vernon and Montague lines were opened (1905 & 06) and the Elmira Sub-division was opened (in 1912). In 1917, the line to Cape traverse was re-directed to the new ferry terminal which was called Borden after the Prime Minister of the day.

The last work done on the railway was to standard-gauge the line. This began in 1923 but was not completed until 1930 when the last narrow-gauge rail was lifted on the Murray Harbour and Vernon Branches. During the seven year conversion, parts of the system were operated as dual gauge. A third rail was placed outside of the track so that where the standard gauge met the narrow, both types of trains could operate.

## II MOTIVE POWER

Down through the years the Prince Edward Island Railway has operated with a variety of locomotive power. Initially, locomotives were acquired from British builders including the Hunslet Engine Company of Leeds, England. However, the railway discovering that the British engines were too light quickly turned to Canadian manufacturers. Wheel arrangements such as 4-4-0 and 4-6-0 were most commonly used.



C.N.S. G.E. 70-TONNERS 40 and 41 heading back from Montague P.E.I. just before Mount Stewart Junction where the branch meets the main line.

Photo by Bruce Ballantyne 1974.

TIMETABLES OF P.E.I. PASSENGER SERVICE 1960

CHARLOTTETOWN — SUMMERSIDE — TIGNISH

Table with columns for train numbers (M241, M251, M208, M252, M207, M212), directions (Read Down, Read Up), and times. Includes sub-table 'TABLE 26' with 'Atlantic Standard Time' and 'Miles'.

CHARLOTTETOWN — MURRAY HARBOR

Table with columns for train numbers (NOTE M209, M240), directions (Read Down, Read Up), and times. Includes sub-table 'TABLE 27' with 'Atlantic Standard Time' and 'Miles'.

CHARLOTTETOWN — SOURIS

Table with columns for train numbers (M233, M267, M234, M268), directions (Read Down, Read Up), and times. Includes sub-table 'TABLE 28' with 'Atlantic Standard Time' and 'Miles'.

MOUNT STEWART JCT. — GEORGETOWN

Table with columns for train numbers (NOTE M249, M248), directions (Read Down, Read Up), and times. Includes sub-table 'TABLE 29' with 'Atlantic Standard Time' and 'Miles'.

REFERENCE MARKS — TABLES 26, 27, 28, 29
f Stops on signal, M Mixed train.



Dieselization came early compared to other Canadian railways. With the acquisition of GE 70-tonners and Canadian Locomotive Company (Fairbanks-Morse H12-44's) locomotives, steam was retired in 1950. The 70-tonners found a home on the light rail of the branchlines while the CLC units were used on the "mainline". The H12-44's disappeared by the mid-sixties while the GE units have gradually dwindled to three (#30, 35, & 41) which still operate. CN classed these as ER-6 while the CLC's were classed as CR12's and were numbered in the 1600 series.

The CLC's were replaced by specially built, 6-wheel truck (Montreal Locomotive Works) locomotives. These units were basically RS-1's with A-1-A trucks used to spread the weight and were given the model designation of RSC13. CN classed them as MR-10's and numbered them in the lower 1700's.

The RSC13's were replaced in turn by RS18's (1975) which were modified by replacing their trucks with the 6-wheel trucks from the retired units. They are classed as MR-14's and are still in service -numbers 1750 to 1756 (7 units).

So in total CN now has a fleet of 10 diesels on the island but one wonders what will replace the aging GE units. Anything heavier may not be suitable for operations on the Murray Harbour, Vernon Branches.

### III PASSENGER SERVICE

Passenger service on Prince Edward Island changed very little over the years until total abandonment occurred in 1969. Conventionally equipped trains supplemented the more numerous mixed trains which served every corner of the province. Just after the Second World War, there were about 28 conventional and mixed trains serving Tignish, Borden, Charlottetown, Georgetown, Murray Harbour, Souris and Elmira. Some operated daily while others, particularly the mixed, frequently were run on alternating days. Hence 28 trains would not be running everyday.

By 1960, the number had dwindled significantly but there was still the same variety of service being provided. At that time only Tignish, Borden and Charlottetown had passenger trains, although the CN timetable showed listings for bus service to some of the other points. Interestingly enough, one of the timetables shows bus service to Souris, Murray Harbour, Georgetown and Elmira up to December when a mixed train was again introduced for the winter months. Likely the Islanders did not have much faith in their highways during the winter at that time, so the passenger service was provided as a back up.

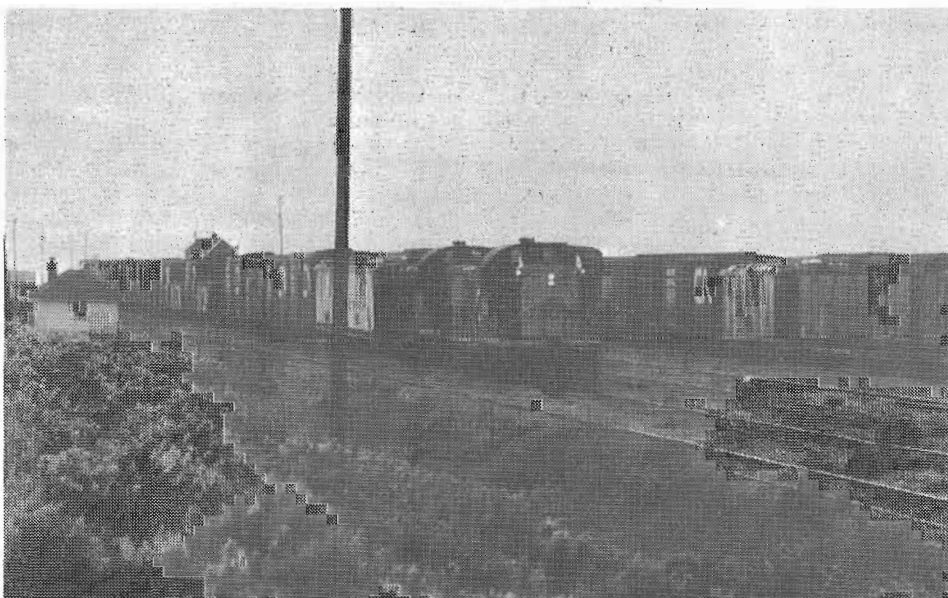
At one time, presumably in the 1950's, consideration was given to introducing RDC ("Railiner") service on the Island. However it was quickly discovered that the units would not fit on the ferries (too high with the roof exhaust) so the idea was dropped. If it had been possible, likely the convention trains would have been replaced while the mixed trains would have remained unchanged due to light patronage.





LOCOMOTIVES 40 and 41 at Montague P.E.I. The station is just out of the picture at the left. The freight backs down to the village from the junction since there is no place to turn the train at Montague.

Photo by Bruce Ballantyne 1974.



C.N. RSC-13 No. 1729 and an unidentified mate in the yards at Borden with a string of cars off the ferry from the previous night. The freight is likely bound for Charlottetown.

Photo by Bruce Ballantyne, August 1974.

Service was finally abandoned completely in 1969 when only a Charlottetown-Borden mixed train was in operation. The conventional train had been discontinued the previous year between these two points. If one considers the amount of patronage the passenger service had during the final ten years, it is amazing that it was not abandoned many years earlier than 1969.

#### IV THE FERRY SERVICE

Ferry service to Prince Edward Island has, since 1870, been closely linked to the railway operations and deserves mention in this article. Until the 1900's the service could only be considered adequate during the warmer months when ice was not a problem. In fact, winter travel across the Northumberland Strait could be downright dangerous with the ice flows and bad weather taking their toll.

The only method of conveyance for one hundred years between 1775 and 1875 was by birchbark canoe in summer and birchbark canoes with runners (for pulling the boats over the ice flows) in winter. This ingenious idea had been invented by the Micmac Indians who were the original inhabitants of the Island. Obviously, by 1870, this was totally inadequate and still quite dangerous. It usually took four to six hours in winter and sometimes longer. Many are the stories of hapless travellers drifting off course with the ice and ending up miles away from the intended landing spot. Most would be hungry and frost-bitten while others never made it at all.

From the time P.E.I. entered Confederation, its citizens had pushed the federal government for better ferry service. Not until the 1960's could it be considered adequate.

So by the end of the decade (1870's) two ships were placed in service during the summer but winter travel across the strait remained unchanged. Finally in 1885 ice-breakers of sorts were introduced but were of limited success, frequently being caught in ice flows and drifting off course.

It was at this point that the first push for a tunnel began. This dream of a tunnel has persisted on and off since then. Succeeding governments have done various studies on the idea, each meeting with the same conclusion -too expensive for the anticipated traffic volume.

Not until 1913 was a suitable car ferry constructed that had the power to handle the difficult conditions -summer and winter. With the introduction of the steam-powered "Prince Edward Island", winter operations became practical. The service has seen the introduction of several other ferries since then, including The Charlottetown, The Abegweit (Micmac for "resting on the waters"), the MV Confederation, the Lucy Maud Montgomery, the John Hamilton Gray, the Vacationland, and the Holiday Island. The last two are automobile/passenger ferries and along with the Abegweit are the mainstay of the Northumberland service.

The story of the P.E.I. ferry service deserves a whole chapter for itself as its history is as exciting and interesting as that of the railway. A book has been written on the CN Marine operations (see bibliography) which includes a good account of the Northumberland Strait ferry service.

#### IV 1980 OPERATIONS

Operations today are limited to the mainline routes on a regular basis. Freight service from Borden to Tignish is Monday, Wednesday and Friday with a return run on Tuesday, Thursday and Saturday. Freight service from Charlottetown to Borden is Sunday to Thursday with trains returning to Charlottetown the same day.

Service to Elmira, Souris, Vernon, Georgetown, Montague and Murray Harbour is on an "as-and-when-required" basis except during the potato season when two round trips are made on each subdivisions per week. If anyone plans a visit to P.E.I. the best time would be the end of August to mid-September. At this time you will see the 70-tonners often doubleheaded, journeying up and down the branchlines to set off boxcars and reefers and to pick up those which have been loaded with potatoes. It is this part of the operation which takes on the looks of a 1930 branchline. There is no tight schedule so the pace is slow as the following will illustrate.

When I visited the Island in 1974 I had the good fortune of exploring the railway when a train was running to Montague. On the return trip to Charlottetown, the crew stopped behind a farmhouse. I was at a loss to understand why, since there was no siding or station. However, one of the crew ran into the farmhouse and reappeared about 10 minutes later with a handful of ice cream cones!

Besides these train operations there is a yard crew at Charlottetown and Borden five days a week and a road switcher is assigned to Summerside six days a week.

For train movement, the railway utilizes the Manual Block System. Consequently, there are no longer any train order stations on the island.

The railway shops are located in Charlottetown next to the old railway station which houses the offices. The shops consist of an old brick building and a number of smaller structures. Only minor repair work is done here as major overhauls would be done in Moncton.

While exploring the railway in 1974, I found the railway employees friendly and helpful. To find out if a train was running I visited the offices in the station and with the help of a wall map, I was shown how to get to the branchline to Georgetown and Montague. The CN employees at the shops were friendly too, but as with any other rail facilities, before you explore ask for permission.

The scenery of Prince Edward Island lends itself well to railfan photography. Along the line to Montague I viewed rural stations, farmhouses, churches and stores. It made a perfect setting for the 70-tonners. So don't delay a visit to see this unique operations. It should be on every railfan's vacation plans.

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## ACKNOWLEDGEMENT

Special thanks to Mr. C.E. Johnston, Trainmaster for the CN Prince Edward Island operations, to CN Marine in Moncton, and to Mr. Earl Roberts of Ottawa for information provide for this article.

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# *The Harbour Grace Railway*

*by Les Harding*

In April 1880, as the first stage in a trans-island railway, the Newfoundland House of Assembly decided to put down a narrow gauge line between St. John's and Harbour Grace a town some eighty-five miles distant. The government did not seriously expect to make any money out of the railway but hoped that it would serve as a pump primer for the economy, opening up new areas for mining, timbering and farming. A government report had stated, with unconcious humour. "The railway to be constructed shall not be what is deemed in England or the United States a first class railway."

The Tories were the opposition party. They and the newspapers they controlled, were virulent in their aversion to anything and anyone even remotely connected with the railway project. In their opinion, the railway would drown Newfoundland in debt and drive her into the waiting arms of a foreign country known as Canada.

The journalism of the time was not exactly subtle. The St. John's Evening Telegram, still in existence, was the principle organ of the opposition. Its columns almost shook with rage at the mention of that 'infernal project'. The insults flew fast

and furious. On one occasion the Liberal Prime Minister, William Whitenay, was described as the "Necromancer-General". The Evening Telegram in one of its more moderate editorials, stated that, "In common with most natives we consider the Railway a farce, or perhaps a political dodge with the design of getting us into Confederation." The article concluded with a ringing call of "Newfoundland for the Newfoundlanders."

The months immediately following the introduction of the Railway Act were spent in a survey of the intended route. The New Brunswick firm of Knipple and Morris - their previous claim to fame being the winning design for the St. John's sewer system - was given the job.

Early in July, the surveying team started to arrive. The Evening Telegram, under a headline which left little to the imagination - "The Confederation Advance Guard" - reported that, "No doubt we'll have all the tramps in the Dominion down here when they hear of all the 'givin's out'." Even the name of the ship the surveyors arrived on was suspect - the SS Nova Scotia.

Despite a near riot in the village of Foxtrap, well aimed pitch forks and buckets of evil smelling pickle-jar water 'The Canadian Cormorants' finished their survey on time and under budget.

The construction project was tendered and the winning bid came from the American firm of A.C. Blackman. A contract was signed on April 20, 1881 on the promise that the railway would be in operation within five years.

In its eagerness to obtain a railway at bargain basement prices the government of Newfoundland became heir to a railway built to bargain basement specifications. The line was destined to be more thrown down than properly constructed. To make matters worse, within the space of two years the Blackman group went bankrupt. Only sixty miles of ramshackle track had been laid forcing the government to step in and finish the line itself. The government was saddled with heavy debts to the syndicate's creditors and expensive legal cases which dragged on for years as far as the Privy Council in London.

On August 16, 1881, the sod turning ceremony had taken place at Oak Farm near what is now the site of the Newfoundland Hotel in St. John's. Under the watchful eye of A.C. Blackman and several cabinet ministers fifty men set to work with pick and shovel. The St. John's Newfoundlander, a paper controlled by the Liberal Party, reported that, "notwithstanding unpropitious weather the men set to work with vigour and will." The Evening Telegram did not bother to cover the event.

As the months passed, and the labour force grew to twelve-hundred, the pro-government papers crowded with reports of the unabated energy of the workers, the superior quality of their labours, the beauty of the gleaming iron rails and the immense benefits to be accrued by the colony once the venture was completed. The opposition press ignored the whole disagreeable business as best they could.

The first steam locomotive for the railway met with an untimely fate. It was scheduled to arrive aboard the schooner Millo on October 24 but was lost overboard. The engine had been purchased from the narrow gauge P.E.I. Railway. Loaded aboard the Millo at Halifax the long and stormy passage to St. John's took thirteen harrowing days. The locomotive weighing a 12-ton dead weight was strapped on deck. The sea was violent enough to shift this great bulk over on its side threatening the schooner with capsizing. In order to save the vessel from sinking and their own lives the frantic crew had to cut the restraining ropes and over it went.

The Evening Telegram had a field day. Claiming that they "must be born under a lucky star," and be "one of heaven's peculiar favourites." The October 26 edition was crowned with banner headlines. "MELANCOLY MARINE CATASTROPHE. SUDDEN LOSS OF 'OUR' LOCOMOTIVE. A VALUED FRIEND THROWN OVERBOARD TO FEED THE FISHES!!...Newfoundland being a child of the sea, it is only natural that the first locomotive should go down as a meat offering....We are sorry to hear that the....locomotive was uninsured."

A second locomotive was ordered from the same source and it arrived safe and sound on December 5. The engine was put to steam and ran for the first time on December 13. What the Newfoundlander called "boisterous and jubilant", the Evening Telegram called run down and laughable. "Yesterday, the wheezy, old, second-hand 'bulgine'...made as much noise, smoke and smell as a heathen volcano....It backed and butted 'wuss than a crazy donkey'...We fear "Old Number Ten" as the boys call it, has like some of the rest of us, 'seen its better days.'"

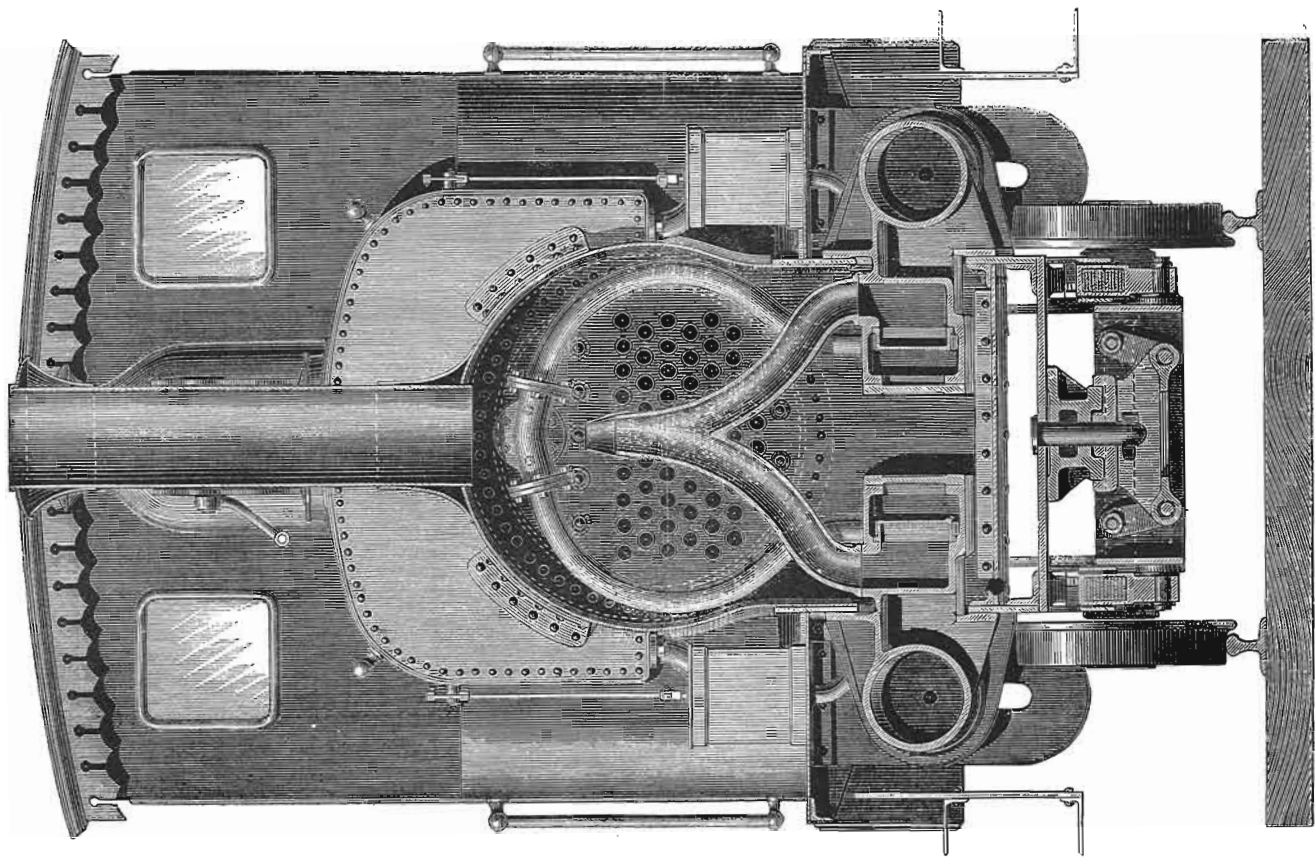
Despite such determined opposition, the project continued to forge ahead. In June, 1882, regular passenger service had been inaugurated. The fare was two dollars. Even with its opinion on the matter well known, the Evening Telegram did not hesitate to take front page ads for railway pleasure excursions. Business was business. Under the drawing of a train proudly steaming along were the headlines, "Take Notice! You are going to the Engineers and Moulders Great Mamoth (sic) Pic-Nic Excursion to Topsail by rail...Entertainment provided by Professor Bennet's Brass and String Band." The paper sent along a reporter to comment on the so called 'Mamoth Pic-Nic Excursion'. In the paper for the next day we read, "THE AGONY OF THAT TRIP TO TOPSAIL". The article goes on to say how the engineers and moulders, accompanied by "The Total Abstinence and Benefit Society, "experienced" excruciating agony... mental suffering....terryfying recollections" and similar vicisitudes.

By 1883 bungling and extravagance had squandered the money raised by the Blackman syndicate. The Americans declared themselves bankrupt and the railway reverted to its bondholders. In receivership the last twenty-five miles to Harbour Grace was completed. The last spike being driven by a young midshipman aboard HMS Bacchante, a British warship which just happened to be visiting St. John's. The midshipman was later to become King George V.

THE END

TANK LOCOMOTIVE FOR THE PRINCE EDWARD ISLAND RAILWAY (3 FT. 6 IN. GAUGE).

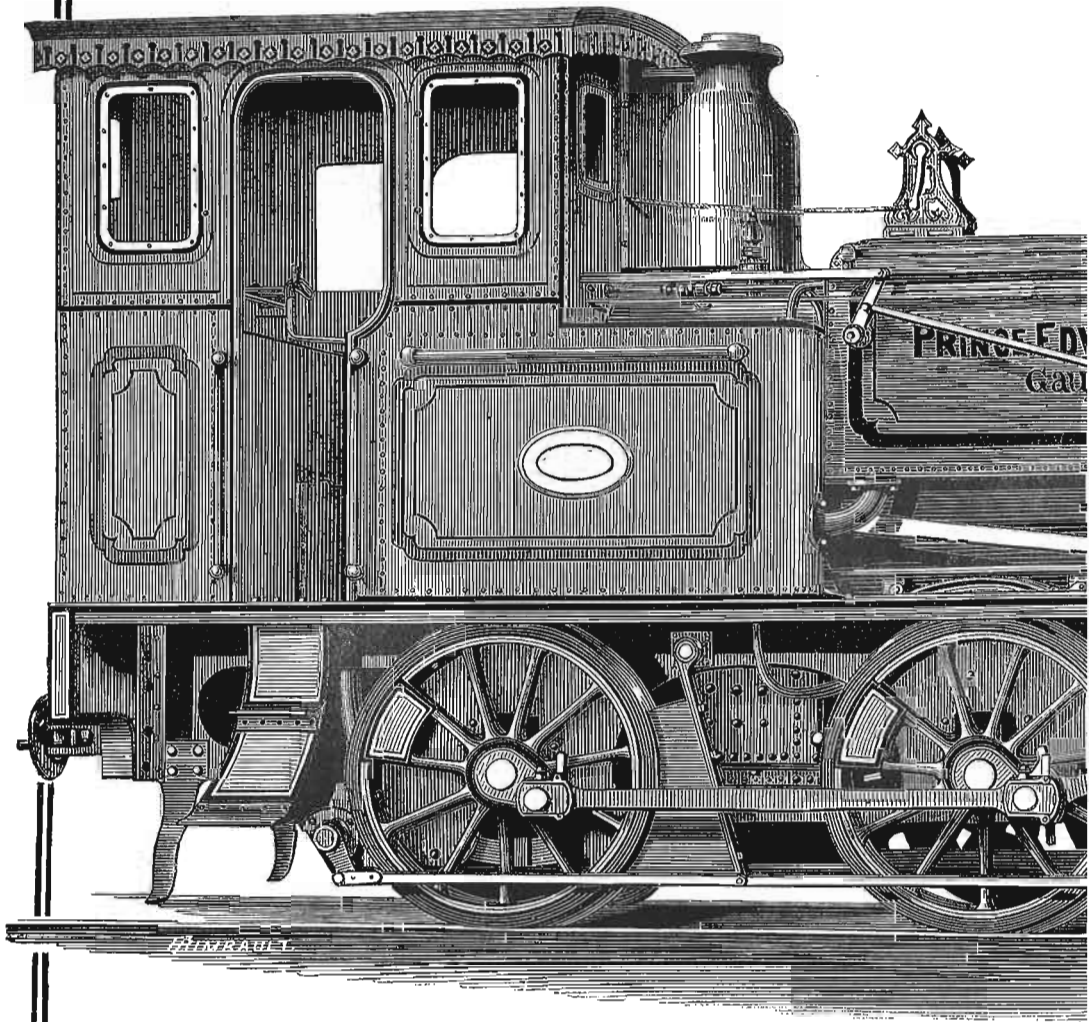
CONSTRUCTED BY THE HUNSLET ENGINE COMPANY, ENGINEERS, LEEDS.





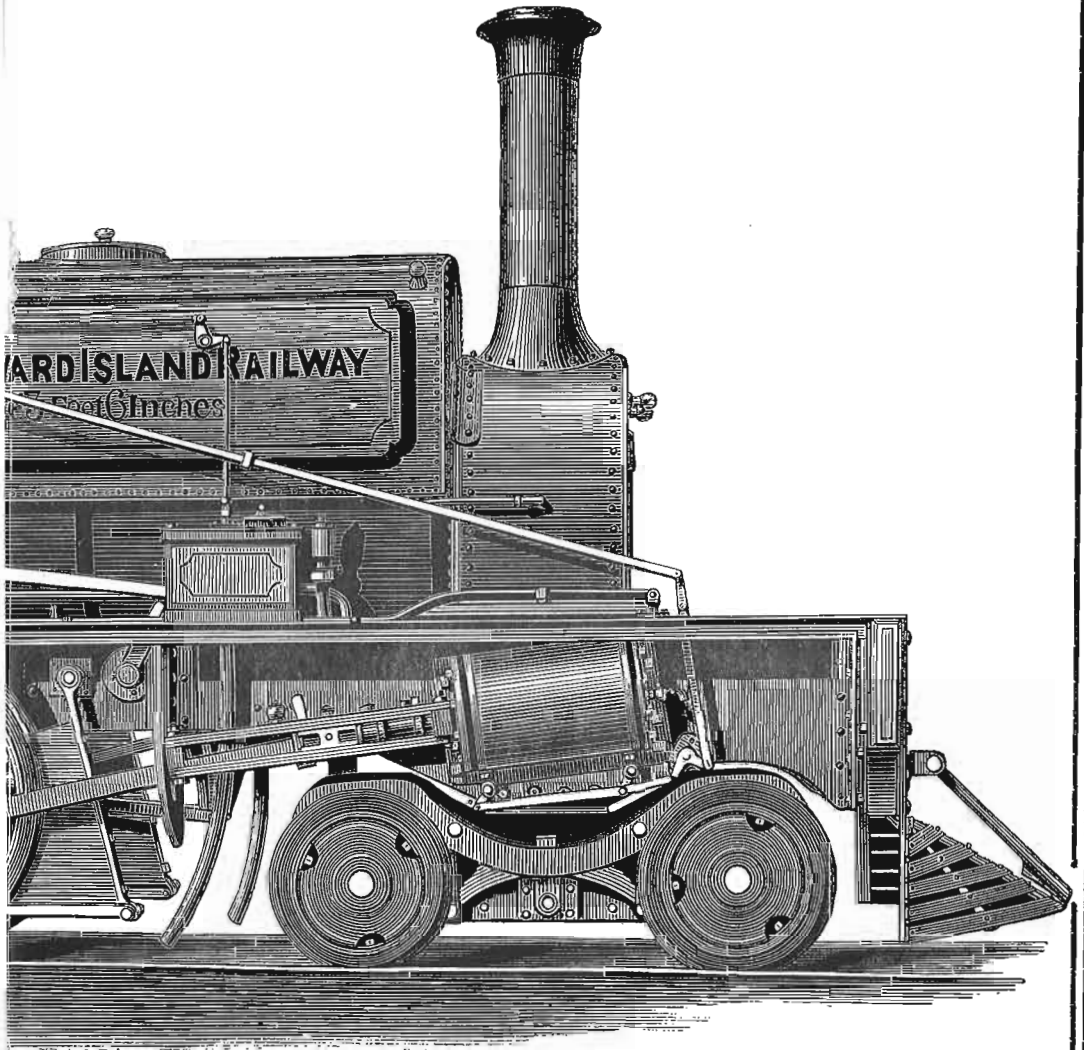
TANK LOCOMOTIVE FOR THE PRINCE I

CONSTRUCTED BY THE HUNSLI



PRINCE EDWARD ISLAND RAILWAY (3 FT. 6 IN. GAUGE.)

HUNSFLET ENGINE COMPANY, ENGINEERS, LEEDS.



ONE OF THE ORIGINAL LOCOMOTIVES ON THE PRINCE EDWARD ISLAND RAILWAY, this tank engine was built by the Hunslet Engine Company of Leeds England in 1872. These small 4-4-0's weighed only 15 tons in running order, had 3'6" drivers, 1'10" leading wheels, and 10" (bore) X 16" (stroke) cylinders. The tanks carried a total of 600 gallons of water, while fuel was 36 cubic feet of coke, enough for a run of 40 miles. This class of locomotive had the distinction of being the first in both P.E.I. and Newfoundland, since the first railway in the latter province used engines purchased second-hand from P.E.I. It is one of these that was lost overboard in October 1881, and so may still exist somewhere in "Davy Jones' Locker".

Drawing from "Engineering" magazine, Nov. 8, 1872.

# "HOT BOX"

Gordon McBean

With the heavy criticism of all and sundry of the problems resulting from accidents caused by "Hot Box" problems that have appeared on nearly a day to day regularity in the public press it seemed that members may be interested in the following which was published in pocket publication called 'Railway Lubrication' and distributed by Imperial Oil Company sometime in the late forties to early fifties.

'Notwithstanding all the attention that has been given to the details of assembly, repair and servicing of equipment, the railroads are still confronted with one of their biggest problems - delay to train movements. Among these delays "hot boxes" are high on the list. By a "hot box" is meant any unusual increase in bearing temperatures sufficient to cause bearing failure unless given prompt attention. Various railroads have different ways of recording the number of hot boxes, ranging from delays of 15 minutes on freights and 5 minutes on passenger cars caused by a bearing heating, to the more strict interpretation of some roads that record any bearing requiring special attention either en route or at terminals as a hot box.

The logical question arises then is: "What causes a hot box?". This goes back to the theory of lubrication, and in order to avoid confusion we will refer to a few propositions of more interest to the subject, roughly, as follows: Irrespective of how smooth a journal and bearing may appear, there are still projections on their surfaces. These projections on the journal and bearing interlock and abrade when set in motion, if not separated by a film of lubricant. The pressure of the oil film varies, being greatest at a point a few degrees past the centre of the bearing load, and the sum of the pressures on the oil film about equals the total load on the bearing. The pressure of the oil film passing under the area of highest pressure is not known, and the heat generated by the internal friction of the oil film causes this rise in temperature.

Various tests have shown that fluid film lubrication of a journal requires -

1. A supply of oil at any speed sufficient to maintain an unbroken film of necessary thickness over the whole load carrying area.
2. A supply of oil at any time sufficient to make up for the oil lost by leakage at the two ends of the bearing due to the flow from maximum pressure zone to the two ends where atmospheric pressure exists. In order to avoid the breaking down of the oil film at any point the supply must be largely in excess of the requirements.

3. That oil is always available at the leading edge of the bearing and over the whole length of it in sufficient quantity to permit the formation and maintenance of a solid oil wedge.

Waste grabs - Too often in operation we have a partial or complete interruption of these conditions because of lint, small fibres of waste, and even strands themselves, being carried by the oil and rotation of the journals up against or under the edge of the brass, to give rise to a condition known as "waste grab".

The term "waste grab" often leads to wrong conclusions because the word "grab" indicates to many a considerable volume of waste, while in reality, most hot boxes, except in cold weather, are caused by grabs where volume of waste is not readily observable. It is also assumed that waste grabs cause heating of the journals, due to the grabs getting into the load area of the bearings, thereby raising the bearing to one side and throwing the load into a restricted bearing contact.

Waste grabs are more likely to occur after new bearings have been applied to journals which are less than their original diameter. Under these conditions the journal leaves clearance at the edge of the bearing which offers ample opportunity for loose fibres or strands to enter. After the rubbing surface extends down to the edges of the bearing, the liability of waste grabs are lessened, but heavy brake applications often force the journal far enough away from the lip of the bearing to allow waste to enter.

New wool packing presents a greater tendency for waste grabs, especially the coarser and lower grades of wool, as such material has innumerable fibres projecting out of the strands. These fibres stick to the journals and pull loose from the strands and enter the load area of the bearings. Bearings that have not worn down to full contact when removed will reveal, in many cases, this linty material jammed into the non contact area of the bearing surfaces.

While theoretically it is impossible for the journal bearings to rise up off the journal due to the pressure load on top of the journal box, it has been demonstrated by means of photographs that brasses do leave the journal due to rough switching of the car in the yards. At 9 miles per hour impact, the brass in some cases will be  $3/8$ " off the journal. If the packing is high at the sides of the journal box, loose strands will be pinched between the brass and the journal which will create a "hot box" before the car has run many miles.

Other causes of Hot Boxes - Considerable time has been devoted to hot boxes caused by waste grabs, because today, the conditions just discussed constitute the majority of evils. However, hot boxes are the result of many additional

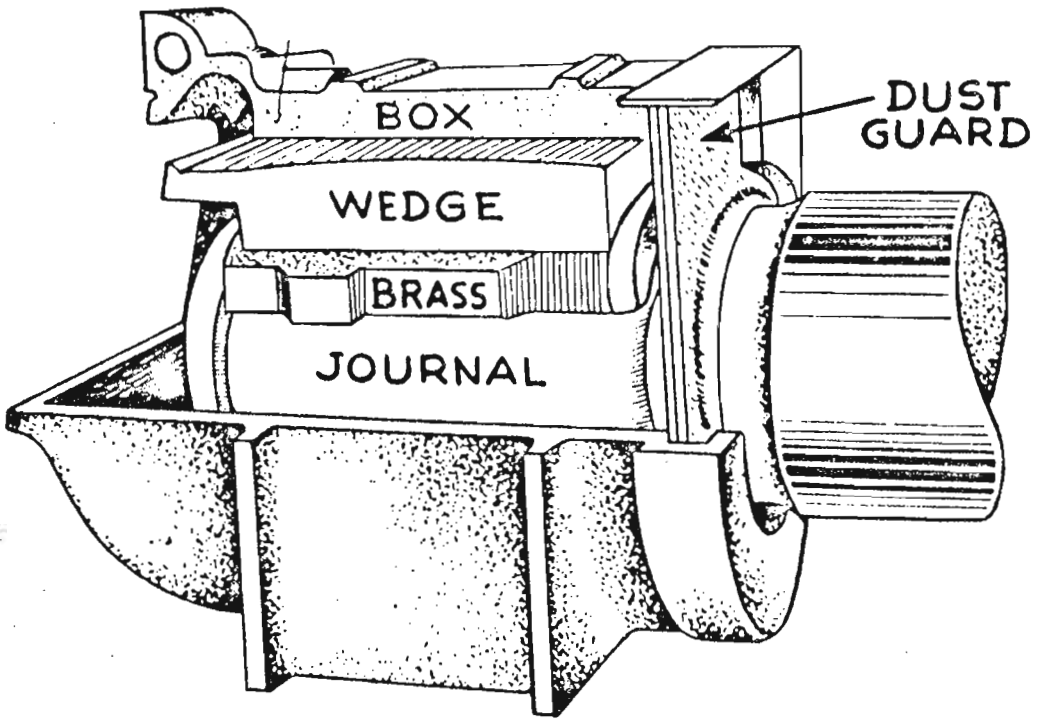


FIG. 52—Cut Away View of A.A.R. Journal and Box Assembly.

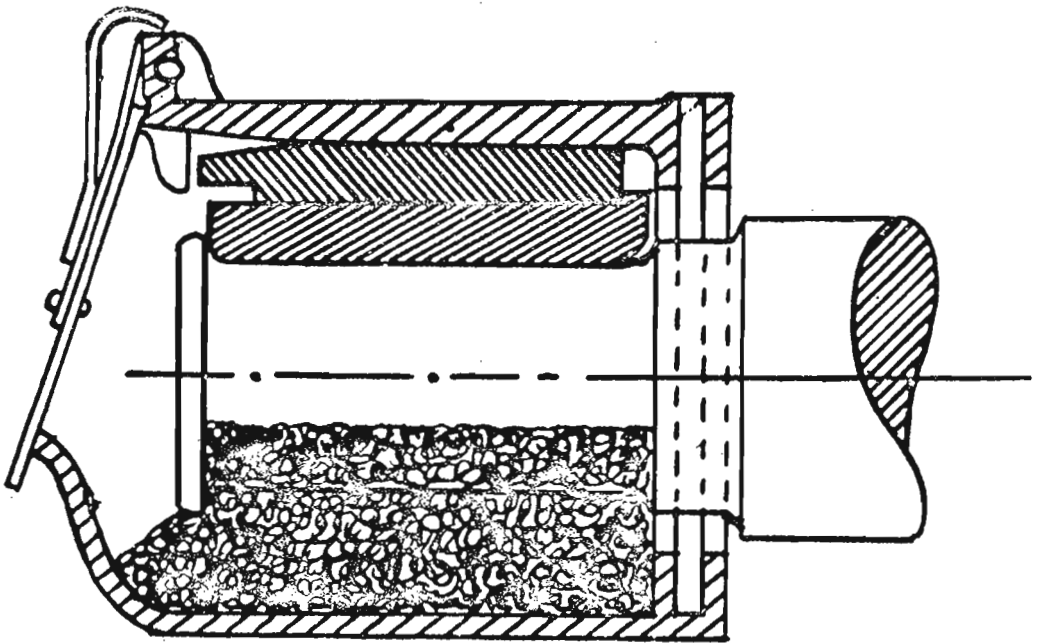


FIG. 53—Standard A.A.R. Journal Box, packed by A.A.R. Method.

factors, but underlying all, the final heating of the bearings is due to one cause and that is the total or partial elimination of the oil film which may be caused by one or more of the following conditions:

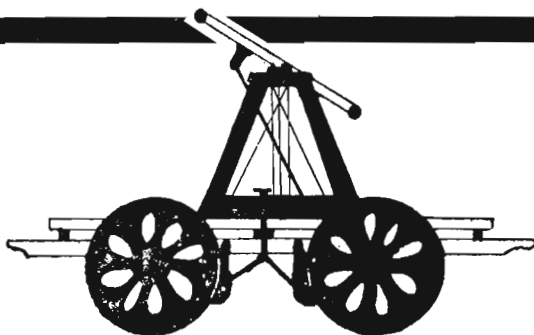
1. Improper bearing surfaces. A journal must have a uniform and accurate finish to give satisfactory results. Two journals may appear to be alike in finish, but if calipered, one may be accurate while the other may be tapered or with high spots. Any inequality will cause an overloaded area.
2. Improper fitting of brass and wedge. If the brass does not have a full crown bearing for the entire length of the journal, the bearing area will be so reduced that the load per square inch will be above the film strength of the oil. Also, if the load is carried along the sides of brass, it will act as a wiper, robbing the bearing of the necessary lubricant. A wedge that has worn on top so as to destroy the camber will cause an unequal distribution of weight.
3. Defective journal boxes. Numerous hot boxes are due to improperly fitting lids and dust guards which allow water and dirt to enter the box and contaminate the packing. Under certain circumstances, such as brine drips on refrigeratorcars, wheel wash in wet weather, snow blowing into boxes under improperly fitting lids, sufficient water enters the box either to wash out part of the lubricant or to cause it to emulsify. Worn pedestals will often cause box heating, as will also a new box which is tight in the pedestals, because this condition will not allow free up and down movement of the box to conform to track conditions.
4. Hard spots or improper mixture in babbitt lining: These cause a rupture in the load area of lubricating film, where its stability is vital.
5. Insufficient lateral: This creates excessive friction and end wear on brasses so that temperature is raised above safety zone.
6. Overload or unequal distribution of weight on boxes: These conditions are due to improper functioning of springs equalizers or boxes.
7. Glazed packing: Due to dirty oil and dirty packing, the openings between the fibres are filled with dirt so that capillarity of the oil is reduced or entirely destroyed.
8. Unmatched wheels: Unless wheels of equal diameter are mounted on the same axle, hot bearings are liable to occur due to one wheel travelling faster than its opposite, which has the same effect as a tapered journal.

The foregoing are only a few of the more common causes of heating, and to attempt to explain the many other conditions which cause journals to heat would be almost impos-

ible. It has been estimated that there are more than one hundred conditions which would cause a hot box, and in railroad work, as in every other specialised division, it requires familiarity and experience to solve many of the problems which arise.

Cooling Compounds. - Before leaving the subject of hot boxes, we should touch upon the treatment of them in service. It has been conservatively figured that each hot box costs the railroad \$25.00 (Prorate today's costs represents tremendous costs to the railways annually. Ed). This figure does not include the loss of time and interest on the investment of equipment delayed, but only includes the labour and material charges incurred. Cars have frequently to be set out of trains at points where no repair facilities are present, with the result that car repairers are sent out from the nearest terminal to rebrass and repack the car so that it can be moved to the repair yard. Consequently, anything which will assist in bringing these cars to a terminal will result in considerable savings to the railroad, and it is for this purpose that Cooling Compound was developed. This is manufactured in the form of sticks so that it may be easily carried and applied. When a journal has reached a temperature high enough to set the packing afire, it is beyond the flash point of the oil, and the journal has generally become roughened so that oil is of little value. The Hot Box Compound, being heavy solid grease with compound melts as it is applied along each side of the journal, helping to dissipate the heat, and provide a heavy film of lubricant which assists in preventing metal to metal contact. Before applying the Cooling Compound, the old packing, if on fire, should be removed, and the journal cooled as much as possible and then repacked with new packing. Following this, a stick of compound should be applied along each side of the journal and in contact with it. It may be necessary to repeat this treatment before the next terminal is reached, but, if followed up, it will bring the average hot box into the terminal. After reaching the terminal any box having had Cooling Compound used en route must be repacked, as this compound is only an emergency measure and not designed for normal lubrication.

Reprinted from the  
July 1980 issue of  
MILEPOST





# **"LAST" SPIKES in BRITISH COLUMBIA**

By Mervyn T. Green

Newspaper pictures in mid-May of the Premier of British Columbia and the president of CP tapping in a rail spike should remind us that "last" spike ceremonies are fairly common in B.C. rail history. The latest one occurred when the last spikes were inserted in the first phase of CP's current double-tracking in the Rocky Mountain area. This first phase, costing \$32 million, included 17 km of new track Tappen-Notch Hill and 7.2 km between Revelstoke and Clanwilliam. The site of the latest ceremony was at Tappen, just west of Salmon Arm. As has often happened in the past, when dignitaries are invited to become spike-drivers for a few moments, neither Premier Bill Bennett nor president Fred Burbidge were very accurate and had to be satisfied with a few light taps into a pre-drilled hole in the tie on May 15, 1980.

Many people are familiar with the ceremonies connected with the completion of the first transcontinental railways, thanks to the films on theatre and TV screens. The meeting of the Union Pacific & Central Pacific construction forces at Promontory, Utah, in 1869 has been often retold; today, the U.S. Parks Service maintains a Visitor Center and displays at the site. Canadians were first made aware of their first completion ceremony when the CBC broadcast its version of "The National Dream" in 1973. Based upon the two books by Pierre Berton which chronicled the establishment and construction of the CPR across Canada (The National Dream, The Last Spike), the TV series portrayed the "last" spike being driven at Craigellachie, in Eagle Pass, on November 7, 1885. However, B.C. has been the site of several other similar ceremonies, including marking the completion of the other transcontinentals: The Grand Trunk Pacific (in 1914), and the Canadian Northern Pacific (in 1915). Both lines are now part of the CNR system.

It was a dull murky morning when the CP group from the West, led by Andrew Onkerdonk and Michael Naney met with the directors from the East, led by William Van Horne, Sandford Fleming and Donald A. Smith. Smith drove in the last spike (on the second try, for he bent the first). Major Rogers tried to mark the site with an upended tie, but the site remained largely unnoticed and unmarked until the erection of a stone cairn and brass plate on the north side of the track. The plaque (like the original ceremony) is plain and simple, and reads: "Here was driven the LAST SPIKE completing the Canadian Pacific Railways from OCEAN to OCEAN November 7, 1885". A commemorative plate was also erected at the side of the nearby road (Trans Canada Highway No 1) in 1958.

The second "last" spike ceremony occurred at Cliffside, on the eastern side of Shawnigan Lake, on August 13, 1886. This time, B.C. was honoured by the presence of the Prime Minister, Sir John A. Macdonald, who drove the last spike of the Esquimalt and Nanaimo Railway. A cairn now marks the spot. The line was built by the Dunsmuirs, mainly to facilitate coal exports from their mines on Vancouver Island. It was purchased by CP in 1905

and later extended to Courtenay and Port Alberni (by 1914). The last spike on CN lines on Vancouver Island was not driven until 1928, when the oft-delayed line from Victoria to Cowichan Lake reached Kissinger (Nitinat Camp).

The Grand Trunk Pacific was authorized in 1903 to provide a second transcontinental route. Construction began in Manitoba in 1905, in Eastern Canada in 1906, and from Prince Rupert eastwards in 1908. Work began on the section through the Rockies in 1909 and cost over \$100,000 per mile. Such heavy expenditures, allied with the outbreak of World War I, led to the financial crippling of the GTP. In 1923 it joined the CNR. The third "last" spike in B.C. was driven on April 7, 1914, about one mile east of Fort Fraser. A commemorative plate on Highway No. 16 was erected in 1966. The 60th Anniversary (in 1974) was marked by CN with a ceremony and a small display at Fort Fraser. Five of the original construction workers were present.

The Canadian Northern Pacific was the B.C. extension of the Canadian Northern lines promoted and built by the two entrepreneurs, Donald Mann and William Mackenzie. Political and economic difficulties plagued the construction from its inception in 1909. Costs sky-rocketed, with heavy work required in the Thompson and Fraser River valleys, where the line was forced to locate across the rivers from the previously-built CPR, which had generally chosen the better locations. Construction at Hell's Gate badly affected the salmon runs (Not corrected until recent years, with the building of salmon ladders on both sides of the Fraser). A small group of engineers and workmen watched B.C.'s fourth "last" spike being driven on January 23, 1915, some ten miles north of Spences Bridge. A roadside plate was erected there in 1967 (alongside Highway No. 1.)

The next "last" spike followed soon after. The eastern section of the Kettle Valley Railway, from Penticton to Midway, was officially opened on May 31, 1915, when the first train ran through to Penticton's lakeside station. Two ceremonies - the first unofficial - were held at the east end of Princeton, on April 21 and 23, 1915, to hammer in the "last" spikes of the Merritt-Penticton line. The main line of the KVR, over the Coquihalla Pass was not completed and repaired from the ravages of the 1915-16 winter until the summer of 1916. The first train over the bridge (at Lander Creek) crossed on June 11, and when repair work was finished a simple "last" spike ceremony was held at the east end of that bridge. The new main line was declared completed on July 31, 1916, and Vancouver-Nelson through passenger trains commenced. The CP's southern main line was finally complete.

On a smaller scale, the Pacific Great Eastern/British Columbia Railway has also had its "last" spikes. The main ones were the completion of the Quesnel-Prince George main line in 1952, the Squamish-North Vancouver link in 1956 and the building of the Fort Nelson extension in September, 1971. A silver spike was driven home at mile 369.1 near Ahbau Creek, on November 1, 1952, to complete the Quesnel-Prince George Line. June 10, 1956, saw the last spike driven on the North Vancouver-Squamish extension, a short distance north of Horseshoe Bay. The official "last" spike (of copper, from the Britannia Mine) was driven at North

Vancouver on August 27, 1956. The future may see BCR with yet another "last" spike ceremony, if the proposed link with the Alaska Railroad is ever built, extending north from the presently-stalled Dease Lake extension line. If done, such a ceremony would certainly rank with the three transcontinental "last" spikes that B.C. has already experienced.

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# Book Review

## RAILS IN THE CANADIAN ROCKIES

-- Adolf Hungry Wolf

Good Medicine Books, Box 844 Invermere, British Columbia, Canada V0A 1K0

368 pages \$35.00

A most excellent and well researched book by this resident of southern British Columbia. He covers thoroughly the rail-roading history and heritage of the area from Calgary west to Golden and from Golden southward over the Kootenay Central Branch towards Cranbrook. The tour continues up the Columbia to its headwaters and down the Kootenay River past Fort Steele Pausing to explore branches leading to a connection with the Union Pacific (Spokane International) at Yakk and to the mining operations at Kimberley. From Cranbrook the journey turns eastward over the Crow's Nest Pass line to Fort MacLeod, Lethbridge and Calgary.

The book is a photo history illustrating the trains, stations and railway operation in the area through all facets of its operation from the beginnings to the most modern. The photographs chosen show locomotives long gone, stations which, one active, now lay dormant and those that through various causes have met destruction such as the original Fernie station destroyed by fire in 1908. The text is a history in itself and shows that the author has dug deeply to come up with some most excellent sources. He speaks to retired railway men who recall such as the last Crowsnest Passenger Train; the memories of Andrew Staysko who worked out of Lethbridge as fireman and engineer on both narrow and standard gauge trains (Alberta Railway and Irrigation Company and Canadian Pacific). This gives the book and added interest as it delves into history with the men who made it the roadbuilders and tracklayers, engineers and firemen, conductors and brakemen and others.

The final chapter is the authors own experience the ride from Calgary to Skookumchuck in his own caboos as it was being transported to its final resting place as his office and headquarters. The voyage of caboos 436788 was an experience which combined the friendliness of the railroaders with the feeling of exploring some of the most historic canadian country. Throughout the journey the author met with railroaders who went out of their way to assist him in his efforts to restore the original splendor it once earned. He was told by "Red" Donovan that the car had

long worked out of Cranbrook for most of its early career assigned to conductors such as "Rollie" Cox and "Black Jack" Sutherlin. Later it was assigned to the Kimberly way freights before reaching retirement. The crews all told him it was "going home".

The book is definitely most excellent and would definitely be of interest to the majority of railfans.

Harvey W. Elson



# The business car

AGREEMENT WAS REACHED IN JUNE WHEREBY CANADIAN NATIONAL WILL become the sole owner of Northern Alberta Railways Company by purchasing the shares held by Canadian Pacific Limited for cash and other considerations.

The NAR, a 925-mile network of rail lines, runs from Edmonton to Dawson Creek in northeast B.C. and to Barrhead, Hines Creek and Fort McMurray in Alberta.

Terms of the transaction and the purchase price were not disclosed.

INCORPORATED IN 1929

The NAR was incorporated in 1929 with Canadian Pacific and Canadian National each owning fifty per cent of the capital stock.

Under the agreement, CP Rail's established traffic rights over the NAR will be preserved. Completion of the transaction is subject to regulatory approval, which is expected to be given before the end of the year.

Ross Walker, Mountain Region vice-president, said that early in the negotiations, CN assured employees, through NAR management,

that should negotiations be successful, CN would take all practical steps to minimize any impact on the NAR workforce.

#### \$24 MILLION REVENUES

The NAR currently employs between 550 and 600 persons. In 1979 the system generated about \$24 million in revenues including Government of Canada branch-line loss payments.

With expenses of about \$21 million, there was an after-tax profit of approximately \$1.6 million.

#### GRAIN CARRIER

Most of the current freight traffic is grain from the Peace River country, between 45 million and 50 million bushels annually, as well as lumber and general cargo.

There was a heavy movement of construction materials into tar sands projects near Fort McMurray during their construction.

The NAR now operates a twice weekly passenger-freight train from Edmonton to Fort McMurray, serving communities north of Lac La Biche where there are no roads.

The railway owns 21 locomotives and more than 200 pieces of work equipment and leases about 100 special cars for lumber traffic. Otherwise it has depended on CN Rail and CP Rail for its supply of revenue freight cars.

#### ORIGIN IN 1907

The NAR was originally formed from the Edmonton, Dunvegan and B.C. Railway incorporated in 1907, the Alberta and Great Waterways Railway in 1909, the Central Canada Railway in 1931, and the Pembina Valley Railway which was completed in 1927.

Its lines connect with the British Columbia Railway at Dawson Creek, B.C., the Alberta Resources Railway at Grande Prairie, and the Great Slave Branch of CN Rail at Roma Junction near Peace River, as well as with CN Rail and CP Rail at Edmonton.

#### KEEPING TRACK

A 40-MAN CREW REPLACING WOODEN TIES ON A 17-MILE STRETCH OF THE Canada and Gulf Terminal Railway laid a record-making 2,060 ties in 11 hours on May 14. The previous record was 2,041 installed in one day.

The Canada and Gulf Terminal Railway, which was acquired by CN in 1975, runs from the CN Rail line at Mont Joli to Matane, a distance of about 36 miles. The tie replacement program was carried out on the 17-mile stretch between Mont Joli and Baie-des-Sables.

A total of 18,250 new wooden ties were laid in 14 days at a cost of \$400,000. Partial renewal of ballast on that section is scheduled to be done this month.

The crew worked with a special work train which included 13 track maintenance machines mounted on eight power trucks.

The machines do such work as spike pulling, removing, replacing and tamping the ties, spike installation and regulating the ballast.

The work train also included 26 cars to transport material and provide crew accommodations.

#### KEEPING TRACK

CN REPORTED CONSOLIDATED NET INCOME OF \$37 MILLION FOR THE FIRST quarter of 1980, an increase of \$14.7 million over the same period last year.

The main contributors to the improvement were CN Rail, Grand Trunk Corporation, CN Telecommunications and Real Estate.

CN Rail's income increased by \$3.1 million. The major factor was the elimination of passenger losses with completion of the transfer of inter-city passenger train services to VIA Rail Canada Inc. in April 1979.

This was offset in part by lower income from other rail operations where revenue improvements resulting from rate increases and increases in tonnages and lengths of haul - particularly in the fuels and chemicals, forest products and export grain groups - did not equal the increase in expenses.

Expenses were higher mainly due to the impact of inflation and the effect of a greater operating workload, partially offset by the effects of a milder winter. In addition, there were increases in net equipment per diem rental costs, fringe benefit costs and provincial sales and fuel taxes.

Grand Trunk Corporation's income of \$8.3 million was \$6.7 million higher than in the corresponding quarter of 1979. In spite of inflation and increased fuel costs, expenses decreased, mainly as a result of the mild winter.

An improvement in revenues due to higher rates was partially offset by reduced traffic volume, of which automotive traffic was the most significant.

CN Telecommunications' income increased by \$3.5 million, due principally to rate increases and higher business activity.

Real Estate's income improved by \$8.4 million, mainly from increased land sales.

The increase of \$5.3 million in the CN Express loss resulted from lower revenues and the effect of inflation on labor and materials costs, partially offset by expense reductions from handling a lower traffic volume.

The results of CN Hotels and CN Marine improved over last year, while those of CN Trucking, TerraTransport and the Miscellaneous sector declined.



Because of the general slowdown in the economy, the corporation's net income for the year is expected to be slightly lower than that of 1979.

President Robert Bandeen told a senior staff meeting in mid-May that revenues for the rest of the year will be less than anticipated for almost all divisions, reflecting a softening of the economy and a general falling-off in business.

He explained that while the first-quarter financial report was very good, showing net earnings of \$37 million for the corporation, revenues began declining in March, fell even further in April and continued to do so in May.

Mr. Bandeen said that corporate divisions were taking a very detailed look at what can be done to correct the lower-revenue situation as well as what actions can be taken to stem some of the decline in net earnings. A preliminary projection estimated year-end net earnings at \$191 million - \$26 million less than budget - but Mr. Bandeen said the figures will have to be re-examined because of current economic conditions.

(KEEPING TRACK)

THE "RIDE INTO HISTORY" WILL RETURN. THE OLD NO. 1 STREETCAR THAT was recently restored and was operated across the High Level Bridge will soon have a permanent home. The car will run at Fort Edmonton Park operating out of a replica of an early Edmonton Radial Railway car barn which will be built this summer.

The initial funds for this project were awarded by the City's 75th Anniversary Committee several weeks ago. The \$177,000 received will allow work to get underway immediately.

The project is to install a street railway system at Fort Edmonton with three objectives in view.

- a) To provide transportation for visitors to the Park.
- b) To form a working exhibit of cars, tracks and associated machinery.
- c) To provide opportunity for retired transit employees and others for social contact and for continued exercise of their skills through the construction, operation and maintenance of the system.

Completion date for the basic track installation from Fox Drive to the Fort Edmonton Station and thence via 1920 Street and 1905 Street would be the summer of 1985, but it is proposed to have a streetcar operating by means of an auxiliary diesel power unit over the existing railway tracks during the 1980 season.

Members of the Edmonton Radial Railway Society will be involved in the construction, operation and maintenance of the system. Membership in the Society is open to all and many skills will be required in the restoration of vehicles and artifacts. It is hoped that many senior citizens will become involved. Transit Department staff who are interested in assisting in this project are asked to contact Bob Clark at 428-2758 for further details.

The skills represented by members of the Society are many and varied, a number having had leading roles in the introduction of LRT to Edmonton. Society members were responsible for the

restoration of Streetcar No. 1 and its successful operation on the High Level Bridge in October 1979. Several members have been involved in street railway preservation groups such as the Canadian Railroad Historical Association and the Tramway Museum Society.

The Society anticipates a donation of between 10 and 20 thousand dollars towards the construction of the car barn as well as a quantity of obsolete machinery from Edmonton Transit and other sources.

As the street railway will form an integral part of the displays at Fort Edmonton, it is anticipated that its costs will be covered by gate revenue, as is the case with the railway. Since the streetcars and the workshop exhibit will be manned and maintained by volunteers from the Society the only operating expenses will be heating, lighting and power. Costs are likely to be minimal compared with the saving that will occur from not having to operate the steam train at periods of low traffic and relieving Edmonton Transit from having to operate special buses into the Park, after the Fox Drive extension is built.

This project will last as long as Fort Edmonton Park exists and will stand as a perpetual reminder of what City Transit was like in the first half of the 20th century. It will be a memorial to the farsightedness of our early City Fathers and to faithful car and bus drivers through the years.

(EDMONTON TRANSIT NEWS)

BACK COVER

VIA RAIL TRAIN 185 AT SUDBURY awaiting the time to depart for White River, only one week before the train was taken off. RDC's 9111 and 9251 are still in the C.P. Rail paint scheme.

Photo by Scott B. Anderson.

