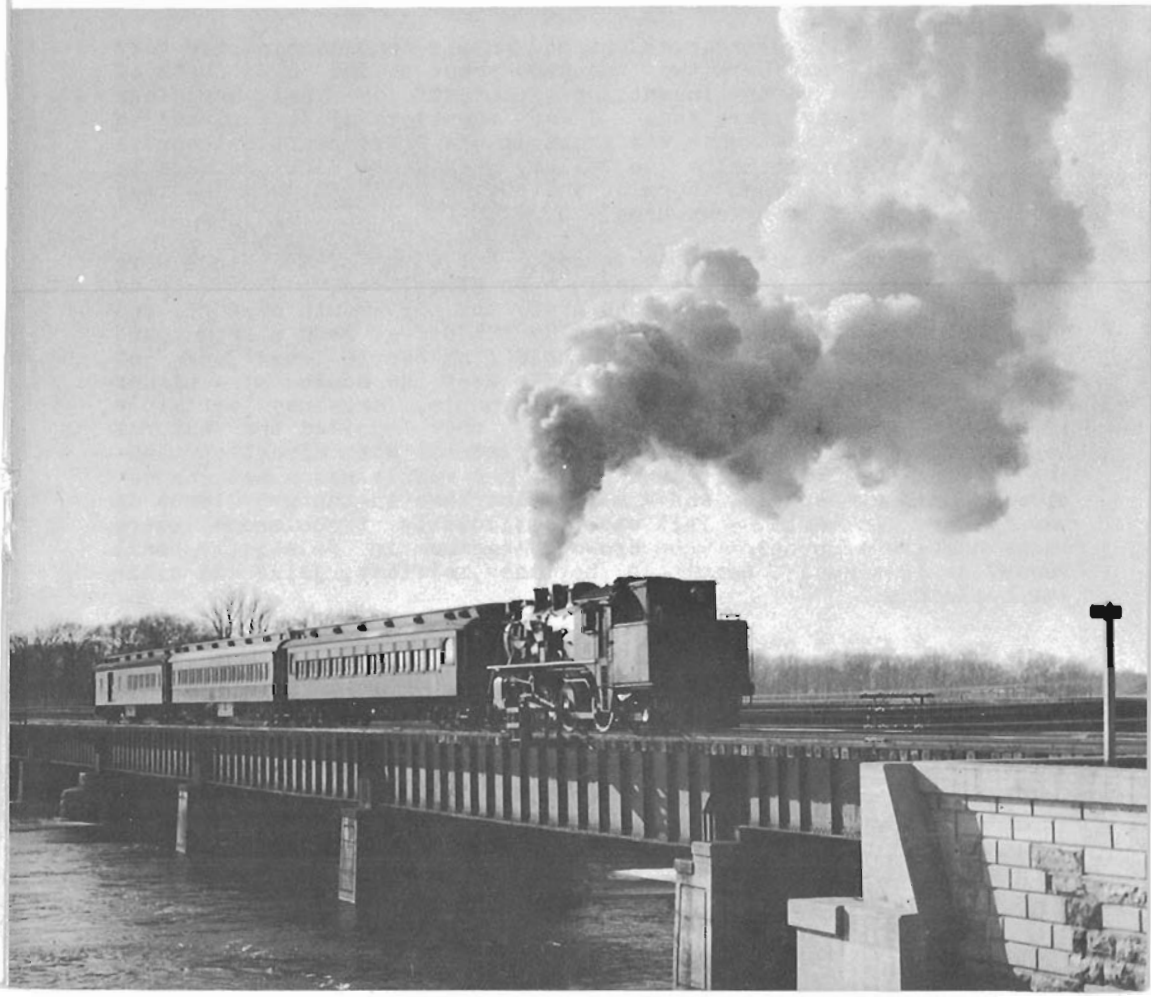
Canadian Rail

june
1966

No. 178



EARLY CANADIAN EXPERIMENTS in air conditioning

by

ROBERT R. BROWN

One of my earliest experiences with air conditioning was an unfortunate one. Some years ago, when air conditioned sleeping cars were still a novelty, I was riding in one between Montreal and Quebec when, some time in the small hours of the morning, the train side-swiped a family of skunks. The little "bêtes puantes" seemed to be annoyed and retaliated in the only way they knew; in a matter of seconds the delicate aroma was sucked into the air-conditioning system and distributed in generous quantities all through the car. At first I was filled with disgust -- "Who invented this crazy idea, anyway?" -- but soon this changed to wonder as in an incredibly short time, the incoming fresh air cleared the car leaving not a trace of the unpleasant odour.

The basic principles of modern air-conditioning are very ancient. They date back two thousand years to the hypocausts of ancient Rome, and to the inventions of Leonardo da Vinci, over four hundred and fifty years ago. I was considerably astonished to learn, however, that what was probably the first practical application of air-conditioning to railway passenger cars was made in the Pointe St. Charles shops of the Grand Trunk Railway -- less than five miles from my own home!

In the early days in Canada, buildings of all kinds were very inefficiently heated by large open fireplaces. Stoves began to appear in the first few decades of the nineteenth century, and soon their use was universal. Usually the stoves were square boxes of sheet or cast iron designed to hold from two to four "junks" of birch or maple. While they undoubtedly kept the houses at a higher and more even temperature with less trouble, and they certainly improved the quality of the cooking, they spoiled the natural ventilation provided by the older fireplaces. With almost continuous cooking and frequent laundering, the result was a hot, excessively humid atmosphere, and a marked increase in the prevelence of respiratory ailments. This was particularly troublesome where large numbers of people were crowded together in relatively small rooms, as in schools, hospitals, barracks, offices, jails and similar buildings.

A little over a century ago, in the small town of Cobourg on the north shore of Lake Ontario a few miles east of Toronto, there lived one of those mechanical geniuses who couldn't mind his own business. Henry Jones Ruttan was sheriff of Northumberland

---

This manuscript was written by the late Mr. Robert R. Brown about twelve years ago. It was carried in the "News Report" at that time, but in view of the limited circulation then prevailing, and our inability to reproduce photographs or diagrams properly, it has been decided to republish it at this time.

county and, as such, one of his duties was to see to the heating of the courthouse and jail. When the outside temperature dropped to 20° below zero, it was a difficult job to maintain a comfortable temperature inside with the primitive equipment available. He devoted a great deal of time and thought to the problem and, starting with the well-known but little understood fact that warm air rises and cold air falls, he developed a system of heating whereby the cold air was drawn from the rooms at floor level, conveyed downward through ducts to the heating chamber of a furnace, where it was warmed and humidified, and then distributed upward through other ducts to all parts of the building. The air circulated continuously without any mechanical propulsion so that the building was heated easily and efficiently; even today the system is widely used in Canada.

For ventilation, Ruttan found that in a house inhabited by a family of average size, the occasional opening of a door or window provided enough new fresh air, but in schools and other buildings containing many people, he found that the air had to be changed at fairly frequent intervals. Fresh air from the outside was admitted through adjustable registers or simply by opening a window, and the vitiated air was drawn off through registers near ceiling level in each room, and conveyed upward through a ventilating shaft to create the partial vacuum needed to draw off the foul air. In the winter time, the heat from the interior of the building was sufficient to create this suction but in milder weather it was necessary to keep a small fire burning in the base of the shaft. The first school I attended, many years ago, was an old one heated and ventilated in this manner and it was a much more comfortable building to be in than the ultra-modern steam-heated school which replaced it.

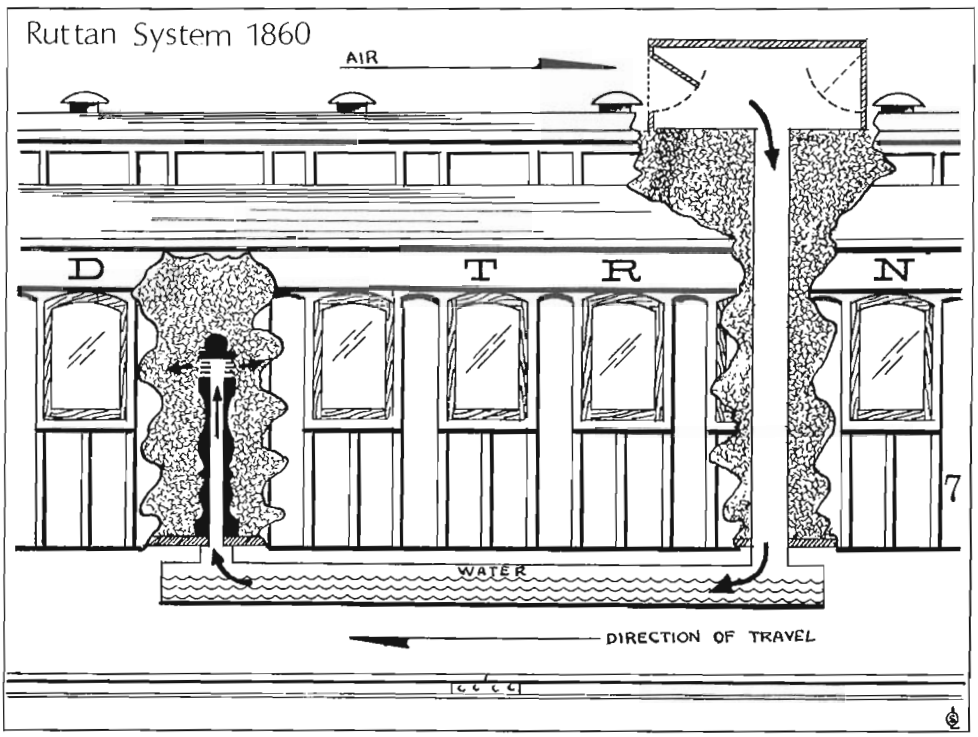
Sheriff Ruttan soon acquired a reputation as a heating and a ventilating expert, and, as his duties were not onerous, he was able to spend a great deal of time travelling all over Ontario, designing and supervising the installation of new units. From April or May to November, he travelled on steamboats which even by today's standards were large and confortable and even luxurious, while, in winter, he used a horse and sleigh -- pleasant and comfortable even for fairly long distances. And then came the railways. The flat-roofed passenger cars, with hard and uncomfortable low-backed seats, were excessively hot in summer, and were filled with smoke and cinders from the locomotive and with dust from the sandy ballast; but in winter they were much worse. Those who managed to huddle around the little pot-bellied stove were nearly roasted while others, a few feet away, shivered in cold so severe that it would congeal the oil in the brakeman's lantern. So it was that on one of these uncomfortable train trips about 1856, Ruttan began to wonder if his system of heating and ventilating could be adapted to railway use. By 1859 he had made enough progress with his experiments to be able to persuade the Grand Trunk Railway to install his system in six passenger cars plus a special car then being built in the shops at Pointe St. Charles, Montreal, for the use of the Prince of Wales who was to visit Canada the following year.

The Ruttan system was very simple; on the roof of the car there was a square structure, about the same shape and size as the cupola of a conductors' van, which was called the "receiving box". There were two self-acting valves or hinged doors facing opposite ends of the car. As the car moved in either direction, the

One day in the Eighties, the railway bridge over the Grand River at Brantford, Ont., collapsed under the weight of a Grand Trunk 4-4-0 and its three-car train. In photographing the accident, the cameraman unwittingly captured a distant but unmistakable view of a passenger car equipped with Ruttan's ventilating system.

(Collection of Omer Lavallee)

breeze created by the movement of the train forced open the valve facing the front of the train while, at the same time, tightly closing the one facing the rear. This built up air pressure in the receiving box which was sufficient to operate the whole ventilating system. Air was forced downward from the receiving box through ducts to one end of the wash tank which was suspended under the floor of the car. The tank was made of sheet iron and was sixteen feet long, nine feet wide and four inches deep; it was filled almost to the top with water which was agitated by the motion of the car. The air, in passing from one end of the tank to the other, was cleansed of a surprisingly large amount of dirt -- so much so that the tank had to be cleaned out at frequent intervals. Also, since the tank was sheltered from the rays of the sun by the car body, and was exposed to the breeze caused by the movement of the train, the temperature of the air passing through the wash tank was lowered by five degrees or more. Thus the air delivered to the interior of the car was cleansed, humidified and cooled. From the tank, the air was forced upward by the pressure from the receiving box into two ornamental pedistals or columns called "dischargers", and escaped through grills about six feet above floor level. It was not thought necessary to keep the windows tightly closed because the air pressure built up inside the car was sufficient to prevent the admission of air, dust and cinders. The foul air escaped through adjustable grills and was carried through ducts to exhausting vents on the roof.

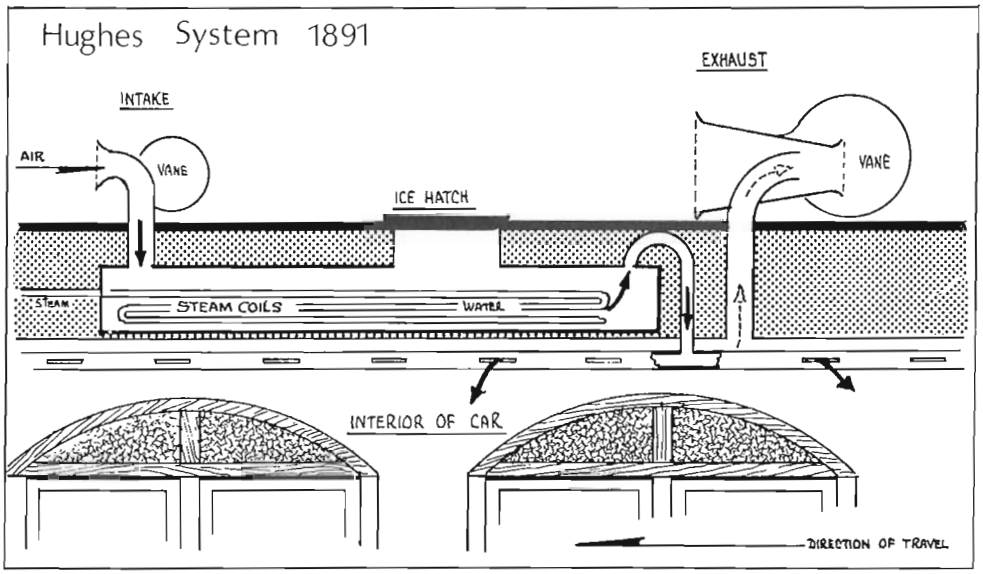


Although the system worked remarkably well and was regarded at the time as a marvellous invention, it did have one serious defect: a strong tail wind or a side wind would reduce the efficiency of the system and, of course, when the train stopped, the circulation of air stopped too. This fault was partially corrected some years later by the Great Western Railway of Canada which built receiving boxes of sheet metal and mounted them on the roof in such a way that they would revolve on a vertical axis. Suitable vanes were attached to the boxes so that they always faced the wind and, with this improvement, if a breeze was blowing at all, the circulation of air continued even when the train stopped.

In wintertime, the water was drained from the wash tank and the dischargers inside the car were removed. One duct was closed and a hot air stove was placed over the other. The air was forced upward from the empty tank into the stove where it was heated, and then it was discharged through a duct along one side of the car which had apertures at floor level under each seat.

At an average speed of forty miles per hour, it was estimated that in summer the air in the car was changed every two minutes while, in winter with one duct closed and the air passing through the heating system, it was changed every six minutes. The cost of installing the Ruttan system was only $60.00 per car, but apparently the railway officials concluded that the results obtained did not justify even that moderate expenditure and no further experiments were made on Canadian railways for many years. It is possible too that passengers objected to swirling currents of air inside the car. Ruttan then made arrangements with a number of American railroads to experiment with his system of ventilation. Trials were made by the New York Central, Erie, Boston & Lowell, Philadelphia Wilmington & Baltimore as well as several other railroads, but the results were not entirely satisfactory and railroad officials lost interest. In the Peale Museum, Baltimore, there is a model of a Boston & Lowell coach equipped with the Ruttan ventilating system and presumably he made use of the model when he was trying to arouse the interest of officials of the Philadelphia, Washington & Baltimore Railroad.

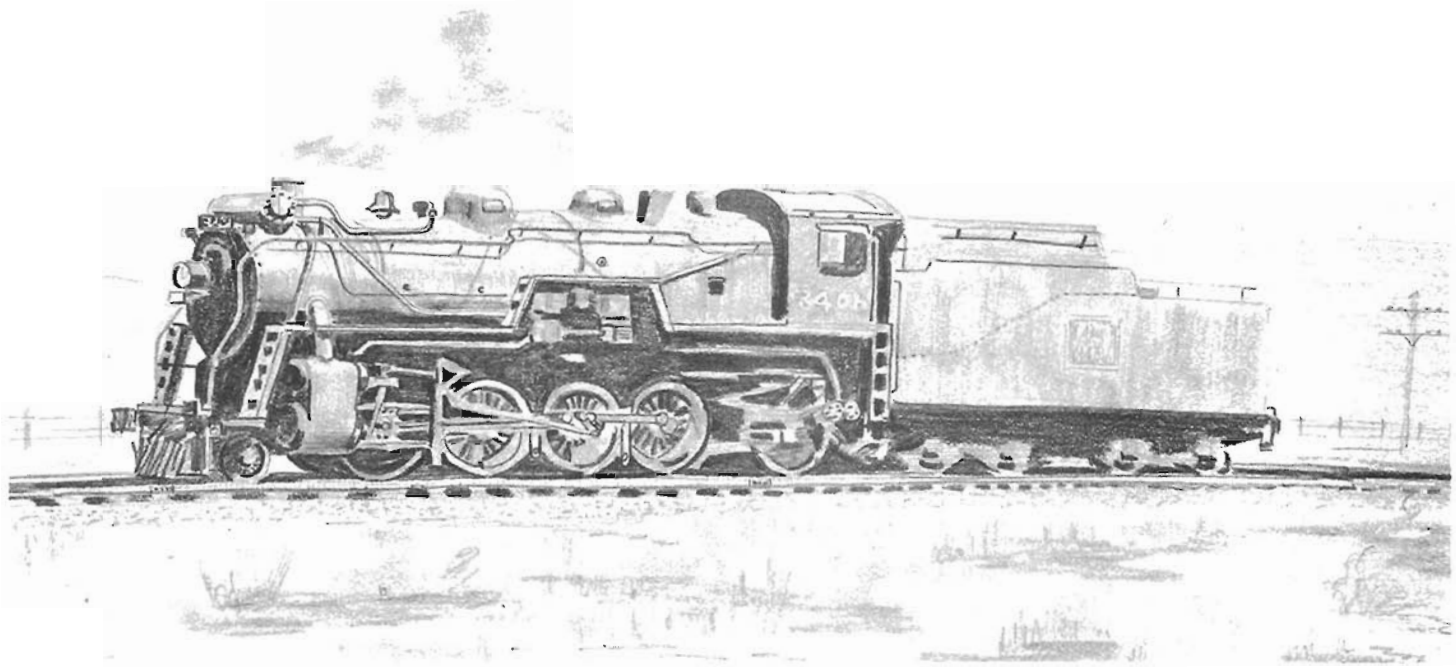
A number of other inventors tried to develop satisfactory air conditioning units for passenger cars and some of them were fairly efficient, but the inventors found it impossible to overcome the inertia of the official mind. Among the subsequent inventors was Major Sam Hughes of Lindsay, Ontario, whose system was tested on the Intercolonial Railway in 1891. Sam Hughes is almost completely forgotten today but he was a distinguished soldier and, as Minister of Militia in the Borden government during the first two years of World War I, he was instrumental in converting the Canadian militia, which had been little more than an elite and rather picturesque social and athletic club, into an efficient fighting machine which even the German army soon learned to fear and respect. The Hughes ventilating system differed radically from the earlier Ruttan invention, in which pressure was built up which forced fresh air into the car and the vitiated air was allowed to escape. In the Hughes system, an exhausting ventilator created a partial vacuum which drew the vitiated air out of the car and fresh air rushed in to replace it. This, of course, is an oversimplification. Fresh air entered the car from above through a trumpet-shaped funnel like those used on ships, and then passed over water in a tank, there depositing dust and cinders; thence it passed into the car. In hot summer weather, the water in the tank was cooled by blocks



of ice put in at frequent intervals while in winter the air was heated by exhaust steam from the locomotive, circulating through coils of pipe immersed in the water of the tank. The air was distributed along each side of the car at ceiling level, in pipes having a continuous narrow slot opening, thus obviating the unpleasant drafts. A similar arrangement was designed to ventilate the lower and upper berths of sleeping cars, with individual controls for each berth. The heart of the Hughes system was the specially designed exhausting ventilator on the roof of the car which was made in such a way that the wind caused by the movement of the train created a suction or a partial vacuum which drew the foul air up out of the car. It was claimed that this ventilator was so efficient that even when the train was stopped, a slight breeze would create enough suction to cause the system to continue functioning.

The Intercolonial Railway became interested and one coach was equipped with the Hughes system; the work was supervised by D. White, Master Car Builder, and J. H. Wran, foreman of the fitting department. Numerous trial runs were made with officials on board and contemporary reports state that the trials were successful but nothing further was done, probably because the officials believed that the results did not warrent the expense. Then too, the Intercolonial Railway was a government-owned road, with all the evils of government ownership highly developed. During the early Nineties, the political atmosphere was in such a disturbed state that officials of the railway perhaps were unwilling to initiate a project which might cause repercussions in parliament, especially when the inventor was a politician of considerable prominence.

The early air-conditioning systems failed mainly because there was no reliable and easily controllable source of power to operate the units; it was only when passenger cars were equipped with individual and independent systems for generating electric power that practical air conditioning became possible.



John Sanders' Sketch Book

A few more pages from John Sanders'
sketch book .....

showing CN 3406, class S-1-f Mikado
Canadian Pacific 2-10-4, class T-1
CN electric 186, class Z-4-a. (Must
have been a special train -- air-
conditioned coaches, running on the
left-hand track!)

over


186

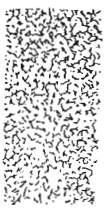
Order No. 10462

by R. M. BINNS

Glancing through the early Proceedings of the Canadian Street Railway Association, one cannot help being intrigued by some of the problems facing street railway managements in the early 1900's. Military parades, which were frequent on the streets of our cities in those days, were a troublesome cause of delays. Proper compensation for carrying mail bags between post offices was a lively item. The relative merits of electric heaters and coal stoves, and T-rail versus grooved rail, were live controversial topics.

The Association was founded in 1904 at a meeting of street railway officials in the Windsor Hotel in Montreal. The purpose was to provide a clearing house for the mutual exchange of technical information, discussion of operating problems, and to present a united front on matters of legislation affecting the industry. One of the founders was the late Mr. Acton Burrows of Toronto, publisher of "Canadian Railway and Marine World". As Secretary-Treasurer of the Association, Mr. Burrows acted as spokesman for the electric railway industry and, for many years carried on the management of the Association with great devotion.

Around 1908, some twenty electric railway companies were members of the Association, and a subject of great concern to most of them was the question of air brakes on single truck streetcars. The heavier double truck cars introduced in many cities after 1900 were, of course, equipped with air brakes when built or had them added shortly after, but there had been few applications to single truck cars. An unsuccessful experiment was made on two cars in Halifax a few years earlier, of which the Manager said: "They were far from satisfactory. In fact, we had an expert here for over three months doing nothing but keeping one equipment in order". A similar unsuccessful experiment was reported by Toronto Railway Company. It was true that a few single truck cars on Bank Street in Ottawa had air brakes because they pulled trailers, but the record of collisions was greater than that of similar cars using hand brakes. Naturally the Unions were pressing for some form of power brake to eliminate the physical effort of hand braking and to allow the motorman to sit down while at work. One can imagine that the manufacturers of air brake equipment naturally had their eyes on hundreds of additional cars to which their product might be applied.



THE COVER

Photo: O.S.A.Lavallee

The late afternoon sun was casting long shadows over the Ottawa River as one of the National System's X-10-a Suburban locomotives hustled its three-car commuter train back towards Montreal from Vaudreuil, Que.

In addition to these pressures, government regulatory bodies felt they were obliged to exert more control over street railways, particularly in the matter of public safety.

At that time, several of the street railways came under the jurisdiction of the Board of Railway Commissioners for Canada. These companies were startled to receive, on November 25th 1909, notice that the Board would meet on December 7th, to consider "A proposed order requiring all electric railways, subject to the Board's jurisdiction, to equip all their cars with air brakes as well as hand brakes"---- Mr. Duncan McDonald, Manager, Montreal Street Railway Company, then President of the Association, hastily got in touch with the Secretary of the Board in Ottawa and asked that the hearing be deferred on account of the short notice given. The Board's Secretary replied that the request would be considered when case came up for hearing on December 7th. At that sitting the Association was represented by counsel and several members of its Executive Committee who requested an adjournment and suggested that the whole question be fully discussed at a conference between the Board's Chief Operating Officer and the Association's Executive Committee. An adjournment was granted to February 4th 1910, but the Chief Commissioner stated that the Board had a full report on the subject from its Operating Department and did not favour a conference. However, Mr. Burrows acting for the Association was later able to obtain a copy of the report from the Secretary of the Board who assured him that the Board was agreeable to a conference. This was fixed for January 11th 1910. The report appears singularly superficial and seems to be no more than an opinion. It was as follows:- "My views are that all electric cars should be equipped with automatic air brakes as well as hand brakes as an additional safeguard in case of damage or breakage to the air brake equipment. It is not a question of being able to successfully operate electric cars with hand brakes, but to decrease the liability of accident. Hand brakes can only be depended on for ordinary stops, not in case of emergency. It takes some time to apply hand brakes, while the application of the air brake is practically instantaneous. The time necessary to apply the hand brakes would in many cases of emergency be sufficient to prevent accident, with the air brake. I would recommend that all electric lines under the jurisdiction of the Board be required to withdraw from service, cars not equipped with air brakes after a given date to be determined by the Board".

Mr. Burrows immediately issued a circular to all members, asking for reasons, if any, why such an order should be opposed, pointing that companies under provincial jurisdiction were also vitally interested as the Public Utilities Commissions in the various provinces, particularly the Ontario Railway and Municipal Board would likely follow the lead of the Federal body.

Up to the date of the conference on January 11th, twelve companies had submitted opinions, some of them quite lengthy technical briefs. The concensus of opinion was against the use of air brakes in single truck cars, - principal reasons given were:- Tendency to lock wheels and skid. Successive applications cause car to oscillate. Motormen inclined to take chances. Reverse power more reliable in emergencies. Motorman does not have the proper "feel" of the brakes. No space under car for proper installation of

equipment. Expensive maintenance. In short, all agreed that hand brakes were safer and more reliable on light cars.

Armed with these opinions, the Association's Executive Committee met with the Board's Operating Officer on January 11th 1910. It was decided to conduct tests of air vs hand brakes at Ottawa under the Association's auspices, and Messrs. J.E.Hutcheson, Ottawa Electric Railway, D.E.Blair, Montreal Street Railway and W.R.McRae, Toronto Railway Company were appointed to be in charge of the tests. The Board's hearing was further adjourned to May 3rd. The tests were not required however, for Mr.J.E.Hutcheson and Mr.E.P.Coleman of Hamilton were able to have informal meetings with the Board's Chief Operating Officer. There is no record of these private meetings, but the persuasive abilities of these gentlemen must have been formidable because the Board's Operating Officer finally agreed to a modified order for submission to the Board. At the hearing on May 3rd, after some discussion, the Board issued the following order, No. 10462:-

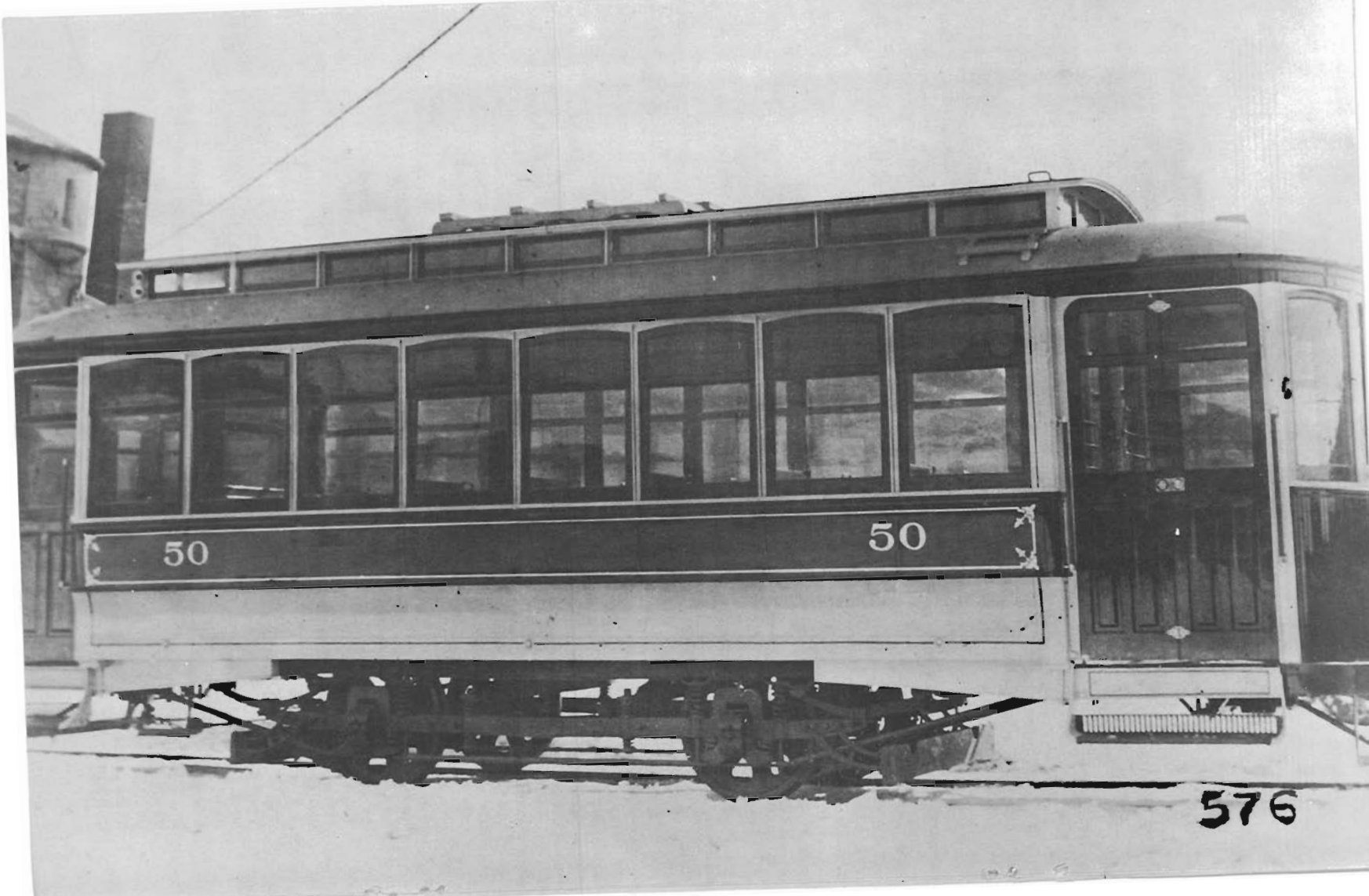
"1. On or before June 1, 1911, all electric railway companies under the Board's jurisdiction shall equip all rolling stock in use by them of 37 ft. or over in length, or of the weight of 35,000 lbs. or more, with power brakes, to be approved of by the Board, in addition to hand brakes and proper sanding appliances.

"2. Immediately upon the completion of said equipment, the same railway companies shall notify the Board thereof and furnish a detailed account of the rolling stock so equipped."

This was indeed a very generous concession, as single truck cars rarely exceeded 32 feet in length, and usually weighed less than 24,000 lbs. This order did, in fact, exempt some of the smaller double truck cars. Even so, a few of the companies still felt that the Order was too sweeping and that each case should be judged separately according to severity of grades, frequency of stops, and other local conditions in each city.

The above is necessarily a condensed and sketchy version of the struggle for a fair solution to a problem which is now only of mild academic interest. It is a good example, however, of the Association's work and its value to the street railway industry as a whole. In fact the favourable ruling obtained in this case was helpful in similar situations in the United States.

In Canada, there was no further significant legislation on air brakes until early 1913 when a bill was passed in the Nova Scotia Legislature amending an earlier statute regarding street railway companies. This amendment provided that all street railway cars operated in the province, weighing 10,000 lbs. or more, be equipped with modern air brakes. The Nova Scotia Board of Public Utilities decided not to put this law into effect for the time being. However, late in 1913, the Motorman's and Conductor's Union of Halifax petitioned the Board to put


50
50
576

the statute into force. Several hearings were held at which the Union and Halifax Electric Tramway Company Ltd. were represented by counsel and both parties produced expert witnesses; Mr.D.E.Blair of Montreal for the Company and a Mr.Brown of Detroit for the Union. Incidentally, Detroit was the bête noir in all discussions of air brakes. Since 1902 Detroit United Railways was obliged by municipal ordinance, to use air brakes on all its cars. This required alteration of the truck and lengthening the wheelbase of their single truck cars. Apparently Detroit was not of much help to the Union in the Halifax case, as the Board rendered a decision in favour of the Company on January 8th 1914.

At the Association's Annual Meeting held in Ottawa in May, the Secretary Treasurer, Mr.Burrows stated that the Nova Scotia judgment was of such importance to other companies under Provincial jurisdiction that he proposed to record the complete findings of the Nova Scotia Board of Public Utilities in the Association's proceedings, and to read it aloud to the meeting. Following are some extracts from this judgment:

"In addition to the motormen and conductors and other officers of the company who are able to speak from actual experience of conditions as they exist in Halifax, the Board had the advantage of hearing the evidence of a witness from Montreal and another from Detroit, both of whom occupy responsible positions in tramway service, and testify as to the theory and practice of hand and power brakes. In Halifax, at the present time, cars are small and of the single truck type. In addition to the hand brake commonly used, there is also available the reverse, which one witness testifies is almost invariably the refuge in an emergency. In addition to these, it is now sought to have air brake equipment. Mr.Mosher, a practical motorman of long experience, representing the Union, says: 'There are four "pay-as-you-enter" cars, which are much heavier than the other cars, and the brakes that are in use to-day are very hard to pull on. The present brakes are antiquated and cause a heavy strain on the men.' Again, 'If you are driving any of these heavy cars, to make a stop with the hand brake it is impossible to make a stop within 40 ft.'

"The problem is very clearly and very fairly put by Mr.Blair, of Montreal, a witness for the Company, who testifies: 'In order to retard or stop a car when in motion, there is only one point to which energy can be applied, and that is at the rail. The only available position at which to retard is between the car rail and the wheel. The amount of friction is limited. It is not possible to stop a car in 10 ins. or 10 ft. There is a certain limit at which it is practically possible to stop a car under either conditions.

LEFT: One of the Halifax cars which was claimed by motormen to be too heavy for hand brakes. The photograph was taken in the builder's yard while the car was still unequipped. Since left-hand rule-of-the-road prevailed in Nova Scotia until 1923, the front platform is at left, the rear platform at right. When fully equipped, such cars weighed 23,000 pounds.

That limit, fixed by the friction which may develop between the wheel and the rail, depends on the condition of the rail. Under absolutely favourable conditions it is possible to get about 33% force. For a car weighing 10,000 lbs., it is possible to get 3,300 lbs. of retardation. In the earlier street railway days, when the traffic was light, conditions did not require more than a certain size car, and they were single truck cars, and they were quite easily operated by the hand brake. The total maximum of the brake possible should easily be applied by hand without any exertion on the part of the motormen. After the cars were built larger we saw it was going beyond the limit of endurance of some of the motormen to handle such a weight. It was too hard on the motormen themselves, so the power brake was evolved to do mechanically what the men used to supply by hand power. Then the question was where to draw the line between the car that was absolutely safe with the hand brakes, and where the air brake should be put on".

"Further, at page 59, 'I think these cars can be stopped as quickly as it is possible to stop any car with any kind of brake. Installation of air brakes would not make any improvement in handling cars in Halifax.' Mr. Brown also, in answer to the question: 'From your examination, and from your experience in Detroit, is there anything to be gained in Halifax in the use of air brakes, as to efficiency, etc?' says, 'I would say "No" on your type of cars.'

"On behalf of the petitioners, the following claims for air brakes are put forward: 1. That they relieve men from excessive strain, resulting in permanent physical injury. 2. Relieve from long hours of standing, and permit of sitting. 3. May be applied instantaneously. 4. Stop a car more quickly. Some evidence was offered on behalf of the motormen that operating hand brakes placed upon the men excessive strain, resulting in kidney troubles. In the absence of medical testimony to that effect, and none such was offered, although invited, the Board does not feel that the evidence sustains this contention.

"On behalf of the Company, the contention is that: 1. Air brakes have been tried and found wanting. 2. There is not sufficient room to install on single truck cars. 3. They are liable to freeze and not dependable. 4. They cause injury to wheels and discomfort to passengers. 5. They are less effective than hand brakes on cars of type used in Halifax.

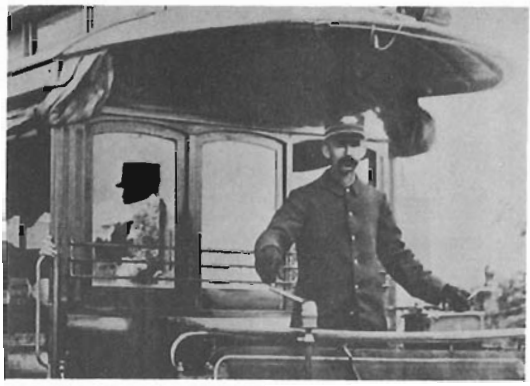
"The Dominion Railway Board has fixed the length at 37 ft.; the weight at 35,000 lbs. While there is no rule of law which compels the Board to follow the findings of this body, it must carry great weight.

"The number of cars used in Halifax exceeding 30 ft. in length is comparatively small. The longest, an open summer car, is one inch under 32 ft., and its weight is 18,000 lbs. The heaviest, a pay-as-you-enter car, is less than 23,000 lbs., and exceeds by 13 ins. the length limit referred to in the section under consideration. When the maximum of 37 ft. length and 35,000 lbs. weight, for cars to be operated with hand brakes, fixed by the Dominion Railway Board, is compared, it

will be seen that a tolerably wide margin exists between the finding of that Board and what is here invited.

"The Board is not convinced that the time has arrived for bringing into force any part of chap. 52, consequently, for the present, the only order to be made will require the company, from time to time, and before new cars are brought into service, to report to the Board the length, weight and type, and the proposed braking equipment of all cars, as contracted for, or proposed to be contracted for."

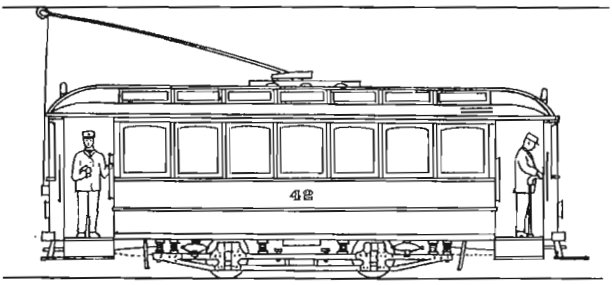
The decision of the Nova Scotia Board of Public Utilities appeared to settle this matter, for we do not have any allusion to air brakes on single truck cars in subsequent proceedings of the Association.



LEFT: The discussion vis-a-vis air brakes on single-truck cars was solved by the appearance of the Birney safety car. No. 129 of the Halifax system is shown, 1939.

TOP: The time-honoured stance of the motorman, holding his "gooseneck" brake handle.

Only a few years were to pass, however, before many companies would welcome, with open arms, a tiny car (28 ft. and 16,000 lbs.) with air compressor throbbing and fitted with all the latest pneumatic gadgets, - engineered from the wheels up according to the concept of Charles O. Birney. Ironically, it was on the steep hills and narrow streets of Halifax that almost all the Birney cars in Canada were ultimately to be found. In fact this fleet of 82 Birney cars was only exceeded, at any time, in three or four United States cities.



South Eastern Railway

LOW FARES

FOR THE —

QUEEN'S BIRTHDAY !

RETURN TICKETS

Will be on sale to any Station on the line of the South Eastern Railway, good on 24th May only, at

SINGLE FARE

FOR THE ROUND TRIP.

Also, Tickets good to go on May 23rd and 24th, and to return up to May 26th, inclusive, at

ONE AND ONE-THIRD SINGLE FARE

FOR THE ROUND TRIP.

T. A. MACKINNON,
General Manager for the Trustees.

Montreal, May 19th, 1884.

ALL ABOARD!

No wristwatch nor walkie-talkie set for this old-time train conductor , sketched by W. McKeown.

Patriotic holidays of two nations: a Grand Temperance Pic Nic: almost any celebration was reason enough for Mr. MacKinnon's South Eastern Railway to offer reduced rates and operate special trains.

SPECIAL TRAIN

South Eastern Railway.

4th of July

CELEBRATION

—AT—

BURLINGTON, VT.,

—ON—

MONDAY, JULY 5.

Return tickets to Burlington will be issued from the following Stations at the very low rates named:

FROM	TIME.	FARE.
Newport - - -	6.30 a. m.	$1.50.
Newport Centre -	6.49 "	
North Troy - -	7.05 "	
Mansonville - -	7.11 "	
Glen Sutton - -	7.25 "	
East Richford -	7.32 "	$1.25.

Connecting with train leaving Richford 7.45 a. m., and arriving at Burlington at 10.50 a. m. Returning, leave Burlington at 10.00 p. m.

☞ Tickets good for the day only.

For Particulars of Programme see Bills.

T. A. MACKINNON,
General Manager for the Trustees.

Montreal, June 30th, 1886.

SOUTH EASTERN RAILWAY.

GRAND TEMPERANCE

PIC-NIC,

Under the Auspices of

THE DOMINION ALLIANCE

—AT—

MYSTIC, P. Q.,

WEDNESDAY,

AUGUST 25, 1886.

Return Tickets

will be issued from stations to which there are train connections at

Single Fare for the Round Trip.

A SPECIAL TRAIN

will leave Mystic, returning at 6.15 P.M., connecting at Farnham with trains North and South.

T. A. MACKINNON,
Gen. Manager for the Trustees.

MONTREAL, August 18th, 1886.

Montreal Herald Print, Victoria Square.

★ Canadian National Railways has started work on a two-mile tunnel in Vancouver, which will link its lines south of the Lougheed Highway with the Second Narrows Bridge. The single-track bore, 28' high by 20' wide, will involve the excavation of some 200,000 yards of sandstone, and will take some two years to dig. The tunnel, together with the new Second Narrows Bridge and additional yard facilities is expected to cost $27 million.

★ Ontario Northland Railway has purchased a number of air-conditioned coaches from Canadian Pacific Railway, to go into service immediately.

★ West Coast Railway Association's 2-8-2TT, formerly Comox Logging & Railway Company No.16, has been leased to the Anchorage Centennial Development Corporation, who will use it as part of festivities in 1967 to mark the centenary of Alaska's purchase from the Russian Empire by the United States. It is reported that the lease is for $300 and will run until April 1968.

★ Canadian National Railways has awarded a contract to Hawker-Siddeley (Canada) Limited to construct 150 new all-steel cabooses. Hawker-Siddeley will build the shells at Trenton, NS, then ship them to Fort William for completion. The new vans will be five feet longer than present CN cars, will be provided with such amenities as shock-absorbers on the underframes, roller-bearings, safety glass, and electrically-operated appliances such as refrigeration, cooking, toilet, and windshield wipers on cupola windows. The designs have been evolved in consultation with the Brotherhood of Railroad Trainmen.

★ All service between Montreal and New York for passengers, over CN-CV-B&M-NH, which has pursued an on-again, off-again career during the summer months as a result of ICC decisions and court appeals, ended with the start of the railway strike on August 26. The trains, including the daylight "Ambassador" and the overnight "Washingtonian" and "Montrealer" services, were originally scheduled for removal effective July 11. A court appeal resulted in the service being prolonged, with the official date of cessation being decided upon as September 3. With the railway stoppage, however, all service was suspended on August 26 and never resumed.

★ The largest single order for rail/road containers has been placed by Canadian National with Steadman Industries Limited, who will produce 492 aluminum units for the railway. The containers, for Express-freight transport, can be hauled by highway or railway, and can be interchanged from one type of vehicle to the other.

★ On Sunday, June 26, the Scotian Model Railroad Society operated an excursion over the Canadian National's line from Halifax to Upper Musquodoboit, and return. Over 300 passengers climbed aboard the eight-car diesel-hauled train, which required six hours to make the 100-mile trip each way, the speed limit being 25 m.p.h.

- The Board of Transport Commissioners has authorized Canadian Pacific Railway to construct a new branch line for 2.6 miles, starting at M.P. 9 of the Wilkie Subdivision. It will involve a crossing of Canadian National's Watrous Subdivision, at M.P. 197.6.

- The House of Commons gave approval to a pre-legislative resolution to permit Canadian National Railways to build two new branch lines to mineral deposits in the west. One line will extend twelve miles from Stall Lake to the Hudson Bay Mining & Smelting operation at Osborne Lake, Man. to carry copper and zinc ore. The other line will run to a new potash development near Watrous, Sask.

- The BTC approved Canadian Pacific Railway's application to abandon 14 miles of the Kingston Subdivision, extending from Sharbot Lake to Snow Road, Ont., effective September 1st. A public hearing was held in Perth, Ont., but the application went unchallenged.

- Two further CP branches have been applied for: one would extend for 11 miles from the Burstall Subdivision, near Fox Valley, Sask., to a sodium sulphate plant near Ingebright Lake. The other would be 16.5 miles long, from a point on the Red Deer Subdivision near Didsbury, Alta., to the site of a gas processing plant of Canadian Superior Oil Limited.

- In May, the BTC approved Canadian Pacific Railway's application to abandon mixed train service between Fredericton and Chipman, NB, 47 miles. It also authorized CNR to operate over Canadian Pacific rails from South Devon, NB to Newburg, Woodstock and Valley, in order to permit CN trains to serve the now-disconnected line from Valley to Centreville, NB.

- In May also, Canadian National was authorized to build an $11.1 million branch line from the CN main line at Redditt, Ont., northwest to Bruce Lake in the Kenora District, where there is an iron ore occurrence. The ore will travel by rail to Fort William, and then to Hamilton and Stelco by lake vessel.

- Canadian National Railways will demolish its railway station at Lennoxville, Que., which has not seen passenger service since late in 1965.

- A reservation wrinkle will go into effect on January 1st, 1967, when Canadian National will introduce a computer reservation system which will be the first application of its kind in North America. It will be able to answer reservation requests from 37 Canadian cities, and Chicago, in less than ten seconds. The computer will make train reservations up to six months in advance, and will add and subtract train space to and from its inventory memory, to avoid such familiar problems as double-sold space and last-minute cancellations. Initially, the installation will cover only coach space, but will be extended to parlour and sleeping cars in 1968.

- An organization in Mexico called "Villa Fiesta Mexicana" claims to have lined up 308 compartment-type sleeping cars from United States railroads, which will be used to transport and house some 12,000 visitors to the 1968 Olympic Games in Mexico City. The cars will be assembled together in the Mexican capital in the form of a "pullman city" which will also have a shopping centre and space for 3,000 house trailers.

- New York Central has converted an RDC car into a jet-propelled test car. No. M-497 has been provided with two aircraft-type jet engines on its roof which propel the car by jet thrust, just as in an aircraft. Speeds considerably in excess of 100 m.p.h. have been reported during the tests.

- The same railroad has indicated that it wishes to withdraw from all long-haul passenger service by the end of 1966. Alfred Perlman, NYC president, said his company would file an application on September 1st to end the 64-year-lifespan of the famed Twentieth Century Limited and a number of other trains, before the end of the year. As an alternative, the Central offers a more intensive service with shuttle trains between 80 cities which are spaced less than 200 miles apart. A trip to Chicago from New York would still be theoretically practicable, in five shuttles between New York, Albany, Buffalo, Cleveland, Toledo and Chicago. But of course there will be no dining, sleeping and parlour cars.

- A European practice is shortly to be introduced to Canadian National rail operations in the form of the twenty-four hour clock, now in use almost completely in Europe. The change is to take effect with autumn timetables at the end of October. Canadian Pacific has indicated that it will study a similar application. Interestingly, both railways use the 24-hour system in operating timetables west of the Lakehead, both retaining the "a.m." and "p.m." designations in the east. But heretofore, all public timetables have shown times in twelve-hour terms.

- The city of Capreol is looking for a steam locomotive, but has declined to pay $5,000 to Canadian National Railways for one of the very few left for such purposes that is uncommitted.

- Canadian Pacific will not be permitted to abandon passenger service on its Lachute Subdivision, between Ottawa and Montreal. The railway claimed that it had lost $102,000 on this service in the year ending September 31st, 1965.

- Canadian National Railways has applied to the BTC for permission to abandon sections of line between Cannington and Lorneville, Ont. and between Lindsay and Beaverton East, Ont.

- The corporate life of the London & Port Stanley Railway was officially ended after 113 years of existence on May 27, 1966, when the Mayor of London (Ont.) signed a transfer deed officially conveying the railway to Canadian National Railways. The transfer was retroactive to January 1st, 1966. In return, Canadian National turned over to the City its car shops in Florence Street and 29 acres of land. The L&PS was originally opened between those two localities on October 1st, 1856.

- In July, Canadian National ordered 700 cylindrical steel hopper cars from National Steel Car Corporation, and 250 quadruple similar cars from Hawker-Siddeley. Delivery is to begin in February, 1967; the contracts total $17 million.

- A further order totalling $7.5 million awarded to National Steel Car was subsequently announced, this time for 400 70-ton boxcars for newsprint use, and two 180-ton well-bottom flatcars. Delivery is to begin in December.

Canadian National Railways recently leased and purchased a number of passenger cars from United States railroads. The purchases are intended to augment its permanent fleet of cars, while the leased units are to carry the national system over the heavy demands to be made during centennial year.

The old designations and new names and numbers of the purchased cars are as follows:

Boston & Maine RR - Pullman-Standard 1954 (6 sec. 6 r'mette, 6 Dbl. Bedroom)

B&M	CN No.	Name
Rye Beach	1194	Greenhurst
Salisbury Beach	1195	Greenwald
Dartmouth College #1	1192	Greendale
Dartmouth College #2	1193	Green Harbour

Norfolk & Western RR - Pullman-Standard 1950 (for NKP) (10 r'mette, 6 Dbl. Bedroom)

N&W No.	Name	CN No.	Name
204	City of Painesville	2125	Riverdale
205	City of Erie	2126	Riverlea
208	City of Kokomo	2127	Riverside
209	City of Muncie	2128	Riverfield
212	City of Fort Wayne	2129	Riverview

The cars leased, listed below, will retain their present names but be assigned temporary numbers while on CN lines.

Rock Island - Pullman-Standard 1954 (8 r'mette, 6 dbl.bedroom)

Temporary No.	Name	Temporary No.	Name
630	Air Force Academy	631	The Broadmoor
632	Rampart Range	633	Turquoise Sky
634	Lake Nokomis	635	Buffalo Bayou
636	San Jacinto	637	Golden Spire
638	Golden Tower.		

Norfolk & Western - Pullman Standard 1950 (for Wabash) (12 r'mette, 4 dbl. bedroom)

Temporary No.	Name	Temporary No.	Name
639	Blue Gazelle	640	Blue Skies
641	Blue Knight	642	Blue Horizon
643	Blue Cloud	644	Blue Boy

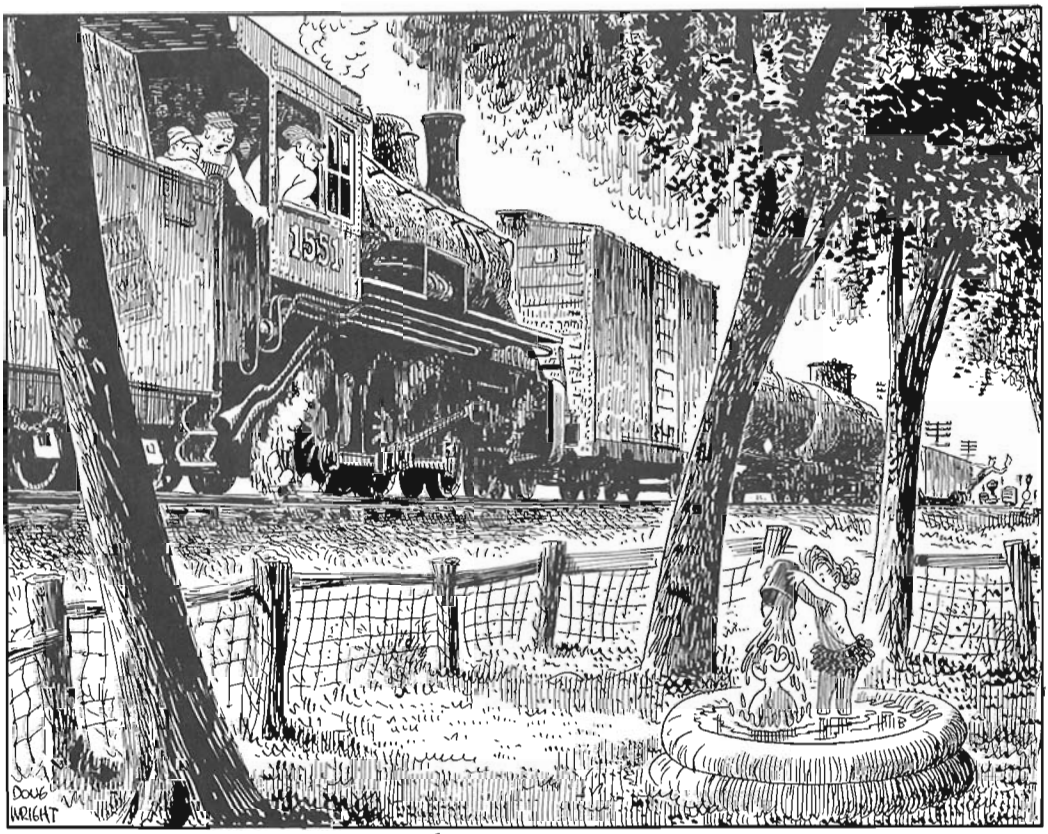
Baltimore & Ohio - Budd 1948 (5 r'mette, 1 bedrm., 3 compts., 24-seat dome)

Temporary No.	Name	Temporary No.	Name
647	Moonlight Dome	648	Starlight Dome
649	Sunlight Dome		

Erie-Lackawanna - Pullman-Standard 1954 (10 r'mette, 5 dbl. bedroom)

Temporary No.	Name	Temporary No.	Name
645	Spirit of youngstown	646	Pride of Youngstown

SUBURBAN SWITCHER Doug Wright -- Montreal Star



"Hey you want to drive an engine Junior? You want to trade places?"

CANADIAN RAIL: Published monthly (except July/August combined) by the Publications Committee, Canadian Railroad Historical Association, P.O. Box 22, Station B, Montreal 2, Canada. Subscription includes Associate Membership: $4.00 annually.

ASSOCIATION REPRESENTATIVES:

OTTAWA VALLEY: Kenneth F. Chivers, Apt. 3, 67 Somerset St. W., Ottawa.
PACIFIC COAST: Peter Cox, 2936 W. 28th Avenue, Vancouver, BC.
SASKATCHEWAN: J.S. Nicolson, 2306 Arnold St., Saskatoon, Sask.
ROCKY MOUNTAIN: V.H. Coley, 11243 - 72nd Avenue, Edmonton, Alta.
FAR EAST: W.D. McKeown, 900 Senriyama (Oaza), Suita City, Osaka, Japan.
BRITISH ISLES: John H. Sanders, 10 Church St., Ampthill, Beds., England.

Printed in Canada on Canadian paper.