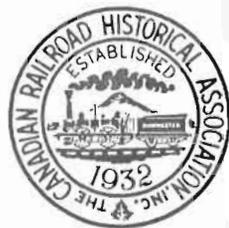
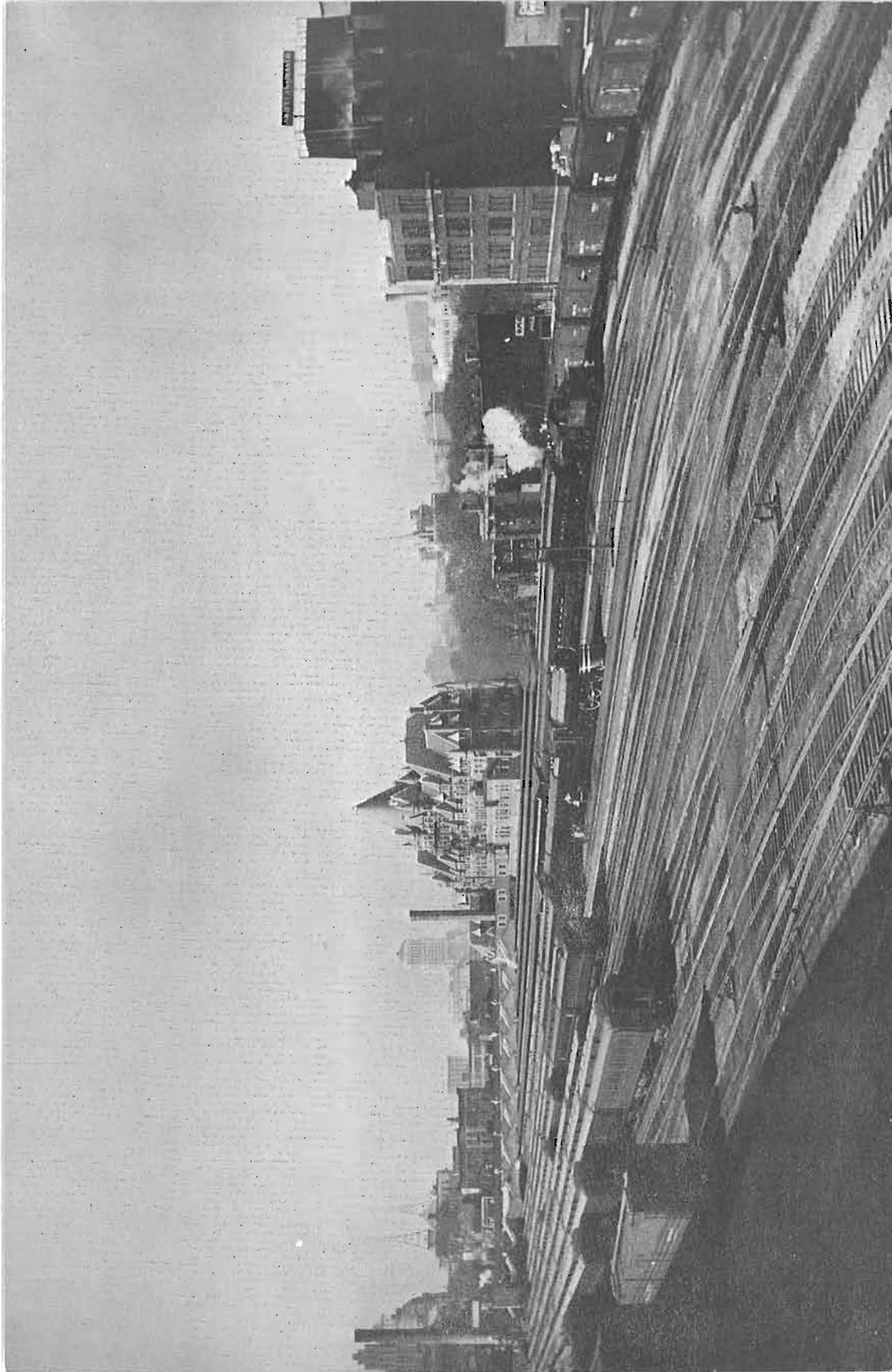


# Canadian Rail



NO. 222  
JUNE 1970





# COMMUTING TO THE LAKESHORE

The Commuter Services of the Canadian Pacific Railway

F.F. Angus

**T**he introduction of new passenger-carrying equipment on CP RAIL's trains between Montréal and Rigaud, Qué., is the latest innovation in a service which goes back more than 75 years. While the spectacular development of the Lakeshore and the western end of the Island of Montréal as a residential area has taken place in more or less recent times, largely since World War II, there has been some commuter traffic in to and out of Montréal since well before the turn of the century.

In the 1850's, the Grand Trunk Railway Company of Canada was busy building its main line between Montréal and Toronto and it was this line that first traversed the western extremity of Montréal's Island, following the shore of Lake St. Louis, along the present Canadian National Railways' right-of-way to the village of Ste-Anne-de-Bellevue, where it crossed the eastern mouth of the Ottawa River by means of a tubular bridge, leaving the Island of Montréal.

In these days and for some years afterwards, most of the trains on the line ran at least as far as Kingston, Ontario and there was little suburban local traffic, apart from the milk trains, which daily brought supplies of milk to the metropolis. The villages of Dorval, Pointe Claire and Ste-Anne were completely rural and few

COMMUTERS ALONG MONTREAL'S LAKESHORE ARE NOW ENJOYING THE MODERN COMFORTS of CP RAIL's new bilevel cars. Here is a head-end picture of control car no. 900, complete with air-horns, bell and offset oscillating light.

Photo courtesy of CP RAIL.

CANADIAN PACIFIC RAILWAY'S FIRST LOCATION IN MONTREAL—PLACE VIGER STATION Yards—about 1937, showing the many wooden commuter cars. In this era, the commuter operation to Ste-Therese, Qué. was based on Place Viger and the cars used were similar to those used on the Lakeshore service.

Photo courtesy of CP RAIL.

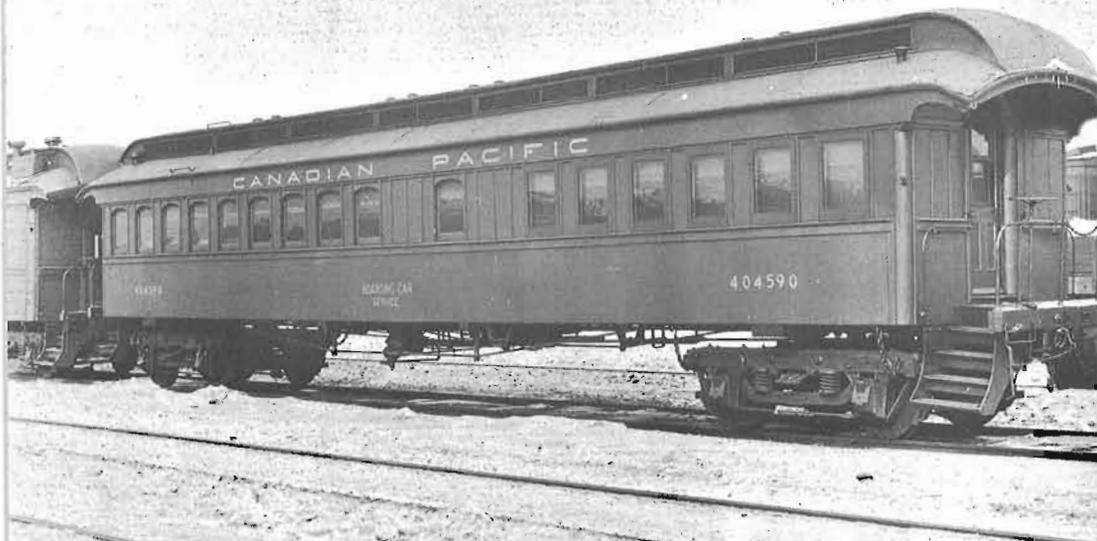
of their residents had any reason to travel regularly to Montréal. However, as time went on, the Lakeshore became more and more a place for summer residents and, in the 1870's, the Grand Trunk Railway put on trains which stopped at some of the suburban villages. By the 1880's, some people were actually living in the Lakeshore villages and coming to work daily in Montréal and the commuter traffic had begun.

In this same decade, the Canadian Pacific Railway was completed to Canada's west coast and the company was soon constructing a number of feeder lines in the east. The line from Montréal to Smith's Falls was completed in 1888 and this single track paralleled the Grand Trunk all the way from Lachine to Vaudreuil. Stations were established at Lachine Bank, Dorval, Valois, Beaconsfield, Ste-Anne and Vaudreuil, but at first no local service was offered and trains still departed from Dalhousie Square Station (later Place Viger), running via Hochelaga, Mile End, to Montréal Junction, just west of the present Montréal West station. Here the line turned west along the Lakeshore, continuing to Vaudreuil, Smith's Falls, Peterboro and Toronto.

The following year, Windsor Station, Montréal, was opened and the distance to the C.P.R.'s main station was shortened by five miles by means of the new access line through Westmount. In this way, the present line from Montréal to Vaudreuil was completed, essentially. By the nineties, suburban development on the Lakeshore was becoming considerable and this extended to the areas along the Ottawa River between Vaudreuil and the Ontario border. Accordingly, in 1893, the Canadian Pacific constructed a new line, leaving the main line to Smith's Falls at Vaudreuil and running through Como, Hudson and Rigaud to Point Fortune on the Ottawa River. Passenger service on this new line consisted of one train a day in each direction, except Sundays, between Montréal and Point Fortune, making all intermediate stops. The introduction of this train in 1893 marks the birth of the Canadian Pacific Railway's Lakeshore Commuter service.

To operate this train, a small suburban 4-6-4 tank engine, No. 624, was built in Delorimier Shops in 1893 and this engine, hauling a train of second-class coaches, departed from Windsor Station at 5:20 p.m., returning at 8:45 a.m. the following morning. Running time to Rigaud was about two hours and to Point Fortune, an additional 25 minutes. This was the direct ancestor of Trains 271 and 274, which today leave Windsor Street at 5:15 p.m. (1715 hours) and arrive at 8:45 a.m. (0845 hours) respectively, although the time to Rigaud is nowadays 40 minutes less.

Engine 624 later became No. 5990 and survived until 1924, although latterly the commuter trains were hauled by larger and heavier locomotives, including some tank locomotives constructed in 1910-12. In 1897, the line through Rigaud was extended towards Ottawa, our Nation's capital and service via the "Short Line" (not to be confused with the Montréal-Saint John, N.B. route) began the following year. This left the section between Rigaud and Point Fortune

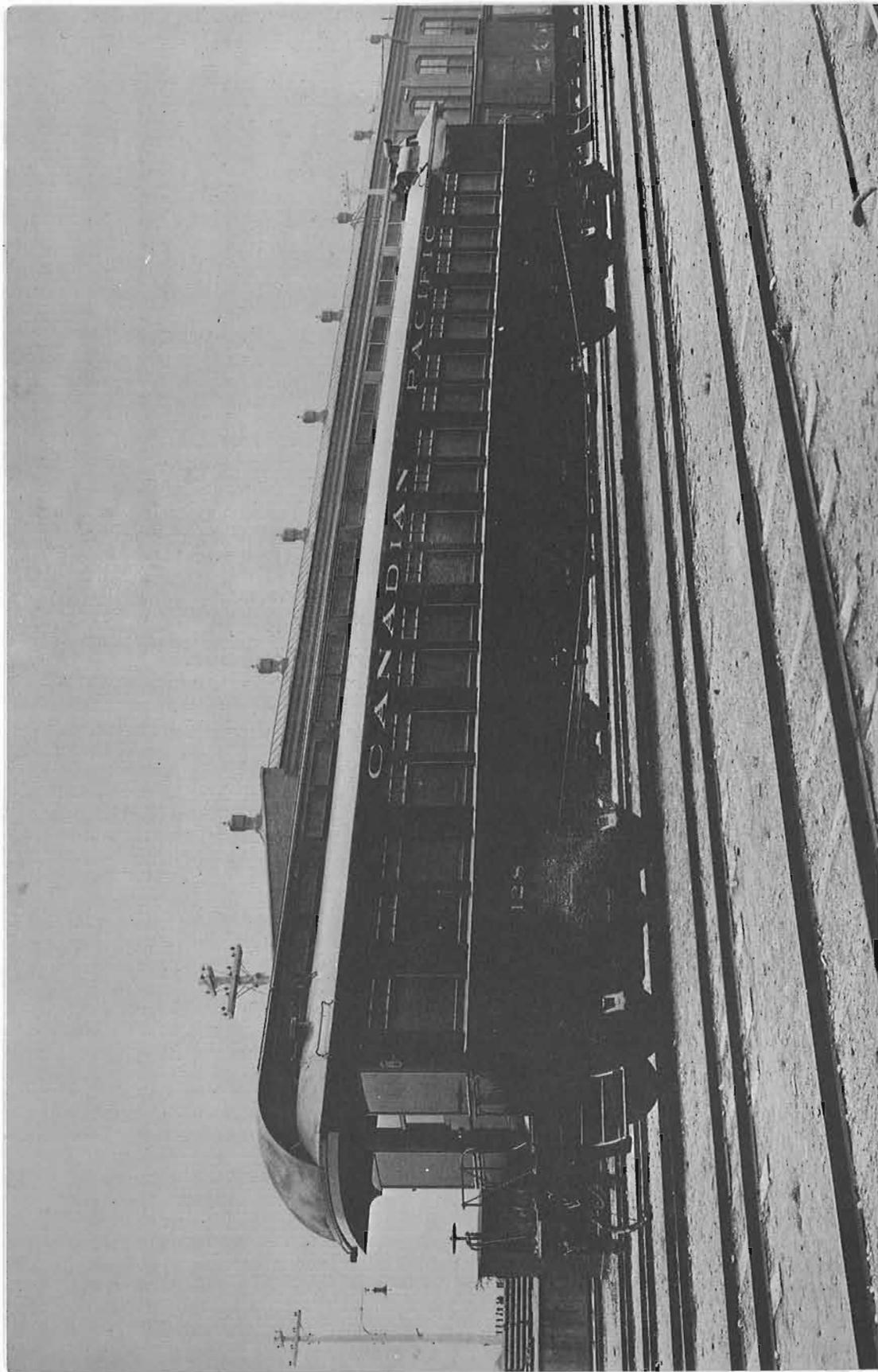


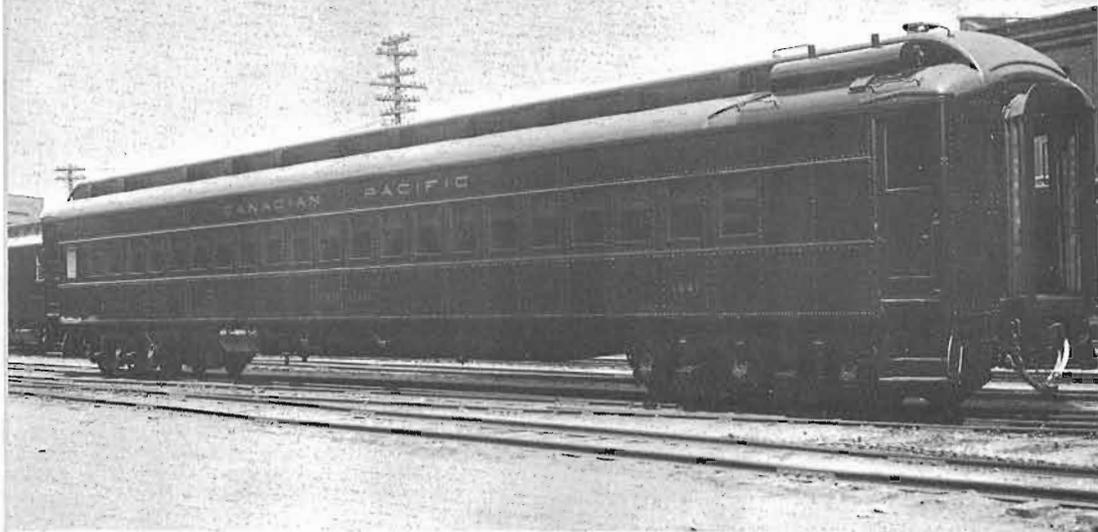
↑ BOARDING CAR 404590 PHOTOGRAPHED IN 1936 WAS BUILT ABOUT 1880 PROBABLY for the Credit Valley Railway. It was a second-class coach in the 1890's and represented the type used on the suburban runs before the special cars were built in 1904.

as a dead-end stub, which continued to be serviced by the daily suburban train from Montréal until the branch was abandoned in 1935.

Soon after the turn of the century, it became apparent that the C.P.R.'s suburban service was assuming more and more importance. In those days, the automobile was still impractical for daily travel to and from the Lakeshore and the trains carried all the commuters. At this time, the Canadian Pacific had double-tracked the line between Montréal-Windsor Street and Vaudreuil. In 1904, the C.P.R. constructed its first passenger coaches designed primarily for suburban use. These were the 300's (soon renumbered into the 100 series), of which more than 200 were built between 1904 and 1913 and used on many parts of the C.P.R. system. For nearly half a century, these open-platform, wooden, gas-lit cars were the mainstay of the suburban trains and the number of passengers carried and miles run by them was astronomical. Throughout this era, the Grand Trunk and its successor, the Canadian National Railways, operated a parallel service, with trains running at about the same times and stopping at the same stations. Many exciting stories have been told of the races between the commuter trains of the rival companies. Often, when the race was close, the commuters barely had time to get on or off the train and sometimes the dilatory ones were carried on to the next station or waited for the next train. Regrettably, no factual accounts of these exciting competitions seem to have survived.

As the years passed and more and more families settled in the western area of the Island, the suburban trains became longer and service became more frequent. As additional stations were opened, schedules were modified to include trains which would omit certain stops, followed by other trains which stopped at the stations that the first train had omitted. This resulted in a faster service

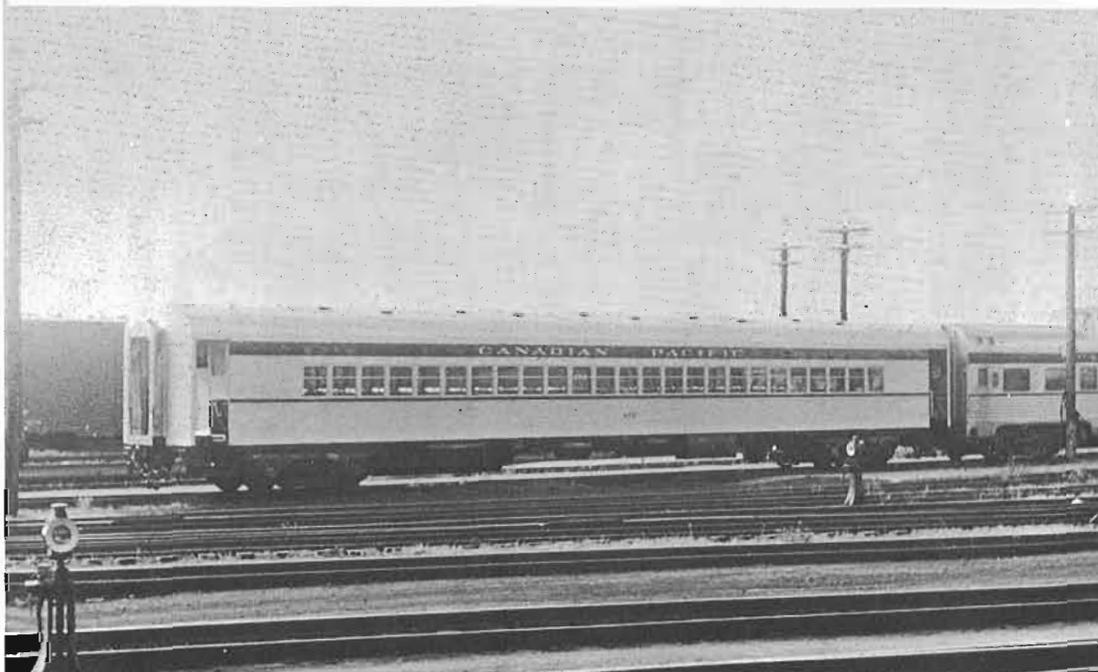




↑ THE THIRD GENERATION OF CANADIAN PACIFIC COMMUTER CARS, NO. 1441, WAS built as a first-class coach and was photographed as new in 1924. After 46 years in service in Canada, this car is beginning a new career in Peru.  
Photo courtesy of CP RAIL.

← CAR NO. 128 WAS A SUBURBAN CAR BUILT AT ANGUS SHOPS, MONTREAL IN 1906. Representing the "Second Generation" of commuter cars, this type were used in regular service on the Lakeshore until 1953.  
Photo courtesy of J.A. Shields Collection.

↓ THE FOURTH GENERATION - ONE OF CANADIAN PACIFIC'S 800-SERIES CARS - ONE of 40 lightweight commuter cars nos. 800-839, built by CAN-CAR, Montreal, in 1953. All of these cars are still in service. Photo courtesy F. Angus.





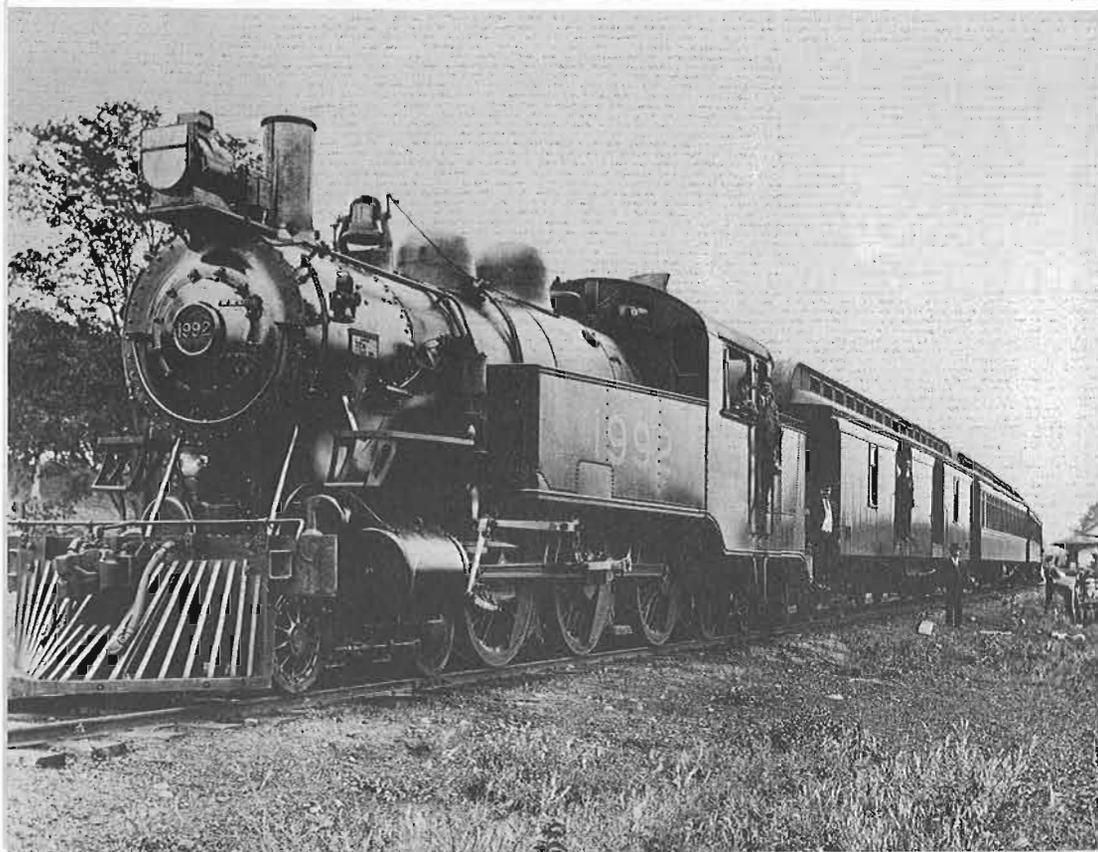
- ↑ CP RAIL'S "DAYLINER" NO. 9100, A TYPICAL R.D.C.2 UNIT, CAN BE OTHERWISE described as the "Fifth Generation" of Lakeshore commuter cars. Photo courtesy of CP RAIL.



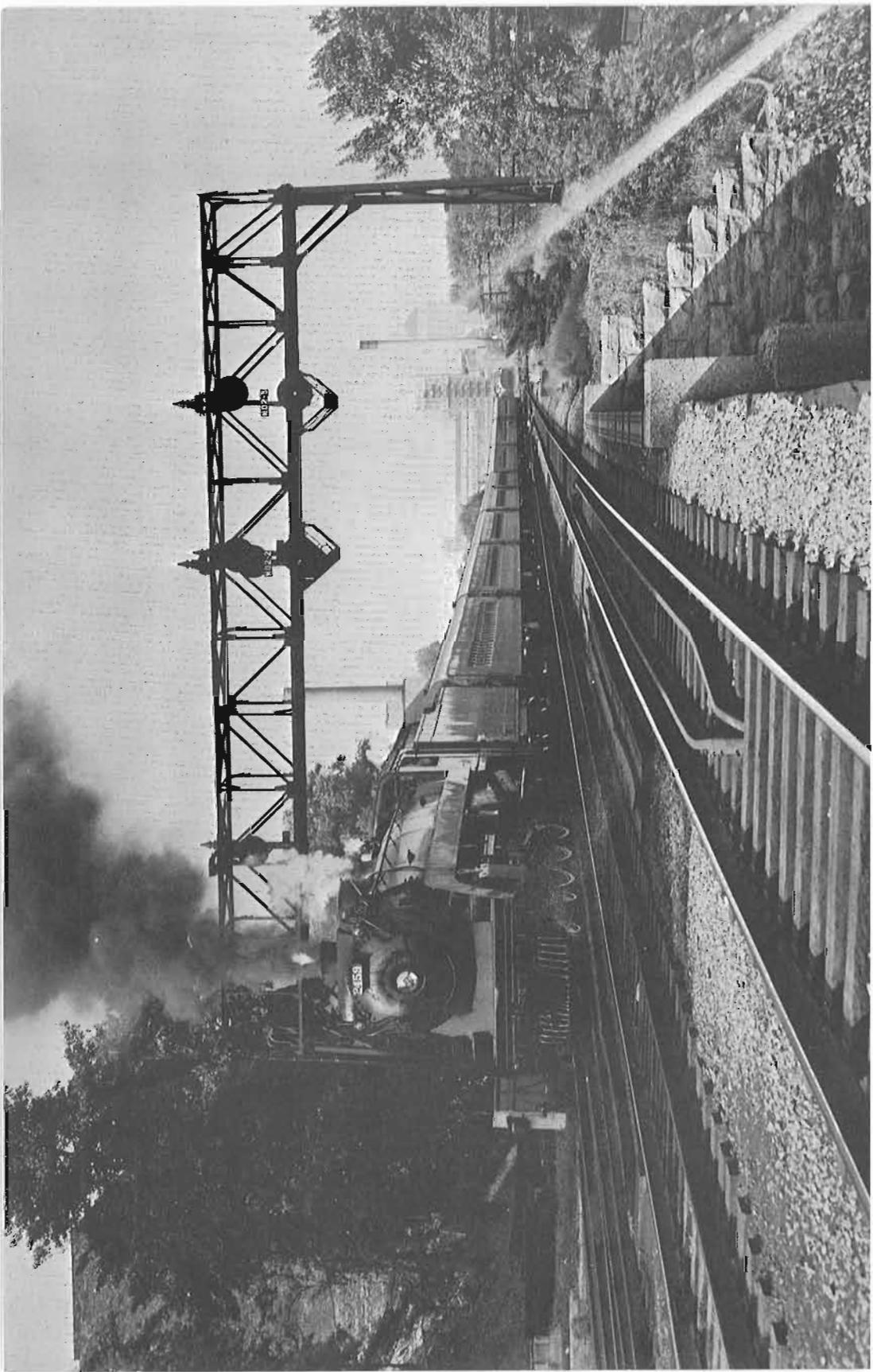
- ➔ AN ASSEMBLY OF TIMETABLES FOR CANADIAN PACIFIC'S LAKESHORE COMMUTER service from 1896, 1906 and 1921. These timetables are dated precisely on the back of each timetable. Courtesy collection F. Angus.

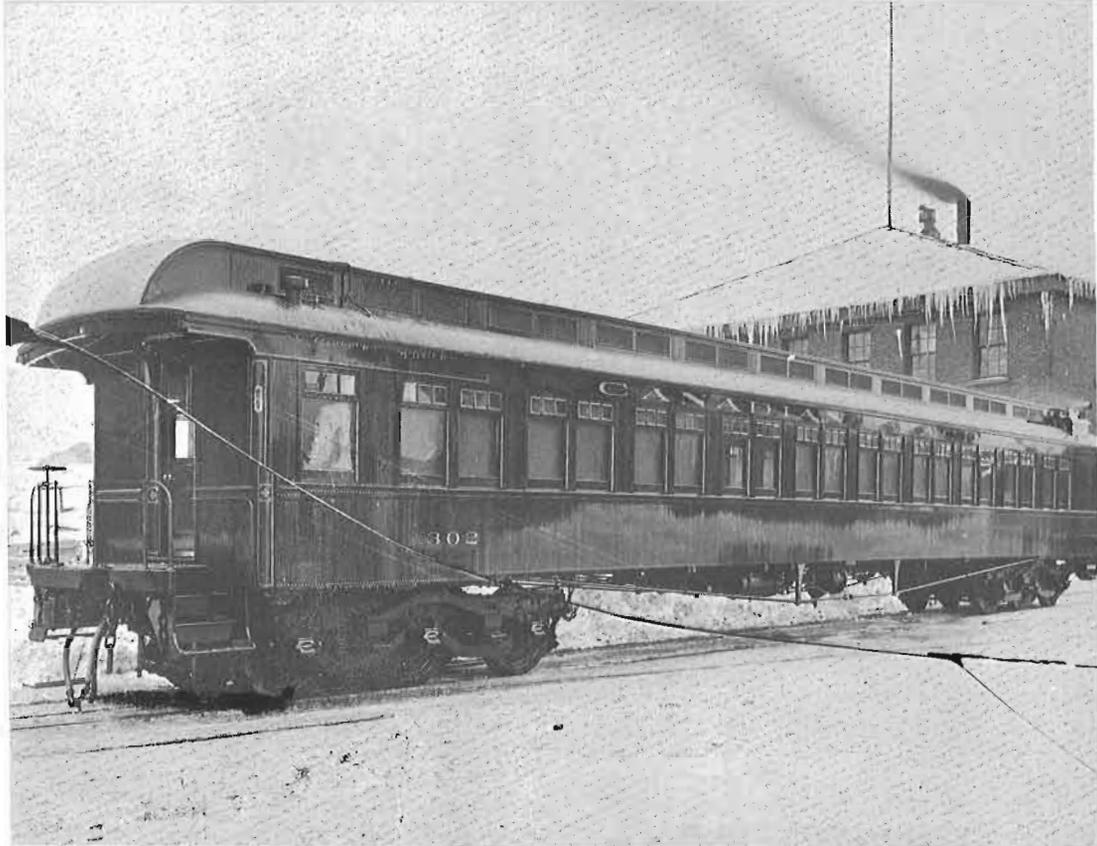


- ↓ A CANADIAN PACIFIC COMMUTER TRAIN, HEADED BY ENGINE NO. 1992, A 4-6-4T, stands in the station at Pointe Fortune, Que. about 1910. The engine was scrapped in 1934 and the line between Rigaud and Pointe Fortune was abandoned about 1936. Photo courtesy collection Roger Boisvert.









↑ ONE OF CANADIAN PACIFIC'S FIRST SUBURBAN COACHES, CAR NO. 302 WAS SOON renumbered to 102. This car was built at Hochelaga Shops in 1904.

Photo courtesy J.A. Shields Coll.

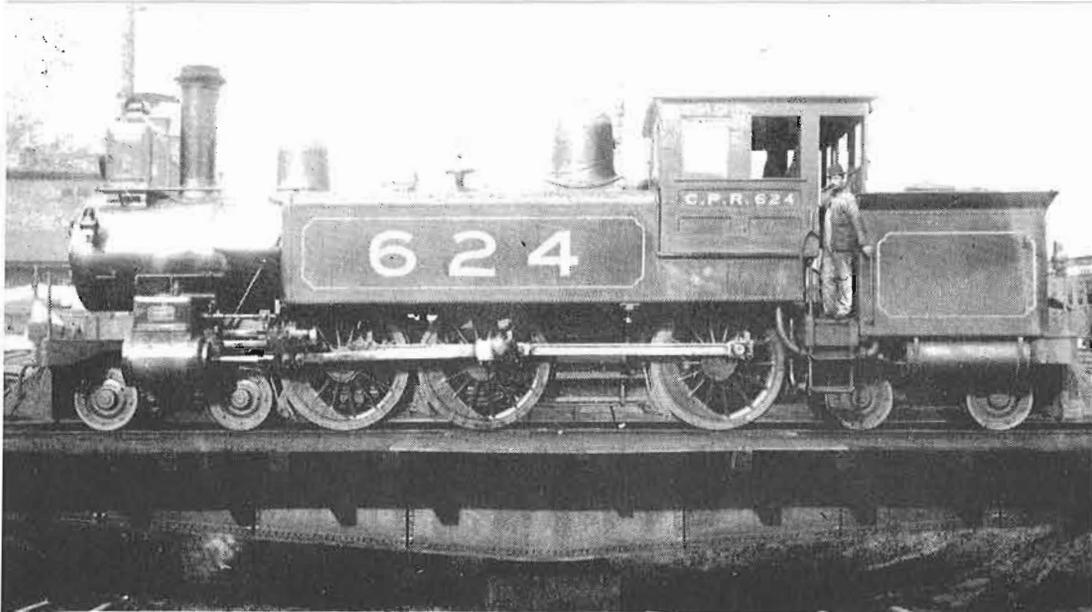
← WHEN THE 800-CLASS COMMUTER CARS WERE NEW, CANADIAN PACIFIC ENGINE NO. 2459 powered a train of them up the hill from Windsor Station to Westmount about 1955.

Photo courtesy of CP RAIL.

while still covering all the station stops. In 1935, the Point Fortune branch was abandoned, but little else changed, despite the increasing automobile traffic and the construction of a divided highway along the Lakeshore, now identified as Route 2-20, parallel to the main lines of both the Canadian Pacific and Canadian National. The trains of 1950 differed but little from those of forty years before although steel cars, displaced from other runs, gradually joined the commuter train consists.

The first big change came in 1953, when 40 new 103-seat, lightweight suburban coaches were added to the company's roster. Being numbered 800 to 839, they are all still in use, although they are now painted in CP RAIL's silver and red livery. With the coming of the 800's, the old wooden cars were finally withdrawn and although a few survive as boarding cars, the majority have long since been scrapped.

The parallel commuter service, operated by Canadian National Railways, with their distinctive vintage-1914 tank locomotives, was cut back to Dorval in 1955 and was discontinued entirely in 1961. In the same year, the Canadian Pacific built a new roadbed just to the north of its original alignment between Ballantyne Tower (approximately Lachine) and Dorval. This enabled the Canadian National to



↑ A REMARKABLE 4-6-4T, no. 624 WAS BUILT BY CANADIAN PACIFIC [REDACTED] in 1893 for commuter train service. Photo courtesy Railway & Locomotive Historical Society.

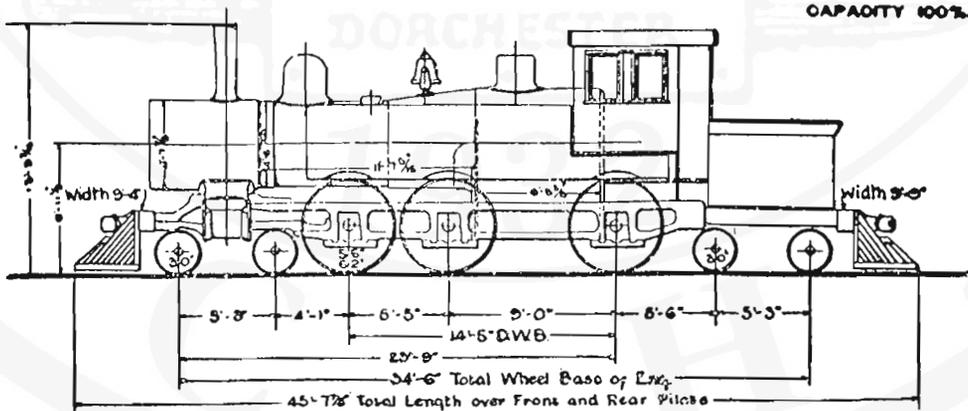
→ CANADIAN PACIFIC RAILWAY ENGINE NO. 2816 ROLLS DOWN THE GRADE WEST OF Grand Boulevard to Montreal West with a train of 800-class and heavy-weight coaches at the close of the steam-power era on Montreal's Lakeshore commuter trains. Photo collection P. Murphy.

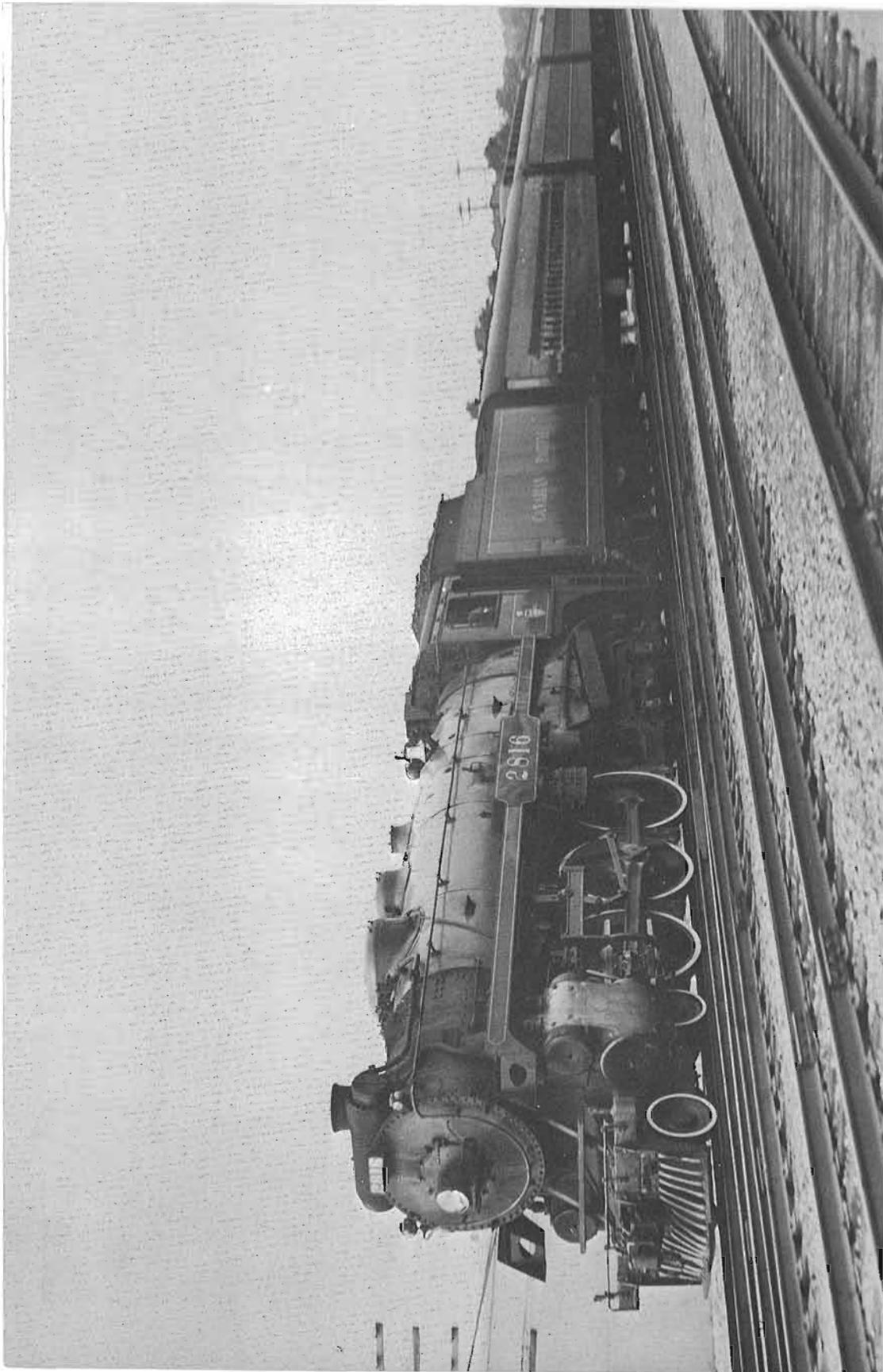
↓ OFFICIAL DIAGRAM OF CANADIAN PACIFIC RAILWAY LOCOMOTIVE NO. 624 (LATER no. 5990), the first 'suburban engine on the Lakesore. Built by Canadian Pacific in 1893, she was scrapped in 1924.

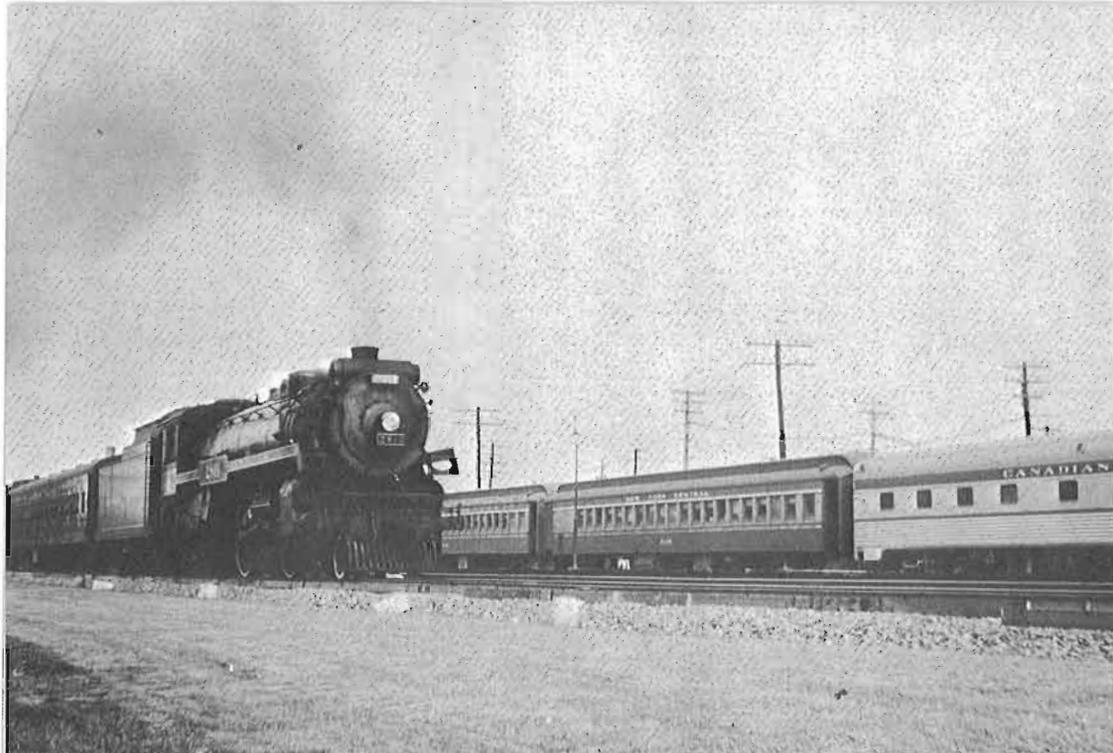


4-6-4 SUBURBAN TANK LOCO.

CLASS T 1.  
SUB CLASS T1a  
CAPACITY 100%





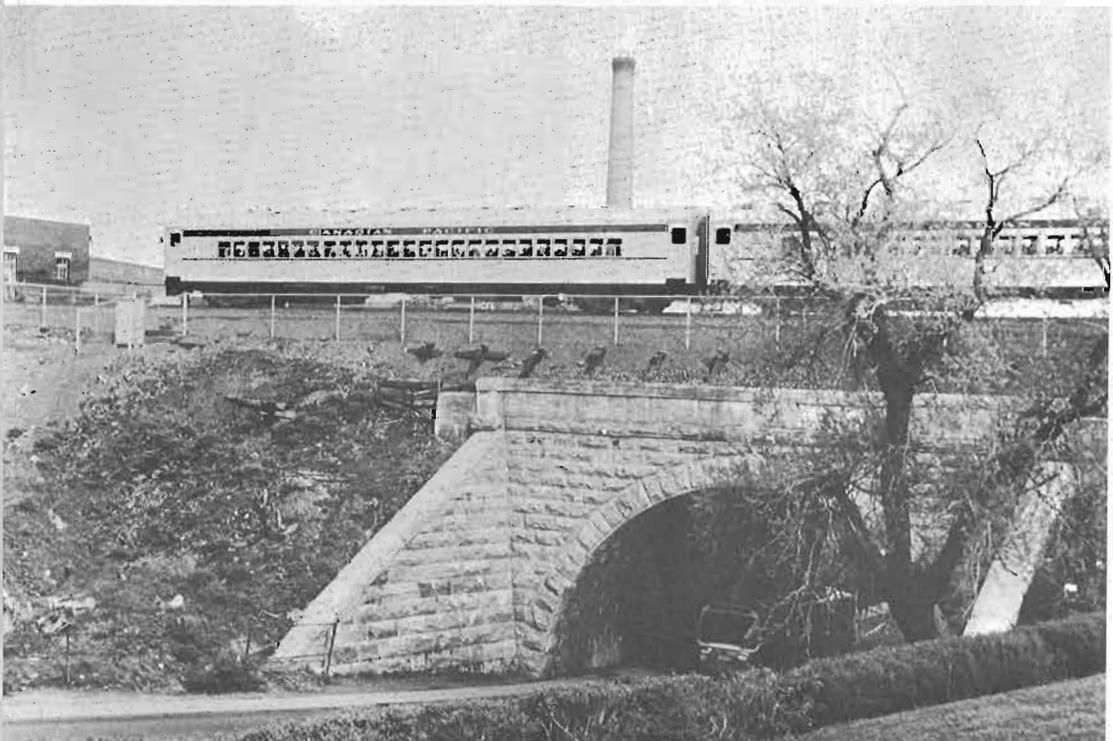


CANADIAN PACIFIC RAILWAY ENGINE NO. 2811 LEAVES WESTMOUNT ON A SUNNY June afternoon in 1960 with a load of homeward-bound commuters. Note the old New York Central coaches in the background. A week later, the "steamers" were retired and the diesel-electric era began.

Photo courtesy of P. Murphy.



CP RAIL COMMUTER CAR NO. 819 RIDES ON THE REAR OF THE "5.15" OVER THE Glen overpass on a warm summer day in 1969. Photo courtesy F. Angus.



relocate its main line west from Turcot Yard along the original 1856 Grand Trunk right-of-way, thus avoiding the slow passage over the many road crossings in Lachine. After 1955, the Canadian Pacific was the sole proprietor of Lakeshore commuter service, apart from the ever-increasing private car and bus traffic. The year 1957 saw the introduction of self-propelled BUDD R.D.C. "Dayliners" and these vehicles have continued to play an ever-increasing role in the suburban traffic picture. About this time, the milk trains which had provided an essential service for so long finally succumbed to the tank-truck competition. Steam locomotives continued to haul practically all the non-R.D.C. commuter trains until 1960 and by the spring of that year, the Montréal-Lakeshore commuter trains were the last stronghold of steam on the entire Canadian Pacific system. For a time that spring, the steamers disappeared, but they reappeared briefly thereafter. However, in June, 1960, the diesels took over for good and the commuter trains assumed the appearance they retained until 1970.

The roster of Canadian Pacific's suburban passenger coaches in the 1960's included forty 800-class cars, with about thirty heavyweight steel coaches of the 1920's and '30's, as well as the R.D.C.'s used on some of the trains. Car 1700, a 1938 streamlined coach was rebuilt in 1968 and joined the fleet and the following year, it and all the 800's were repainted in the new CP RAIL colours. Then, on April 27, 1970, the new gallery cars, 900-901 and 920-926 made their appearance and the schedules and consists of the commuter trains were greatly changed. All of the old heavyweight cars were retired and the 800's were grouped into three trains of 13 cars each, leaving one 800 and no. 1700, as spares. The gallery cars run as one train and there are two trains of R.D.C.'s, for a total of six trains.

The modern streamlined trains of 1970, which carry thousands of passengers daily from their homes to their offices in Montréal and back again in the evening, in all kinds of weather, are a far cry from old engine No. 624 and its wooden coaches, or even from the commuter trains of 20 years ago. As the highways get more and more clogged with autos, the saturation point of the roads comes ever nearer and the construction of new expressways, at astronomical cost, only serves to postpone the inevitable for a short interval, while increasing the contribution to air pollution, already intolerably high.

The commuter train, meanwhile, continues to occupy a very important position in the suburban area picture and, by making the commuter trains so attractive, CP RAIL has done much to get the commuters off the highways and on (or back on) the rails. In this automobile-conscious age, the provision of fast, efficient suburban trains is a major factor in convincing the travelling public that the automobile is not necessarily the best way to go and, as the number of suburban homes increases and parking spaces in the city decrease, the importance of CP RAIL's Lakeshore commuter service is indisputably assured for many years in the future.



# NEW LOOK ON THE LAKESHORE

F. Angus

**F**riday, April 24, 1970, was the last day of operation of the old consists of the commuter trains from CP RAIL's Windsor Street Station in Montréal. That morning, these trains were made up of their usual equipment as they came in to Windsor Street from the Lakeshore.

During the day however, considerable switching was done to make up the new trains of 13 cars each of the 800 class coaches. Since the new gallery cars were not yet in service, some of the old heavy-weight cars were marshalled together for one last run and the last regular train of the old heavyweight passenger cars left Windsor Station at 5:27 p.m. (1727 hours) on April 24.

The consist of this train, with the construction dates of the cars, is of interest:

Diesel electric locomotive No. 4069

Cars 1441 (blt.1924) 1433 (blt.1923) 1335 (blt.1931)  
1469 (blt.1928) 1486 (blt.1926) 1303 (blt.1929)  
1476 (blt.1928) 1350 (blt.1929) 1700 (blt.1938)

It is interesting to note that all but the last car were heavy-weights and the first three cars had been used recently on the Canadian Railroad Historical Association's excursion to Drummondville, and were making their first run since that trip.

At 1727 hours, this last train departed from Windsor Station, Montréal, in a pouring rainstorm. Despite the load of 8 heavy-weight coaches, the schedule was maintained, although few passengers were riding beyond Pointe Claire and therefore subsequent station stops were short. When the train reached the end of its run at Vaudreuil, it marked the end of an era in Lakeshore commuter service. The next day, the old cars were deadheaded back to the Glen Yards and placed in storage awaiting disposition.

The subsequent disposition of these cars is of interest. Twenty-four of these old heavyweights have been acquired by the Peruvian Corporation and will be shipped to Peru in South America, in the near future. The cars involved are: 1335, 1336, 1345, 1347, 1348, 1349, 1350, 1356, 1360, 1361, 1433, 1441, 1455, 1458, 1459, 1460, 1465, 1467, 1469, 1476, 1479, 1480, 1486 and 1854. This will write "finis" to the



← Map of the Montreal urban and suburban area showing the commuter routes operated by Canadian Pacific Railway-CP RAIL. Courtesy CP RAIL.

1400's and 1800's and the only heavyweight coaches remaining on the system will be 1301, 1302, 1303, 1305, 1307, 1310, 1322, 1324, 1328 and 1331 in Montréal and 1334 and 1337 on the Dominion Atlantic Railway in Nova Scotia. On May 12, 1970, cars 1433 and 1441 were moved to the wharf for loading, preparatory to the sea voyage to Peru.

Saturday, April 25, before the annual spring change of time, the new gallery cars left Montréal at 1610 as Train 283 and carried passengers for the first time. However, the first official run of the new cars was the following Monday, April 27, when diesel units 4075 and 8765 hauled cars 901, 926, 925, 924, 923, 922, 921, 920 and 900, in that order, leaving Rigaud, Qué., at the western extremity of the commuter service zone, for Montréal at 0648 as Train 272.

At 0815, the inaugural train arrived at Windsor Station and the first commuters to enjoy this new facility disembarked from the new cars. The long-awaited changeover had taken place and the "new look" had come to Montréal's Lakeshore.

<b>CP Rail</b> 	<b>Coupon Billet 10</b>	of 10 trip commutation ticket d'une série de 10 voyages	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	No stop-over allowed. Good for 36 months from date of issue. Aucun arrêt autorisé. Valable pour 36 mois de la date d'émission.	
	Form 660 00001		
<b>CP Rail</b> 	<b>Coupon Billet 9</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	
<b>CP Rail</b> 	<b>Coupon Billet 8</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	
<b>CP Rail</b> 	<b>Coupon Billet 7</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	
<b>CP Rail</b> 	<b>Coupon Billet 6</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	
<b>CP Rail</b> 	<b>Coupon Billet 5</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	
<b>CP Rail</b> 	<b>Coupon Billet 4</b>	One way between/Un voyage entre	<b>Employee</b>
	<b>Montreal and/et Ste. Anne's</b>	Form 660 00001	

REPRODUCTION OF THE COMMUTER TICKET recently introduced for commuter passenger service on Montreal's Lakeshore.

THE LAST LAKESHORE COMMUTER TRAIN OF heavyweight coaches stops at Dorval Station in the afternoon of Friday, April 14, 1970. The car in the foreground is no. 1441. Contrast this picture with that of the same car when new on page 183. Photo by F. Angus.



THE FRIDAY AFTERNOON TRAIN OF APRIL 14, 1970, discharges passengers at Beaconsfield, Qué., before completing the last few miles of its run into retirement. All of the cars in this train are going to Peru, except nos. 1303 and 1700.

Photo by F. Angus.



# THE GALLERY CARS

Bernard Wilkinson.

## INTRODUCTION

The spring timetable came out on April 26, 1970, and with it, CP RAIL introduced a new suburban train of nine gleaming, space-age, stainless-steel, gallery-type coaches. The new train operates between Windsor Station, Montréal and points along Montréal's Lakeshore.

The diesel-electric locomotive is on the west end of the train and will pull it on its westward runs and push it back on the eastward trips. This method of operation obviates the necessity of turning the train around at each end of its run. In operating terminology, this is known as a "push-pull" operation. To make this kind of operation possible, two of the new cars are "control" cars and have an operator's cab at one end.

During the "push" phase of the operation, the driver is in the control-car cab and lines running through the train to the locomotive carry the commands that control the train.

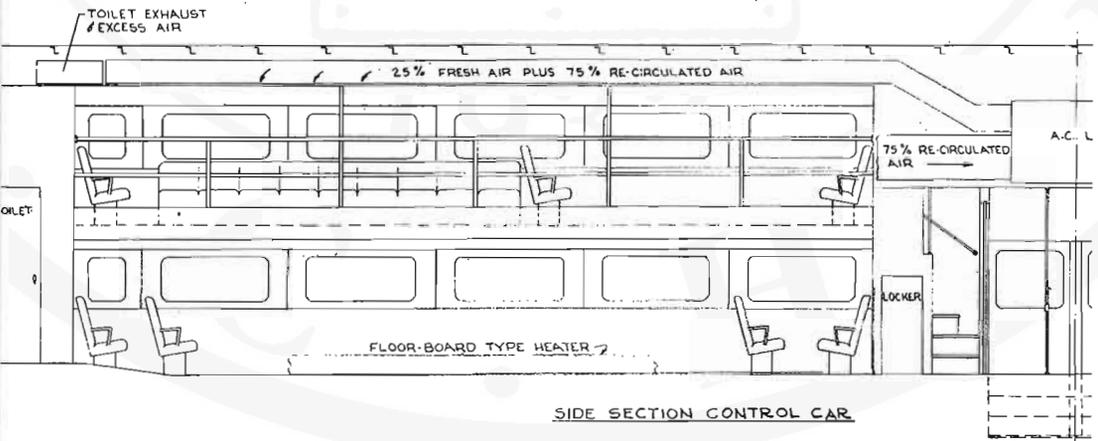
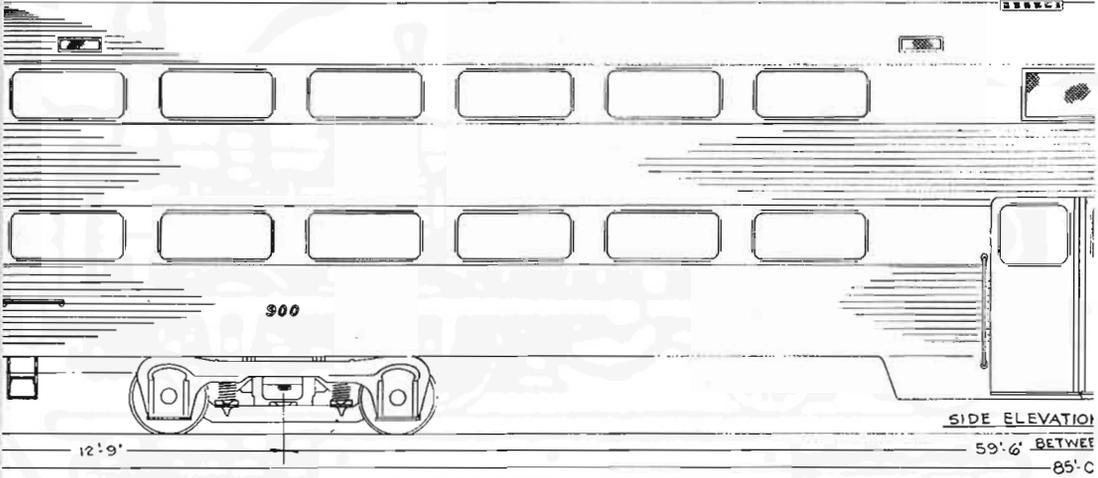
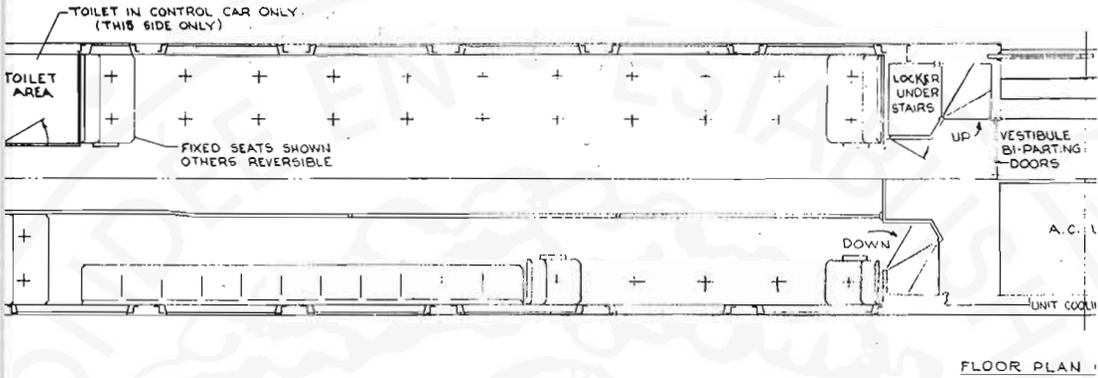
Gallery-type passenger cars are not new to the North American continent, since several roads operate similar cars in the Chicago commutation zone. Their new Canadian cousins however, have several notable differences and innovations. Before deciding to build gallery cars, CP RAIL conducted an intensive study to determine what type of equipment would be best suited to the needs of modern commuter service. It was decided that the gallery-type car would meet all of the requirements and, at the same time, would provide the passengers with a comfortable and efficient service.

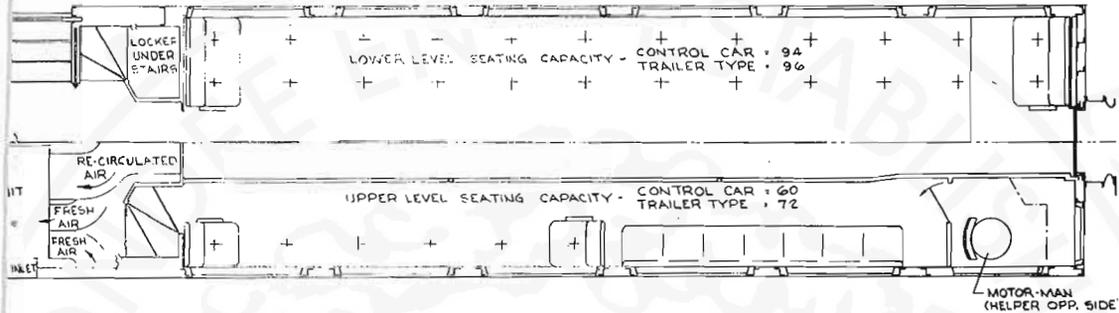
## GENERAL DESCRIPTION

The most important feature in the new cars is that they each have four upper gallery seating areas. Each gallery has its own spiral staircase located adjacent to the central vestibule.

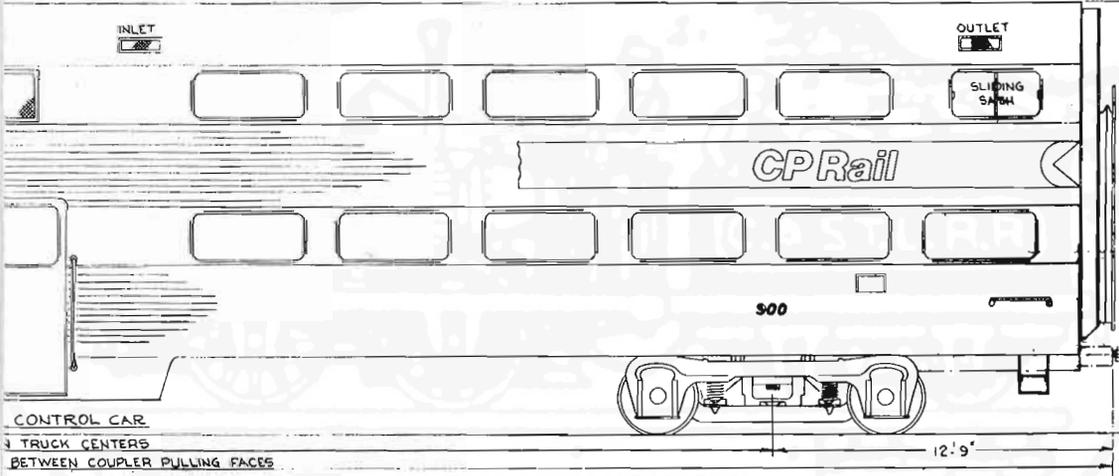


 FLOOR PLAN AND SIDE ELEVATION OF ONE OF CP RAIL'S GALLERY CARS - A CONTROL car, showing the seating arrangement and facilities. Courtesy CP RAIL.

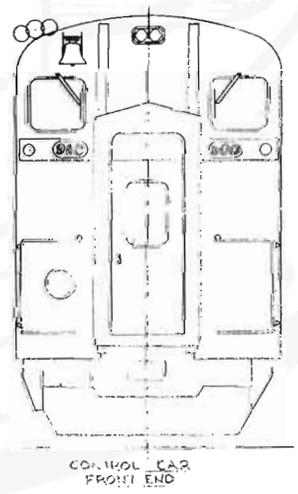
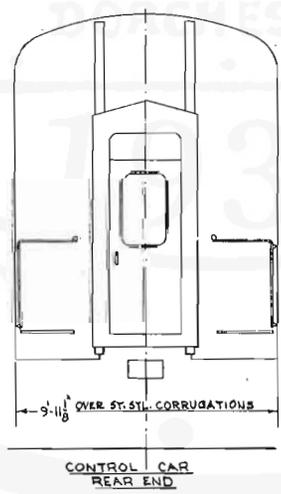
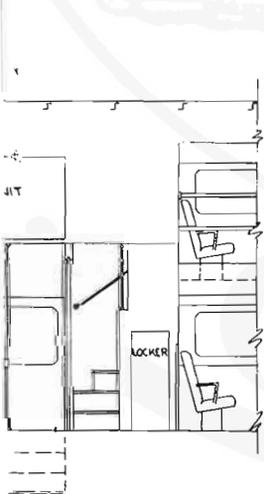




CONTROL CAR



CONTROL CAR



Wide electrically-operated sliding doors allow rapid loading and unloading of passengers. There are two types of cars. Seven are called trailer cars and two are called control cars. In addition to the driver's cab, the control cars are also equipped with a toilet and water-cooler.

The passenger capacity of the new cars is as follows:

Control cars - upper level - seated	60
Control cars - lower level - seated	94
Control cars - standees - approximately	30
Control cars - total passengers.....	184
Trailer cars - upper level - seated	72
Trailer cars - lower level - seated	96
Trailer cars - standees - approximately	30
Trailer cars - total passengers.....	198
Estimated Total passengers per train.....	1,800

The control cars carry fewer passengers because of the space occupied by the driver's compartment on the upper level and because of the toilet on the lower level. The control cars are numbered 900 & 901 and weigh 113,000 lbs., while the trailer cars are numbered 920 to 926 inclusive and weigh 110,000 lbs.

This light weight, compared to conventional equipment, is a direct result of stainless-steel construction. For example, the present single-deck commuter coach weighs 105,000 pounds, which is almost as much as the new cars which have approximately double the passenger-carrying capability.

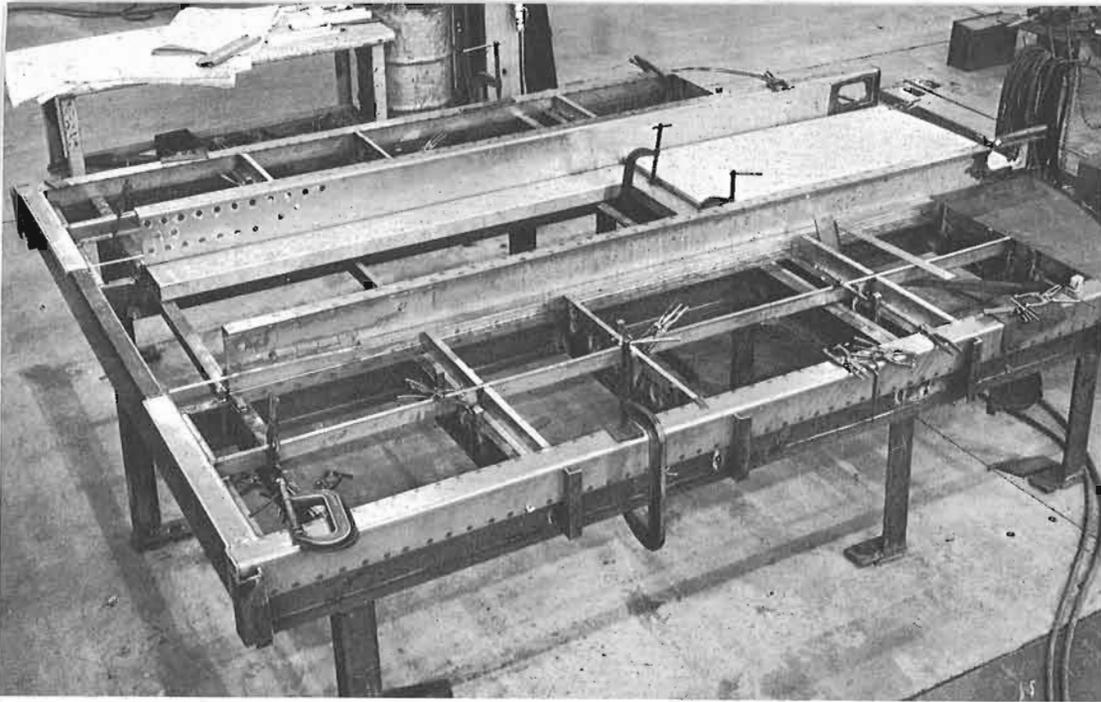
Stainless steel being much stronger than ordinary carbon structural steels, its use permits a significant weight reduction in each car. This reduced weight results in a saving in the cost of fuel for the diesel locomotives. Based on the experience gained through the use of stainless steel cars on the "Canadian", the advantages of its use were obvious. Stainless steel is durable and permanent and will last for the lifespan of these cars.

Stainless steel, as its name implies, is corrosion-resistant and - an aspect which is of particular importance in commuter cars - is highly resistant to grime, soot and the corrosive vapors found in urban areas. Stainless steel eliminates the necessity of repainting routinely and cleans easily. Its soft lustre presents an attractive appearance to the passengers.

## CONSTRUCTION

CP RAIL's gallery cars were built by Canadian Vickers, Ltd. in Montréal, in the same shop where the cars for Montréal's METRO, the city's subway, were built.

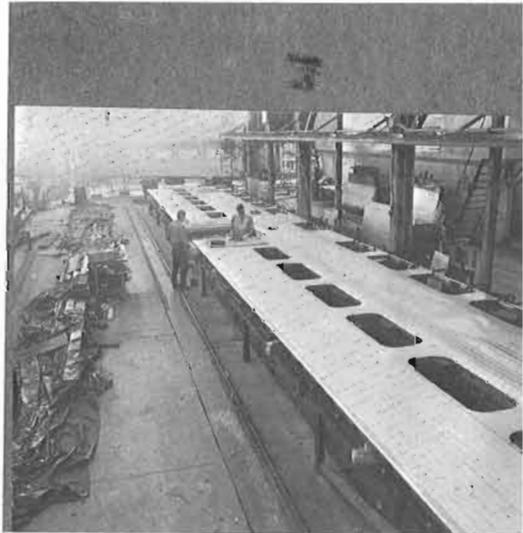
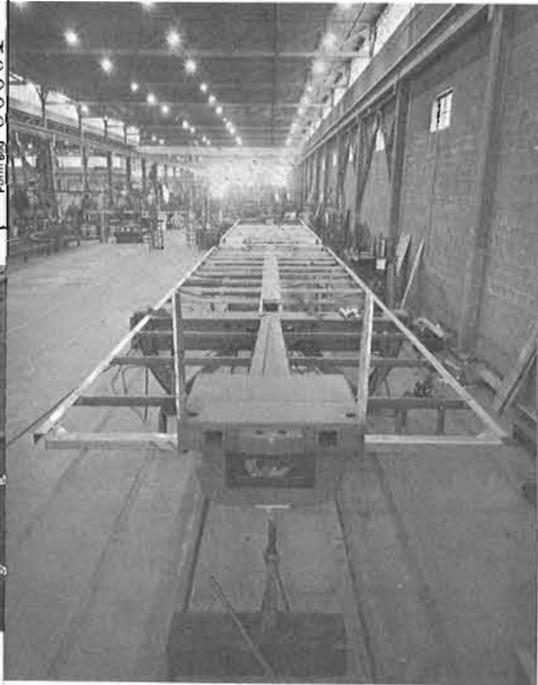
The underframes, side-walls, end-walls and roof structures were all assembled by welding on specially designed jigs. When the first body shell was completed, it was subjected to rigid structural testing, in accordance with Association of American Railroads exact-



↑ THE GALLERY CAR ENDS ARE ASSEMBLED IN a jig at Canadian Vickers Limited, prior to the welding stage. Photo by CP RAIL.

← THE MAIN UNDERFRAME HAS BEEN COMPLETED and is now ready for the next step in the construction process. Photo CP RAIL.

↓ THE GALLERY CAR SIDES ARE PUT TOGETHER in the same manner as the main frame and car ends - tightened up in a jig before being welded. Photo by CP RAIL.



ing requirements. These tests were conducted to confirm that the completed structure conformed to the engineering strength calculations. Thus, this series of tests confirmed the soundness of the design. There were several tests conducted, but perhaps the most interesting and most important was the "squeeze test". In this test, the car shell was placed in a huge steel "squeeze" frame and the couplers and draft gear at each end were removed and replaced by large diameter steel bars, which were inserted into the centre sill, until they contacted the draft-gear stops. One of these bars was connected to a large hydraulic jack. During the "squeeze" operation the jack applied a force of 800,000 pounds to the car structure. The strain gauges at various locations on the structure transmitted readings to electronic equipment to measure the stresses produced in the car body. The upward deflection was measured to determine that it was within the prescribed limits. The compression of the structure, under this pressure, was also measured.

Visual evidence of stressed areas was provided by painting the structure with a "stress-coat" of paint, whereupon it could be easily seen whether or not these highly-stressed areas were acting normally.

After the tests were completed, it was essential that no permanent deformation of the structure should remain; otherwise, it is a reason for rejection of the design.

Much to the credit of CP RAIL and Canadian Vickers engineers, the car structure passed all these compression tests with flying colours.

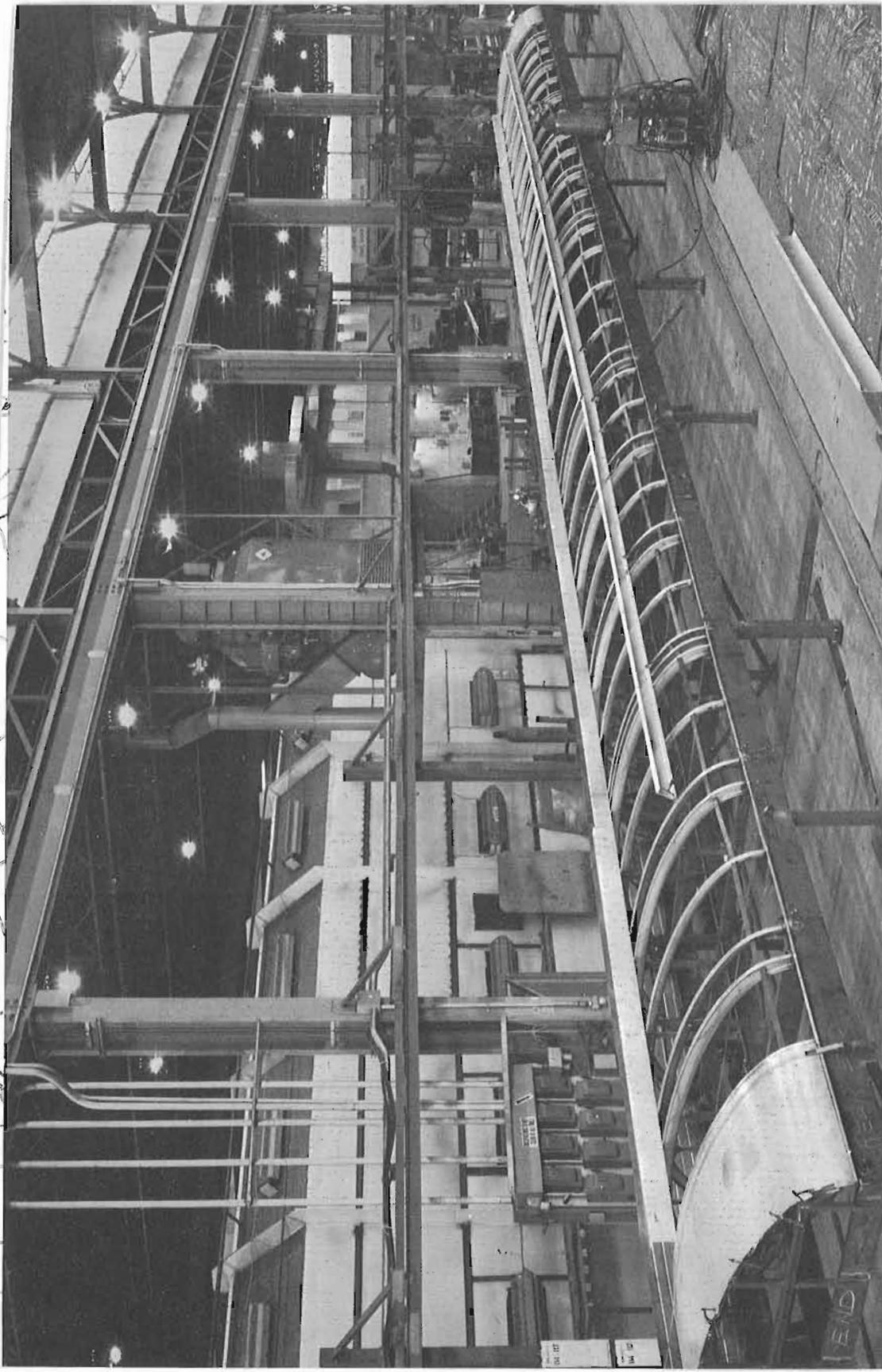
#### INTERIOR FINISH

When the structural test program was completed, the finishing of the interiors began in earnest.

The interior decor of the cars had been tastefully chosen to provide a bright, airy and colourful atmosphere. Materials were selected not only for reasons of appearance but also for durability and ease of maintenance. For example, the floor-covering chosen was "Flexiflor". In the centre of the floor, it is red and at each side, under the seats, it is black. CP RAIL's decision to use this material was based on experience. "Flexiflor" has seen 18 years of use in some passenger cars and it has never needed repair or replacement.

The very comfortable seats are covered in green, breathable nylon and the hardware is chrome-plated. Some of the seats are the "throw-over" type, for proper directional orientation of the passengers on the return trips.

→ THE FINAL COMPONENT OF THE GALLERY CAR IS THE ROOF STRUCTURE. THE PIECES for this element of the car are shown here bolted in the jig prior to welding. Photo courtesy of CP RAIL.



ORDER NO. 28700  
DECEMBER 30, 1968.  
NEG. # 88/3511



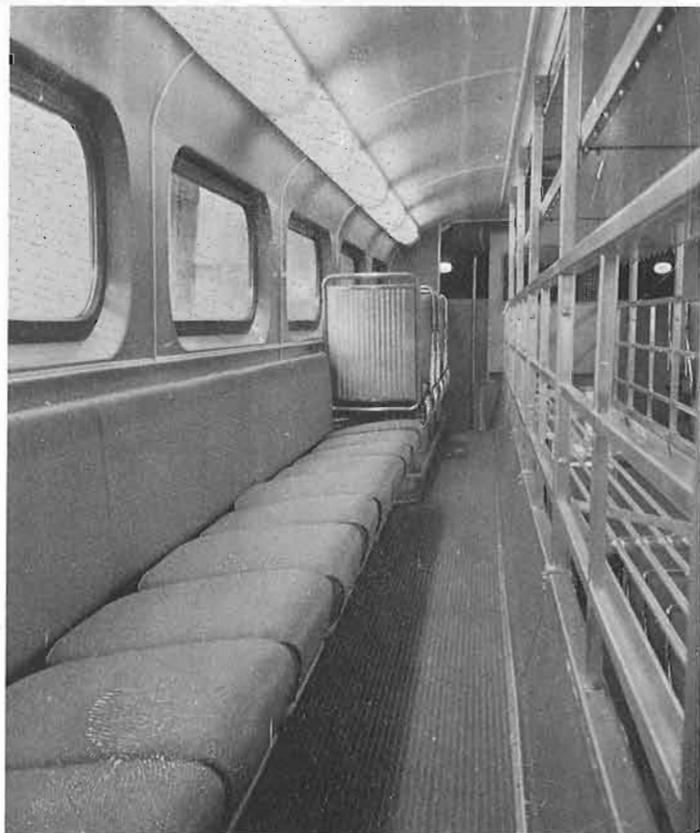
↑ AT CANADIAN VICKERS LIMITED, THE UNDERFRAMES FOR THE NEW CP RAIL GALLERY cars are being assembled in a jig before being welded. Photo by CP RAIL.

→ AN INTERIOR VIEW OF THE COMPLETED GALLERY CAR STRUCTURE-STAGE 8 IN the construction process, followed by a picture of the first car structure in the "squeeze" frame. The white areas are "Stress-coated" to show the areas affected during the test. Photos CP RAIL.





AN INTERIOR VIEW OF THE LOWER level of the passenger compartment of one of the new gallery cars. The accompanying photo shows the gallery arrangement. Photos CP RAIL.



The side-wall panels are "Formica" in a terracotta and cream combination. The windows are "Solex" tinted glass on the outside panes and safety plate-glass on the inner panes, which are gradually tinted, being darker at the top. The side-window panes are one-quarter inch thick. All other glass panels in the car are untinted. Tinting helps to reduce the bothersome glare of the sun and is also important in preventing thermal transmission on hot summer days when the air-conditioning system is in operation.

The glass in the end-doors of the control cars, at the cab end and also the cab windshield are safety plate-glass 9/16th. inch thick.

It is also interesting to note that the vestibule at the centre of the car is completely stainless-steel lined and the spiral stairways to the galleries are also of stainless steel. Another innovation in this pollution-conscious age is the installation of chemical-type toilets in the control cars. This eliminates the discharge of effluent onto the right-of-way.

#### LIGHTING, HEATING AND AIR-CONDITIONING

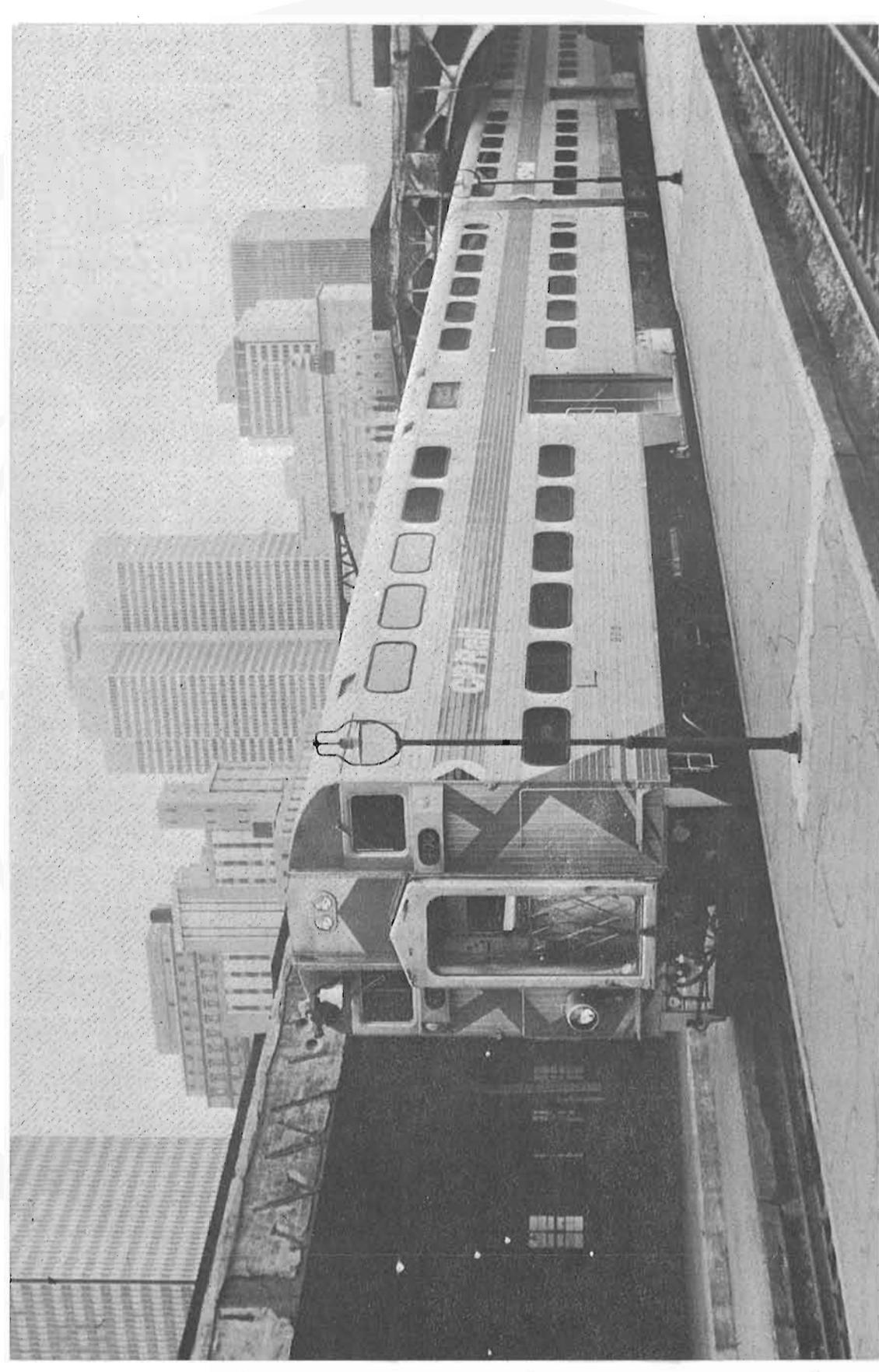
The interior of the new cars is lighted with fluorescent fixtures and operates on 110 volts A/C. There is also an emergency lighting system that operates off the batteries on 32 volts D/C.

Each car has two separate air-conditioning systems, - one for each end. These are mechanical refrigeration units and have a capacity of 8 tons each and operate on 220 volts A/C.

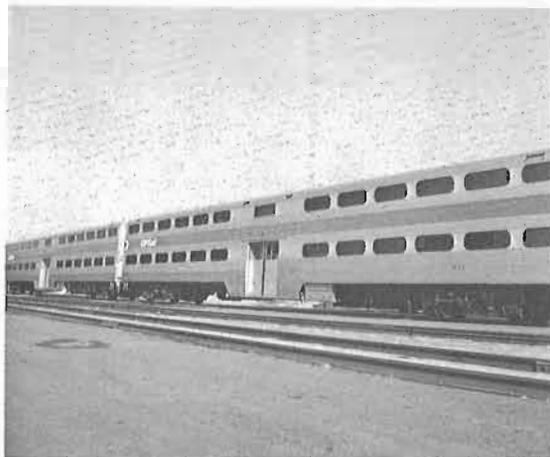
The heating system, essential for cold-weather comfort, is electric. The heaters are installed at the junction of the side-wall and the floor and are continuous for the full length of the passenger compartment. A 1000-watt electric heater has been installed under the bottom step at the side door, in the vestibule. This helps to keep the step free of ice and snow in wintertime layover periods and also keeps the door pocket clear of ice and snow which could soon foul the proper operation of the doors.

Each car is equipped with its own electrical generating system. A Cummins diesel engine drives a generator which has an output of 75 kilowatts. The electricity developed is used for the heating and air-conditioning systems and also for the lights. In the event of the failure of the diesel engine in one car, power is supplied from an adjacent car, since the cars are trainlined in sets of two. This arrangement permits full lighting and air-conditioning, in seasons of summer temperatures and partial heating during the cold weather. However, the electrically-operated sliding doors, as well as the control car headlights, "gyrolites", marker lamps, chemical toilets, etc., are arranged to operate on the 32-volt D/C system. In the case of a total power failure, all cars could be brought back for maintenance without operational difficulties.

Exhaust gases from these diesel engines on each car, after passing from the engine through the muffler, are piped up one end of the car to roof level. This provision has been made so that passengers on station platforms will not be bothered by the fumes. For the engine cooling system, a special shroud has been designed to en-







↑ THE REAR END OF THE GALLERY CAR IS FITTED WITH AN EXHAUST PIPE WHICH conveys the fumes from the diesel motor to the car roof level, away from the passengers on the platform. Photo courtesy CP RAIL.

↗ A SIDE VIEW OF THE NEW GALLERY CARS - USED FREQUENTLY IN PUBLICITY releases by CP RAIL - shows the impressive size of the car.

↘ ON THE FIRST DAY OF REGULAR SERVICE, THE NEW GALLERY CARS FIT NEATLY under the canopy of the platform at CP RAIL's Windsor Station, Montreal.

AT THE END OF ITS FIRST RUN IN REGULAR SERVICE, THE COMPLETE TRAIN OF CP RAIL gallery cars poses at Hudson, Que., on April 29, 1970. F. Angus.

close the radiator and fans in the winter. The resulting heat that is trapped is utilized in preventing a build-up of ice on certain components.

#### PERFORMANCE IN SERVICE

The new gallery cars have been equipped with the latest design of truck, incorporating soft long-travel springs and roller bearings. CP RAIL conducted ride tests on the new cars and, utilizing impact ride recorders, determined that these cars are among the best for ride quality in the fleet.

For those of us who are not fortunate enough to live in Montréal's Lakeshore district, an afternoon trip to Ste-Anne-de-Bellevue and Hudson would be a refreshing and enlightening experience and might even convince some city buffs to move to the suburbs.

Train 265 leaves Montréal Windsor Station for Hudson at 1610 with 5 or 6 cars and arrives back at Windsor Station at 1830, as Train 264. Train 273 with all nine of the new cars leaves Montréal at 1845 for Rigaud, at the end of the commuter district, where it remains overnight. Next morning as Train 272, it heads back into Windsor Station, where it arrives at 0815.

CP RAIL is to be congratulated for having produced this fine train. It has brought a new and vital experience to those who travel daily from the Lakeshore. It is a fitting tribute to the Company whose motto is: "Serving You in So Many Ways".



A COMPLETE TRAIN OF GALLERY CARS, HEADED BY CONTROL CAR NO. 900. JUST Visible at the rear of the train is the diesel unit supplying the power. Photo courtesy of R. Ian Stronach.

CP RAIL'S FORM 19-Y FOR APRIL 24, 1970 INTRODUCES THE NEW OPERATING Timetable 44 (Eastern Region) heralding the advent of the new Gallery Car Commuter Trains. Collection F. Angus.

**Canadian Pacific**  
 FORM 19 <sup>Y</sup>  
 TRAIN ORDER NO. 481 April 24 19 70

TO \_\_\_\_\_ AT \_\_\_\_\_

*Trains Originating* *Required*

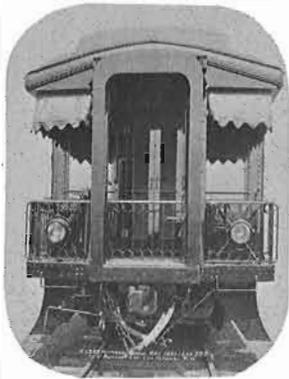
*Atlantic Region Time Table*  
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SIGNATURES \_\_\_\_\_



# OBSERVATIONS

WITH F. A. KEMP

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The concept of carrying passengers in vehicles with two or more levels is not recent or new. In fact, it antedates the railways, as we know them.

In the latter years of the 18th. century, roads were improved to permit the passage of heavier vehicles and "stage-coaches" began to provide more or less regular service between towns and cities in Great Britain, Europe and eastern North America, carrying passengers, mail and small parcels.

In Great Britain, an elaborate system developed at about the same time as the postal service, with which it was closely allied. Four-wheeled coaches, hauled by four or six horses, generally carried six passengers inside and from two to six "outside". The latter rode on top of the stage-coach, along with the driver and the guard. These passengers usually paid lower fares and enjoyed an excellent view of the landscape on fine days, but were, of course, exposed to the weather in inclement periods and were expected to get out and push if the coach should become mired in a mud-hole, which was not an unusual occurrence! In North America, roads were worse and lighter vehicles were used, so that "outside" passengers were not always carried.

As the railways developed in England during the 1830's, they were provided, almost from the beginning, with "carriage trucks" as well as "horse-boxes", which were used to transport privately-owned carriages and horses, but soon came also to be used to transport mail coaches and freight wagons, which completed their journeys by road, after reaching the end of the railway line. This practice soon ceased after the rail lines were completed between the principal centres, but the carrying of private carriages and horses at special rates continued for many years.

Today, in the latter half of the 20th. century, we are constantly reminded of these early days by the names still given to some

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→ UNDOUBTEDLY A VERY EARLY EXAMPLE OF A "BILEVEL" CAR, CANADIAN PACIFIC'S Observation Car No. 517 was built in 1902, probably for use on trans-continental trains through the Canadian Rockies. Photo courtesy CP RAIL.



members of the railway operating trades in the United Kingdom; we speak of the "driver" (engineer), the "guard" (conductor) and in common parlance, passenger cars are still "carriages" there but "coaches" in North America.

In the early days, occupants of private carriages often remained in them, rather than transferring to the passenger space available on the train. It is not known, however, whether or not mail-coach passengers did likewise, - probably not. The restricted clearances of British railways effectively precluded the adoption of the bi-level principle and although the compartments of early British railway carriages were styled to look like stage-coach bodies, passengers did not, as a rule, ride outside!

Early North American railroads were built with more generous clearances and passenger cars of the early 1830's were often fitted with seats on their tops. A description of the first eight-wheeled passenger car, the "Columbus", built for the Baltimore and Ohio Railroad in 1831 by Ross Winans, states that it had seats on the top, like other cars previously used, reached by a ladder at one corner of the car.

Roof-top seating was found to be uncomfortable, impractical and unnecessary and soon was abandoned by the railways, although a number of double-deck horse-cars were built for urban transit lines. These were more common in Great Britain and led to the almost universal adoption of the double-deck vehicle when tram lines were electrified. Very few such vehicles operated in North America, where road clearances were more restricted.

The improved visibility potential of a roof-top position became apparent to a freight train conductor on the Chicago and North Western Railway in 1864. Following an accident which made a large hole in the roof of his way-car caboose, he installed an elevated seat and later persuaded the car foreman to construct an enclosure or "cupola". This feature was adopted on the C. & N.W. and gradually spread to many lines throughout North America. A design for a passenger observation car was published in 1889, but the idea was not adopted until 1892 when the Canadian Pacific Railway built three parlor-observation cars of its own design, with not one but two cupolas! They were used in Rocky Mountain service, but had definite disadvantages in the days of coal smoke and no air-conditioning, which influenced the Company to revert to the use of the single-deck open observation cars.

After 1900, double-deck trams and motor buses came into general use in Great Britain and many British colonies throughout the world. Double-deck buses were used in New York and Chicago, but low

clearances of wires and underpasses limited their use in other North American and European cities to a few experimental vehicles. The upper decks of the earlier cars and buses were open, but it soon became apparent that an enclosed upper level made for a more useful all-weather unit, so the "open-tops" disappeared, along with their North American counterparts, -the open-bench street car.

By the late 1930's, the Long Island Railroad, with restricted clearances in its East River tunnels and North America's heaviest commuter traffic attempted to resolve some of the concurrent problems by designing a high-capacity coach, in which alternate groups of four seats were raised above the others, giving a staggered effect similar to that of the "duplex roomette" sleeping cars which were built after World War II.

The first cars were produced in 1937 and a later group came out about ten years later. They were not popular with the passengers, who objected to the "compartmentization" which, while quite usual and acceptable in Europe, was not so in the United States. In addition, this arrangement obliged half the passengers to ride backward. These cars are still in service. At about the same time, the Pennsylvania Railroad introduced sleeping cars with "duplex single rooms" staggered in the same manner, the beds being crosswise of the car. These cars are also still used on the "Broadway Limited".

The "need to see" and the tourists provided the incentive for the re-introduction of the cupola in passenger car design in 1945. Re-entitled the "Vista Dome", it derived from the suggestion of a design engineer of General Motors' Electro-Motive Division, who, suitably impressed with the view from the cab of a newly-delivered GM diesel locomotive on the Denver & Rio Grande Western Railroad, sketched out a passenger car with an elevated, glassed-in observation room.

The first "Vista-Dome" was constructed on an existing coach of the Chicago, Burlington & Quincy Railroad, but the "dome boom" did not begin until 1947, when the General Motors "Train of Tomorrow" toured North America. This train, hauled by a 2000 hp. E-7A diesel unit, consisted of a dome coach, parlor and sleeping car. The domes of these and most subsequent dome cars seated 26 persons. The floor under the dome was lowered slightly and the space was generally occupied by washrooms and closets but, in later years, cars were built with kitchens, dining rooms and lounges, under the domes.

The Union Pacific Railroad which purchased the original "Train of Tomorrow", later built several dining cars in which meals were served in the dome. The Milwaukee Road boasted the first passenger cars built in which the dome extended for almost the full length of the car. The lower level contained a lounge for refreshments, washrooms and a considerable amount of air-conditioning equipment. Six

of these cars are now owned by Canadian National Railways. The Santa Fe and Great Northern railroads also purchased full-length dome cars, mounted on six-wheel trucks, but the Southern Pacific, with many miles of tunnels too low for regular dome cars, converted several coaches into "low profile" dome cars with a glass roof covering a low-level lounge and a high-level observation section. The space under the observation section was not accessible to passengers and contained only air-conditioning equipment.

Dome observation cars are not in widespread use in Europe, but the French National Railways (SNCF) operate a number of dome-equipped "autorails" or self-propelled railcars, mainly on services in the south of France, while the "Rheingold" express of the German Federal Railways (DB) has featured a dome car since the mid-1950's. This same railway system also operates true bi-level or double-deck coaches, in which revenue passenger space is on both levels. The history and interior arrangements are not known to the writer and they may indeed antedate the introduction of bi-level equipment in North American service in 1954.

The principal railroads operating suburban commuter service in the Chicago, Ill. area are the Chicago & North Western, the Chicago, Milwaukee, St. Paul & Pacific (the Milwaukee Road), the Burlington Northern (formerly the Chicago, Burlington & Quincy, known as the Burlington Route), the Chicago, Rock Island & Pacific (Rock Island), the Illinois Central (electric) and the Chicago, South Shore & South Bend (South Shore Line; electric). A limited service is also operated by the Penn Central (former Pennsylvania Railroad).

While most of these lines operate throughout the day, they experience heavy traffic peaks in the morning and evening rush hours. In 1950, most of their suburban equipment was from 24 to 30 years old, of heavyweight design and construction and limited in capacity. The Rock Island was the first to begin modernization; it received some single-level lightweight suburban coaches in 1951. These cars had two mid-car entranceways, dividing the cars into three parts. Doors were mechanically operated and steps enclosed. Most of them are now retired.

The Chicago & North Western Railway introduced its "gallery cars" in 1954. Decorated in the bright lemon yellow and apple green of the "400 Fleet", they introduced their commuters to bright lights, stainless steel and air conditioning, - a decided contrast to the rattan seats, bare bulbs and open windows formerly enjoyed. The unprecedented seating capacity of these new cars (154 passengers) now

meant shorter trains and more seats. The gallery arrangement permitted all fares to be collected from the lower level. The Company introduced them to main line services between Chicago, Green Bay, Ishpeming and Ashland in 1959, including even bi-level parlor cars. They continued to operate to these cities, mixed in with single-level dining and lounge cars. Subsequent units for commuter service seated 169 passengers. Control-cab cars and train-lines to permit push-pull operation were introduced by the C. & N.W., but soon spread to other Chicago lines, the Burlington, the Milwaukee and the Rock Island, which also adopted bi-levels, but still operate single-level coaches in rush hours. The Illinois Central, whose large fleet of multiple-unit electric cars dates from about 1925, has ordered units of a unique design of bi-level electric, cut down at one end to allow enough room for a roof-top pantograph. None of these is yet in operation, but their arrival is expected soon. Similar units could probably be used on the South Shore, but this "last interurban", although serving the Chicago suburban area, operates mainly in the State of Indiana and has been unable to persuade the Indianapolis-based State government to set up the necessary authority to qualify it for Federal government aid for the construction of new passenger cars. Its equipment is now about 44 years old, but has been considerably modernized and air-conditioned. However, maintenance and operating costs are increasing and the road recently petitioned to terminate many of its off-peak-hour runs. It would be a shame if this valuable facility should be lost through indifference and inaction, as were its colleagues, the Chicago, Aurora & Elgin (1959) and the Chicago, North Shore & Milwaukee (1963). Last but by no means least, even the Penn-Central is to get bi-levels for its two commuter trains!

San Francisco, California, is the only other U.S. city to be served by a double-deck suburban train service, but this is quite logical and appropriate, since this is the only remaining rail commuter service west of Chicago! Moreover, the zeal of many San Franciscans to avoid the "freeway fanaticism" of neighbouring Los Angeles is well-known. The Southern Pacific trains run down the peninsula to San José. The cars are similar to those in Chicago and a few aged "Harriman" arch-roof coaches appear in rush hours.

However, the motive power differs. While Chicago Bi-levels are powered by a generally reliable if ageing collection of GM E-7a's, E-8A's, FP-7A's and even a few E-9A's, displaced by the attrition of main line passenger trains, the San Francisco locomotive maintenance staff, crews and passengers have to suffer the vagaries of a large fleet of Fairbanks-Morse "TrainMasters", which have been relegated to that small corner of the vast EsPee system.

The best examples of the "bi-level" to "high-level" transition were the ponderous vehicles operated by the Santa Fe on the "El Cap" San Francisco "Chief" and "Texas Chief". These monsters represented the last order of main-line passenger cars and the "El Cap", when it is run separate from the "Chief" still makes an impressive sight, with its huge cars rocking ever so slightly, the southwestern sunset glinting brilliantly from their stainless-steel sides. If the passenger train has to go, it should go looking just like this!



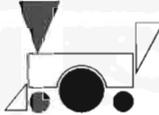
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