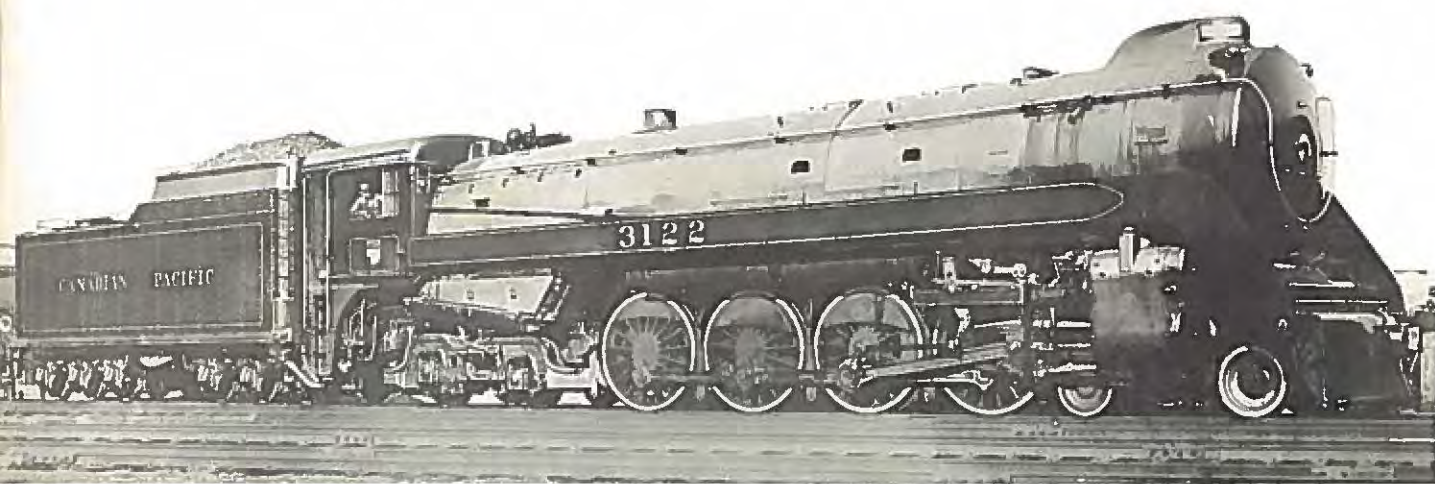
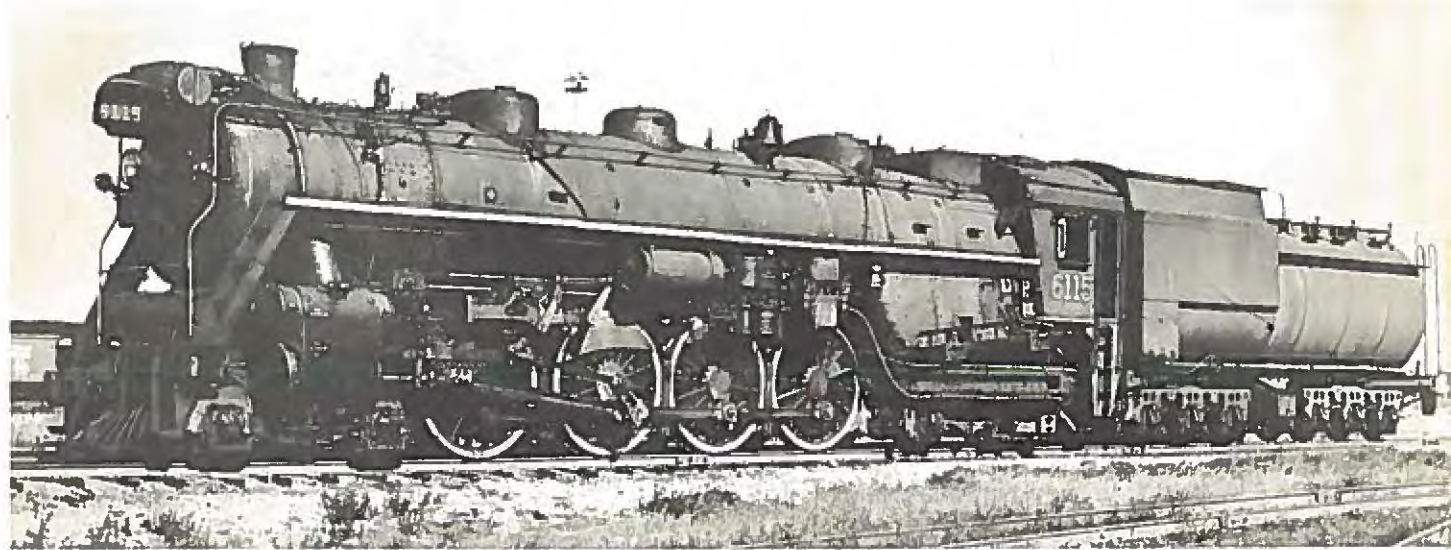


newsletter

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THE WESTERN 4-8-4



Upper Canada Railway Society



newsletter

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Members are asked to give the Society at least five weeks notice of address changes.

The Cover

"Northern Type" locomotives, commonplace in eastern Canada, had a limited use in the West as well. CNR 6115 was assigned for a time in Winnipeg. (J. Walder photo) While CPR's K-1-b class 4-8-4's, of which 3122 is an example, never operated in the West, the two K-1-a's were assigned there for several years. See page 70. **

Contributors to this Issue

Roger Boisvert, Chas. Bowman, John Bromley, Bruce Chapman, Bill Coe, Ray Corley, Carl Ehrke, Dick George, Tom Henry, Bob Johns, Eric McGreer, Bob McMann, Peter Meldrum, David Page, Al Paterson, Newt Rossiter, Fred Sankoff, David Stalford, Jim Walder, Brian West.

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58 APRIL, 1966



Regular meetings of the Society are held on the third Friday of each month (except July and August) at 8.00 p.m., in Room 64, Royal Ontario Museum, Queens Park at Bloor St., Toronto, Ont.

- Apr 15th; Regular meeting. Mr. Ken Biggs of the Ontario Northland Railway will talk about his experiences in the steam age. Members are invited to bring a limited number of good slides they may have on the ONR.
- Apr 22nd; UCRS Hamilton Chapter regular meeting. Board Room, CNR James Street Station, Hamilton, Ont. 8.00 p.m.
- May 6th; A tour of the railway facilities of the Toronto Terminals Railway. Tickets (available at the April 15th meeting) are required as only limited numbers can be accommodated. Group meets in the main concourse of Union Station prior to 8.00 p.m., DST.
- May 20th; Regular Meeting. EFFECTIVE THIS MONTH, THE MEETING LOCATION MAY BE CHANGED -- WATCH NEXT MONTH'S ISSUE FOR DETAILS.
- May 27th; UCRS Hamilton Chapter regular meeting. Board Room, CNR James Street Station, Hamilton, Ont. 8.00 p.m.
- June 4th; The UCRS Spring Steam Excursion to Belleville. During the lay-over at Belleville, a diesel sidetrip will take excursionists to Madoc. Fare and schedule details will be released shortly.

Readers' Exchange

TOOLED LEATHER WALLET, with CN 6167 or 6218 design, two or three initials as desired, is available at \$8.00 postpaid from Ross Clark, 13 Helen Street, Paris, Ontario.

RIDE AVAILABLE: Travelling to Mexico City and Vera Cruz by car (or car and rail) during August. Anyone interested in coming on all or part of this trip is invited to contact Terry Thompson, 365 Main St., Toronto 13, or phone 699-3816 after 7 p.m.

UCRS News

"THE PREZ SEZ"

Hello again! First, let me express my thanks on behalf of the Directors to those worthy souls who contributed their time and effort to help out at the UCRS display at the recent Sportsmen's Show. Without a doubt, the exhibit was a success, and the experience gained should help us to put forth an even better effort next year. Shows such as this bring UCRS to the attention of interested parties who might otherwise be unaware of our existence.

At the March 23rd Directors meeting, a proposal of the Publications Committee concerning the ways and means of producing UCRS printed matter was discussed. Specifically, the proposal recommended disposal of the Society press, on the grounds that the economic advantage of doing our own work has virtually disappeared, the continuing requirement for volunteer services makes adherence to deadlines virtually impossible, and the technical quality of our printed matter has deteriorated. It was decided to accept an offer by Mr. Basil Headford of \$600 for the press in "as is" condition -- the press was purchased in 1962 for \$500. In future, UCRS printing will be done by commercial printing firms;

the NEWSLETTER has been produced in Basil Headford's shop since last December.

During the past few months, the Directors have been considering a proposal to lease quarters in the building owned by the Toronto Camera Club, on Mount Pleasant Road. These premises afford us the opportunity to consolidate our activities, i.e., to combine our meeting place and office cum library at a single address. After lengthy discussion at the last meeting of the Directors, the move was approved, and arrangements are now being made to transfer our activities to the new locale. We hope to be relocated in time for the May meeting. Watch the next issue for more details.

The Excursion Committee is planning another enjoyable outing, the Spring Steam Excursion to Belleville and Madoc on Saturday, June 4th. Full schedule and fare details are not quite ready, but will be distributed very soon. Plan to be with us!

The Finance Committee has been hard at work gathering data from the various committees in their study of the club's financial position. Three meetings were held during the past month and two more are slated for the next two weeks, with the hope that the report and proposals will be ready for the April Directors meeting.

And that's about it for this month!

/Brian West



LEFT: Judged "Best in the Show" at last June's UCRS Photo Contest was this impression of CNR 6167 storming up the hill toward Danforth station with an excursion train in tow.

/C. W. R. Bowman

Railway News and Comment

R. A. EMERSON, CPR PRESIDENT, DEAD AT 54

Robert A. Emerson, president and chief operating officer of the Canadian Pacific Railway, died suddenly at his Montreal home on March 13th. He was 54.

A director and member of the executive committee of the company since 1958, Mr. Emerson was a third generation CPR employee, joining the company in 1928 as a summer employment rodman at Kenora, Ont. He rose through a number of positions to chief engineer, vice president, operation and maintenance, vice president of the company and finally president, in October, 1964, succeeding N. R. Crump.

Shortly before his death, Mr. Emerson was vigorously engaged in explaining CP's stand on the passenger business to the Commons Committee on Transportation.

A successor to Mr. Emerson will likely be named on April 11th. Rumored as likely candidates are two CPR vice presidents, Ian D. Sinclair and George Baillie.

THE COMMONS COMMITTEE AND THE CPR

In one of his last official duties before his untimely death on March 13th, CPR president R.A. Emerson told the Commons Transport Committee that CP has plans to drop a number of passenger services, all Dayliner runs. Those specifically mentioned were Toronto-Owen Sound (tri-weekly), Sudbury-Sault Ste. Marie (daily), Montreal-Ottawa, via North Shore (daily), Montreal-Mont Laurier (tri-weekly), Victoria-Courtenay (ex. Sun), Sherbrooke-Quebec City (daily), Montreal-Megantic (daily) and Medicine Hat-Lethbridge (daily). Also under consideration for abandonment is the "Winnipeg" from Winnipeg to Emerson, Man. Some applications have actually been made to the BTC, while others are in the planning stage.

CP's outspoken vice president, Ian Sinclair, told the Committee that CN had a passenger deficit of \$40-million in 1958 and that he "has reason to believe that it has gone higher." At one point in the questioning, Mr. Sinclair mentioned a deficit of \$60-million, without identifying the railway in question. (Canadian National has not released figures to indicate the success or failure of its passenger promotions.) He reiterated CP's stand that passenger trains are a losing proposition.

RAILWAY EARNINGS, DEFICIT DOWN

The 1965 net railway earnings for Canadian Pacific were \$40.2-million, a decrease of \$3.2-million from 1964. Increased expenses more than offset the \$8-million additional revenue to account for the drop.

Canadian National's deficit for 1965 was \$34,718,000, slightly more than \$4-million less than the 1964 deficit. The figures, revealed in the Commons when supplementary spending estimates were tabled, gave no details of CN's revenues or interest payments. In recent years, interest on CN's massive inherited debt has been averaging \$60-million.

TRACK-LAYING THIS SUMMER ON ARR

It is expected that the first track will be laid in July on the provincially-financed Alberta Resources Railway; the line is being built by Canadian National.

Grading has proceeded throughout the winter on the first 60 miles of the 111-mile route which branches northwest from CN's main line at Solomon, Alta., about 180 miles west of Edmonton. The construction tempo will increase as weather moderates and contracts are let for the remainder of the line.

The Alberta government is hopeful that an ultimate connection with the Northern Alberta Railways at Grande Prairie would stimulate even further resources development than was originally envisioned when the ARR was conceived.

EXPERIMENTAL STAGE OVER, SAYS CN'S RICHER

In a year-end report, CN's vice president, passenger sales and services, Jean H. Richer, summarized the events in 1965 which "saw the removal of restrictions which over the years had doubtless cost CN many millions in revenues, and by 1965 had become insupportable." Referring to the abolition of the Pool Agreement, Mr. Richer noted that passenger revenue increases were sharply higher in November and December, and that the change has extended into 1966 to such an extent that he expects the increase in 1966 revenues as compared with 1965 will be the largest year-to-year gain since the war, and possibly in CN's history.

Mr. Richer outlined CN's new passenger policy, which became official last December. In effect, this policy now requires CN to put into effect the lessons learned during the years of experimentation, and it reiterates CN's determination to remain in the passenger business. In fact, this policy may well prove to be the historic turning point when changes and innovations have ceased to be experiments as such, and have in fact become an integral part of a long-range programme to make rail service a profitable undertaking.

COMMUTER TRAIN PROSPECTS BRIGHT

Ontario Highways Minister Charles MacNaughton has indicated that the future of expressways in the province is closely tied in with the results of the experimental Burlington-Toronto-Dunbarton commuter service which gets under way early next year. He pointed out that if the new service is used extensively, additional trains will eventually assume the chief role in transportation, with expressways filling secondary roles. He said that the results of the Toronto-centred commuter system will determine the mode of transportation in the 1970's in Ontario.

"If we can persuade enough people to use the new transportation system, then all major urban centres in Ontario will eventually be served by commuter trains.... If the experimental system fails, then the Government will have to continue the construction of expensive expressways," he said.

Earlier, Mr. MacNaughton explained why the service would not be extended to Hamilton for the time being, pointing out that the initial service is experimental only. He noted that the present average passenger volume on Hamilton-Toronto trains is five per train; travellers have a choice of ten trains and 84 buses daily each way between the two cities. "It cannot be said that Hamilton lacks public transport with Toronto," he said.

Mr. MacNaughton produced figures indicating that the absolute minimum additional cost required for track and signalling alterations to carry even a marginal service to Hamilton would run to about \$4.3-million more than the \$9.3-million necessary to implement the service.

Work on the commuter system is progressing. Design of stations, servicing facilities and yard and signalling is well under way, although construction has not yet begun. A model of the new cars has been produced, and first deliveries of cars and locomotives is expected by mid-summer. CN's Toronto advertising agency, McConnell Eastman, has been awarded a \$150,000 contract for the promotion of the new system.

CN SETS FREIGHT RECORDS

New daily and weekly freight records were established in February by Canadian National. The high was recorded in the week of February 24-27 when the railway moved 2.197-billion gross ton miles; the figure topped two other record weeks set earlier in the month. A new single-day record was made on February 5th when CN moved nearly 365 million gross ton miles, exceeding the previous high of 338 million set last November 5th.

A record 114,300 cars of export grain loaded and moved to terminal elevators by CN in the period between August 1st, 1965 and the end of February were the largest single factor responsible for the increased traffic; however, potash shipments were also up, and the Ontario truck strike had some effect.

SYSTEM PASSENGER TRAIN RENUMBERING FOR CN

Effective April 24th, most passenger and express freight trains across the Canadian National system will be renumbered. The sweeping changes have become necessary to eliminate duplication that is presently confusing statistical record keeping, and to prepare the CN for a computerized reservation system which will be inaugurated in the near future.

Trains have been classified into general groups, in number series as follows:

1-199 incl.	- Conventional passenger trains
200-230 "	- Express-Freight trains
231-299 "	- Mixed Trains
600-699 "	- Railiner Trains
900-999 "	- Commuter Trains

Sufficient vacancies have been provided to allow for future expansion.

The new passenger train numbers are grouped according to the territory in which the train operates; moreover, where practicable, the numbers are arranged in ascending order for successive departures throughout the day. As examples, trains 1-10 are transcontinental, 11-19 are Montreal-Halifax, 20-29 are Montreal-Quebec and Montreal-New York, 30-39 are Ottawa-Montreal, 40-49 are Ottawa-Brockville-Toronto-Windsor, 50-59 are Chicago-Toronto-Montreal, 60-69 are high-speed "Rapido"-type trains, 70-79 are northern Quebec and 80-89 are northern Ontario. Space does not permit publication of the complete renumbering. However, some eastern Canada examples are given below:

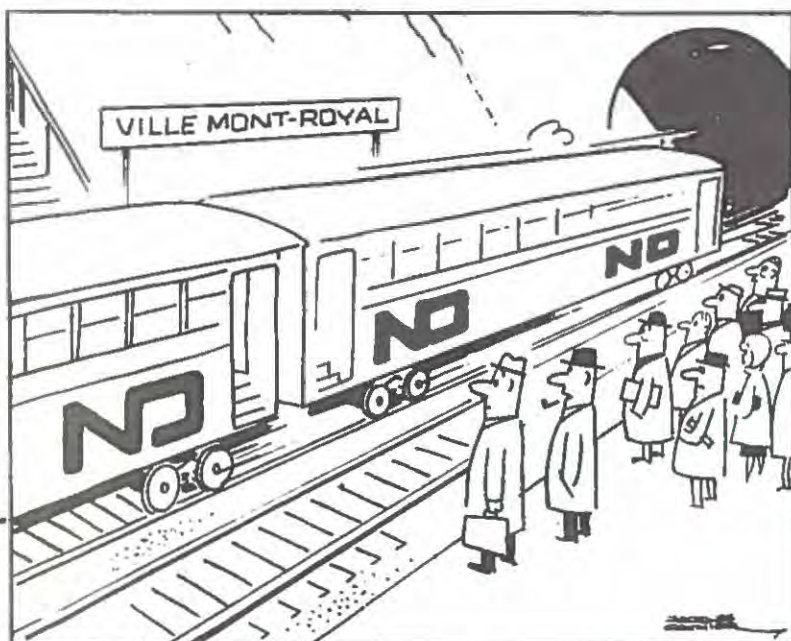
MONTREAL-TORONTO:

Train 8 becomes	60;	Train 7 becomes	61
14 -	50;	5 -	51
30 -	64;	29 -	65
6 -	54;	15 -	55
118 -	158;	119 -	159
16 -	58;	17 -	59

OTTAWA-TORONTO:

Train 34 becomes	140;	Train 35 becomes	141
36 -	44;	37 -	45
106 -	*214;	105 -	*213

*The Toronto-Ottawa overnight train was originally an Express-Freight schedule, and thus the 200-series number is assigned.



LEFT: CN's symbol is twisted again, this time in the hands of LE DEVOIR, which manages to find humour in the railway's refusal to release the Mount Royal Tunnel for rapid transit.

WORTH NOTING:

- Pacific Great Eastern is calling tenders for an extension to its locomotive repair shop at Squamish, B.C.
- The recent blizzard in the midwest snarled rail traffic in the Winnipeg area. One Great Northern train from St. Paul to Winnipeg was snowbound at Grand Forks, N.D., for three days
- CNR has agreed to reduce the work week for sleeping and dining car employees from 48 to 40 hours, without a reduction in wages.
- The BTC is studying an Alberta suggestion that revolving lights be installed on locomotives to warn motorists at level crossings.
- Add to your list of "nationalize the CPR" proponents; the Hudson Bay Route Association and the United Fishermen and Allied Workers Union.
- U.S. railroads are considering a low-cost fare which would permit a circle tour of the U.S. from any major city.
- The Newfoundland Federation of Labor will ask the Canadian Labor Congress this year to seek a standard gauge railway system for the province.
- CPR has been ordered to increase the frequency of its tri-weekly RDC service between Sudbury and White River to daily, for the summer season, in lieu of operation of the "Dominion"
- Equipment required to reroute CN's "Scotian" to Sydney instead of Halifax would cost the railway \$15-million, according to the Atlantic Region general manager.
- Canadian National's new summer timetables will appear for the first time in Daylight Saving Time. Meanwhile, the Prime Minister is considering setting dates for nationwide observance of Daylight Saving.
- It is understood that work may begin this summer on the installation of double-track, double-direction CTC on Canadian National's Toronto-Montreal main line.
- A Kingston resident won a set of luggage from CN for suggesting the name "Ontarian" for the railway's Brockville-Toronto-London RDC. Over 1800 entries were received.
- An article in the April CANADA MONTH suggests that a 4000-mile rail line be built across the Northwest Territories, to open up the forestry and mining resources of the north.
- Canadian National's London Carshops will likely be turned over to the city on July 1st. CN received the L&PS Rly. in exchange for the shop property on January 1st.
- The BTC has ordered CPR to extend Montreal-Sherbrooke trains 201 and 206 to Megantic, Que., before it can withdraw present trains 202 and 203.
- CN is testing the use of covered hopper cars in grain service in an attempt to cope with the chronic shortage of suitable boxcars.

MOUNT ROYAL TUNNEL NOW OUT FOR RAPID TRANSIT

Canadian National's Mount Royal tunnel line, offered some time ago to suburban Montreal communities for one dollar as a rapid transit line, is no longer available for that purpose. Said CN president Donald Gordon, "Because of the increase in patronage that has been attracted to our intercity passenger services in response to our marketing initiatives, there will no longer be capacity to spare in Central Station. Moreover, because of the substantially increased scale of our responsibilities in the densely populated region of central Canada, we need the tunnel trackage for our own operational requirements.

Mr. Gordon revealed that "on the Toronto-Montreal run alone, we are carrying about 20% more passengers than both railways carried during the pool operation. So far as the existing commuter service through the tunnel is concerned, while we will do our best with it, the fact is that it has definite limits and cannot be expanded to accommodate the present rate of growth of the communities it serves."

Two years ago, Mr. Gordon warned that the commuter service was fast reaching its practical capacity. It was hoped at that time that CN would be able to make available for the use of rapid transit the tunnel with its associated trackage and pedestrian access in Central Station, but that is no longer the situation.

Predictable reaction to the announcement was soon forthcoming from the suburban municipalities. Almost unanimously they blasted the CN decision in spite of the fact that during the two years in which they could have initiated a workable rapid transit scheme, nothing was accomplished.

Something was accomplished on March 21st, however. The Mount Royal Tunnel Rapid Transit Study Committee was abolished and replaced by a new organization called the Mount Royal Transit Action Committee. There will be "immediate and rapid action by the new committee," said Mayor Reginald Dawson of Mount Royal.

COMMONS COMMITTEE WILL TRY OUT CPR

The Commons Transportation and Communication Committee, currently determining the adequacy of Canadian Pacific's passenger service, has decided to climb aboard a CPR train and see what all the commotion is about. However, the publicity being given their junket is almost certain to guarantee that whatever the normal circumstances may be, the red carpet treatment will prevail. Pointing out that there are "difficulties making connections" along the CPR route, a point raised by several of CP's antagonists, the Committee chairman said that the group would likely fly to Vancouver and return to Ottawa via CPR.

The connections may indeed be difficult by CPR, but the Committee should certainly be aware that another railroad runs trains to the West Coast.

Equipment Notes...

LEASED UNITS HEADING HOME

Canadian Pacific had returned its ten leased Bessemer and Lake Erie units to the B&LE by the first of April. Also being recalled from CP are its leased Lake Superior and Ishpeming units.

The six Boston and Maine Alco switchers used for a time by Canadian National in Montreal, are reported to have been turned over to CP. One of these, 1270, is working in CP's Toronto Yard.

A pool of three NYC locomotives and three TH&B units has been established to handle Toronto-Buffalo freight service. The NYC locomotives are Nos. 7429, 7430 and 7431, while the TH&B contribution is Nos. 72, 73 and 76. These locomotives will operate out of Toronto at about 9.00 p.m., daily on the "Kinnear", returning at about 4.00 a.m. Each day will see the two sets of power alternate at Toronto Yard.

CNR ORDERS MORE BOXCARS

Canadian National has ordered 200 50½-foot, 70-ton boxcars from National Steel Car Corp., of Hamilton, Ont. The cars will be equipped with 9-foot doors, hardwood flooring and hydraulic cushion underframes. The majority of the cars will be assigned to CN's "yellow door" newsprint fleet. Delivery will begin in November, 1966.

TIRy 500 DONATED TO GANANOQUE

Diminutive diesel electric No. 500 of the Thousand Islands Railway has been donated to the town of Gananoque by Canadian National Railways. Built in the Oshawa Railway shops in 1930 as a gas-electric, No. 500 was transferred to the TI in 1931 where it worked until 1961, when the line was closed by CN. The locomotive will be displayed in a prominent location in the town. (See UCRS Bulletin 43 for a history of the Thousand Islands Railway.)

CN TO LEASE MORE SLEEPING CARS

Canadian National is presently negotiating to lease a number of sleeping cars from U.S. railroads for a two-year period. Already confirmed as being available for CN service are the following cars:

ROCK ISLAND: 8 roomette-6 bedrooms
(Built by Pullman, 1954 - stainless steel)

-- Golden Spire
-- Golden Tower
630 Air Force Academy
631 The Broadmoor
632 Rampart Range
633 Turquoise Sky
634 Lake Nokomis
635 Buffalo Bayou
636 San Jacinto

NORFOLK & WESTERN:

5 roomettes-buffet lounge
(Built by Pullman, 1949 - stainless steel)

150 City of Cleveland (ex-NKP)
151 City of Chicago "

12 roomettes-4 bedrooms
(Built by ACF, 1950 - painted)

Blue Cloud, Blue Boy (ex-Wabash)
Blue Gazelle, Blue Horizon "
Blue Knight, Blue Sky "

ERIE-LACKAWANNA

10 roomettes-6 bedrooms
(Built by Pullman, 1954 - painted)

Pride of Youngstown
Spirit of Youngstown

It is understood that negotiations for cars from the Boston and Maine and Baltimore and Ohio are proceeding, as well.

We'd like to see good quality photos of any of these cars operating on CN.

CANADIAN PACIFIC MOTIVE POWER NOTES

CPR's current order from Montreal Locomotive Works was completed in March with the delivery of Century 424's 4249 on the 7th and 4250 on March 11th.

A head-on collision at Bury, Quebec, east of Sherbrooke, on March 9th, caused varying amounts of damage to six locomotives. The eastbound train was powered by Nos. 8443-8759-B&LE 717A, while the westbound was in charge of Nos. 8450-8477-B&LE 718B. Damage to the B&LE units was evidently not serious since they were returned to their owner along with the other eight B&LE's on CPR, at the end of March.

CPR switcher 7087 was badly damaged in a switching accident at Megantic, Quebec, in early March, and its future appears uncertain.

CPR GETS INTO THE NUMBERS RACKET

In as intriguing a piece of jiggery pokery as we've seen in a long time, Canadian Pacific has done some rather involved juggling of numbers on a few of its recent MLW trade-ins.

It all began when road switcher 8557 suffered extensive fire damage on January 28th. For some reason, it was decided not to trade in the unit, but to rehabilitate it. And that is where 4014 entered the picture; 4014 had been turned over to MLW on February 4th, but its body and chassis were still intact. CP purchased these components (of 4014) from MLW, installed rehabilitated components from 8557 together with new parts, as required, and thus produced a "new" A-unit.

The "new" unit has been assigned road number 4016, class DFA-15b, despite the fact that the original 4016 was wrecked and rebuilt as 8824 in 1957!

The second 4016 was outshopped from Angus on March 14th. Meanwhile, CPR records will continue to show 4014 as traded in on 4249, in spite of the fact that part of it has returned to the rails. And 8557 has disappeared completely.

Confused?

WRECKED C&O DIESELS LISTED

From EXTRA 2200 SOUTH we learn the numbers of the Chesapeake and Ohio diesels which were wrecked at South Buxton, Ont., last May. (See June, 1965 NL, page 95)

Written off were GP-30's 3045 and 3047 and almost new GP-35's 3537, 3563 and 3574.

ALCO DEMONSTRATORS NEXT?

Rumours from Montreal indicate the possibility of two Century 630 (3000 h.p., six motor) demonstrators being brought to Canada from Alco by Montreal Locomotive Works about June.

CANADIAN NATIONAL MOTIVE POWER NOTES

The first three Century 424's of CN's current order of twenty, Nos. 3202-3204, were delivered in March.

Retired from the CN roster on March 15th and delivered to MLW for rebuilding were Nos. 3029 and 9403. Unit 3003 was retired on March 28th for the same purpose.

MS-7 switcher 8464 was converted to booster unit B-13 on January 17th. It is understood that two more MS-7's will be so converted.

The notation "7900-7905", shown in the summary of US unit transfers on page 47 of the March issue, should read "7900, 7905". Unit 7902 was transferred to the DW&P on June 26th, 1965. ■

World Railway News

...Edited by Peter Meldrum

* November 15th, 1965 marked what may have been the last operating day of the Isle of Man Railway. The Company has applied to the Tynwald (Manx Parliament) for permission to abandon the line, the usual reason being given. The fact that for several years an absolute minimum has been spent on maintenance means that a large sum would have to be expended if the railway were to continue in operation. Inadequate maintenance had reduced the locomotive fleet from 16 to five for last year's operations.

For many years, the Isle of Man Railway has been a mecca for enthusiasts from all over the world, despite an obvious policy of distrust and dislike by the management. An anachronism in every sense of the word, it was a Victorian-age line in a jet-age world. With the exception of two secondhand railcars, no new stock had been purchased since 1910. Many locomotives and all rolling stock had their beginnings even earlier. Despite the poor roadbed condition, the engines were always polished and the cars clean. Oddly enough, save a solitary 0-6-0, the railway operated 2-4-0 type locomotives exclusively. Its personnel invariably appeared to have reached pensionable age many years ago.

To travel on the Isle of Man Railway was to transport oneself back in time and, strangely perhaps, this was why the trains were so heavily patronized during the summer season. However, in all likelihood the railway would have closed in the '30's had it not acquired the island bus company whose profits permitted the little trains to continue running.

* Three nameplates from British Railways locomotives have been presented to the CRHA's Canadian Railway Museum at Delson, Quebec. Two plates, "Canadian Pacific" and "Cunard White Star", were obtained from Merchant Navy class 4-6-2's, while "Dorchester" was the plate carried by a "West Country" Pacific. The names selected all have historic links with Canada; Samuel Cunard, founder of the Cunard Steamship Company, was a Halifax-born Canadian, while Lord Dorchester was a Governor-General in pre-Confederation Canada who fought and was wounded on the Plains of Abraham.

* The Tatung Locomotive Plant in North China has put into production a new type of steam locomotive rated at 3000 h.p. According to the New China News Agency, it is the largest steam locomotive in use in the country.

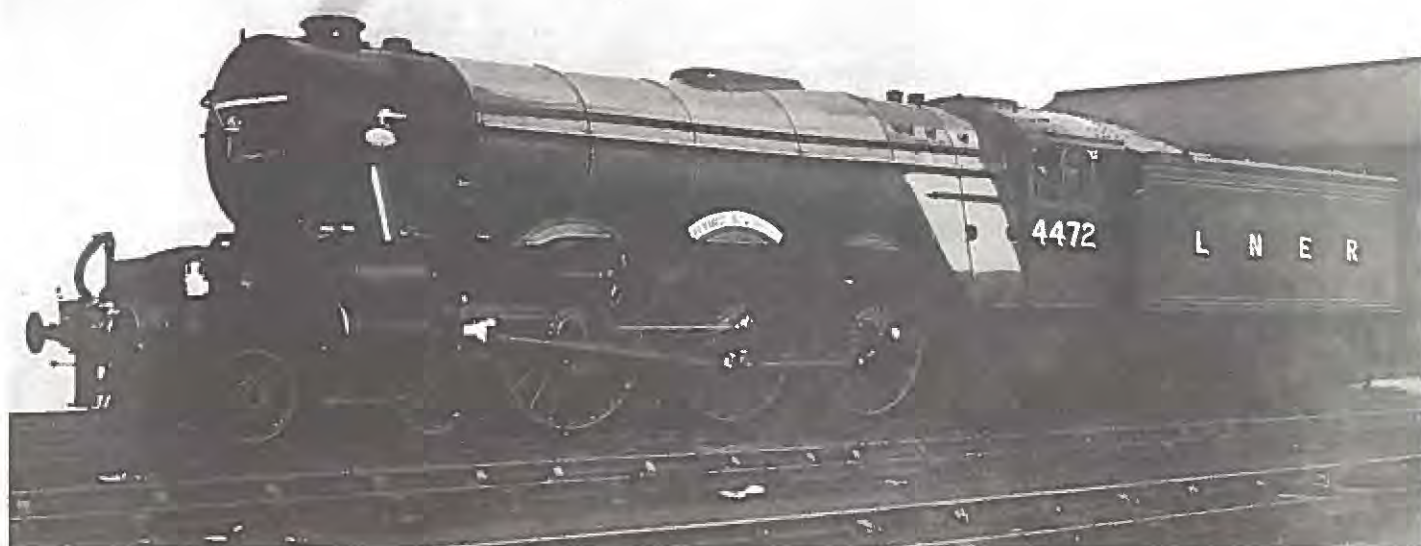
Locomotive building is a relatively new industry in China, but the country is striving to become self-sufficient in the motive power field. In addition to steam locomotives, 25 kv electrics and diesels from 600 to 2000 h.p. are under construction.

* For the first time in British history, 80 m.p.h. timings will appear in a timetable. When the new schedule is issued on April 18th, several runs will be shown scheduled at over 80 per. These speeds will be seen between Crewe and Watford on the recently-completed London Midland electrification. As well, the new services will be of unparalleled frequency.

BELOW: The race is on, between two Isle of Man Railway trains departing St. Johns. Engine No. 4 (left), "Loch", is bound for Ramsey, while No. 1, "Sutherland", has Peel as its destination.

/Ivo Peters
-from RAILWAY WORLD





GRESLEY A3 PACIFIC

BY TONY HOGG

PHOTOS BY TONY HOGG & BRITISH RAILWAYS



IN AN AGE of compacts, economy cars, mini cars and other trivia, it is a great relief for us when occasionally we are able to get our hands on a machine which has some real guts to it. Therefore, when Englishman Alan Pegler invited us to test his personal steam locomotive, we lost no time in gathering up our stopwatches, Tapley meters and other tools of our trade in order to make a thorough and critical evaluation of this unusual machine.

Running your own steam locomotive is a bit like drinking champagne for breakfast; not everybody can afford it, but it can be a great pleasure for those who can. Pegler acquired the habit three years ago when British Railways was offering a selection of used locomotives for sale at scrap value. Passing his friendly neighborhood used locomotive lot one day, he saw a 1923 model in good condition with only 2,076,000 miles on the clock. The price was a mere \$9000, so quite naturally he bought it.

Unfortunately, the terms of the sale were that his purchase should be removed within a specified time, and how do you remove something that is 70 ft long, 13 ft high and weighs 175 tons? Pegler solved the problem by reaching an agreement with British Railways whereby BR houses it for him, lets him use the tracks and provides a trained crew when required. All of which we feel is most commendable for an organization that normally seems to be buried up to its neck in bureaucracy.

After taking delivery Pegler spent another \$25,000 on a complete overhaul and restoration, including a pale green and black paint job in the original livery of the now defunct London and North Eastern Railway. Since its restoration

the locomotive has covered some 20,000 miles, most of them towing trains full of railroad enthusiasts to enable Pegler to meet some of his operating expenses.

For the technically and historically minded, the locomotive is a Gresley A3 Pacific type 3-cylinder using Walschaert's valves on the center cylinder. The tractive effort at 85 percent boiler pressure is 29,835 lb and the maximum drawbar horsepower is 1400 at 100 mph measured by a dynamometer car.

The designer was Sir Nigel Gresley who, in his day, was the Colin Chapman of the steam locomotive, and this machine was constructed specifically to haul express passenger trains between London and Scotland. It is named the Flying Scotsman, which is also the name of the train that it normally pulled. It was exhibited at the Wembley Exhibition of 1924 and has always been surrounded by a lot of glamor.

On first being confronted by the Flying Scotsman, we were more than a little awed by the sheer size of the beast. As you stand at the side of the track, it appears to tower above you, and you have to look up at the six driving wheels of 80-in. diameter. The standard of finish of both the body and chassis is superb and obviously belongs to a more leisurely era when time and money were available for such details.

Climbing aboard (stepover height 51 in.), we were struck immediately by the Spartan interior and lack of creature comforts for the crew. On the other hand, through the steam which seemed to envelop everything we were able to discern a complete absence of those chintzy little plastic knobs, buttons, and warning lights so common today. In

place of them is an arrangement of levers, valves, and gauges sensibly laid out and of a size suitable to the general proportions of the machine. No radio is installed, but among the amenities we noticed that the heater is sufficient for even the coldest weather conditions, and there seems to be an adequate supply of boiling water for making coffee or other hot beverages.

Before giving our impressions of this machine on the track, it is necessary to consider the operation of steam locomotives as a whole, and the characteristics of the Gresley A3 type in particular. The Flying Scotsman has three cylinders with a bore and stroke of 19 x 26 in., which is a long way from the over-square ratios fashionable today. The third cylinder is not visible because it is located in the center, between and in line with the two outside cylinders. Because the cylinders "fire" on each stroke and in each direction, this arrangement is the equivalent of a conventional 12-cyl internal combustion engine. The steam is fed to the cylinders from a regulator valve situated at the top of the boiler where it is kept in a superheated or "dry" state, and the long "regulator" lever is the most important of the various controls.

When the locomotive is in motion, the engineer uses the "reversing" lever in conjunction with the regulator to control the speed of the train or, as the operating manual puts it, "he employs the reversing lever to control the use of the steam expansively and economically in relation to the weight of the train and the gradient on which it is running."

When the train is ascending a gradient, the regulator will be open and the piston valve will be set near the point of its maximum travel by the reversing lever. When descending a gradient, the regulator will be almost closed so that just a whiff of steam is entering the cylinders to avoid creating a vacuum, and the reversing lever is set so that the valves are operating at a small percentage of their full travel. The reversing lever is marked in percentage-cut-off of valve travel, and its setting is referred to accordingly. Full travel is 75% and at a fast cruising speed the setting would be in the region of 40%.

The Flying Scotsman carries 6000 gallons of suitably softened water and 10 tons of coal. The coal supply is sufficient for about 500 miles, but the water consumption is prodigious—in the region of 60 gal per mile—so the whole 6000 gal is consumed in 100 miles. When steam was in general use, there was provision for taking on water at all stops, and also by means of water troughs set between the

tracks so that the engineer could pick up water without reducing speed, an effective but splashy method. With these facilities disappearing fast, Pegler has acquired a 6000-gal tank car complete with water-softening equipment in order to double the range of his locomotive.

Gresley A3s were designed for a crew of two—an engineer and a fireman. However, the tender has a passage through it so that a relief crew can take over when necessary. The job of the fireman is to maintain steam pressure throughout the run, which is not always easy. The steam pressure gauge on the Flying Scotsman is red-lined at 220 psi and the fireman endeavors to keep it simmering at a steady 219. If 220 is exceeded the steam blows off automatically through a Ross pop valve, and we were unfortunate enough to be present when this happened. You could have heard it 10 miles away, and it seemed to go on interminably. Apart from temporarily deafening everyone in the immediate vicinity, it seemed a shocking waste of coal, water and firemen's sweat.

Coal, of course, is a subject in itself, and those who happen to have studied it will be interested to know that Gresley A3s run best on Yorkshire Main Large Washed Cobbles. The fireman uses a shovel to feed the fire and he tries to maintain a thin red layer which gives off a brilliant orange/red flame. To achieve this requires constant attention and a lot of hard work. Referring to the manual again, we note that "when too much smoke is emitted it means that gases are being wasted, resulting in loss of heat and waste of coal, in addition to causing a public nuisance and complaints from the Health Authorities." We forbore from shoveling any coal, for fear of causing a public nuisance and incurring the wrath of the dreaded Health Authorities.

The fireman is helped in his work by the forced draft created by the exhaust steam from the cylinders, which is ducted through a blast pipe where it draws the smoke and gases from the firebox. In this manner the heat of the fire is partially self-regulating, because the greater the volume of steam being used, the greater the draft created by the blast pipe. When the locomotive is at rest, it is possible by opening a valve to create a forced draft using live steam direct from the boiler, which is released from a blower ring at the bottom of the blast pipe. To keep the steam pressure at its maximum without letting it blow off is tricky work, and the fireman's main concern is to predict the steam requirements well ahead, which can only be done if he has a thorough knowledge of the route and its gradients.

GRESLEY A3 PACIFIC

We are grateful to the editors of ROAD AND TRACK magazine for their permission to reprint this tongue-in-cheek 'road test' of "Flying Scotsman". The article originally appeared in the April, 1966 issue of R&T.

"Flying Scotsman" fans will be interested to know that plans are afoot to bring this locomotive to North America in 1967, where it is understood it will go on tour, under steam! In England, the Westinghouse Brake and Signal Company has assembled the major components for an automatic and straight air brake system, and it is expected that 4472 will have this equipment applied at the Crewe Works of British Railways this fall. The locomotive will retain its vacuum brakes for normal operation in Britain.



GRESLEY A3 PACIFIC AT A GLANCE...

List price, new.....	\$40,000
Engine.....	3-cyl, double-acting, coal-fired
Curb weight, lb.....	350,000
Top speed, mph.....	110
Acceleration, 0-60 mph, sec.....	397.2
50-70 mph.....	121.1
Average fuel consumption.....	50 mi/ton

As we have already noted, the Flying Scotsman was designed specifically for the express passenger run between London and Scotland, a distance of some 400 miles. On this run it would pull 12 cars, making a total gross weight for the train of about 600 tons. The schedule called for some steady cruising in the 90s, and Edgar Hoyle, a retired locomotive engineer ("engine driver" is the British term) who is employed by Alan Pegler to look after the machine, recalls traveling as fast as 110 mph on occasions. When talking to railwaymen, one is not only surprised by the very high speeds which they consider normal but also by the number of years that they have been considering them normal. The Flying Scotsman was running over 100 mph in 1923 when the Land Speed Record stood at 133 mph.

During the course of our test we were able to make two separate runs, each of about 300 miles. The first was from London to Cardiff and back following the normal route through Maidenhead, Nether Wallop and Chipping Sodbury, during which we established a new record for steam locomotives, and cruised for long periods at 90 mph at as little as 35% valve cut-off. The second was much more leisurely and permitted us to make accurate assessment of the machine's qualities. On each occasion we were pulling a 5-car train carrying not more than 80 passengers.

The first thing to do when operating a steam locomotive is to get up bloody early in the morning and light the fire. You can then go back to bed for another four hours while it all comes to a boil or, alternatively, get to work on the 75 lubrication points that have to be attended to daily. But we were firmly in the sack when the match was struck, and by the time we arrived someone had been round with the oil can and the steam pressure was nearing 200 psi.

To draw away from rest is surprisingly difficult and calls for much more skill than just dumping a clutch and shifting some gears. The technique is to use about 65% cut-off, which is nearly full travel, and then open the regulator cautiously to feel the weight of the train. On a damp day this usually promotes wheelspin, which can easily be detected because 30 tons of revolving and reciprocating steel suddenly breaks loose underneath you. The remedy is to close the regulator immediately and try again. Under certain conditions wheelspin can occur at high speed, resulting in a dangerous motion somewhat akin to overrevving and the possibility of a bent connecting rod. Investigating the problem further, we discovered that the engineer has to be on his guard against such natural hazards as tunnels, which drip water on the track making it slippery, and also trainloads of wet fish traveling ahead which do the same thing. It appears that such are the vagaries of railroading that the natural juices from one pound of cod or other coarse fish can break traction on a locomotive weighing 350,000 lb.

Acceleration is dismally slow and our best 0-60 time was 397.2 sec, which is ridiculous in these days of 8-sec quarters. On the other hand there are few dragsters capable of pulling 600 tons at 90 mph, so it is really just a question of what


you want out of life. When 20 mph is reached, it is time to start "notching up," as reducing the amount of valve travel is called, simultaneously increasing the regulator opening.

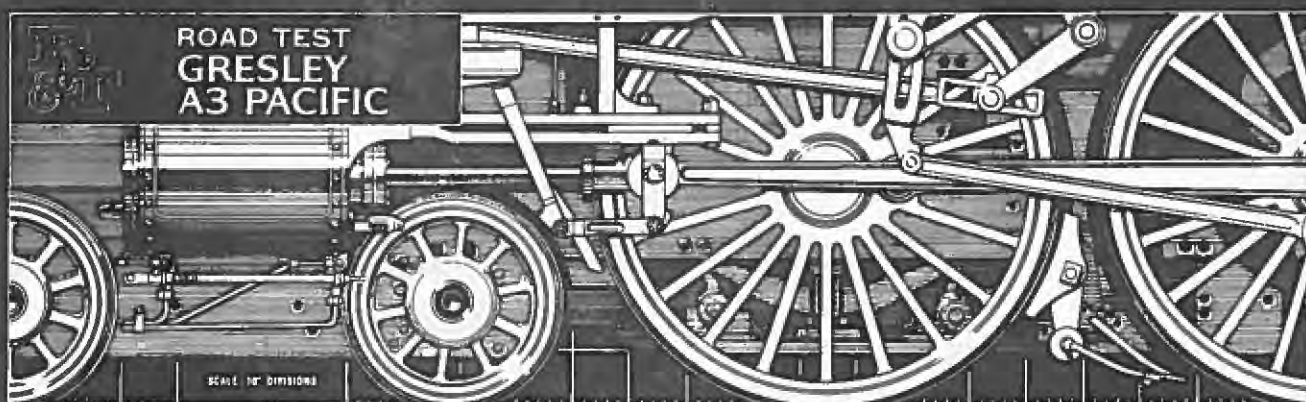
Meanwhile, the fireman will be busy, because to accelerate 600 tons from rest to 90 mph calls for the maximum volume and pressure of steam. It took us all of 623.9 sec to reach 90 mph, which is, incidentally, the slowest acceleration figure we have ever recorded. However, at 350,000 lb it is also the heaviest machine we have encountered in 15 years of testing, and although we were unable to verify the weight on our portable scales, we feel quite confident in accepting the manufacturer's figure.

The designed cruising speed of the Flying Scotsman is a little in excess of 90 mph. In complete contrast to most owners of 43-year-old classics, Alan Pegler thrashes his machine as far and as fast as it will go, and after riding on it at close to its maximum, one can appreciate that this is the only way to treat such a machine. At lower speeds there is an impression of immense but restrained power, but at 90 mph all restraint is left behind and the machine quite suddenly seems to get into its stride. The noise level is appallingly high but it is not particularly unpleasant because it is compounded of a variety of sounds and none of them are ear piercing (of course the engine is turning only 252 rpm at 60 mph); little attention has been given to sound-proofing. Referring to the Calculated Data, we find a Wear Index of only 2.75; the fact that this vehicle has covered over 2,000,000 miles once again bears out the significance of this index.

Although the sound is tolerable, the motion is somewhat unnerving until one gets used to it. There is an initial feeling of hurtling headlong to destruction as the locomotive sways, plunges, and weaves about with sudden and unpredictable movements. The suspension is not effective at all; in consequence it follows every undulation of the track and at 90 mph the track does not seem to be in the least bit level. Forward visibility is poor, but by leaning well out over the side one can see the direction of the track ahead, and one enters a bend seemingly far too fast but, due to the manner in which the track is banked, there is little sensation to indicate that one is not traveling in a straight line.

We are quite accustomed to traveling at 90 mph during the course of our road tests, but always with the feeling that a stab at the brake pedal will bring us back to zero. On the Flying Scotsman we were not filled with the same degree of confidence because it appeared that nothing could stop us in the event of an emergency, which is quite true. The braking system is a complicated affair operated by vacuum created by a steam ejector (Dreadnaught type). A vacuum pipe or "train pipe" runs the length of the train and application of the brakes admits air into the pipes causing the shoes to make contact with the wheels by means of vacuum cylinders. It is perhaps sufficient to point out that weight and speed are the two natural enemies of any braking system and leave it at that.

Summing up the Gresley A3 Pacific type is difficult because we have not previously tested any machines in the same category, and therefore have no basis for comparison. Obviously the operation of a classic steam locomotive is not an easy matter and involves one in many problems. For instance, in these days it is just not possible to arrive at a filling station and ask for 6000 gallons of soft water and 10 tons of Yorkshire Main Large Washed Cobbles. As with many classics, the parts problem is a difficult one, although Pegler has been able to acquire such useful little items as a complete boiler assembly. However, at 45, Alan Pegler is an extremely active and enthusiastic man and it would appear to us that provided he avoids all fish trains and pays particular attention to his 75 lubrication points, he has many years of happy steaming ahead of him. 



PRICE

List price, new\$40,000
Price as tested.....not for sale

ENGINE

No. cyl & type: 3-cyl, double-acting,
Walschaert link valve action.
Bore x stroke, mm.....482 x 660
Equivalent inches...19.0 x 26.0
Displacement, cc.....121,000
Equivalent cu in.....7390
Steam pressure, psi.....220
Tractive effort (85% pressure),
lb.....29,835
Bhp (drawbar pull).....
1400 bhp @ 416 rpm
Type fuel required: Yorkshire Main
Large Washed Cobbles.

DRIVE TRAIN

Basic layout: front-mounted pistons,
multiple links.
No. driving wheels.....6
Final drive ratio.....1:1
Optional ratios.....none

CHASSIS & SUSPENSION

Frame type.....semi-monocoque
Brake type vacuum/steam ejector
Friction surfaces, metal-to-metal
Swept area, sq in.....n.a.
Wheel size (driving), dia. in...80.0
Type.....radial-spoke, cast iron
Steering type.....rail
Turns, lock-to-lock.....n.a.
Turning circle, ft.....766
Front suspension: live axles, semi-
elliptic leaf springs, no shocks,
no anti-roll bar.
Rear suspension: live axles, semi-
elliptic leaf springs, no shocks,
no anti-roll bar.
Leaves/spring.....10

ACCOMMODATION

Normal capacity, persons.....2
Occasional capacity.....968
Seat width, in.....2 x 24.0
Head room, in.....73.0
Seat back adjustment, degrees...0
Entrance height, in.....129.0
Step-over height.....51.0
Door width.....18.4
Driver comfort rating:
Driver 69 in. tall.....90
Driver 72 in. tall.....80
Driver 75 in. tall.....75

GENERAL

Track weight, lb.....350,000
Test weight.....350,465
Weight distribution (with driver),
front/rear, %.....47/53
Wheelbase, in.....796.0
Track, front/rear.....58.5/58.2
Overall length.....845.0
Width.....104.3
Height.....160.7
Frontal area, sq ft.....93.2
Ground clearance, in.....1.4
Overhang, front/rear...30.4/18.6
Departure angle, degrees.....73
Usable luggage space, cu ft....∞
Fuel capacity, tons.....10
Water tank capacity, gal.
(std.).....6000
Water capacity (optional).12,000

INSTRUMENTATION

100-mph speedometer, 300-psi
boiler pressure gauge, brake vac-
uum gauge, steam chest pressure,
water level.
Warning lights: none.

MISCELLANEOUS

Body styles available: coupe as
tested.

CALCULATED DATA

Lb/hp (test wt).....250.3
Engine revs/mi.....252
Mph/1000 rpm.....238
Piston travel, ft/mi.....1092
Rpm @ 2500 ft/min.....1195
Equivalent mph.....285
R&T Wear Index.....2.75

EXTRA-COST OPTIONS

6000-gal auxiliary water supply
tank, coal shovel.

MAINTENANCE

No. lubrication points.....75
Chassis lube interval.....daily

ROAD TEST RESULTS

ACCELERATION

Time to speed, sec:
0-30 mph.....192.0
0-40 mph.....260.0
0-50 mph.....324.3
0-60 mph.....397.2
0-70 mph.....479.9
0-80 mph.....519.9
0-90 mph.....623.9
50-70 mph.....121.1
Time to distance, sec:
0-100 ft.....34.9
0-500 ft.....71.5
¼-mile.....112.0
Speed at end, mph.....16.7
Passing exposure time, sec:
Train ahead going 50 mph.120.7

SPEED IN GEARS

Top gear (462 rpm).....mph 110

BRAKES

Panic stop from 80 mph:
Deceleration rate, max % g...5
Control.....excellent
Parking brake: hold 30% grade.no
Overall brake rating.....poor

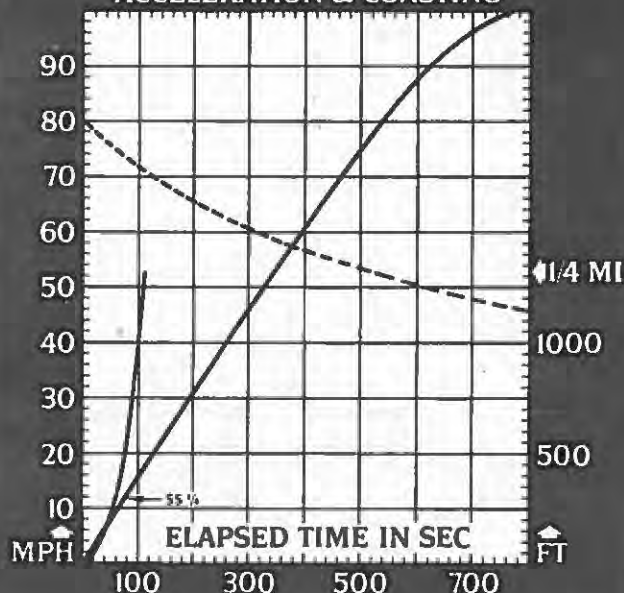
SPEEDOMETER ERROR

30 mph indicated.....actual 29.8
40 mph.....39.7
60 mph.....59.5
80 mph.....79.3
100 mph.....99.1
Odometer correction factor...n.a.

FUEL CONSUMPTION

Normal driving, mi/ton.....47-52
Cruising range, mi.....470-520

ACCELERATION & COASTING



NORTHERNS in the WEST

Data From
A. Paterson
R. S. George
and W. H. N. Rossiter



/A. Paterson

While Canadian National's famous 4-8-4's were the backbone of that railway's Central and Atlantic Region operations, it was not until relatively late in their career that they began to appear in western Canada. Although it is quite possible that, prior to 1951, the occasional Central Region "Northern Type" worked as far west as Winnipeg, no official records are available to confirm this.

The first recorded visit of a "Northern" to the West occurred in 1951, when U-4-a class 6403 hauled the Royal Train into Winnipeg. This engine remained there long enough to make one or two trips to Saskatoon on Nos. 11 and 12 before returning east. Apart from being recorded as the first engine of its type to work west of Winnipeg, 6403 had the distinction of being the only streamlined 4-8-4 to see western operation.

CN's "Northerns" were never a common sight on the Prairies. The 4-8-4's relatively shallow ash pan, necessitated by the substantial trailing truck, displayed an alarming tendency to accumulate snow and water, freeze solid and block the proper flow of ashes from the firebox, during the extremes of the Prairie winters. A locomotive with a two-wheel trailing truck (or no truck at all) had a much deeper ash pan and was thus better equipped to cope with this problem.

As far as can be determined, no "Northerns" operated west of Edmonton. Since the forestry laws of British Columbia prohibit the use of coal-fired locomotives in forest areas, no facilities were available for servicing coal-burners in the area. Evidently, there was insufficient advantage to be gained by running 4-8-4's through the mountains, to warrant conversion of some of the engines to oil-firing.

The only regular 4-8-4 assignments in the West were passenger trains 1-2-3-4 between Winnipeg and Edmonton, and 11-12 between Winnipeg and Saskatoon. The first "Northerns" to be assigned to Winnipeg's Fort Rouge roundhouse, Nos. 6218 and 6226, broke in on these trains in 1952.

Only a few 4-8-4's were assigned to Fort Rouge and Transcona for freight service. In general, they were worked only as far as Brandon and Rivers, although in a few cases "Northerns" appeared as far west as Saskatoon and Wainwright in freight service.

A single U-2-g, 6210, attempted one Edmonton-Calgary trip, but was found to be a little too much for the bridges on the line and the experiment was not repeated. The only record of any running south of Winnipeg was in the spring of 1957, when 6115 made a single trip to Emerson Jct. Classes U-2-d, -e and -f saw very little western service, but the famous 6167 together with 6176 and 6187 were assigned to Fort Rouge for a short time.

The Gladstone subdivision to Dauphin saw 6201 and 6207 make a number of trips, with infrequent extensions from Dauphin to Kam-sack. A U-2-b, 6139, finished out its life in January of 1958 assigned to freight service on this line; it was later scrapped at Transcona Shops together with 6138 and 6187 -- the only "Northerns" left on western lines.

On the main line east of Winnipeg, it was quite a different story. Here, the majority of the assigned western 4-8-4's handled most of the through freight and passenger runs in the years 1954-1957. Trains 33 and 34 between Winnipeg and Port Arthur were extensively powered by 6204 and 6207 in 1955-1957, while other 4-8-4's appeared frequently in freight service to Rainy River and occasionally, Fort Frances. In many instances, Central Region 4-8-4's worked through from Capreol to Winnipeg, supplementing the efforts of those assigned to Fort Rouge or Transcona. (There is no record of ex-Grand Trunk Western U-3 class 6300's venturing even as far as Capreol, from their southern Ontario home rails.)

After trains 1-2-3-4 were dieselized, the "Northerns" took over standby duties in passenger service and filled in admirably on occasion. In July of 1955, 6254 made excellent time on the diesel schedule from east of Armstrong to Winnipeg, after an engine failure laid out the internal-combustion motive power. On January 21st, 1958, the "Super Continental" arrived at Winnipeg in charge of U-2-c 6147.

The last "Northern" to be dispatched on Western lines was 6176 on train 2/404 from Winnipeg to Armstrong on February 1st, 1958. The retirement from service of the three 4-8-4's left at Winnipeg, Nos. 6138, 6139 and 6187, coincided closely with the date that all coal-burners were withdrawn from Western lines operations; it was also at this time that the extensive conversion from coal- to oil-firing began to take effect and many 2-8-0's, 2-8-2's and 4-8-2's were sent west from Ontario and Quebec.

The following "Northern Type" locomotives were assigned to Fort Rouge or Transcona at some time during the period 1953-1958:

6100	6152	6207	6224
6104	6154	6210	6225
6115	6159	6211	6226
6138	6167	6213	6228
6139	6176	6217	6229
6141	6187	6218	6251
6146	6201	6220	6261
6147	6204	6223	

* * *



Both of Canadian Pacific's impressive K-1-a class 4-8-4's saw extensive western duty before their fires were drawn for the last time.

Their route to the West was a devious one. In February of 1954, diesels took over the working of trains 21-22 between Toronto and Montreal, and the K-1's were retained as protect engines, 3100 at Toronto and 3101 at Montreal; during this period, they saw no active service. In August, 1954, 3100 was transferred to Montreal, and in the ensuing four months they worked the "Atlantic Limited" east of Montreal. Then in January 1955, they were hauled dead to Winnipeg for a new lease on life.

BELOW: An unidentified switcher smokes it up in the background as Canadian National 6223 arrives at Port Arthur with train 34 from Winnipeg. /D. H. Page





LEFT: A satisfying plume of prearranged smoke darkening the sky, CP's oil-burning 3100 thunders across the Manitoba prairie, near Brandon.

/F. Sankoff

The 3100's operated primarily on the over-night local Winnipeg-Moose Jaw passenger trains, Nos. 43 and 44, although from time to time they managed to work in the occasional freight run, working as far west as Calgary.

For their first year in the West, the 3100's retained their original coal tenders. However, on March 28th, 1956, 3101 was converted at Ogden Shops in Calgary to oil-firing, and lost its tender in favour of one from a scrapped T-1-a 2-10-4; also dis-

carded in the process was the distinctive tuscan red and black paint, replaced by a more utilitarian black scheme. No. 3100 received the same treatment later the same year.

Trains 43 and 44 saw the last of 3101 in October, 1957, and 3100 in March, 1958, as the K-1's were placed in storage for the last time, at Weston Shops, Winnipeg. In the summer of 1965, 3101 was placed on display near Regina, Sask., and it is understood that a similar future awaits 3100. ■

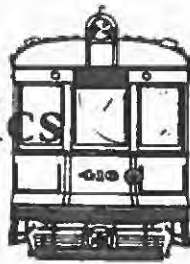
RAILWAY	C P R	C N R	C N R	C N R	C N R	C N R	C N R	C N R	C N R	C N R	G T W	G T W	C N R	G T W
CLASS	K-1-a	U-2-a	U-2-b	U-2-c	U-2-d	U-2-e	U-2-f	U-2-g	U-2-h	U-3-a	U-3-b	U-3-c	U-4-a	U-4-b
NUMBERS	3100-01	6100-19	6120-39	6140-59	6160-64	6165-79	6180-89	6200-34	6235-64	6300-11	6312-36	6400-04	6405-10	
DRIVER DIAMETER;	ins: 75	73	73	73	73	73	73	73	73	73	73	77	77	
PRESSURE;	p.s.i.: 275	250	250	250	250	250	250	250	250	250	250	275	275	
CYLINDERS; Dia.x Stroke;	ins: 25x30	25x30	25x30	25x30	25x30	25x30	25x30	25x30	25x30	26x30	26x30	24x30	24x30	
LOADED WEIGHT - Engine; Tons;	218	193	191	191½	193	201½	193	200	200	199½	201½	190	191½	
- Tender; Tons;	147	134	134	139	140	140	140	139	139	134	135	140	135	
TENDER CAP'Y - Coal; Tons;	21	18	18	18	18	18	18	18	18	18	16	18	16	
- Water; Imp. gals;	12,000	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,440	11,700	11,440	
O/A LENGTH;	ft: 97½'	94'	94'	94'	94'	94'	94'	95'	95'	94'	95'	85'	95'	
TRACTION EFFORT - Engine; lbs;	60,800	56,785	56,785	56,785	56,785	56,785	56,785	56,785	56,785	59,035	59,034	52,457	52,457	
- Booster; lbs;	*9,315	-	-	-	-	*10,315	-	-	-	-	-	-	-	
BUILDER	C P R	C L C	M L W	M L W	M L W	M L W	C L C	M L W	M L W	Alco	Alco	M L W	Lima	
DATE	1928	1927	1927	1929	1936	1940	1940	1942-43	1943-44	1927	1942	1936	1938	

*U-2-a engines with boosters; 6100, 6101, 6105, 6106, 6109, 6111, 6112, 6115, 6116, 6119
All U-2-a engines equipped with boosters except: 6168, 6169, 6173, 6179

**The cover photo is from a 1957 issue of "The Canadian Railway" magazine. The photo is a 1957 issue of "The Canadian Railway" magazine. The photo is a 1957 issue of "The Canadian Railway" magazine.

Traction Topics

Edited by John F. Bromley



* At their meeting of February 1, 1966, the TTC Commissioners approved a new long-range subway construction program which gives priority to the Queen Street streetcar tunnel over the Spadina Expressway operation. The program requires the approval of the six Metro boroughs which will come into effect next year as a result of reorganization of Metro Toronto council. Completion of the BLOOR-DANFORTH extensions in 1967 will be followed by the extension of the YONGE route to Sheppard Avenue. Following this will be the Queen Subway between Spadina Avenue and Sherbourne Street. Construction will be made in such a manner as to allow later conversion to standard rapid transit trains. It is not unlikely that the Queen Street Tunnel might be built while the latter stages of the YONGE extension are being completed in 1972. Method of financing would be unchanged, with Metro assuming 70% of the cost. The SPADINA line would follow the Queen Street Tunnel. Much opposition to this plan is expected from the new Borough of North York, who apparently are not satisfied with just one subway. North York would deny any form of rapid transit to east and west end riders who live near or on the shore of the lake. Much support, however, will come from Toronto, Etobicoke Borough and Scarborough Borough.

To be considered in connection with the building of the Queen Street Tunnel is a connection by a "subway spur" line to the Canadian National Exhibition. Plans are in the making to convert the CNE to an "all-year" attraction, and rapid transit direct to the park could have a deciding influence on the success or failure of such a venture should same be undertaken. The suggestion was put forth by Mr. J. G. Inglis, General Manager of TTC operations. Commissioners approved Mr. Inglis' report and recommended copies be forwarded to the CNE Board of Directors and to the consultants hired by the CNE who are now making long-range plans for the Exhibition. William Allen, present Metro Chairman, hinted recently that the Spadina Expressway rapid transit line may never be built, because of the tremendous development of downtown Toronto and the resulting pressure for more central rapid transit. Also approved by the TTC was a \$30,000 feasibility study of the Queen St. subway on condition that the money would be considered as part of the capital cost of the subway when it is built.

Also in the news again is the proposed tunnel to the Toronto Island Airport. When, we wonder, will the idea of an extended BATHURST street car through the tunnel occur to the Toronto Harbour Commission? Operation of streetcars to the islands would not only be in line with the current ban on gas and diesel-powered vehicles on the islands, but would also save the additional cost of expensive ventilating equipment required if buses are to use the tunnel. Occasional or regularly-scheduled BATHURST streetcars to the islands from the Bathurst Station of the BLOOR-DANFORTH subway would be ideally suited to the situation. /JFB

* Following is a list of street car divisions presently storing the out-of-service street cars, indicating the current location of all Toronto air-electric PCC cars that have been retired. Active air cars at St. Clair are included as they will ultimately be stored at that division.

DANFORTH DIVISION						100 cars
4006,	4014,	4016,	4017,	4021,	4024,	4026,
4030,	4034,	4036,	4037,	4043,	4044,	4046,
4047,	4055,	4056,	4058,	4064,	4066,	4070,
4071,	4072,	4079,	4082,	4092,	4094,	4102,
4110,	4111,	4112,	4113,	4116,	4118,	4121,
4129,	4130,	4131,	4136,	4153,	4154,	4155,
4156,	4158,	4161,	4164,	4165,	4166,	4167,
4168,	4170,	4171,	4172,	4174,	4175,	4180,
4181,	4182,	4183,	4184,	4185,	4186,	4189,
4190,	4191,	4192,	4193,	4194,	4195,	4206,
4207,	4215,	4219,	4233,	4240,	4243,	4244,
4256,	4260,	4262,	4263,	4264,	4265,	4266,
4269,	4271,	4272,	4273,	4276,	4281,	4283,
4284,	4286,	4287,	4289,	4292,	4295,	4296,
4297,	4298,					

LANSLOWNE DIVISION						72 cars
4002,	4003,	4007,	4009,	4010,	4011,	4012,
4020,	4022,	4023,	4029,	4031,	4032,	4033,
4038,	4039,	4042,	4045,	4048,	4049,	4050,
4054,	4057,	4059,	4061,	4065,	4067,	4069,
4076,	4080,	4081,	4086,	4087,	4088,	4089,
4093,	4096,	4097,	4100,	4103,	4104,	4106,
4107,	4108,	4109,	4117,	4119,	4120,	4132,
4134,	4157,	4160,	4162,	4169,	4173,	4176,
4177,	4178,	4187,	4188,	4196,	4197,	4204,
4208,	4209,	4214,	4217,	4248,	4259,	4282,
4285,	4288,					

ST. CLAIR DIVISION						51 cars
4001,	4004,	4005,	4008,	4013,	4015,	4018,
4019,	4025,	4027,	4028,	4035,	4040,	4041,
4051,	4053,	4060,	4062,	4068,	4073,	4074,
4075,	4077,	4078,	4083,	4084,	4085,	4090,
4091,	4095,	4098,	4099,	4101,	4105,	4115,
4122,	4124,	4125,	4126,	4127,	4128,	4133,
4135,	4137,	4138,	4139,	4150,	4151,	4152,
4163,	4198,					

HILLCREST SHOPS						5 cars
4000,	4159,	4211,	4239,	4247,		
Last three are rotation cars in storage.						/JFB

* The major shifting of surface equipment in connection with the opening of the new BLOOR-DANFORTH subway began February 10th, one day early, with the removal of PCC cars 4314, 4363 and 4369 from Lansdowne Division to Roncesvalles. Class A1 PCC cars 4102, 4106 and 4127 were taken back to Lansdowne. Cars 4312, 4327 and 4370 went to Roncesvalles on the 11th and replaced 4080, 4081 and 4082. On February 12th, Russell Division received their first all-electric cars in twelve years as 4312, 4314 and 4327 operated on QUEEN change-over runs. With this, the massive shift which was to involve 628 PCC cars was on.

First cars to be moved from St. Clair Division were 4386 through 4389, which were sent to Lansdowne Division in exchange for Training Cars 4303 through 4306 on February 13th. Air-electric Training Cars 4137, 4138, 4139, 4150, 4151, 4152 and 4198 were taken to St. Clair Division from Roncesvalles on February 14th and 17th, and were replaced at Roncesvalles by an equal number of Class A9 all-electrics. Class A9 PCCs had operated from St. Clair since the time they were originally placed in service. As of March 27th, 4137 and 4151 remained in service at St. Clair, with 4137 being the last class A1 PCC operating in Toronto.

During the shift period, a great number of "oddities" were seen on all TTC street car lines. Among the strange sights were 4584 and 4589 operating on all lines based at both Lansdowne and Danforth Divisions, with 4700, 4702 and 4703 on all lines from St. Clair, 4703 on HARBORD and KINGSTON ROAD-COXWELL, 4404 and 4496 on all lines from St. Clair Division and 4570 on HARBORD and PARLIAMENT. An interesting note is the fact that 4496, as run 6, was the very last FORT car on February 25th. A1 and A2 class PCCs, as well as 4589, were seen on the BLOOR and DANFORTH routes during the last week of service, as the number of MU trains was reduced due to several MU cars being shifted to Russell and Roncesvalles. A1 PCCs on the BLOOR route were ironical at the end, as A1 PCCs were the first on BLOOR back in 1938.

The balance of the shift was carried out on the 25th, 26th and 27th of February, and it was relatively uneventful. One exception was the removal of all A10 class PCCs from Russell to Danforth on the evening of the 25th. These cars were all returned to Russell on the afternoon of the 27th. One car, 4583, broke down at Coxwell and Queen, and was pushed to Russell by 4575 without the aid of drawbars.

Many cars not included in the rotation pool took part in the rotation between February 28th and March 9th. Cars 4001, 4002, 4040, 4044, 4103, 4109, 4160, 4204 and 4209 were in use at various times. The latter five cars were changed off to Roncesvalles Division and then replaced several rotation cars which were inadvertently placed at Lansdowne Division after February 25th. Car

4044 operated on both QUEEN and CARLTON night car assignments. Three cars at Lansdowne, 4042, 4162 and 4196 had their linens removed at Hillcrest before storage at Lansdowne. 4196 was used for a time as a towing car, and a large gash in the blind side sustained while in service on KING, was repaired at Hillcrest, the entire left side body panel being repainted.

Rotation cars in service as at March 26th were: 4199, 4200, 4202, 4203, 4205, 4213, 4220, 4221, 4222, 4224, 4230, 4232, 4238, 4241, 4245, 4253, 4254, 4267, 4268, 4274, 4275, 4280, 4294, 4575 to 4601 inclusive, a total of 50. Other rotation cars in use at various times prior to March 26th were 4201, 4212, 4291 and 4299. /JFB, RM

* Further to the TTC equipment notes on page 36 of the February NEWSLETTER, 4004 was returned to service in early February, following 4246 and 4389 in late January. The other PCC involved in the rear-end collision at Rogers and Kane was 4513. Other cars out of service as of mid-February included 4196, sporting a 10-foot gash on the blind side as a result of a side-swipe accident on the KING route, 4260, receiving a new set of front vestibule steps, 4648, 4159, 4211, 4239, 4247 and one as-yet unidentified class A13 PCC. 4111 was also undergoing repairs at St. Clair Division in late January, and 4674 was being repaired at Hillcrest in early February. 4462, another sideswipe casualty, was out of service for a few days in late January while repairs were made. PCC 4316, and not 4153, was the car involved in an accident at Carlton and Yonge (see December NEWSLETTER, page 217). /JFB

* Victoria Park Station on the east extension of the BLOOR-DANFORTH subway will be the first rapid transit station in North America to combine a transit stop with a golf clubhouse. Dentonia Park Golf Club, which opens this July, will have subway trains thundering overhead when the extensions are opened to the public next year. The thought has been advanced that a combined ticket should be introduced by the TTC and the golf club! Anyone for a fast game of handball at Union Station? /JFB

* Omitted from the March NEWSLETTER due to lack of space were the consists of the ceremonial and first regular subway trains. No less than three ceremonial subway trains were required to carry guests to Greenwood Shops, these being (in order) 5336-5337-5346-5347-5462-5463, 5400-5401-5478-5479-5457-5456, and 5352-5353-5454-5455. The first regular train was run 5 (Keele-Woodbine), with 5456-5457-5396-5397-5390-5391. Run 5 left Greenwood Yard at 5:39 a.m., dead-heading to Keele Station, leaving the latter at 6:00 a.m. /RJ, RM

* Tuesday, February 15th saw the last service northbound on Dundas Street past the new Dundas West Station, with car 4215 on #25 run, DUNDAS, being the last car to use the through track at 9:51 p.m. After that time, DUNDAS cars were routed west via Bloor Street to Jane Loop until the next morning. Following closely on the heels of this small abandonment was the closing of Vincent Loop after the departure of car 4259 on #3 run, KING, at 1:02 a.m. on the 16th. KING cars were diverted to Park Loop for the remainder of the night, with CARLTON night cars following DUNDAS cars to Jane Loop. Prior to the morning rush hour on the 16th, Dundas West Station Loop was opened to all cars.

Two interesting facts have come to light with the opening of "Dundas West". Night cars, as shown on timetables posted at the carhouses, are instructed not to operate via Dundas West Station after the subway is closed; however, with the abolition of the northbound through track on Dundas Street, all northbound cars must operate through the station. It is presumed that night cars will do so non-stop. Secondly, the electric switch installed for cars entering the station from the north must be referred to as a combination of "Necessity-Action", "Self-Restoring" and "Manual" types of switches. Cars operating southbound from Runnymede may elect to enter the station or continue straight through, thus requiring a "Necessity-Action" switch. Cars leaving Edna Street southbound automatically restore the switch to the closed position or maintain it in a closed position, regardless of whether or not the "necessity action" button is activated. Therefore, to make a complete circuit of the loop, as was done on a fantrip February 20th, it is necessary to operate the switch manually, as a streetcar leaving the loop in a southbound direction automatically closes the switch. This type of switch action is a first for the carlines of Toronto. /JFB

* Some major and minor changes were made to schedules on several street car lines. It was noted on page 35 of the February NEWSLETTER that some passengers boarding cars on Roncesvalles Avenue "will wait longer for their streetcar". This situation has now been partially relieved by the re-scheduling of runs 87, 89, 91, 93, 95 and 96 of the KINGSTON ROAD TRIPPER. These runs now leave the carhouse earlier and operate one trip to Dundas West Station before proceeding along King Street towards Bingham Loop. These cars leave Roncesvalles Division between 6:52 a.m. and 7:19 a.m. Times from Bingham Loop remain unchanged. In afternoon rush hours, KING runs 1x through 6x leave Roncesvalles between 3:55 p.m. and 4:20 p.m., proceed east via Queen Street, south on Church and west on King towards Dundas West Station. Thus, in both daily rush periods, the number of cars performing full or

"partial" KING service is increased from 33 to 39 cars.

A further change to the KINGSTON ROAD-TRIPPER morning service now requires runs 78, 79, 80 and 81 to make a second eastbound trip from Roncesvalles to Church Street, arriving at Church between 8:49 a.m. and 8:58 a.m. These cars return to Roncesvalles via Church, Richmond, Victoria and Queen Streets, following the routing of the now-defunct KING-Church a.m. tripper service, abandoned with the opening of the subway.

Two additional cars, runs 61x and 62x, now operate one round trip in morning rush between Runnymede and Broadview Station. Previously, all run numbers 40 and up terminated at City Hall Loop. Minor adjustments were made to QUEEN runs 69 and 71 in the morning rush, and these cars now operate directly east to Neville, leaving 13 and 9 minutes earlier, respectively.

A major change was effected on the BATHURST street car line on Sunday mornings, effective March 27th. Previously, street car run numbers 1, 7 and 4 left the division for service at 5:22 a.m., 6:07 a.m. and 7:02 a.m. respectively, being joined by other runs after the subway opened at 9:00 a.m. With the new schedule, street cars do not appear until the subway is open, with seven cars leaving St. Clair Division between 8:50 a.m. and 9:20 a.m., with other cars entering service at later times.

Finally, what must be one of the longest headways of any street car line in the entire world can now be credited to the TTC. One car a week, a headway of 168 hours between cars, is operated as QUEEN run 10. The run leaves Bingham Loop destined for Long Branch Loop every Sunday morning at 1:02 a.m. Let's see the Pittsburgh system (PAT) top that! /JFB

* The UCRS paid homage to the BLOOR, HARBOR, COXWELL, PARLIAMENT, ST. CLAIR-Avon, BATHURST-Downtown and FORT carlines in another successful fantrip on February 20th, with much thanks to Mr. Art Hutton of the TTC. A total of twelve movie runs and five photostops were made at various points on carlines that were abandoned or rerouted February 26th. The trip featured steel-wheeled PCC 4044, and included movie run-pasts through the newly opened loops at Dundas West and Broadview Stations. The only mishap of the day was the loss of an 88" x 21" cardboard sign prepared specially for the occasion by your editor. It appeared to be a victim of a gust of wind, probably on the Prince Edward Viaduct. If anyone managed to get a coloured slide of 4044 with the sign in place, this editor would like to beg, buy or borrow it. The sign required ten hours of slave labour to prepare and this editor is somewhat sentimental about ten hours of slave labour. /JFB

* TTC line crews have been kept busy adding and removing electric switches. Following is a summary, excluding abandoned trackage, of switches changed in February and March.

NECESSITY ACTION SWITCHES ADDED:

Bloor at Keele Station Loop	E to N
Broadview at Queen	S to E

NECESSITY ACTION SWITCHES REMOVED:

Broadview at Gerrard	N to E
Queen at Coxwell	W to N
Gerrard at Carlaw	E to N
Parliament at Carlton	N to W
Parliament at Gerrard	S to E
Parliament at Dundas	N to E
Dundas at Spadina	W to N
College at Lansdowne	W to N
Lansdowne at College	N to E
Main at Danforth	N to W
Danforth at Main	E to S
Keele at Weston	N to W

SELF-RESTORING SWITCHES ADDED:

Gerrard at Coxwell	E to S
Dundas at Broadview	E to S
Main at Danforth	N to E

SELF-RESTORING SWITCHES REMOVED:

Coxwell at Gerrard	S to E
Dundas at Bloor	S to E
Bathurst at Bloor	S to E

Some portions of "abandoned" trackage are still in use. Upper Coxwell Ave., to Danforth, is still being used by CARLTON short turn cars, while Parliament Street, between King and Gerrard, sees occasional KING and DUNDAS cars, both lines signed "Erindale via Parliament". Church Street north of King Street is also in use and is described in another paragraph. /JFB

* As regards the assignment of PCC cars to the various routes, all cars at any division at any given time are placed in a general pool, after cars have been assigned to routes requiring destination signs that are not placed on all cars. Even so, occasional "gremlins" can be found on DANFORTH, BLOOR, DUNDAS and KING. Cars 4469 and 4601 were on DANFORTH in early March, while 4711 was assigned to BLOOR on two occasions. Virtually all classes have operated on the DUNDAS and KING routes at various times. Some air cars were in base service on the CARLTON, QUEEN and KINGSTON ROAD lines in early March, and an occasional air car can still be seen out in base service on these routes. Generally, the air cars are now confined to rush hours only, with most being placed in service by Russell Division. Rather than the thirty air cars that were to be assigned at any time to the rotation pool, one can usually see about 48-50 in service. As well, a few air-electric training cars are still in use at St. Clair Division. /JFB

* As has been reported, additional "Jane" and "Luttrell" destination signs were installed in PCCs 4160-4489 and 4650-4674, in order that these cars could be used on the "subway shuttle" operations. The cars are indeed being used in shuttle service, with BLOOR operators using "Jane" and "Keele" destinations. DANFORTH operators, however, have developed a case of "lazy-arm-itis", and on the first day of service cars were signed "Danforth DANFORTH" in both directions. From the second day onward, "Subway DANFORTH" signs have been used in both directions. If this practice continues, any PCC on the system could be used on DANFORTH rather than only 4550-4674.

Perhaps the most energetic operators are those taking crews on the BATHURST line. A "Bloor" destination was used northbound on the first few days of the revised service, but since then most cars use the "Subway" destination northbound. The practice of carrying a destination rather than a route sign on the side lining, previously a practice confined to ST. CLAIR and EARLSCOURT, has now spread to BATHURST. Side linings of "Exhibition" and "Bloor", as well as "Wychwood", are now used on the line, requiring considerable twisting of the side route selector. Some cars, including those destined for Fleet Loop, still use the standard side "Bathurst" lining in both directions, as the side linings do not have "Fleet". It should also be mentioned that the official schedules indicate northbound BATHURST cars are to use a destination of "Bathurst Station", however this sign is non-existent on street cars. /JFB

* SHORT TURNS.....The TTC called for tenders on March 21st for the signalling system for the east and west subway extensions.....overhead and some rail was removed from Bedford Loop immediately following cessation of street car service, and the transfer station at Yonge was barricaded at the same time, as was Vaughan Loop.....removal of overhead on Weston Road began March 21st, followed by removal of overhead on Church Street north of Carlton on the 22nd, and Pape and Riverdale Avenues on the 25th. Overhead was also removed from Vaughan Loop.....PCC 4709, the new Hillcrest Training Car, remains in service as of March 28th.....PCCs 4564 and 4565 are now based at Roncesvalles Division....."Eglinton Via Downtown" destination signs are now appearing on "G" class subway cars, and will follow on other equipment....PCC 4010 was the last HARBORD car along Dovercourt and Davenport Roads, but the distinction of being the last rail vehicle belongs to Crane Car C-2.....other "last" cars included 4496 on FORT, 4528 on BATHURST/Downtown, 4158 on COXWELL, 4326 on KINGSTON ROAD/COXWELL, 4428 on BLOOR, 4213 on PARLIAMENT, 4182 on DANFORTH TRIPPER, 4368 on KING/Church TRIPPER and 4112 on the KING/York TRIPPER. /JFB, RM, DS■

MAIN TRACK SWITCHES



Set for main track.
Normal position.



Set for diverging route.

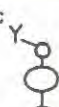
NOTE: Lights need not be maintained on main track switches in single track ABS territory.

Where authorized by special instructions, main track switches may be equipped with reflectorized lenses or targets of the prescribed color in lieu of lights.

YARD SWITCHES—With or Without Lights, Reflectorized Lenses or Targets.



Set for straight track.
Normal position.



Set for diverging route.



Set for straight track.



Set for diverging route.

SPRING SWITCH



HANDLING OF SWITCHES AND DERAILS

NOTE: When spring or dual control switches are operated by hand, they are then hand operated switches and rules governing hand operated switches apply.

104. HAND OPERATED SWITCHES—Except where switchtenders are stationed, conductors are responsible for the position of switches manually operated by them and members of their crews. Employees are not relieved of responsibility in properly handling switches.

Switches must at all times be secured. Main track switches must be lined and locked for main track when not in use. Yard switches that are equipped with locks must be lined and locked for normal position after having been used.

A main track switch must not be left open unless in charge of a member of the crew or a switchtender.

After a switch has been turned the points must be examined and the target or light observed to know that the switch is properly lined.

When a train or engine is clear of the main track waiting for an approaching train, the crew on engine must, when practicable, see that the switches at the front of the engine are properly lined for the approaching train.

A train or engine must not foul a track until switches connected with the movement are properly lined, or in the case of automatic or spring switches the conflicting route is seen or known to be clear.

A member of the crew of a train occupying the main track at a meeting or passing point will, when practicable, open the switch for the approaching train and protect it until relieved by a trainman of the other train or by a switchtender.

When a train is closely approaching or passing over a main track switch, employees must keep not less than twenty feet from the switch stand, and on single track must, in addition, when practicable, stand on the opposite side of the track.

The position of the switch at the end of two tracks is normal when set for trains leaving single for two tracks.

When a train or engine turns out from the main track at any point, the switch must not be restored to its normal position until the train or engine has cleared the fouling point.

If it is known or suspected that the points, or any parts of a switch are damaged or broken, the switch must be protected, section foreman notified, and report made to the proper authority from the first available point of communication.

Both switches of a crossover must be open before a train or engine starts to make a crossover movement and the movement must be completed before either switch is restored to normal position. When a crossover is to be used the switch in the track on which the train or engine is standing must be opened first.

104A. SPRING SWITCHES—When a trailing movement is stopped before passing entirely through a spring switch, the movement must not be reversed nor slack taken until the switch has been properly set by hand.

When a train or engine is stopped by a fixed signal governing movement over a spring switch in the facing point direction, the points must be examined, and if not properly closed and cannot be closed by hand, they must be spiked in proper position before being used. After movement over switch has been made spike must be removed and superintendent notified immediately. If switch points are found in proper position train will be governed by indication of signal.

Trains or engines must stop and examine main track spring switches before making facing point movements over them unless receiving a signal indication permitting them to proceed.

NOTE: Wherever the words "train dispatcher" appear herein they apply to the employee performing the duties.

104B. DUAL CONTROL SWITCHES—When a train or engine is stopped by a signal governing movement over a dual control switch, if no conflicting movement is evident, a member of the crew must immediately communicate with the train dispatcher and be governed by his instructions. Such instructions must include information as to the route to be used. The instructions must be in writing and repeated to ensure correct understanding.

When a train or engine is required to move over a dual control switch under a Stop indication, movement must not be made until after selector lever has been taken out of "power" position and placed in "hand" position. Hand throw lever must be operated until switch points are seen to move with the movement of hand throw lever. Switch must then be lined for the route to be used. Selector lever may be restored to "power" position and locked as soon as leading wheels have moved onto the switch points.

When switching is to be done over a dual control switch, the switch may be operated manually by a member of the crew after authority to do so and work and time limits have been obtained from the train dispatcher as prescribed by Rule 268. Selector lever must then be placed in "hand" position and hand throw lever operated until switch points are seen to move with the movement of the hand throw lever. Selector lever must be left in "hand" position until switching movements have been completed.

When selector lever is placed in "hand" position, all signals governing movements over the switch will display STOP indication and the train or engine granted work and time limits may consider the indication of such signals suspended, and movements may be made on hand signals until switching completed and selector lever is restored to "power" position and locked. Train dispatcher must be notified when switching completed and selector lever has been restored to "power" position and locked.

104C. ELECTRICALLY-LOCKED HAND OPERATED SWITCHES—Hand operated switches equipped with electric locks must be operated in accordance with instructions posted at the switch.

104D. Sand must not be used nor water allowed to run from engine appliances over spring or power operated switches.

104E. DERAILS—Where derails are provided on other than the main track they must be known to be in proper position before signals are given for movements on tracks so equipped, and except while such tracks are being used the derails must be kept set in derailing position whether or not there are cars on the tracks. Employees must know where such derails are located.

105. Unless otherwise provided by signal indication, trains or engines using other than a main track must proceed at restricted speed.

105A. Except on subdivisions specified in the time table, the train dispatcher must be advised when cars are left on a siding.

106. Trains will run under the direction of their conductors. When a train is run without a conductor the engineman will perform the duties of the conductor.

Conductors, enginemen, and pilots if any, are responsible for the safety of their trains and the observance of the rules and under conditions not provided for by the rules must take every precaution for protection. This does not relieve other employees of their responsibility under the rules.

107. Trains or engines must move with extreme care when meeting or passing a train carrying passengers which is receiving or discharging traffic at a station. They must not pass between such train and the platform at which traffic is being received or discharged unless the movement is properly protected.

108. In case of doubt or uncertainty the safe course must be taken.

110. When snow removal equipment is being operated, points must be raised, wings closed, and a speed of fifteen miles per hour not exceeded when meeting or passing trains on adjacent tracks or passing structures which are liable to be damaged.

111. When other duties will permit, employees in the vicinity of passing trains must observe the condition of equipment in such trains; trainman at rear of moving trains will be in position, on rear platform where provided, and trainmen of standing trains in best possible position on the ground from which a view of both sides of passing trains can be obtained. If a dangerous condition is apparent every effort must be made to stop the train.

Train and engine crews of moving trains must, when practicable, be on the lookout for signals given by employees calling attention to conditions on their train.

Trainmen at rear of moving trains must frequently look back at the track to see if there is evidence of dragging equipment.

Conductors and trainmen must know that cars in their trains are in good order before starting and inspect them whenever they have an opportunity to do so. All cars taken in their trains en route must be examined with extra care.

When practicable, employees of a moving train must make frequent inspection of their train to ensure it is in order, and when a freight train stops a trainman will be in position to inspect the train as it pulls by.

When starting freight trains speed must be regulated to permit trainmen to entrain.

112. A sufficient number of hand brakes must be applied on cars left at any point to prevent them from moving. If left on a siding they must be coupled to other cars, if any, on such track unless necessary to separate them at public crossings at grade or otherwise.

Before coupling to cars at any point care must be taken to ensure that cars being coupled to are properly secured.

Before coupling to or moving cars being loaded or unloaded, all persons in or about such cars must be notified. Vehicles and loading or unloading devices must be clear.

Cars must not be moved foul of other tracks unless the movement is properly protected.

113. When for any reason a siding or crossover is to be used, speed through turnouts must not exceed fifteen miles per hour unless otherwise provided.

114. Before making running switches stop must be made, hand brakes and switch tested. They must not be made with or onto occupied cars or cars containing explosives or other dangerous commodities.

151. (TWO OR MORE TRACKS) Where two main tracks are in service, trains or engines must keep to the right unless otherwise provided.

Where more than two main tracks are in service, they shall be designated by numbers and their use indicated by special instructions.

152. (TWO OR MORE TRACKS) When a train or engine crosses over to or obstructs another track, unless otherwise provided, it must first be protected as prescribed by Rule 99 in both directions on that track.

RULES FOR MOVEMENT BY TRAIN ORDERS

201. For movements requiring their use, train orders will be issued by authority and over the signature of the superintendent or designated train dispatchers and only contain information or instructions essential to such movements.

They must be brief and clear; in the prescribed forms when applicable; and without erasure, alteration or interlineation.

Words or figures in train orders must not be surrounded by brackets, circles or other marks.

The different forms of train orders may be combined in one, provided that every movement in such combination directly affects the train first named in the order.

202. Each train order must be given in the same words to all employees or trains addressed.

203. Train orders, except those relating to track or other conditions, must be numbered consecutively each day, beginning at midnight.

Train orders relating to track or other conditions must be numbered consecutively, using a separate series of numbers, and re-issued if continuing in effect for a period of two weeks.

204. Train orders must be addressed to those who are to execute or observe them, naming the place at which each is to receive his copy. Those for a train must be regarded as addressed to conductors, engineers, and also to pilots or snow plow foremen, if any. Those addressed to yardmasters may be used only by crews within yard limits. A copy for each employee addressed must be supplied by the operator.

Train orders addressed to operators restricting the movement of trains must be respected by conductors and engineers the same as if addressed to them.

205. Each train order must be written in full in a book provided for the purpose in the office of the train dispatcher; and with it recorded the signals and responses transmitted, the offices from which the order is repeated and the time, the names of those who sign for the order, the times at which the order is made complete, and the train dispatcher's initials. These records must be made at once and never from memory or memoranda.

Additions to train orders must not be made after they have been repeated.

206. In train orders, regular trains will be designated by numbers as "No. 10 Eng. 756", Sections as "Second 10 Eng. 756" and those handling a snow plow as "No. 86 Eng. 756 snow plow". If the number of the engine cannot be ascertained the word "unknown" will be used.

Extra trains, except work extras, will be designated by engine numbers and the direction, as "Extra 234 East", "Pagr. Extra 234 East", "Mixed Extra 234 East", "Plow Extra 234 East", etc.

Work extras will be designated as "Work Extra 234".

Engines of other railways will be designated by their initials and numbers, as "Eng. ABC 234", "Extra ABC 234 East", or "No. 76 Eng. ABC 234".

When two or more engines are coupled, or when a combination of units are operated in multiple service, the number of the leading engine or unit will be used in train orders, except when an engine or unit is placed on the head end of a train to operate over a portion of a subdivision only, the number of the engine operating through may be used.

To express even hours in train orders the word "o'clock" will be used as "nine o'clock 900 am (or pm)" and the words "noon" or "night" will be used instead of "am" or "pm" where midday or midnight is involved as "twelve o'clock 1200 noon (or night)".

In transmitting and repeating train orders by telephone, train order numbers, and the numbers of trains and engines in the address, will be pronounced and then spelled letter by letter. All stations and numerals in the body of an order must first be plainly pronounced and then spelled letter by letter, thus: Aurora A-u-r-o-r-a, and one nought five o-n-e n-o-o-u-g-h-t f-i-v-e.

When train orders are transmitted by telephone, train dispatcher must write the order as he transmits it, and check and underscore each word and figure each time it is repeated. When transmitted by telegraph, he must write it as it is being repeated the first time and check and underscore each word and figure each time it is repeated thereafter.

207. Before transmitting a train order, the train dispatcher must give the signal 19R or 19Y followed by the direction to each office addressed, the number of copies being stated, if more or less than three, as: "19R east copy 2", or "19Y west copy 7", and receive the proper response from the operator as prescribed by Rule 221.

208. A train order to be sent to two or more offices must be transmitted simultaneously to as many of them as practicable. When not sent simultaneously to all, the order must be sent first to the trains being restricted.

OUTSIDE ABS TERRITORY: The operator at the first restricting point (except initial stations) and at all meeting points must, when practicable, be made a party to the order on 19R, and must deliver copies to all trains affected until all have arrived from one direction.

In transmitting a train order of a previous date, the operator must be advised of the date of issue and when such order is repeated, operator will record the date repeated following the repeated time.

208A. OUTSIDE ABS TERRITORY: A train order must not be sent for delivery to a train at the point at which its right or schedule is being restricted by the order if the train order signal is located beyond the point where such train would be required to stop to permit an opposing train to clear, and at other points, except the initial station, such order should not be sent if it can be avoided. When a train order is so sent to a train, except at its initial station, the operator must be made a party to the order and the words "This order to.....at....." must be added, which is notice to an opposing train to approach that point at restricted speed. When Form A train order is used, provision must be made for the restricted train to hold the main track under conditions where such train would otherwise be required to take the siding.

209. Operators receiving train orders must write or typewrite them in manifold on the prescribed form during transmission. They must retain a copy of each train order. The word "complete", the time, and the signature of the operator must be in his handwriting.

If for any reason a train order is to be rewritten, the operator must make additional copies from one previously repeated, and repeat to the train dispatcher from the new copy each time additional copies are made. The date of issue, repeated time, "complete", and time must not be changed, and the name of the operator who first copied the order will be shown with the initials of the operator who made the additional copies.

The train dispatcher must make record in train order book of each repetition.

When an error is made in transmitting a train order and before it has been repeated, all copies of that order must be immediately destroyed, the order marked "void" in the train order book, and if re-issued, given another number.

210. When a train order is transmitted, each operator receiving the order must, unless otherwise directed, repeat it at once from the manifold copy in the succession in which the several offices have been addressed. Each operator receiving the order must, unless relieved of the duty by the train dispatcher, check the other repeats for correctness. If an operator is so relieved, the train dispatcher must make record in the train order book. An operator must not be relieved of this duty unless one or more operators who have received the order are required to check each repeat.

When an order cannot be transmitted simultaneously to all, or if the repeat from any office is delayed, or is again required, train dispatcher must, when practicable, require an operator at an office from which repeat has already been made to check the correctness of each subsequent repeat. The office checking such repeats must be recorded in the train order book.

210A. In issuing train orders, 19Y may be used to restrict right or schedule of trains, except that 19R must be used.

When a train carrying passengers is affected outside ABS territory unless the operator has been made a party to the order as prescribed by Rule 208;

When an order is sent for delivery to a train at the point at which its right or schedule is being restricted;

When signatures are required as prescribed by Rules 217, 218 and 219.

210B. After a train order has been correctly repeated, and the names of those who have signed the order have been transmitted (when signatures are required), the train dispatcher will respond "complete", with the time and his initials. Each operator receiving this response will then write on the order the word "complete", the time and his last name in full, and deliver a copy to each person addressed. 19R train orders must not be delivered until the train addressed has been brought to a stop. Where only 19Y train orders are to be delivered, delivery will be made by the operator, or from an approved device where provided, without bringing the train to a stop. When delivery of train orders to engineers, pilots or snow plow foremen will take the operator from the immediate vicinity of his office, copies will be delivered by the conductor or trainman of the train.