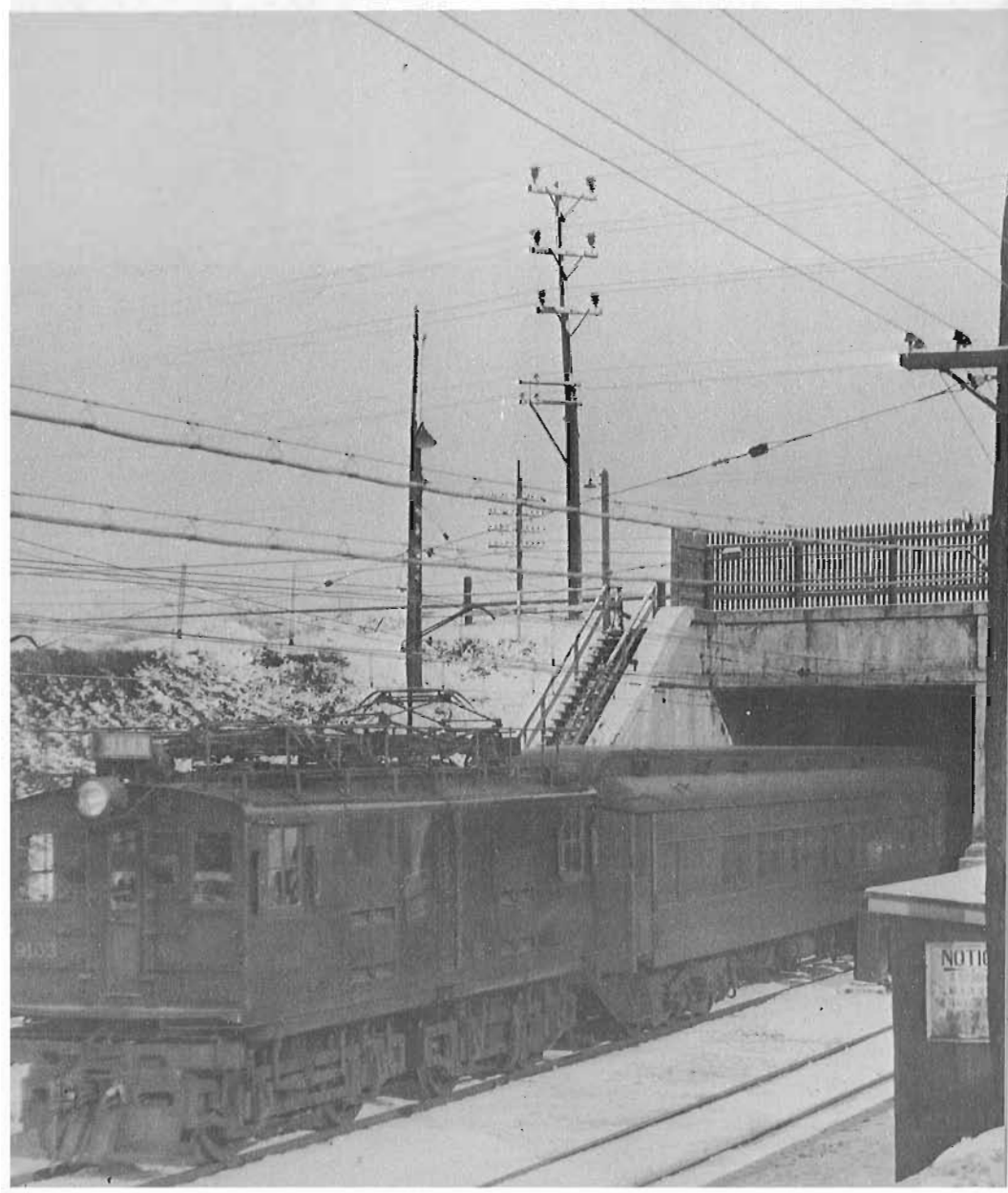


Canadian Rail



NO 203

OCTOBER 1968





METRO - MOSCOW

1968

W.F.G. Doran

NOWADAYS,- AND ESPECIALLY IN NORTH America, there is only one "officially recognized" METRO, and that is in Montreal. Now let's take a look at another, equally famous METRO,- that in Moscow U.S.S.R.

COMMISSIONED IN 1935, Moscow's original METRO line was nearly eight miles long, and had thirteen stations. Constructed along traditional patterns and using conventional rapid-transit equipment, in the beginning it carried about 180,000 passengers daily, and accounted for about 2 percent of the city's passenger traffic.

SINCE 1935, THE MOSCOW METRO has increased rapidly in size and in popularity. Its present-day operational intensity and traffic volume surpasses that of most of the larger cities of the world. In peak hours, it operates trains at 85-90 second intervals, carrying as many as 300,000 passengers at one time. The METRO's operating intensity is presently at a level of sixty to sixty five thousand passengers per mile per day, - which is seven times as many as London's Underground, and twice as many as the Paris METRO or New York's Subways.

AS TRAFFIC DENSITY INCREASES, so does train frequency and speed. Top speed of trains can reach 45 miles per hour, which results in an average speed, including station stops, of about 25 miles per hour. On the ZHDANOV line, recently put into service, higher train speeds have been attained. With 16.4 minutes allowed to complete 8.8 miles of travel, with five intermediate stops, good performance is essential. Such an average speed is unequalled on any other subway system.

SURFACE TRANSPORT SPEEDS certainly do not compare very favourably with METRO levels. The average speeds of urban transport vehicles, such as tramways, trolley bus and autobus are 9.28, 9.71 and 10.51 miles per hour, respectively. Moscow's METRO, being the fastest way to travel, is naturally attracting an ever-increasing number of patrons, as it grows in length. In 1966 the METRO carried 35 percent of the total urban traffic as against 28.5 percent in 1960.

CARS ON THE MOSCOW METRO are much like vehicles on the subways in other U.S.S.R. cities. They are of all-metal construction, 62 feet long, about 9 feet wide and 12 feet high. There are four sliding doors on each side of the car. The overall dimensions are subject to periodic revisions. Natural ventilation provides a complete air change every two minutes. Since its inception, engineering specialists have developed four types of cars for the METRO. They have been built principally in the Mytishchi Works, near Moscow. Each new design reflects improvements over the previous model. The most recent design, called the model "E", is equipped with four traction motors on two trucks and rheostatic braking. The new cars weigh 31 tons each, and is about one and a half times smaller than the first model. Maximum speed for these units is said to be 60 miles per hour. Acceleration and deceleration occur at a rate approximating 47.24 feet per second. The new cars have wider doors to facilitate loading and unloading.

ON THE DRAWING BOARDS is a further modification in METRO cars, which will produce a vehicle that will have a top speed of between 60 and 75 miles per hour with a reduction in gross weight to 25 tons, while maintaining the same overall dimensions. This can be accomplished through the large-scale use of aluminum alloys and synthetic materials.

WORK IS GOING FORWARD STEADILY towards the introduction of an automated system of train control. This work is also applicable to main-line railways in the U.S.S.R. It will probably resemble the system recently used at EXPO '67 at Montreal, Canada, in 1967. In the U.S.S.R., the basic unit for automatic train control is a special purpose computer. The computer will select the optimum route and speed plan, in response to predetermined schedules and accessory programming. The computer will signal its instructions to traction motor controllers and braking devices, so that the train speed and stopping points and times comply with the programme. Doors will open and close according to electronic instructions from the computer, and although there will be METRO personnel on the trains, they will only supervise the proper functioning of the equipment as directed by the computer.

POSITIVE SAFETY WILL BE A PRIME requirement for the new system of automated trains. As one train is gradually overtaken by a following train, safety circuits will come into play, which will prevent possible rear-end collisions. Quick acting devices, controlled through track circuit impulses, will shut off power on the following train, and apply the brakes, if necessary. Tests on automated METRO trains have already produced very favourable results, and on the basis of this work, top speeds have already been raised to 55 m.p.h.



PHOTO PAGE 214: The new Molodezhnaya Station Platform on the Arbat Radius Line of Moscow's METRO (1965). (Photo courtesy N.Minev)

PHOTO ABOVE: The Studencheskaya Terminal Station of the Moscow Metro, as pictured by Y.Abramochkin , in 1966.

AUTOMATION HAS ALREADY FOUND other applications on Moscow's METRO. At terminals where trains are obliged to reverse, rather than turning on a loop line , switches are now controlled by the route computer. As soon as the train has discharged its passengers, it moves ahead over the switch points for the connection to the adjacent line. It then reverses over the cross-over to the line for trains in the opposite direction, and at once begins to load its passengers. These computer-connected switches eliminate the need for switchmen, also the need for supervision from the line signal tower or a central manual or CTC control. This type of automation is also being applied to line power stations and substations.

PASSENGERS USING MOSCOW'S METRO are said to be completely unconscious of the fact that they are really underground. All of the stations are beautiful architectural emblems. A powerful system of forced ventilation maintains the temperature within fixed limits, summer and winter. The relative humidity is always below 75 percent and the dust content of the air is maintained at from 1 to 1.5 milligrams per cubic meter. Air changes are at the rate of 3 to 4 per hour. Special ventilating shafts contain powerful ventilating fans to pass about 500 million cubic meters of air daily through the METRO.

THE HEALTH OF METRO'S PASSENGERS is constantly considered. Ventilation experts check on the air quality in the underground tunnels many times daily. Air temperature and humidity checks are made at each METRO station two or three times daily. Moreover, air samples are taken periodically and the carbon dioxide and dust content are carefully measured. The METRO's cars are thoroughly cleaned and disinfected daily, and at night, are washed completely in special washing chambers.

METRO CONTINUES TO OFFER more and more of the most modern conveniences for its passengers. Public address systems at every station provide service announcements. Fully automatic direction-finding systems are available in stations, so that passengers can determine rapidly the swiftest route to a given destination. These days, much attention is being given to automation of the ticket-selling and collecting machines, which, together with automatic money changers, will speed the METRO traveller on his way. To help prevent congestion during hours of peak travel, stations handling the largest crowds are equipped with closed-circuit television.





PHOTO PAGE 218: Access Corridor to Arbatskaya Station on the Lenin Line of Moscow's Metro (1966) (Photo courtesy R.Alfimov)

PHOTO ABOVE: The lower entrance to the Leninskiye Gory Station of Moscow's Metro, as photographed by A.Nevzhin.

NEW CONSTRUCTION IS TAKING PLACE constantly on Moscow's METRO. Two additional lines are presently being built. One of the new sections will form part of the METRO's longest route of about 20 miles. This line crosses the city from north to south, and connects a new housing development in the suburbs with the centre of the city. Some of the older stations with a high-density passenger flow will be reconstructed. The long-range plan for MOSCOW METRO is to extend it to a length of about 200 miles.

ADDIO - THREE PHASE

P. I. Giovanni Cornolo

TRACTION ENTHUSIASTS ALL OVER THE world were saddened by the news from Italy, recently, - a country where steam railroad electrification began as early as 1899.

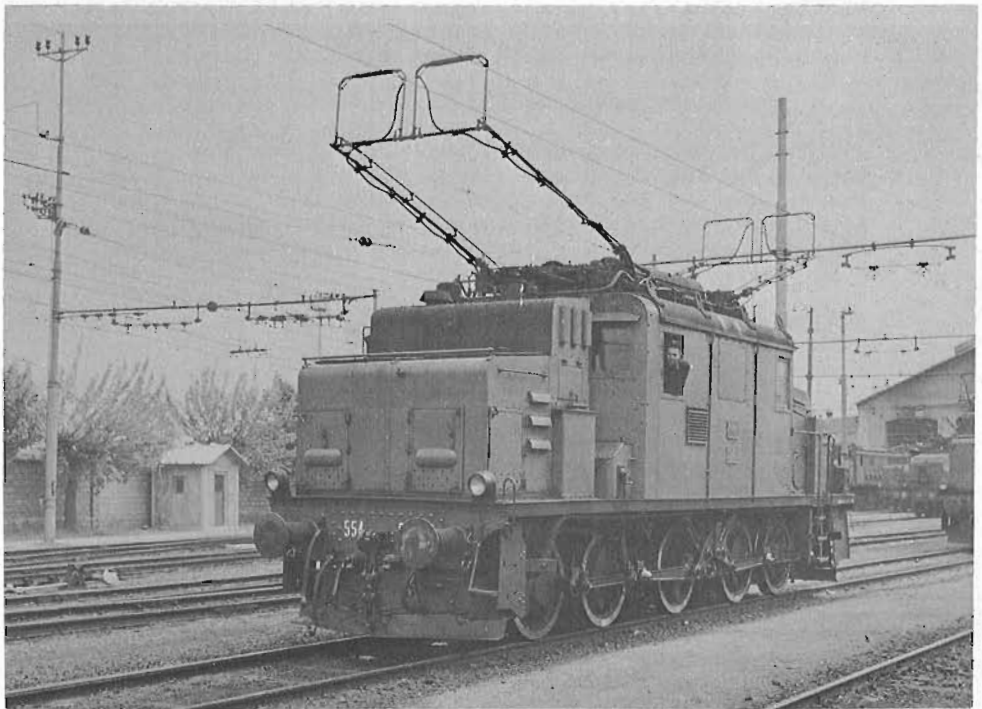
With the conversion of the Savona-Ventimiglia section of the Genoa (Italy)-Marseilles (France) international coast route to direct current, effective 8 October 1967, the unique three-phase current operation ceased. This was the last main-line section of the Italian State Railways to use three-phase electric current, although there are still a few branch lines in Piedmont, - the last location of this peculiar type of electrification. Before long, these isolated lines will be de-electrified and diesel-electric locomotives will take over the hauling of all trains.

THREE-PHASE WAS THE ORIGINAL form of electrification in Italy, mostly in the northern provinces of Piedmont and Liguria, but with lines also in Lombardy and Alto Adige, as well as through the Appenine Mountains on the old "Porrettana" route. The first three-phase current electric railway in Italy ran between Lecco and Colico, - a scenic branch line on the eastern shore of the Lake of Como. This line is generally considered to be the first high-voltage electrification in the world. Current was originally supplied to the double overhead wire at 3,000 volts, at a frequency of 15.8 cycles per second, but later the voltage was raised to 3,700 volts and the frequency to 16.7 cycles per second. This is the voltage as presently used on the remaining three-phase lines.

THE SAVONA-VENTIMIGLIA RAILWAY started public operation on 4 September 1902. Two articulated steple-cab gearless locomotives, very similar mechanically and in appearance to those which worked in Baltimore, Md. U.S.A. from 1895 on, were used to haul freight trains. On the other hand, passenger trains were hauled by electric motor cars, powered by the same electrical equipment and gearless axle drive as the electric locomotives.

THE LINE, SUBSTATIONS AND ROLLING-STOCK, were built originally by Ganz of Budapest, Hungary, and the system was so successful from the outset, that the Italian State Railways (Ferrovie dello Stato) electrified, step by step, a total of about 1,000 route miles, up to 1934. Nevertheless, the first trials (in 1927) of high-voltage direct-current electrification in Italy, on the Trans-Pennine Benevento-Foggia main line, demonstrated the advantages of this kind of railway electrification. This d.c. system had previously been installed on the Chicago, Milwaukee, St. Paul and Pacific Railroad, in 1915.

THERE IS NO MISTAKING an electric railway which is three-phase. There is one overhead wire for each of two phases of the current, - therefore two wires carefully insulated one from the other. This provides a tremendous complication of wires above every switch and cross-over. The third current phase is carried in the running rails. However, utilization of the three-phase current is considerably simpler than d.c., or high-voltage single phase, as three-phase traction motors can run on regenerative braking, simply by overcoming the synchronous speed, without complications in the locomotive circuitry or in substations. But this advantage is cancelled out by the awkward current frequency and the number of poles necessary on the motor armatures.



THE UNIQUE CLASS E 554, three-phase freight motor of the Ferrovie dello Stato, at the engine depot at Bolzano. This is the boundary station between the 3-phase and the d.c. on the Brenner Pass line. 2/5/65.

(All photographs courtesy of the Author)

ALL ITALIAN STATE RAILWAY three-phase electric locomotives were provided with two motors, the rotors of which were linked together by side-rods. All of the freight electrics had two fixed speeds of 15.5 and 31 miles per hour. The lower speed was achieved by connecting the motors in series. The passenger motors gen-

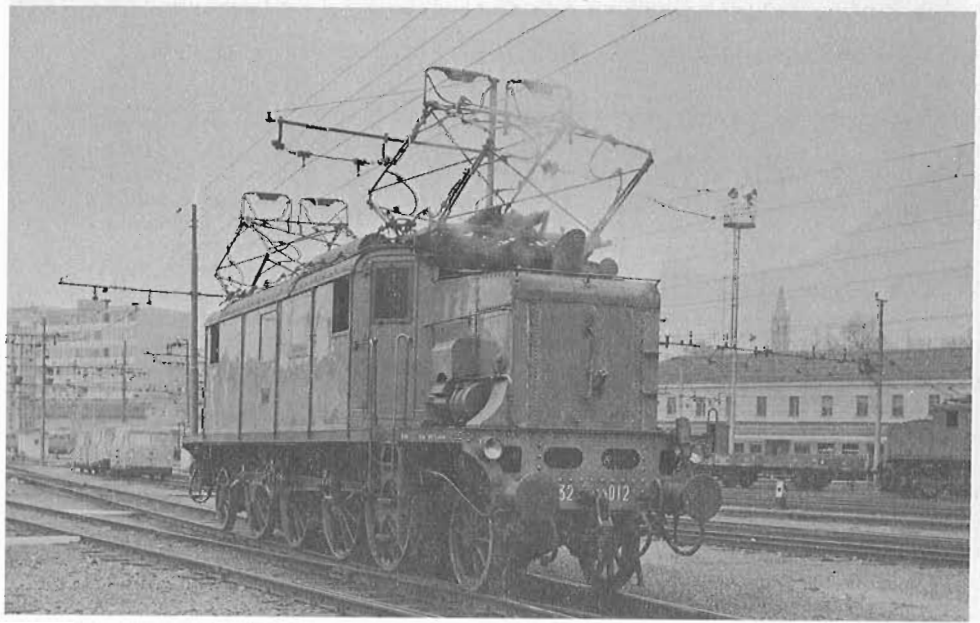
erally had four fixed speeds of 23, 31, 46.5 and sixty two miles per hour. The two higher speeds were achieved by switching the number of poled per motor, or by converting the three-phase current into two-phase, through a Scott-type transformer, carried in the body of the motor car. The lower speeds were obtained by connecting the two motors in series.

EACH THREE-PHASE LOCOMOTIVE was equipped with two double-collector trolley poles, - except the E 432 class passenger locomotives, which were fitted with 2 double-pole pantographs. The double-collector poles were placed one at each end of the locomotive body, and were raised simultaneously to overcome the problem of making contact with the two overhead wires at precisely the same time. This problem of current collection forced the designers, from the outset, to limit the speed of these electric locomotives to 62 miles per hour.

TRAVEL BEHIND A THREE-PHASE electric locomotive was an interesting experience. A passenger train, for example, accelerated to 62 miles per hour, starting up by switching the motors through ballast resistors to improve the power coefficient. After attaining a top speed, the locomotive continued to maintain it, - up hill and down !

ABOUT TEN YEARS AGO, when the three-phase system was more extensive, there was a shortage of pas-

THE PANTOGRAPH GLORY OF THE THREE-PHASE !
No. 432.012, passenger engine, rated at about 3,000 h. p. stands in the atation at Bolzano on 2/5/65.

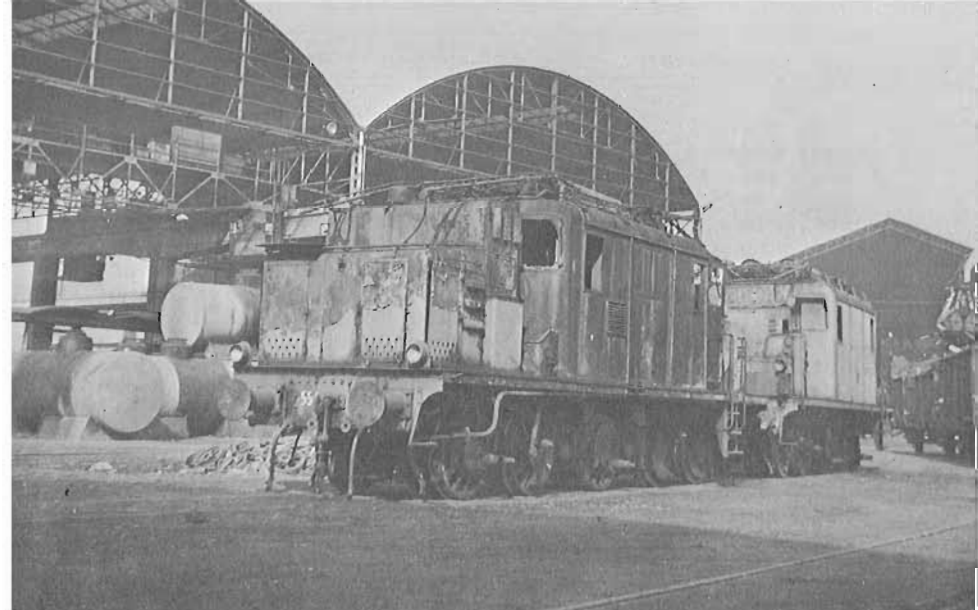


senger engines, and it was very common to see some class E 554 freight locomotives hauling express passenger trains, in sets of three, or in pairs, on the Brenner Pass route, from northern Italy to southern Austria and Bavaria, through the Austrian Tyrol. Three-phase electrification on this route started at Bolzano, Italy, and ended at the top of the Brenner Pass, at an elevation of 4,900 feet. This was the European "Continental Divide" and here the Austrian single-phase electrics took over the trains, brought up by the Italian three-phase motors.

I REMEMBER A RAINY WINTER DAY, when I was to travel on an Innsbruck-bound ten coach passenger train. The consist started from Bolzano with a class E554 freight engine on the head-end. At Fortezza, an important junction, twenty miles further on, the train stopped and another class E 554 was coupled on the rear of our train, as a helper. We then proceeded up the grade at a steady 31 miles per hour.

THE FRONTIER STATIONS, - not only between countries but also between systems of electrification, have changed frequently during the past decades. Thus the old three-phase has been shortened and the new d.c. has been extended. Yet the conversion from one system to another, especially on a long main line, is not as complicated as you might think. On the appointed day for the current conversion, the two overhead three-phase wires are switched over to direct current feeders and the appropriate electrical connections are made. Train operation is then taken over by a fleet of d.c. electric engines. Their pantographs are fitted with wider current collecting shoes, which effectively span the gap between the two overhead wires, both now carrying d. c. current. In the next few weeks, the ex-three-phase overhead wires are moved closer together, after which standard collector shoes are fitted to the pantographs, replacing the oversized ones. Later on, standard direct-current equipment replaces all of the older materials.

THE CHANGE-OVER from one system to another at present-day boundary points is equally simple, and requires about ten to twelve minutes. The whole station yard is divided into two parts, - three-phase current at one end and direct current at the other. At the center portion of the yard and platforms, there is an insulated section in the overhead wires between those for the three-phase and those for the d.c. As the train approaches, the driver lowers and locks down the locomotive collector poles, outside the station, and coasts into the platform to the appropriate stopping place. By this time, the engine is under the "wrong" kind of overhead electrification, so that the poles cannot be raised. Then, a switching locomotive, - either a diesel-electric or a "correct current" electric, couples to the train engine, and draws it forward to the next switch for the parallel siding track. It then reverses with the train engine and picking up speed, gives the train engine a good hearty shove ("loose shunt") back into the part of the yard where the proper current may be obtained from the



GONE WITH SINCERE REGRETS. Two class E 554 freight motors waiting for the cutting torch in a scrap yard on 9/3/68.

overhead wires for the train engine. Thus, the driver is able to unlock and raise the current collecting poles, and once again move his train engine under its own power. Meanwhile, another electric engine of the correct type, - in this case, a d.c. engine, has coupled on to the head of the train and shortly departs with the train as it travels to its intended destination.

THE MOST REPRESENTATIVE CLASSES of the three-phase engine fleet were the E 432 and E 554, -passenger and freight classes, respectively. The E 432 engines were built in 1928-29, numbered 40 units and were produced by Breda of Milano. These were equipped with 2 motors with a total one-hour rating of 2,200 kw. weight on drivers, 71 metric tons, total weight of 94 metric tons and running speeds of 23, 31, 46.5 and 62 miles per hour. The second, third and fourth speeds were obtained by running the motors in parallel and switching them on 12, 8, and 6 poles. The first speed was obtained by running the motors on 8 poles and in series.

THE E 554 CLASS IS A TYPICAL heavy freight hauler, fitted with two electric motors, with a total one-hour rating of 2,000 kw. 183 units were built between 1928 and 1930, with running speeds of 15.5 and 31 miles per hour. The lower speed was obtained by connecting the two motors in series. Both the class E 432 and E 554 motors have a rather complicated system of coupling rods, by which the rotary motion of the jackshafts is transferred to the driving wheels.

SOMETIMES, MOTORS OF BOTH CLASSES can be observed, stopped beside a water column, taking on a supply of water. This is a very odd procedure for an electric locomotive. Curiously enough, water is needed for

the resistors, used to control the starting of the locomotive. The resistors are located in a tank, which is quite empty, until the engine is required to start. Then, these resistors are short-circuited, one by one, by pumping into the tank a 5% solution of sodium carbonate, by means of a centrifugal pump. The level of the solution in the tank varies the resistance of the starting circuit. The heat from these resistors evaporates the water and so it must be replenished, from time to time !

IS THREE-PHASE ELECTRIFICATION really almost dead ? Not yet, friends ! A short section is still in operation in Italy, between Sondrio and Tirano, near the border of Switzerland, in northeastern Italy. Previously, this section was operated by a private company, but the F.S. took it over in 1963. Yet another railway has three-phase operation. This is the Zermatt-Gornergratt Railway in Switzerland.

WE SHOULD ALL SINCERELY HOPE that this most unusual type of overhead electrification for railways will continue to exist for a few years yet, so that it may be examined from time to time by electric railway lovers from all around the world.

ABOUT ASSOCIATION MEMBERS

THE EDITOR REGRETS that the excellent article on "The Snow Excursion - March 2, 1968", published in The 200th. Issue of CANADIAN RAIL was not credited to Mr. Forster A. Kemp, as it should have been.

Mr. Adolph Monsaroff, F.C.I.C., a member of the Advisory Board of the Canadian Railway Museum, has been appointed President of DOMTAR, Limited.

Dr. Robert V. V. Nicholls, President of our Association, has been named Associate Dean, Faculty of Graduate Studies and Research, McGill University, Montreal.

Mr. S. S. Worthen, Chairman, Canadian Railway Museum, conducted a panel discussion on "The Dilemma of the Small Museum" at the recent annual meeting of the Canadian Museums Association, at Quebec. Mr. Worthen has also been re-elected President of the Province of Quebec Museums Association, at the Annual Meeting of that group.

THE FERROVIAN

SOCIETY IN

MONTREAL

S. S. WORTHEN

CONCURRENT WITH the opening of the FERROVIA pavilion at MAN AND HIS WORLD, Montreal, came the announcement of the formation of the FERROVIAN SOCIETY - a select, 14-member group, formed earlier in the year to promote the appreciation of railway operations, past and present. Headed by Mr. Marcel Roger as President, other officers include Mr. J. Norman Lowe, Rideau Region Public Relations, Canadian National Railways, as Car Trustee, and Mr. O.S.A. Lavallee, Speakers Bureau, Canadian Pacific Railway, as Director.

THE HEADQUARTERS of the Ferrovia Society has no fixed address, that is to say, it is a railway car. Specifically, it is a former Grand Trunk passenger car, which was built by the Wagner Car Building Company in the United States in 1897.

IT WAS RECONSTRUCTED in 1918 in the Grand Trunk's Point St. Charles Shops and according to Messrs. Lowe and Lavallee, represents one of the finest examples of antique railway car construction yet to be preserved. From 1925 to the present time, the car has operated on the Canadian National under a number, as is the case with other passenger vehicles. The car is particularly noted because it was the car specifically assigned to the late Charles M. Hays, when he was second Vice-President and General Manager of the Grand Trunk Railway from 1901 to 1909.

THIS UNIQUE "headquarters" for the Ferrovia Society obviously has no fixed location. It has travelled during its "business" life to Toronto, Hornpayne and Quebec City on official business and may be used by the Society in future trips to other cities in Canada. Although the car has led a purely utilitarian existence since its assignment to the late Mr. Hays, it is nevertheless equipped with priceless silver and porcelain pieces from many of the railway lines which now form a part of Canadian National Railways. Its interior is largely of solid mahogany and has specially designed brass electrical fixtures, wall-to-wall carpeting, sleeping accommodations for six persons and a dining room complete with draperies and a well-equipped kitchen. The car was donated to the Society by Canadian National Railways. It is the third such car to be acquired by a group of Canadian railway enthusiasts, the others being Canadian Pacific Car No. 1, built prior to 1867, and owned by the Canadian Railroad Historical Association, the former Dominion Atlantic Railway's "Nova Scotia," presently the property of the Upper Canada Railway Society of Toronto and former Canadian Pacific Railway's Business Car No. 16, now lettered West Coast Railway - British Columbia and owned by the West Coast Railway Association.



Messrs. J. Norman Lowe, Public Relations Department, Rideau Region, Canadian National Railways and Omer S. A. Lavallee, Speakers Bureau Canadian Pacific Railway, two of the officers of the select 14 member Ferroviaian Society, discuss modern railways in the atmosphere of the 71 year old Grand Trunk Railway ex-private car now utilized as an office on wheels.

Photo courtesy Montreal STAR.

COVER

OUR COVER THIS MONTH: Canadian National Railway's famous CENTRAL STATION celebrated its 25th. Birthday in July, - complete with birthday cake. On the 21st. of this month will occur the 50th. birthday of the MOUNT ROYAL TUNNEL, so well described in the Association's publication 'Mount Royal Tunnel' by A.A.Clegg. The picture shows CNR # 9103, with train, emerging from the North Portal at Portal Heights P.Q., on 27 February, 1949. Photo from the CRHA, E.A.Toohy Coll.

In conjunction with the above MOUNT ROYAL TUNNEL 50th. anniversary, the C.R.H.A. will operate two 'Fiftieth Anniversary Specials' these trains will cover all the electrified trackage in the system. The morning train will consist of three M.U. cars painted in the fast vanishing 'old colors'. The afternoon train will consist of former Canadian Northern Loco # 101 and train, in a nostalgic re-creation of the first train through the tunnel. Watch out for details.

GENTLEMEN, YOU CANNOT HAVE OUR COUNTRESS

EVER SINCE "L'AFFAIRE HYDRO number 3," there has been a great gnashing of dental plates in the Winnipeg City Council, with Alderman Claydon as the protagonist or antagonist, depending on the topic of discussion. After Alderman Claydon's unfruitful attempt to make Winnipeg Hydro's 4-4-0 operational in Canada's Centennial Year, he was recently involved in another railroad discussion.

CERTAINLY, THERE ARE changes occurring around Winnipeg, and the eagle eye of Mayor Joe Guay of adjoining St. Boniface has caught a couple. Item: the City of Winnipeg has a very well-known historic locomotive, the "Countess of Dufferin;" Item: the Royal Alexandra Hotel, nearby the "Countess," is now closed; Conclusion: Mayor Guay thinks the "Countess" will be forgotten and will be allowed to deteriorate. Thus says Mayor Guay, "If Winnipeg agrees, we would relocate and restore her to proper form. We could place the locomotive on Provencher Avenue, near City Hall, where the first railway station (in St. Boniface) was once located."

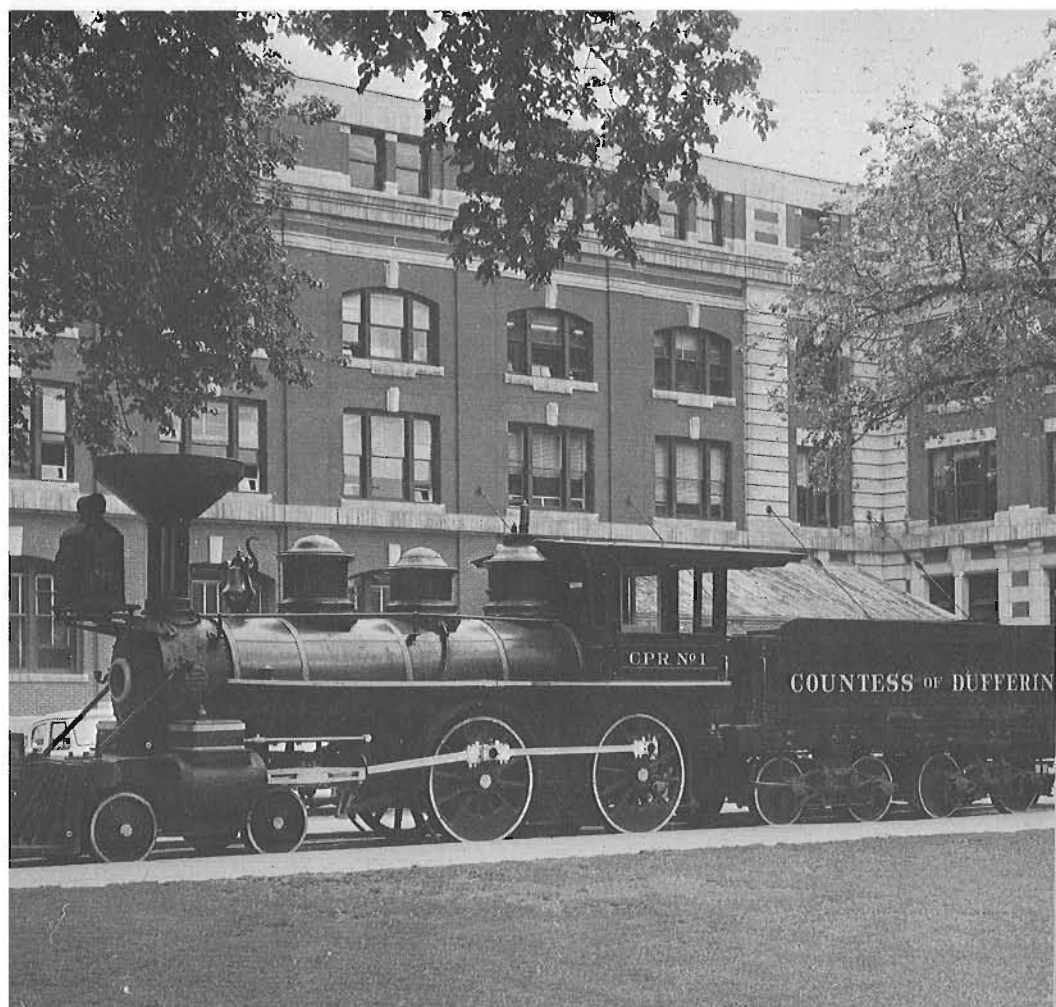
THIS WAS THE signal for Alderman Claydon to spring into action. He stated categorically that Winnipeg must keep the engine as an historical monument, since she was given to the City originally in 1910 by Sir William Mackenzie of Mackenzie and Mann fame. Mayor Guay's comment regarding the restoration of the "Countess" is probably stimulated by the numerous occasions on which University of Manitoba students have painted the engine sky-blue-pink, necessitating a complete repainting by Canadian Pacific, whose name appears on the cab sides.

OF COURSE, IT is quite by chance, (and has nothing to do with the main proposition) that St. Boniface's 150th anniversary as a community will be celebrated in 1968 as well as its 60th year of existence as a City. Could it just be that Mayor Guay considers the relocation of the "Countess" as a suitable commemorative event?

MR. CLAYDON EXPRESSED considerable doubt that the City of Winnipeg would let the "Countess" go. "I would be the first to oppose this," he said. "We are obliged to retain her as a municipal historical monument." Mayor Stephen Juba was quick to back him up: "He (Guay) can't be serious. It's (The Countess) so closely related to the history of Winnipeg. He may also want the Statue of Liberty. And he has about the same chance of getting it. She came to Winnipeg in 1910, and here she'll stay."

THE MAYOR AND The Alderman agree that there are many other possibly more suitable locations in Winnipeg for the "Countess." Among them are Manitoba's Centennial Arts Centre, the Inkster Industrial Development Park and Assiniboine Park. But the "Countess" won't cross city lines - at least so says the Mayor. On the subject of historic railway locomotives, including Winnipeg Hydro's 4-4-0, Mayor Juba was more voluble: "These are museum pieces. It's like giving your mother's wedding ring to a stranger. It's something money can't buy." Indeed, these are noble sentiments! He continued, "Rumours that the "Countess" would leave Winnipeg are wild statements without consultation."

NO, GENTLEMEN of St. Boniface, you cannot have our "Countess"



NOTATIONS FOR RAILWAY HISTORY

Through the kindness of Mr. J.A.Beatty, we herewith reproduce the significant portions of Bulletins of the Canadian Pacific Railway, beginning with the year 1909. The information thus made available will help to clarify some turn-of-the-century events on the CPR.

BULLETIN NO. 3 - September 13, 1909:

Extension of Nominig Branch.

On September 15th, the extension of the Nominig Branch 35 miles to Rapide de l'Orignal will be opened for passenger traffic, new stations being called Loranger, Hebert, Campeau, Routhier and Duhamel; "Duhamel" is located in that portion of the municipality of Rapide de l'Orignal, on the east bank of the Lievre River. The territory opened by this new line is exceedingly attractive for sportsmen.

BULLETIN NO. 4 - September 30, 1909:

Changes in Station Names.

Effective October 3rd, the following changes in names of stations in Eastern Division will take place:

C.N.Q. Transfer (near St. Jerome) will be known as Montfort Junction;
East Farnham as Eastfarn; East Richford as Missisquoi; Glen Sutton as Glenton; Hull Junction as Maniwaki Junction - Kemptville Junction as Kempton; St. Martin Junction as Quebec Junction; Ste. Therese Junction as Ste. Therese and Sutton Junction as Drummondville Junction.

Effective December 1st, the name of Irish Creek, Ont. will be changed to Jasper.

BULLETIN NO. 39 - May 30, 1912:

C.P.R. Oil-Burning Locomotives

The Company has decided to transform the locomotives in use on the Mountain Sections of the British Columbia Division between Field and Kamloops to oil-burners and the work

is now being proceeded with so that the use of oil as fuel, instead of coal on that portion of the line will begin very shortly. The alterations consist of jet burners in the fire boxes of the locomotives, and in changing the tenders so that they can carry oil, instead of water and new storage tanks of steel construction have already been placed at Kamloops, Revelstoke, Rogers Pass and Field. Oil is understood to be more economical than coal and to afford greater steaming power; it is certainly cleaner, and absence from cinders will increase passengers' comfort.

(Ed. note: These must have been the first steam locomotives to operate without water).

BULLETIN NO. 45 - November 30, 1912:

C.P.R. St. Lawrence River Bridge

The double tracking of the Company's big St. Lawrence River Bridge, which has been going on for nearly two years and which is costing about \$2,000,000, has reached an advanced stage. When completed the structure will really consist of two bridges, of which the Eastern one is practically completed, the last of the two big spans, 408 feet long, 55 feet high in the centre and weighing 1,300 tons, having been floated into position on November 22nd. The western bridge is in constant use and will not be completed by putting in the two new heavy centre spans until next summer, but the bridge will be used as a double track bridge throughout the winter and will be of great assistance in handling the heavy traffic to and from the Canadian Winter Atlantic ports.

The double track between Montreal Junction and Highlands and between Adirondack Junction and St. Johns, has been completed and is in use and, when both tracks over the St. Lawrence River Bridge are put into service, a double track line will be in operation between Montreal and St. Johns, Que.

As soon as weather conditions will permit, work upon extension of the double track, as far as Farnham, will be begun and hurried to completion.

BULLETIN NO. 47 - December 31, 1912:

Dominion Atlantic Ry. Betterments.

The Dominion Atlantic Ry. now controlled by the C.P.R. is practically being reconstructed. At Yarmouth, a new wharf 520 ft. long with a warehouse 150 x 50 feet is being built. Ten wooden bridges are being replaced by modern structures and some of these, especially those over tidal rivers, are very difficult and expensive undertakings - the Avon River Bridge at Windsor - 1,100 feet long, Bear River Bridge - 1,655 feet long with 16 spans - the substructure of these bridges are all concrete and the superstructures of steel and they are designed to carry the heaviest locomotives. Much of the line has been reballasted and relaid with heavy rails. A fine new station has been opened at Wolfville. A branch line 15 miles long

is being constructed that will open up a new portion of Nova Scotia.

BULLETIN NO. 49 - January 31, 1913:

The Canadian Pacific now uses the telephone for dispatching over its entire main line from St. John to Vancouver, excepting between Fort William and Winnipeg. It is found a very considerable improvement over the former telegraph system - more accurate and less trying on the operator.

The St. Lawrence River Bridge.

The new double - track bridge over the St. Lawrence, between Highland Station and Adirondack Junction, referred to in Section 6 of Bulletin 45, is in use and will continue in its present shape until the spring when the work of replacing the four continuous spans of the old structure by two 408 ft. and two 270 ft. spans in the western side of the bridge will be done during which operation all trains will use the eastern side for a short time. The double-track between Windsor Street Station and St. Johns has already been proved of immense service in facilitating the movement of the heavy winter traffic to and from St. Johns and Halifax. Work has begun on reconstruction of this bridge July 12th, 1910, the old piers being first enlarged so as to carry new girders and as soon as this was done, the work of laying the metal structure commenced. From the time the work started, until the regular double-track service began January 1st, 1913, was a few days over two and a half years which gives an idea of the magnitude of the undertaking. The bridge is 3,657 ft. long and when the

BULLETIN NO. 45 - November 30, 1912:

C.P.R. Telephone Dispatching

Trains are dispatched by telephone between the following points:

Eastern Lines

Atlantic Division	-St. John, N.B. and Megantic, Que.
Eastern Division	-Megantic, Que. and Farnham, Que.
	-Quebec and Montreal.
	-Newport, Vt. and Montreal.
	-Ottawa and Chalk River, Ont.
Ontario Division	-Smith's Falls & Toronto & Detroit
	-Hamilton & Goderich
	-Woodstock & St. Thomas
	-Tillsonburg & Port Burwell.
Lake Superior Division	-Chalk River, Ont. & Fort William
	-Sudbury & Muskoka.
	-Sudbury and Sault Ste. Marie.



BY F. A. KEMP

"1970 or Bust!"

This might be the slogan of some North American railways, in referring to a target date for the discontinuance of their passenger train services.

It recalls a prediction made by Examiner Howard Hosmer of the United States Interstate Commerce Commission in 1959, that at the then-prevailing rate of discontinuance, rail passenger service, other than suburban, would be non-existent by 1970. The recent removal of most of the U.S. Post Office services from passenger trains has contributed to their decline significantly and trains and stations from coast to coast are papered with notices of ICC hearings on applications to discontinue passenger service. Schedules are changing every month and travellers must verify whether the trains they plan to take are running. Some railways are cutting off ancillary services such as sleeping cars and checked baggage, while others downgrade meal service and still others grossly neglect the equipment. This latter practice is probably the most effective way to discourage patrons. On-time operation of scheduled trains is becoming increasingly rare and passengers, wishing to continue their journeys by rail, must often stay over a day due to missed or discontinued connections.

Some recent applications to end service for well-known passenger train service follow:

Southern Pacific Company:

Trains 11-12 CASCADE	San Francisco-Portland, Ore.
51-52 SAN JOAQUIN DAYLIGHT	San Francisco - Los Angeles, Calif.
53-54 SACRAMENTO DAYLIGHT	Sacramento-Lathrop connection to 51-52
1-2 SUNSET LIMITED	Los Angeles-New Orleans, via El Paso & Houston.

A.T. & S.F. Railway (Santa Fe):

Trains 42-47	Williams Jct. - Phoenix, Ariz.
190-191	La Junta - Denver, Colo.
200-201	La Junta - Denver, Colo.

and trains operated in the summer season between Williams Junction and Grand Canyon.

Norfolk & Western Railway:

Trains 121-124 BLUE BIRD

Chicago - St. Louis, Mo.

In addition, this road discontinued Detroit-St. Louis night trains 302-202 on 30 May 1968, and eliminated through operation of equipment to and from the Union Pacific Railroad on 15 July 1968. With the recent addition of the Delaware & Hudson to N. & W.'s corporation, one wonders about the implications of these cassations of passenger services.

Union Pacific Railroad:

UP has applied to discontinue Trains 5 & 6 - Omaha to Los Angeles, Calif. The Company has also reduced service on Trains 35-36 (BUTTE SPECIAL) from Salt Lake City to Butte, Mont., from daily to three times weekly. The name of Trains 9 & 10 from Kansas City to Ogden Utah, has been changed from the CITY OF ST. LOUIS to the CITY OF KANSAS CITY. Everything is NOT up-to-date, - at least by former standards.

* * * * *

In Canada, the Canadian Pacific Railway has apparently reiterated its well-known position respecting passenger train services, by giving notice of its intention to discontinue Trains 337 & 338 and 339 & 340, which provide a twice-daily DAYLINER service between Toronto, Galt, Woodstock, London and Windsor, Ont. These trains have the fastest scheduled service in this southern Ontario district, but at higher fares than the more frequent and more commodious trains operated by Canadian National Railways, which serve all points except Galt, Milton and Tilbury. The proposed discontinuance is to be effective 1 October 1968 but is subject to a ruling by the Railway Transport Committee of the Canadian Transport Commission, on whether or not these trains "constitute a passenger train service" according to the provisions of the Railway Act.

Canada's loss has become the Republic of Mexico's gain, as the Canadian Pacific has sold 80 reclining-seat coaches to the National Railways of Mexico. The variegated rolling stock of the "Nacionales de Mexico" has been augmented by most of the CP 2100 series coaches and about 15 of the 2200-2234 series. They were repainted before shipment in the N. de M. olive green, with a red stripe, below the window line, lettered NACIONALES DE MEXICO in gold on the letterboard and (again in gold) SEGUNDA in the middle of the body below the red belt-band stripe. They carry numbers at each end of the car. The former "thermopane" windows were replaced by openable stainless-steel sash - of the vertical lifting type for the 2100-class cars and horizontal-sliding type for the long-windowed 2200-class. Seats were left in place, as was the air-conditioning equipment, although, being of the ice-activated type, it will not be of much use in sunny Mexico! This was the reason for providing openable windows.

This will leave only the coaches from series 2235-2298 and 100-128 remaining in regular service on the CP augmented when required by the survivors of the 2200-2234 series and a few odd 1300 and 1400-class coaches not required by the suburban services from Montreal. Mention of these two latter series is a reminder that there are about 25 of these veterans in the Montreal-Vaudreuil-Rigaud service and Canadian Pacific expects to replace them

soon with nine double-deck "gallery" cars, now being built at the Montreal Works of Canadian Vickers Limited. Apparently these 169 passenger coaches will be similar to those in use on the Chicago & North Western, Burlington and Southern Pacific commuter lines serving Chicago and San Francisco, except that power for electrical accessories will be supplied from a generating set on the engine and electric heating will be used for the coaches in a similar fashion to the Ontario GO Transit and TEMPO train equipment in the Toronto area. There is a rumor current that there will be a shortage of one-half a car in essential capacity for the Montreal commuter trains, using these "gallery" cars. Car 1700 of Canadian Pacific will be used to eliminate the deficit. Car 1700 was built in 1936 as a smoking car, along with the first of CP's lightweight equipment. Other units built at the same time were mail-express cars 3600-3603 baggage-buffet-coach combination cars 3050-3053, coaches 2100-2107 and buffet-parlor car 6630. Motive power for these lightweight trains was, of course, Canadian Pacific's famous JUBILEE class F2a, 4-4-4 locomotives, numbers 3000-3004.

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METROLINER' at Wilmington, Delaware. Notice high level platforms.

UAC-CN'S jet-propelled marvel, TURBO-TRAIN, seems to be overcoming its difficulties, north of the forty-fifth parallel. Flowing newspaper reports minimize operating problems, which have delayed the formal introduction of this high-speed flyer in Montreal-Toronto service, and at this point in time, it is doubtful that it will see revenue service this side of Christmas '68. Meanwhile, its electrical counterpart in the United States, intended for continuation of NORTHEASTERN CORRIDOR service south of New York, is also experiencing embarrassing delays and frustrations. Members of the United States Congress are urging acceleration of the entire Northeast Corridor Transportation Project (from Boston Mass. to Washington, D.C.). Recently the House of Representatives Appropriations Committee gave the project a vote of confidence and made a strong recommendation for the immediate production of a comprehensive plan of action. This advice was contained in the committee's report on a \$1.3 billion transportation appropriation for fiscal 1969.

