

CANADIAN
NORTHERN
RAILWAY
DEVELOPMENT

1913

The Canadian Northern Railway's Montreal Tunnel.

S. P. Brown, M. Am. Soc. C.E., M. Am. Soc. M.E., Managing Engineer, Mackenzie, Mann and Co., and Chief Engineer, Canadian Northern Montreal Tunnel and Terminal Co., read a paper on tunnelling before the Canadian Railway Club in Montreal recently in which he dealt with the subject most exhaustively, covering its history and the questions of classification, surveying, design, ventilation, signals, tracks, construction, plant, excavation, and linings very thoroughly. Following are extracts which refer particularly to the C.N.R.'s Montreal tunnel, which he places in class 2 of the three classes into which he divides tunnels.

Class 2.—Entries into cities, where natural surroundings make tunnels imperative, where city ordinances prohibit grade crossings, where land values do not allow of a private right of way for an open cut with bridges at street crossings, or where grades or cost of construction and maintenance make an elevated viaduct inadvisable or impossible.

The Canadian Northern is just completing its transcontinental system, for which terminal facilities in Canada's principal city are essential, especially as this city is the main eastern seaport during the busiest half of the year. Montreal's natural location, between the St. Lawrence river and Mount Royal, made the problem of entry appear complicated. To enter from either end of this narrow strip meant a detour that was undesirable, and might possibly have resulted in two separate stations for the east and west bound traffic. Grade crossings were out of the question. Cut, cut and cover subway, or elevated viaduct would have necessarily been of considerable length, which would have been difficult and expensive in many ways. The natural alternative was a tunnel; and as by developing the country back of the mountain, suburbanly, for Montreal's rapidly increasing population, much of the expense of the improvements could be covered, it was the only logical course. Furthermore, the topography of the city—combined with the distribution of business activity of different sorts—made the actual terminal location, yards, etc., equally logical and simple.

The line of the Canadian Northern Montreal Tunnel and Terminal Co., from its junction with the main line of the Canadian Northern Quebec Ry.—near the Jacques Cartier Union Ry.—is depressed through the new town of Mount Royal to the tunnel portal, where it passes under the C.P.R. belt line, about a mile from the latter's Outremont yard. From this point the tunnel goes down at a 0.6% grade, in an almost due easterly direction, to the McGill

demands. The main yard will be located near the Back river, where the electrical transfer yard will also be situated. There will also be a delivery yard in Mount Royal and an elevated yard in the commercial part of Montreal.

The designs for the Mount Royal tunnel are not yet completed, but it is probable that both twin tunnels and double track sections will be used, depending on the ground. Where the rock is of the proper character to permit it, the tunnel may be left unlined, although this cannot yet be determined. The minimum clearance has been limited to 16½ ft. above the rail, but the standard tunnel clearance will be 17½ ft. The standard clearance in width is 8 ft. off the centre line of track, which may be slightly reduced near the bottom as, for instance, at station platforms.

In the twin tunnel, centre walk ways will be provided at about the level of the coach floors, and cross passages will be cut through the dividing wall, at intervals, for communication between the twin tubes. Refuge spaces are allowed for track men under the walk ways. The ducts will be carried in the centre wall. The relation of the train cross section to the tube area will be approximately 50%.

In the double track section the two tracks will be separated by the duct bench, which is the same height as the centre walk ways in the twin tunnel, so that in case of derailment one train cannot block both tracks.

The studies for electrification have not yet been completed, so that there is not much to be said on this subject. Owing to the climatic conditions outside the tunnel, it is improbable that a third rail will be used on the ground, which will probably force the adoption of some form of trolley. This means high voltage, either direct or alternating current. Great strides have been and are now being made in high voltage, direct current railway work and, until very careful and exhaustive studies have been completed, no decision can be made. This is important in the final design of tunnel cross sections, as the amount of head room for 10,000 volts alternating is quite different to that required for 1,500 volts direct current.

In the Mount Royal tunnel, where soft ground is encountered, a cap and post system of construction will probably be used, owing to the location of the rock surface; this running in general fairly near the roof line permits the full width timbering to be done without shifting posts, which rest directly on the rock. As fast as the roof excavation can be carried on in this manner, the arches will be built, so that the

the axes. Both gasoline and electric locomotives will be used. Part of the tunnel muck will be crushed for concrete stone and ballast; part being used for fill and sub-foundation work. The crushers are gyratory and roll hammer types, to give the desired grades, and both revolving and oscillating screens will be used over the bins.

The cages used at the shafts are of the counter balanced automatic dumping types, with electric hoists. These are designed for a capacity of about 800 cu. yds. per day.

The shops consist of a blacksmith shop, equipped with an air hammer, shears, punches, drill sharpening machinery and the usual forges; machine shops equipped with large and small lathes, a shaper, radius drills, saws, pipe machine, emery and grindstones, etc.; carpenters shops, with band and circular saws and drill repair and testing shops, as well as garage for the maintenance, storage and repairs of automobiles and auto trucks.

The method of excavation adopted in the Mount Royal tunnel is a bottom centre heading, with breakups at intervals where the full sized tunnel section will be developed. The heading is driven by the horizontal bar method. Later, a carriage and other auxiliary apparatus is expected to be used, as described under plant. At the breakups, jumbo timbers will be placed in the heading so that traffic can be maintained and the upper portion of the tunnel stoped down on the top of this and run directly into cars in the heading by gravity. As many as these breakups will be opened as are found necessary to keep up with the heading progress.

The firing is done electrically, but an effort is being made to get some special fuses with electric igniters, by which the cut may be fired electrically, at the same time igniting the time fuses of the reliever and line holes. This should give a better result than the ordinary time fuse method, without its accompanying risk, and will relieve the men from the necessity of going back into the smoke to load the later rounds.

In the Mount Royal tunnel, at present, the average progress at the west end is 20 ft. per day. In the east end, where the ground is rather bad, requiring timbering, and where no shooting is allowed at night, on account of public annoyance, the average progress for the last two months was 12 ft. per day. Heading 9 x 12 ft., 4 cu. yds. per foot. No drill carriage; percussive drills used with water attachment. 24 in. gauge temporary muck cars still in use.

National Transcontinental Ry. Arbitra-

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Two tracks will run both east and west from the main passenger station. The tunnel is something over three miles long, the viaduct about a mile long. The passenger station yard will be about a quarter of a mile long, with platforms over 1,000 ft. long and an area of about nine acres. Local passenger stations will be situated down town and back of the mountain, as traffic

off the centre line of track, which may be slightly reduced near the bottom as, for instance, at station platforms.

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The plant for the Mount Royal tunnel will be quite complete. The compressor plants at each end consist of one direct connected cross compound unit of 2,200 cu. ft. per minute capacity, driven by a synchronous motor and three belt driven cross compound units of 1,100 cu. ft. per minute capacity, with induction motors. The power is three phase, 62½ cycles at 2,200 volts. Pumps, drills and some small motors are run by air. Most power used, however, is electrical. The drills used are the percussive type with the water attachment built largely of steel, to reduce their weight. Horizontal bars are used to support the drills, and carriages are being made to handle the full drilling outfit for each heading.

The muck cars are 3 ft. gauge, very low and narrow. They are built with a 3 ft. wheel base, 18 in. wheels and springs on

axles, saws, pipe machine, emery and grindstones, etc.; carpenters shops, with band and circular saws and drill repair and testing shops, as well as garage for the maintenance, storage and repairs of automobiles and auto trucks.

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National Transcontinental Ry. Arbitration. Sir Wm. Whyte has accepted the position offered him by the Dominion Government, with the consent of the G.T. Pacific Ry., as sole arbitrator in settling the points of difference between the Government and the company as to the operation of the Winnipeg Lake Superior Jct. section of the National Transcontinental Ry. Involved in this question, M. Donaldson, Vice President, G.T.P.R., is reported as saying, Dec. 10, is the settlement of the point whether the shops at Transcona are part and parcel of the National Transcontinental Ry. Mr. Donaldson believed that possession of the shops would be taken Jan. 1, the details of the opening being arranged by G. W. Robb, Master Mechanic. An order-in-council will be passed making the appointment and defining Sir Wm. Whyte's powers as sole arbitrator. Sir William inspected the Transcona shops Dec. 17, and then went by special train over the portion of the N.T.R. east of Winnipeg on which rails have been laid.

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Canadian Northern Railway Locomotive and Car Shops at Winnipeg.

By Frederick H. Moody, B.A. Sc.

The last issue of Canadian Railway and Marine World contained a very full description of the C.N.R.'s locomotive department at its Fort Rouge shops, Winnipeg. This present article completes the description of the entire shops:—

CAR DEPARTMENT.

The transfer table running east and west across the shop property forms the divisional line between the locomotive and car departments, and is the means by which the passenger cars are placed on the tracks running into the passenger car shop from the north, the cars coming on the transfer table from either the north or south over

handled, and also from the fact that the greater portion of the work can be handled in the open, more than two thirds of the shop grounds are occupied by the car department, as a survey of fig. 1 will indicate.

THE PASSENGER CAR SHOP, figs. 17 and 18, T. Hammill, Foreman, is the newest building of the group, the present freight car shop having until within a couple of years ago served the double duties of freight and passenger car shop. It is a brick structure, similar in general design to those of the locomotive department, 201 ft. long from north to south, and 154 ft. wide in

The shop floor is planked throughout, with the surface shinned level with the top of the rail, and resting on 4 by 6 in. sleepers at 4 ft. centres. At a distance of 2 1/4 ft. each side of the rails, there is embedded a 12 by 12 in. cedar jacking beam, centering directly under the side sills of cars for jacking up.

As fig. 18 shows, there is a convenient system of movable platforms attached to posts braced from the shop columns, for convenience in working on the sides of the cars. Every track in the shop has a similar set along each side.

The full width of a bay along the east

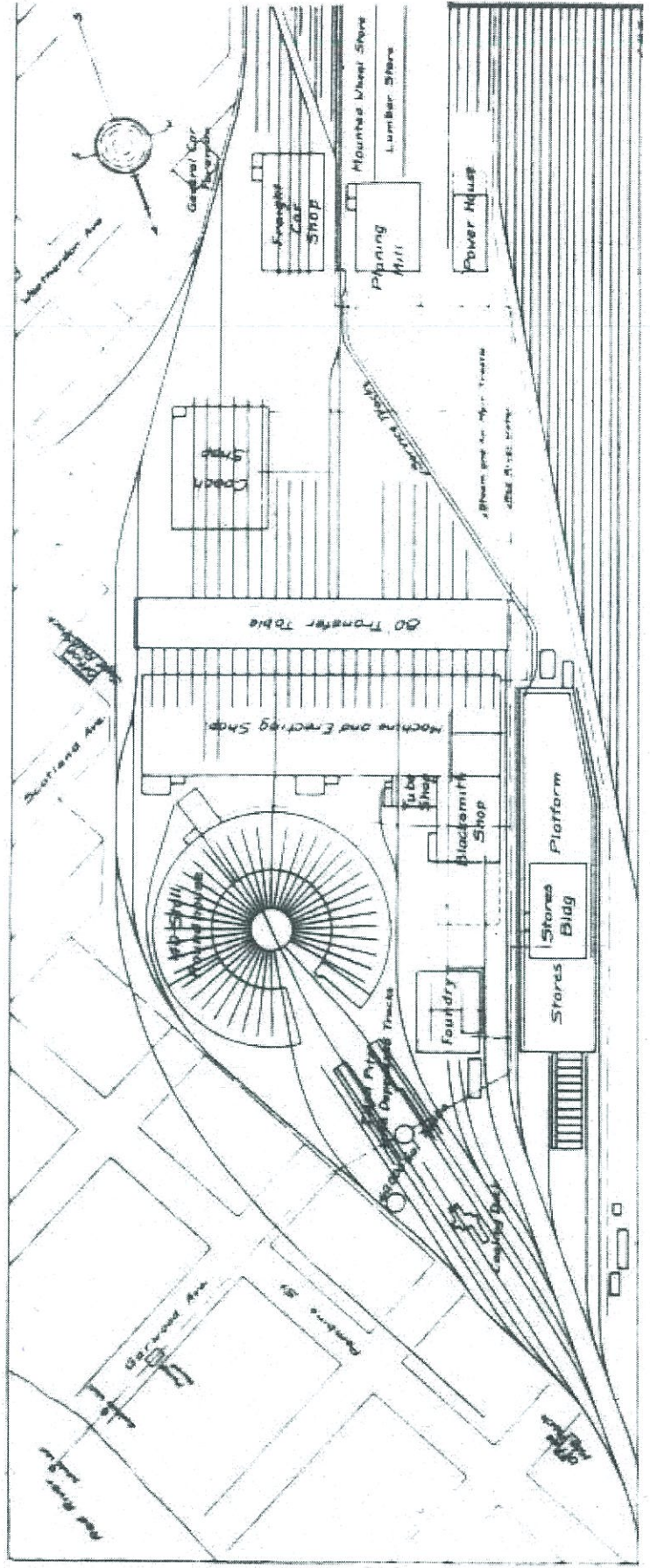


Fig. 1. Section 1.—Layout of C.N.R. Fort Rouge Shops—North End

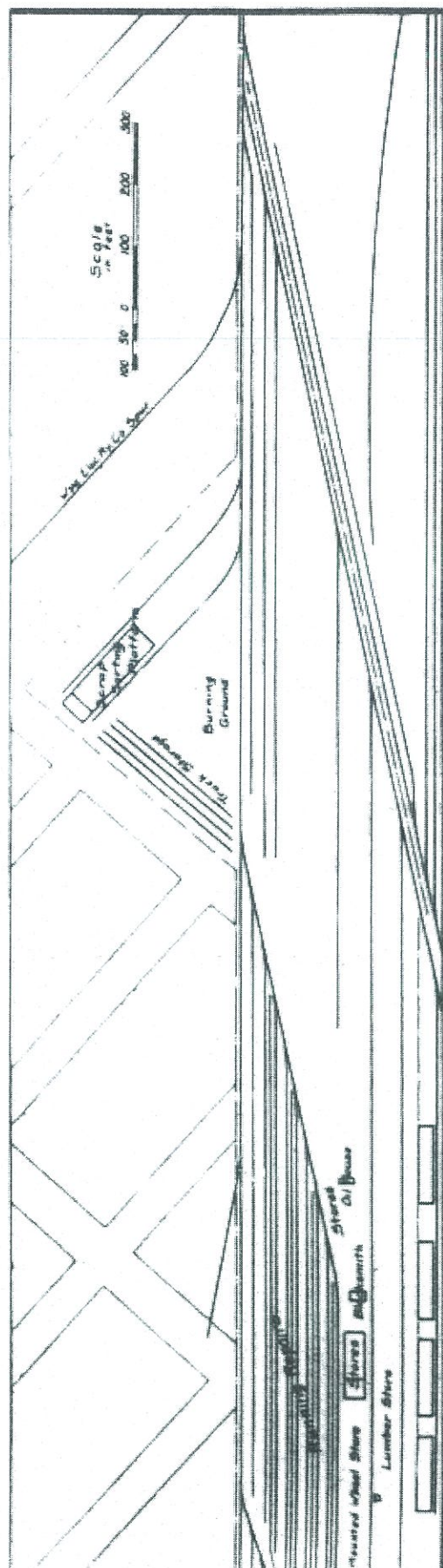


Fig. 2. Section 2.—Layout of C.N.R. Fort Rouge Shops—South End

the through running track along the east side of the grounds. There are also five approach tracks into the car shop from the south, which allows of cars being placed shop independent of the transfer table. The General Car Foreman is A. McCowan, whose office is located in a central position at the foot of the next street south of the Superintendent of Rolling Stock's office. Convenient to all parts of the car department buildings and grounds. The buildings in the car department group comprise the passenger car shop, freight car shop and planing mill, in addition to the several small buildings at the south end of the grounds, made use of by those working on the freight car repair tracks. From the nature and greater volume of the work

width, there are seven 22 ft. bays, all but the east having a through track. Over all but the outer bays there is a skylight 132 by 12 ft., located centrally over the roof, which slopes from the centre, north and south, from a clear height inside of 27 ft., to one of 20 ft. at the end walls. There are five rows of steel columns down the length of the building, built up of two 8 in. channels and two 10 by 1/4 in. plates supporting 9 in. cross I beams, between which are 20 in. I beams carrying the roof stringers. The steel columns are carried on step concrete footings, 6 1/2 ft. deep and 5 ft. square at the base, the wall abutments at the corresponding points extending to the same depth, with a width at base of 4 ft. 5 ins., and a length of 10 ft. 2 ins.

side of the shop, there has just been completed a gallery at a height of about 10 ft., carried on 12 in. I beams from column to column, and across from the columns to the east wall. The gallery is approached from either end by stairs.

Commencing from the south, along the east wall of the shop, there is first a walled in room for the lavatory. Along the outside of the north wall of this room, one of the gallery stairs is located, and backing against these stairs is a sash rack, with a similar rack parallel to it a few feet further along. Between these two sash racks are five benches for finishing work, such as pumice stoning and varnishing the sashes, which on completion are slipped into the racks mentioned. This section of the shop

along to the side door has a cement floor, with a moulded gutter along the wall for draining off the cleaning water.

North of the sash finishing section is the glaziers' department, provided with a 20 compartment glass rack, carrying all sizes of standard glass. One end of the glass rack forms a trimming table. Along towards the door against the wall there is a double 8 by 3½ ft vat for washing and

for carpenter and pipe work, and in addition there are several movable benches, which can be moved about to the most convenient point with regard to the work. A service track runs across the shop at the centre from the side door, over which the material from the stock piles and stores department can be brought into the shop.

The upholstery department occupies the greater portion of the new gallery along

tions; 5 by 3 ft. lye vat; 20 gal. acid jar; and a 30 gal. potash jar. There are also work benches and a deep storage rack for finished and unfinished work.

The heating system of the whole shop corresponds to that of the other shops, there being 16 coils of 1½ in. pipe, banded along all sides between the doors and windows. Live steam is brought to the passenger car shop through a 6 in. main, paralleling that to the locomotive shop part of the way, and branching off at right angles to the passenger car shop as shown in fig. 1, coming into the latter at the southwest corner of the building. The condensation from the building heating system drains into a vacuum pump in a pit at the northeast corner of the building, the water being elevated thereby to a storage tank in a skylight, from which it is drawn off as desired for the washing and scouring requirements. Air is supplied the shop through a 2 in. main from the power house, paralleling the steam main.

The possibility of passenger car shop expansion is well shown by an inspection of the grounds plan, fig. 1. An extension to three times its present size is possible by knocking out the west wall and extending in that direction. Such a course is at present in contemplation.

THE FREIGHT CAR SHOP. T. A. Nelson, Foreman, to the south of the passenger car shop, as will be noted in the plan, fig. 1, is 192 by 100 ft., similar in design in most particulars to the passenger car shop, the freight car shop having served as the passenger car shop before the latter was constructed, as previously noted. Fig. 20 is a plan of the shop, and figs. 21 and 22, views along the south and east walls respectively, from the cab department in the southeast corner of the building.

There are three longitudinal bays in the shop, each 33 ft. 4 ins. wide, down the central one of which there are two tracks leading in from the north of the building, and one in each of the side bays, alongside the bay dividing walls, leaving a clear space along the side walls of the building for the machinery and work benches.

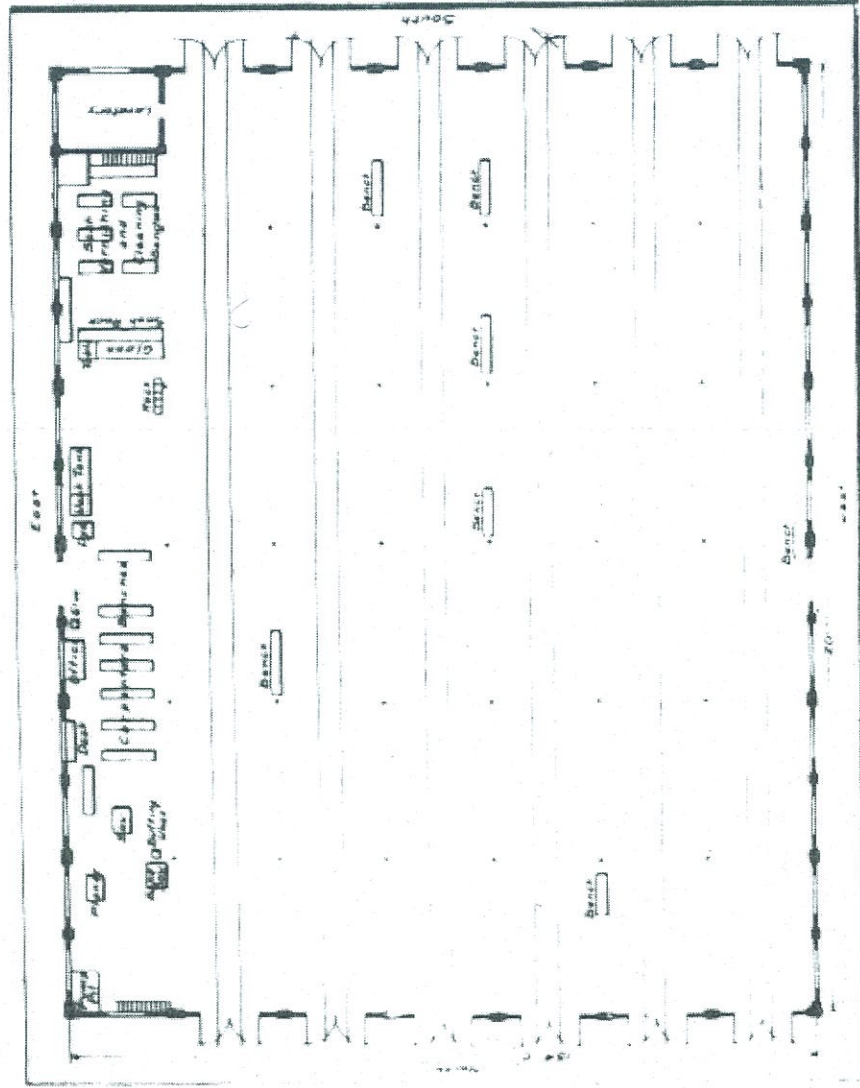


Fig 17 Interior Layout and Machine Distribution in Passenger Car Shop

scouring window sashes, tools etc. provided for painting and varnishing. This vat has steam and water connections for providing warm scouring water. The vat adjoining beside the door is a tub

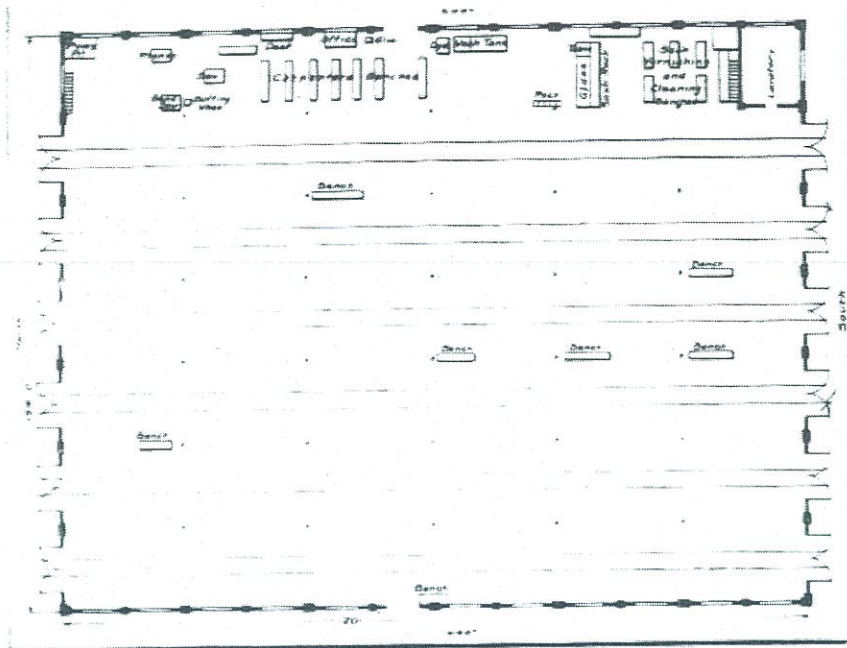


Fig. 17 Interior Layout and Machine Distribution in Passenger Car Shop

scouring window sashes, doors, etc. preparatory to painting, stoning and varnishing. This vat has steam and water connections for providing warm scouring water. The vat, adjoining beside the post, is a tank $2\frac{1}{2}$ by 3 ft. and is used for drying cushions, covers, and such other material that requires renovating. This vat is also provided with hot and cold water connections.

On the east side this department having been recently moved from a smaller gallery in a corner of the freight car shop, which, as previously mentioned, was formerly the passenger car shop. The new location provides much needed additional space. The department is provided with all the usual upholstery shop equipment, and is located in a good position for the convenient handling of the work.

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The walls and columns are carried on step footings at a depth of 6 ft., the bottom step of those at the wall being 4 ft. 8 ins. wide and for the columns, 5 ft.

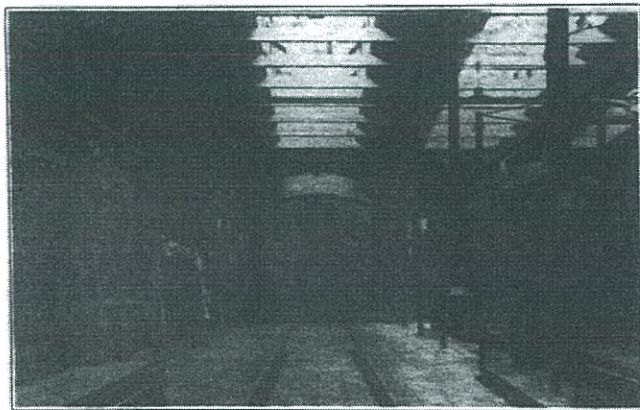


Fig. 18 Arrangement of Track in Passenger Car Shop

The foreman's office adjoins the side door of the building, and opposite this office is a row of seven carpenter's benches for car work. The passenger car shop woodworking department is at the north end, and contains a circular saw, planer, bandsaw, and buffing wheel, all operated from shafting below the floor, driven by a 15 h.p. motor, which is also under the floor.

At different points in the shop, between the tracks, there are permanent benches

The north end of the gallery, with a separate stairway leading thereto, houses the dipping department. Owing to the nature of the work, that portion is provided with a cement floor, which will hold the drippings. This department has a steam heated lacquer oven 6 ft. long, $2\frac{1}{2}$ ft. deep, and 4 ft. high; an oxidizing barrel; a 20 gal. jar of spent acid for preliminary pickling of new brass; three compartment washing tank, fitted with steam and water connec-



Fig. 19 Freight Car Repair Track Buildings and Stores

square, of concrete. The brick walls are 16 ins. thick, and contain windows of ample proportions to give a well lighted interior, in conjunction with six cross skylights in size, 48 by 12 ft., located at 24 ft. centres, centrally in each of the 8 sections into which the shop is divided, excepting the end ones.

The roof columns are of steel, built up of two 8 in. channels and two 10 by $\frac{1}{4}$ in. plates, the clear height under the centre

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bay cross beams being 22 ft., the side bay beams sloping off to a height of 20 ft. The cross beams are 20 in. channels, on which rest the roof stringers. The slope of the roof is uniform, from the centre over the middle bay to the outer edge of the building.

The store room for the car department is in the small building adjoining the shop, at the southeast corner, the structure having originally been intended for the fan room, when the original intention had been to have the shops air heated. Adjoining

ground being for the storage of sash, etc., while undergoing refinishing by the cabinet makers. The work is brought from the passenger car shop and returned on completion.

Further along the east wall of the shop, in the northeast corner of the building, is the tinsmith shop, where all the tinwork for both the car and locomotive departments is handled. The larger tools here found include shears and sheet bender, and on the edges of the hexagonal table shown are the smaller tinworking tools to be found

shop, as shown in fig. 20 and the background of fig. 21. To the north of the entry door in the west wall there is an axle lathe, and on the other side of the doorway an hydraulic wheel press. Next to this is an emery wheel, and in the corner a car wheel boring mill. This equipment, provided with the two jib cranes, is in a position to handle to good advantage large quantities of wheels, both for repair work and renewals.

The mounted wheel storage tracks, of which there are three, about 300 ft. long, are located to the south of the mill, which is directly to the west of the freight car shop. Wheels from and to these tracks pass into the freight car shop through the side door, the practice being to keep one track for mounted wheels that need renewal, and the other two for wheels that are ready for shipment or use in the shop. The convenient location of the wheel storage tracks to the freight car shop is apparent. A large part of the wheel renewal work is done directly, without the use of the wheel storage tracks. The car carrying the mounted wheels to the freight car shop from outside points on the system, for renewal, is brought up alongside the freight car side door on the track running down through the yards, where a yard crane, on a track adjoining lifts them off to the planked space outside the door, and they can then be run into the shop without first placing in the storage space.

The freight car shop, on its four tracks, only has a capacity of about 15 cars, mostly for heavy repairs, rebuilding, and new rolling stock, such as cabooses, which the company builds in its own shops. The majority of the repairs are handled in the running repair, or rip tracks, directly to the south of the freight car shop. Here there are 8 tracks about 1,200 ft. long. These yards are under the charge of P. A. Musgrave, Foreman.

By a system devised by Mr. McGowan, the rip tracks are divided into sections, with different nature of repairs allocated to each. The nature of the repairs is divided into three general groups—heavy, medium and light—the car inspector in the receiving yards looking over the cars as they come into the yards, and labelling them with

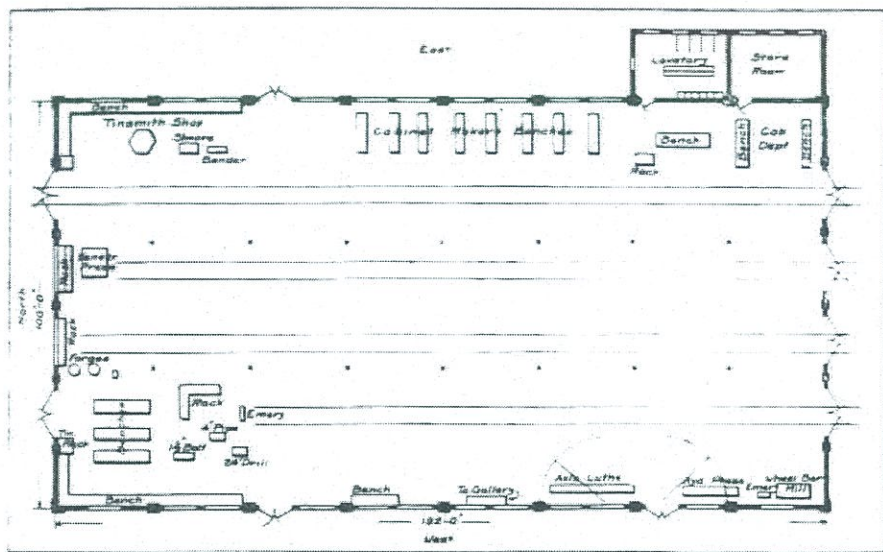


Fig. 20.—Interior Arrangement of Freight Car Shop

this building, in a room of similar size, is located the lavatory, with the usual conveniences.

The cab department occupies the southeast corner of the building. All the cabs now made on the C.N.R. are standard in design, and the parts, as made up in the mill, are assembled here into the completed cabs, which are stored just outside the shop, along the south boundary fence of the grounds, where they are conveniently located for loading on flat cars on the through

in well equipped shops. All repairs to such parts as headlights, etc. are here handled.

In the northwest corner of the building is the car pipe fitting department, equipped with a 4 in. pipe machine, a 24 in. drill, 1½ in. bolt machine and an emery wheel. On the benches in the department are the various pipe tools required, and the benches are also fitted with pipe vises and ordinary vises. There are also two forge fires and an anvil for light forgings and bent pipe work. The rack centrally situated in the



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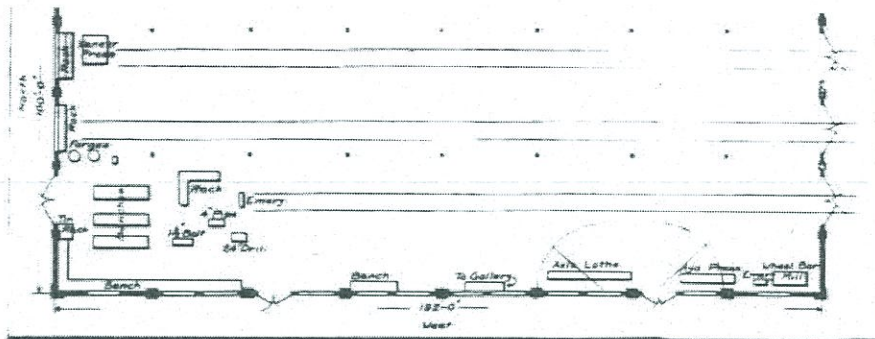


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work is done directly, without the use of the wheel storage tracks. The car carrying the mounted wheels to the freight car shop from outside points on the system, for renewal is brought up alongside the freight car side door on the track running down through the yards, where a yard crane, on a track adjoining, lifts them off to the planked space outside the door, and they can then be run into the shop without first placing in the storage space.

The freight car shop, on its four tracks, only has a capacity of about 15 cars, mostly for heavy repairs, rebuilding, and new rolling stock, such as cabooses, which the company builds in its own shops. The majority of the repairs are handled in the running repair, or rip tracks, directly to the south of the freight car shop. Here there are 8 tracks about 1,200 ft. long. These yards are under the charge of P. A. Musgrave, Foreman.

By a system devised by Mr. McGowan, the rip tracks are divided into sections, with different nature of repairs allocated to each. The nature of the repairs is divided into three general groups—heavy, medium and light—the car inspector in the receiving yards looking over the cars as they come into the yards, and labelling them with

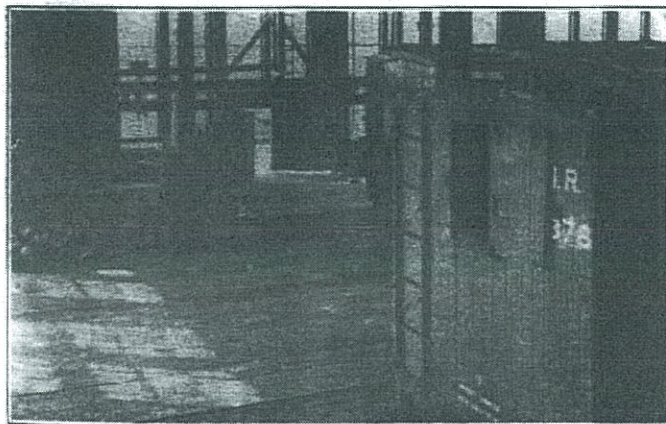


Fig. 21.—South Side of Freight Car Shop.



Fig. 22.—East Side of Freight Car Shop.

running track, for removal to divisional points. The benches in the cab department are for fitting, one cab at a time being assembled in the space between these two benches.

As a reminder of the time when the passenger car work was also handled in this shop, there is a row of 8 cabinet makers' benches along the east wall, where all the passenger car cabinet work is still handled, owing to lack of space in the passenger car shop. These benches are shown along the right edge of fig. 22, the rack in the fore-

department, carries the necessary pipe stock. Over this northwest section of the shop there is a small gallery to be seen in the left background in fig. 22, and approached by a stairway along the side of the west wall. This gallery formerly contained the upholstering department, which has since been moved to the new gallery in the passenger car shop as mentioned before. Its future use will probably be for storage purposes.

The wheel and axle department occupies the whole of the southwest corner of the

cards bearing in large red letters, H, M, or L, the yard locomotive switching the cars on their respective tracks at night, everything being in readiness on the commencement of work in the morning.

Between every second rip track there is a narrow gauge service track, similar to that in use in the locomotive department. These service tracks lead on to a common ladder at the north end, passing along between the freight car shop and mill, crossing over the yard track between the buildings by means of two small turntables,

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the service track being double tracked from that point across the space intervening between the locomotive and car departments, to the stores building, from which all the stores required by the car department are brought across with the least effort, and placed where required in the rip track yard.

Along the south side of the rip track yard are the various buildings belonging to that section of the work. This includes a combined stores and office building, blacksmith shop and oil house, as shown in fig. 19. The stores building carries all the local

form there are spotted several cars on which the different materials are loaded as sorted, each separate material on its own car, simplifying the operation of sorting scrap, and making it unnecessary to re-handle after sorting. In a small building at the north end of the platform are housed a bolt threader and shears for reclaiming bolts and cutting up scrap.

To the west of the platform, on an open piece of ground, is located the burning ground, where wrecked parts of cars are burnt away from iron members which it is desired to separate for the scrap piles.

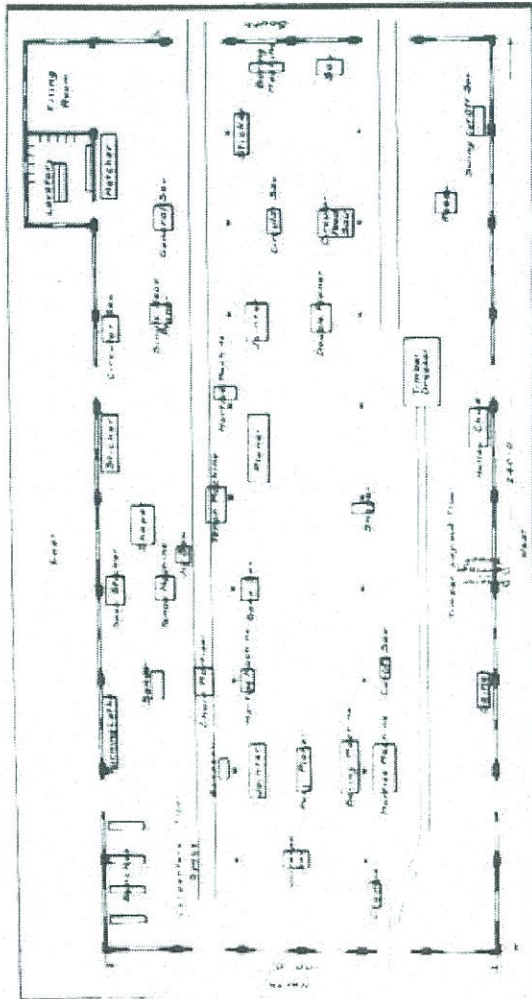


Fig. 23 Interior Layout and New Machine Distribution in Mill

stores and the rip tracks, drawing from the main stores. The blacksmith shop is, of course, quite small and handles only light work, such as repairing bent truss rods, etc. Along the ladder track in front of the oil house, as shown in the foreground in fig. 19, there are racks for carrying the larger car stores, including brake beams, and similar members. Reclaimed parts from the scrap sorting yard are also brought here if they appear to be within easy repair and put in shape by the local blacksmith.

tion being to the north, as shown in fig. 1. While this addition increases the length 90 1/2 ft., there is still ample room for an increase in length of more than double the new length.

The interior arrangement of the machine tool equipment has been well thought out. It will be observed that the heavier equipment is along the west side of the shop and the lighter along the east side, with the machinery arranged in each case to form a steady forward movement from the south to the north end of the shop. Take, for instance, the path of car sills as they enter from the south; after laying out just inside the south door on the west side, they pass first to the swing cut off saw, from which, on a roller carriage track, they pass to the hollow chisel and the gainer, coming out completed as far as the principal operations are concerned.

Near the entry door there is a resaw, beyond which there is a timber dresser, fed from a standard gauge track leading in from the south end of the shop from the timber storage piles, located to the south of the shop in the position shown in fig. 1. The finished lumber is drawn off on a service track leading out from the north end of the building.

The other machinery in the building is arranged in the best possible manner to give a good layout. The balance of the equipment is as follows: Shaper, cut off saw, mortise machine, veneer cramps, boring machine, pony planer, universal saw, jointer, band saw, lathe, sander, chain mortiser, mortise machine, band saw, jig saw, tenon machine, sash stickler, shaper tenon machine, planer, mortise machine, stickler, circular saw, single head planer, jointer, double planer, circular feed saw, circular saw, general saw, matcher, stickler, boring machine and saw. These are given in the order in which they appear, proceeding along the west side from the south, and thence around the shop. In the southeast corner of the shop is a small building adjoining, where the saws are kept in repair, the room being equipped with various saw sets and filing machines. The pattern shop is arranged in a gallery in the northeast

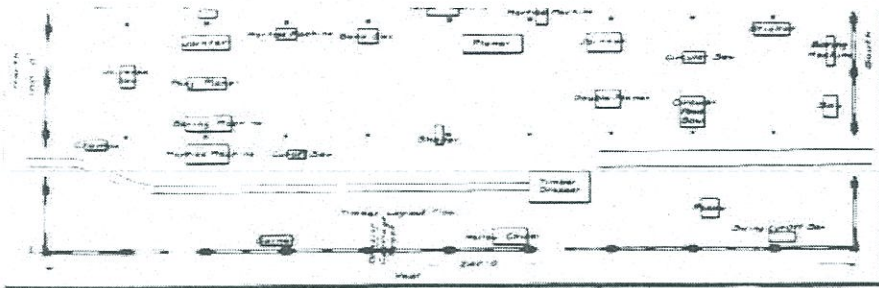


Fig. 23. Interior Layout and New Machine Distribution in Mill

stores for the tip tracks, drawing from the main stores. The blacksmith shop is, of course, quite small and handles only light work, such as repairing bent truss rods, etc. Along the ladder track in front of the oil house, as shown in the foreground in fig. 19, there are racks for carrying the larger car stores, including brake beams and similar members. Reclaimed parts from the scrap sorting yard are also brought here if they appear to be within easy repair and put in shape by the local blacksmith.

To the north of this are four tracks, on which are stored the trucks reclaimed from wrecks, the missing members for which are here fitted from less serviceable trucks, a considerable store being accumulated from time to time, which prove of value in car repair work, and in the building of certain new cars, such as cabooses.

THE PLANING MILL. J. E. M. Firby, Foreman, is located in the building directly to the west of the freight car shop, as shown in fig. 1. In common with the other shops of the plant, it has become so over-

crowded that an extensive addition has recently been added. The plan of the shop, as extended with the proposed arrangement of the machine equipment, is shown in fig. 23; the interior arrangement prior to the addition, is to be seen in fig. 24, in which is shown the crowded nature of the interior.

The other machinery in the building is arranged in the best possible manner to give a good layout. The balance of the equipment is as follows: Shaper, cut off saw, mortise machine, veneer cramps, boring machine, pony planer, universal saw, jointer, band saw, lathe, sander, chain mortiser, mortise machine, band saw, jig saw, tenon machine, sash sticker, shaper tenon machine, planer, mortise machine, sticker, circular saw, single head planer, jointer, double planer, circular feed saw, circular saw, general saw, matcher, sticker, boring machine and saw. These are given in the order in which they appear, proceeding along the west side from the south, and thence around the shop. In the southeast corner of the shop is a small building adjoining, where the saws are kept in repair, the room being equipped with various saw sets and filing machines. The pattern shop is arranged in a gallery in the northeast

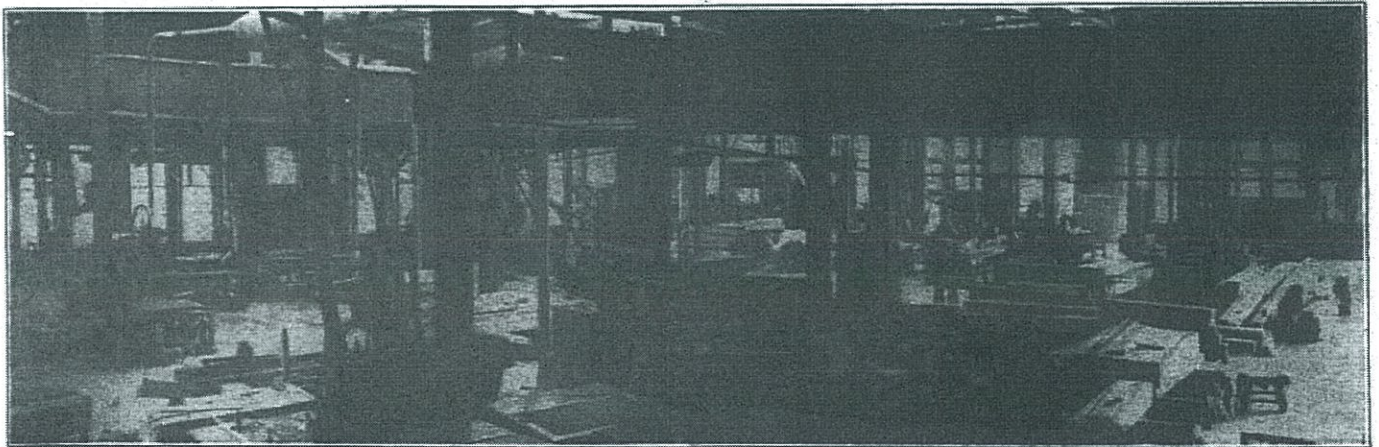


Fig. 24.—Interior of Mill, showing Old Arrangement.

All the wrecked cars and scrap car stock of all kinds, as brought in from the line on flat cars, is sorted over in a special yard at the southerly end of the grounds. Two tracks lead into this section from the easterly running track, one of which the flat cars carrying the wrecked material are placed. Between the two tracks is a platform at the car level, on which the scrap material is unloaded from the cars, and sorted there, the scrap parts being dismembered at the same time. On the track at the other side of the plat-

form is a platform at the car level, on which the scrap material is unloaded from the cars, and sorted there, the scrap parts being dismembered at the same time. On the track at the other side of the plat-

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of a brick construction throughout, except that its narrowness makes unnecessary the use of steel columns and the division of the building into bays. The walls are all carried on step footings at a depth of 6 ft., some of which are 4 ft. 11 ins. wide, and the others 5 ft. 11 ins., the latter for the outer wall abutments, and the other for the dividing wall.

Electrical power is used entirely throughout the plant, and is obtained from the Winnipeg Electric Ry. Co., which generates it at a hydro-electric development at Lac du Bonnet on the Winnipeg river. The power is delivered at 2,200 volt, 60 cycle, 3 phase alternating current to the power house of the railway shops, where it has to be transformed for general use in the shops.

Along the east wall of the power house are three 60 cycle, 150 k.w. transformers, that step the power down to 600 volts for transmission throughout the shops for the group and constant speed machine drives. Adjoining this battery of transformers is a 19 k.w. potential regulator. Along the north wall is a motor generator set, with a capacity of 80 k.w., receiving power in the induction motor end direct from the power line at 2,200 volts a.c., and delivering the same at 250 volts, d.c., for trans-

be seen to the rear in fig. 25.

The coal storage for the boilers is in the bins shown of the left in fig. 25, coal being brought to the building on the track along its east side, as shown in fig. 1, being thrown into the covered bins along the inside of the building, in no way exposing the interior to the cold of the outside. The bins are about 10 ft. deep and are 6 ft. high, holding about 100 tons. In fig. 24, it will be noticed that there are the usual suction pipes for drawing off the shavings from the various machines. These pipes all lead to a suction fan on the power house side of the mill, the pipe from there slanting up at an angle of about 45 degrees to a point over the coal bins, where the shavings drop into a suspended bin, from which they are fired into the first two boilers in the boiler room. These two boilers are equipped for firing both the shavings and coal.

Forced draft is employed, with two 12 ft. fans on a platform at the north end of the boiler room, driven by the two fan engines mentioned before, discharging through a short 6 ft. smoke jack through the roof over top. Back of the boilers, and above the common smoke header, there are two Green fuel economizers with a combined capacity of about 1,000 h.p., so ar-

pump for the same purpose.

STORES DEPARTMENT.

The general stores department for all the company's lines west of Port Arthur, Ont., is located in the Fort Rouge shop grounds, northwest of the machine and erecting shop. The General Storekeeper is A. E. Cox. The building is of brick, 150 by 100 ft., and has two stories and basement. It stands in the centre of a long, narrow platform, 575 by 175 ft., at car level, the main floor of the building being at the same level. At the southerly end of the building are the stores department offices, behind which on the main floor is a system of shelving for the storage of the medium weight stores, the upper story being similarly arranged for light material, and the basement for heavy stock that must be kept under cover, both reached by a freight elevator. The interior arrangement of the building is well planned for convenience. Down the centre and along the sides are main alleys from end to end, at right angles to these main channels are side alleys, on each side of which have been built up tiers of bins, which contain the stores, each in its separate compartment, as shown in fig. 26.

Rough stores are kept on the long platform to the north and south of the build-

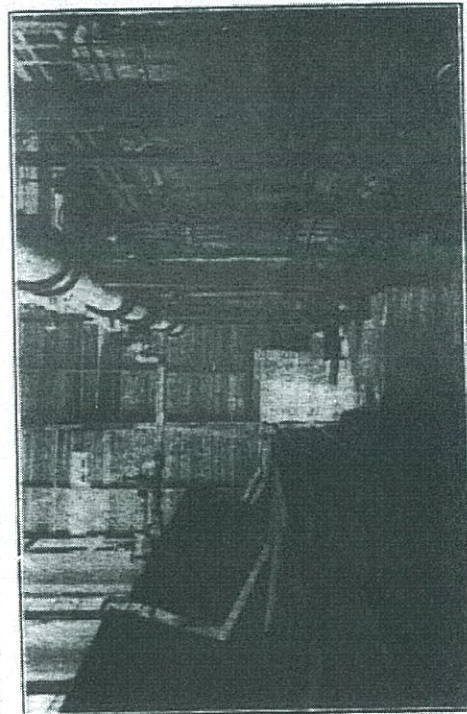


Fig. 25—Interior of Boiler Room.

mission through the shops for the variable speed individual drives. This motor generator set is shortly to be duplicated, as the increased demands on the single set are



Fig. 26—Interior of Stores Building.

ing, the platform being divided off into streets, crosswise and lengthwise, by white painted marking lines. The rough stores are thus as easily located and arranged as those in the building. Along both edges

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group and constant speed machine driven. Adjoining this battery of transformers is a 19 k.w. potential regulator. Along the north wall is a motor generator set, with a capacity of 80 k.w., receiving power from the induction motor and direct from the power line at 2,200 volts a.c., and delivering the same at 250 volts, d.c., for trans-

mission through the shops for the variable speed individual drives. This motor generator set is shortly to be duplicated, as the increased demands on the single set are exceeding the capacity. The electrical equipment is all controlled from the 7 panel switchboard to the rear in fig. 25.

In rear of the motor generator set is located a 20x30x17x26x28 in. air compressor, handling 2,000 ft. of free air per minute, and delivering it at a pressure of about 110 lbs. This compressor being now overtaxed has made necessary the addition of a similar unit which will shortly be added in an addition to the north end. The only other equipment in the compressor room, other than the oil tanks, are two small oil engines on a platform along the dividing wall of the building, driving the fans of the boiler room.

The long room to the rear of the compressor room shown in fig. 25, is the boiler room. In it are six 250 h.p. Canada water tube boilers, and a seventh is being installed in the boiler room addition at the far end of the room, which it will be noted in fig. 25, has only a temporary wall. Each boiler connects through a looped 7 in. pipe from the top of the boiler to a 15 in. header near the top front of the boiler, as in fig. 25, which leads into the compressor room. The connections to the other buildings leading out along the elevated trestle-work before mentioned, except the one to the mill and freight car shop, which is to

right angles to these main channels are side alleys, on each side of which have been built up tiers of bins, which contain the stores, each in its separate compartment, as shown in fig. 26.

Rough stores are kept on the long platform to the north and south of the build-

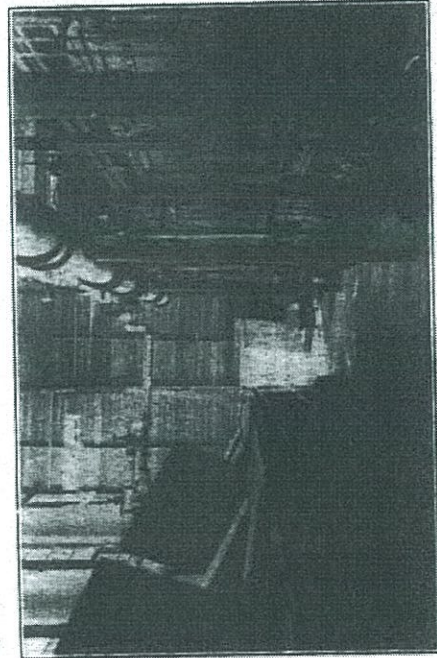


Fig. 25—Interior of Boiler Room

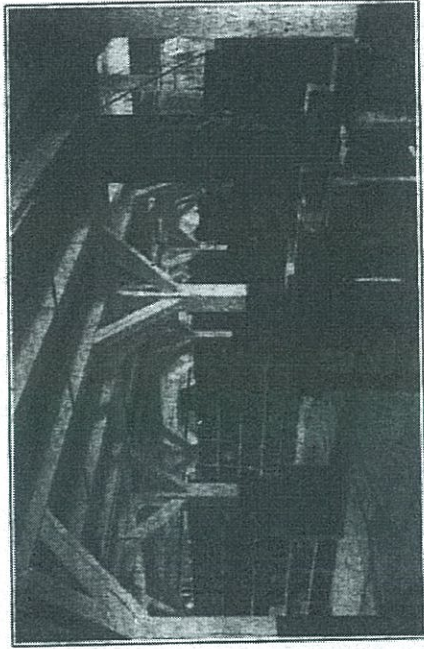


Fig. 26—Interior of Stores Building

ing, the platform being divided off into streets, crosswise and lengthwise, by white painted marking lines. The rough stores are thus as easily located and arranged as those in the building. Along both edges and the ends of the platform are service tracks, connecting the building with all parts of the platform, and with a double track line running from the platform diagonally across the grounds to the car department buildings. Along both sides of the platform there are also yard tracks, over which the stores are brought in cars, from the point of manufacture or assembly to the grounds, or from outside points. On the track to the west of the platform is usually spotted the stores supply car, which is to be taken out on the system for the replenishing of local stores at division points.

LOCUMOTIVE HOUSE.
To the north of the machine and erecting shop there is a 40 stall roundhouse, which handles all the motive power in and out of Winnipeg, taxing it to the limit. This is shortly to be relieved by the building of another across the Red river in the new east yards. The Roundhouse Foreman is J. H. McAlpine. The roundhouse is of a brick construction, and is divided into four sections, with 10 stalls in each. The stall at the northwesterly end is partitioned off for the office of the roundhouse foreman, the engine men's room, oil room and machine shop. The machine shop only con-

stant speed machine driven. Adjoining this battery of transformers is a 19 k.w. potential regulator. Along the north wall is a motor generator set, with a capacity of 80 k.w., receiving power from the induction motor and direct from the power line at 2,200 volts a.c., and delivering the same at 250 volts, d.c., for trans-

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tains a 22 in. lathe, 24 in. shaper, 30 in. drill and an emery wheel, it being unnecessary to have a large equipment on account of the close proximity to the main shop, with which it is connected by a through track which enters the machine shop in the driving wheel and driving box departments. As these are the parts that have greatest need of repair between shoppings, the arrangement is remarkably convenient.

The roundhouse is entered from the north through a 70 ft. turntable equipped with impelling tractor. The pits under each track are concrete, the floor of each sloping to the rear, connecting with the drain. The floor outside of the pits is of cinder, in which, on each side of the pit, are embedded jacking timbers. Over each pit is a cone shaped asbestos smoke jack.

There are two double driving wheel drop pits at pits 17 and 18, and at pits 23 and 24, and for handling trucks there is a smaller drop pit between tracks 3 and 4. All these drop pits are hydraulic, with a full depth drop, non telescopic.

The heating system is provided for by five 75 h.p. boilers in an adjoining building. A 14 ft. fan discharges through a 7 ft. pipe, the latter branching in both directions around the outside of the roundhouse near the roof, through 3 ft. pipes, gradually diminishing in size to the two extremities. At each pit an 18 in. branch comes down the outer wall and under the floor, discharging into the end of the pit. For severe weather there is an auxiliary vacuum heating system for the heating of the two outer sections of the roundhouse, drawing steam from the same source.

Around the roundhouse are three rows of wooden columns, the water, steam and air pipes near the roof being branched down the centre one of these posts between each pit. There is an elaborate boiler washing system in use, with blow off connections on the row of columns next the entry doors. In the centre of each bay is an arc light, and centrally in each bay along the outer pathway are also incandescent lights suspended from the ceiling. In addition, there are plug connections for extension cables.

Two entry tracks from the north lead on the turntable both passing over ash pits alongside of which are depressed tracks for the ash cars. Nearby are a couple of 60,000 gal. water tanks and between the approach tracks is a mechanical coaling plant of a 500 ton capacity. To the north of this the tracks lead directly out on the main line.

Hudson Bay and Pacific Ry.—In the proceedings in London, Eng., for the liquidation of the H.B. and P. Ry. Development Co., announced to hold the H.B. and P. Ry. stock.

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Two entry tracks from the north lead to the turntable, both passing over ash pits, alongside of which are depressed tracks for the ash carts. Near by are a couple of 60,000 gal. water tanks, and between the approach tracks is a mechanical loading plant of a 500 ton capacity. To the north of this the tracks lead directly out on the main line.

Hudson Bay and Pacific Ry.—In the proceedings in London, Eng., for the liquidation of the H.B. and P. Ry. Development Co., organized to build the line, the official receiver reported that the company's resources had been recklessly exhausted without sufficient regard to the object for which it was formed. The accounts show ranking liabilities £88,701 and assets estimated to produce £110,300. The latter figure represents the value of the charter taken at cost price. The total deficiency as regards contributors is returned at £195,036. The company was formed in April, 1909, with a nominal capital of £150,000, increased in Nov., 1910, to £250,000; its object being to construct and equip a railway from Port Churchill, on Hudson Bay, to Calgary, Alta., with certain branches. The accounts show that about £8,000 was sent to the engineers in Canada, and that about 300 miles of route was surveyed, and 75 miles of steam road was constructed through the bush.

Owing to representations made as to the conditions prevailing at railway construction camps throughout Canada, the Minister of Labor is arranging for a thorough investigation and report, so that if any abuses be found they may be remedied.

Classification and Percentage Rating of Canadian Northern Railway Locomotives.

Canadian Railway and Marine World readers who in the course of their daily pursuits come across Canadian Northern Ry. locomotives, will latterly have noticed a considerable change in outward appearance, and many will probably be at a loss to locate the nature of the change which has taken place. The change referred to is that of the manner of classifying and rating of locomotives and the means by which this information is concisely arranged in a convenient location on the sides of the locomotive.

The fact of the matter is that the C.N.R. has felt for some time that it has outgrown its swaddling clothes, and become a large system the growth being rather marked for its rapidity. Becoming a system, the various details that go towards its makeup must in consequence become systematized likewise, and not be left in the haphazard manner that would be successful on a small line, but which would not be economical on a large system such as the C.N.R.

Until recently, there was no accepted method of classifying and rating locomotives on the system. An attempt at introducing some standard of comparison among the

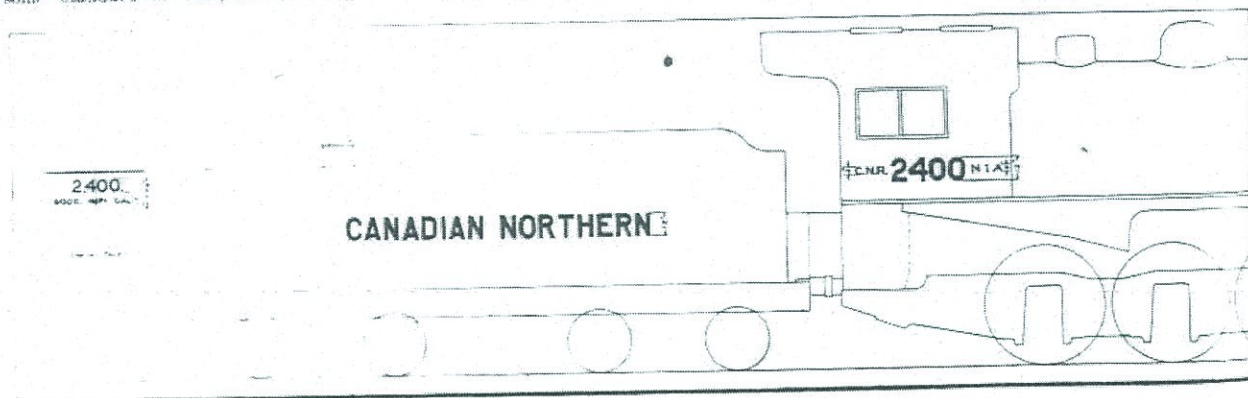
motives of all the Mackenzie-Mann interests in Canada and the United States. Realizing the failings of several of the different systems of rating, principally from the fact that some arbitrary unit has been selected as a standard, for which no logical reason can be given, consideration was given to the selection of a base that would be within the realm of logic. As in most other systems, the tractive effort has been taken as the ground work of rating. The question was to determine the unit of comparison. Tractive effort is usually measured in even thousands of pounds, hence the selection by Mr. Hungerford of 1,000 lbs. tractive effort as being a 1% rating. A locomotive with a tractive effort of 28,000 lbs. is in this C.N.R. rating a 28% locomotive, and this is the rating of the latest 10 wheel passenger locomotives on the system.

The classification scheme developed has necessitated the renumbering of nearly all the motive power. Previously, as each new batch of locomotives was received from the builders, they were given the series of numbers above the last lot of locomotives numbered, this scheme using up the numbers in properly ascending numbers, but without any system as regards the allo-

for many years to come, as the number of railways operating over 3,000 locomotives is very few.

The planning of a system of locomotive classification involved different considerations. There is first of all the general type system of classification universally adopted, such as Pacific, consolidation, etc. The best basis of subdivision of these types was considered to be on the diameter of driving wheels, the locomotives of a certain type between given limits of driving wheel diameter are given a certain type symbol letter; for example, consolidation locomotives with driving wheels over 52 ins. diameter but under 58 ins. diameter, have the type symbol "M." This is the type of locomotives until recently in general use for freight, but they have been superseded by locomotives of a larger type, in the next or "N" group, for the heavier main line work. The general arrangement of type symbols is as follows:

Type Symbol. Outside Diameter of Drivers
Wheel Arrangement, 4-4-0 (Standard):
A.....63 ins. or less.
B.....70 ins. or less, but over 63 ins.
Wheel Arrangement, 2-6-0 (Mogul):
C.....52 ins. or less.
D.....58 ins. or less, but over 52 ins.
E.....63 ins. or less, but over 58 ins.
Wheel Arrangement, 4-6-0 (Ten-Wheel):
F.....52 ins. or less.
G.....58 ins. or less, but over 52 ins.
H.....63 ins. or less, but over 58 ins.
I.....70 ins. or less, but over 63 ins.
Wheel Arrangement, 4-6-2 (Pacific):
J.....70 ins. or less.



Standard Lettering and Numbering, Canadian Northern Railway Locomotives.

locomotives then in use, was introduced on the system several years ago, the basis of comparison being an order of 10 wheelers just then being delivered from the builders, and which were the largest then in use on the system. These locomotives had a tractive effort at the drivers of about 23,600 lbs. and from the fact that they were the largest in use were considered as 100% locomotives. Having an odd number of pounds such as 23,600 as the unit of comparison, naturally led to considerable confusion in the rating of other existing locomotives from this base, as while it was a simple matter to determine the percentage by a simple calculation, the percentage thus arrived at conveyed but little meaning, the unit being so unusual. That is to say, given a locomotive with maybe a rating of 70%, a calculation beyond the scope of the average person's powers of mental arithmetic would have to be made to ascertain the tractive effort that the locomotive would develop, resort being made to pencil and paper to determine the desired information.

The system of classification and percentage rating at present in use, and to be here described, was developed recently by S.-J. Hungerford, Superintendent of Rolling Stock. Not only is it being applied to the C.N.R. locomotives, but also to the loco-

cating of the different types of locomotives to any particular run of numbers. With but few exceptions, it was impossible to refer to any particular type of locomotive as say the "600 class." In the new scheme, certain runs of numbers are given to different types of locomotives, the number in each run depending as far as possible on the relative quantities of that particular type at present in use, with due regard to contemplated future additions to that particular type. That is a matter of pure conjecture, as new types are constantly being introduced, though, at the same time, it will be observed that there are certain general lines that appear to have become more or less standard—such for example as the 8 wheel switcher, the 10 wheeler, and the consolidation. The allocation of numbers is as follows:

Number	Type
1 to 99	4-4-0-American.
100 to 199	2-6-0-Mogul.
200 to 299	0-6-0-Switcher.
300 to 699	0-4-0 and 0-6-0-Switchers.
700 to 999	4-6-2-Pacific.
1000 to 1999	4-6-0-Ten Wheeler.
2000 to 2999	2-8-0-Consolidation.
3000 to	Mallet.

This provides for over 3,000 locomotives, giving the larger groups to 8 wheel switchers, Pacifics, 10 wheelers and consolidations. It is estimated that this arrangement will provide ample room for expansion

K.....75 ins. or less, but over 70 ins.
Wheel Arrangement, 2-8-0 (Consolidation).
L.....52 ins. or less.
M.....58 ins. or less, but over 52 ins.
N.....63 ins. or less, but over 58 ins.
Wheel Arrangement, 0-6-0 (Switch).
O.....52 ins. or less.
Wheel Arrangement, 0-8-0 (Switch).
P.....52 ins. or less.
Wheel Arrangement, Mallet Articulator.
Q.....52 ins. or less.
R.....58 ins. or less, but over 52 ins.
Wheel Arrangement, 0-4-0 (Switch).
S.....58 ins. or less.

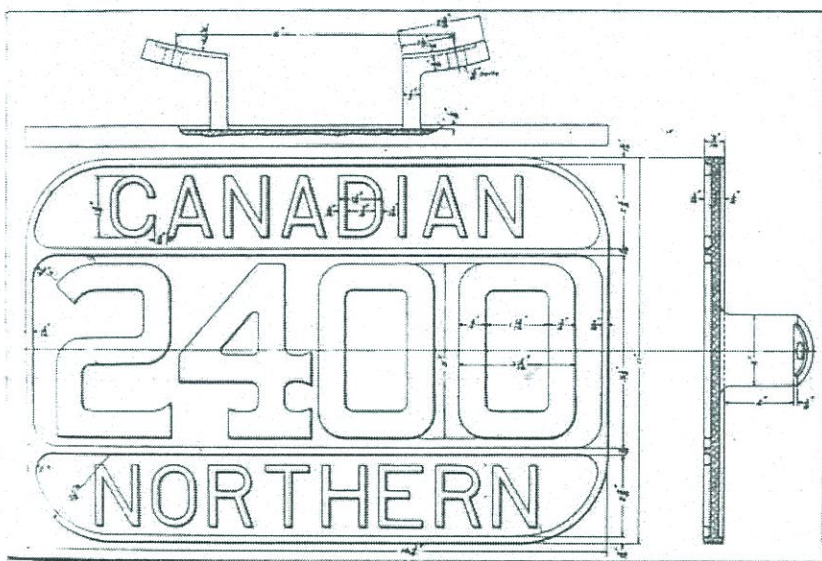
While it is possible, under the grouping of numbers before referred to, to roughly classify the locomotives, the object of this classification with type symbols, is to make it possible to refer to any locomotive by its type symbol, as the type symbol conveys concisely the locomotive type and its general size, as in each type, the size is more or less proportional to the driving wheel diameters.

The type symbols are further subdivided into groups, symbolized by numerals, and sub-groups, symbolized by small letters. In each type symbol group, there are often several designs that are considerably different from each other, as for example when the same specifications are worked out independently by different builders. Now, any one of these different designs, if built again on a further order, might be slightly altered from the original and so could not

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be included in the group designated by the numeral. Thus, in group M, there are only three different designs, 1, 2 and 3. Being the first of the group, there would be no subdesigns, so each group would have the subletter a. The first batches of the three designs would be designated respectively, M-1-a, M-2-a, and M-3-a. Now, suppose it was found that one of these designs was better than the other two, and it was decided to perpetuate that type with slight modifications, the next design would be given the subletter b. Thus, the next one in group 2 would be M-2-b. In some of the different groups, there are a great number of designs, running up to 16 in the G portion of the 10 wheeler group. The subgroups do not run as high, the highest being g in the H-6 class, the type of larger size 28% 10 wheelers that is being perpetuated for heavy passenger service.

The renumbering of the locomotives was made the occasion of the general change in the character of labelling the locomotives, the nature of which is shown in the accompanying two illustrations. Instead of printing the words "Canadian Northern" along the side of the cab as formerly, in the centre of the space the number of the locomotive is painted in letters 12 ins. deep.



Standard Front End Number Plate.

to the left of the number, in letters 12 ins. deep, there is painted "C.N.R.," and on the opposite side to this, the classification of the locomotive, as for instance the one shown, the "N-1-a" class. The locomotive is further labelled on the smokestack door by a projecting brass plate 11 ins. deep and 16 1/2 ins. wide, on which the word "stands out in raised brass letters, the surface of which is buffed, and the background painted black. Along the top, the letters 1 1/2 in. high, is the word "Canadian" with the word "Northern" in corresponding letters along the bottom. Between the two words, in figures 5 ins. high, is the number of the locomotive, as indicated in the illustration, "2400." The two sides of the headlight have the number 2400 in letters, cut out of tin, 4 in. high, with corresponding letters of the same height in the top front of the headlight, above the glazing.

The locomotive number formerly graced the sides of the tenders, but owing to the exigencies of the service sometimes requiring that the tenders be interchanged temporarily, (made possible by the standard type of tender used), it was deemed in-

advisable to continue the practice of so locating the number. The present practice is to have the words "Canadian Northern" painted along that space in block letters 12 ins. high, utilizing to advantage a fine stretch of advertising space. The number of the locomotive is painted in letters 6 ins. high near the top of the rear end of the tender, in a place that would not be conspicuous in the event of a tender interchange. Below the number are letters 3 ins. high, giving the capacity in imperial gallons. All painted lettering on both loco-

Oil and Paint House of Grand Trunk Railway Port Huron Shops.

The oil and paint house of the G.T.R. car shops at Port Huron, Mich., labors under peculiar difficulties, from the fact that it does not possess an up to date equipment with self measuring oil tanks and automatic paint mixers such as are to be found in many recently constructed plants, or in old plants where a modern equipment has been introduced. Lacking these modern adjuncts of a well planned oil and paint shop, J. L. Hodgson, the Master Car Builder, was compelled to make shift with such facilities as could be readily improvised. Just how

motive and tender is in the company's standard golden yellow.

This policy of classifying and rating locomotives has been generally adopted all over the Mackenzie-Mann lines. With but single modifications, the standard lettering and numbering has also been adopted on the other lines, the modifications for the most part occurring through the difference in names. This standard method of classifying and rating, involving the scheme of renumbering in a standard manner, was only introduced during the past year.

The oil room at the northerly end of the building is the longest of the three front rooms. In it there are three rows of tanks as in figs. 1 and 2, one row as in fig. 1, down the rear wall of the room, and the other two back to back down the centre as in fig. 2. There are 16 tanks, ranging in size from 2 1/2 to 25 barrels capacity each. They are all labelled with the oil contained, and have drawing off faucets near the bottom, the sides and bottom sloping to this point so as to completely

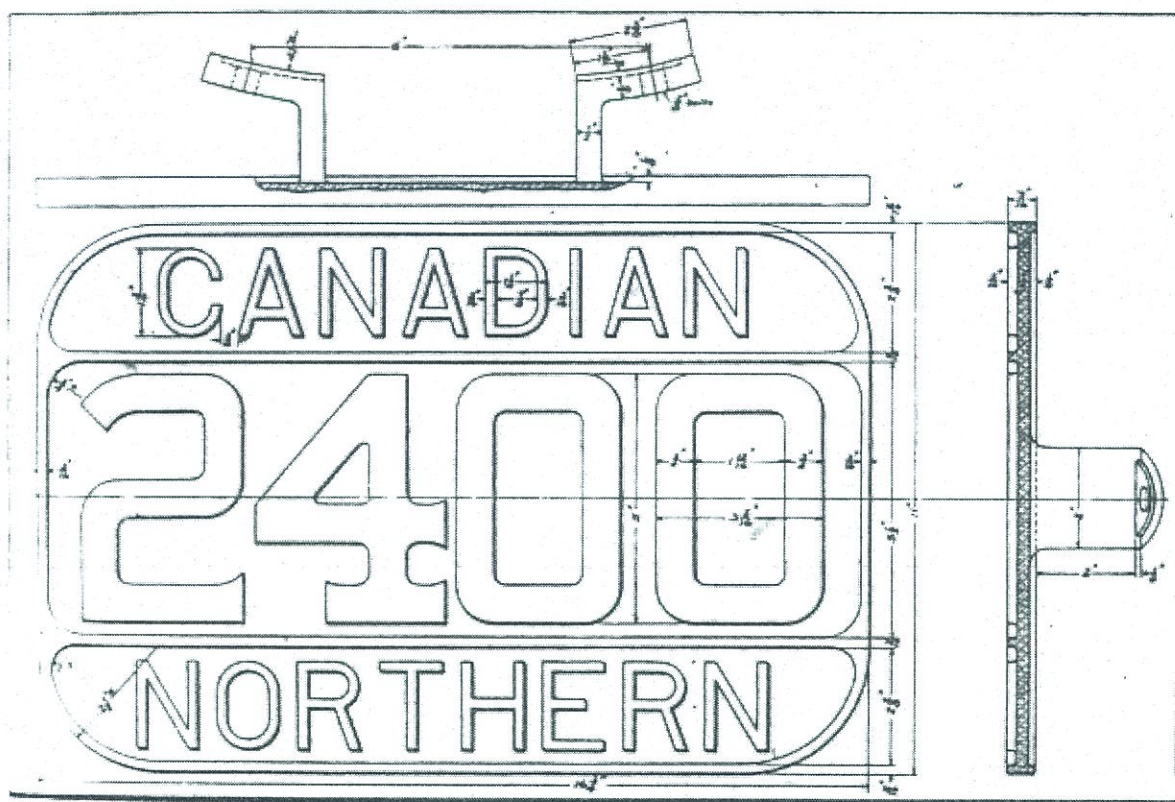


Fig. 1.—Oil Storage Tanks.

drain the tank when necessary, an operation that is performed periodically, the interior being thoroughly cleaned out at the same time by washing.

The tanks are all raised a few inches from the ground, on platforms. Below the platforms, on the floor, there is a drainage trough, with perforated stands on which the receptacle to be filled is placed. Beneath each of the faucets there is a drip can, which is always placed to one side when filling a can, and then replaced immediately afterwards, keeping the surface of the drain trough free from sticky oils and similar dirt. The reader will notice how clean and tidy the whole place appears, and it may be mentioned that the illustrations were made from photographs taken as it appeared under normal operating conditions, with no previous preparation to make it presentable. All the tanks are painted dark red, and are varnished over top. The drain troughs are painted white. Both tanks and trough are repainted at frequent intervals, and in consequence always present a neat appearance. Along in front

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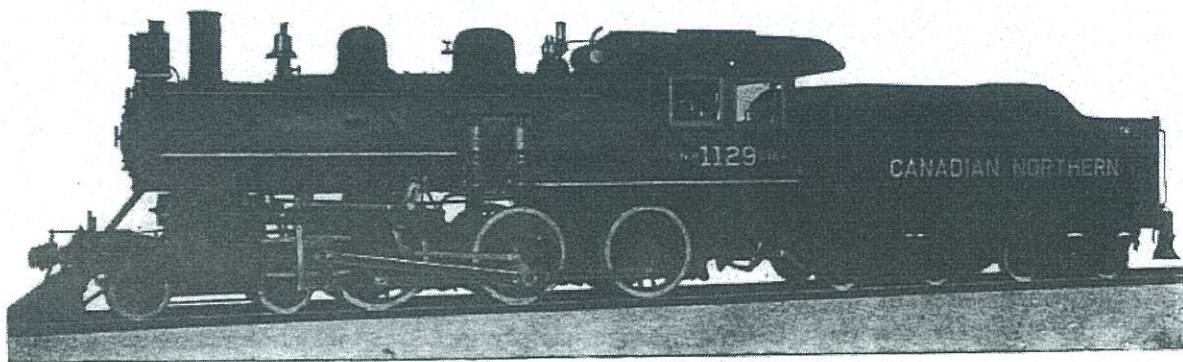
Standard Front End Number Plate.

to the left of the number in letters, good a substitute for a modern installation

February
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TEN WHEEL LOCOMOTIVE

CANADIAN NORTHERN RAILWAY



Total weight of engine, 154,000 pounds.

Weight on drivers, 112,500 pounds.

Diameter of drivers, 57 inches.

Boiler pressure, 170 pounds.

Cylinders, 20 x 24 inches.

Maximum tractive power, 24,300 pounds.

MONTREAL LOCOMOTIVE WORKS, LTD.

DOMINION EXPRESS BUILDING, MONTREAL, CANADA

Canadian Northern Railway, Construction, Betterments, Etc.

Sir Donald Mann, Vice President, returned to Toronto, Feb. 10, from the Pacific Coast. In an interview he is reported as stating that the line to Port Arthur will be completed this fall. Work on the Pacific section of the line is progressing satisfactorily; there are 17 bridges to be built on the section between the mountains and Kamloops, B.C. It is proposed to have two outlets on the Atlantic Coast, one at St. John, N.B., and the other at Halifax. It is hard to tell, he is reported as stating, at Vancouver, when trains will be running through into that city, but it is hoped to be able to start a freight and a passenger service by Aug., 1914. At Winnipeg, Sir Donald is reported as stating that he was quite satisfied with the progress of the lines in the west. It is not expected to do much in the way of new construction on branch lines this year; track will be laid on lines already graded, but the principal work will be centered on the completion of the main lines, on which construction is in progress in Ontario and British Columbia.

Montreal-Ottawa-Port Arthur Line.—Rapid progress is reported as being made with the construction of the two bridges on the Montreal-Hawkesbury section at the back of Montreal. The substructure work will be completed so as to enable the Dominion Bridge Co. to make a start with the superstructures early in the summer.

On the section between Ottawa and Pembroke, Ont., there are two large bridges under construction across the Ottawa River—one at Shaw Falls, 1,800 ft. long, the other at Portage du Fort, 1,300 ft. long.

The Board of Railway Commissioners has approved of location and revised location plans for the following sections of the line:

1. Nepean Tp., mileage 5.53 to 14.3; through Jones Tp., mileage 277.9 to 281.2 from Ottawa; through North Bay, at mileage 314; and through unsurveyed territory, mileage 189.1 to 192.2 from Sudbury Jet.

Press reports, Feb. 11, stated that about 200 miles of track had been laid on the line between Sudbury and Port Arthur. Of this 70 miles are said to have been laid west of Sudbury, and 130 miles east of Port Arthur. About 60% of the grading is reported to have been completed, and it is expected to have the balance done by the end of the year, and track laid on the entire section of 450 miles.

Canadian Northern Ontario Ry.—The Board of Railway Commissioners has authorized the building of a line across the province near Donlands station, York Tp., to connect the Toronto-Sudbury line with the Toronto-Ottawa line to the North Toronto station at the head of Yonge St.

Wm. Mackenzie, President, is reported as stating, Feb. 5, that it is expected to start a regular passenger service in operation between Toronto and Ottawa, in July.

Press reports state that arrangements are being made under which the C.N. Ry.

jected route through London is contingent on the C.N.R. obtaining a lease of the London and Port Stanley Ry. St. Thomas papers are advocating the interests of the route through that city, and the taking over of the Pere Marquette Rd.'s Canadian lines.

Canadian Northern Ry.—Recent press reports quote Sir Wm. Mackenzie, President, as having stated that work will be started in the spring on the building of a second track between Port Arthur and Winnipeg, and the further enlargement of the terminal facilities at the head of the lakes.

The company graded 655.82 miles of track in Manitoba, Saskatchewan and Alberta, and laid 303.63 miles of track during 1912. Grading, but no tracklaying was done on the following lines:—**MANITOBA**—Winnipeg Northern Ry., 35.88 miles; Wroxtton to Yorkton, 28.7 miles. **SASKATCHEWAN**—Extension of Grosse Isle line, 35.6 miles; Canora, northerly, 19.3 miles; Craven, northeasterly, 8.00 miles; Carlton, northerly, 10.1 miles; Alsask, southeasterly, 50 miles; Vonda, northerly, 15.00 miles; Prince Albert-Battleford line, 36.66 miles; Jackfish branch, 2.34 miles. **ALBERTA**—Strathcona-Calgary line, 11.1 miles; Red Deer-Lacombe line, 7.8 miles; Oliver, north, 14.7 miles; Peace River line, 53 miles; Bruderheim, east, 2.5 miles; Camrose, southeasterly, 10 miles; Calgary, south, and Macleod-Pincher line, 48.3 miles.

Tracklaying and grading was done on the following mileages, part of the grading having been done in 1911:—**SASKATCHEWAN**—Swift Current line, grading 40.6 miles, tracklaying 9.62 miles; Melfort-Humbolt line, tracklaying 4.69 miles; Moose Jaw line, grading 1.20 miles, tracklaying 2.00 miles; Goose Lake line, grading 104.57 miles, tracklaying 100.02 miles; Delisle line, grading 4.3 miles, tracklaying 3.70 miles. **ALBERTA**—Brazeau line, grading 50 miles, tracklaying 45.26 miles; Canadian Northern Alberta Ry., grading 87.45 miles, tracklaying 50.42 miles; Morinville line, grading 1.90 miles, tracklaying 17 miles; Strathcona-Camrose line, grading 5.87 miles, tracklaying 46 miles; Vegreville-Calgary line, grading 0.85 mile, tracklaying 24.92 miles.

It was reported, Feb. 12, that construction work is to be started at once on the proposed cut off from near Portage la Prairie to Stuartburn, east of Morris, Man.

The Saskatchewan Minister of Railways informed the Legislature recently that the Canadian Northern Ry., under an agreement with the Government, is building an extension of the Delisle branch from near MacRorie through the Duck Lake country, southerly and southwesterly. It is expected to complete this line this year.

The Saskatchewan Legislature has passed a measure granting the company an extension of time within which to build the lines under the contract with the Province. Under the legislation of 1908 the C.N.R. undertook to build 410 miles of line, and under the legislation of 1909 the company

with this title to build the following railways:—From Taber northeasterly to Consort; from Calgary northwesterly to an already authorized line between Brazeau and Cochrane; from Calgary southwesterly to an authorized line between Cochrane and Pincher Creek; from Cardston westerly to the western boundary of the province. Short, Woods, Biggar and Shawcross, Edmonton, are solicitors for applicants.

Canadian Northern Pacific Ry.—During 1912 track was laid from Sumas to Hope, 41.64 miles, making the total track laid on the line 78.25 miles. The line from Hope to Yellowhead Pass, 421.82 miles, is under construction. On the section from Hope to Stillwater Flats, 274.91 miles, the contractors are the Northern Construction Co., Vancouver; between Stillwater Flats and the Yellowhead Pass, 146.91 miles, the contractors are the Northern Construction and Foley, Welch and Stewart. Track is reported to have been laid practically to Yale, and to have been started above Yale, for the purpose of getting in bridge material.

It is reported that Engineer J. Barthen has been transferred from Kamloops to North Bend, B.C., on construction work, and that B. A. Savage has been transferred to section 1.

A branch line from Kamloops to Vernon, Lumley and Kelowna, 132 miles, is under construction.

A contract has been let to the Northern Construction Co. for the building of a branch line from Lulu Island Bridge to Steveston, 10.2 miles. The work, which is light, is to be completed within six months. The principal feature on the line will be a trestle about a mile and a half long over the muskeg near Woodward's Slough.

Plans have been filed with the Registrar at New Westminster, B.C., for this line, mileage 5 to 15: these already having been approved by the Minister of Railways. The contract let to the Northern Construction Co. covers the grading, wooden bridges, culverts, etc., from a crossing of the north arm of the Fraser River, just west of New Westminster to Steveston, near the mouth of the Fraser River. There are no particular engineering features, the gradients being level, and no cuttings. The work is to be proceeded with at once, and finished early in the summer.

Port Mann Terminal.—J. Montgomery, Toronto, arrived in Vancouver, Feb. 7, to take charge of construction on the terminals at Port Mann. He is reported as stating that his instructions were to get all the preliminaries arranged so that construction could be started Mar. 1. He added:—"The buildings to be erected now are as follows: Fifteen stalls of what will later be enlarged to a 42 stall locomotive house, a repair shop, coaling station, oil storage, house and a general storehouse for train equipment. The buildings are to be of the most modern and permanent construction. The repair shop will be 150 by 300 ft., with room for doubling the length. With the repair shop will be a complete foundry, blacksmith shop—in fact, all the

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Press reports state that arrangements are being made under which the C.N. Ry. and the G.T.R. will build a joint station and hotel in Hamilton, Ont.

An agreement was reached, Feb. 5, with the City of Catharines, Ont., City Council, under which the company will build its line between Toronto and Buffalo, through St. Catharines, erecting a general traffic bridge across the old Welland canal. The city is to grant a bonus of \$100,000.

Surveys for lines in Western Ontario are in progress at various points between Hamilton and Windsor. — Congdon has been in London for some time, and another engineer has been in St. Thomas. Mr. Congdon is quoted as stating that the pro-

Yorkton, 28.7 miles. **SASKATCHEWAN**—Extension of Grosse Isle line, 35.3 miles; Canora, northerly, 19.3 miles; Craven, northeasterly, 8.00 miles; Carlton, northerly, 10.1 miles; Alsask, southeasterly, 50 miles; Vonda, northerly, 15.00 miles; Prince Albert-Battleford line, 36.86 miles; Jackfish branch, 2.34 miles. **ALBERTA**—Strathcona-Calgary line, 11.1 miles; Red Deer-Lacombe line, 7.8 miles; Oliver, north, 14.7 miles; Peace River line, 53 miles; Bruderheim, east, 2.5 miles; Camrose, southeasterly, 10 miles; Calgary, south, and Macleod-Pincher line, 48.3 miles.

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The Saskatchewan Legislature has passed a measure granting the company an extension of time within which to build the lines under the contract with the Province. Under the legislation of 1908 the C.N.R. undertook to build 410 miles of line, and under the legislation of 1909 the company undertook to build a further 545 miles of branch lines, the Province in each case guaranteeing the company's bonds. Of the first mentioned mileage 310 miles are in operation, and the remaining mileage, with the exception of one branch which has been abandoned, is under construction; about 400 miles of the branches to be built under the 1909 contract are practically completed or in operation, and the remaining mileage, with the exception of the Hartney extension of 65 miles, is under contract.

Canadian Northern Western Ry.—Application is being made to the Alberta Legislature for the incorporation of a company

Yale, and to have been started above Yale, for the purpose of getting in bridge material.

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Plans have been filed with the Registrar at New Westminster, B.C., for this line, mileage 5 to 15; these already having been approved by the Minister of Railways. The contract let to the Northern Construction Co. covers the grading, wooden bridges, culverts, etc., from a crossing of the north arm of the Fraser River, just west of New Westminster to Steveston, near the mouth of the Fraser River. There are no particular engineering features, the gradients being level, and no cuttings. The work is to be proceeded with at once, and finished early in the summer.

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Vancouver Terminals.—Reports state that the British Columbia Government has approved plans for the entrance of the company's lines into Vancouver, the company agreeing to spend \$4,000,000 in reclaiming False Creek during the next five years. The C.N.R. will build a sea wall on the False Creek water front, then pump out the water in the flats and fill in the 200 acre area. Entry to this area will be secured through a tunnel about half a mile long. Terminal facilities will be provided at a cost of about \$4,000,

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000 and a station building at a cost of \$1,500,000. The agreement made with the Vancouver City Council, which evidently was under consideration when the matter was before the Government, provides that the C.N.R. agrees within five years to procure and at all times maintain deep water wharfage facilities within the city adequate to the needs of a transcontinental railway and trans-Pacific steamship lines. The company also agrees that it will, within eight years from the date of the agreement, establish and thereafter at all times maintain a trans-Pacific steamship line, both for passengers and freight, having its freight and passenger terminals and its home office for all time as effective in Vancouver as the C.P.R., or any company which may operate or control the trans-Pacific steamers operated in connection with the C.P.R. from time to time makes Vancouver the passenger and freight terminals and the home port of such trans-Pacific steamers for freight and passenger traffic. It is also covenanted by the C.N.R. that supplies shall be purchased for and supplied to the vessels in Vancouver in so far as they can be obtained on as favorable conditions there as elsewhere. The steamship company will make Vancouver its head office on the Canadian Pacific coast and the place in Canada for signing on the crews of any such steamers and the point at which, in so far as possible, such crews shall be discharged and paid off. The railway company will also make its western headquarters both for passenger and freight and its western terminals at Vancouver. The bylaw was passed by the Vancouver City Council, Feb. 5, and will be submitted for ratification to the taxpayers March 15.

A special message from the Lieutenant-Governor to the B. C. Legislature, Feb. 13, asked for the guarantee of \$10,000,000 of bonds, for the construction of the Lulu Island Branch, and the laying out of terminals at Vancouver, Port Mann, and Victoria.

Vancouver Island Line.—The company's line on Vancouver Island is under construction from near Victoria to Alberni, 132 miles, the contractors on the three sections being:—Grant, Smith and Co., Vancouver; Moore and Pethick, Victoria, B.C.; and Northern Construction Co., Vancouver. A. K. Warren and G. S. Mallory are reported to have been appointed to the company's engineering staff in Victoria. Press reports state that 26 miles of grading at the Victoria end are ready for the tracklaying.

Surveys are in progress for an extension of the line from Alberni to the Quinsam River, 74 miles, and from the Quinsam River to Nootka Sound, Duncan Bay and Buttler Lake, about 71 miles.

Press reports state that plans have been prepared and that tenders will shortly be asked for the construction of wharves and terminals at Union Bay. D. O. Lewis is engineer in charge of the work.

The British Columbia Minister of Railways has approved of route maps for a line starting from mileage 4.7 on the main line to Union Bay, on Saanich Inlet, at the head of Saanich Peninsula, and a map showing the general location of the line from Victoria to mileage 4.7.

Tenders are under consideration for the building of a line from the Songhees Reserve, Victoria, to near Deadman's River, about five miles; and from near Regina Ave. on the above line to Union Bay, Saanich Peninsula, 15.25 miles. The work to be done includes clearing, grubbing, grading, bridges, trestles, culverts, masonry and fencing. The first line is to give the company an entrance into the Songhees Reserve, which is to be laid out in terminal yards, in conjunction with the

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Canadian Northern Railway Construction Betterments, Etc.

Canadian Northern Montreal and Terminal Co.—Recent reports state that about a mile and a half of the headings of the tunnel under Mount Royal, Montreal, have been completed. An injunction was obtained, Mar. 10, by Hon. H. B. Rainville against further work on the tunnel so far as it passes under his property, under the old civil code which sets out "Ownership of the soil carries with it ownership of what is above and what is below it." An arrangement was, however, arrived at under which work was resumed.

The Board of Railway Commissioners has approved, subject to terms to be fixed, of revised location of the projected line from St. Catherine St. to St. Antoine St., Montreal.

Montreal-Ottawa-Port Arthur Line.—It is reported that grading has been so far advanced on the various sections of this line that there is a probability of steel being laid between the present track end west of Sudbury and the present track end east of Port Arthur by the fall.

Canadian Northern Ontario Ry.—Track is reported to have been laid on the Toronto-Ottawa line between Chaffey's Locks and Lombardy, and that only about seven miles of tracklaying is required to complete the line.

In connection with the building of the line into Toronto, the company is asking for the incorporation of Leaside, or its annexation to the city. The Board of Control was informed, Mar. 5, that a car building plant and other industries will be established there. The plans for an entrance to the yards on Eastern Ave. have been filed with the Toronto City Council. The line connects with the Ottawa-North Toronto line at the junction with the C.P.R. just outside the city, crossing the Don River, paralleling the C.P.R. to Winchester St., crossing the C.P.R. and parallel to the Don River, to south of Queen St., then across the river to Eastern Ave.

Canadian Northern Ry.—Hugh Sutherland, Executive Agent, in an interview at Winnipeg, Mar. 13, is reported as stating that no further development plans will be considered until the financial conditions are improved. All that will be done will be the completion of work already in hand, for which the money had been provided.

The Canadian Northern Coal and Ore Docks Co. proposes to build a new dock at Port Arthur, Ont., east of the present one, to be about 500 ft. wide at the head and equipped with storage sheds and loading pockets.

It is reported that a new station, to cost about \$50,000, will be built on Victoria Ave., Port William, Ont., this year.

Application is being made to the Board of Railway Commissioners for permission to build a branch from mileage 111.89 on the Oak Point branch, in Manitoba, through sections 29, 32 and 33, tp. 26, and sections 16, 15 and 22, tp. 27, range 7 west principal meridian.

The Minister of Railways has approved a route map for a revision from Sturgis northerly for 21.09 miles, of the projected line of the Canadian Northern Branch Lines Co. from Canora to Hudson Bay Jet., Sask.

berta; from Merking Creek, on the Vegreville-Calgary line to Wetaskiwin, thence by Pigeon Lake to the Edmonton-Pincher Creek line; from Cardston to the western boundary of the province, and from Drumheller, on the Vegreville-Calgary line, to Carbon.

Grading has been completed on the branch line out of Macleod as far as Fishburn, Alta., and the right of way is being purchased westward of Fishburn. Construction gangs are being taken in to Pincher Creek, which will be the centre of work during the year.

An arrangement is reported to have been made with the G. T. Pacific Ry. for the building of a second track on its line for about 12 miles along the shore of Moose Lake, about 20 miles west of Yellowhead Pass, in order to avoid engineering difficulties in the way of building a second line.

Canadian Northern Pacific Ry.—The British Columbia Legislature has authorized the company to construct or acquire railway yards, terminals, wharves, shops and works, connecting lines, telegraph and telephone lines, hotels, etc., and to carry on any business incidental thereto. A second act confirms an agreement made with the Vancouver City Council for the laying out of terminals at False Creek, the Canadian Northern Ry. being a party thereto. A third act authorizes the guaranteeing by the province of \$10,000,000 of 4½% bonds, in aid of the laying out of terminals at Port Mann, including the tunnel approaches, Victoria, Steveston, and at Union Bay on Vancouver Island. A fourth act authorizes the building of the following lines:—From the north end of the Westminster bridge to Vancouver, 11 miles; from the north end of Westminster bridge to Steveston, 15 miles; and from near Victoria to Union Bay, 18 miles, and the province is authorized to guarantee the company's bonds for \$35,000 a mile to aid in the building of the same.

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The right of way for the line on Lulu Island has been cleared, and grading was started Mar. 6 by C. R. Schacht, who is reported to have received a subcontract for five miles.

The bylaw confirming the agreement between the company and the city of Vancouver was voted on by the taxpayers Mar. 15, and approved by 5,032 votes to 1,485. (Mar., pg. 119.)

New Train Service on Grand Trunk Pacific Ry.—A Winnipeg press dispatch says:—General Passenger Agent Hinton, of the G.T.P., announces six new daily trains to be run each way this summer as

Recent Provincial Legislation

Acts affecting transportation interests were passed at the recent sessions of Provincial Legislatures as follows:—

BRITISH COLUMBIA.

Canadian Northern Pacific Ry.—Amending the original act of incorporation of 1910; confirming an agreement between the company, the C.N. Ry. Co., and the city of Vancouver; providing for the extension of the company's lines and granting aid towards their construction, and granting aid for construction of terminals.

Esquimalt and Nanaimo Ry.—Authorizing issuance of Crown grants of certain lands.

False Creek.—Amending act relating to reclamation of False Creek, Vancouver, and amending the False Creek Confirmatory Act. These affect the Canadian Northern Pacific Ry. and the Great Northern Ry.

Pacific Great Eastern Ry.—Two acts amending act of incorporation of 1912.

Railway Act.—Amending Railway Act.

MANITOBA.

Intermarine Ry. and Navigation Co.—Incorporation.

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Winnipeg Electric Ry.—Respecting company's powers.

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The first lot of measures receiving the Royal assent at the current session of the Dominion Parliament includes the following affecting transportation interests:—

Alberta Central Ry.—Extending time for construction.

Alberta Ry. and Irrigation Co.—Amending company's powers.

British Columbia Southern Ry.—Extending time for construction.

Burrard Inlet Tunnel and Bridge Co.—Extending time for construction and increasing bonding powers.

Campbellford, Lake Ontario and Western Ry.—Extending time for construction.

Canada Shipping Act.—Amending various provisions.

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National Transcontinental Ry.—Extending time for construction.

Ontario-Michigan Ry.—Extending time for construction.

Ottawa, Northern and Western Ry.—Ex-

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real.

Montreal-Ottawa-Port Arthur Line.—It is reported that grading has been so far advanced on the various sections of this line that there is a probability of steel being laid between the present track end west of Sudbury and the present track end east of Port Arthur by the fall.

Canadian Northern Ontario Ry.—Track is reported to have been laid on the Toronto-Ottawa line between Chaffey's Locks and Lombardy, and that only about seven miles of tracklaying is required to complete the line.

In connection with the building of the line into Toronto, the company is asking for the incorporation of Leaside, or its annexation to the city. The Board of Control was informed, Mar. 5, that a car building plant and other industries will be established there. The plans for an entrance to the yards on Eastern Ave. have been filed with the Toronto City Council. The line connects with the Ottawa-North Toronto line at the junction with the C.P.R. just outside the city, crossing the Don River, paralleling the C.P.R. to Winchester St., crossing the C.P.R. and parallel to the Don River, to south of Queen St., then across the river to Eastern Ave.

Canadian Northern Ry.—Hugh Sutherland, Executive Agent, in an interview at Winnipeg, Mar. 13, is reported as stating that no further development plans will be considered until the financial conditions are improved. All that will be done will be the completion of work already in hand, for which the money had been provided.

The Canadian Northern Coal and Ore Docks Co. proposes to build a new dock at Port Arthur, Ont., east of the present one, to be about 500 ft. wide at the head and equipped with storage sheds and loading pockets.

It is reported that a new station, to cost about \$50,000, will be built on Victoria Ave., Fort William, Ont., this year.

Application is being made to the Board of Railway Commissioners for permission to build a branch from mileage 111.89 on the Oak Point branch, in Manitoba, through sections 29, 32 and 33, tp. 26, and sections 16, 15 and 22, tp. 27, range 7 west principal meridian.

The Minister of Railways has approved a route map for a revision from Sturgis northerly for 21.09 miles, of the projected line, of the Canadian Northern Branch Lines Co. from Canora to Hudson Bay Jct., Sask.

The Alberta Legislature, Mar. 15, authorized the building of the following lines under guarantee of bonds:—From Taber to Consort; from Medicine Hat to a junction with the Saskatoon-Calgary line; from range 12 to 14 of last mentioned line, northerly to the main line in ranges 6 to 9, and northeasterly to the eastern boundary of Al-

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Railway Act.—Amending Railway Act.

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Ottawa Terminals Ry.—Extending time for construction.

Simcoe, Grey and Bruce Ry.—Extending time for construction.

Wetaskiwin, Yellowhead and Pacific Ry.—Incorporation.

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May, 1913.]

Canadian Northern Railway, Construction Betterments, Etc.

Canadian Northern Montreal Tunnel and Terminal Co.—The boring of the first two miles of the tunnel under Mount Royal, Montreal, was completed April 5, when the two headings were connected. The bore is being enlarged and lined. There is yet about 8,000 ft. of the tunnel to be bored.

The layout of the city terminus of the line on Dorchester St. is being prepared, and it is stated that the work of preparing the site will be started in June. The main station will be below the street level, and for the purpose of providing the necessary space, the entire area of the two blocks from Cathcart to Lagachetiere St. will be excavated. The buildings will be above the station. Warren and Wetmore, New York, are making the plans for the building.

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The Board of Railway Commissioners has approved of revised location plans for the line, mileage 4.35 to 7.21 from Yonge St., through York and Scarboro tps.

By a vote of eight to four, the Toronto City Council, April 8, declined to adopt the resolution of the Board of Control, favoring the annexation by the city of the Leaside townsite, on which the C.N.O. Ry. proposes to lay out terminal yards, and build shops.

Canadian Northern Ry.—The new annex of the C.N.R. elevator at Port Arthur, Ont., was put into use Mar. 23, thereby increasing the storage capacity by 3,000,000 bush.

It was reported from Winnipeg, April 5, that no contracts will be let this season for new construction on Western lines.

The Oak Point Branch is being completed from Deerfield to Sheep's Rock Point, Man., 15 miles, giving access to the gypsum mines. As soon as track laying is completed the plant will be transferred to the Grosse Isle Branch, where there is about 35 miles of track laying to be completed between Inwood and Fisherton, Man.

Tenders are being asked for the building of a six stall addition to the locomotive house at Saskatoon.

Track laying on the branch from Vegreville to Calgary, Alta., has been completed to the Bow River, and when the bridges over this river and the Elbow River in Calgary have been completed, the line will

On the section of the line which is being built from Port Mann, B.C., grading and bridge work is so far advanced that it is expected to lay the steel to Kamloops, 243 miles from Port Mann, by Dec. 31. Track has been laid 10.5 miles east of Yale, where a steel bridge is being put in. About 39% of the grading is reported completed between Kamloops and Albretha Summit, on the divide between the Upper Fraser and the North Thompson Rivers.

It is reported that active work will be started on the line between Port Mann and New Westminster, early in June. This is part of the line into Vancouver, which will include a tunnel, about four miles long, to the False Creek flats. It will take about two years to bore the tunnel. T. E. Holt, Executive Agent, Vancouver, is reported to have stated April 1, that special engineers would be engaged immediately to survey and lay out the area acquired for terminals at False Creek. (April, pg. 180.)

Traffic Orders by the Board of Railway Commissioners.

The dates given for orders are those on which the hearings took place, and not those on which the orders were issued:—

Approval of G.T.P.R. Freight Tariff.

18860. Mar. 13. Re application of the G. T. Pacific Ry., under sec. 327 of the Railway Act, for approval of its Standard Freight Mileage Tariff, C.R.C. 15, including and cancelling C.R.C. 13, to apply between stations in British Columbia, Prince Rupert to Beaumont, inclusive. It is ordered that the said tariff be temporarily approved, pending the result of the Board's enquiry into rates charged generally by railway companies west of and including Crownsnest, Canmore, and Thornton.

Esquimalt and Nanaimo Freight Tariff.

18866. Mar. 14. Re application of Esquimalt and Nanaimo Ry., for an order further extending time within which it may be permitted to file a revised standard freight tariff for the Board's approval. It is ordered that the time within which the company was required to file the said tariff of maximum freight tolls be further extended for six months from the date of this order.

Interchange Track at Port Hope, Ont.

18838. Mar. 13. Re application of Town of Port Hope, Ont., for an order directing the Canadian Northern Ontario and the Grand Trunk Railway Companies to furnish interchange facilities for the handling of traffic of every description between the two companies, within the limits of Port Hope. It is ordered that the C.N.O.R., at its own expense, construct a transfer track between its railway and the G.T.R., in Port Hope; plans showing the location of the track to be filed within 60 days from the date of the approval of an engineer

catchewan and Manitoba; and directing that schedules, to give effect to this order, be published and filed to become effective by April 1, 1913; it is ordered that the effective date of the schedules be extended until April 2, 1913.

18910. Mar. 25.—Re order 18738, Feb. 19, 1913, directing the Canadian Pacific, Canadian Northern and Grand Trunk Pacific Railway Companies to reduce the local and joint rates on lumber, and on other commodities carried at the lumber rates, from shipping points west of and including Blairmore and Laggan, Alta., to points east of the Red River, so as to graduate less abruptly from the Winnipeg basis to the maximum basis west of Lake Superior; and requiring the said reduced rates to be published and filed to become effective not later than April 1, 1913; it is ordered that the effective date of the reduced rates be extended until April 7, 1913.

Re Rates on Flannelette Sheets.

18944. Apr. 1.—Re application of Montreal Board of Trade for an order requiring flannelette sheets to be added to the dry goods list of the Canadian Freight Classification at the same ratings as are provided for cotton piece goods, namely, i.c.l. 2nd class and c.l. 4th class; it is ordered that the application be refused.

Grand Trunk Railway Betterments, Construction, Etc.

Southern New England Ry.—In a letter to the Governor of Rhode Island, E. J. Chamberlain, President G.T.R., states that \$2,500,000 has already been expended upon this project, and that to complete it will require some millions more than was originally estimated. The company offers to hand over to the state the line as it at present stands, on condition that the state will complete it and operate it on one of two plans. If the state will operate it as a Government line, running powers will be given over the New London Northern Ry., owned by the Central Vermont Ry., from Palmer to Brattleboro, Vt., so as to constitute a complete division, and a traffic agreement will be given by the C.V.R. for a division of through rates on a mileage basis with an addition for terminal charges. Under the second plan the C.V.R. will lease the completed line on a rental of 5% on the actual cost of completing it. If the state will not take any action, Mr. Chamberlain says the work will be definitely abandoned. (April, pg. 181.)

Automatic Block Signalling on C.P.R.—Automatic block signals are now in operation on the Eastern Lines between Vancouver, Que., and Mattawamkeag; Montreal and Vaudreuil, Que.; Bresslay (near Mile End) and Ste. Therese, Que.; Romford Jet. and Sudbury, Ont.; West Toronto and Bolton, Ont.; Islington and Streetsville Jet., Ont. On the Western Lines, automatic signals are being installed between:—Port

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Canadian Northern Pacific Ry.—A. T. Fraser, District Engineer, Tete Jaune Cache, B.C., is reported to have stated in Edmonton, April 4, that it was expected to have track laid to the summit, 350 miles west of Edmonton by the end of July. The end of steel on Mar. 30 was at Macleod River, the bridge across which was practically completed. Track laying would be resumed immediately the bridge was completed and would be gone on with uninterruptedly until the Athabasca River was reached, where there would be a short delay pending the completion of the bridge there.

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