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Canadian Railway and Marine World.

January, 1913.

Canadian Pacific Railway Clearing Yard at North Transcona, Man.

The C.P.R. has in course of construction at North Transcona, 6 miles east of Winnipeg, what will probably be one of the largest and most complete clearing yards on the continent, having an ultimate capacity when developed to the extent laid down in the present layout, of over 12,000 cars. The accompanying illustrations show the layout, profile and cross sections.

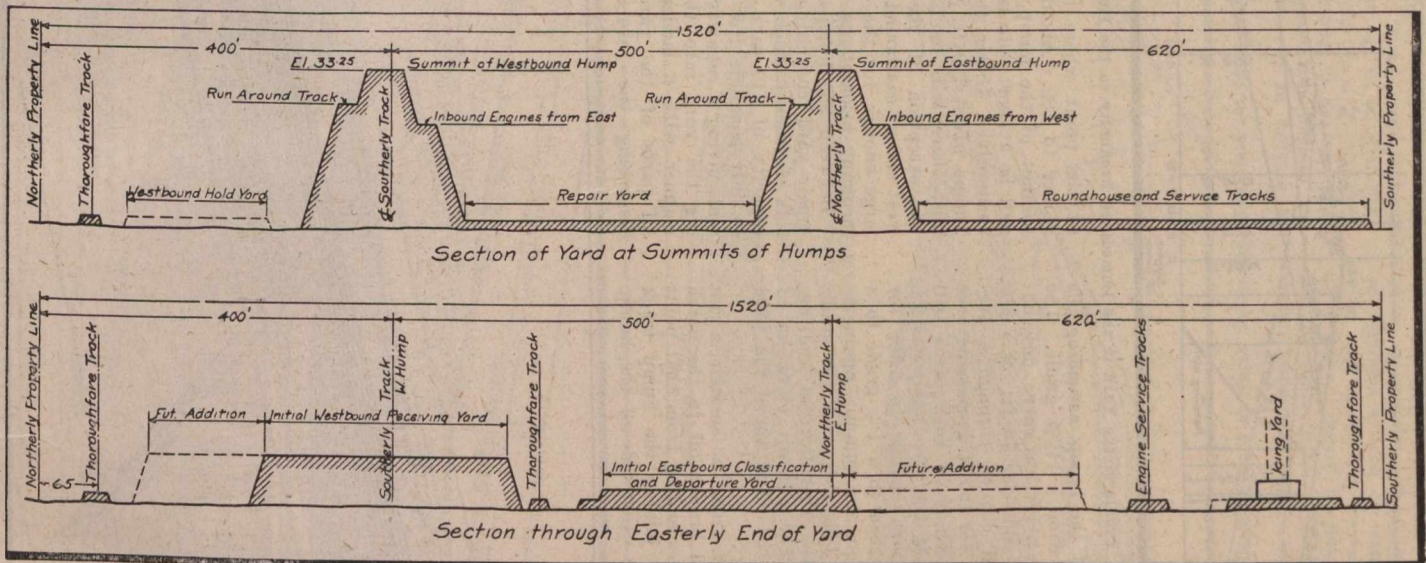
The yards are situated a short distance beyond the point where the Molson cut off branches from the main line via East Selkirk at Whittier Jet., these two lines forming the west and east boundary lines of the property respectively, the Canadian Northern Ry. Birds Hill branch crossing the Molson line at the eastern extremity of the yard. The grounds lie almost due east and west. Along the north and south sides

shown in the three section plan of the grounds, in full lines; the ultimate expansion is indicated by the dotted lines. It will be noted that the layout is such that the part under construction at present is compact, and the future construction will add to the yard in such a manner as to be an outward extension, and not an internal rearrangement, the additions being along the outer edge of the several major yards.

Traffic from the west will come out from Winnipeg through Whittier Jet. and to the yards, over the main line, branching off into the yards at their west end, three tracks leading in. Parallel to these entry tracks, it is the ultimate intention to construct a 16 track grain yard, with a capacity for 730 cars to form part of the eastbound hold yard. The entry tracks lead

initial development is to be for 1,440 cars as in the other yards. This yard will lead over a double track hump through a double ladder, leading out over the hump into the westbound classification and departure yard, which is to have 4 tracks for 100 cars, and 36 tracks for 65 cars, giving a capacity of 2,740 cars. The present layout calls for 1,440 cars capacity, making the initial development of all the major yards the same. The westbound classification and departure yard leads out to the north of the grain yard, to the main line, through Whittier Jet. to Winnipeg.

At a central point, opposite the humps, the plan calls ultimately for two roundhouses of 55 stalls each. At present, only 44 stalls of the easterly one is under construction. These roundhouses are to be of



Cross Sections of the Yard Through the Humps and Through the Easterly End of the Yard.

there is a thoroughfare track for through freight traffic, clear of the several yards.

The yards are divided into two grand divisions—the major and the minor yards. The major yards, consisting of the eastbound receiving yard, the westbound classification and departure yard, the eastbound classification and departure yard, and the westbound receiving yard, are each large yards symmetrically arranged about a central line through the summit of the humps, facilitating access to all parts of the grounds. The minor yards, consisting of the various auxiliary yards that are necessary to a terminal, such as hold yard, caboose yards, etc., are distributed to excellent advantage in the spaces between the four major yards, making a layout that is remarkably compact.

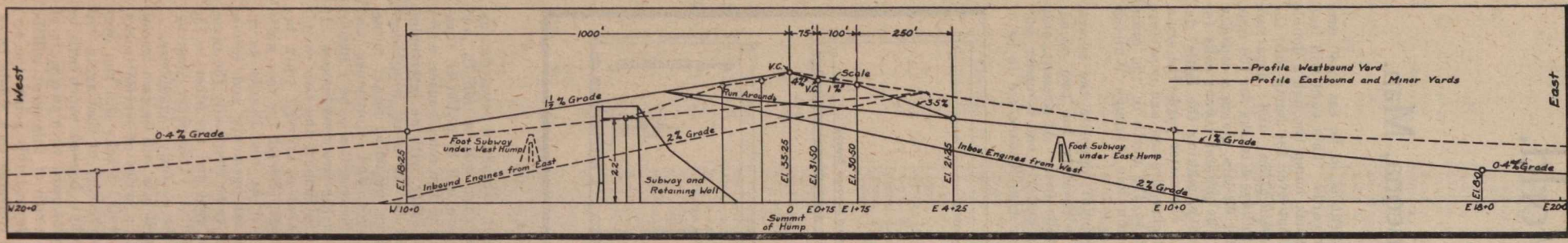
The yards have been designed to relieve the company's large Winnipeg yards, which are said to be the largest in the world, but which, from the rapidly increasing traffic, principally in grain, have become so overcrowded as to demand increased facilities. The ultimate development not being required at once, it is planned to construct only about half the layout proposed, the part at present under construction being

into the eastbound receiving yard, which will eventually contain 4 tracks for 100 cars and 26 tracks for 65 cars, a total capacity of 2,090 cars. Only the northern portion of the yard is to be constructed at present, giving a capacity of 1,440 cars. From this yard, a double ladder converges to a double track over the eastbound hump to the eastbound classification and departure yard, which will have 8 tracks for 100 cars and 32 tracks for 65 cars, a total capacity of 2,880 cars. The initial construction only calls for a capacity of 1,440 cars. The eastbound classification and departure yard converges on double ladders out to the Molson line, and thence east, striking the main line at Molson. The Molson line is a cut off from the main line, practically an air line between Winnipeg and Molson on the original main line, whereas the latter makes a wide detour around by East Selkirk.

The westbound receiving yard, entered from the Molson line to the north of the eastbound classification and departure yard, is to have 4 tracks for 100 cars, and 26 tracks for 65 cars, or a total capacity of 2,090 cars, this yard being almost identical in layout, and the same in capacity as the similar yard for eastbound traffic. The

latest C.P.R. standard construction. The outside diameter will be 425 ft., and in the centre there will be a 100 ft. turntable. Between the two roundhouses, which back up to each other, with an intervening space, there will be the usual roundhouse auxiliary buildings, including power house, small machine shop, and storehouse and office building. There will also be a 100,000 gal. tank between the two roundhouses. It is the intention to connect the two roundhouses by means of a through track between the buildings, through the rear walls. The layout of the two roundhouses as regards approach arrangements and service track facilities is to be identically the same, one lying to the east and the other to the west. The immediate yards under construction belong to the easterly roundhouse.

From the roundhouse will be two tracks, branching out to a series of service tracks. Two pairs of parallel tracks will run over cinder pits. To the east of that again will be a coaling pocket, beyond which will be two inspection pits, each with two pairs of tracks. To the south of this point will be a sand house. Beyond this point, the service tracks will converge to a single track. Paralleling this converging track will be an



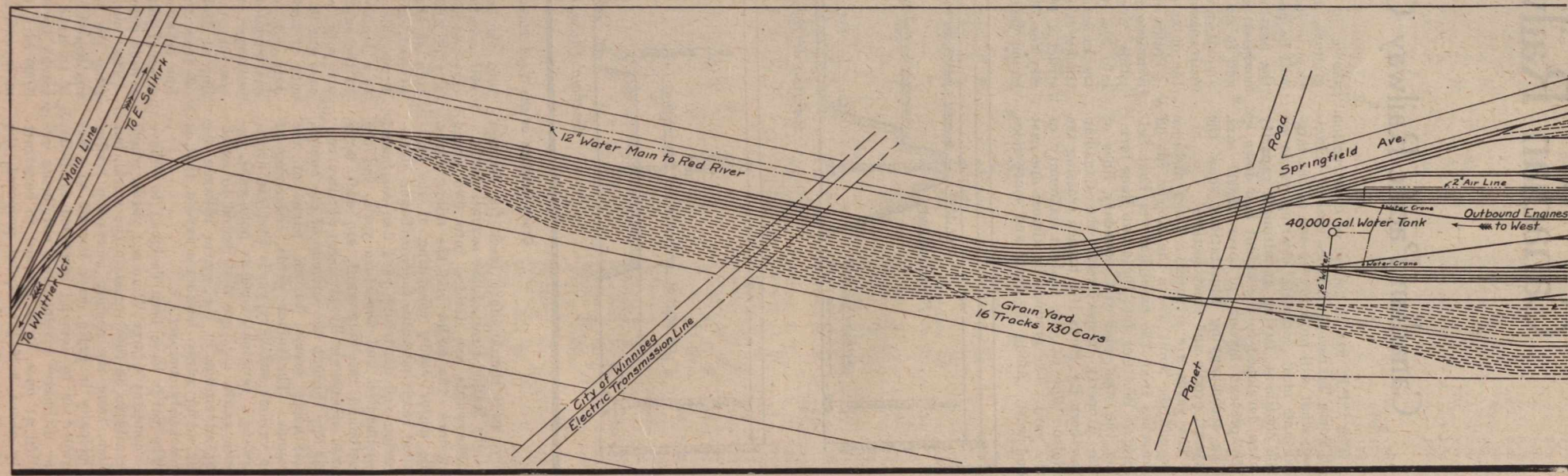
Profile of the Yard in the Immediate Proximity to the Humps.

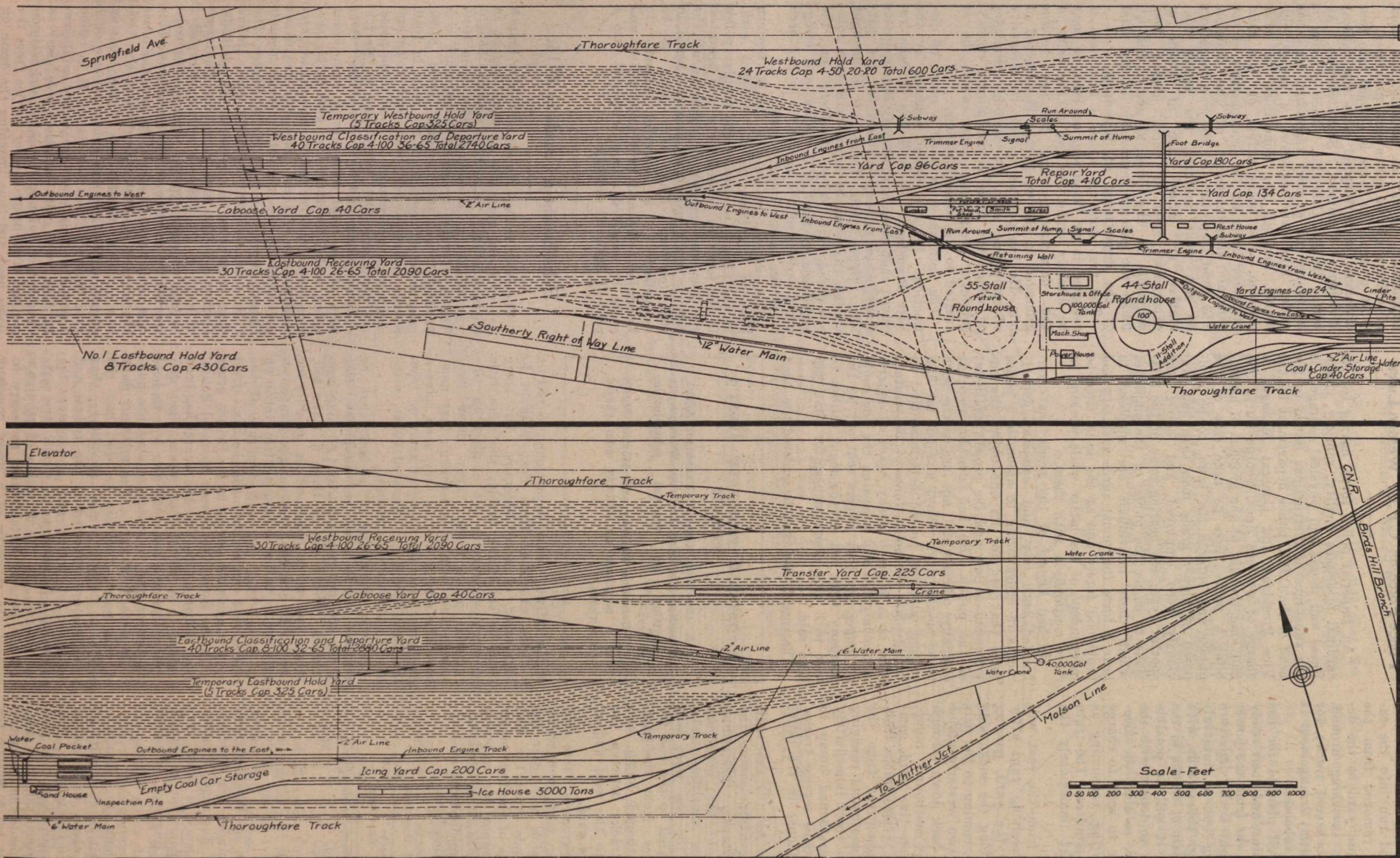
empty coal car storage track. North of the cinder pits will be six short tracks which are to be used to help out the roundhouse, storing the yard engines, this small yard having a capacity for 24 switchers. Somewhat similarly located, to the south of the roundhouse tracks, will be 4 coal and cinder car storage tracks with a capacity of 40 cars. The immediate yard arrangement around the other roundhouse will be the same, having its own cinder pits, coaling dock, inspection pits and yard engine tracks. The humps will be to the north of the roundhouses, the eastbound one immediately to the north and the other separated from it by the repair yards. The shape and size of the humps are shown in the sectional view accompanying, and the profile of the yard through the hump. The hump ends of the receiving yards will ascend on a 0.4% grade to within 1,000 ft.

of the summit of the hump, ascending the remaining distance on a 1 1/2% grade. The summit will form a vertical curve, descending on the other side for 75 ft. on a 4% grade, which will change through a vertical curve to 1% for 100 ft. in passing over the track scale, which in both cases will be on the inner of the two hump tracks. The grade will then change to 3.5% for 250 ft., reducing then to a 1% grade to a point 1,800 ft. from the summit, again reducing to 0.4%. This will carry the gradients well into the classification and departure yards. The summit elevation of both humps will be 33.25 above the yard level. At about 300 ft. from the summit, a run around track will branch off to the north in both humps, descending from that point on a 1% grade, joining the hump track again 425 ft. the other side of the hump,

at the point where the hump grade will reduce to 1%. About 400 ft. beyond the summit of the hump, in both cases, there will be a short side track for the trimmer locomotive. Under the approaches to the humps, about 700 ft. each side of the summit, there will be a foot subway, with the exception of the subway under the west end of eastbound hump, which will be large enough for the double track for the incoming locomotives. Between the humps will be located the repair yard, consisting ultimately of three sets of tracks, which will have a combined capacity of 410 cars. It is the intention to only complete the central yard at present, giving a capacity of 180 cars. Dividing the yard into three sections in this manner with 6 ladders will make nearly all parts of the yard accessible without disturbing the cars under repair. The

present buildings for the repair yard will be a small smith shop, scrap bins and wood piles, with a couple of minor buildings. Plans are laid for the future construction of a car shop and wood shop adjoining the smith shop. The repair yard will be crossed near the easterly foot subways by a foot bridge. To the north of the humps there will be a westbound hold yard, containing 24 tracks with a total capacity of 600 cars, 4 to hold 50 and 20 tracks to hold 20 cars each. This is planned for the future, none of this yard is to be constructed at the present time, provision being made for a westbound hold yard by using 5 tracks of the proposed extension of the westbound classification and departure yard temporarily for this purpose, giving a capacity of 325 cars. At the easterly end of the grounds, between the ends of the two major yards there





Canadian Pacific Railway Clearing Yard at North Transcona, Man., laid out for a Capacity of over 12,000 cars.

located, there is to be a 225 car transfer yard to contain 4 tracks each side of a central platform. The present development only plans to lay 4 of these 8 tracks, giving a capacity of 125 cars. Near the east end of this yard is a double track crane.

An icing yard, similar in many ways to the transfer yard, will be located immedi-

ately to the south of the eastbound classification and departure yard, close to the southerly thoroughfare track. This yard will contain 6 tracks, 3 on each side of a 3,000 ton ice house, to have a capacity of 200 cars. The initial development is to be 4 tracks, with a capacity of 140 cars.

A temporary eastbound hold yard will

be located in the undeveloped section of the eastbound classification and departure yard, having 5 tracks with a capacity of 325 cars. Part of the main eastbound hold yard will be to the south of the southerly thoroughfare track, containing 8 tracks with a capacity of 430 cars. This, with the grain yard, is to be completed later.

The two caboose yards, one for eastbound and the other for westbound traffic, will be very conveniently located, between the adjacent receiving and the classification and departure yards, the tracks at an angle to the main direction of movement, so that the through tracks will form the ladders for the short tracks of the caboose yards.

The incoming caboose can then be taken from the train end and run into the caboose yard, and then removed from the other end of the caboose yard to the departure yard, without switching around. Each caboose yard is to have 7 tracks, for 40 cabooses, but the initial arrangement is for 4 tracks to hold 24 cabooses.

Arrangements are well planned for the quick making up of trains, and their ready departure. A 2 in. air line from the power house will run through both departure yards, branches leading out at intervals along the section through these yards, with headers between each pair of tracks in the yard. By this means, it will be possible to charge a train ready to depart with the full requirement of air, so that the locomotive will not require to wait to charge the train before departing, consuming as it does upwards of 10 minutes. The train will be ready to depart immediately the locomotive arrives.

Inbound locomotives from the east will leave the westbound receiving yard after pulling the train into the yard, passing along the side track along the south side of the westbound hump, coming to the pair of tracks between the two westerly major yards. They will then back down through the subway under the eastbound hump, through the switch locomotive yard, coming into the roundhouse service tracks from the east. Inbound locomotives from the west, after leaving the eastbound receiving yard, will pass along the track immediately to the south of the eastbound hump to the east of the roundhouse service tracks, backing into the roundhouse in the usual manner.

Outbound locomotives for the east will have a straight course after leaving the roundhouse service tracks, proceeding to the east end of the departure yard, backing in on the awaiting train. Outbound locomotives for the west will leave on the track parallel to the one for the inbound locomotives from the east, passing under the eastbound hump, and proceeding along the tracks between the westerly major yards to the west end of the westbound departure yard.

At both ends of the grounds there will be a 40,000 gal. water tank, connecting with a water main which will enter the west end of the grounds from the Red river. At the outer ends of the four major yards will be water cranes for watering on arrival and departure in either direction.

A summary of the development as ultimately planned is as follows:

Westbound receiving yard, 30 tracks	2000 cars.
Westbound classification and departure yard, 40 tracks	2740 "
Eastbound receiving yard, 30 tracks	2000 "
Eastbound classification and departure yard, 40 tracks	2880 "
Westbound hold yard, 24 tracks	600 "
Eastbound hold yard, 24 tracks	1160 "
Eastbound caboose yard, 7 tracks	40 "
Westbound caboose yard, 7 tracks	40 "
Repair yard, 32 tracks	410 "
Transfer yard, 8 tracks	225 "
Ice yard, 6 tracks	200 "
Coal storage yard	80 "
Engine yard	45 engines.

The yard was planned by Westinghouse, Church, Kerr and Co., under the direction of J. G. Sullivan, Chief Engineer, Western Lines, C.P.R., and the work is being carried out under the supervision of Frank Lee, Assistant Chief Engineer, Western Lines.

Appropriations sufficient to eliminate many grade crossings within the limits of greater New York are about to be asked for by the Public Service Commission. The total sum necessary to carry out this programme will be about \$6,000,000, it is said, and the commission has made the first move by a preliminary request for \$1,500,000 for 1913.

Police Force on C.P.R. Western Lines.

"An Imperial police force, having for its cardinal principles civility, sobriety, cleanliness and moral and physical courage," is the substance of instructions issued to the head of the C.P.R. police department by the Vice President and General Manager in charge of western lines, George Bury. He had long thought of the problem of assembling a police force to take care of the public and enforce the laws, to be composed of higher grade men than had previously been employed, and above the spotter type, and bearing none of the relations to either the public or the employes which those individuals are supposed to bear, a force that must agree with city and provincial forces and at the same time be independent of the latter while working in close conjunction with them.

He had known of the trials that confronted both city and company departments in endeavoring to assemble a police force that had for its one object the enforcement of law and the proper treatment of the public. He had also known that company officials did not assimilate with those of the city. Why, was not for him to find out; but he did determine that he would place the police force of the western lines on a plane whereby heads of departments in cities and towns on the line could no longer say that officers sent out by the company were not of the right calibre to mix with city departments, for that had been said.

The result was that he ordered the head

A GENERAL PASSENGER AGENT'S TRIBUTE.

R. Creelman, General Passenger Agent, Canadian Northern Railway, Winnipeg, in rewriting his renewal subscription, writes:—

"Canadian Railway and Marine World is a magazine no railway man should be without."

of the railway police department to recruit a force, extending from Fort William to Vancouver, of army veterans. But there must be something besides the mere title of army veteran to get a place on this Imperial police force. They must have served their term of enlistment; they must have the service medal; they must have a discharge from the Imperial army or from the Royal Northwest Mounted Police, without the shadow of a blemish.

It was something of a task that he assigned and it is not yet completed. Out of the 150 men required about 80 have been secured. Every one of these fills the bill. When you see a police officer on duty at the C.P.R. stations, wearing the company's uniform, he will also have a little ribbon on his left breast. It is a duplicate of the ribbon that carries the medal he has earned by distinguished service in the British army or in the Royal Northwest Mounted Police. That ribbon means that the wearer has been trained in a school that means rigid discipline, lessons that teach him how to hold his temper and to recognize that the public is a hard master. The principal duty of this police force is to see that the public is helped while travelling; that travellers are informed of the arrival and departure of trains and to answer the thousands of questions that only the public can ask. In the detection of criminals and the general watchfulness necessary to protect the property of a great company like the C.P.R. this force endeavors to

supplement, as far as possible, the work of officers of the cities and provinces.

At present the force is divided into four divisions:—Manitoba, Saskatchewan, Alberta, British Columbia. Each division is in charge of a chief inspector, who has under him two inspectors, a senior constable, and all the constables of that division, the headquarters of the chief inspector being at the headquarters of the general superintendent of the division. The chief inspector and the two inspectors do not wear uniform, the senior constables are army men of years of experience, most of them having been sergeants in the Imperial army, and all under the general supervision of the chief of the department at Winnipeg.

The first duty to which a new man is assigned is at Winnipeg, so that he may be directly under the eye of the chief of the department until he has become grounded in the work that is expected of him. He has pointed to him the necessity of complying with the cardinal principles on which the force is disciplined, civility, sobriety, cleanliness, after which he is drafted to the other divisions.

The uniform is in itself a mark of distinction. It is a design selected by the Vice President. So well has it been received that there have already been requests from other railway officials for the pattern. When the Duke of Connaught visited the west he more than once complimented the Vice President on the excellence of the C.P.R. police, and recognized several of the men who he had seen in service in the Imperial army.

The police force of the C.P.R. western lines is something to be reckoned with. It has all the powers of the regular police in the territory in which the road operates, the men are schooled in rendering all the help in their power to preserve peace in that territory. They have come to be recognized as a powerful adjunct to Dominion, city and provincial police, and could be solidified almost instantly into a unit of Imperial defence.

Poles Bought in Canada in 1911.

The Interior Department's forestry branch has compiled statistics of poles bought in Canada in 1911. The total number bought was 585,703, a decrease of 25% from 1910. The total value at point of purchase was \$1,056,277, and the average price \$1.80, greater by 47 cents than the price in 1910. Steam railways, telephone and telegraph companies used almost 90% of these poles, the remaining 10% being used by electric railway, power and light companies. Over 90% of the total consumption were cedar poles, which for their cost give better service than any other wood. At present practically none of these poles are treated or preserved by any method, in which respect Canada is far behind the United States. The U.S., using in 1910, 3,870,694 poles, found that it paid to use preservative methods. During the last four years the treatment of poles in the U.S. has advanced rapidly; in 1910 over 21% of the total number were treated by creosote or other methods. This was an increase of some 45% over the number treated in 1909. At present the U.S. has a large number of timber-treating plants, while Canadian pole users are only now beginning to treat them. It is to be hoped that this great inequality will soon be done away with and that pole users in Canada may take up this cheap and rational method of securing greater service from the poles used and thus lessening the drain on the forests.

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 shimmed level with the top of the rail, and resting on 4 by 6 in. sleepers at 4 ft. centres. At a distance of 2¼ 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

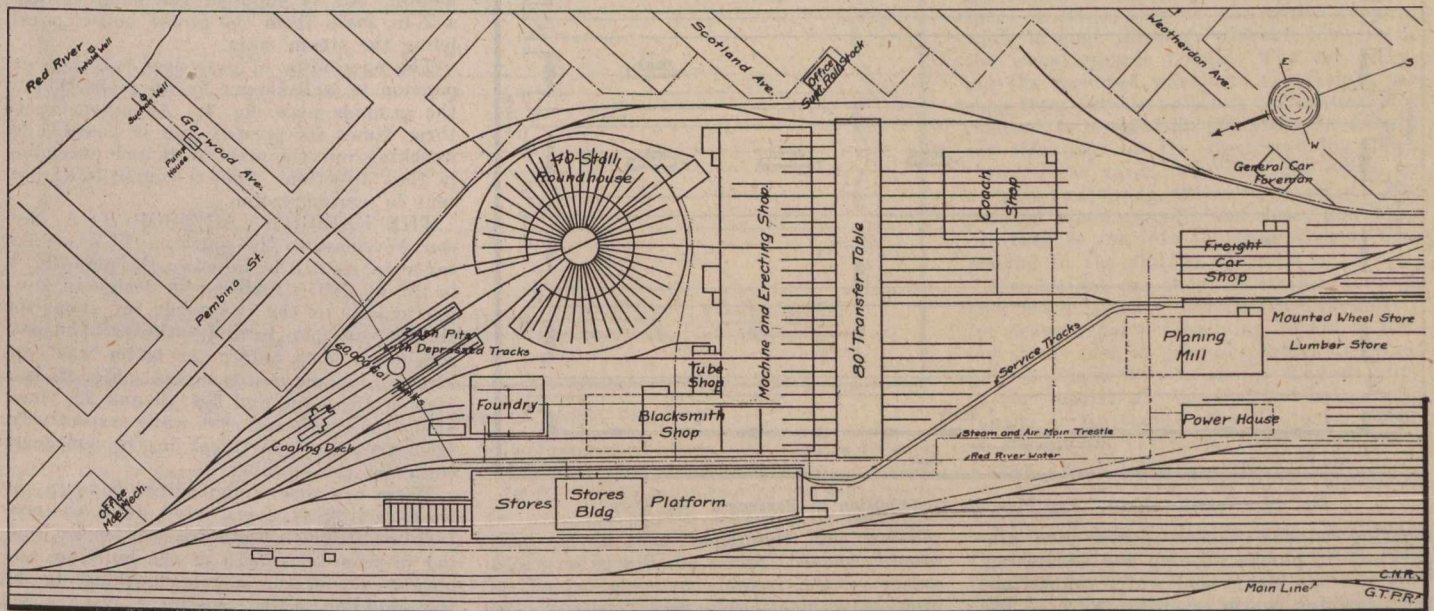


Fig. 1. Section 1.—Layout of C.N.R. Fort Rouge Shops—North End.

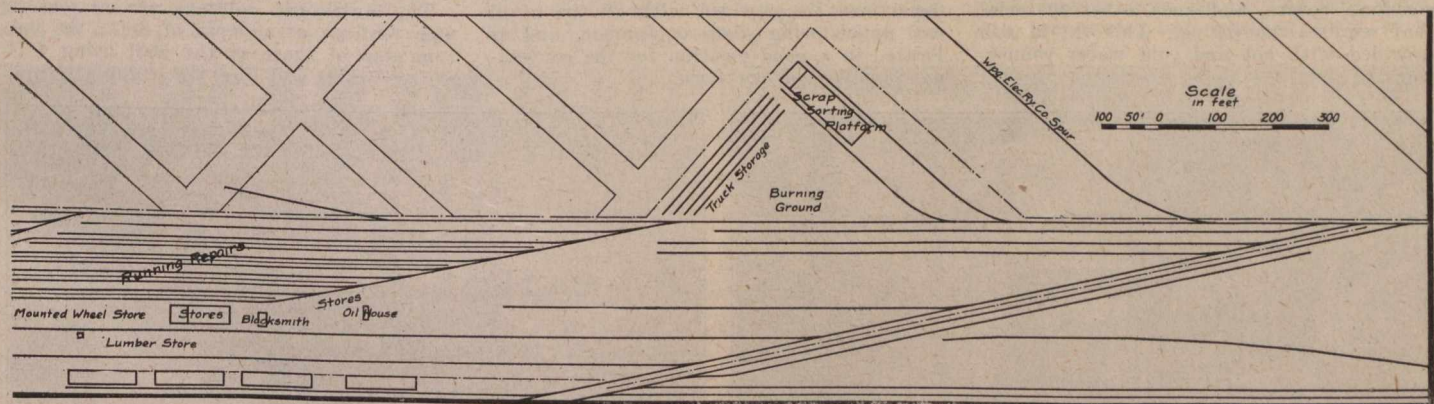


Fig. 1. Section 2.—Layout of C.N.R. Fort Rouge Shops—South End.

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 in 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 ¼ 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, 6½ 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 upholstering 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, banked 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.

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.

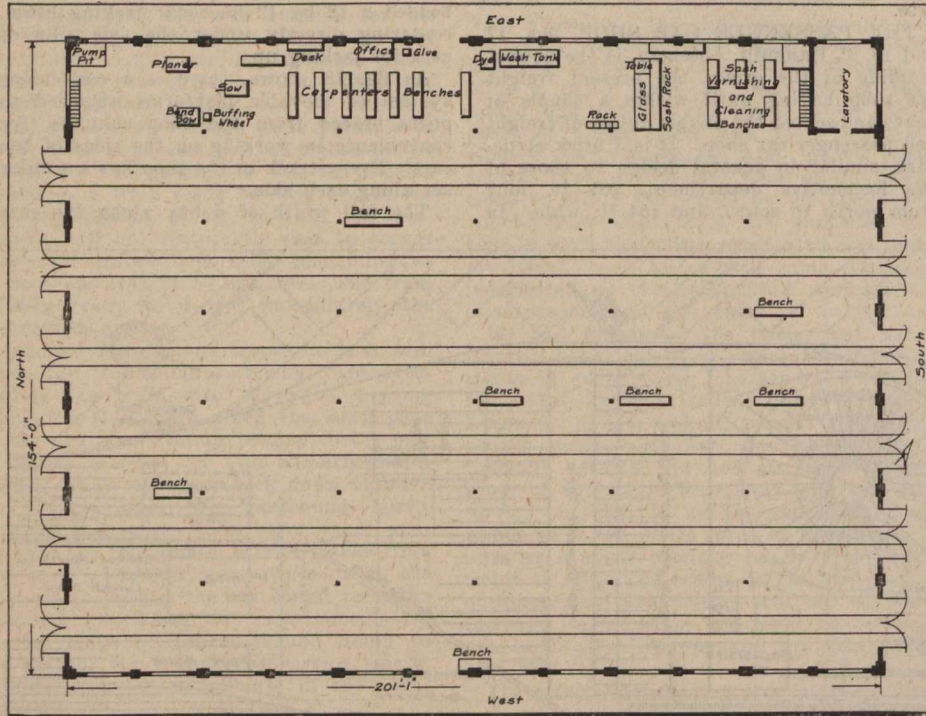


Fig. 17.—Interior Layout and Machine Distribution in Passenger Car Shop.

scouring window sashes, doors, etc., preparatory to pumice stoning and varnishing. This vat has steam and water connections for providing warm scouring water. The vat adjoining, beside the door, is a tank 2½ by 3½ ft., and is used for dyeing cushions, covers, and such other material that requires renovating. This vat is also provided with hot and cold water connections.

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 car upholstering shop equipment, and is located in a good position for the convenient handling of the work.

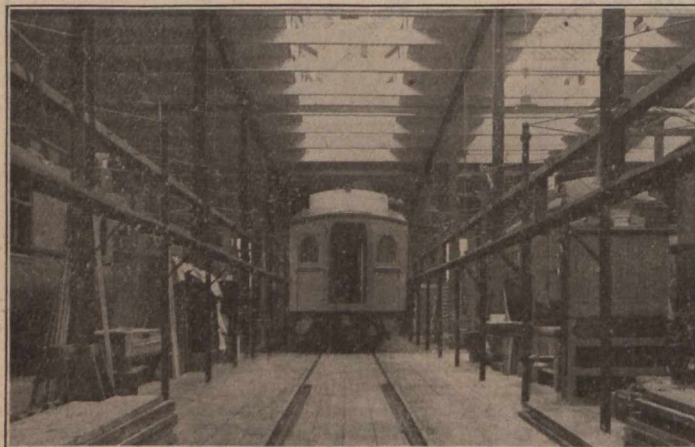


Fig. 18.—Arrangement of Track in Passenger Car Shop.

The foreman's office adjoins the side door of the building, and opposite this office is a row of seven carpenters' 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, 2½ 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-

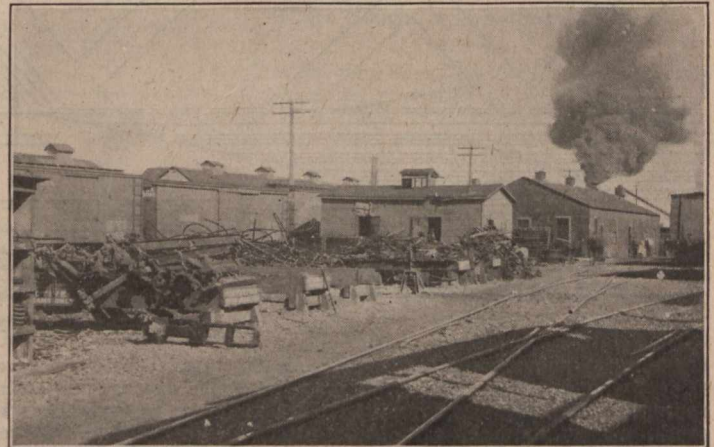


Fig. 19.—Freight Car Repair Track Buildings and Stores.

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 ¼ in. plates, the clear height under the centre

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

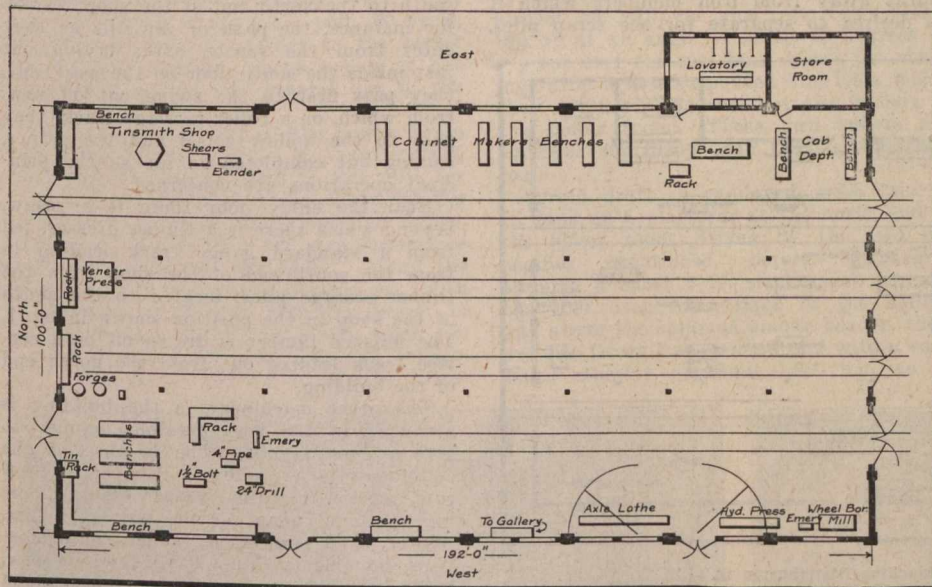


Fig. 20.—Interior Arrangement of Freight Car Shop.

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, 1 1/2 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

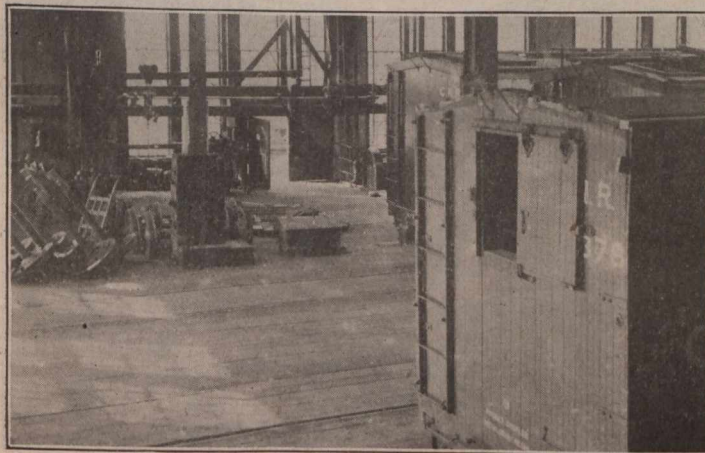


Fig. 21.—South Side of Freight Car Shop.

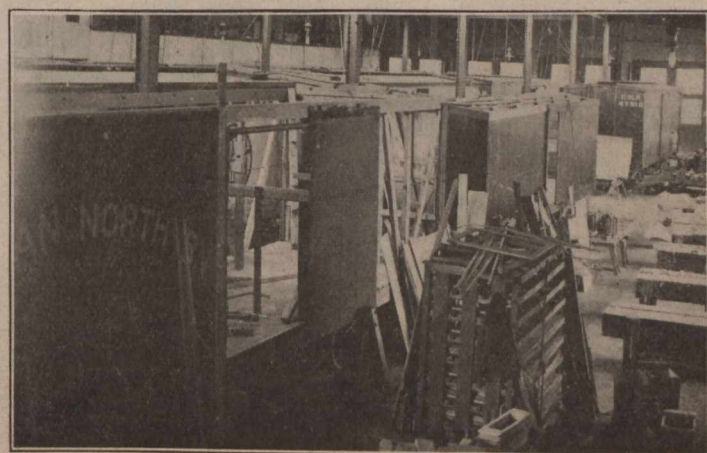


Fig. 22.—East Side of Freight Car Shop.

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 upholstery 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,

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.

tion being to the north, as shown in fig. 1. While this addition increases the length 96½ 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 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

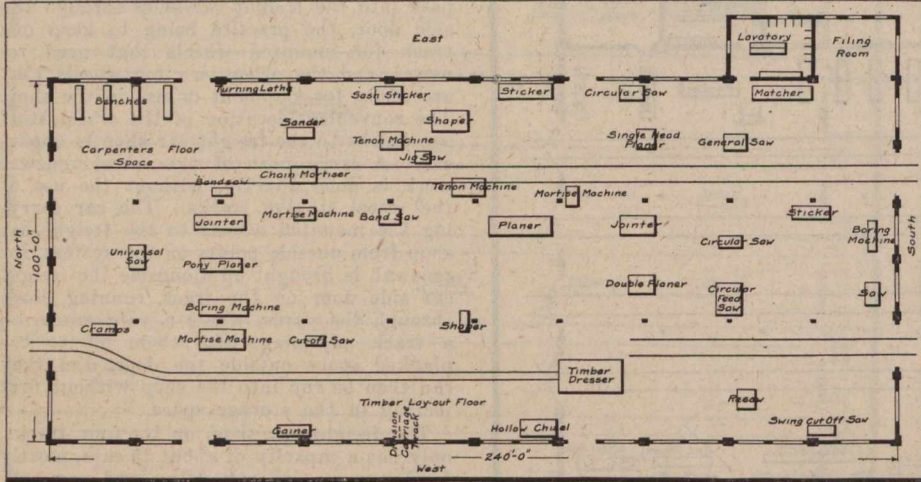


Fig. 23.—Interior Layout and New Machine Distribution in Mill.

stores for 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.

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-

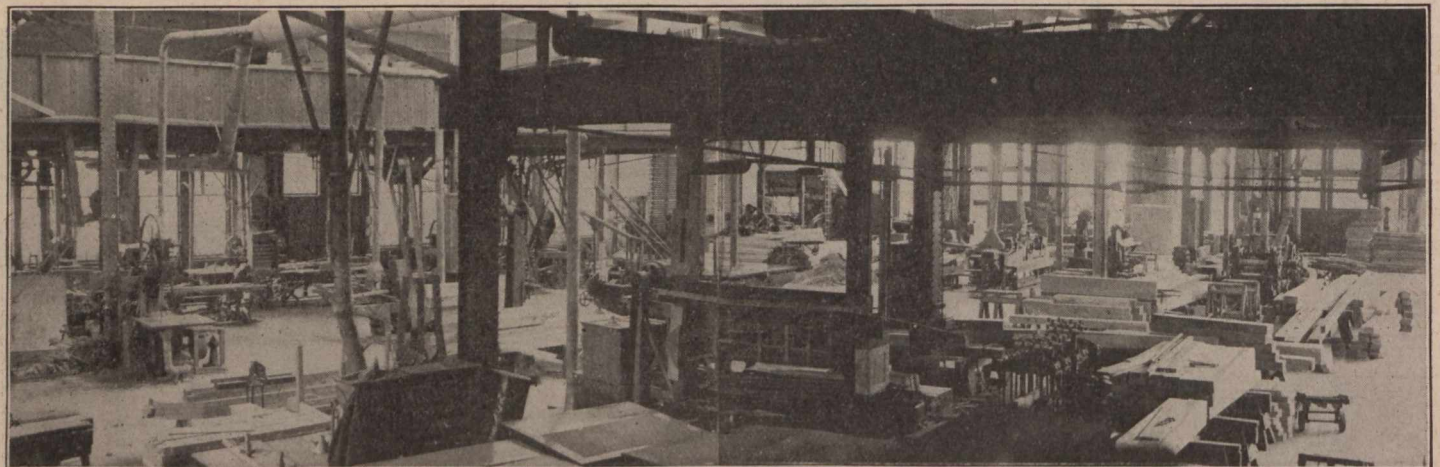


Fig. 24.—Interior of Mill, showing Old Arrangement.

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, on the southern 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-

crowded that an extensive addition has corner of the shop. 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 the crowded nature of the interior is shown. The construction of the shop is identical in all details with the blacksmith shop, as just had an addition of 35 ft. 2 ins. to which the reader is referred. The building, as extended, is 240 by 100 ft., the addition as all the others of the group, being

POWER HOUSE.

This is the building directly to the west of the planing mill, and is in charge of J. A. Fraser, Chief Engineer, Power House. It is 162½ ft. by 54 ft. 4 ins., divided into two separate rooms, the front one of which contains the power units, and the other, which contains the boilers. This latter room has just had a further power reserve.

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-

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 fan engines on a platform along the dividing wall of the building, driving the fans in 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 noticed 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

be seen to the rear in fig. 25. The coal storage for the boilers is in the bins shown on 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-

ranged that they can be by passed from the smoke header, causing the smoke draft to pass through at will.

There are two supplies of water—city and Red river. The Red river supply is obtained from a pumping station, shown in fig. 1, at the foot of Garwood avenue on the edge of the Red river. This station is to be increased by the addition of two 100 h.p. suction gas pumps, with a 24 hr. capacity each of 1,000,000 gals. Both supplies are connected together at the power house to the water system, but with drainage joints to prevent contamination of the city water by the impure Red river water.

The boiler feed water passes through a 1,000 h.p. Cochrane feed water heater, and is forced into the boiler by two 6 x 6 x 12 in. feed pumps. There are two auxiliary pumps of similar size for fire purposes, but so connected that in the event of necessity they can be connected for boiler feeding.

The exhaust from the compressor has two paths—one straight out to the atmosphere, and the other through the feed water heater. Under normal conditions, the feed is heated to a temperature of about 180 degs.

The drainage from the heating system of the freight car shop and the mill, returns to the power house, where it is handled by a 6 x 6 x 12 in. pump, and emptied into the feed water heater for delivery to the boiler. Steam traps all deliver to this

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-

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 in 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.

LOCOMOTIVE 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 enginemen's room, oil room and machine shop. The machine shop only con-

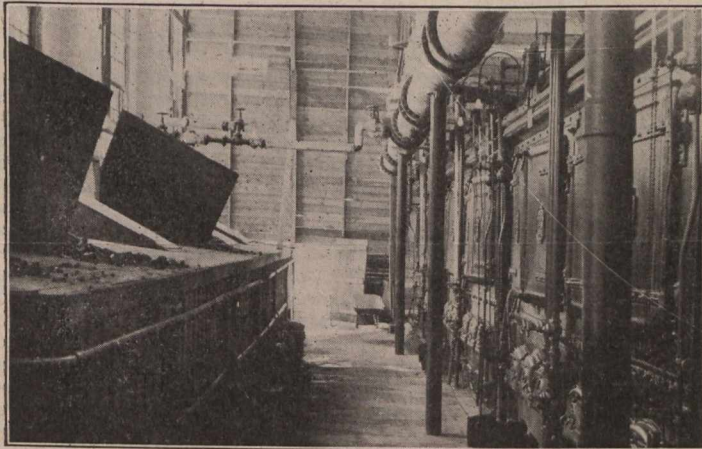


Fig. 25.—Interior of Boiler Room.

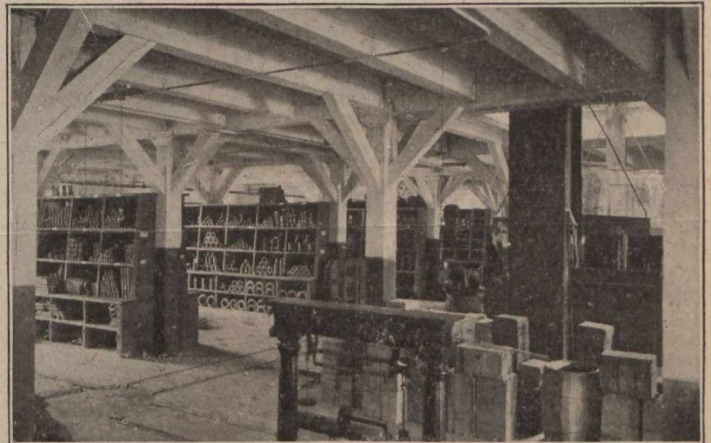


Fig. 26.—Interior of Stores Building.

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 5 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. Near by 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., 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 £68,701 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 contributories 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.

Quebec Central Railway Company's Annual Report.

Following are extracts from the report for the year ended June 30, presented at the annual meeting in London, Eng.:—

	1912.	1911.	Increase.
Gross earnings	\$1,354,811	\$1,208,949	\$145,862
Working expenses	943,976	820,803	123,173
Net operating revenue	\$410,835	\$388,146	\$22,689
Interest earned	11,744	7,911	3,833
Net income	\$422,579	\$396,057	\$26,522
Net income as above			\$422,579
Brought forward from June 30, 1911		\$77,005	
Less appropriations for special bonus fund		28,000	49,005
			\$471,584
Interest on 4% debenture stock		\$117,742	
Interest on 3% debenture stock		49,348	167,090
			\$304,494
Interest on 7% income bonds, coupon 12		115,145	
Surplus			\$189,349
Out of the surplus shown above the directors recommend the payment of a dividend on the share capital at the rate of 4% per annum (£1 per share) as follows:—			
Surplus as shown above			\$189,349
4% on share capital \$135,264			
Income tax adjustment	1,754		
		137,018	
Less proportion of dividend receivable on shares in treasury (\$601,277)		22,648	
			114,370
Balance			\$74,979

No capital issue has been made during the year.

On June 12 last special meetings of the various classes of security holders were held, at which resolutions agreeing to the amendment of your charter and confirming the agreement between your company and the C.P.R. Co. and the schedule attached thereto were passed. The C.P.R. shareholders at their general meeting on Oct. 2 also gave their sanction. The lease has accordingly been executed and early next year the new securities will be issued in exchange for those now existing.

The expenses were 69.68 of gross earnings, against 67.89 the previous year. The gross receipts per mile of line operated were \$5,354; expenses and taxes, \$3,731; net from operation, \$1,623. Of the freight traffic, products of the forest furnished, 61.54%; agricultural and dairy products, 3.57%; minerals, 15.20%; and manufactured goods and merchandise, 19.69%. The total train miles run was 957,214; passengers carried, 402,682; average earnings per passenger, \$0.928; tons of freight hauled, 931,258; average earnings, per ton, \$0.959.

The President, E. Dent, occupied the chair at the annual meeting and dealt in detail with the main features in the report. He referred to the relaying of the main line with 80 lb. rails, which is being actively proceeded with. The various legal formalities in connection with the lease of the line to the C.P.R. Co. were explained, and it was stated that the lease will go into effect on Jan. 1 next. In conclusion he said:—As this may be the last meeting to take place under the present board, the directors desire to thank our general manager, Mr. Walsh, as well as the officers and employes of all grades for the efficient and faithful services which they have rendered to the company, and which have contributed in no small measure to the satisfactory results produced in the last 24 years, during which time the present board have had the railway under their care. We took over the line in 1887 in a derelict condition, in such a state that the government threatened to have it closed. The mileage then

was 153 miles, with 10 miles of sidings. The net earnings in 1888 were under \$50,000, and the £25 shares were at the nominal value of about 5s. The first mortgage bonds, which are now represented by the 3% debenture stock, and 7% income bonds, were worth about £20. This last year the mileage increased to 253, with 52 miles of siding, and the net earnings were over \$410,000. The shares are quoted now about £20, and the value of what were first mortgage bonds would make an equivalent of about £105. So, therefore, in handing over this railway to the C.P.R., we can feel that the value of the securities has been greatly increased, and that the C.P. Co. has acquired a railway in a thoroughly sound condition physically and financially, on which they are never likely to be called upon to pay anything under their guarantee.

The retiring directors, E. Dent, A. Bremner, T. Lindley, F. H. Norman and S. G. Sheppard, were re-elected.

The General Manager, J. H. Walsh, said:—I thank the President for the kind manner in which he has referred to my connection with your company. I feel today that although we have had many trying and difficult conditions to meet and overcome in the early days of the company, it has, on the whole, been a pleasure to your Canadian staff to have been connected with a sound and prosperous little railway. From small beginnings, with a line in poor physical condition and weak financially, we have grown to be a railway for its length equal to any line in Canada, and of a financial standing second to none. Originally a streak of iron laid through almost a virgin forest, with little population and no industries throughout its length, running only a couple of mixed passenger and freight trains daily, we now have a line standard in character, with prosperous and enterprising cities and towns along its whole length, and serving a district which has grown through what I think I am justified in saying the enterprise of your company to rank among the most prosperous and progressive sections of eastern Canada—a line requiring six express passenger trains and many freight and extra trains daily to give the required accommodation. So prosperous and prominent have we grown to be in our section that we are now about to be associated with, and become part of, the greatest and most successful transportation system on the American continent, and I have no fear, gentlemen, but that the great C.P.R. Co. thoroughly appreciates the fine property it has acquired, and will continue the policy that you have followed of encouraging and developing the resources of the line. Before concluding, as this may be the last opportunity I may have of meeting the proprietors of our little line, which I have been connected with for over 30 years, I wish to thank the President and the directors for the uniform kindness and confidence that has been extended to me, both personally and as general manager, as well as to your whole Canadian staff. I can assure you we have all tried to live up to and be worthy of that confidence, and you transfer today to the C.P.R. a railway system and staff of employes of which you may well be proud.

After a vote of thanks to the directors had been passed the President said:—Although it may be for the last time that we shall sit here as a board, there will probably have to be yearly meetings, though you will not perhaps have so much interest with regard to the earnings, as your interest is guaranteed. Still, I think we shall all follow the fortunes of the Q.C.R. Co. with great interest for many years to come, and I trust that Mr. Walsh will live for many years to preside over the company's interests on your behalf.

Railway Mechanical Methods and Devices.

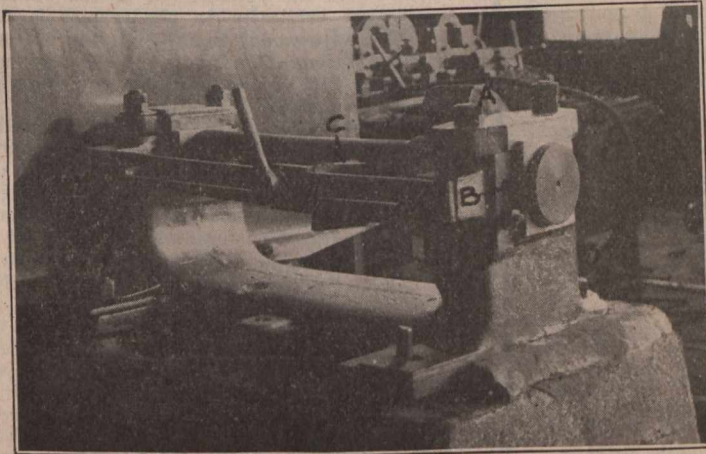
Cutting Bolt Stock at Canadian Pacific Railway Winnipeg Shops.

The customary method of cutting up bolt stock is under the shears, mating cutouts being formed in the upper and lower blades in which the different sizes of bolt stock is placed. This is a slow process, as the stroke of the shears being at a slow rate, it is impossible to produce them rapidly. The practice of cutting off several of a batch grouped together under flat blades has been tried at different shops with varying degrees of success, but this manner of handling work has certain decided disadvantages.

In the bolt department of the C.P.R. Winnipeg shops there are two special machines for the rapid cutting up of bolt stock, one of which is shown in the accompanying illustration. The machine is essentially the same in construction as the headstock of a lathe, there being a central spindle of generous size supported at either end of the machine frame in bearings as in the spindle of a lathe. The drive is from the left end of the spindle, behind the screen.

On the near end of the spindle there is a projecting arm, A, integral with the spindle, with which it revolves. To the front face of this arm is attached a shear section, consisting of a piece of hardened steel, and on the inner face of the front bearing standard there is a corresponding shearing piece, the revolving piece just clearing the stationary one as it revolves, the same as the two shear blades of a vertical shear would do.

Through the near bearing standard there is a hole, B, passing through the stationary shear blade. Through this hole the bar stock is passed, being sheared off on the inner face by the revolving shear, which revolves at a comparatively high rate of speed. The length of the bolts are set by the stop C, on the front face of the machine. This stop can be moved the length



Special Machine for Cutting Bolt Stock.

of the spindle along the slotted bar attached at each end to the bearing standards.

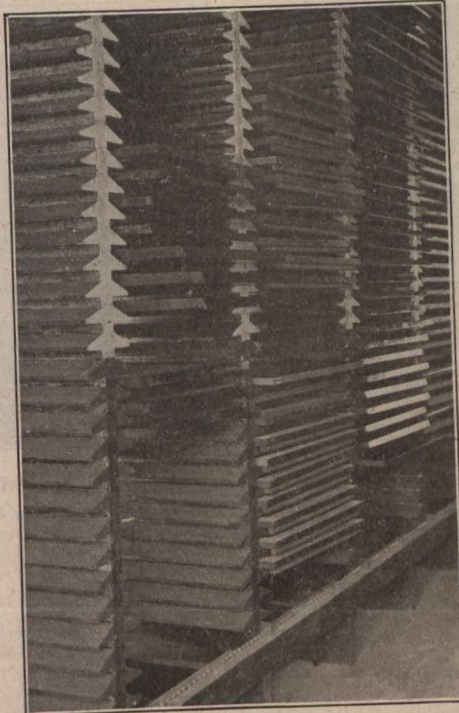
The rapidity of production is nearly as great as the speed with which the operator can feed the bar into place between shears. To maintain uniform operation, there is a heavy flywheel on the spindle behind the rear screen.

F. F. Osborne, General Manager of the Bengal (India) Ry., is visiting British Columbia, to secure ties for the railway. An experimental shipment has been arranged.

Varnish Drying Racks at the Grand Trunk Railway Port Huron Shops.

In the varnish department of the G.T.R. car shops at Port Huron, Mich., new drying racks for sashes have been constructed. The general appearance and details of construction are clearly shown in the two accompanying illustrations.

These racks are 25 ft. long, and extend from ceiling to floor. The partitions for carrying the sashes are movable, and it is in this particular that they are especially



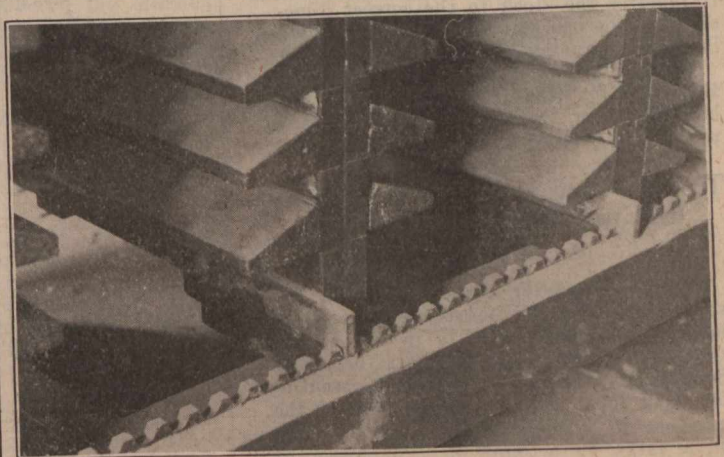
Adjustable Racks for Varnished Sash.

bottom, and projecting about 2 ins. on each side. These are so placed apart as to fit into the grooves on the surface of the supporting scantlings. The upper cross bar hangs in one of the grooves, while the lower one rests in the corresponding groove on the lower framework. Thus, the intermediate partition walls can be moved at will to accommodate any size of sash, the end ones, which form a part of the framework, being the only ones that are solid. Working from one end, the different standard widths can be set for handling normal conditions, and when there is a special rush of any particular size, the racks can be altered easily to accommodate this variation.

The ledges on which the sash rest are different from those found generally, though the same style is to be found in some car shops. The upper, or resting surface, on which the sashes rest, slopes down at about a 20 deg. angle, so that all of the sash that touches the shelves is the edge on which it is resting, the advantage being that the varnish is in no way marred, as it would be in places where the resting edges are horizontal and not sloping. An inspection of the filled racks shows what a very small portion touches. The sash surface comes out clear and unmarked by the resting surface. The marring of the edges is not a very serious matter when it is considered that the best part of it is hidden in the sash groove, yet a perfect job has such an added pleasure to the true mechanic as to make a kink of this type appreciated.

Hot Water Mixer at Canadian Pacific Railway Montreal Shops.

The accompanying plan shows a home made hot water mixer for locomotive boiler washout that can be made by any machinist in a short time, and with very little material. The main body A is a common 3 1/2



Details of Adjustable Rack for Varnished Sash.

unique. Two beams, placed the depth of the drying racks apart, are raised about a foot above the level of the floor, and on the upper surface of these scantlings there is a notched strip of wood, as the detail photograph shows, these notches consisting of semi circular grooves about an inch apart, centre to centre. At the top of the rack structure there is a similar pair of notched scantling with cut-outs on the upper surface. The division walls to carry the drying sashes have a 3/8 x 1 1/2 in. strip of wrought iron attached to both the top and

in. T, and the piece B is made from a brass 1 3/4 in. pipe. This is the steam inlet. The piece C is the discharge end adapted for 2 1/2 in. pipe, and the piece D is the cold water inlet adapted to suit a 2 1/2 in. cold water union.

We have an extra water header combined with boiler for washout, and this hot water mixer we have connected in our piping, which serves as an emergency outfit when the header does not work, and the results are always of the best.—J. G. Koppell, Railway and Locomotive Engineering.

Planing Locomotive Shoes and Wedges at Canadian Northern Railway Shops.

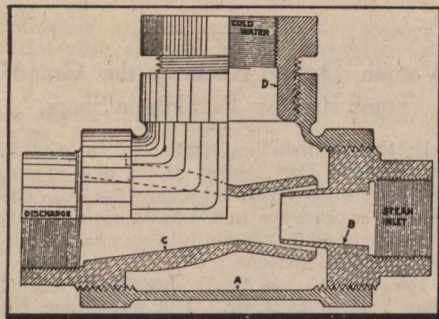
The accompanying illustration shows the practice at the C.N.R. Winnipeg shops in the matter of machining locomotive shoes and wedges. As will be noted, they are produced in batches, both heads being in service on different stages of the work.

The castings are mounted in a row on the planer table, with a small block under each end. The casting ends are placed close together, a bolt at each end holding down the two adjacent ends. A special forked tool is used for planing two sides, held in the head in the usual manner. Each arm of the fork has an inwardly projecting tool, adjusted to the work by a set screw in the

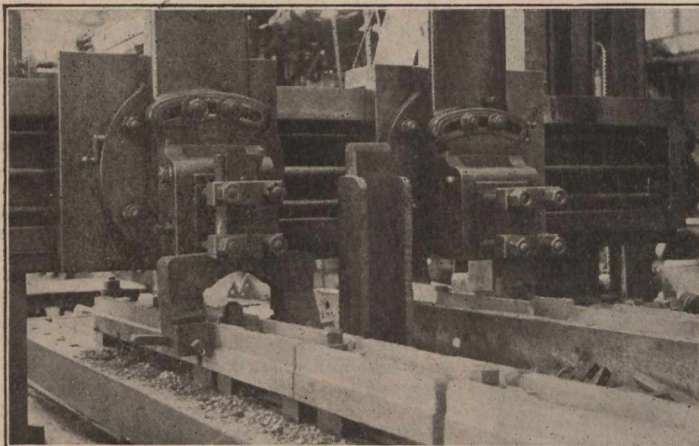
or shell cutter descending on the work with the drill press feed, reduces the bosses to

Portable Milling Tool Grinder at Grand Trunk Stratford Shops.

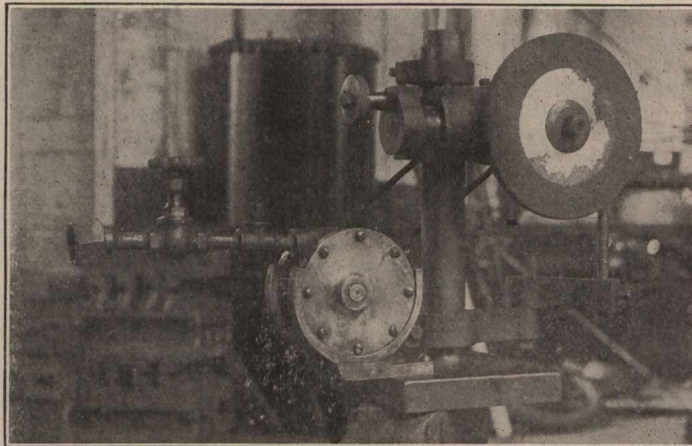
The accompanying illustration shows a portable milling tool grinder for use on large horizontal millers. The principal use to which it is put is to regrind teeth that become broken in the middle of a job, removing the rough edges, or for the grinding of a new cutting edge inserted in the place of the broken one. The advantage lies in the fact that the cutter does not require to be removed from the lathe, a desirable factor, for the removal of the cutter spoils the cut to a certain degree, it being impossible to place the cutter back in exactly the same place. There is also



Hot Water Mixer.



Planing Locomotive Shoes in Batches.



Portable Grinder for the Horizontal Milling Machine.

front face. The tool has a knuckle in each fork, which frees the tool from the cut on the return stroke. The two springs in the knuckle of the left hand arm are to be seen in the opening over the tool.

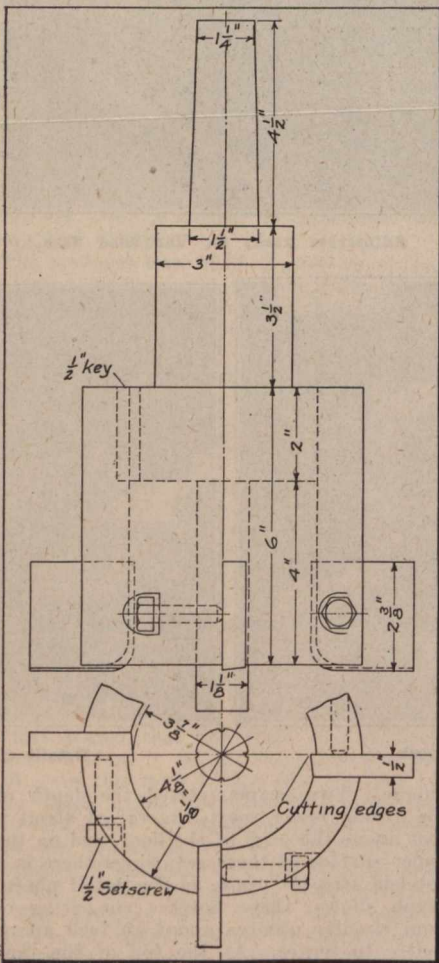
When the sides of the shoes are planed, they are moved over for the other head to operate on. On the table of the planer is fastened a long trough shaped jig, in which the shoes are secured by set screws from the far side. A tool of the correct width is held in the tool holder, and as it feeds down, it removes the stock to the correct dimensions at the one setting. The finished shoe is shown standing between the two heads.

We are indebted to A. Hopkirk, Shop Engineer, for this information, and from him we learn that it is now possible to produce 26 per day.

Tool for Turning Rocker Arm Bosses at the Grand Trunk Railway Stratford Shops.

The accompanying illustration of a box tool for turning the bosses on the ends of locomotive rocker arms, is in use at the G.T.R. locomotive shops at Stratford, Ont. Some such device as this is almost essential for such jobs, as it is almost out of the question to attempt to turn them down on a lathe on account of their awkward shape. Different tools will be found in use, but this is probably as simple as any.

A taper shank to fit a drill press is turned down on its lower end to 1 1/4 in. diameter to act as a guiding pin into the drilled hole in the boss at the end of the rocker arms. Half way between this guide pin end and the taper, there is attached by a 1/2 in. key, an outer shell carrying four radial cutters. The outside and inside diameters of this shell are 6 1/8 and 4 1/8 ins. respectively. The cutters, held in radial slots by 1/2 in. set screws, have cutting edges both on the inside and on the bottom. This box size, and at the same time puts the fillets



Tool for Turning Rocker Arm Bosses.

size, and at the same time puts the fillets in the arm corners, the cutters being ground to give this required corner.

the loss of time in the following of such a course, as the disassembling of the machine is no small task.

The base of the grinder is secured to some convenient surface such as the platen or the top of a side rod being milled, or any level surface. Under the tooth to be ground, the double swinging arm near the bottom of the stand is placed, so as to have the cutting face level. The emery wheel, carried on a shaft on a clamp block attached to the vertical rod of the stand, is located vertically to the correct level, and the adjustment radially to the cutter is made through the small adjusting screw near the top, which carries the grinding wheel arbor along that spindle.

The drive of the grinder is from a small impulse air motor, mounted on the grinder base, power being transmitted through a short section of circular belt. The saving in time on the horizontal miller from the speedy repair of cutters broken or requiring repair, is quite considerable, and the quality of the work performed is the equal of that which would be possible on a stationary grinder.

The Manchester Ship Canal Co., Manchester, Eng., has placed a contract for the construction of a 1,500,000 bush. reinforced concrete elevator on the American system. It was designed by John S. Metcalf Co., Ltd., Montreal and Chicago, who are acting as consulting engineers for the company on the work. It will be of reinforced concrete throughout, will have large capacity for receiving grain in bulk, storing, sacking, and for shipping in sacks and in bulk. Approximate total cost, \$900,000.

J. B. WAY, agent, C.P.R., Sault Ste. Marie, Ont., in remitting his renewal subscription, writes:—"I cannot understand how I got along without Canadian Railway and Marine World before I subscribed to it. I believe every railway man in Canada should have a copy on his desk."

Canadian Northern Railway Company's Annual Report.

The following directors' report, over the signature of Sir Wm. Mackenzie, President, was submitted at the annual meeting recently:

The result of operations for the year ended June 30, 1912, are as follows:

GROSS EARNINGS	
Passenger traffic.....	\$ 3,434,140.81
Freight traffic.....	15,567,998.17
Express, mail, telegraph, dining and sleeping cars, interest and profits from elevators and other subsidiary companies and investments.....	1,857,954.65
	<u>\$20,860,093.63</u>
Working expenses, including taxes, etc....	14,979,048.52
Net earnings.....	\$ 5,881,045.11
Fixed charges.....	4,630,844.12
Surplus.....	\$ 1,250,200.9
Interest at 5% per annum paid on income charge convertible debenture stock outstanding.....	674,804.11
Net surplus for year.....	\$ 575,396.88

The gross earnings show an increase of \$4,499,381.24, or 27.50%, and the net earnings of \$890,698.29, or 17.85% over the preceding year. The working expenses were 73.82% of gross earnings of the railway proper and 71.81%, including taxes, of the gross earnings from all sources, compared with 72.59 and 69.50% respectively last year.

During the year over 586 miles of newly constructed tracks were added to the system, the average mileage operated being 3,888 miles.

The classified table of freight carried again reflects a substantial development of the industrial and agricultural resources of the country served by your railway. The statistics covering grain, including the figures representing flour shipments, show a total movement of over 60,000,000 bushels, or approximately 32% of the total inspected crop of Western Canada. This shows a notable advance over any previous year, and is a reliable indication of the productiveness of the territories your directors have selected. An increase of 120% in the total bulk of commercial coal carried is also remarkable, the figures being 804,803 tons moved this year, compared with 370,161 for the previous year. This increase is indicative of the growth of the coal mining industry in Western Canada, which, upon the completion of the extensions of your railway now being constructed in the larger coal areas, will receive an even greater stimulus. There is also a further indication of the prosperous extension of the cities, towns and settlements along the lines of your railway, as shown by the increase of 48% over last year in the amount of building materials carried by your railway during the year.

Land sales during the year were 55,111 acres for \$836,084.37, an average of \$15.17 an acre, compared with 279,151 acres for \$3,345,498.73, an average of \$12 an acre, the preceding year. The reduction in sales is substantial, but your directors, recognizing that the value of productive acreages in Western Canada is assured, and being desirous of, as far as possible, selling to settlers only, have not pressed the sale of your lands. On the other hand they have adopted an aggressive policy of colonizing the free lands offered by the Dominion Government in territories adjacent to your railway; 2,479,000 acres of these lands were entered upon by settlers during the year, of whom a largely increased number were a most desirable class of British emigrants.

The operation of the Royal Line Steamships continues to vindicate the wisdom of engaging in the Atlantic trade. The

increasing popularity of the route emphasizes the necessity for extending the service so that the company may take the full benefit of the business controlled by its organization. The negotiations referred to in the previous report, having in view the increase of the fleet, did not terminate satisfactorily and your directors are considering other means of attaining the object.

Your directors are pleased to report that a movement having as its purpose the adoption of more permanent methods of agricultural development in the prairie provinces is responding favorably to the impetus given to it by the demonstration and educational propaganda which is being actively carried on by the various railway companies in conjunction with the Dominion and provincial governments. This movement was inspired, primarily, to offset the reduction in production of beef and other cattle products which followed the settlement of the large ranch leases by homesteaders and small grain farmers. Climatic, physical and financial conditions encourage the pioneer farmer settler to engage in the production of grain to the exclusion of other agricultural products. There are, however, indications from the campaign for diversified farming which has been engaged in, of a change to more permanent methods. The progress of this movement is especially gratifying to your directors as the location of the lines of your railway in the prairie provinces is through country which is preeminently adapted to the practice of diversified farming in general.

Great progress has been made in the construction of the transcontinental line of the Canadian Northern system, which it is hoped will be completed by the end of 1913; the line through British Columbia to connect the western lines of your railway with tidewater at the Pacific coast is advancing rapidly. In addition to a very fortunate advantage of easy gradients, the location of the line enters without competition into a large territory, the physical characteristics of which will attract a very desirable class of settlers. The line will also give access to a hitherto unknown section of the Canadian Alps, of which the scenic attractions are such as will divert a large volume of the transcontinental tourist traffic to the route.

The work of linking up the lines of your railway in Western Canada with the railways of the Canadian Northern system in the eastern provinces is also making satisfactory progress, having regard to weather and other conditions. The resources of the country opened up by this line will be productive of great traffic advantages to your company. Capital is only awaiting the completion of these transportation facilities before entering upon the development of iron and other mineral deposits, extensive pulpwood and timber areas. In addition to the tonnage assured to your railway from this industrial development there are the traffic advantages which will accrue from the agricultural development of the great clay belt of Northern Ontario, through which your railway will pass for 350 miles. Experienced officers of your company who have carried out explorations of the entire area estimate that the industrial and agricultural resources of this territory will attract and support a population of over 2,000,000 of people.

During the year another section of the Canadian Northern Ontario Ry. was opened for traffic, but your directors regret that due to adverse weather and other conditions the

completion of the line between Ottawa and Toronto has been delayed. The work is, however, progressing and it is hoped in a short time to establish a through service connecting Toronto with Ottawa, Montreal and Quebec. The pulp and paper industries in Northern Quebec are expanding quite satisfactorily, the traffic advantages of which accrue chiefly to railways operated under your control in the Province of Quebec.

The movement of the crop of 1912 has now begun, and recognized authorities estimate the yield of the Provinces of Manitoba, Saskatchewan and Alberta as follows: Wheat, 196,000,000 bush.; oats, 224,500,000 bush.; barley, 49,600,000 bush.; flax, 12,900,000 bush.; total crop, 483,000,000 bush. Having regard to the fact that the yield is greater than any previous year; that the quality is good and that the market value is satisfactory, your directors anticipate another year of substantial growth in revenue.

Since the close of the fiscal year the gross and net earnings for the months of July and August have been ascertained and the figures show a very satisfactory increase over the same period last year. They are as follows:

	1912.	1911.	Increase.
Gross earnings.....	\$3,575,500	\$2,896,500	\$679,000
Operating expenses.....	2,710,100	2,220,200	489,900
Net earnings.....	\$865,400	\$676,300	\$189,100

Your directors have noticed with great pleasure the keener interest in Canadian affairs generally displayed by statesmen and other leaders of opinion and thought in Great Britain and emphasized by the large number of prominent men who have visited Canada during the past summer. They hope to see a still larger number of visitors from the old country in the future, as they believe that a personal and unbiased examination of the actual and potential resources of the Dominion will result in still greater confidence in the future of Canada and the close co-operation in her development, which your directors have in the past endeavored to promote by every means in their power, in the interests of the Empire.

The accounts and statistical tables appended were submitted over the signature of D. B. Hanna, Third Vice President.

GENERAL BALANCE SHEET.

ASSETS.	
Cost of railway and equipment.....	\$191,903,360.92
Acquired securities..... (Cost)	8,294,006.87
Advances to other companies.....	2,817,091.80
Advances to lines under construction	6,935,410.80
Material and supplies on hand.....	\$2,285,049.90
Due from agents, station balances, etc.....	1,213,479.39
	<u>3,448,520.29</u>
Deferred payments on land sales.....	9,082,673.91
Cash with National Trust Co., account of land sales.....	2,869,618.71
	<u>11,952,292.62</u>
Cash account—	
With Dominion Government.....	1,175,464.54
With Province of Manitoba.....	18,278.35
With Province of Saskatchewan.....	1,978,110.40
With Province of Alberta.....	1,339,752.62
Cash on hand.....	1,931,641.79
	<u>6,443,247.70</u>
	<u>\$231,883,940.00</u>
In addition to the above assets the Company owns 816,755 acres of land in Manitoba and Saskatchewan.	
LIABILITIES.	
Capital stock.....	\$ 70,000,000.00
Bonds and stock guaranteed by Government.....	54,390,491.20
4% perpetual consolidated debenture stock.....	39,464,716.63
5% income charge convertible debenture stock.....	15,000,000.00
Land grant bonds.....	6,040,306.70
1899.....	\$2,000,000.00
1909.....	4,040,306.70
Car trust obligations.....	15,177,882.73
Current liabilities—	
Unpaid pay rolls.....	1,074,168.18
Unpaid audited vouchers.....	2,058,659.91
Due to other companies.....	3,321,114.92
	<u>6,453,943.</u>

79% of the cost of the line is covered by the sale of the land - 1.8% of the cost of the line

Coupons and dividend warrants due on July 1 (since paid)...	1,690,569.24
Accrued interest on bonds and equipment securities	459,090.25
Equipment replacement fund Surplus—	2,149,659.49
Land account	345,560.63
Railway account	16,874,826.32
	5,986,553.29
	22,861,379.61
	\$231,883,940.00

INCOME ACCOUNT.

Operating expenses	\$ 14,794,463.50
Taxes, railway	106,899.05
Taxes on company's lands	77,685.97
Interest on Bonds, etc.—	
Consolidated debenture bonds, guaranteed by Manitoba government	\$ 487,010.54
Ontario division debenture bonds, guaranteed by Manitoba government	230,690.46
Winnipeg terminal bonds, guaranteed by Manitoba government	120,000.00
3% debenture stock, guaranteed by Dominion	280,799.86
3 1/2% debenture stock, guaranteed by Dominion	258,405.24
4% debenture stock, guaranteed by Manitoba government	113,828.49
4% debenture stock, guaranteed by Saskatchewan government	236,319.28
4% debenture stock, guaranteed by Alberta government	89,960.00
Consolidated debenture stock, Qu'Appelle, Long Lake and Saskatchewan Ry. 4% debenture stock	1,496,988.82
Qu'Appelle, Long Lake and Saskatchewan Ry. 4% debenture stock	202,055.99
Qu'Appelle, Long Lake and Saskatchewan Ry. 6% bonds	963.60
Land grant 4% bonds	163,792.52
	3,689,823.80

Rental of Leased Lines—	
Northern Pacific and Manitoba Ry	225,000.00
Minnesota and Manitoba Rd.	13,960.00
	238,960.00

Interest on equipment securities	711,060.32
Accrued interest to June 30, 1912	459,090.25
Less accrued interest to June 30, 1911, paid during current year	304,341.34
	154,748.91

Interest at 5 p.c. per annum paid on income charge convertible debenture stock outstanding	674,804.11
Balance of income account	5,986,553.29
	\$26,425,998.95

Balance of income account at June 30, 1911	\$ 5,565,9 5.32
Gross earnings, viz.—	
Passenger earnings	\$ 3,434,140.81
Freight earnings	15,567,998.17
Express, mail and miscellaneous earnings	1,857,954.65
	20,860,093.63
	\$26,425,998.95

GROSS EARNINGS.

Class.	1911-1912	p.c.
Passenger	\$ 3,434,140.81	16.46
Freight	15,567,998.17	74.63
Mails	112,177.63	00.54
Express	466,157.11	02.24
Miscellaneous	1,279,619.91	06.13
Total	\$20,860,093.63	100.00

OPERATING EXPENSES.

Class.	1911-1912.	p.c.
Maintenance of way and structures	\$ 2,608,866.45	17.42
Maintenance of equipment	3,262,727.41	21.78
Traffic expenses	790,474.34	02.41
Transportation expenses	8,013,252.78	53.49
General expenses	733,727.54	04.90
Total	\$14,979,048.52	100.00

SUMMARY OF EARNINGS AND EXPENSES.

Class.	1911-1912.	p.c.
Gross earnings	\$20,860,093.63	
Operating expenses	14,979,048.52	71.81
Net earnings	5,881,045.11	28.19

DESCRIPTION OF FREIGHT CARRIED.

	For year ended June 30 1912.	1911.
Flour, sacks 100 lbs. ea.	2,854,136	2,215,004
Grain, bushels	53,441,140	40,249,939
Live stock, head	188,669	137,295
Logs and lumber, feet	405,395,000	324,221,000
Firewood, cords	227,030	210,625
Coal, tons	804,393	370,161
Immigrants' effects, cars	5,154	5,644
Building material, lime, stone, brick, sand, etc., cars	53,425	36,328
Miscellaneous, tons	1,203,887	1,170,964

PASSENGER TRAFFIC.

	1911-1912.	1910-1911.
Passengers carried (earning revenue)	1,681,760	1,394,361
Passengers carried one mile	158,400,017	113,506,430
Passengers carried one mile per mile of road	40,741	31,552
Average distance carried	94.18	81.40
Total passenger revenue	\$ 3,349,317.00	2,756,415.06
Average amount received per passenger	\$ 1.99.16	1.97.68
Average amount received per passenger per mile02.115	.02.428
Total passenger train earnings	\$ 4,012,475.55	3,226,139.60
Passenger train earnings per train mile	\$ 1.21.074	1.17.116

FREIGHT TRAFFIC.

	1911-1912.	1910-1911.
Revenue tons carried	5,970,449	4,675,405
Revenue tons carried one mile	2,024,003,946	1,855,711,579
Revenue tons carried one mile per mile of road	520,577	409,610
Average distance haul of one ton	359.70	296.38
Total freight revenue	\$ 15,537,533.95	11,768,493.37
Average amount received for each ton of freight	\$ 2.56.891	2.51.711
Average revenue per ton per mile00.758	.00.84
Total freight train earnings	\$ 15,567,998.17	11,951,993.57
Freight train earnings per train mile	\$ 2.37.492	2.66.112

PASSENGER AND FREIGHT, ETC.

	1911-1912.	1910-1911.
Gross earnings per mile of road	\$ 5,365.25	4,836.15
Operating expenses per mile of road	\$ 3,852.64	3,361.03
Net earnings per mile of road	\$ 1,512.61	1,475.12
Amount required per mile of road to pay fixed charges, including leased lines	\$ 1,008.17	993.57

TRAIN MILEAGE.

	1911-1912.	1910-1911.
Passenger trains	3,314,063	2,754,634
Freight trains	6,555,157	4,491,345

EXPENSES PER TRAFFIC TRAIN MILE.

	1911-1912.	1910-1911.
Maintenance of way and structures	26.44	32.60
Maintenance of equipment	33.06	31.59
Traffic expenses	03.65	03.64
Transportation expenses, cts.	81.19	81.14
General expenses	07.43	08.95
Total	\$ 151.77	156.92

SUMMARY OF EQUIPMENT AT JUNE 30

	1912.	1911.
Locomotives	430	398
Sleeping and dining cars	64	50
Passenger coaches	307	226
Baggage and mail and express cars	99	90
Business cars	14	11
Freight, refrigerator and stock cars	18,675	14,778
Conductors' vans	257	251
Boarding, tool, auxiliary cars, steam shovels and snow equipment	594	481

The total mileage owned and operated, including leased lines, at June 30, was 4,316.62 miles, located as follows: Ontario, 366.60; Manitoba, 1,758.25; Saskatchewan, 1,718.75; Alberta, 394.82; Keewatin, 44.50; Minnesota, 43.70.

The average mileage operated for the fiscal year was 3,888. The results per mile operated were as follows: Earnings, \$5,365.25; expenses, \$3,852.64; net earnings, \$1,512.61.

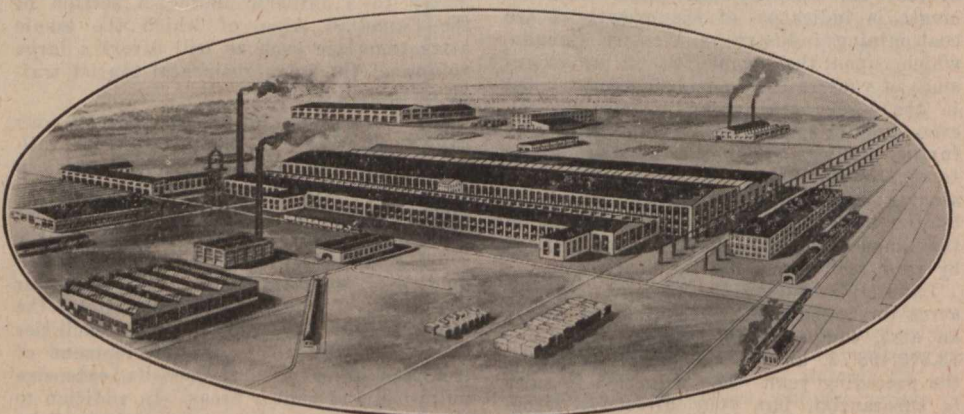
The report was unanimously adopted at the annual meeting. The directors who were elected for the current year are: President, Sir Wm. Mackenzie; Vice President, Sir Donald Mann; other directors, Z. A. Lash, F. Nicholls, R. M. Horne-Payne.

Canadian Pacific Railway Ogden Shops at Calgary.

A complete preliminary description of these shops, with ground plan, was published in Canadian Railway and Marine World for February last. The accompanying illustration gives a birds eye view of the shops as they will appear when completed. It is not strictly accurate in all details, but is nearly correct, and gives a good general idea. The construction work has now reached a stage where the real magnitude of the completed plant may well be imagined. Under the direction of Engineer F. E. Caldwell, Westinghouse, Church, Kerr and Co., have 1,200 men at work on the 400

ing can be expedited. A great deal of machinery has already arrived. Immense quantities of material are arriving still, and there is every appearance that the contract to have the buildings completed early in 1913 will be carried out.

For the comfort of the employees the company has reserved a block adjoining the shops whereon are being erected the first lot of houses. These will be supplied with all modern city conveniences of water, light and sewage, etc. As soon as the electric railway bridge is finished across the river, the Calgary Municipal Ry. will operate a service so that employees may easily reach



C.P.R. Ogden Shops, Calgary, Alta.

acre block which is the site of the new shops, between the irrigation canal and the Bow river. From the business portion of Calgary only the high concrete smokestack of the power house is visible over the banks of the river, but inside the grounds there is a busy scene where day work and a certain amount of night work is being carried on. All the structural steel is up and already considerable closing in has been accomplished. It is the intention to have this practically completed on all the buildings erected in 1912 so that the placing of machinery and preparatory work for repair-

every part of the city. There are now many buildings on private property near the shops, a brick hotel facing the main entrance, picture theatre, etc., and, in fact, though only a few months since the ground was first broken, there is a town where but a very short time ago, except for passing trains, the section man, irrigation ditch rider or cowboy were the sole visitors.

Between the shops and the business portion of the city, a three track bridge is being built across the Bow river, and the C.P.R. will have a double track extending all the way.

Orders by the Board of Railway Commissioners.

Beginning with June, 1904, Canadian Railway and Marine World has published in each issue summaries of orders passed by the Board of Railway Commissioners, so that subscribers who have filed our paper have a continuous record of the Board's proceedings. No other paper has done this.

The dates given of orders, immediately following the numbers, are those on which the orders took place, and not those on which the orders were issued. In many cases orders are not issued for a considerable time after the dates assigned to them.

17871. Oct. 30.—Approving revised location C.P.R. Sudbury to Sault Ste. Marie branch as now constructed, from mileage 31.76 to 34.76, westerly from Webbwood, Ont.

17872, 17873. Oct. 30.—Authorizing Campbellford, Lake Ontario and Western Ry. to construct across three highways, mileage 93.59 to mileage 95.8, Northumberland County, Ont., and across Sidney street and West street, Trenton, Ont.

17874. Oct. 30.—Refusing application of J. A. C. Ethier, M.P., for order compelling C.P.R. to erect platform for milk shipping purposes between St. Herman and Ste. Scholastique, at Cote St. Louis, Que.

17875. Oct. 29.—Authorizing C.P.R. to open for traffic Moose Jaw northwest branch from Outlook to Conquest, 9.3 miles, including bridge across South Saskatchewan river.

17876. Oct. 30.—Authorizing C.P.R. to build spur to its ballast pit near Olds, Alta., across Edmonton trail and road allowances.

17877. Oct. 29.—Approving proposed location C.P.R. station at Shelburne, Ont.

17878. Oct. 30.—Authorizing C.P.R. to build double track across G.T.R. at Delson Jct., and rescinding order 17437, Sept. 11, 1912.

17879. Oct. 30.—Allowing correction of plan showing location of stations at Gwydyr and Lampman, and addition to station grounds at Regent, C.P.R., Boissevain to Lauder branch, Man.

17880. Oct. 29.—Authorizing C.P.R. to build spur for Ontario Wind Engine and Pump Co., Calgary, Alta.

17881. Oct. 29.—Authorizing C.P.R. to build bridge 8.7 on Interprovincial and James Bay Ry., in Province of Quebec.

17882. Oct. 29.—Authorizing C.P.R. to open for traffic double track of Moose Jaw subdivision, from Belle Plain, mileage 117.0, to Pasqua, Sask., mileage 127.6.

17883. Oct. 30.—Further extending, until Nov. 30, 1913, time within which C.P.R. may complete branch line across highways near Marquette, Man.

17884. Oct. 29.—Authorizing Esquimalt and Nanaimo Ry. to build bridge over Little Qualicum river, on its Comox extension, B.C.

17885. Oct. 29.—Authorizing C.N.O.R. to build across three highways on its Hawkesbury-Montreal line, Laurent parish, Que.

17886. Oct. 30.—Rescinding order 17782, Oct. 17, 1912.

17887. Oct. 31.—Authorizing C.N.O.R. to build across and divert public road between lots 10 and 11, con. 8, Chisholm tp., Ont.

17888. Oct. 30.—Authorizing C.N.O.R. to build overhead across Montreal Tramways Co.'s tracks, near Cartierville, Que.

17889. Oct. 29.—Authorizing C.N.R. to build its Swift Current extension across two highways, Saskatchewan.

17890, 17891. Oct. 29.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to construct bridge over creek at mileage 72.75, and to build across nine highways, in Tyndinega tp., mileage 59.45 to mileage 65.75.

17892. Oct. 30.—Approving location G.T.P. Branch Lines Co., Moose Jaw-Northwest branch, mileage 48.55 to mileage 67.86, Saskatchewan.

17893. Oct. 30.—Authorizing G.T.R. to build bridge at mileage 109.35, 20th district, Middle division, over creek and public road.

17894. Oct. 29.—Authorizing city of Saskatoon, Sask., to carry its municipal street railway across C.P.R. at Avenue A and at Twenty-third street.

17895. Oct. 31.—Dismissing Canada Cement Co.'s complaint against charge of demurrage on cars ordered to a specific siding, and delayed on account of space not being available.

17896. Oct. 31.—Authorizing G.T.P. Branch Lines Co. to divert road at mileage 88.2, Calgary-Boundary branch, Alberta.

17897-17899. Oct. 31.—Authorizing C.P.R. to build spurs for D. Lalonde at Mile End station, Que.; for its Department of Natural Resources at Strathmore, Alta., and for S. Walker, at Winnipeg.

17900. Oct. 31.—Dismissing application of W. H. Dawson and residents in vicinity of Stonefield, Que., for order directing C.P.R. to stop trains at road between Staynerville and Grenville stations, to pick up shipments of cream.

17901. Oct. 30.—Approving C.P.R. plan showing extension of bridge 0.41, Fort William terminals, Ont.

17902. Oct. 31.—Approving proposed layout of C.N.O.R. station grounds at Clarendon, Que.

17903. Oct. 29.—Authorizing city of Saskatoon, Sask., to carry its municipal street railway across C.P.R. at Twentieth street.

17904. Oct. 29.—Authorizing C.P.R. to change location of station at L'Acadie, Que.

17905. Oct. 31.—Approving location G. T. P. Ry. proposed station at South Hazelton, B.C.

17906. Nov. 2.—Approving location C. N. O. R. through North Bay, Ont., mileage 343.55 to mileage 346.42 from Montreal.

17907. Oct. 26.—Authorizing G.T.P. Ry. to build spur for T. Jackson & Son, Winnipeg.

17908. Oct. 2.—Authorizing C. N. R. to build cut-off through Winnipeg to connect its Fort Rouge yards with its eastern yards.

17909. Nov. 4.—Certifying that correction of error, in location plan of Toronto Eastern Ry. at Bowmanville, Ont., is allowed, upon condition that company cross mill pond by trestle work and do no filling in the pond.

17910. Nov. 4.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build bridge 11.15, in Ontario.

17911. Nov. 6.—Postponing, to and including Dec. 31, certain railway tariffs covering increased charges for cartage.

17912. Nov. 5.—Authorizing N. St. C. & T. Ry. to build spurs for Thorold Pulp Co., Thorold, Ont., and Interlake Tissue Mills Co., Merrittton, Ont.

17913. Nov. 4.—Authorizing St. John and Quebec Ry. to cross over C.P.R. tracks between 49th and 50th miles, north of McAdam Jct., N.B.

17914. Nov. 5.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build across Toronto and Eastern Ry. overhead at mileage 162.98, Whitby, Ont.

17915. Nov. 4.—Authorizing C.P.R. to build across road in lot 59, Kildonan parish, Man., main line, Winnipeg to East Selkirk.

17916. Oct. 31.—Approving location C. P. R. Swift Current southeasterly branch to junction with Moose Jaw southwesterly branch, mileage 45 to mileage 101.3, and to cross 57 highways.

17917. Nov. 5.—Directing C.P.R. to remove embargo on sand loaded in cars other than its own, shipped into Winnipeg from points on C.N.R. line.

17918. Nov. 2.—Authorizing C. N. R. to build spur for D. R. Fraser & Co., Edmonton, Alta.

17919-17921. Nov. 5.—Authorizing C. N. O. R. to build across Park avenue, Mance street and McPherson avenue, Montreal.

17922. Nov. 4.—Directing C. N. Q. R. to provide flag station for passenger purposes only at Larose station, Que.

17923. Nov. 5.—Authorizing G. T. P. Branch Lines Co. to divert Lake View avenue, Moose Jaw, Sask., and to construct Regina-Moose Jaw branch under it.

17924-17926. Nov. 4.—Authorizing G.T.R. to build sidings for Breithaupt Leather Co., Penetanguishene, Ont.; for Sarnia Chain Co., Sarnia, Ont., and for Beaverton Brick & Tile Co., Beaverton, Ont.

17927. Nov. 4.—Authorizing G.T.R. to build northerly track across Cote Noir road, St. Antoine de Longueuil parish, Que.

17928. Nov. 2.—Directing G.T.R. to install two sets of gates at crossings of Lapiniere road, between Greenfield Park and St. Lambert, Que.

17929. Nov. 2.—Directing G.T.R. to repair and extend to highway, the centre platform at Bulstrode station, Que., and to put culvert in repair.

17930. Nov. 4.—Approving revised location Central Ry. Co. of Canada from mileage 0 to 5, in Montreal, on condition that grade at crossing of St. Michel road be eliminated.

17931. Nov. 4.—Authorizing C.N.O.R. to cross jointly with the Lachine, Jacques-Cartier and Maisonneuve Ry., under the C.P.R., near Jacques-Cartier Jct., Que.

17932. Nov. 5.—Authorizing C.P.R. to open for traffic its Wilkie southeasterly branch from Wilkie, to Anglia, 35.3 miles.

17933. Nov. 5.—Approving proposed location G.T.P. Branch Lines Co. station at Belseker, Sask.

17934. Nov. 4.—Authorizing C.P.R. to build across 58 highways from mileage 22.7 to 106.2 on its Pheasant Hills branch.

17935. Nov. 5.—Directing C.P.R. to install improved type of automatic electric bell at crossing at Sharbot Lake, Ont.

17936. Nov. 6.—Authorizing G.T.R. to build siding for Standard Steel Construction Co., Welland, Ont.

17937, 17938. Oct. 24.—Authorizing town of Pointe aux Trembles, Que., to extend St. Jean Baptiste street and First avenue across C. N. Q. Ry.

17939. Nov. 7.—Directing that cost of installing gates at crossing of Main street, Victoriaville, Que., be divided as follows: 20 per cent. out of railway grade-crossing fund; 30 per cent. by Victoriaville municipality, and 50 per cent. by G.T.R.; and that cost of maintenance be paid 70 per cent. by railway company and 30 per cent. by municipality.

17940. Nov. 7.—Authorizing C.N.Q.R. to build across two highways on its St. Eustache-St. Jerome line, Que.

17941. Nov. 6.—Authorizing C.P.R. to open for traffic its second track from Secretran to Chaplin, mileage 44.9 to 54.

17942. Nov. 9.—Authorizing G.T.R. to take certain lands in St. Antoine ward, Montreal.

17943. Nov. 9.—Approving by-law of Marconi-Wireless Telegraph Co. of Canada, authorizing J. H. Lauer, general manager, to issue tariffs of tolls.

17944. Nov. 7.—Directing G.T.R. to install improved automatic electric bell at crossing just west of Vineland station, Ont.

17945. Nov. 7.—Authorizing C.P.R. to build spur for N. K. Fairbank Co. in Lachine parish, Que.

17946. Nov. 7.—Authorizing C.P.R. to rebuild bridge 13.9, Owen Sound subdivision, Ont.

17947. Oct. 19.—Authorizing N. St. C. & T. Ry. to build its Beamsville extension across five highways in Louth tp., Ont.

17948. Nov. 5.—Authorizing N. St. C. & T. Ry. to build across 12 highways in Grantham and Niagara tps., Ont.

17949. Nov. 8.—Authorizing Campbellford, Lake Ontario and Western Ry. (C. P. R.) to build bridge across Front street in Trenton, Ont.

17950. Nov. 7.—Refusing application of Borden municipality, Sask., to extend Sheppard street across C.N.R.; and authorizing municipality to cross C.N.R., just east of west switch.

17951. Nov. 5.—Refusing application of C.P.R. for approval of station at mileage 17.5, Virden-McAuley branch; and approving location at mileage 21.5, Virden-McAuley branch, Man.

17952. Nov. 8.—Authorizing C.P.R. to divert highway adjoining west boundary of s.w. ¼ sec. 5, tp. 11, r. 10, w. 4 m., southwesterly, to connect with highway adjoining south boundary s.e. ¼ sec. 6, tp. 11, r. 10, w. 4 m., Alta.

17953. Nov. 8.—Approving Campbellford, Lake Ontario and Western Ry. (C. P. R.) plan for bridge at mileage 129.68, Hope tp., Ont.

17954. Nov. 8.—Authorizing G.T.R. to build additional track across Thompson road, Bertie tp., Ont.

17955. Nov. 8.—Authorizing G.T.R. to extend siding for Vineland Canning Co., Vineland, Ont.; and to build an additional siding.

17956. Nov. 5.—Authorizing N. St. C. & T. Ry. to build its Beamsville extension across eight highways in Clinton tp., Ont.

17957. Nov. 5.—Approving revised location James Bay and Eastern Ry., mileage 20.43 to 21.40 from Roberval, Que.

17958. Nov. 8.—Authorizing C.P.R. to take certain lands in Notre Dame de Grace ward, Montreal.

17959. Nov. 5.—Directing V. V. & E. Ry. & Nav. Co. to protect its railway between Ocean park and White rock as follows: One night watchman between mile posts 123 and 125, and one night watchman between mile posts 125 and 127; section-men to protect park during day time by going over the ground at least twice a day.

17960. Nov. 9.—Approving location C.N.R. through tp. 2, rgs. 6-8, w. 2 m., Sask., mileage 0.00 to 8.02.

17961. Nov. 8.—Directing G.T.R. to provide an electric bell at Woodbine avenue, Toronto.

17962. Nov. 8.—Authorizing North American Smelting Co. to build aerial tramway and electric power transmission

- line over C.N.O.R. in Loughborough tp., Ont.
17963. Nov. 9.—Authorizing C.P.R. to lay sewer and water pipes across East Kildonan road or Kelvin avenue, and Bird's Hill road or Panet road, Man., and amending order 17391, Aug. 30.
17964. Nov. 7.—Authorizing C.P.R. to build spur for J. H. Preston Planing Mills Co., Medicine Hat, Alta.
17965. Nov. 8.—Relieving M.C.R. from providing further protection at sixth concession road, near Leamington, Ont.
17966. Nov. 8.—Approving G.T.P. Branch Lines Co. location of station at Frobisher, Sask.
17967. Nov. 8.—Approving revised grade of G.T.P. Branch Lines Co. from mileage 21 to 23, Cornwallis municipality, Man.; and rescinding order 17753, Oct. 14.
17968. Nov. 8.—Approving location and plans of G.N.R. station and detention house at Rossland, B.C.
17969. Nov. 5.—Extending until April 30, 1913, the time within which the C.N.O.R. install the permanent interlocking plant where it crosses G.T.R. and C.P.R. near Ottawa.
17970. Nov. 5.—Refusing application C.P.R. for order rescinding order 16833, June 20, dispensing with services of night watchman where C.N.O.R. crosses St. Lawrence and Ottawa Ry., east side of Rideau river, near Ottawa, Ont.
17971. Nov. 11.—Approving location C.N.O.R. station grounds at Chisholm, Ont.
17972. Nov. 8.—Relieving G.T.R. from providing further protection at highway three miles east of Brighton, Ont.
17973. Nov. 11.—Authorizing C.P.R. to build its Swift Current southeasterly branch across highways at mileage 69.29; and to divert a highway.
17974. Nov. 11.—Amending order 17921, Oct. 31.
17975. Nov. 11.—Authorizing C.N.O.R. to build across Cormanville street, North Bay, Ont.
17976. Nov. 14.—Extending until Nov. 28, time within which British Columbia Electric Ry. Co. may appeal to Supreme Court of Canada from order 17840, Oct. 14; and in meantime staying all proceedings under said order.
17977. Nov. 2.—Authorizing G. T. P. Branch Lines Co. to build extension of industrial spur in Yorkton, Sask.
- 17978, 17979. Nov. 12.—Approving revised location G.T.P. Ry., mileage 108.8 to 111.29, and from mileage 157.51 to 170.84, east of Prince Rupert, B.C.
- 17980, 17981. Nov. 12.—Approving G.T.P. Branch Lines Co. station sites and stations at Duff, Sask., and at mileage 142, Regina-Boundary branch, Sask.
17982. Nov. 12.—Authorizing G.T.R. to build siding for Canadian Billings & Spencer, Welland, Ont.
- 17983, 17984. Nov. 13.—Authorizing C.N.O.R. to build across Sixteen-mile creek, Trafalgar, tp., Ont., mileage 23.45 west from Toronto, and across road between con. 2, Westmeath tp., and con. 2, Pembroke tp., Renfrew, Ont.
- 17985, 17986. Nov. 12.—Authorizing C.N.R. (Vegreville-Calgary extension) to build over Secondary Canal A, sec. 2, mileage 247.5, and over Secondary Canal B, south branch, mileage 238.7.
- 17987, 17988. Nov. 12.—Authorizing C.N.R. to construct Calgary southerly branch across road between secs. 6 and 7, tp. 21, r. 88, w. 4 m., and under road between sec. 25, tp. 21, r. 29, and sec. 30, tp. 21, r. 28, w. 4 m.
- 17989, 17990. Nov. 12.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build bridge 54.05, in Richmond tp., Ont., and approving revised location from mileage 61.87 to 64.09.
17991. Nov. 12.—Authorizing C.P.R. to build spur for McPherson Fruit Co., Calgary, Alta.
17992. Nov. 11.—Authorizing C.P.R. to divert certain highways, and to build across certain roads in Hussar, Alta.
17993. Nov. 12.—Authorizing C.P.R. to build Kerrobert northeasterly branch across 15 highways, mileage 20.63 to 35.45.
17994. Nov. 12.—Authorizing city of Vernon, B.C., to extend Lyons street across C.P.R.
17995. Nov. 12.—Approving rearrangement of siding from G.T.R. and C.P.R. into exhibition grounds, West Toronto.
17996. Nov. 12.—Authorizing Kettle Valley Ry. to open for traffic the portion of its railway from Merritt easterly 29 miles.
17997. Nov. 12.—Directing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build live-stock pass for N. Bellyou, in Murray tp., Ont.
17998. Nov. 12.—Directing M.C.R. to install an electric bell at highway crossing one mile east of Shedden, Ont.
17999. Nov. 15.—Authorizing C.P.R. to open for traffic new second track, St. Constant to St. Claude, Que., mileage 24.46 to 26.6.
18000. Nov. 13.—Directing C.P.R. to demolish or remove baggage room at Farnham, Que., before June, 1913.
18001. Nov. 13.—Authorizing C.P.R. to build sidings for Davenport Coal Co. at Burmis, Alta.
18002. Nov. 13.—Authorizing C.N.R. to build across C.P.R. in Moose Jaw, Sask.
18003. Nov. 11.—Approving C.N.R. plan of structures to be erected at crossing of Park road, Manitoba street, and 2nd and 3rd crossings of Moose Jaw creek, Sask.
18004. Nov. 13.—Approving location C.N.O.R. station grounds at Fitzroy Harbor, Ont.
18005. Nov. 13.—Authorizing C.N.O.R. to build across two roads in Fitzroy tp., Ont.
18006. Nov. 12.—Authorizing C.N.O.R. to build across road in St. Leonard de Port-Maurice parish, Que.
18007. Nov. 13.—Approving location James Bay and Eastern Ry., station grounds at Dufferin, Que., mileage 30.7 from Roberval; and rescinding order 16344, April 18.
18008. Nov. 14.—Authorizing G.T.P. Branch Lines Co. to build Prince Albert branch across highway in rural municipality 312, Sask.
- 18009, 18010. Nov. 11, 13.—Authorizing G.T.P. Branch Lines Co. to build Moose Jaw northwest branch across 22 highways, mileage 48.55 to 67.85; and build Calgary-Boundary branch across 8 highways, mileage 82.5 to 90.3.
18011. Nov. 9.—Authorizing Niagara, St. Catharines and Toronto Ry., to build across Carlton and Niagara streets, Grantham tp., Ont.
18012. Nov. 14.—Varying order 16846, June 25, to provide that Bartlett avenue be maintained, at grade, over C.P.R. and C.N.O.R. in North Toronto; that Ossington avenue and Christie street subways be built with 14 ft. clear headway; that Albany avenue be not reopened and Huron street be not opened across said lines, but that Bridgeman avenue be opened and graded through to Bathurst street.
18013. Nov. 12.—Extending until May 1, 1913, time within which Hull Electric Co. equip all rolling stock in use by it of 37 ft. or over in length, or weighing 35,000 lbs. or more, with power brakes, to be approved by the Board.
18014. Nov. 8.—Directing C.P.R. to file within 30 days plans of gates directed to be erected at McTavish street, Fort William, Ont., and to be operated by day and night watchmen.
18015. Nov. 6.—Directing C.P.R. and G.T.R. to protect from 6.30 a.m. to 6.30 p.m. daily by a watchman, crossing at George street, Toronto.
18016. Nov. 6.—Refusing application of T. H. and B. Ry. to cross at grade, Stanford avenue, Hamilton, Ont., with two branch lines or spurs.
18017. Nov. 6.—Directing T. H. and B. Ry., to protect by day and night watchmen, crossings at O'Reilly street and Ferguson avenue, Hamilton, Ont.
18018. Nov. 14.—Approving location C.P.R. station at Severn Falls, Ont.
- 18019, 18020. Nov. 14.—Authorizing C.P.R. to build spur for Neilson Furniture Co., Calgary, Alta., and crossover track opposite V. V. and E. Ry. and Nav. Co.'s freight sheds, to connect with G.N.R. at New Westminster, B.C.
18021. Nov. 14.—Approving revised location G.T.P. Branch Lines Co., Tofield-Calgary branch in sec. 10, tp. 50, r. 19, w. 4 m.
18022. Nov. 15.—Authorizing G.T.R. to build siding for Canada Furniture Manufacturers, Warton, Ont.
18023. Nov. 13.—Authorizing Oshawa Ry. to build branch line from end of present track on Bruce street, Oshawa, Ont., to property of Bricks, Limited, and to cross C.N.R., and Toronto and Eastern Ry. tracks.
18024. Nov. 15.—Recommending to Governor-in-Council for sanction, agreement of amalgamation of Western Dominion Ry. Co. and Alberta Pacific Ry. Co.
18025. Nov. 15.—Approving Nipissing Central Ry. standard passenger tariff C.R.C. 8.
18026. Nov. 15.—Authorizing C.P.R. to take for construction of siding certain lands at Leslie station, Ont.
18027. Nov. 15.—Authorizing C.P.R. to open for traffic its Moose Jaw northwesterly branch from Rosetown to Conquest, 34.3 miles.
18028. Nov. 16.—Authorizing C.P.R. to build bridge 50.0, Cascade subdivision, B.C.
18029. Nov. 15.—Authorizing C.P.R. to open for traffic Wilkie northwesterly branch from mileage 0 to 27.8, Sask.
- 18030, 18031. Nov. 15.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across five highways in Bowmanville, Ont., and bridge over road allowance in Brighton tp., mileage 95.25 from Glen Tay, Ont.
18032. Nov. 13.—Directing G.T.R. to build subway at highway leading to Cardinal, Ont.
18033. Nov. 14.—Authorizing G.T.R. to build siding for Standard White Lime Co. near Beachville, Ont.
18034. Nov. 15.—Authorizing C.N.R. to build across 38 highways on its Thunderhill branch, Sask.
18035. Nov. 15.—Authorizing C.N.O.R. to build across public road between lots 32 and 33, con. 15, Ferris tp., Nipissing district.
18036. Nov. 15.—Authorizing C.N.R. to build over public road between secs. 10 and 15, tp. 65, r. 22, w. 4 m.
18037. Nov. 15.—Authorizing Kettle Valley Ry. Co. to build across highway at station 333.57 northwest of Penticton, B.C.
18038. Nov. 15.—Authorizing C.P.R. and G.T.P.R. to operate their trains without being brought to a stop over crossing at mileage 6.1, sec. 6, tp. 39, r. 19, w. 3 m., Sask.
18039. Nov. 14.—Amending order 17628, Sept. 30, Canadian Northern Montreal Tunnel and Terminal Co.
18040. Nov. 11.—Dismissing application of G.T.P. and G.T.P. Branch Lines Co. for order relieving them from erecting gates in openings in right of way fences provided to give public ingress to and egress from station reservations on their lines.
18041. Nov. 12.—Dismissing application of Rockwood municipality, town of Stonewall and Stonewall district board of trade for order directing C.P.R. to grant commutation passenger tickets between Winnipeg and Stonewall.
18042. Nov. 11.—Dismissing complaint of board of trade of St. Boniface, Man., and Couture & Marion against C.P.R., alleging excessive charges on brick from St. Boniface to Yorkton, Sask.; also discrimination in favor of brick manufacturers of Portage la Prairie, Man.
18043. Nov. 11.—Refusing application of Midland Ry. of Manitoba and Winnipeg Trackage, Ltd., for order granting leave to Midland Ry. Co. to cross C.P.R. main industrial spur near Wall street, Winnipeg, with additional spur to Winnipeg Trackage, Ltd.
18044. Nov. 11.—Authorizing C.N.R. to build across C.P.R. in s.e. ¼ sec. 6, tp. 20, r. 28, w. 4 m., Alta.
18045. Nov. 11.—Amending order 17216, Aug. 15, re crossing of C.P.R. by G.T.P. R. Harte-Brandon branch.
18046. Nov. 11.—Authorizing C.P.R. to build an additional track and reconstruct existing track on its Emerson branch; and that it place watchman at Montcalm street, St. Boniface, Man.
18047. Nov. 11.—Directing C.N.R. to file within 30 days from this date plans showing a four-car siding between Baldur and Belmont, Man.
18048. Nov. 11.—Directing that North Norfolk municipality, Man., be added as party to application of R. Wallace et al., for subway between secs. 24 and 25, tp. 11, r. 12, w.p.m., Manitoba, and that the road be diverted by the C.P.R.
18049. Nov. 15.—Remitting penalties imposed under order 16823, June 20, 1912; and directing city of Montreal to commence construction of subway, under C. P. R., at Park avenue, not later than April 1, and complete same by October 1.
18050. Nov. 19.—Authorizing Kettle Valley Ry. to carry freight from Midway to Carmi, B.C., 46 miles.
18051. Nov. 18.—Approving bylaw of Niagara, Welland and Lake Erie Ry., authorizing C. J. Laughlin, Jr., Vice-President, or H. Rooke, Secretary, to prepare and file tariffs for freight and passenger traffic; and of telegraph tolls.
18052. Nov. 18.—Authorizing Government of Saskatchewan to build road north of secs. 13 and 14, tp. 22, r. 3, w. 3 m.
18053. Nov. 18.—Approving revised location of site of Burrard Inlet Tunnel and Bridge Co.'s bridge at Burrard inlet, B.C.; also width of opening spans of bridge across second narrows of Burrard inlet; and rescinding order 17565, Sept. 24, 1912.
18054. Nov. 18.—Authorizing M.C.R. to build sidings across and upon certain highways and lots in Crowland tp., Ont.; and approving lateral and overhead clearances.
18055. Nov. 15.—Relieving M.C.R. from providing further protection at crossing of Ferry road, just west of Victoria park station, Niagara Falls, Ont.

18178. Nov. 30.—Permitting C.P.R., G.T.R., C.N.R. and M.C.R. companies to increase from Dec. 15, 1912, to March 31, 1913, both inclusive, car service or demurrage toll from \$1 to \$2 a day for first 24 hours, and \$3 a day for each succeeding 24 hours, beyond free time allowed by order 906, Jan. 25, 1906, for loading and unloading cars.
18179. Nov. 30.—Relieving C.N.R. from providing further protection at highway about 7 telegraph poles north of mileage 58, Parry Sound subdivision.
18180. Dec. 2.—Recommending lease, Oct. 2, 1912, between St. Marys and Western Ontario Ry. and C.P.R., to Governor in Council for sanction.
18181. Nov. 30.—Authorizing C.P.R. to build 2 spurs for Builders Supply Co., Winnipeg.
18182. Nov. 30.—Authorizing Esquimalt and Nanaimo Ry. to build spur for Canada Mosaic Tile Co. at Victoria West, B.C.
18183. Dec. 2.—Amending order 18024, dated Nov. 15, 1912, by changing its date to Nov. 16, 1912.
18184. Nov. 30.—Authorizing G.T.R. to build sidings for Dymont Mickle Lumber Co., in Fencelon tp., Ont.
18185. Dec. 2.—Relieving G.T.R. from providing further protection at crossing of road about a mile north of Golden Lake, Ont.
18186. Dec. 2.—Directing G.T.R. to build siding for Carroll Bros., Humberstone, tp., Ont.
18187. Dec. 2.—Authorizing Empire Limestone Co., Ltd., to build tunnel under Carroll Bros. siding in Humberstone tp., Ont.; and repealing order 17007, July 13, 1912.
18188. Dec. 2.—Relieving Central Ontario Ry. from providing further protection at highway, short distance south of Wellington, Ont.
18189. Dec. 3.—Appointing A. Sullivan, of Winnipeg, barrister, to make inquiry and take evidence necessary to show whether or not the portion of the Winnipeg Electric Ry. to the C.P.R. shops is profitable.
18190. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of the acts 7-8, Ed. VII., for approval of White Pass and Yukon Route tolls for telegraph messages between all points in Canada; and allowing tolls authorized to be charged under acts 7-8, Ed. VII., chap. 61.
18191. Nov. 30.—Extending tariffs of telephone tolls of the North American Telegraph Co. until June 1, 1913.
18192. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of Canadian Northern Telegraph Co.'s messages, and allowing tolls authorized to be charged under said acts.
18193. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of G.T.P. Telegraph Co.'s tolls, with exception of tolls between local offices, on Ottawa division, in Ontario and Quebec, and between them and Swanton, Vt., approved by order 11153, July 12, 1910; and allowing tolls authorized to be charged under acts 7-8, Ed. VII., chap. 61.
18194. Dec. 2.—Directing G.T.R. to keep all cars away from crossing just east of Jordan station, Ont., in both directions, for 100 ft.
18195. Nov. 30.—Extending tariff of telephone tolls of Bell Telephone Co. until June 1, 1913.
18196. Dec. 3.—Approving location C.N.R. through tp. 26, r. 7, w. 3 m., Sask., mileage 54.05 to 61.32.
18197. Dec. 3.—Approving location G.T.P. Branch Lines Co.'s Moose Jaw northwest branch, mileage 67.86 to 70.02, Sask.
18198. Nov. 30.—Extending until June 1, 1913, time limited by sec. 4, chap. 61, of acts 7-8, Ed. VII., for approval of G.N.W. Telegraph Co.'s tolls between points west of North Bay, also to and from points west of North Bay and to points east thereof, and east of and including Windsor, Ont., and allowing tolls which it was authorized to charge under said acts.
18199. Nov. 12.—Permitting Winnipeg Electric Ry. to lay and maintain tracks through subway under C.P.R. tracks on McPhillips street, Winnipeg.
18200. Dec. 3.—Directing C.P.R. to provide farm crossing in east ½ of lot 23, con. 11, Beckwith tp.
18201. Dec. 2.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build its Glentay to Cobourg line over C.N.O.R. at mileage 95.1 from Glentay by overhead structure.
18202. Dec. 3.—Certifying that correction to show station grounds at Bayside in plan of Campbellford, Lake Ontario and Western Ry. Glentay to Cobourg line is allowed.
18203. Dec. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance in Hope tp., mileage 133.38 from Glentay.
18204. Dec. 2.—Authorizing G.T.R. to build siding for Empire Cotton Mills Co., near Welland, Ont.
18205. Dec. 2.—Authorizing G.T.P. Saskatchewan Ry. to connect its Weyburn branch with G.T.P. Branch Lines Co.'s Regina-Boundary branch at Talmage, Sask.
18206. Dec. 2.—Approving proposed location G.T.P. Branch Lines Co.'s station in sec. 124, tp. 1, r. 3, w. 2 m., Sask.
18207. Dec. 3.—Authorizing G.T.P. Ry. to operate trains over portion of railway between mileage 164 and 176.8, east of Prince Rupert, B.C., and amending order 17769, Oct. 14, 1912.
18208. Dec. 2.—Temporarily approving G.T.P. Standard Freight Mileage Tariff, C.R.C. 12, between stations between Thornton, Alta., and Tete Jaune, B.C., inclusive.
18209. Dec. 3.—Authorizing Campbellford, Lake Ontario and Western Ry. (C.P.R.) to build across road allowance between Haldimand and Cramahe tps., Ont., mileage 106.17 from Glentay; and eliminating item 10 of order 17361, Aug. 29, 1912.
18210. Dec. 3.—Suspending, pending hearing of application, the rate of 40c. a net ton on coal from Detroit, Mich., to Windsor, Ont., as published in M.C.R. Supplement 14 to Tariff C.R.C. 1288.
18211. Nov. 6.—Approving location C.N.O.R. through York and Scarboro tps., Ont., from mileage 0 to 7.60 from Yonge street.
18212. Nov. 6.—Directing T.H. & B.R. to cut down hill immediately east and south of railway at Gerrie's crossing.
18213. Nov. 6.—Authorizing London Street Ry. Co. to cross C.P.R. at Adelaide street, London, Ont.
18214. Nov. 22.—Authorizing G.T. Pacific Ry. to open for traffic its line between Fitzhugh, mileage 1027.8, and Tete Jaune Cache, mileage 1095.3.
18215. Dec. 4.—Authorizing local improvement district 18, w. 4, to build road across Calgary and Edmonton Ry. in east ½ sec. 20, tp. 35, r. 28, w. 4 m., Alta.
18216. Dec. 4.—Relieving British Columbia Electric Ry. from providing further protection on its Lulu Island branch at Townsend road, Point Grey.
18217. Dec. 4.—Approving location of Canadian Northern Ry. Craven northeasterly line through tps. 20-21, r. 21-20, w. 2 m., Sask., mileage 0 to 8.79.
18218. Dec. 4.—Authorizing C.N. Ontario Ry. to connect with C.P.R. in Westmeath and Pembroke tps., mileage 82.02 to 82.61.
18219. Dec. 4.—Authorizing C.N. Alberta Ry. to operate trains over G.T. Pacific Ry. crossing in s.e. ¼ sec. 31, tp. 53, r. 10, w. 5 m., Alta., for construction purposes only.
18220. Dec. 4.—Authorizing G.T.R. to build siding and spurs for Dominion Wood and Lumber Co. in Himsworth tp., Ont.
- 18221, 18222. Dec. 4.—Authorizing G.T.R. to build sidings for Kirkfield Portland Cement Co., Raven Lake, Ont., and for Canada Grip Nut Co., St. Johns, Que.
18223. Nov. 21.—Authorizing C.P.R. to open up Thirteenth avenue, Estevan, Sask., across its tracks and station grounds.
18224. Dec. 4.—Authorizing C.P.R. to build spur for Standard Chemical Iron and Lumber Co., Montreal.
- General order 98. Dec. 6.—Respecting provision of heated refrigerator cars on railways in eastern Canada. This order is given in full on another page.
18225. Dec. 4.—Ordering C.P.R. to install a 12 in. pipe for drainage under its tracks in Vaudreuil, Que.
18226. Dec. 5.—Recommending to Governor in Council for sanction lease, of Oct. 2, 1912, between Alberta Central Ry. and C.P.R.
18227. Dec. 3.—Authorizing C.P.R. to build spur for Alex. Bremner, Ltd., in St. Felix de Valois parish, Que.
18228. Dec. 4.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plan of structure across road near Parham, mileage 32.44.
- 18229, 18230. Dec. 5.—Authorizing Canadian Northern Ry. to build its Craven northeasterly line across eight highways, and its Maryfield branch across fourteen highways in Saskatchewan.
18231. Dec. 5.—Authorizing G.T.R. to build siding for Dunnville Brick and Tile Co., Moulton tp., Ont.
18232. Dec. 5.—Authorizing Palmerston tp., Ont., to divert and build road across Kingston and Pembroke Ry., near Mississippi station.
- 18233, 18234. Dec. 5.—Authorizing C.P.R. to build spurs for Calgary Terra-Cotta Co. near Calgary, Alta., and to Baynes lake across Government highway in Kootenay district, B.C.
18235. Dec. 6.—Amending order 18105, Dec. 6, re C.P.R. branch at Merritt, B.C.
18236. Dec. 7.—Approving British America Ex. Co.'s bylaw authorizing H. J. Herrold, General Agent, to prepare and issue tariffs of tolls.
18237. Dec. 7.—Approving Canadian Northern Ry. location through tps. 22 and 21, r. 20-19, w. 2 m., Sask.
18238. Dec. 7.—Authorizing C.P.R. to build bridge 129.65, White river subdivision, Lake Superior division.
18239. Dec. 4.—Authorizing Toronto Power Co. to carry transmission line across G.T.R. and Wabash Rd., Thorold tp., Ont.
18240. Nov. 23.—Dismissing application of North Edmonton village and others for opening up Kelly avenue, Edmonton, Alta.
- 18241, 18242. Nov. 18, 19.—Authorizing city of Brandon, Man., to build its single track municipal railway across Canadian Northern Ry. at Thirteenth and First streets.
18243. Dec. 9.—Authorizing C.P.R. to build its Swift Current southeasterly branch across highway adjoining north boundary of sec. 27, tp. 12, r. 13, w. 3 m., Sask.
18244. Nov. 26.—Dismissing application of Tees and Perse, et al., to rescind order 17398, re C.P.R. spur from Princess street, Winnipeg.
18245. Nov. 22.—Ordering Canadian Northern Ry. to build shelter and platform at Legal, Alta.
18246. Dec. 2.—Dismissing Vancouver and Nanaimo Coal Mining Co.'s complaint that Esquimalt and Nanaimo Ry. refuses to handle private coal cars over its main line.
18247. Nov. 28.—Dismissing application of corporation of Delta, B.C., to rescind orders relating to River road.
18248. Nov. 29.—Dismissing Pacific Machinery and Supply Co.'s complaint against first class rating of Canadian freight classification for band saws.
18249. Dec. 2.—Authorizing Esquimalt and Nanaimo Ry. to erect gates at Esquimalt road, Victoria, B.C.
18250. Nov. 28.—Authorizing British Columbia Transport Co. to cross Great Northern Ry. opposite water lots 94 and 97, New Westminster, B.C.
18251. Nov. 29.—Dismissing application of Imperial Rice Milling Co., Vancouver, B.C., for reductions from freight rates on rice and broken rice from Vancouver to points east of and including Calgary, Alta., to Winnipeg, Man., inclusive.
18252. Nov. 28.—Extending for five months from date time for completion by C.P.R. of station at Salmon Arm, B.C., required by order 17306.
18253. Nov. 29.—Extending for two months from date time within which British Columbia Electric Ry. be allowed to appeal from order 17840, re carrying certain streets over V.V. & E. Ry. overhead, in Vancouver.
18254. Nov. 22.—Authorizing Edmonton, Dunvegan and British Columbia Ry. to lay rails across Canadian Northern Ry. on sec. 33, tp. 55, r. 25, w. 4 m., pending installation of permanent crossing authorized by order 17148.
18255. Nov. 29.—Ordering Great Northern Ry. to extend by 100 ft. siding at Western Paper Mills, Sapperton, B.C.
18256. Dec. 12.—Extending to June, 1913, time for C.P.R. to file telegraph tolls applying west of Sudbury, Ont.
18257. Dec. 9.—Approving platform for Windsor Plaster Co. on Dominion Atlantic Ry. at Brooklyn, N.S.
18258. Dec. 9.—Authorizing city of St. Thomas, Ont., to lay sewer under Pere Marquette Rd. on London and Port Stanley gravel road.
18259. Dec. 11.—Extending to Jan. 15, 1913, time within which G.T.R. is required to install gates at King and Sherbrooke streets, Peterboro, Ont.
18260. Dec. 9.—Authorizing Winnipeg Electric Ry. to build double track across C.P.R. spur on Talbot avenue, Winnipeg.
- 18261, 18262. Dec. 9, 11.—Authorizing C.P.R. to build bridge 17.1 on its Cowichan lake branch, B.C., and bridge 124.7 over Gage's creek, near Port Hope, Ont.
18263. Dec. 7.—Approving Campbellford, Lake Ontario and Western Ry. (C.P.R.) plans of bridges to be built at mileage 157.47 and 157.75, East Whitty tp., Ont.
18264. Dec. 10.—Authorizing C.P.R. to build spur for Northern Sand and Gravel Co., Milner, Man.
18265. Dec. 9.—Authorizing C.P.R. to build highway diversion to join road allowance on west boundary of sec. 12-11-10, w. 4 m.
18266. Dec. 9.—Authorizing C.P.R. to cross highways on its Weyburn-Lethbridge branch, Sask., mileage 112.1 to 131.43.
18267. Dec. 9.—Authorizing C.P.R. to build extension to siding, and additional spur in Victoria park, for city of Calgary, Alta.
18268. Dec. 9.—Authorizing C.P.R. to build extension to branch line in block 13, Fort William, Ont., for Fenton Elevator Co.
18269. Dec. 9.—Authorizing C.P.R. to build additional track across St. Louis street, Farnham, Que.
18270. Dec. 10.—Recommending to Governor in Council for sanction, agreement between Georgian Bay and Seaboard Ry. and C.P.R.
18271. Dec. 9.—Authorizing C.P.R. to build temporary track for one year on its Virgin northeasterly branch across East Kildonan road and Winnipeg Electric Ry. in Kildonan parish, Man.
18272. Dec. 10.—Ordering C.P.R. to provide farm crossing for S. Y. Brockman, Roseberry tp., B.C.
18273. Dec. 11.—Approving C.P.R. plan showing extension to bridge 45.8, McAuley subdivision, Man.
18274. Dec. 7.—Authorizing Canadian Northern Ry. to build its Bienfait-Estevan branch across C.P.R. Sault line in n.w. ¼ sec. 13-2-8, w. 2 m.
18275. Dec. 7.—Approving Canadian Northern Ontario Ry. station grounds at Meadowside.
18276. Dec. 7.—Approving Canadian Northern Ontario Ry. location through Deseronto, mileage 132.99 to 134.30.
18277. Dec. 10.—Authorizing Canadian Northern Quebec Ry. to build across public road in lot 27, con. 3, Arundel tp., Que.
18278. Dec. 12.—Authorizing G.T.R. to rebuild bridge 73 over Cheshire creek, mileage 136.56, district 15, Middle division, Ont.
18279. Dec. 11.—Authorizing Canadian Northern Pacific Ry. to build across Esquimalt and Nanaimo Ry. Cowichan lake branch, mileage 74.5, Cowichan lake district, B.C.
18280. Dec. 12.—Approving C.P.R. plan showing details of trestle on extension to spur for Spanish River Pulp and Paper Mills Co., at Sturgeon Falls, Ont.

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 College grounds, where it curves into McGill College avenue, which leads to the main passenger terminal, situated in the blocks between Cathcart and Lagachetiere streets and Ste. Monique and Mansfield streets. The grades and elevations are such that this tunnel passes under St. Catherine street, with ample room for a future rapid transit subway above it, and the tracks are able to be carried level through the station and over the lower town on the proposed viaduct, where a yard for light and perishable freight is contemplated, to connect with the proposed Harbor Commissioners' elevated and a possible bridge across the St. Lawrence river.

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

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 6 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 roof will be absolutely protected. After the arches are in, the lower excavation will be removed and arches underpinned, where necessary.

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

the axles. 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 fuzes of the relievors 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. 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 Jet. 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.

Railway Development.

Projected Lines, Surveys, Construction, Betterments, Etc.

Alberta Interurban Ry.—The Minister of Railways has approved of route map of this projected railway from Calgary to Cochrane, Alta., 45 miles.

The taxpayers of Calgary voted, Dec. 29, on a bylaw authorizing the city council to sign an agreement granting the company a right of way into the city, and on certain streets on certain conditions, for 25 years at a rental of \$1 a year. (Nov., 1912, pg. 557.)

Algoma Central and Hudson Bay Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the main line from mileage 93 to Hawk Lake Jet., mileage 164.5 from Sault Ste. Marie, Ont. (Dec., 1912, pg. 604.)

Algoma Eastern Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of the main line from Crean Hill, mileage 22.7, to West River, Ont., mileage 60.76. (Dec., 1912, pg. 604.)

British Columbia and White River Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the lines authorized by chap. 45 of the statutes of 1911. Barnard and McKeown, Montreal, are solicitors for applicants. (July, 1911, pg. 645.)

Buctouche Ry. and Transportation Co.—Application is being made to the Dominion Parliament to change the name of this company to the Moncton and Northumberland Strait Ry. Co., and to authorize the building of the following additional lines:—From Richibucto to Chatham or Loggieville; from Painssee to Cape Tormentine, N.B. E. G. Evans, Moncton, N.B., is General Manager.

The Minister of Railways has approved of route plan of a proposed extension of the Moncton and Buctouche Ry. from Buctouche to Richibucto, N.B., about 20 miles. The M. and B. Ry. is owned by the B. Ry. and T. Co., and the extension named is a section of the line authorized to be built by it. (May, 1911, pg. 409.)

Burrard Inlet Tunnel and Bridge Co.—The Board of Railway Commissioners has approved of revised location plan of site of the proposed bridge at Burrard inlet, Vancouver, B.C., and of the revised plans of the bridge showing opening spans of 225 ft. each, rescinding the previous order.

Application is being made to the Dominion Parliament to extend the time within which the bridge and connecting railways may be built. (Nov., 1912, pg. 556.)

Calgary, Edmonton and Fort McMurray Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title to build the following railways and to operate them by any motive power:—From Calgary to Edmonton, thence east of Lac la Biche to Fort McMurray, and by the valleys of the Athabaska and the Slave rivers, to Fort Resolution on Great Slave lake; from near Fort Smith south-westerly to Fort Vermillion, thence south-westerly to Peace River Landing, and thence on to Fort Dunvegan; from the Red Deer river north of the 52nd parallel to Red Deer. Christie, Green and Hill, Ottawa, are solicitors for applicants.

Canada Western Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized by chap. 69 of the statutes of 1909 may be built. Hough, Campbell and Ferguson, Winnipeg, Man., are solicitors for applicants. (Nov., 1909, pg. 829.)

Central Ry. of Canada.—We are officially advised that there is under construction a

38 mile section from Hawkesbury to South Indian, Ont., the contractors being C. J. Wills and Sons, London, Eng., and Montreal; and a 15 mile section from Ste. Agathe to Francess town, Que., the contract for which is held by H. Armstrong. A general contract has been let for the entire line from Montreal to Midland, but the two sections named cover all the mileage that has yet been brought to the construction stage. Tenders were received to Dec. 20, 1912, for 1,000,000 ties, to be delivered in quantities as directed at Ste. Agathe, Lachute, Montreal, Grenville, Que.; Hawkesbury, MacAlpine, Ottawa, South Indian, Carleton Place, Bannockburn, Fenelon Falls, Orillia and Midland, Ont. F. Stuart Williamson is Chief Engineer and General Manager. (Dec., 1912, pg. 604.)

Duluth and Northern Minnesota Ry.—J. Millen, Vice President and General Manager, visited Fort William, Ont., recently, with some other officials, and is reported to have stated that the line would be extended to that point as soon as arrangements could be made, and that the route would be surveyed during the winter. The company's line starts from the Duluth and Iron Range Rd., at Knife River, 19.6 miles from Duluth, Minn., and runs by a rather circuitous route 62 miles northeasterly to Cramer, Minn.

Duluth, Winnipeg and Pacific Ry.—We are officially advised that track was laid on 73.4 miles of this line during 1912. This covers the entire line from Duluth to Silver Jet., Virginia, Minn., where connection is made with the section of the line extending to the Rainy River, opposite Fort Frances, Ont., at which point connection is made with the Canadian Northern Ry. by a bridge across the river.

Edmonton, Dunvegan and British Columbia Ry.—Tracklaying is in progress north-erly from Edmonton, Alta., in the direction of Sturgeon River, which was reached early in December. Grading and bridge construction on the first 70 miles have been completed, and it was expected to have track laid on this mileage by Dec. 31. (Dec., 1912, pg. 604.)

Erie, London and Tillsonburg Ry.—The route map for this projected railway shows a line running north out of Port Burwell, thence direct north-westerly to Aylmer, then on to a junction with the G.T.R. main line from Hamilton, just east of London. The G.T.R. line over which the Wabash Rd. operates, is crossed at Aylmer; a little further on the Michigan Central is crossed, and the C.P.R. is crossed near Belmont. A. S. Going, of the G.T.R. staff, was the locating engineer. (Dec., 1912, pg. 604.)

Esquimalt and Nanaimo Ry.—We are officially advised that Moore and Pethick, Victoria, B.C., have been awarded the contract for grading and bridging a portion of the Courtenay extension, viz., from the Big Qualicum river, mileage 15.5 to Union Bay, mileage 34.79. The contract calls for the completion of the work by Aug. 31. A contract has also been let to C. Hoard, Victoria, for grading and bridging on the extension from mileage 34.79 to 40, the work to be completed by Mar. 31. (Dec., 1912, pg. 604.)

Fredericton and Grand Lake Coal and Ry. Co.—We are officially advised that track has been laid on this line as follows:—From Gibson, N.B., for 11 miles, and from the end of the New Brunswick Coal and Ry. Co.'s line near Minto, N.B., for seven miles in the direction of Gibson. Grading and bridge work on the mileage between the

two points to which track has been laid is well advanced. A. E. Trites and Son, Salisbury, N.B., have the contract. A branch line is to be built from mileage 0.5, near Gibson, to Marysville, three miles. The clearing and fencing on this branch have been done, but the contract for construction has not yet been let. H. W. D. Armstrong, Fredericton, N.B., is Chief Engineer. (Nov., 1912, pg. 556.)

Huron Lake Shore Ry.—Application is being made to the Dominion Parliament to incorporate a company with this title, to build a railway from Sarnia, north-easterly through Lambton, Huron, Bruce and Grey counties to Meaford, Ont. W. B. Converse, Montreal, is solicitor for applicants.

Intercolonial Ry.—We are officially advised that track has been laid on diversions of line as follows:—From Nelson to two miles east of Chatham, N.B., 8.3 miles; and from George river to Sydney Mines, N.S., 9 miles.

The new station at Chatham, N.B., to replace the one destroyed by the big fire of 1910, was opened Nov. 29.

Tenders are under consideration for the building of an addition to the freight car repair shop at Moncton, N.B.

The Minister of Railways stated in the House of Commons Dec. 4 that the report, plans and estimates for the proposed terminal improvements at Halifax, N.S., were in course of preparation and would be submitted to the House as soon as possible.

In reply to questions in the House of Commons, Dec. 4, the Minister of Railways said the government had authorized the carrying out of the following works for which appropriations had not been voted by parliament:—A new connection between the I.R.C. and the C.P.R. at Ste. Rosalie Jet., Que., at an estimated cost of \$2,000, on which work about \$100 had already been expended. A rearrangement of tracks at Rimouski, Que., and other work at a cost of \$2,685, on which \$150 had already been expended. (Dec., 1912, pg. 604.)

Joliette and Lake Manuan Colonization Ry.—We are officially advised that the first section from Joliette to St. Michel des Saints, Que., 60 miles, is under construction, the contractor being R. J. Craig, Cornwall, Ont. A further section of 90 miles from St. Michel des Saints to Weymontachene, Que., on the National Transcontinental Ry., is under survey. J. N. Patton, St. Felix de Valois, Que., is Chief Engineer for the British Canadian Construction Co., which is financing the construction. (Aug., 1912, pg. 412.)

Kettle Valley Lines.—The Board of Railway Commissioners has authorized the carrying of freight on the line from Midway to Carmi, B.C., 46 miles. (Dec., 1912, pg. 605.)

Kingston and Pembroke Ry.—The only construction done on this line during the past year was the ballasting of about 10 miles, and the putting of a number of bridges and cement culverts. (June, 1912, pg. 300.)

Little Nation Ry.—Subscribers to the common stock of this projected railway were called upon to pay a further 10% of their subscriptions by Dec. 28, and shareholders who had not met two previous calls of 10% each, have been notified that proceedings will be taken to forfeit their rights to the shares subscribed for. (Dec., 1912, pg. 605.)

Manitoba-Ontario Ry.—The Dominion Parliament is being asked to incorporate a company with this title, to build a railway from Fort William, Ont., to the Lake of the Woods, and thence to Winnipeg, with a branch southerly to the International boundary, and another northerly to the National Transcontinental Ry., within the

Kenora district. Lewis and Smellie, Ottawa, are solicitors for applicants.

Medicine Hat, Alta.—Among the bylaws voted on on Dec. 27 was one authorizing the spending of \$20,000 for spur tracks to industrial sites. (Oct., 1912, pg. 502.)

Moncton and Buctouche Ry.—See Buctouche Ry. and Transportation Co.

North Ry.—It has been announced in Montreal that an arrangement has been made by which the G.T. Pacific Ry. will be given running rights over the section of the line between Montreal and Bell river, Que., the junction with the National Transcontinental Ry. It is reported that arrangements have been completed for starting construction on this section of the line during the current month. This will not consist of general construction work, but will be selected pieces of the line on which there is a lot of rock work, on which blasting is best done during the winter. (Dec., 1912, pg. 605.)

North Shore Ry. and Navigation Co.—We are officially advised that the following extensions of the line are under survey:—From Adamsville to Snow Shoe lake on the National Transcontinental Ry., N.B., 20 miles; and from Beersville to Richibucto Cape, N.B., 30 miles. C. Dean, Adamsville, N.B., is Superintendent. (June, 1912, pg. 301.)

Pacific and Hudson Bay Ry.—The Dominion Parliament is being asked to extend the time for the building of this projected railway, as set out in the statutes of 1910. Power is also sought to increase the capital to \$25,000,000, and to enter into agreements with the Pacific Great Eastern Ry., the Edmonton, Dunvegan and British Columbia Ry., and British Columbia and Dawson Ry. W. F. Brougham, Vancouver, B.C., is solicitor for applicants. (Dec., 1912, pg. 605.)

Pacific Great Eastern Ry.—Grading has been started on the extension of the Howe Sound and Northern Ry., which has been acquired by the P.G.E. Ry., in the direction of Lillooet, B.C. P. Welch, the general contractor, is reported to have sublet the following mileages:—Four miles to foot of Bear Mountain, P. Welch; next seven miles, McAll and Wilson; next five miles, not yet let; next five miles, McGowan and Murchison; next five miles, — McGillivray; next five miles, McAlpin and Cunningham. At the Lillooet end of the line 42 miles have been sublet in sections to the following:—D. D. McPhee & Co.; Kennedy and Welsh; Nicholson and Timlick; Burns-Jordan and Co.; Peter Salvas, J. A. Welsh. It is reported that a further 32 miles will be let as soon as the wagon roads, now under construction, are completed. (Dec., 1912, pg. 605.)

Peace River Great Western Ry.—The Alberta Legislature is being asked to extend the time within which the lines authorized by the statutes of 1910 may be built. Short, Woods, Biggar and Collisson, Edmonton, Alta., are solicitors for applicants. (Dec., 1912, pg. 605.)

Prince Edward Island Ry.—Track has been laid, we are officially advised, from Harmony Jet., to Elmira, 9.9 miles. (July, 1912, pg. 339.)

Quebec Rapid Transit Ry.—Power to build the following additional lines is being asked from the Dominion Parliament:—From St. Gregoire of Montmorency to L'Ange Gardien, Chateau Richer, and Ste. Anne de Beaupre; to cross over to the Island of Orleans and a belt line round it; and to build bridges from the shores of the St. Lawrence river to the Isle of Orleans. (Dec., 1912, pg. 605.)

The Reid Newfoundland Co. is making extensive alterations at the station building and offices at St. Johns, Nfld. The old

baggage and express departments have been added to the general office and station accommodation, and new quarters have been provided for baggage and express. (Nov., 1912, pg. 558.)

Southern Central Pacific Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized by sec. 7, chap. 191 of the statutes of 1903, and by sec. 1, chap. 141 of the statutes of 1911, may be built; and to change the provisional directorate. Macdougne, Honeywell and Graham, Ottawa, are solicitors for applicants. (May, 1911, pg. 413.)

Timiskaming and Northern Ontario Ry.—The new roundhouse at Hearst, Ont., construction on which was started June 15, is reported to have been completed.

Rapid progress is being made with the construction of the Elk Lake extension. The tracklaying gang reached the Montreal river Dec. 11, and J. L. Englehart, Chairman of the Commission, reported, Dec. 12, that it was expected to have the steel laid to Elk Lake by Dec. 22. (Dec., 1912, pg. 605.)

Vancouver, Westminster and Yukon Ry.—J. Hendry, President, is quoted as stating that there is no truth in the report that the C.P.R. had acquired this charter, and further, he said, "I may say that no negotiations are in progress looking for the acquisition of the charter. (Sept., 1912, pg. 451.)

Victoria Harbor Ry.—There has been deposited in the Land Registry Office at Victoria, B.C., plan, profile and book of reference of the proposed main line between stations 100 + 00 at Camel point to station 246 + 40 at Selkirk Water, including loops between stations 100 and 112 + 54.3 and station 100 and 112 + 46.4 and connection with Esquimalt and Nanaimo Ry. from station 00 + 00 to station 10 + 72.4, Rock bay, Victoria. H. J. Haffner is Chief Engineer. (Jan., 1912, pg. 23.)

The Canadian Pacific Railway's Enormous Rolling Stock Orders.

The C.P.R. during 1912 placed orders for rolling stock to the value of about \$48,000,000, which is said to be double the amount ever ordered by any other railway system in North America in the same period.

When the orders are completely filled, the C.P.R. will have in commission 2,225 locomotives, 90,416 freight and stock cars of all kinds, 2,164 first and second class passenger cars, and 512 tourist sleepers, standard sleepers, diners and cafe cars, 1,383 conductors' vans, 4,329 boarding, tool and auxiliary cars and steam shovels—to be operated on over 12,500 miles of track.

The new equipment ordered during 1912 includes 467 locomotives, 26,653 box cars, 636 flat cars, 401 coal cars, 300 stock cars, 227 refrigerator cars, 94 first class sleepers, three compartment cars, 20 observation cars, 25 diners, 57 tourist cars, 117 first class and suburban cars, 138 baggage, mail and express cars.

Four motor cars, which will climb up the side of the mountain from Laggan, B.C., to the Lakes in the Clouds, will be placed in service—the tracks having already been laid—and will prove a great convenience to the tourists who invade that region yearly.

Out of the total expenditure the new locomotives cost over \$9,000,000, the passenger cars nearly \$5,250,000, and the freight and miscellaneous cars over \$34,000,000. The equipment is being chiefly procured in Canada, but Canadian shops being unable to fill the orders in their entirety, the remainder had to be purchased in the United States, in order to obtain delivery within a reasonable time.

Canadian Northern Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases, or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$1,829,700	\$1,335,100	\$494,600	\$133,000
Aug.	1,745,800	1,375,000	370,800	56,100
Sept.	1,671,500	1,248,000	423,500	4,100
Oct.	2,351,200	1,645,900	705,300	24,900
	\$7,598,200	\$5,604,000	\$1,994,200	\$28,100
Incr.	\$1,096,400	\$ 873,300	\$218,100

Mileage in operation during Oct., 4,297, against 3,731 during Oct., 1911.

Approximate gross earnings for Oct., \$2,509,700, against \$2,001,500 for Oct., 1911.

Canadian Pacific Railway Earnings, Etc.

Gross earnings, working expenses, net earnings, increases or decreases, compared with those for 1911-12, from July 1, 1912:—

	Gross Earnings	Expenses	Net Earnings	Increase
July	\$12,052,398.58	\$7,604,221.68	\$4,448,176.90	\$745,148.57
Aug.	12,251,715.87	7,533,790.21	4,717,925.66	642,354.65
Sept.	11,579,733.98	7,329,430.13	4,250,303.85	332,857.05
Oct.	13,060,397.80	7,999,510.61	5,060,887.19	379,782.44
	\$48,944,246.23	\$30,466,952.63	\$18,477,293.60	\$2,100,142.71
Incr.	7,603,446.71	5,503,304.00	2,100,142.71

Approximate gross earnings for Nov., \$12,145,000 against \$10,399,000 for Nov., 1911.

The mileage under operation was increased with the commencement of Nov., to 11,354.

Grand Trunk Railway Earnings, Etc.

The following figures show the earnings and expenses of the G.T.R., C.A.R., G.T. Western Ry. and D.G.H. & M.R. for Oct., 1912, as compared with those for Oct., 1911:—

	1912.	1911.
Earnings	\$3,781,400	\$3,455,265
Expenses	2,777,600	2,542,870
	\$1,003,800	\$ 912,395
Canada Atlantic Railway.		
	1912.	1911.
Earnings	\$235,600	\$206,488
Expenses	209,600	177,268
	\$ 26,000	\$ 29,220

	1912.	1911.
Earnings	\$646,000	\$581,478
Expenses	506,400	444,631
	\$139,600	\$136,847
Detroit, Grand Haven and Milwaukee Ry.		
	1912.	1911.
Earnings	\$239,000	\$228,403
Expenses	205,700	168,989
	\$ 33,300	\$ 59,414

TRAFFIC RECEIPTS OF THE SYSTEM

Aggregate from July 1 to November 30:—

	1912	1911	Increase
G.T.R.	\$18,680,692	\$16,961,251	\$1,719,441
C.A.R.	1,079,703	946,359	133,344
G.T.W.R.	3,049,886	2,801,209	248,677
D.G.H. & M.R.	1,08,112	1,025,788	72,329
Totals	\$23,908,393	\$21,734,607	\$2,173,786

Passenger Association Meetings.—The Niagara Frontier Summer Rate Committee will meet at the Chateau Laurier, Ottawa, January 21 to 23. On the first two days mentioned the representatives will arrange all details as far as possible, their report to be submitted to the general meeting Jan. 23 at 10 a.m. The Great Lakes and St. Lawrence River Rate Committee will meet at the same place immediately after the Niagara Frontier Summer Rate Committee's meeting. The International Water Lines Passenger Association will also meet in Ottawa on Jan. 23.

Quebec Bridge.—The shops at Rockfield, near Montreal, in connection with the erection of the Quebec bridge, are practically completed. About 400 men will be employed preparing the steel work. W. P. Ladd, of the Canadian Bridge Co., Walkerville, Ont., will superintend the manufacture of the material, and W. B. Fortune has been appointed to superintend the erection.

Mainly About Transportation People.

SIR WM. WHYTE has been elected a governor of the Winnipeg Country Club.

W. C. COOK, who died at Newark, N.J., recently, was an old G.T.R. official, formerly living in Montreal.

GEORGE BURNHAM, formerly President, Baldwin Locomotive Works, died in Philadelphia, Pa., Dec. 10, aged 95.

R. G. CHAMBERLEN, chief of the Vancouver city police force, has resigned to enter the C.P.R. service at Montreal.

MRS. E. F. SEIXAS, wife of the General Manager, Niagara, St. Catharines and Toronto Ry., died of angina pectoris, Dec. 9.

D. McNICOLL, Vice President, C.P.R., has declined to accept nomination for the position of mayor of Westmount, Que., for 1913.

LADY TYLER, widow of the late Sir Henry W. Tyler, at one time President, Grand Trunk Ry., died in London, Eng., Dec. 8.

W. L. BEATTY, of M. Beatty and Son, Welland, Ont., manufacturers of dredges and contractors' plant, died there, Nov. 29, aged 71.

A. S. GOODEVE, a member of the Board of Railway Commissioners, was the principal speaker at the Canadian Club luncheon in Toronto, Dec. 9.

J. S. MACLAUCHLAN has been appointed Dominion Government engineer in charge of public works, on Vancouver Island, with office at Victoria, B.C.

J. L. ENGLEHART, Chairman, Timiskaming and Northern Ontario Railway Commission, has been elected a director of the Bank of Toronto.

J. E. DALRYMPLE, Vice President, G.T.R., and Mrs. Dalrymple have been spending some time recently in New York and other points on the Atlantic coast.

SIR DONALD MANN, Vice President Canadian Northern Ry., has been elected Honorary President of the newly organized Canadian Amateur Lacrosse Association.

J. T. LEGRAND, Bridge Engineer, G.T. Pacific Ry., Winnipeg, has been elected chairman, Manitoba branch, Canadian Society of Civil Engineers.

J. THOMSON, Superintendent, Canadian Transfer Co., Toronto, returned to Canada on the C.P.R. s.s. Empress of Britain, Dec. 7, after a short vacation in Scotland.

SIR DONALD MANN will close Fallingbrook, Toronto, for the winter, while Lady Mann and their son are in southern Europe, and will live at his former town house on St. George street.

P. J. DORAN, formerly well known in marine circles in Montreal, at one time representing the Thomson Line, died suddenly at the Jubilee rink, of which he was the owner, Dec. 7.

G. M. BOSWORTH, Vice President, C.P.R., and Mrs. Bosworth returned to Montreal, Dec. 9, from Great Britain, where Mrs. Bosworth christened the C.P.R. s.s. Empress of Asia at its launching.

F. SUTHERLAND, who retired from the position of Master Car Builder, G.T.R., about four years ago, died at Point St. Charles, Que., Dec. 7, aged 78. He entered the G.T.R. employ in 1855.

A. B. COMEAU, for a number of years travelling auditor on the Intercolonial Ry., died at St. Damien, Que., Dec. 5. He had been in failing health for some time, and was relieved from duty in Feb., 1912.

W. L. KELLOGG, formerly Superintendent of Motive Power, Pere Marquette Rd., Grand Rapids, Mich., has been appointed Superintendent of Motive Power, Missouri, Kansas and Texas Ry., St. Louis, Mo.

HON. J. S. HENDRIE, C.V.O., chairman of the railway committee during recent sessions of the Ontario Legislature, returned to Canada from Great Britain, Dec. 7, on the C.P.R. s.s. Empress of Britain.

G. O. OTTY, K.C., has been appointed Chairman of the New Brunswick Public Utilities Commission in succession to the late D. McL. Vince, and A. B. Connell, K.C., Woodstock, has been appointed to fill the vacancy.

Two bundles of clothing, belonging to CAPT. SEALEY, until recently a Canadian Northern Ry. engineer, were found in the ice near Athabasca Landing, Alta., Dec. 3. It is feared that he was drowned.

J. W. SHARPE, Travelling Freight Agent, G.T.R., Hamilton, Ont., was married there Dec. 18, to Miss Ethel Warrington, until recently Secretary to J. Gray, General Agent, G.T.R., Hamilton. They went to California for a trip.



A. E. Rosevear,
Assistant to Vice President, Grand Trunk
Railway.

F. PENNINGTON, a Wabash Rd. agent, is reported to be also interested with E. Pennington, President of the Minneapolis, St. Paul and Sault Ste. Marie Ry., in the heirship to the Muncaster peerage and estates, referred to in our last issue.

A. S. CHEEVER, for many years Superintendent, Fitchburg division, Boston and Maine Rd., Boston, Mass., has been appointed Assistant to the General Manager and will be assigned to special work in the operating department.

MRS. LICHTENHEIN, widow of A. Lichtenhein, who was the Galena-Signal Oil Company's Contracting Agent in Canada, and her family, have moved from New Rochelle, N.Y., to the Cliff Haven, 417 Riverside drive, New York city.

JOS. RAMSEY, JR., formerly of the Wabash Rd., has resigned as President and General Manager of the Ann Arbor Rd. He is succeeded as President by N. Erb, Chairman of the Board of Directors, and as General Manager by H. H. Harrison, Vice President.

C. N. ARMSTRONG, of Montreal, Vice

Chairman, Central Ry. of Canada, who has spent most of his time in England for several years past, will, it is said, be the next conservative candidate in the Colne Valley division of Yorkshire for the House of Commons.

HOWARD JAMES, Director of Purchases, Great Northern Ry., and Vice President and General Manager, Great Northern Steamship Co., and S. B. PLECHNER, Purchasing Agent, G.N.R., were both killed, when their automobile upset, recently, near J. J. Hill's country home, adjacent to St. Paul, Minn.

W. C. HUNTER, formerly General Air Brake Inspector, Intercolonial Ry., afterwards Manager, New Brunswick Coal and Railway Co., and latterly railway sales representative for T. McAvity and Sons, St. John, N.B., has been appointed Manager, Record Foundry and Machine Co., Moncton, N.B.

SIR THOMAS TAIT, President, Frederick Grand Lake Coal and Ry. Co., Montreal; H. J. FULLER, President, Canadian Fairbanks Morse Co., Montreal, and W. R. ALLAN, General Northwest Agent, Allan Line Steamship Co., Winnipeg, are directors of Atlantic Sugar Refineries, Limited, recently organized to operate at St. John, N.B.

A telegram received in Montreal, Dec. 3, stated that E. A. WILLIAMS, who resided there some years ago, had been killed in a street car accident in New Orleans. At first it was feared that the victim was E. A. Williams, formerly Superintendent of Rolling Stock, C.P.R., but enquiries showed that the latter was alive and well at Glen Ridge, N.J.

A. D. CARTWRIGHT, Secretary, Board of Railway Commissioners, is one of the executors of his late father, Sir Richard Cartwright, who left an estate of a net value of \$83,239.90, the interest on which goes to his widow. After her death the estate is to be divided, the three daughters to receive \$20,000 each, and the balance going to the six sons.

JOHN F. PIERCE, who has been appointed District Passenger Agent, Richelieu and Ontario Navigation Co., for New England territory and the maritime provinces, was born in Chatham, Ont., and prior to his present appointment, was for two years, Travelling Passenger Agent in New England territory, and for ten years chief clerk of the Traffic department.

A. E. ROSEVEAR, whose appointment as Assistant to the Vice President (Traffic) G.T.R. and G.T.P.R., Montreal, together with some biographical data, was given in our last issue, and whose portrait appears in this issue, was born at Montreal, Feb. 20, 1863. Prior to holding his present position he was Assistant General Freight Agent, G.T.R., from Apr. 20, 1908.

LORD FURNESS, of Furness, Withy and Co., Manchester Liners, Ltd., and Honorary President, Richelieu and Ontario Navigation Co., who died recently, in his will authorizes his trustees to expend, not exceeding £30,000, towards the founding of an institution for the training of boys for the mercantile marine service, with a view to their being engaged on vessels of the various fleets with which he had been associated.

A. P. BOLLER, of Boller, Hodge and Baird, Engineers, New York City, and Vice-President, American Society of Civil Engineers, died Dec. 9, aged 72. In the sixties he planned an International bridge over the Niagara river at Black Rock, which was not carried out owing to the collapse of the railway company in the same year. His firm designed the Algoma Central and Hudson Bay Ry.'s Montreal river viaduct, which was completed recently.

H. F. BRADLEY, whose appointment as Passenger Manager, Allan Line Steamship Co., Montreal, was announced in our last issue, was born at Waterville, Que., July 20, 1876, and entered Allan Line service in 1898, and was to 1906 attached to the head office in Montreal. He was appointed General Agent for Ontario, with office in Toronto, in 1906, which position he held to Feb., 1912, when he was appointed Assistant Passenger Manager.

C. B. WILKIE, whose appointment as Road Foreman of Engines, Canadian Division, Pere Marquette Rd., Port Huron, Mich., was announced in our last issue, was born near Lunenburg, N.S., Nov. 19, 1877, and entered railway service July 30, 1898, since when he has been, to Dec., 1898, in car shops and roundhouse, Lake Erie and Detroit Ry., Walkerville, Ont.; Dec., 1898, to the summer of 1900, fireman, same road; 1900 to Nov. 4, 1912, locomotive driver, same road and Pere Marquette Rd., the latter having absorbed the L.E. and D.R. in 1901.

Toronto Saturday Night published a portrait recently under which it put "GEORGE HERBERT SHAW, who has relinquished his post as Assistant General Freight Agent, Canadian Pacific Ry. lines west of Port Arthur, to become Traffic Manager of the Canadian Northern Ry." This is ancient history with a vengeance. Mr. Shaw "relinquished his post" with the C.P.R. in June, 1901, over 11 years ago, when he was appointed Traffic Manager, Canadian Northern Ry. In Feb., 1911, he was appointed General Traffic Manager, Canadian Northern Ry.

H. B. FLEMING, whose appointment as Assistant Superintendent, Halifax and St. John division, Intercolonial Ry., Moncton, N.B., was announced in our last issue, was born at Moncton, N.B., in 1858, and entered I.R.C. service in 1873, since when he has been, to 1874, in stationery stores department; 1874 to 1878, relieving operator and station agent; 1878 to 1879, relieving dispatcher at Truro, Moncton and Campbellton; 1879 to 1898, dispatcher, Halifax and St. John division, Moncton, N.B.; 1898 to Nov. 7, 1912, Chief Dispatcher, Springhill and St. John division.

G. A. STOKES, whose appointment as acting Terminal Superintendent, G.T.R., Toronto, was announced in our last issue, was born in Nassagawaya tp., Ont., July 23, 1879, and entered G.T.R. service, Nov. 15, 1897, since when he has been, to Oct. 15, 1898, operator, Listowel, Ont.; Oct. 15, 1898, to March, 1899, relieving agent; March, 1899, to April, 1907, agent, consecutively, at Hariston, Wingham, Warton and Brantford, Ont.; April, 1907, to Nov. 1, 1910, dispatcher, Stratford, Ont.; Nov. 1, 1910, to Sept. 13, 1912, Yardmaster, Don station, Toronto; Sept. 13 to Oct. 25, 1912, General Yardmaster, Toronto Terminals.

B. C. GESNER, heretofore Mechanical Expert, Galena-Signal Oil Co., who has also been appointed Eastern Sales Agent for the company, was born at Cornwallis, N.S., Apr. 23, 1859, and entered Intercolonial Ry. service, Jan. 23, 1877, since when he has been, to Oct., 1882, fireman; Oct., 1882, to Sept., 1898, locomotive driver; Sept., 1898, to Oct., 1901, General Air Brake Inspector; Oct., 1901, to Dec., 1902, Master Mechanic, Stellarton, N.S.; Dec., 1902, to Apr., 1903, Air Brake Inspector; Apr., 1903, to Nov., 1912, Mechanical Expert, Galena-Signal Oil Co., with headquarters at Moncton, N.B. He is a medallist of the Imperial Service Order.

C. J. WILSON, whose appointment as Superintendent, district 3, Central division, Canadian Northern Ry., Winnipeg, was announced in our last issue, and whose portrait appears in this issue, has served the whole of his time spent in railway service,

prior to his present appointment, in the U.S., having been telegraph operator and train dispatcher, Chicago, Milwaukee and St. Paul Ry.; dispatcher and trainmaster, Chicago, St. Paul, Minneapolis and Omaha Rd.; dispatcher, Assistant Superintendent and Division Superintendent, Northern Pacific Ry., and for the last nine years, Division Superintendent, Chicago, Rock Island and Pacific Ry.

HUGH SUTHERLAND, Executive Agent Canadian Northern Ry., Winnipeg, sustained a fracture of the left thigh by being thrown from his horse at Osborne street bridge, Winnipeg, Nov. 27. The lift span of the new bridge did not close by about 3 ins., so that the horse's foot caught in the opening, and as he pulled it out violently Mr. Sutherland was thrown over his head. After being taken home Mr. Sutherland was removed to the general hospital, where the fracture was reduced, and he was placed in a plaster cast, which will probably not be removed until well on in January. He is progressing favorably in every way, and is able to attend to his correspondence.



C. A. Dunham,
Signal Engineer, Grand Trunk Railway.

DONALD M. MCINTYRE, K.C., whose appointment as Chairman, Ontario Railway and Municipal Board, Toronto, was announced in our last issue, is a native of Kingston, Ont., and a graduate in Arts of Queen's University. He was admitted a barrister in 1885 with honors and gold medal, and served on the Kingston city council, as alderman, from 1889 to 1905, with the exception of 1892, for which year he was elected mayor. He was appointed City Solicitor there in 1895, and acted in that capacity to the date of his present appointment. He was for many years a trustee of Queen's University, and a governor of the School of Mining, of which board he is chairman. He is also a governor of the Kingston General Hospital, and was chairman of the board in 1904 and 1905.

A. S. GOING, who has been appointed Engineer of Construction, G.T.R., Montreal, was Born in Portland, Ore., Apr. 7, 1860, and entered railway service in 1880, since when he has been, to 1881, instrument man, Oregon Ry. and Navigation Co.; 1881 to 1883, Assistant Engineer, Northern Pacific Ry.; 1884 to 1886, Assistant Engineer, Oregon

Pacific Ry.; 1887, Resident Engineer, Seattle, Lake Shore and Eastern Ry.; 1888 to 1889, Resident Engineer, Northern Pacific Ry.; 1890 to 1902, in private practice in State of Washington and British Columbia; 1903, Division Engineer, Great Northern Ry.; 1904 to 1905, Exploratory Engineer for British Columbia, Grand Trunk Pacific Ry.; 1905 to 1907, Division Engineer, Minneapolis and St. Louis, Ry.; 1907 to Nov. 30, 1912, Locating Engineer in charge of surveys, reports, etc., G.T.R.

R. COLCLOUGH, whose appointment as Assistant to the General Superintendent, Intercolonial Ry., Moncton, N.B., was announced in our last issue, was born at Bic, Que., Feb. 24, 1871, and educated at Rimouski College and Laval University, graduating from the latter in arts in 1888. He entered I.R.C. service Dec. 9, 1889, since when he has been, to Nov., 1892, clerk in Superintendent's office, Moncton, N.B.; Nov., 1892, to Nov., 1901, private secretary to Chief Superintendent, General Manager and General Superintendent and Manager; Nov., 1901, to Oct., 1902, chief clerk, Manager's office; Oct., 1902, to June, 1911, clerk in General Manager's office and in the Managing Board's office; June, 1911, to May, 1912, chief clerk, General Superintendent's office; May to Nov. 7, 1912, Assistant Superintendent, Halifax and St. John division.

W. B. CRONK, whose appointment as General Superintendent, National Transcontinental Ry., Ottawa, was announced in our last issue, was born at Footville, Wis., Nov. 11, 1862, and entered railway service, Jan., 1878, since when he has been, to 1898, consecutively, operator, agent, dispatcher and chief clerk to Superintendent, Chicago and North Western Ry.; 1898 to 1900, dispatcher, Chicago, St. Paul, Minneapolis and Omaha Ry.; 1900 to 1902, chief clerk to General Superintendent and Division Dispatcher, Baltimore and Ohio Rd.; 1902 to 1903, chief clerk to General Superintendent, Chicago, Rock Island and Pacific Ry.; 1903 to 1906, in private business; 1906 to 1911, consecutively, dispatcher, Assistant Superintendent and Superintendent, C.P.R.; 1911 to Sept. 1, 1912, Superintendent, Grand Trunk Pacific Ry.; Sept. 1 to November, 1912, Superintendent of Transportation, National Transcontinental Ry., Winnipeg.

J. M. SHANLY, M. Can. Soc. C.E., Consulting Engineer, Montreal, who died there suddenly Nov. 28, was born at Waukegon, Ill., in 1857, and, after completing his education at Toronto university, moved to Montreal in 1878. He began his professional career under his uncle, the late Walter Shanly, and after spending several years on survey and construction work, was appointed Chief Engineer of the Beauharnois Jet. Ry. in 1887, and was subsequently Chief Engineer of the Montreal and Ottawa Ry., now the C.P.R. short line between those cities. He was subsequently engaged in the construction of the Central Counties Ry. (now partly the C.P.R.), the Baie des Chaleurs Ry., the Great Northern Ry. of Canada, the International Ry. of New Brunswick, and latterly he was engaged in connection with the Central Ry. of Canada. His connection with the Canadian Society of Civil Engineers, of which he was a councillor, dates from 1887.

S. BRUCE McCONNELL, A.M. Can. Soc. C.E., who has been appointed Assistant Engineer, C.P.R., Montreal, commenced railway engineering in the winter of 1897, as transitman on the Atlantic and Lake Superior Ry., since when he has been, April to May, 1898, transitman on location, Midland Ry. of Nova Scotia; May, 1898, to Apr., 1899, Resident Engineer on construction, same road; Apr. to June, 1899, transitman on location, Great Northern Ry. of

Canada; June, 1899, to 1900, Resident Engineer on construction, same road; 1900, Assistant Engineer on water power developments, Sturgeon Falls, Cornwall, Ont., and Upper Saguenay river, Que.; Jan., 1901, to Jan., 1902, Resident Engineer on construction, Cuba Co.'s railway, Santa Clara, Cuba; Jan. to June, 1902, locating engineer, South Shore Ry.; June to July, 1902, Assistant Engineer in charge of yard construction, C.P.R., North Bay, Ont.; July, 1902, to Sept., 1905, Resident Engineer, C.P.R., North Bay, Ont.; Sept., 1905, to Jan., 1910, Resident Engineer, C.P.R., Montreal; Jan., 1910 to Nov. 1, 1912, Assistant Division Engineer, Eastern division, C.P.R., Montreal.

W. D. BARCLAY, General Manager, Canadian Northern Quebec Ry., Quebec and Lake St. John Ry., Halifax and South Western Ry., and Inverness Ry. and Coal Co., Montreal, died at Riverside, Cal., Dec. 13. He had been ill for some months, suffering from tuberculosis and diabetes, and spent most of the summer at Lethbridge, Alta. He returned to Montreal early in October, and after a short stay there went to California early in November. He was born at Campbellton, N.B., Sept. 23, 1852, and entered railway service in 1867, since when he has been, to 1869, Chairman, Western Extension Ry.; 1869 to 1870, assistant engineer, same road; 1870 to 1871, assistant engineer, Maine Central Rd.; 1871 to 1875, assistant engineer, Prince Edward Island Ry.; 1875 to 1876, engineer-in-charge, Spring Hill and Parrsboro Ry.; 1876 to 1877, assistant engineer, Intercolonial Ry.; 1877 to 1879, Principal Assistant Engineer, Eastern Extension Ry. of Nova Scotia; 1879 to 1881, Engineer, C.P.R., Winnipeg; 1881 to 1882, Division Engineer, Western division, C.P.R.; 1882 to 1883, Assistant Chief Engineer, same road; 1883 to 1885, acting Chief Engineer, same road; 1885 to 1886, Engineer, Alberta Ry. and Coal Co.; 1886 to 1888, Division Engineer, Great Northern Ry.; 1888 to 1890, Engineer, Foley Bros. and Guthrie, railway contractors; 1890 to 1894, General Superintendent, Alberta Ry. and Coal Co. and Great Falls and Canada Ry.; 1894 to May, 1899, Manager, same roads. From 1899 to 1906 he was engaged in railway contracting with Foley Bros. and Larson, of St. Paul, Minn. In Dec., 1907, he was appointed General Manager, Halifax and South Western Ry., and Inverness Ry. and Coal Co., and in March, 1909, he was also appointed General Manager, Canadian Northern Quebec Ry., and Quebec and Lake St. John Ry.

Railway Finance, Meetings, Etc.

Canadian Pacific Ry.—The Minister of Finance stated in the House of Commons, Dec. 4, that the President had informed him it was the company's intention to issue \$60,000,000 of new stock under the authority of the act of 1900. This issue is in addition to the \$75,000,000 for the issue of which the company had applied for the sanction of the Government. No action had been taken upon this application.

Canada Southern Ry.—A new first and refunding mortgage has been signed to secure an authorized issue of \$40,000,000 consolidated 50-year 5% gold bonds, guaranteed both as to principal and interest by the Michigan Central Rd.

In connection with this issue, press reports, which Sir Thos. Shaughnessy said recently were absurd and without foundation, stated that the M.C.R. had been acquired by the C.P.R. by an arrangement with the New York Central and Hudson River Rd.

Cap de la Madeleine Ry.—The Board of Railway Commissioners has recommended

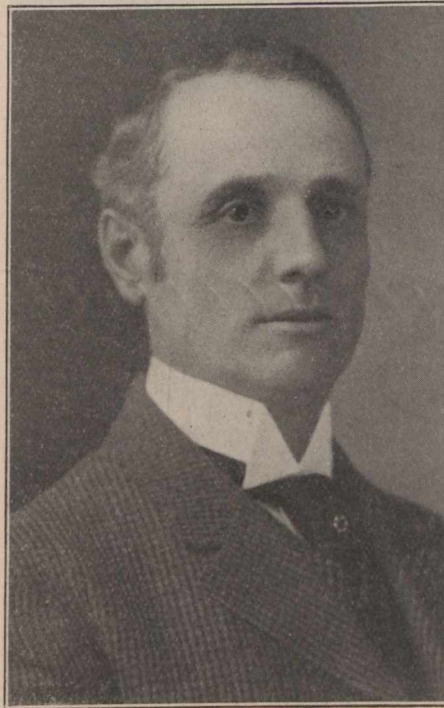
the Governor in Council to approve of a conveyance, dated Oct. 3, 1912, transferring this line to the C.P.R.

The Central Ry. of New Brunswick, extending from Norton, on the Intercolonial Ry., to Minto, N.B., will be taken over by the C.P.R., Jan. 1. It will be operated in connection with the Fredericton and Grand Lake Coal and Ry. Co., which is now well advanced towards completion.

Grand Trunk Ry.—A London, Eng., cable says the underwriters have had to take 38% of the £1,000,000 4% debentures offered recently.

Kingston and Pembroke Ry.—The Board of Railway Commissioners has recommended the Governor-in-Council to approve of a lease of this line to the C.P.R.

Quebec Central Ry.—By proclamation the Lieut.-Governor of Quebec has ratified the agreement for the lease of the Q.C.R. to the C.P.R. The Board of Railway Commissioners has recommended the Governor-in-Council to sanction the lease. These are the final steps necessary in the transfer of the line to the C.P.R.



D. M. McIntyre, K.C.,
Chairman, Ontario Railway and Municipal Board.

Quebec Oriental Ry.—A trust deed dated Oct. 22, 1912, made between the company and the Royal Trust Co., Montreal, to secure an issue of 5% prior lien mortgage bonds on the Matapedia section was deposited with the Secretary of State at Ottawa, Dec. 3.

Rutland Rd.—The appellate division of the New York Supreme Court, Dec. 13, reversed the decision of a lower court which forbade the transfer of the control stock of the R. Rd., held by the New York Central and Hudson River Rd., to the New York, New Haven and Hartford Rd.

St. Marys and Western Ontario Ry.—The Board of Railway Commissioners has recommended the Governor-in-Council to sanction the leasing of this line to the C.P.R.

Shuswap and Okanagan Ry.—Application is being made to the Dominion Parliament to authorize the company to enter into agreements with the C.P.R.; to lease its line to the C.P.R., and to increase its bonding powers. The line has been operated by the C.P.R. for many years.

Stanstead, Shefford and Chambly Ry.—Following are the officers and directors for the current year:—President, S. W. Foster; Vice President, E. H. Fitzhugh; Assistant Secretary and Treasurer, W. H. Chaffee; other directors, E. J. Chamberlin, E. C. Smith, G. C. Jones, G. E. Robinson, G. Stevens and J. P. Noyes; Secretary and Treasurer, H. E. Allen.

Temiscouata Ry.—Net earnings for September, \$4,389; aggregate net earnings for three months ended Sept. 30, \$20,866.

Timiskaming and Northern Ontario Ry.—The Commissioners have paid the Ontario Government \$510,000 on account of the net earnings of this line for the past financial year.

Dominion Government Expenditures on Railways.

The public accounts for the year ended Mar. 31, 1912, show that in addition to the consolidated fund expenditure the following outlays, chargeable to capital account, were made on railways:—

Intercolonial Ry.	\$1,710,448.56
Prince Edward Island Ry.	128,041.91
National Transcontinental Ry.	21,110,352.05
Hudson Bay Ry.	159,632.00
Quebec Bridge	1,153,778.27

Total

The following amounts were paid during the year as subsidies in aid of the construction of railways:—

Central Ontario Ry.	\$ 826.17
St. Marys and Western Ontario Ry.	365.00
Quebec, Montreal and Southern Ry.	23,835.70
Canada and Gulf Terminal Ry.	65,249.75
Quebec and Lake St. John Ry.	27,520.00
Canadian Pacific Ry.	108,608.00
Atlantic, Quebec and Western Ry.	91,279.60
Algoma Central and Hudson Bay Ry.	133,584.00
Canadian Northern Quebec Ry.	86,468.03
Thessalon and Northern Ry.	6,112.00
Quebec and Saguenay Ry.	104,992.00
Kettle River Valley Ry.	148,800.00
Vancouver and Lulu Island Ry.	61,760.00

Total

The following bonds have been guaranteed by the Dominion under the authority of various acts of parliament:—

Canadian Northern Ry. (1903) ..	£ 1,923,287 0 0
Canadian Northern Ry. (1908) ..	1,622,586 19 9
Canadian Northern Ontario Ry. (1911) ..	7,493,835 12 4
Canadian Northern Alberta Ry. (1912) ..	647,260 5 6
Grand Trunk Pacific Ry. (1903) ..	7,200,000 0 0

£18,886,969 17 7

In addition £1,688,000 of G.T.P. Ry. guaranteed bonds have been pledged by the company against advances obtained for construction purposes. There has been paid to the G.T.P. Ry. \$4,994,416.66 out of the consolidated fund to meet the obligations of the Crown to the company under par. 5 of the schedule to chap. 24 of the statutes of 1904, the "implementing" paragraph.

C.P.R. Lands.—The C.P.R. Co. has announced that in future it will not sell any farm lands to speculators, but only to bona fide settlers from North America, the British Isles and Northern Europe. The purchase price will be payable in instalments extending over 20 years, instead of 10 as heretofore. The company will also loan each settler up to \$2,000, to be repaid in instalments extending over 20 years, with interest at 6%, and will sell the settlers live stock and poultry at cost price.

Wanted.—By an experienced Railroad man who has held positions as Yardmaster, Chief Dispatcher and Superintendent for the past 20 years, a position on Western Roads preferred; first class reference will be furnished.

Address, Box 1948, Canadian Railway and Marine World, Toronto, Ont.

Canadian Pacific Railway, Construction, Betterments, Etc.

St John, N.B.—It was reported in St. John, N.B., that about 1,000 acres of land has been bought in the vicinity of Lancaster, adjoining the city, for the C.P.R., and that changes are to be made in the route of the New Brunswick Southern Ry., so as to give it direct access into St. John. There are other reports that there is some likelihood of a new line being built across New Brunswick which will give the C.P.R. a direct line to Moncton, whence access is to be obtained to Halifax over the Intercolonial Ry.

Second Track, Etc., on Farnham Subdivision.—The Board of Railway Commissioners has authorized the opening for traffic of the second track from St. Constant to St. Claude, mileage 24.46 to 35.9, and from mileage 42.46 at Highlands, Que., to the south switch, mileage 43.91. The second span of the new bridge to carry the double track over the St. Lawrence river at Highlands was floated into position Nov. 26. The bridge will consist of four spans, each 408 ft. long. The bridge is being built by the Dominion Bridge Co. The foundations for the new bridge over the river at St. Johns, Que., have been completed.

Montreal to L'Epiphanie.—The Dominion Parliament is being asked to authorize the building of a line from south of Forsythe street, Hochelaga ward, Montreal, northerly to a junction with the company's line near L'Epiphanie, Que.

Ottawa, Northern and Western Ry.—Application is being made to the Dominion Parliament to extend the time within which the projected line from Maniwaki to James Bay, and the proposed extension to Lake Timiskaming, Que., may be built.

Interprovincial and James Bay Ry.—The surveys being made on this railway are under the charge of C. W. P. Ramsay, Engineer of Construction, C.P.R., Montreal. (Nov., pg. 558.)

Campbellford, Lake Ontario and Western Ry.—Application is being made to the Dominion Parliament to increase the company's bonding powers.

North Toronto Union Station.—The C.P.R. plans for a union station at North Toronto have been approved by the Canadian Northern Ry., and it is said that tenders will shortly be invited.

Bolton-Palgrave to Campbellville.—Application is being made to the Dominion Parliament for authority to build a line from the Toronto-Sudbury line between Bolton Jet and Palgrave, through Peel and Halton counties to a junction with the Toronto-Windsor line near Campbellville, Ont.

Guelph and Goderich Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the branch lines authorized by chap. 81 of the statutes of 1904.

Collingwood Southern Ry.—Application is being made to the Dominion Parliament to extend the time for the building of the lines authorized by chap. 77 of the statutes of 1907. A. T. Thompson, Ottawa, is solicitor for applicants.

Sudbury Branch Revision.—The Board of Railway Commissioners has approved of revised location of the Toronto-Sudbury branch between mileage 20.73 and 21.40, and mileage 31.76 and 34.76, Webbwood subdivision.

Lake Superior Division Second Track.—The Board of Railway Commissioners has authorized the opening for traffic of the second track as follows:—Cartier to Geneva, 3.6 miles; White River and Tarpon, 3.5 miles; Crete to Sudbury, 3.2 miles; Devon to Eaper, 4.3 miles; Depew to River, 5.3 miles; Heron Bay to Peninsula, 8.7 miles;

Fire Hall to Ruby, 4.4 miles; Navilius to Hedge, 4.1 miles.

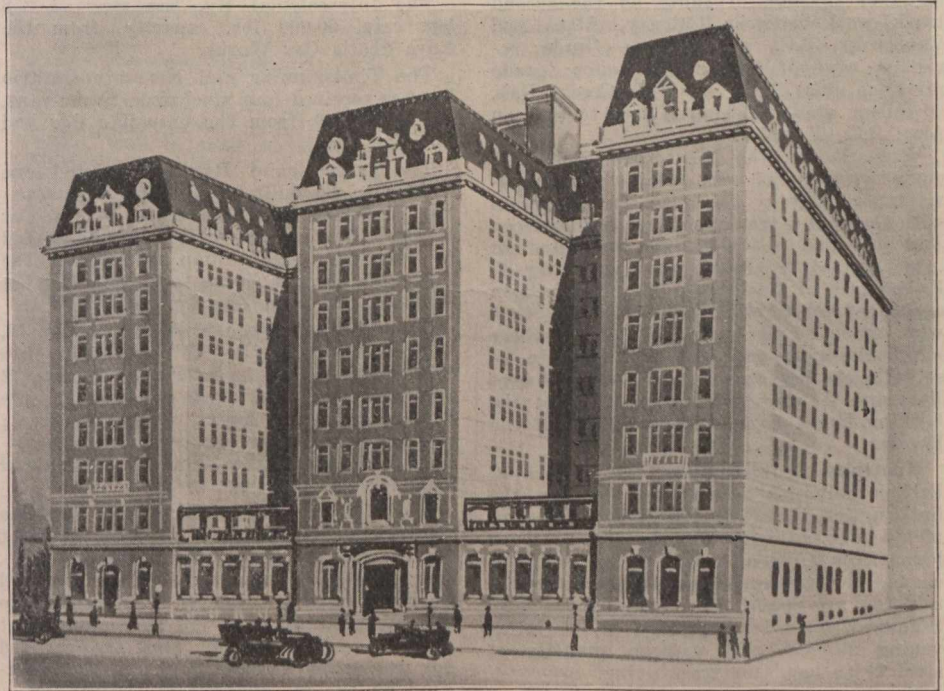
Western Lines.—The Dominion Parliament is being asked to authorize the building of a line from near Snowflake, Man., westerly for about nine miles; a line from the present terminus of the Gimli branch northerly for about 60 miles to the north shore of Lake Winnipeg, thence northwesterly to the Little Saskatchewan river; from about 50 miles east of Sterling, Alta., to the Alberta Ry. and Irrigation Co.'s line near Sterling; from near Cayley on the Macleod branch to near Burmis on the Crownsnest subdivision. It is also desired to obtain an extension of time for the building of the following lines:—From Stonewall or Teulon, Man., northwesterly to the east shore of Lake Manitoba near the north of the boundary of tp. 25; from tps. 32-34, ranges 21-23, west of 2nd meridian, to Prince Albert, Sask., 130 miles; from Dysart or Lipton, southeasterly to a junction with the next mentioned line; from near Tantallon, Sask., to Craven on the Regina northerly branch; from sec. 12,

Sutherland to Saskatoon, Sask.—General Superintendent Taylor was recently quoted as stating that the company's engineers were completing surveys for the building of a second track from Sutherland to Saskatoon, Sask., four miles, and that work would be started thereon in the spring.

Second Track Work Near Moose Jaw.—The Board of Railway Commissioners has authorized the opening for traffic of the second track from Belle Plains, mileage 117.0 to Pasqua, mileage 127.6, on the Moose Jaw subdivision, and the second track from Secretan to Chaplin, Sask., mileage 44.9 to 54.0 west of Moose Jaw.

Moose Jaw Northwesterly Branch.—The Board of Railway Commissioners has authorized the opening of the Moose Jaw northwesterly branch from Outlook to Conquest, Sask., 9.3 miles. This mileage includes the bridge across the South Saskatchewan river. The Lacombe branch of the C. and E. Ry. is being extended easterly to a junction with this line at Kerrobert, and the Board of Railway Commissioners has authorized the temporary operation of this extension from Coronation to Consort, 32 miles.

Swift Current Southeasterly.—The Board



Canadian Pacific Railway Hotel under construction at Calgary, Alta.

tp. 9, range 26, west 4th meridian, on the Crownsnest branch westerly along the north side of the Old Man river to sec. 36, tp. 7, range 4, west 5th meridian, Alta.

Bergen Northeasterly.—The Minister of Railways has approved of route map for the extension of the line at Bergen, Man., for 9.92 miles northeasterly.

Lauder Extension.—The Board of Railway Commissioners has authorized the opening for traffic of the Lauder extension from Tilston to Alida, Man., mileage 28.7 to 54.72.

Manitoba and Northwestern Ry.—The Dominion Parliament is being asked to extend the time within which it may build the following lines: From Yorkton to Prince Albert, Sask.; from Russell to the north-west boundary of Manitoba; from between Portage la Prairie and Arden to the Manitoba boundary; from between Westbourne and Beautiful Plains northwesterly to Lake Dauphin on Duck mountains; from between Theodore and Insenger to tp. 32, range 18 or 19, west 2nd meridian, and from Bredenbury to Kamsack, Sask.

of Railway Commissioners has approved of location plans of the Swift Current southeasterly branch with the Moose Jaw southwesterly branch, mileage 45 to 101.3.

Swift Current-Bassano Line.—The Minister of Railways has approved of route maps for the line from Swift Current northwesterly, 11.34 miles, and for the line from Bassano easterly, 118.1 miles.

Wilkie to Anglia, Sask.—The Board of Railway Commissioners has authorized the opening for traffic of the branch running southeasterly from Wilkie to Anglia, Sask., 35.3 miles.

Wilkie-Cutknife Branch.—The Board of Railway Commissioners has extended until July 1, 1913, the time within which the C.P.R. may operate its Manitou lake branch, from its Pheasant hills branch in sec. 6, tp. 40 r. 19, west third meridian, to sec. 32, tp. 43, r. 21, w. 3 m., mileage 0 to 27.8, between Wilkie and Cutknife, Sask.

Humberstone Coal Mine Spur.—The Board of Railway Commissioners has authorized the building of a spur line at mileage 788.21 from Winnipeg to the Humberstone coal mine, near Cardell, Sask.

Bassano-Irricana Branch.—The Board of Railway Commissioners has authorized the opening for traffic of the Bassano-Irricana branch, from Bassano to Standard, Alta., 35.62 miles.

Alberta Central Ry.—Application is being made to the Dominion Parliament to extend the time within which the company may build the various lines authorized by chap. 44 of the statutes of 1901; chap. 75, statutes of 1903; chap. 39, statutes of 1909, and chap. 50, statutes of 1911.

Alberta Central Ry.—The Board of Railway Commissioners has recommended the sanctioning of a lease of this line, now under construction, to the C.P.R.

Construction on the line west of Red Deer, Alta., was suspended for the season Nov. 30. It is reported that construction will be started on the line projected eastward from Red Deer early in the spring.

Alberta Ry. and Irrigation Co.—The Dominion Parliament is being asked to extend the time within which the company may build the various branch lines authorized.

Calgary-Vancouver Second Track.—The Minister of Railways has approved route maps of revision of route on the second track work between Calgary, Alta., and Vancouver, B.C., as follows:—Grade revisions west of Calgary, 21 miles; grade revisions Ross Peak to Milk Creek, B.C., 20 miles; grade revisions Chase to Salmon Arm, B.C., 25 miles.

V. L. Bogue, the New York consulting engineer, who has been retained in an advisory capacity by the C.P.R. in connection with the double tracking of the line between Vancouver and Calgary, has completed an inspection of the route accompanied by F. F. Busted, of Kamloops, B.C., Engineer in charge of the double track survey. Stops were made at the principal points where big engineering problems will have to be solved, including Fraser river canyon, Rogers Pass and its approaches, the valley of the Kicking Horse river, and both sides of the Rockies.

Kootenay Central Ry.—The Premier of British Columbia recently stated that the building of the K.C. Ry. would be completed next year. The line has already been built from Golden southerly to Spillimacheche Landing, and from Coalmont northerly to Fort Steele, B.C. Grading has been completed on a large portion of the intervening mileage, and a large quantity of steel is on hand for tracklaying.

Branch Line at Merritt, B.C.—The Board of Railway Commissioners has authorized the company to build a branch line at Merritt, B.C., and has rescinded order of Sept. 21, 1912, in respect of the same matter.

Coquitlam Terminals.—The main building of the 12 stall roundhouse at the new terminals at Coquitlam, B.C., has been completed. The building can be enlarged as desired. Additional tracks are being laid in the yards, and other terminal facilities. Work has been started in putting in the substructure for the double track bridge over the Pitt river at this point. The contract has been let to the Foundation Co., and it is estimated that it will take nearly two years to complete it. It will be necessary to go to a depth of 180 ft. to get a solid foundation for the piers. In the centre of the new bridge there will be a bascule lift span of 115 ft.

A contract is reported to have been let to Nickson and Co., Vancouver, to build a road and subway under the C.P.R. at Pitt river, in connection with the development of the terminals.

British Columbia Southern Ry.—The Dominion Government is being asked to extend the time within which the company

may build the various lines authorized to be constructed.

Kootenay and Arrowhead Ry.—The Dominion Parliament is being asked to extend the time within which the company may build its authorized line from Gerrard to Arrowhead, B.C.

Victoria, B.C.—The Premier of British Columbia recently stated that preliminary arrangements had been completed between the C.P.R. and the Canadian Northern Pacific Ry. for the erection of a union station in Victoria, at an estimated cost of \$1,500,000.

Plans are stated to be in course of preparation for the erection of an office building on the corner of Belleville and Menzies streets, Victoria. (Nov., pg. 565.)

Railway Rolling Stock Notes.

The G.T.R. has ordered 10 first class cars and 10 baggage cars from its Montreal shops.

The Grand Trunk Pacific Ry. has received 9 consolidation locomotives from the Canadian Locomotive Co.

The Intercolonial Ry. has received 258 box cars, 60,000 lbs. capacity, from the Nova Scotia Car Works.

The Timiskaming and Northern Ontario Ry. has received four steel underframe vans, nos. 70 to 73, from the Canadian Car and Foundry Co.

The Intercolonial Ry. has ordered one flanger to be built in its Moncton shops; 100 box cars from the Nova Scotia Car Works; 100 Hart convertible dump cars and 50 Hart-Otis steel dump cars, from the Hart-Otis Car Co., these to be built by the Canadian Car and Foundry Co.

The C.P.R., between Nov. 14 and Dec. 13, ordered the following rolling stock:—510 stock cars, 303 refrigerator cars, 6 vans, 12 flat cars, 1 second class car and 2 pile drivers from its Angus shops, Montreal; 800 flat cars, 200 stone cars and 500 ballast cars from the Canadian Car and Foundry Co.

The 400 box cars which the Michigan Central Rd. has decided to have built at its St. Thomas shops, Ont., will be 36 ft. long, 80,000 lbs. capacity. The erection will be commenced as soon as it is possible to get the material, and will be completed at the rate of 15 a month. They are intended for use on the Canada Southern Ry., operated by the M.C.R.

The G.T.R. has received the following additions to rolling stock:—18 Pacific type locomotives, 69-ins. drivers, from the Baldwin Locomotive Works; 63 refrigerator cars from the Canadian Car and Foundry Co.; 155 box cars from the Pressed Steel Car Co.; 16 automobile cars from the Western Steel Car and Foundry Co.; 1 first class car and 2 baggage cars from its Montreal shops.

The Canadian Northern Ry., between Nov. 15 and Dec. 15, received the following additions to rolling stock:—45 box cars and 50 automobile cars from the Crossen Car Co.; 5 first class cars from the Canadian Car and Foundry Co.; one locomotive from the Canada Foundry Co.; 50 flat cars from J. T. Gardner, Chicago, Ill.; 23 box cars from Rathbun Co.; 6 sleeping cars from Barney and Smith Car Co.; and one wrecking crane.

The Canadian Northern Ry., between Nov. 15 and Dec. 15, ordered the following rolling stock:—1,000 box cars, 2 snow plows, from the Canadian Car and Foundry Co.; 500 wooden flat cars, 150 stock cars, from the Crossen Car Co.; 300 Hart cars, from the Hart-Otis Car Co.; 500 box cars, from

the Nova Scotia Car Works; 343 box cars and 200 steel underframe flat cars, from the National Steel Car Co.

The Grand Trunk Ry., has ordered the following rolling stock, deliveries of which are to be made before June 15:—two pay cars, nos. 4106 and 4107, from the G.T.R. Montreal shops; 10 second class cars, nos. 1021 to 1030, 5 colonist cars, nos. 3038 to 3042, from the Canadian Car and Foundry Co.; 15 sleeping cars, 6 parlor cafe cars, nos. 3905 to 3910, 6 dining cars, nos. 4006 to 4011, 5 tourist cars, nos. 3410 to 3414, and 10 first class cars, nos. 2054 to 2063, from the Pullman Co.; 15 baggage cars, nos. 418 to 432, and 14 mail and express cars, nos. 110 to 123, from the Osgood Bradley Car Co.

The C.P.R., between Nov. 14 and Dec. 13, received the following additions to rolling stock:—99 flat cars, 10 first class cars, 1 business car, 15 snow flangers, 1 double track flanger, 5 wedge snow plows, 2 double track snow plows, 7 single track snow plows and 3 D.4 locomotives from its Angus shops, Montreal; 618 box cars from the Canadian Car and Foundry Co.; 16 N.3 locomotives and 6 D.10 locomotives from the Montreal Locomotive Works; 618 box cars from the Standard Steel Car Co.; 173 box cars from the Western Car and Foundry Co.; 244 box cars from the Barney and Smith Car Co.; and 52 box cars from the American Car and Foundry Co.

The Canadian Car and Foundry Co., between Nov. 14 and Dec. 23, received the following orders for rolling stock:—800 steel underframe flat cars, 40 tons capacity, 200 steel underframe stone cars, 40 tons capacity, and 500 ballast cars, 50 tons capacity, from the C.P.R.; 650 box cars, 30 tons capacity, and 2 snow plows, from the Canadian Northern Ry.; 5 colonist sleeping cars, from the G.T. Pacific Ry., and 10 steel underframe flat cars, 40 tons capacity, from the Toronto, Hamilton and Buffalo Ry.; and delivered 25 steel snow plows and 613 steel frame box cars, 40 tons capacity, to the C.P.R.; 5 first class cars and 1 wooden box car, 30 tons capacity, to the Canadian Northern Ry.; 389 steel underframe box cars, 30 tons capacity, and 69 refrigerator cars, 30 tons capacity, to the G.T.R.; 29 Hart convertible coal cars, 50 tons capacity, to the Intercolonial Ry.; 7 steel frame car bodies, to the Montreal Tramways Co., and 2 wood hopper cars, 15 tons capacity, to the Dominion Coal Co.

Toronto Terminals Railway Company.

This is the title of the company which is to build the new union station on the Toronto waterfront. The company was incorporated in 1906, the G.T.R. and the C.P.R. being given the right to hold half the stock each. Application is now being made to the Dominion Parliament to increase the capital stock from \$3,000,000 to \$10,000,000, and naming E. J. Chamberlin, H. G. Kelley and W. Wainwright as provisional directors in place of C. M. Hays, E. H. Fitzhugh and F. H. McGuigan.

The interpretation of this application is that the two companies have completed the arrangements by which they shall be equal partners in the new station. Under the agreement governing the present station, the G.T.R. has the controlling influence. It is said, however, that this agreement does not settle the viaduct question, upon which an appeal has been made to have the Board of Railway Commissioners' order for the building of a viaduct set aside in favor of the C.P.R. plan for bridges over the tracks at the various street crossings. To this plan the Toronto city council is strongly opposed.

Canadian Railway AND Marine World

ESTABLISHED 1898.

Devoted to Steam and Electric Railway, Marine, Express, Telegraph, and Railway and Canal Contractors' Interests.
Official Organ of the various Canadian Transportation Associations.

ACTON BURROWS LIMITED - Proprietors.
70 Bond Street, Toronto, Canada.

ACTON BURROWS - Managing Director and Editor-in-Chief.
AUBREY ACTON BURROWS - Secretary and Business Manager.

Associate Editor - JOHN KEIR
Associate Editor - DONALD F. KEIR
Mechanical Editor - FREDERICK H. MOODY, B.A.Sc.

United States Representative - A. FENTON WALKER
143 Liberty Street, New York City.
Representative for Great Britain - J. MEREDITH MCKIM
17 Cockspur Street, London, S.W.
Canadian Advertising Representative - W. H. HEWITT

SUBSCRIPTION PRICES, INCLUDING POSTAGE:

TORONTO AND WEST TORONTO POSTAL DELIVERY, \$1.25 a year.
To other places in CANADA, and to NEW-FOUNDLAND AND GREAT BRITAIN, \$1 a year.
To the UNITED STATES and other countries in the Postal Union, except those mentioned above, \$1.50 a year, or six shillings sterling.
SINGLE COPIES, 15 cents each, including postage.

The best and safest way to remit is by express money order. Where one cannot be obtained, a post office money order or bank draft, payable at par in Toronto, may be sent. Cheques or drafts not payable at par in Toronto cannot be accepted. Remittances should be made payable to CANADIAN RAILWAY AND MARINE WORLD.

NOTICE TO ADVERTISERS.

ADVERTISING RATES furnished on application.
ADVERTISING COPY must reach the publishers by the 10th of the month preceding the date of publication, if proof is required, or by the 15th if proof is not required.

TORONTO, CANADA, JANUARY, 1913.

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Steam Railway Track Laid in 1912.

The following table gives a preliminary statement of the new track laid on the steam railways of Canada during 1912. In a number of cases the figures given have been estimated partly by the railway companies and partly in our office, pending the receipt of the final figures for the year. It will be noted that the mileage laid is considerably in excess of that laid in 1911. Following are the details:—

Algoma Central and Hudson Bay Ry.—		
Mileage 97 to 117	20.00	
Mileage 194.5 to 244.5	50.00	70.00
Algoma Eastern Ry.—		
Mileage 22.7 to 43.00	20.30	
Mileage 49.75 to 84.00	34.25	54.55
British Columbia Electric Ry.—		
Port Moody to Quictlam (steam line) ..	8.70	
British Yukon Ry.—		
Mileage 106 to Pueblo mines	13.00	
Canadian Northern Ontario Ry.—		
On Toronto-Ottawa line	45.00	
Between Ottawa and Capreol	35.00	
Between Ruel and Port Arthur	115.00	195.00
Canadian Northern Ry.—		
*Manitoba, Saskatchewan and Alberta	303.63	
Canadian Pacific Ry.—		
Ontario—		
From Flamboro to T. H. & B.		
Jct.	10.42	
Manitoba—		
Lauder Boissevain branch	1.80	
Tilston Westerly in Manitoba ..	3.20	
	5.00	
Saskatchewan—		
Tilston West in Saskatchewan ..	22.30	
*Weyburn westerly	36.80	
Moosejaw southwest	7.80	
*Swift Current south east	16.70	
*Swift Current south west	23.80	
*Estevan north west	20.00	
Wilkie-Anglia branch	35.40	
	162.80	
Alberta—		
Lacombe east	32.80	
Bassano Irricana	36.50	
*Suffield south west	26.80	
	96.10	
British Columbia—		
*Golden south	41.00	
*Colvalli north	14.50	
Caithness south	11.00	
Laggan-Lake Louise	4.00	
Three Forks-Whitewater	5.37	
Port Moody spur	3.60	
	79.47	353.79
Dominion Atlantic Ry.—		
Main Line to Canning wharf,		
N.S.	0.69	
Centreville to Belltown, N.B.	0.31	
	1.00	
Edmonton, Dunvegan and B.C. Ry.—		
*Edmonton, Alta., northerly	8.00	
Esquimalt and Nanaimo Ry.—		
Hayward Jct. to Cowichan Lake,		
B. C.	18.20	
Osborne Bay Jct. to Osborne		
Bay, B.C.	2.60	
	20.80	
Fredericton and Grand Lake Coal		
and Ry. Co.—		
Gibson, N.B., to mileage 11	11.00	
Near Minto to Ripples	7.00	
	18.00	
Grand Trunk Pacific Ry.—		
Main Line between Yellowhead		
Pass and Prince Rupert, B.C.	128.00	
Regina towards Int. Boundary	136.00	
Regina to Moose Jaw, Sask.	40.00	
Talmage to Weyburn, Sask.	0.25	
Oban to Battleford, Sask.	48.50	
Biggar towards Calgary	104.00	
Tofield towards Calgary, Alta.	92.00	
Bickerdike to Brazeau, Alta.	56.00	
	604.75	
Intercolonial Ry.—		
Division of line between Nelson		
and Chatham, N.B.	8.30	
Division of line between		
Georges River and Sydney		
Mines, N.S.	9.00	
	17.30	
Kettle Valley Ry.—		
*On several sections	30.00	
Prince Edward Island Ry.—		
Harmony Jct. to Elmira	9.90	
Timiskaming and Northern		
Ontario Ry.—		
Earlton to Montreal River, Ont.	22.70	
Vancouver, Victoria and Eastern Ry.—		
Abbottsford to Kilgard, B.C.	4.52	
Kilgard to Sumas Landing	3.00	
	7.52	

National Transcontinental Ry.	
At various points between:	
Mileage 109 and 153 E. of	
Quebec Bridge	33.00
Mileage 1 and 8.6 E. of Que-	
bec Bridge	7.50
Mileage 288 and 419 W. of Que-	
bec Bridge	84.75
Mileage 168 west of Cochrane and	
102 east of Lake Superior	
Jct., Ont.	235.90
	361.15
Total	2,099.79
*Estimated.	

Locomotives as Fire Engines.

The Pennsylvania Rd. has for the last ten years met with considerable success in the use of locomotives as fire engines in extinguishing conflagrations, not only on its own property, but also on private property located adjacent to the railway line. There are 612 locomotives in yard and switching service, equipped to handle fires, and under the charge of an organized fire department at each of the main terminal points.

The original arrangement made use of a connection in the feed pipe from the injector to the boiler, but this has been changed to the use of a special ejector, discharging water directly from the tender by means of the boiler pressure. The standard equipment consists of 150 ft. of 2½ in. unlined linen hose, and a 15 in. discharge nozzle with a 5/8 in. opening, all kept in a box under the running board. A stream of water can be thrown 70 ft.

The yards are divided into districts, with a certain assignment to each, the locomotives responding, on the fire signal for that district sounding on an air whistle in the signal tower, the traffic in the yard being ordered to give way to the locomotives as they proceed to the fire. These fire brigades come under the charge of the assistant yardmaster, acting as chief, and the conductor of the shifting crews as captain, each member of the crew having some particular duty assigned to him.

Railway Lands Patented.—Letters patent were issued during October, relative to Dominion lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows:—

	Acre.
Calgary and Edmonton Ry.	320.00
Canadian Northern Ry.	28,797.00
Canadian Pacific Ry.	56.47
Canadian Pacific Ry., roadbed and	
station grounds	18.22
Qu' Appelle, Long Lake and Sas-	
katchewan Rd. and Steamboat Co.	970.34
Total	30,162.03

J. H. Dodd has been appointed manager, Great North Western Telegraph Co. at Collingwood, Ont., vice F. Pope, resigned.

The Great North Western Telegraph Co. has opened offices at Milneke and St. Ulric, Que., and has closed its offices at Brookfield, Beaumaris, Dwight, Port Cockburn and Westmeath, Ont.

In connection with the winding up of the Charing Cross Bank, London, Eng., which was financing the Atlantic Quebec and Western Ry. and industrial enterprises in the Gaspé peninsula of Quebec, the trustees recently sold the Gaspé Lumber and Trading Co.'s properties to the St. Maurice Lumber Co. for \$250,000.

The Board of Railway Commissioners has approved the Marconi Wireless Telegraph Co.'s tariffs of tolls, for domestic, and land and water messages. These range from 2½¢. to 10¢. a word, with minimum in each case, of 10 words, and from 1¢. to 6¢. for each additional word. A press rate of 6¢. a word is in force on the St. Lawrence gulf, including Halifax and St. John.

Proposals for Shorter Routes From Great Britain to Canada.

Proposals for the development of a short and more expeditious route between Great Britain and Canada, and on to the centres of population in the middle and western states south of the International boundary, have been made at frequent intervals during the last half century. Of recent years they have been revived, and at present the consideration of three of them is being pushed with considerable vigor. One aims at the development of a new deep water harbor on the Quebec-Labrador coast, and a railway (the Quebec and Saguenay) is already under construction heading in the direction of such a harbor. A second is for the development of steamship lines running between British ports and the terminal of the railway now under construction by the Dominion Government from Pas, Man., to Hudson Bay, and the third is the revival of the old project to make Galway, on the west coast of Ireland, the British port. This project was discussed in Dublin during October, and a committee was appointed to further the project. R. Worthing, an Irish railway contractor, had an interview with the Premier at Ottawa, Nov. 5, in which the project was outlined. While the old project proposed to build a tunnel from Scotland to Ireland, the present one proposes to employ car ferries to transport trains across. After leaving Ottawa Mr. Worthington went to Detroit, Port Huron and other points to investigate the operation of the larger car ferries used on the lakes. It is claimed that the trans-Atlantic trip can be made from Galway to the Canadian mainland in three and a half days.

But it is also claimed that faster time can be made if Green Bay in Newfoundland is utilized as the port on this side of the ocean. The Legislative Council of Newfoundland a few years ago granted a charter to H. C. Thomas, of London, Eng., and his associates for the building of a railway from Green Bay to Bay of Islands, Nfld., and for the operation of a car ferry to Canada, as a part of an all red line of transportation round the world. Green Bay is claimed to be in the fog free zone, and Mr. Thomas' plan is to transfer passengers and express freight from the steamships to the trains which would be run across the narrow neck of the island to Bay of Islands and ferried on large car ferries, similar to those in use on Lake Michigan and on Lake Baikal on the Siberian Ry., to Gaspé, and thence all over Canada and the United States. It is contended that the Gulf of St. Lawrence is no rougher than the lakes named, so that car ferries would operate there quite as well, and that by landing at Gaspé, a day would be saved as compared with Quebec.

In a recent letter J. G. Scott, formerly General Manager Quebec and Lake St. John Ry., states that the railway from Green Bay to Bay of Islands would be 90 miles long, and that many years ago Sir Sandford Fleming advocated the route referred to, but that it was then impossible owing to the fact that car ferries were unknown. After reviewing the various features of the section of the project Mr. Scott pronounces it "practicable and practical."

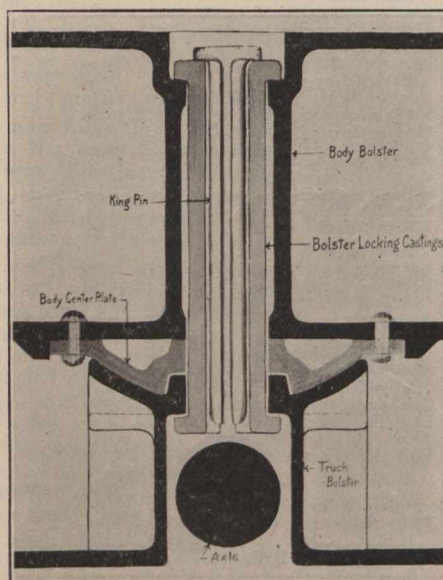
A London cablegram of Nov. 15 stated that the promoters of the Black Sod bay-Canada steamship line, etc., have entered into a contract with Terry and Co. for the construction of a railway and harbor at Black Sod bay, near Gálway, on the west coast of Ireland, and that the work is expected to be completed in two years.

Anti-Telescoping Device on Grand Trunk Railway.

A device which it is expected will greatly reduce the danger of passenger cars telescoping when in a wreck, has been devised and installed on several G.T.R. cars by J. Coleman, Superintendent Car Department.

The reason leading to the invention of the device was a realization of the fact that telescoping would be nearly impossible in cars of modern design if the trucks were in some way prevented from leaving the car bodies, as it is due to the latter leaving the braking influence of the trucks that they slide forward through each other. To make the body and trucks a virtual unit was the aim. That this is generally recognized is evidenced in the circular issued by the Board of Railway Commissioners, published in Canadian Railway and Marine World for December, in which the railway companies were asked to consider the matter so that it might be discussed before an early sitting of the Board.

Hitherto, the only force available to prevent the body from moving off the trucks is the brakes which are applied to the trucks; there never was any means provided to prevent the body from moving off



the trucks, only the ordinary 2 in. king pin, which is not sufficient. The distance that the body will move from the trucks is determined by the force or rate of speed which the train may be travelling. The ordinary first class passenger body weighs from 80,000 to 90,000 lbs.; the average sleeping car body from 100,000 to 120,000 lbs. The constant increase in dead weight has made more essential the need of something to prevent cars from moving off the trucks and telescoping. The heavy shock or impact is taken up on the underframe entirely. The steel underframe of modern cars to-day is quite sufficiently strong to stand the heavy impact; with the high tension buffing device, the use of which is now common practice, a very heavy shock will be taken up in the buffing device and cars will be prevented from riding the platforms of each other and telescoping if the bodies are locked to the trucks, for the reason that the momentum of the body running at any rate of speed is spent in the impact which takes place on the underframe. By locking the body to the trucks the force of the brakes, which are applied simultaneously with the impact, stops the body of the car when the trucks stop. By this means, each car body and truck is an independent unit, and all the car bodies will stop simultaneously when the trucks stop.

There are no means of applying any artificial power on the body of the car to stop it from telescoping except the brakes, and the only means of applying the brakes for this purpose is to tie the body to the trucks.

The simple device shown herewith consists of a couple of steel keys passing through the centre of the body and truck bolsters, with flanges top and bottom, and an increased area of the central hole in the centre plate, with the two keys spread apart in this hole by the insertion of a pin corresponding to the ordinary king pin. This locks the trucks to the car body, adding the additional weight of the trucks to the car body in the event of the latter lifting in a collision, the heavy force on the ends of the car platform having the effect of lifting the body from the trucks. This device will not interfere in any way with the present free and flexible movement of the trucks, as provision has been made for sufficient clearance without interference, and the device can be applied on any ordinary passenger car with but little increase in weight. It is being applied on a large order of new passenger cars for the Grand Trunk Pacific and Grand Trunk Railways, and will be standard on all passenger equipment for both lines.

Railway Building in Alberta in 1912.

From a statement issued by the Alberta Government respecting the building of railways in the province, it appears that 698 miles were built in the 10 months ended Oct. 31, 1912, of which the Canadian Northern Ry. built 463 miles and the Grand Trunk Pacific Ry., 235. In addition, the Canadian Northern Ry. has 448 miles of grading ready for tracklaying; the Grand Trunk Pacific Ry. 34 miles, and the Edmonton, Dunvegan and British Columbia Ry. 70 miles, on which eight miles of track have been laid.

At the end of 1905 there were 1,060 miles of railways in the province, of which 946 were owned by the C.P.R., and 114 by the Alberta Ry. and Irrigation Co. These two companies are now one. In 1906 the Canadian Northern Ry. built 178 miles of line in the province, and in 1908 the G.T. Pacific Ry. had built 40 miles, the total mileage at the end of that year being 1,366. At the end of 1911, the railway mileage in the province was 2,100, and with the present increase there were 2,798 miles of completed railways in the province. Of this mileage 1,387 is owned by the C.P.R.; 792 by the Canadian Northern Ry., and 619 by the G.T. Pacific Ry. In preparing this statement the provincial government appears to have omitted the C.P.R. and Alberta Central Ry. from its calculations. This line was put under construction as a separate line, but has recently passed under C.P.R. control.

Protection of Railway Employees.—The Board of Railway Commissioners has called the attention of railway companies to the following provision of order 12225, Nov. 9, 1910, which provides that semaphores, signals, poles, or high or intermediate switchstands shall, by Nov. 10, 1912, be either removed or changed so that the same shall not be nearer than 6 ft. from the gauge side of the nearest rail; and that high and intermediate switchstands shall be changed to low or dwarf switchstands. The companies are asked to report what action has been taken towards carrying out the order.

A practice of leaving a portion of station water tanks beneath the spout as a reservoir in which sediment in the water supply may settle and get drawn out without passing into the locomotive tank is finding its way into favor.

National Transcontinental Railway Construction.

The Minister of Railways stated in the House of Commons Dec. 4 that the total expenditure by the Government on construction to that date was \$125,053,267.53, of which \$15,545,118.29 had been paid to the G.T. Pacific Ry. in respect of the construction contracts which that company held.

We are officially advised that during the construction season of 1912, there were laid 361.15 miles of track distributed as follows: Mileage 109 to 153 east of Quebec Bridge, 34 miles; mileage 1 to 75 west of Quebec Bridge, 7.50 miles; mileage 288 and 419 west of Quebec Bridge at different points a total of 84.75 miles; mileage 168 west of Cochrane and mileage 102 east of Lake Superior Jct., Ont., at different points a total of 235.90 miles.

A train service was put in operation on the section of the line from Moncton to the New Brunswick-Quebec boundary, Nov. 20, the timetable providing for west-bound service to Edmundston, N.B., on Mondays, Wednesdays, and Fridays, and an east-bound service to Moncton, Tuesdays, Thursdays and Saturdays. The passenger cars used have been hired from the Intercolonial Ry., and the locomotives and freight cars from the contractors, and the Intercolonial Ry. The operation of the line is under the charge of W. B. Cronk, General Superintendent, for the Commissioners at Ottawa, with E. P. Cronk as Superintendent at Edmundston.

The Minister of Railways stated in the House of Commons, Dec. 4, it was expected that the section of the line from the New Brunswick-Quebec boundary to Quebec city would be completed and ready for operation in Sept., 1913. It is reported that there are only about 12 miles of track remaining to be laid on this section of the line, and that the principal work to be done is the bridging, ballasting and levelling.

The whole question of the site of the terminals at Quebec, the Minister of Railways stated in the House of Commons, Dec. 4, is still under the consideration of the Commission. The matters being considered include the question of the construction of a tunnel under Cape Diamond, with the object of locating the terminals elsewhere than on the Champlain market site.

West of Quebec to 150 miles east of Cochrane, Ont., there remains only about 50 miles of steel to be laid. Track now extends from the last point named to a considerable distance west of Cochrane, and the Minister of Railways stated in the House of Commons, Dec. 2, that he expected to receive a report by Dec. 31, that all the steel had been laid to Graham or Lake Superior Jct. At the last report there were only 48 miles unrailed. R. W. Leonard, the Commissioner, is quoted as recently stating that the Cochrane-Lake Superior Jct. section of the line would not be in a condition for the operation of trains until September. The section of the line from Lake Superior Jct. to Transcona, four miles east of Winnipeg, is completed, and a train service is being given by the G.T. Pacific Ry. under an agreement. Negotiations for a lease of this section are in progress. The Commission will give the G.T.P. Ry. the opportunity of leasing the various sections of the line as they are taken over from the contractors, but the company is not compelled," added Mr. Leonard, "to declare its policy until the entire line between Moncton and Winnipeg is completed." (Nov., 1912, pp. 562.)

Tenders will be received by the Commissioners, to Feb. 13, for the furnishing and delivery of machines, tools, appliances,

motors, furnaces, cranes, etc., required for the equipment of the car department of the shops at Transcona, Man. Specifications and other information may be obtained from W. J. Press, Mechanical Engineer, Ottawa.

Grand Trunk Pacific Railway Construction.

The Dominion Parliament is being asked to authorize the company to make a further issue of perpetual or terminable debenture stock to an amount not exceeding \$25,000,000, the same to rank with the debenture stock authorized to be issued by chap. 100 of the statutes of 1906. The proceeds of this issue are to be applied to the completion of the railway and for providing equipment.

The Minister of Finance is seeking power from the Dominion Parliament for the purpose of devoting part of the Dominion surplus for the financial year to the purchase of G.T.P. Ry. bonds, in order to offset any further calls on the Treasury by reason of the operation of the "implementing" clause in the guarantee given by the Government. About £6,500,000 of these bonds are as yet unissued.

Application is being made to the Dominion Parliament to confirm an agreement dated April 10, 1911, made with the Canadian Northern Ry., providing among other things for the joint use of a piece of line near Winnipeg, defining the rights of each company under the agreement, and declaring that the acquiring of these rights is a compliance with the schedule to chap. 71 of the statutes of 1903. It is also desired to secure confirmation of another agreement with the Canadian Northern Ry. made April 24, 1912, providing among other things for the joint use of a piece of line near Edmonton, Alta.

We are officially advised that during 1912 the following track was laid on the main line and branches:—Main line between Yellowhead and Prince Rupert, part westerly and part easterly, 128 miles; branch lines—Regina towards International boundary, 136 miles; Regina to Moose Jaw, 40 miles; Talmage towards Weyburn, 0.25 mile; Biggar towards Calgary, 104 miles; Oban to Battleford, 48.50 miles; Toffield towards Calgary, 92 miles; Bickerdike to Brazeau, 56 miles; a total of 609.75 miles.

The Minister of Railways stated in the House of Commons, Dec. 4, that the assistance granted by the Government to the company in respect of the building of the line from Winnipeg, Man., to Prince Rupert, B.C., was as follows:—Implementing guarantee, \$4,994,416.66; loan under chap. 19, statutes of 1909, \$10,000,000; guarantee of 5% bonds, \$35,040,000; bonds pledged, \$12,745,800.

The Board of Railway Commissioners has authorized the opening for traffic of the line from Fitzhugh, Alta., to Tete Jaune Cache, B.C., mileage 1027.8 to 1095.3.

J. W. Stewart, of the contracting firm of Foley, Welch and Stewart, on the occasion of his recent return to Vancouver from an inspection of construction in progress from Tete Jaune Cache, to the end of steel near Hazleton, easterly from Prince Rupert, is quoted as stating that good progress is being made. While there has been a considerable decrease in the number of foreign laborers employed on account of the war in eastern Europe, their places have been taken by men from the prairies. The only stretch of the right of way on which construction is not being gone on with is between Fort George and Fraser lake. Sub-contracts on this stretch of 140 miles were reported to have been let, Dec. 4, as follows:—Carleton Griffin; Burns and Jordan; John Bostock; Stewart Bros.; D. Ross; M.

Shedy; M. McHugh; N. McLeod; H. McLeod; Freiburg and Stone.

Contracts have been placed for the cutting and delivery along the line west of Tete Jaune Cache, B.C., during the current year of 500,000 ties.

The Board of Railway Commissioners has authorized the operation of trains over portions of the line between mileage 164 and 176.8 easterly from Prince Rupert.

GRAND TRUNK PACIFIC BRANCH LINES.

Extensive improvements and additions are being made to the terminal facilities at Fort William, Ont., where the company's Lake Superior branch reaches the Great Lakes from the National Transcontinental Ry. at Lake Superior Jct. The north shore of the Mission basin at the mouth of the McKellar river is being cribbed with concrete for about a mile. On the shore, the new 1,000 ft. freight shed is about completed; and the finishing touches are being given to the second unit of the company's grain elevator. This addition will hold 2,500,000 bush., bringing the capacity of the elevator up to 6,000,000 bush.

Regina, Sask., is the centre from which a good deal of construction is being carried on. It is reached from the main line by a branch from Melville, and arrangements have been completed for the laying out of extensive terminals.

The Saskatchewan Legislature is considering the confirmation of a bylaw sanctioning an agreement made between the city of Regina and the G.T. Pacific Branch Lines Co., under which the company will be granted certain lands for right of way and terminal purposes in consideration of establishing divisional terminals there; and the confirmation of a second bylaw granting certain lands upon which the company agrees to erect an hotel at a cost of \$750,000, and \$250,000 for furnishing and equipment. The clearing of the hotel site has been completed, and the foundation work is in progress. The company's General Passenger Agent recently announced that this hotel would be named The Qu'Appelle.

The line out of Regina upon which the greatest progress has been made is that running to the International boundary east of North Portal. It was expected it would be completed by the end of 1912. In connection with the building of this line M. Donaldson, Vice President and General Manager, is quoted as stating that if the necessary information is submitted to the company it is prepared to give a favorable consideration to a proposal to give connection with Estevan. On the other branch out of Regina, which runs to Moose Jaw, a limited train service has been put on for 34.7 miles. The ballasting will be done in the spring. Track was laid Nov. 24 into Moose Jaw, where construction work ends for the season. An agreement has been reached with the Moose Jaw city council as to the route through the city and in a northwesterly direction. The location plans for this branch have been approved for a considerable mileage, the most recent mileage being to 45 miles from Central Butte, across the South Saskatchewan river, and from mileage 67.86 to 79.02 from Moose Jaw.

The Board of Railway Commissioners has authorized the opening for traffic of the Biggar-Calgary branch from Biggar to no. 1 siding, 7.1 miles.

The Board of Railway Commissioners has authorized the opening for traffic of the Oban-Battleford, Sask., branch, mileage 0 to 48.5. This takes the line into Battleford. Press reports state that engineers are laying out a 40 mile line to connect Battleford with its Cutknife branch.

The Board of Railway Commissioners has authorized the opening for traffic of the

Tofield-Calgary branch from Trochu, mileage 121.4, to Beiseker, Alta., mileage 162.6.

The Board of Railway Commissioners has authorized the opening for traffic of the Alberta coal branch from Bickerdike, Alta., 36.6 miles. Press reports state that steel has been laid on this branch to mileage 57, the point to which the contract with the Provincial Government called for completion by the end of 1912. (Nov., 1912, pg. 562.)

Dominion Government Railway to Hudson Bay.

The Minister of Railways stated in the House of Commons, Dec. 4, that the Government has decided on making Port Nelson the terminus of the line on Hudson Bay. The length of the line under contract from Pas, Man., to Port Nelson, is 418.5 miles, the contractor for the entire distance being J. D. McArthur. Fifty miles of grading have been completed, and 70 miles of clearing done, but no steel has been laid.

The first rails, 2,200 tons in all, for the line are in course of delivery.

The Geographic Board of Canada has decided that the names Le Pas Mission, Le Pas, or Pas Mission are to be no longer used as the name of the starting point of this line, but that the place is in future to be known as Pas.

The contract for the entire line from Pas to Port Nelson, Man., 420 miles, is being carried out by J. D. McArthur, who has associated N. K. Boyd, Winnipeg, with him in carrying out the contract. On the section of 185 miles to Thicket Portage, which was first put under contract, we are officially advised that grading has been completed to Limestone lake, 62 miles. A sleigh road has been cut to mileage 125, and was expected to have it completed to Thicket Portage in December, 1912. The clearing of the route is well under way, and it is expected to have it completed to the Nelson river at Manitou by the spring. With all the men that can be employed on the rock work during the winter, work will be actively pushed on the grading from Limestone lake to Manitou next summer. The bridge over the Saskatchewan river at Pas is well advanced to completion, the steel work being in course of erection. As soon as this is finished track laying will be started. The work of getting in supplies to the camps on the line is a difficult one. Everything is taken from Winnipeg by steamboats as far as Whisky Jack Portage on Cross lake, and by a 40 mile portage is carried to mileage 150. At Whisky Jack Portage about 1,000 tons of supplies have been collected for transport to the camps on the line during the winter. Some miles further northeasterly lies Sipiwesk lake, whence the Nelson river is navigable to Manitou rapids near mileage 225, a distance of 110 miles. Other supplies are being taken on by rail to Pas. The contracts call for the completion of the whole line by Dec. 1, 1914. (Oct., 1912, pg. 505.)

Deposit of Plans for Railways.—The Dominion Parliament is being asked to pass an act providing that every railway company shall deposit with the Board of Railway Commissioners plans, profile and book of reference for all new lines to be built, for sanction, and at the same time shall deposit similar plans, profiles and books of reference in the registry of the districts through which the new line passes, giving notice of the same in the Canada Gazette and one paper in each registry district, and when such districts are in Quebec or Manitoba, the advertisements are to be in both English and French.

London and Port Stanley Railway.

The affairs of the London and Port Stanley Ry. have been under discussion to a very considerable extent during the past couple of months. The first matter was the proposed electrification at a cost of about \$850,000. After giving consideration to this project, the London city council, owning the line, decided not to submit a bylaw at the municipal elections asking for the raising of the necessary funds to carry out this project. The electrification proposals involve among other things the utilization for terminal purposes of the Michigan Central Rd. station in London, which is practically also the L. and P. S. Ry. terminal. It is owned by the London and South Eastern Ry., a company which never built any railway, but only secured the land on which the station is built. The M.C.R. secured a lease of this land, and obtained an entry to it from the L. and P.S. Ry. The M.C.R. now proposes to buy out the rights of the L. and S.E. Ry. in the land, at \$75,000, under one of the clauses in its lease.

The principal point of the discussion, however, has centred round the leasing of the L. and P.S. Ry. The line is at present operated by the Lake Erie and Detroit River Rd., the Canadian line of the Pere Marquette Rd., which lease is about to expire. Canadian Northern Ry. interests, in working out plans for the development of lines in that part of Ontario, have made certain propositions, and these are under consideration.

Great Northern Railway Lines in Canada

The report of the President of the Great Northern Ry. for the year ended June 30 contains references to the work on the company's lines in Canada, and to the lines in the U. S. connecting therewith. The President refers particularly to the fact that since the close of the year construction of a line from Niobe, N.D., to a connection at the International boundary line with the G.T. Pacific Ry. branch from Regina, Sask., has been begun. The line will be 22 miles long, and will be pushed to completion as rapidly as possible. No other construction giving connection with lines in Canada is in progress.

Midland Ry. of Manitoba.—The G.N.R. President's annual report states that during the financial year to June 30, 1912, the work of betterment on this line, which is jointly owned by the G.N. Ry. and the Northern Pacific Ry., includes the following:—The completion of 6.05 miles of main track connecting with other railways, 6.02 miles of sidings and other tracks, the building of a brick freight house, 50 by 600 ft., a 4 stall frame locomotive house with 80 ft. steel turntable and other buildings at Winnipeg. As of May 1, 1912, the company acquired trackage rights on the Canadian Northern Ry. between the International boundary and its own tracks near Winnipeg, and on lines of the C.N. Ry. and G.T. Pacific Ry. to the Fort Garry union passenger station, Winnipeg. Since that date the G.N. Ry. has been running its own through trains into Winnipeg.

Vancouver, Victoria and Eastern Ry. and Navigation Co.—The G.N.R. President's annual report refers to the work in progress on this line as follows:—Work was continued on the several lines of the V., V. and E. Ry. The section from Princeton to Coalmont, B.C., 12.16 miles, was opened for regular operation May 1. Grading west of Coalmont to Coquihalla summit is in progress. On line west of the mountains, the section between Abbotsford and Kilgard, five miles, was opened for operation

Aug. 15. Construction is in progress between Kilgard and Sumas Landing, about eight miles. From Sumas Landing easterly to Hope the Canadian Northern Pacific Ry.'s line will be used.

Vancouver Terminals, Etc.—The G.N.R. President's annual report states that the work of filling the bed of False creek, Vancouver for terminal purposes is being progressed with. The gradient of the line entering Vancouver is being lowered, and a second track is being built from Sapperton into the city, seven miles. There is under construction at Burrard inlet, Vancouver, a reinforced concrete dock, 300 by 450 ft., on which will be built two frame warehouses, each 100 by 400 ft.

The location plan for the second track work, mentioned above, has been approved by the Board of Railway Commissioners, and plans showing the additional land required for slopes and bridges over the Sumas river, in connection with the grade revision, have also been approved by the Board. (Nov., pg. 559.)

Grand Trunk Railway Betterments, Construction, Etc.

Richelieu River Bridge.—The new bridge over the Richelieu river, described on pg. 20 of our issue of Jan., 1912, which has been built at a cost of \$200,000, has been completed and opened for traffic. The bridge connects Coteau, Que., with St. Albans, Vt.

Prescott Terminals.—Application is being made to the Ontario Legislature by the town council of Prescott, Ont., for the confirmation of a bylaw to carry out an agreement with the G.T.R. relative to the construction of divisional terminals there, and to raise \$35,000 for the building of a subway in connection with the work.

Union Station for Kingston, Ont.—A plan has been prepared by the city engineer to bring the G.T.R. further into the city, and to provide for the erection of a union station. The city council and the board of trade are considering the plans, with a view of pressing it upon the company's consideration.

Hamilton Improvements.—G.T.R. officials in Hamilton, Ont., are quoted as stating that the plans for the enlargement of the Stuart street terminals, and other work on the company's property in the city, have been prepared and will be submitted to the city council at an early date.

Port Colborne Improvements.—The Ontario Legislature is being asked to confirm an agreement dated Mar. 2, 1912, between the company and the municipality with reference to the provision of improved terminal facilities at Port Colborne. (Nov., 1912, pg. 559.)

In connection with a Children's Welfare Exhibition in London, Eng., a Canadian exhibit, covering 800 square yards, showing the handling of western grain from a model western town, by rail, to the head of the lakes, all in miniature, is provided. The railway consists of about 200 ft. of double track, a correct reproduction of a complete freight train, and models of the shipping facilities at Port Arthur and Fort William.

A wireless telegraph system of trans-oceanic scope is being planned, according to press dispatches, to connect Paris with various French colonies and with North and South America. The project as laid before the French Chamber of Deputies contemplates the expenditure of \$4,000,000. Only stations in the South American-Pacific girdle have been named, including Morocco, Senegal, Martinique, Marquesas Island, Tahiti, Noumea (New Caledonia), Saigon and Indo-China.

Transportation Appointments Throughout Canada.

The information under this head, which is almost entirely gathered from official sources, is compiled with the greatest care, so as to ensure absolute accuracy. Anyone who may notice any error in our announcements will confer a favor by advising us.

Canadian Pacific Ry.—A. D. MACTIER, heretofore Assistant to the Vice President (D. McNicoll) Montreal, has been appointed General Manager of Eastern Lines, in charge of maintenance and operation. Office, Montreal. The position of General Manager of Eastern Lines has been vacant since Jan., 1911, when J. W. Leonard, who held the position up to that date, was appointed one of the Assistants to the Vice President (D. McNicoll.)

T. COLLINS, heretofore Superintendent, district 2, Lake Superior division, Chapleau, Ont., has been appointed Superintendent, district 1, Ontario division, vice C. W. Burpee, at present on leave of absence. Office, Toronto.

W. C. GUTHRIE, heretofore Roadmaster, North Bay subdivision, Lake Superior division, North Bay, Ont., has been appointed Superintendent, district 2, Lake Superior division, vice T. Collins, transferred. Office, Chapleau, Ont.

M. CHRISTISON has been appointed Shop Foreman at Kenora, Ont., vice D. B. Cossar, transferred.

GRANT HALL, heretofore Assistant General Manager, Western Lines, has been appointed General Manager, Western Lines. Office, Winnipeg. The position of Assistant General Manager will not be filled.

The territory of the Western Lines passenger department, Revelstoke and Midway, B.C., and east, has been rearranged as follows:—

Manitoba district, J. A. McDONALD, District Passenger Agent, Brandon, Man.; D. M. SINCLAIR, Travelling Passenger Agent, Brandon, Man. Territory, Manitoba division west of Winnipeg.

Saskatchewan district, J. E. PROCTOR, District Passenger Agent, Regina, Sask.; J. C. PIKE, Travelling Passenger Agent, Regina, Sask. Territory, Saskatchewan division.

Alberta district, R. G. McNEILLIE, District Passenger Agent, Calgary, Alta.; J. V. MURPHY, Travelling Passenger Agent, Calgary, Alta.; A. J. SHULMAN, Travelling Passenger Agent, Edmonton Alta. Territory, Alberta division, also, Field to Revelstoke and Arrowhead, B.C., division.

Kootenay district, E. MALONE, District Passenger Agent, Nelson, B.C. Territory, Kootenay Landing to Rossland, Midway, Arrowhead and intermediate points (not including Arrowhead.)

Winnipeg Territory, Ticket Agents report direct to General Passenger Agent. Territory, Emerson, Arburg, Gimli and Lac du Bonnet branches and main line Winnipeg to Port Arthur, inclusive.

D. M. SINCLAIR has been appointed Travelling Passenger Agent, Brandon, Man., vice P. J. Cullin.

J. A. McDONALD, heretofore District Passenger Agent, Nelson, B.C., has been appointed District Passenger Agent, Brandon, Man., vice J. E. Proctor, transferred.

J. LANSBERRY, heretofore store foreman, Moose Jaw, Sask., has been appointed Storekeeper, Weyburn, Sask.

J. C. PIKE has been appointed Travelling Passenger Agent, Regina, Sask.

J. E. PROCTOR, heretofore District Passenger Agent, Brandon, Man., has been appointed District Passenger Agent, Regina, Sask.

D. B. COSSAR, heretofore Shop Foreman at Kenora, Ont., has been appointed Shop Foreman at Moose Jaw, Sask.

A. J. SHULMAN has been appointed

Travelling Passenger Agent, Edmonton, Alta.

A. V. BEALE has been appointed Machine Shop Foreman at Calgary, Alta., vice E. H. Cooper, deceased.

J. M. McKAY, heretofore Trainmaster, Revelstoke, B.C., has been appointed Superintendent, district 1, British Columbia division, vice J. Kilpatrick, resigned. Office, Revelstoke.

JOHN HOPGOOD, heretofore conductor, has been appointed Trainmaster, district 1, British Columbia division, vice J. M. McKay, promoted. Office, Revelstoke.

M. E. MALONE, heretofore Travelling Passenger Agent, Spokane, Wash., has been appointed District Passenger Agent, Nelson, B.C., vice J. A. McDonald.

A. R. HOWARD, recently appointed Trainmaster at Agassiz, B.C., has resumed his former position as General Yardmaster at Vancouver, and the position of trainmaster has been abolished.

Fort Garry Union Station, Winnipeg.—J. A. GLASSFORD, Manager of Terminals,



Grant Hall,
General Manager, Western Lines, Canadian Pacific Railway.

Winnipeg Joint Terminals, Canadian Northern Ry., Grand Trunk Pacific Ry., and National Transcontinental Ry., has resigned.

Grand Trunk Pacific Ry.—F. J. MOFFATT has been appointed Road Foreman, with territory from Watrous to Wainwright, Alta., including branches, reporting to J. R. Mooney, Road Foreman, Wainwright, vice C. D. Smith, assigned to other duties.

The following agents have been appointed:—Westfort, Ont., J. P. Tonnolli; Edgerton, Alta., R. J. Hewett.

Grand Trunk Ry.—A. S. GOING, heretofore Locating Engineer, has been appointed Engineer of Construction. Office, Montreal.

C. E. JENNEY, heretofore Travelling Passenger Agent, Toronto, has been appointed Travelling Passenger Agent, Pittsburgh, Pa., vice W. Robinson, deceased. He will report to the General Passenger Agent, Montreal. Office, 507 Park building.

W. J. MOFFATT, heretofore chief clerk to City Ticket Agent, Toronto, has been appointed Travelling Passenger Agent, vice

C. E. Jenney, reporting to the District Passenger Agent, Toronto. Headquarters, Union station, Toronto.

C. CLARKE, heretofore Division Freight Agent, Detroit, Mich., has been appointed Assistant Commissioner of Industries for lines west of Detroit and St. Clair river. Office, 118 Woodward avenue, Detroit.

The following agents have been appointed:—Point St. Charles, Pass., Que., J. H. Lusignan; Novar, Ont., G. F. Myers; Inglewood Jet., Ont., E. M. Ellis; Alliston, Ont., G. McMann, acting; Glencairn and Avening, Ont., E. McDonald; Hamilton, King st., Pass., Ont., J. Dixon; Appin, Ont., G. Lamont; Caledonia, Ont., F. Anguish; Simcoe, Ont., I. Miller; Stoney Point, Ont., C. W. Ouellette; Carlsbad Springs, Ont., J. T. Boss; South Indian, Ont., F. A. Caillier; outside agencies,—Dunville, Ont., F. Blackwell; Harriston, Ont., R. J. Barton; Renfrew, Ont., C. Dewey; Wingham, Ont., H. B. Elliott.

Great Northern Ry.—R. I. FARRINGTON, Vice President, St. Paul, Minn., has resigned, effective Jan. 1. We are officially advised that the vacancy will not be filled.

Intercolonial Ry.—As previously announced, the position of Chief Engineer has been abolished and W. B. MACKENZIE, M. Can. Soc. C.E., who held that position, has been appointed Right of Way and Lease Agent.

The Engineer of Maintenance, T. C. BURPEE, M. Can. Soc. C.E., has been given charge, under the General Superintendent's direction, of all engineering and maintenance of ways matters.

The superintendents have been placed in charge of operation and maintenance. The resident engineers will report to the superintendents on general matters and to the Engineer of Maintenance on engineering matters. The roadmasters will report to the superintendents. The following are the districts and officials as rearranged:—

District 1, Montreal to Ste. Flavie, Que., District Superintendent, D. McDonald; Resident Engineer, R. H. Emmerson, offices, Levis, Que.; Assistant Superintendent, E. L. Desjardins, office, Riviere de Loup, Que.

District 2, Ste. Flavie, Que., to Moncton, N.B., District Superintendent, E. Price; Resident Engineer, F. O. Condon, offices, Campbellton, N.B.; Assistant Superintendent, L. S. Brown, office, Newcastle, N.B.

District 3, St. John, N.B., to Halifax, N. S., District Superintendent, J. T. Hallisey; Resident Engineer, H. Jardine, offices, Truro, N.S.; Assistant Superintendent, H. B. Fleming, office, Moncton, N.B.

District 4, Truro to Sydney, N.S., and the short line, District Superintendent, Y. C. Campbell; Resident Engineer, C. W. Archibald, offices, New Glasgow, N.S.;

C. W. PRICE, heretofore trick dispatcher, has been appointed Chief Dispatcher, vice H. B. Fleming, appointed Assistant Superintendent, Halifax and St. John district, as announced in our last issue. Office, Moncton, N.B.

Kingston and Pembroke Ry.—This line having been leased to the C.P.R., it will, from Jan. 1, be operated as part of district 1, Ontario division, C.P.R., of which T. Collins, Toronto, is Superintendent.

Michigan Central Rd.—H. SHEARER, heretofore Division Superintendent, Canada division, St. Thomas, Ont., has been appointed Assistant to the General Manager, Detroit, Mich.

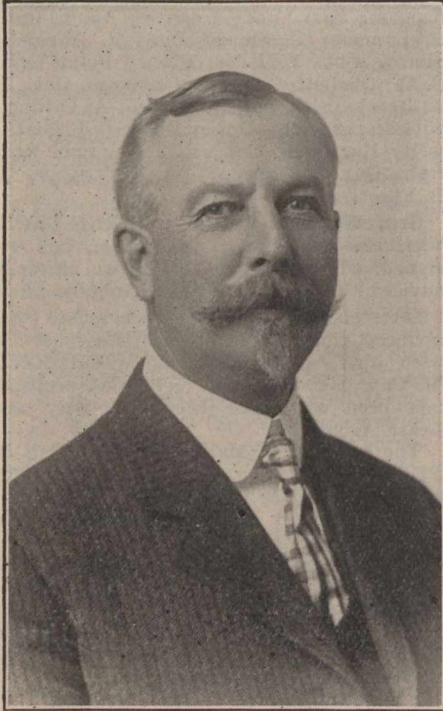
F. W. COWLEY, heretofore Trainmaster, has been appointed acting Division Superintendent, Canada division, vice H. Shearer, promoted. Office, St. Thomas, Ont.

J. S. GRANEY, heretofore dispatcher, has been appointed acting Trainmaster, Canada division, vice F. W. Cowley, promoted. Office, St. Thomas, Ont.

G. ROURKE, heretofore extra dispatcher, has been appointed dispatcher, St. Thomas, Ont., vice J. S. Graney, promoted.

National Transcontinental Ry.—H. B. DIBLEE has been appointed Roadmaster, New Brunswick division. Office, Edmundston.

Northwestern Line, (Chicago and Northwestern Ry., Chicago, St. Paul, Minneapolis and Omaha Ry.) W. S. R. CAMERON, heretofore Travelling Agent, Winnipeg, has been appointed Travelling Agent, Vancouver, B.C., vice H. M. McGinnis.



C. J. Wilson,
Superintendent, District 3, Central Division,
Canadian Northern Railway.

E. R. Cunningham, heretofore City Passenger Agent, Winnipeg, has been appointed Travelling Passenger Agent there, vice W. S. R. Cameron, transferred.

H. A. STUART, heretofore Travelling Freight and Passenger Agent, Chicago Great Western Rd., Winnipeg, has been appointed City Passenger Agent, Northwestern Line, Winnipeg, vice E. R. Cunningham.

Pere Marquette Rd.—F. H. ALFRED, heretofore Assistant General Manager, has been appointed General Manager, vice W. Cotter, resigned. Office, Detroit, Mich.

E. N. WELLER, heretofore acting Treasurer, has been appointed Treasurer. Office, Detroit, Mich.

J. A. GORDON, heretofore Superintendent, Eastern division, Chicago Great Western Rd., Chicago, Ill., has been appointed General Superintendent, P.M.R. Office, Detroit, Mich.

A new division has been established to be known as the Port Huron division, embracing the lines, Saginaw to Port Huron, Saginaw to Bad Axe, Port Huron to Grindstone city; Almont, Port Hope and Sandusky branches. J. L. HAYS, Superintendent, office, Saginaw, Mich. F. P. Smith, Trainmaster, office, Port Huron, Mich.

The Canadian division will consist of the lines in Canada. W. K. TASKER, Superintendent, office, St. Thomas, Ont.

J. W. MULHERN has been appointed Superintendent, Grand Rapids division, vice R. P. Dalton, resigned. Office, Grand Rapids, Mich.

Richelieu and Ontario Navigation Co.—J. F. PIERCE has been appointed District Passenger Agent, with territory including the New England states and the Maritime Provinces. Office, Boston, Mass.

Factors in the Selection of Locomotives.

A paper on this subject was presented before the railway session of the American Society of Mechanical Engineers recently, by O. S. Beyer, Jr., of the Rock Island Lines. He pointed out particularly that it is a comparatively simple matter to select a locomotive when the exact requirements are known, and that, in consequence, a study of the conditions of operation and of the different types and sizes of locomotives is necessary to arrive at the selection. A salient point was the attention directed to the question as to whether it was not better in some instances to use special power than to incur greatly increased capital charges by the reductions of grades in some localities. An outline of all the factors that enter into the selection of a locomotive was considered in some detail, after careful study of all the conditions.

The paper included a study of the permanent plant, including a consideration of track, bridges, passing sidings, terminal yards and locomotive terminals, turntables, coaling stations, watering cranes, ash plant, sanding facilities, and locomotive repair shops. The paper might be summed up as a brief for the study of local conditions for the design of locomotives to meet those peculiar conditions.

H. H. Vaughan, Assistant to the Vice President, C.P.R., in the course of the discussion, emphasized the importance of having standard locomotives and maintaining these standards until conditions change so much that it is possible to design another line of standard locomotives, making a distinct step in advance, rather than to modify the standard types from time to time. The time for standardization is before the equipment is built and not afterward. The C.P.R. has now about 865 standard locomotives out of a total of 1,800 of 1,900 on the system. It is always possible to introduce changes in the design of standard locomotives, bearing in mind that the new arrangement must be made so that it can completely take the place of the old part for renewals or repairs. The advantages of standardizing the motive power may be summed up as follows: The standard locomotives can be transferred from one part of the road to another, when business becomes heavy on one section, without having to provide a new storehouse stock, or have the power crippled because of not having the proper parts in stock. It is also possible to keep the shop cost of the engines down because of fewer variations in the size and design of the parts. Where standard locomotives are used it has been found that the division officers are much more likely to offer suggestions as to improvements. Of course, the standardization has disadvantages, one of which is that it is not always possible immediately to take advantage of improvements in the permanent plant. The advantages of having common standards which can be used on any part of the system and with which the men over the entire system are familiar, greatly offset this, however.

Spur Line Plans.—The Board of Railway Commissioners has decided that, in making application to the board for the approval of a branch line or spur, in addition to the plans required under the board's rules and regulations, it will be necessary for railway companies to supply municipalities, in any way interested, with blue print of final plans.

The Canadian Society of Civil Engineers' annual meeting will be held in Montreal, Jan. 28 to 30. It is expected that the society's new building, 176 Mansfield street, will be ready for the meeting.

Great Northern Railway Finances, Etc.

An amendment to the articles of incorporation of the G.N.R., was filed at St. Paul, Minn., Dec. 4, increasing the capital stock from \$210,000,000 to \$231,000,000. This increase is made mainly for the purpose of acquiring stocks and bonds of allied companies.

The annual report for the year ended June 30, 1912, showed that the total amount of capital stock issued to that date was \$209,990,750, and that the remaining stock was held for the purpose of acquiring 74 shares of the stock of the St. Paul, Minneapolis and Manitoba Ry. still outstanding. The bonded debt was \$174,686,909.09 against \$168,442,909.09 at June 30, 1911. During the year \$3,818,000 of bonds were issued for the purpose of acquiring stock of other companies, including the following: \$2,250,000, Vancouver, Victoria and Eastern Ry. and Navigation Co.; \$30,000, Brandon, Saskatchewan and Hudson Bay Ry.; \$15,000, Nelson and Fort Sheppard Ry.; \$5,000, Red Mountain Ry., and \$1,000, Manitoba Great Northern Ry. In addition to these amounts the G.N.R. investments in Canadian companies has been increased by advances of \$1,608.54 to the Manitoba Great Northern Ry., and of \$334,261.15 to the Midland Ry. of Manitoba. There was also advanced to the Kootenai Valley Ry. during the year \$11,564.39 for additions and betterments. The Kootenay Ry. and Navigation Co. has been liquidated and the G.N.R. has received, free of bonus, the entire capital stock of the Kaslo and Sloean Ry., International Navigation and Trading Co., Kootenai Valley Ry., and Bedlington and Nelson Ry. The stock of the Kaslo and



H. Shearer,
Assistant to General Manager, Michigan Central Rd.

Sloean Ry. and of the International Navigation and Trading Co. were sold. The G.N.R. now operates and includes in its mileage the lines of the Kootenai Valley Ry., and Bedlington and Nelson Ry., extending from Bonner's Ferry, Idaho to Kuskanook, B.C., 49.76 miles (including 8.67 miles of trackage over the C.P.R. between Wilkes and Sirdar Jct., B.C.). The Kootenai Valley Ry. securities were taken up at \$655,000, and of the Bedlington and Nelson Ry. at \$280,000.

Canadian Northern Railway, Construction, Betterments, Etc.

James Bay and Eastern Ry.—The Board of Railway Commissioners has approved revised plans for the line mileage 20.43 to 21.40 from Roberval, Que. This line is under construction, J. P. Mullarkey being the contractor. Considerable grading has been done, but no track has been laid.

Canadian Northern Quebec Ry.—Application is being made to the Dominion Parliament to extend the time for the building of the projected line from Rawdon northerly to a junction with the National Transcontinental Ry., having a branch to Joliette, and the projected line from St. Jerome to St. Eustache, and to authorize the building of the following additional lines:—From Montreal, crossing the St. Lawrence river opposite the city, and from thence to Levis; and from some point on such line east of the St. Lawrence river to St. Rose Jet., thence to near Sherbrooke or Lennoxville.

Application is being made to the Quebec Legislature to confirm an agreement between the city of Quebec and the company regarding the new shops at Limoilon which are practically completed.

Route plans have been approved by the Minister of Railways for 12 miles westerly from Huberdeau, Que., the present terminus of the old Montford and Gatineau Colonization Ry.; and from Rawdon, the present terminal of L'Epiphanie branch, to St. Donat, Que., 42 miles.

Canadian Northern Montreal Tunnel and Terminal Co.—The Board of Railway Commissioners has approved of location plans in Montreal from station 134+79.7, La-gauchetiere street, to station 447+17.9.

Sir Donald Mann visited the tunnel works Dec. 19, and is reported to have expressed himself thoroughly pleased with the progress being made. The total length of the tunnel under Mount Royal, from the northern portal to Dorchester street, Montreal, will be 3.5 miles. The heading from the northern end has already been driven 1,000 ft., and the heading from Dorchester street 500 ft. A shaft 238 ft. deep has been sunk immediately at the back of the mountain, and headings are being driven therefrom in both directions. Two additional shafts are to be dug, so that four additional headings may be driven. It is expected to have the tunnel driven by the end of 1913, and ready for the operation of trains by the end of 1914. From the southern portal to the St. Lawrence river the track will be an elevated one, the exact location and plan of the structure is under consideration by the Board of Railway Commissioners. From the waterfront to a point six miles north of the northern portal of the tunnel the line will be operated by electricity.

Montreal-Ottawa-Port Arthur Line.—The total length of this line under construction is 912 miles and is all under contract. J. P. Mullarkey has the contract for the section from Montreal to Hawkesbury, Ont., 60 miles. No track was laid on this line during the past year. From Hawkesbury to Ottawa the line is being operated, the distance between the two points being 59 miles. The next section under contract extends from Ottawa to Capreol, Ont., 309 miles, J. P. Mullarkey working on the mileage between Ottawa and Pembroke, and Angus Sinclair from Pembroke to Capreol. On this section 35 miles of track were laid during 1912. The line is completed and in operation from Capreol to Ruel, about 38 miles. The contract for the 543 miles from Ruel to Port Arthur is being carried out by Foley Bros. and the Northern Construction Co. On this section 115 miles of track was laid during 1912.

The principal work on the Montreal-Hawkesbury section is being done on the mainland north of Montreal island. The bridge over the river at St. Andrews is about completed and that over the Back river will be completed in the spring.

is expected to have the line completed early this year, so as to enable a through service to be operated between Montreal and Ottawa, and Montreal and Toronto, during the summer.

The Board of Railway Commissioners has been approved. The company had given the age 55.23 to 59.42 in Hochelaga tp., through North Bay, Ont., mileage 343.55 to 346.42 from Montreal; mileage 280.5 to 290.6, in Algoma district; and through unsurveyed territory, mileage 398 to 413 from Sudbury Jet., Ont.

Canadian Northern Ontario Ry.—The Dominion Parliament is being asked to extend the time within which the lines authorized to be built by items 1, 2, 3, 4, 6, 9 and 10 of sec. 2, chap. 57, of the statutes of 1911; the line mentioned in par. c of the same sec. and chap.; the lines mentioned in sec. 2, chap. 93 of the statutes of 1908, may be built, and to authorize the building of the following additional lines:—An extension of the line referred to above as the line in par. c., south-westerly from Berlin to Stratford and St. Marys, with a branch to Woodstock; a line from Sarnia to Chatham, and a line from Orillia to Goderich via Owen Sound, or with a branch to Owen Sound.

During 1912 track was laid on 45 miles of the line between Ottawa and Toronto. The uncompleted section is between Sydenham and Ottawa, 80 miles. J. P. Mullarkey has the contract for the entire distance, with the exception of certain work on a 20-mile section which was let to Ewen Mackenzie. The work on the section is well advanced.

Plans which have been approved by the Board of Railway Commissioners were recently filed at the Toronto City Hall for the line from Leaside Jet. to the union station at North Toronto, which is to be built by the C.P.R. for joint use with the C.N.R. The plan shows a line parallel with the C.P.R. from Leaside Jet., as far as Cottingham street, at which point the two lines will join.

We are officially advised that the company has under survey line from Toronto to Thorold, Ont., 83 miles, and from Hamilton to Brantford, Ont., 26 miles. In connection with the first of these lines plans have been filed for the projected subways on the north of Toronto, as far west as Geary street. The complete right of way is reported to have been purchased into Hamilton; certain plans for work in Hamilton have been filed with the city council. It is reported that the necessary arrangements are being completed for starting building in the spring. The Board of Railway Commissioners has approved revised location plans through Nelson tp., mileage 31.54 to 37.50 from Toronto.

Canadian Northern Ry.—Application is being made to the Dominion Parliament to extend the time for the construction of the lines mentioned in paragraphs a, b, c and h of sec. 2, chap. 92 of the statutes of Canada for 1908; the line of the Saskatchewan Midland Ry. from Humboldt to Melfort; and for power to build a line from near Swift Current westerly to a junction with the authorized Macleod-Lethbridge line; to confirm an agreement with the C.P.R. respecting the terminals in Regina, Sask., and to increase the company's bonding powers.

It is reported that plans have been pre-

pared for the building of a new station in Fort William, Ont.

The bridge over the Assiniboine river at Winnipeg collapsed Dec. 3, and a new 200-ft. span was put in place and the bridge reopened for traffic Dec. 7. The original bridge was a temporary structure, and the new one is also intended to be temporary.

The Board of Railway Commissioners has approved location of line through tps. 7-11, ranges 2-6, west principal meridian in Manitoba, mileage 18.08 to 53.76.

In connection with the proposed line from Bienfait to a junction with the Regina-Brandon line, the Minister of Public Works informed the Saskatchewan Legislature, Dec. 2, that surveys had been made, and the route laid out, but it had not yet of route plans of a line from Craven, to tp. government to understand that construction would be started early this year, and the branch completed by the end of the year.

The Minister of Railways has approved of route map for the extension of the line now terminating at Bienfait, to Estevan, Sask., nine miles, and the Board of Railway Commissioners has approved of location plans for the line through Estevan, mileage 8.02 to 8.98.

The Minister of Railways has approved of route plans of a line from Croven, to tp. 25, r. 19 west second meridian, for 39 miles, and the Board of Railway Commissioners has approved of location plan for the same line for 8.79 miles out of Craven.

The Board of Railway Commissioners has approved of location of branch line through tp. 26, range 7, west 3rd meridian, Sask., mileage 54.05 to 61.32.

The Minister of Railways has approved of revised route map of the Thunder Hill branch extension for 53 miles, and the Board of Railway Commissioners has approved of location plan for the 42.52 miles of the same being from tps. 35-38, range 8.14, west 2nd meridian, mileage 93.83 to 135.52.

The Minister of Railways has approved revision of route map for the Humboldt-Calgary branch for 30.9 miles.

The Minister of Public Works informed the Saskatchewan Legislature, Dec. 5, that surveys for the Lampman-Kipling branch had been completed, and that application had been made to the Government for the approval of the route. Surveys were being made for a line from Kaiser to Swift Current, but no application had yet been made for the approval of the route. The government, however, understood that it was the company's intention to build both lines during 1913.

Recent press reports state that 17 miles of grading have been completed on the line from Oliver through Pakan to St. Paul de Metis, Alta.

Press reports state that track laying is in progress on the main line west of the Pembina river, and that it was expected to have steel laid to the crossing of the Macleod river, a distance of 62 miles, by Dec. 31. The erection of the bridge across the Macleod river will be gone on with during the winter.

The Board of Railway Commissioners has approved of revised location of the C.N.R. through tps. 30-31, ranges 17.20, west 4th meridian, Alta., mileage 280.62 to 303.03.

The Dominion Parliament is being asked to extend the time for the construction of the various lines authorized to be built by the Canadian Northern Alberta Ry., under sec. 8, chap. 56, of the statutes of 1911.

Canadian Northern Pacific Ry.—The first section of the line to be put in operation extends from Port Mann to Hope, B.C. Track laying is in progress from Hope, easterly, and some track laying is also

reported to have been done from Kamloops westerly. A considerable amount of grading has been done on the remaining section of the main line toward the Yellowhead pass. Work has been started at Kamloops on the branch line into the Okanagan valley. Rails are on order for this branch and it is expected that track laying will be started early in the year.

Temporary divisional headquarters have been opened at New Westminster, the local construction work being in charge of W. F. Swan. Local press reports state that the company is arranging to spend \$2,500,000 immediately on the laying out of terminal facilities at Port Mann.

A. D. Davidson, C.N.R. Land Commissioner, is reported as stating that arrangements have been completed for the immediate construction of car building shops at Port Mann. Subsequent press reports state that arrangements have been made with an eastern Canadian car building company to locate a western shop at Port Mann having a capacity of ten cars a day.

Tenders were asked, Dec. 10, for the building of a branch line "on the eastern boundary of section 11, block 4 north, to a point adjacent to the Y of the B.C. Electric Ry. on the west boundary of section 12, block 3 north, adjacent to Steveston, a distance of 10.2 miles. The line is to be completed within six months.

Vancouver Island Construction.—The Premier of British Columbia recently stated in a speech that an arrangement had been practically concluded between the C.N.R. and the C.P.R. for the building of a union station in Victoria at an approximate cost of \$1,500,000.

The construction on the sections of the line under contract from Victoria to the Alberni canal is reported to be making good progress. A considerable amount of location has been done beyond this point, and surveys are in progress on other parts of the line. The provincial Minister of Railways has approved of route plan of the line from Quinsan river to Mucharlot arm, on Nootka sound, mileage 210 to 270; a branch from mileage 215.5 to Duncan Bay, six miles; and a branch from mileage 238.5 to Bottles Lake, 5.5 miles. (Nov. pp. 564.)

Birthdays of Transportation Men in January.

Many happy returns of the day to:—

W. U. Appleton, Assistant to Superintendent of Motive Power, Intercolonial Ry., Moncton, N.B., born there, Jan. 29, 1878.

R. Armstrong, Superintendent, district 3, Saskatchewan division, C.P.R., Saskatoon, born at Kingston, Ont., Jan. 27, 1865.

A. H. Bears, Master of Bridges and Buildings, C.P.R., Saskatoon, Sask., born at Charlottetown, P.E.I., Jan. 6, 1857.

F. X. Belanger, General Freight and Passenger Agent, Temiscouata Ry., Riviere du Loup, Que., born at Chlorydormes, Que., Jan. 20, 1876.

R. H. Bell, General Agent, Canadian Northern Ry., Chicago, Ill., born at Toronto, Jan. 13, 1865.

G. McL. Brown, European Manager, C.P.R., London, Eng., born at Hamilton, Ont., Jan. 20, 1866.

W. H. Burr, Traffic Manager, Dominion and Western Express Co's., Toronto, born at Bloomington, Ill., Jan. 19, 1864.

W. A. Cowan, Assistant to Assistant Chief Engineer, C.P.R., Eastern Lines, Montreal, born at Galt, Ont., Jan. 22, 1877.

J. E. Dalrymple, Vice President, G.T.R., G.T.P.R., and Central Vermont Ry., Montreal, born there, Jan. 1, 1869.

J. E. Everell, Superintendent, Montmorency division, Quebec Ry., Light and Power Co., Quebec, born at Cap Rouge, Que., Jan.

1, 1863.

Sir Sandford Fleming, K.C.M.G., director, C.P.R., born at Kirkcaldy, Scotland, Jan. 7, 1827.

W. H. Geugeon, Locomotive Foreman, C.P.R., Cartier, Ont., born at Point Alexander, Ont., Jan. 16, 1872.

Gordon Grant, Chief Engineer, National Transcontinental Ry., Ottawa, born at Dufftown, Scotland, Jan. 2, 1861.

H. V. Harris, ex-General Manager, Midland Ry. of Nova Scotia, now of Louisville, Ky., born at Devonport, Eng., Jan. 16, 1857.

G. F. Hichborn, formerly Agent, Great Eastern Fast Freight Line, New York, born at Boston, Mass., Jan. 13, 1875.

C. W. Houston, Superintendent, Duluth, Rainy Lake and Winnipeg Ry., Virginia, Minn., born at Hardwick, Vt., Jan. 15, 1858.

Carl Howe, Manager, New York Central Fast Freight Lines, Chicago, Ill., born at Berrien Springs, Mich., Jan. 11, 1870.

W. C. Hunter, ex-Manager, New Brunswick Coal and Ry. Co., Sussex, N.B., born at St. John, N.B., Jan. 4, 1865.

W. J. Hunter, Division Freight Agent, G.T.P.R., and Commercial Agent, G.T.R., Winnipeg, born at Toronto, Jan. 10, 1864.

H. G. Kelley, Vice President, G.T.R., Montreal, born at Philadelphia, Pa., Jan. 12, 1858.

James Kent, Manager, C.P.R. Telegraphs, Montreal, born Jan. 15, 1854.

A. J. McGee, Secretary-Treasurer, Timiskaming and Northern Ontario Ry., Toronto, born at Lachine, Que., Jan. 24, 1876.

G. C. Martin, General Freight and Passenger Agent, Toronto, Hamilton and Buffalo Ry., Hamilton, Ont., born at Creemore, Ont., Jan. 2, 1866.

G. Pappall, Assistant Foreign Freight Agent, G.T.R., and Agent, National Despatch-Great Eastern Line, Toronto, born at High Wycombe, Bucks, Eng., Jan. 15, 1849.

W. Phillips, European Traffic Manager, Canadian Northern Ry. and Canadian Northern Steamships, Ltd., London Eng., born in Toronto, Jan. 31, 1870.

W. Pratt, Superintendent, Sleeping and Dining Cars and Hotels, Canadian Northern Ry., Winnipeg, born at Sibbertoft, Northamptonshire, Eng., Jan. 18, 1870.

John Pullen, President, Canadian Express Co., Montreal, born at Shepton Mallet, Eng., Jan. 23, 1863.

L. J. Rouleau, Travelling Freight Agent, G.T.R., and Agent, National Despatch-Great Eastern Line, Montreal, born there, Jan. 6, 1879.

B. G. F. Rutley, ticket agent, C.N.R. and G.T.P.R., Fort Garry Union Station, Winnipeg, born at Chatham, Ont., Jan. 25, 1879.

S. J. Shannon, Comptroller and Treasurer, Intercolonial Ry., Moncton, N.B., born at Halifax, N.S., Jan. 18, 1865.

J. G. Sullivan, Chief Engineer, C.P.R. Western Lines, Winnipeg, born at Bushnell's Basin, N.Y., Jan. 11, 1863.

Ross Thompson, Chief Engineer, St. John and Quebec Ry., Fredericton, N.B., born at Newry, Ireland, Jan. 1, 1865.

J. A. Villeneuve, Comptroller and Treasurer, Richelieu and Ontario Navigation Co., Montreal, born there, Jan. 4, 1864.

O. C. Walker, Inspector, Refrigerator Service, C.P.R. Western Lines, Winnipeg, born at Newport, Mon., Eng., Jan. 31, 1877.

F. J. Watson, Assistant General Freight Agent, G.T.R., Montreal, born at Toronto, Jan. 12, 1866.

G. H. Webster, C.E., Vancouver, B.C., born at Creemore, Ont., Jan. 31, 1858.

T. H. White, Chief Engineer, Canadian Northern Pacific Ry., Vancouver, born at St. Thomas, Ont., Jan. 27, 1848.

A. Wilcox, General Superintendent, Western division, C.N.R., Edmonton, Alta., born at Kincardine, Ont., Jan. 2, 1865.

Railway Route Maps Approved.

The Minister of Railways approved of the following route maps, Nov. 19:—

ALBERTA INTERURBAN RY.—Calgary to Cochrane, about 45 miles.

CANADIAN NORTHERN RY.—From Craven northerly to tp. 25, r. 19, west of 2nd m., 39 miles.

From MacRorie southeasterly, 44 miles.

CANADIAN PACIFIC RY.—Grade revisions on main line west of Calgary, about 21 miles.

Grade revision on main line between Ross Peak and Six Mile Creek, B.C., about 20 miles.

Grade revision on main line between Chase and Salmon Arm, B.C., about 25 miles.

Grade revision on main line between Indian Head and Qu'Appelle, Sask., about 8 miles.

Revision of Bassano easterly branch, 118.1 miles.

Revision of Swift Current northwesterly branch, 11.84 miles.

MONCTON AND BUCTOUCHE RY.—Buctouche to Richibucto, N.B., about 20 miles.

WESTERN DOMINION RY.—From tp. 6, r. 1, west of the 5th m., to mile 130, near Calgary, Alta., 130 miles.

Specifications for Railway Crossing Signals.

The Board of Railway Commissioners passed general order 96, Dec. 11, providing the following specifications for signals at highway crossings:—

The signal must be placed upon a post of suitable structural material. If the post is made of wood, it must be of sound timber not less than 8 x 8 ins. and 18 feet long, and shall be firmly set in the ground to a depth of 4 ft. If it is made of iron or steel, it shall be not less than 4 ins. in diameter, shall extend at least 12 ft. above the ground, and shall be firmly bolted to a concrete or other foundation constructed below the frost line.

A bell, which shall emit a clear, loud volume of sound under all weather conditions, must be used.

A sign shall be placed upon the same post as the bell, with the word "danger" upon it in letters not less than 6 ins. long, to be illuminated, so as to be plainly visible after sunset. There may be added to the post, if so desired, the railway crossing sign provided for by sec. 243 of the Railway Act.

The bell and the illumination of the sign shall be controlled and operated automatically by the approach of trains, in such manner that only approaching trains shall operate the signal.

Any order of the Board providing for the installation of a highway crossing signal and referring to "Standard Specifications for Highway Crossing Signals" is to be deemed as intended to be a reference to the specifications herein adopted.

These standard specifications come into force the date of this order, and apply to all highway crossing signals hereafter installed.

General order 12915, Feb. 7, 1911, approving specifications for the installation of electric bell signals at highway crossings, is rescinded.

Government Railways Management.—Replying to a question in the House of Commons, Dec. 4, the Minister of Railways said the whole question of management of the Government railways was under consideration, and he had no information to give as to which course the Government would be likely to take.

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:—

Wabash Rd. Cartage Tariff.

18088. Nov. 21. Re Wabash Rd. tariff charge for cartage, as shown by its Supplement 4 to C.R.C. 543; and the request of the Board that the company show cause for such increase. It is ordered that the effective date of item 40A of the said tariff, Supplement 4 to C.R.C. 543, covering the increased charge for cartage, be postponed to and including Dec. 31, 1912.

C.O.R. Tariff on Canned Goods.

18107. Nov. 22. Re application of Dominion Cannery Limited, of Hamilton, complaining of refusal of Central Ontario Ry. to route shipments of canned goods via G.T.R. at same rates as via C.P.R. to the same points of destination. It is ordered that Supplement 6 to Central Ontario Ry. Special Joint Freight Tariff on Canned Goods, C.R.C. 298 (G.T.R. Co.'s C.R.C. No. E. 1928), in so far as it affects the joint rates from points on the Central Ontario Ry., as being in contravention of the second clause 1 of order 8984, Dec. 11, 1909, be disallowed; and that the rates of Tariff C.R.C. 298 from the Central Ontario stations be restored, with leave to the said railway companies to apply to the Board for a hearing.

Grain Rates from Grenfell, Sask.

18109. Nov. 22. Re application of Grenfell Milling and Elevator Co., Grenfell, Sask., for order directing the railways interested to provide a through rate on grain products from Grenfell to Glenavon and Kipling, via Regina. It is ordered that the C.P.R. and the Canadian Northern Ry. be required jointly to file a tariff of through rates on grain products, in carloads of the minimum weight of 30,000 lbs. per car, from Grenfell, via Regina, at 18½c. per 100 lbs. to Glenavon, Sask., and 19c. per 100 lbs. to Kipling, Sask., the tariff to be made effective not later Dec. 16, 1912.

Coal Rate, Detroit to Windsor.

18121. Nov. 26. Re application on behalf of the Windsor, Walkerville, and Sandwich boards of trade, protesting against the increased rate on coal proposed under C.P.R. Tariff, Supplement 9 to C.R.C. E. 1606, and the Pere Marquette Rd. Tariff, C.R.C. 1539; and applying for an order postponing the effective dates of the tariffs until a hearing can be had. It is ordered that, pending a hearing of the application by the Board, the Pere Marquette Rd. Tariff, C.R.C. 1539, and the rate on coal from Detroit, Mich., to Windsor, Ont., as published in C.P.R. Supplement 9 to Tariff C.R.C. E.1606, be suspended for 60 days from Dec. 1, 1912.

Switching Tolls in Quebec City.

18135. Nov. 27. Re complaint of Quebec board of trade, and others, against the tolls charged by the C.P.R. for switching traffic, in carloads, originating at, or destined to, points on the Grand Trunk, Quebec Central, and Intercolonial Railways, between the ferry dock and tracks and sidings in Quebec city. It is ordered that, without prejudice to the pending inquiry into interswitching services and tolls generally, and subject to any order that may be made in that inquiry, the tolls charged by the C.P.R. for interswitching the said traffic for any distance within, and including, four miles from Point-a-Carcy wharf, shall not exceed 1 cent per 100 lbs., subject to a minimum charge of not more than \$3 a car, to or from private sidings, and 1½ cent. per 100 lbs., subject to a minimum charge

of not more than \$5 a car, to or from public team tracks; the tolls to be payable by the shipper or consignee, and to become effective not later than Dec. 9, 1912.

Temporary Advance in Demurrage Rates.

18178. Nov. 28. Re application of C.P.R., G.T.R., Canadian Northern Ry. and Michigan Central Rd., on behalf of themselves and of other railway companies, for permission to increase, temporarily, the toll for car detention by shippers or consignees, with the object of minimizing the misuse of freight cars for storage purposes, and alleviating the car shortage and congestion of traffic. It is ordered that, on the publication and filing of tariffs therefor, and for the period commencing Dec. 15, 1912, and terminating March 31, 1913, both inclusive, the said companies be permitted to increase the car service or demurrage toll prescribed by order 906, Jan. 25, 1906, from \$1 a day to \$2 a day for the first 24 hours, or any part thereof, and to \$3 a day for each succeeding 24 hours, or any part thereof, for delay beyond the free time allowed by the said order for loading or unloading cars; provided that this order shall not apply to cars held in transit at stopover points under published tariffs filed with the Board.

Grand Trunk Pacific Ry. Freight Tariff.

18208. Nov. 22. Re application of Grand Trunk Pacific Ry., under sec. 327 of the Railway Act, for the approval of its Standard Freight Mileage Tariff, C.R.C. 12, to apply between stations in Alberta and British Columbia, between Thornton, Alta., and Tete Jaune, B.C. It is ordered that the company's said Standard Freight Mileage Tariff be temporarily approved, pending the result of the enquiry by the Board into the rates charged generally by railways west of and including Crowsnest, Canmore, and Thornton.

Coal Rate, Detroit to Windsor.

18210. Dec. 3. Re application on behalf of the Windsor, Walkerville, and Sandwich boards of trade, protesting against increased rate on coal from Detroit to Windsor, Walkerville, and Sandwich, Ont., and applying for order postponing the effective date of the said rate until a hearing can be had. It is ordered that, pending a hearing of the application by the Board, the rate of 40 cents a net ton from Detroit to Windsor, exclusive of switching charges, as published in Michigan Central Rd. Supplement 14 to Tariff C.R.C. 1288, be suspended for 60 days from Dec. 1, 1912.

Refrigerator Cars for Less than Carloads.

General order 98. Dec. 6. Re application from Sanitaris, Limited, Arnprior; White and Co., Toronto; the Board of Trade of Hamilton; and others, for order requiring railway companies during cold weather to furnish heated refrigerator cars for carriage of perishable freight in less than carload quantities. It is ordered that, until further ordered by the Board, upon the receipt of reasonable notice from the shipper that such is required, railway companies operating in Eastern Canada, which own refrigerator cars, and according to their respective powers, furnish to any shipper, or combination of shippers, a heated refrigerator car, or cars, for the carriage, during cold weather, of fruit, vegetables, and eggs, in less than carload quantities, the same to be carted by the shipper, and loaded in the car by the shipper, in the order in which the shipments are to be unloaded; provided that under this order the carrier be not required to accept shipments necessitating more than five openings of any such car for unloading purposes; to furnish heated cars for transshipments from the original car for destinations off the route of the car; to accept less than a total weight of 12,000 lbs. in any such car, or a less aggregate

amount in freight charges than for 12,000 lbs. distributed proratably over the various shipments in any car; to accept such shipments unless the freight charges are prepaid; to assume liability for loss or damage to the property by frost while in the car, if caused by the opening of the car for loading or unloading purposes, or after it has been unloaded from the car.

Cartage on Freight.

General order 99. Dec. 18.—Re special tariffs of railway companies, in crossing charges for cartage, and the request of the Board that the said companies show cause for such increases. It is ordered that the special tariffs of the railway companies, the effective dates of which were postponed to and including Dec. 31, 1912, by orders 17911, 18088, and 18153, be disallowed; and that, in lieu thereof the companies may make effective on statutory notice, special tariffs of tolls chargeable for cartage at those points in eastern Canada where cartage services are rendered by the said companies, or their agents, which shall not exceed 2½ cents per 100 lbs., provided that a minimum toll may be charged for the cartage of any single complete shipment, which minimum toll shall not exceed 15 cents.

The New Montreal Harbor Commission.

Ottawa press dispatches of Dec. 24, to daily papers supporting the Dominion government, and which are therefore, probably semi-official, say that the new Harbor Commission for Montreal will consist of W. G. Ross, Farquhar Robertson and E. A. Labelle, who will succeed G. W. Stephens, C. C. Ballantyne and L. E. Geoffrion, resigned, effective Dec. 31, 1912.

W. G. Ross was born in Montreal, Aug. 6, 1863, and engaged in auditing and accountancy work with his father as early as 1880. He was subsequently, successively, Secretary, Treasurer and Assistant Manager, Windsor Hotel Co., Montreal, and in 1892 became associated with Jas. Ross, who was then developing electric railways in Canada, and organizing their finances. He has been Comptroller, Secretary-Treasurer and Managing Director, Montreal St. Ry., also Managing Director, Montreal Park and Island Ry., and General Manager, Suburban Tramway and Power Co., now all combined as the Montreal Tramways Co., Treasurer, Mexican Light, Heat and Power Co., and is a director, Dominion Steel Co., and President, Asbestos Corporation of Canada, as well as being connected with a number of other companies with which the same financial interests are concerned. He was President, Canadian Street Railway Association for the year 1905-06.

Farquhar Robertson has been associated with the coal trade for a number of years, and has represented St. Andrew's ward in the Montreal city council for six years. He was Vice President, Montreal board of trade in 1908, and President in 1909.

E. A. Labelle is General Manager, St. Lawrence Flour Mills Co. and prior to holding that position had been connected with the Ogilvie Flour Mills, Ltd., since 1883. He was Lieutenant-Colonel of the 65th. battalion Mount Royal Rifles, transferred to the reserve of officers and later appointed Brigadier 19th Infantry Brigade.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, to amend the bill defining the jurisdiction of the Board, giving it complete control over the Montreal harbor, which is at present shared with the Marine Department, and to remove a number of minor harbors, which are at present controlled in conjunction with a portion of the ship canal, from its jurisdiction.

Electric Railway Department.

Montreal Tramway Company's Track Construction and Method of Cost Keeping.

In making up the type of this article by J. D. Evans, Chief Engineer and Superintendent of Construction, in Canadian Railway and Marine World for December, the two concluding paragraphs, which should have appeared on pg. 619, were omitted. They refer to the intersection work, and are as follows:—

After the new material has been all unloaded and placed, the crane car is then put to work loading the cars with the old intersection and returns to the store yard. With the use of the crane car the cost of our work has been reduced and it is absolutely necessary on account of the increased weight of the intersection parts, also we do not require as many laborers, and the street is not blocked with any of the intersection material. As soon as the new intersection is placed traffic is resumed and we then

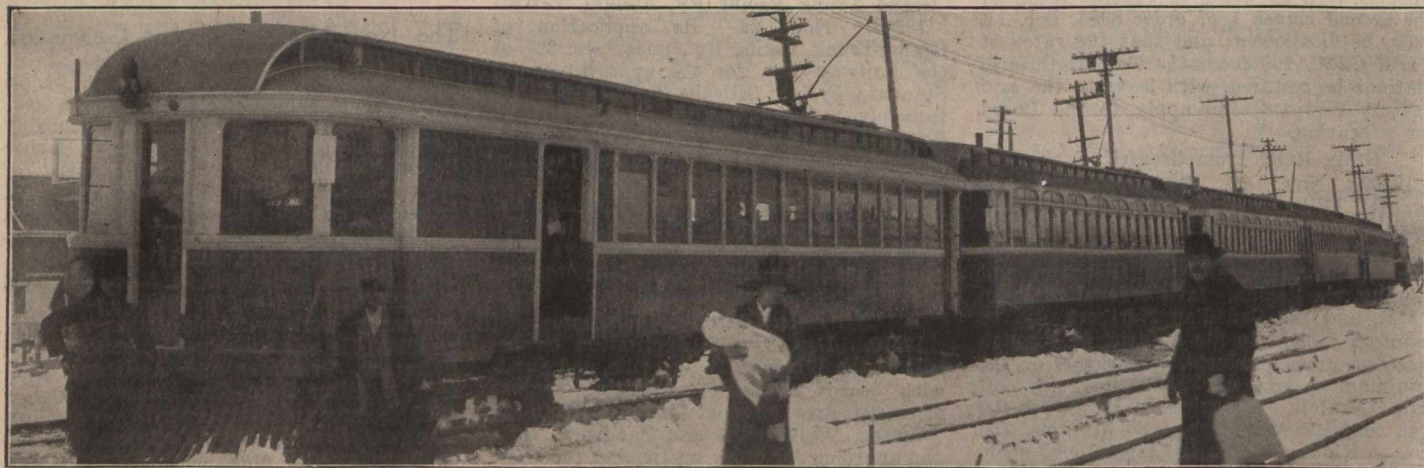
Five Car Trains on Winnipeg, Selkirk and Lake Winnipeg Railway-

The accompanying illustration shows a five car multiple unit train, which is operated for excursion business on the W.S. & Lake Winnipeg Ry., a subsidiary of the Winnipeg Electric Ry., between the two terminals, Winnipeg and Selkirk, about 20 miles, making the run in 40 minutes each way. The train consists of 3 power cars in multiple and 2 trailers, with seating capacity for 320 passengers. The cars were built by the Winnipeg Electric Ry. at its own shops and have Canadian General equipment throughout. They are heated with hot water and hot air heaters, but the hot water is found much the better for the Manitoba climate. The train is operated by motorman, conductor and trainman, and as soon as the men became conversant with the equipment the operation gave no trouble.

The train is very popular for excursion,

Lulu Island Railway Terminal in Vancouver.

The B.C. Electric Ry. has arranged with the city of Vancouver for the construction of a new terminal for its Lulu island interurban railway. This line extends from Vancouver through Point Grey to Eburne, from which point one division runs across Lulu island to Steveston and another extends along the north arm of the Fraser river to New Westminster. Along this route settlement has been very rapid of recent years and a large commuters' traffic is now carried on over the division. The line now enters Vancouver by a bridge spanning False creek, terminating at a station at the water level. This location is inconvenient, inasmuch as the station is located on low ground and passengers transferring to city lines must either walk up a steep hill or climb a spiral stairway to the level of the Granville street bridge, over which all the connecting city lines, except



Multiple Unit Train on Winnipeg, Selkirk and Lake Winnipeg Ry.

start the excavation, the sub-grade being 24 ins. below the top of rail. This work is carried on hand in hand with the placing of the ties. We have adopted long ties, that is ties varying in length from 8 ft. to 20 ft., the longest ties taking in the four rails. The attached plan shows the spacing of the special ties, with the list as to sizes that are in addition to the regular standard 8 ft. ties.

We use all ties sawn on at least on two sides, the extra long ties being sawn on four sides, no hewn ties being allowed where concrete slab construction is adopted, on account of their varying thickness and unevenness. As fast as the excavation is completed and the ties placed in final position we block up the intersection per plan 164 T-G., so that the concrete slab can be laid and allowed to thoroughly set without carrying any load from the cars while running over the intersection. After the concrete has set for ten days the intersection is tamped up with one inch of sand under the ties and brought to final surface. After this has been completed the concrete is placed for the pavement. As soon as this concrete has set, from four to seven days, we start laying the pavement which completes the job.

We feel that the Montreal Tramways Co.'s work ranks with the best of railways in America, and we believe the reason for this is on account of the efficiency and loyalty of the employes working together systematically.

sions, securing business that would go to the steam railway if a solid train was not operated. During 1912 up to Mar. 30, the company carried 55 excursions from Winnipeg to Selkirk, ranging from 150 to 4,000 passengers per excursion. Then number of passengers carried between the two points for the first 11 months of the year was as follows:—Jan., 21,084; Feb., 21,207; March, 22,480; April, 21,783; May, 27,608; June, 39,087; July, 53,681; Aug., 54,673; Sept., 39,687; Oct., 37,495; Nov., 30,930.

The W.S. & L.W. Ry. is operated under G. Pettingill, Superintendent, who has his office at Selkirk.

Gas Electric Trains for suburban service are to be employed by the Pittsburg & Lake Erie Rd. in the district tributary to Pittsburg, Pa. A single train, consisting of a gas-electric motor car and one trailer, will first be placed in operation on the regular local schedule as a test of the system. It will run on the four-track main line in connection with the regular steam trains. It is contemplated that the service will extend from near McKeesport, 17 miles south of Pittsburg, to Beaver Falls, 32 miles north of the city. The motor car is 42½ ft. long, 10 ft. 5 in. wide and weighs 36 tons. It is driven by two 100 h.p. motors, operating at 600 volts. Its capacity is 42 people. The trailer is 45 ft. long, weighs 22 tons and seats 80 people. Both cars are of steel.

one, run.

The new arrangement proposed by the company is the location of an interurban terminal at the south end of Granville street bridge. By this plan interurban passenger cars will not be obliged to cross the False Creek bridge and they will be taken into the city directly on a level with the Vancouver city cars. The terminal will also be of advantage to the city system, as it is located near 4th and Granville streets, an important city transfer point.

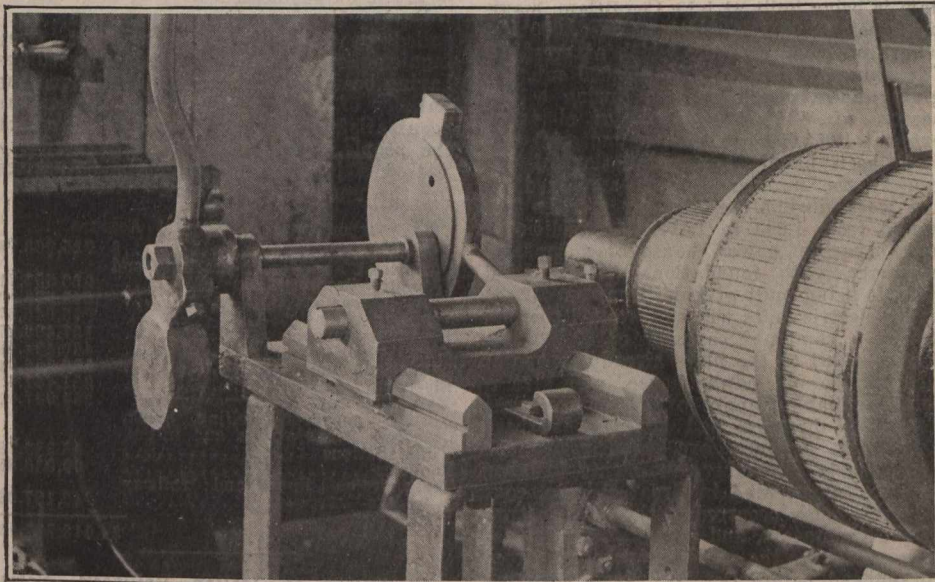
The station will consist of two wings, each about 40 by 28 ft., connected by a covered passage way 25 ft. wide, ample to accommodate the traffic from the interurban lines to the city system. In the south wing will be located the ticket office, agent's office, etc., while in the opposite wing will be a general waiting room and separate ladies' room. The terminal, being located on made ground, will be of wood construction. The plans call for a handsome structure which will cost between \$30,000 and \$40,000. The trackage arrangements will provide a terminus for the Lulu island cars on the west side of the station. The east frontage of the station will be located directly on the Granville street bridge, all the Fairview cars of the company passing this point on their way to the business centre of the city.

The first cars were run on the Toronto civic railway, Dec. 18.

Commutator Slotting Device at Winnipeg Electric Railway Shops.

It is a well known fact to all street railway shop men that the mica insulation between the individual segments of the commutator does not wear down at anything like as rapid a rate as the copper of the segments themselves. In consequence, it is necessary periodically to remove the mica slightly below the surface of the copper, as otherwise the brushes would not have a good bearing, but would skip from projecting fin of mica to the next projecting fin, with a great deal of incidental sparking.

In the shops of the Winnipeg Electric Ry. there is a simple little device for performing this operation of slotting down the mica mechanically. The machine in operation is shown in the accompanying illustration. The armature is mounted on V blocks on a stand about 30 ins. above the ground. In front and to one side is the machine for slotting. This machine consists of a bed plate, similar to the ways of a lathe, mounted on a light iron forged frame. This cast plate has V ways on its



Device for Slotting Commutator Insulation.

upper surface, on which a small carriage operates. Mounted in this carriage from side to side, is a bar, in the far end of which is carried a small parting tool, secured by a set screw. The main bar is secured in the carriage likewise by set screws.

At the far end of the base, on two standards, is supported a cross shaft with a handle on the left end and an eccentric sheave and strap on the other. The latter is connected by a small rod to the carriage, the latter receiving its motion along the ways through this means.

The operation is simple. The slotting machine is set parallel to the armature, and with the slotting tool on a level with the centre of the armature. The tool rod is adjusted for depth of cut by the set screws in the carriage. The length of stroke is likewise adjusted by the small stop between the ways at the front end of the base. The carriage can thus be moved over just the correct amount, and not ram the end windings of the armature. Around the outside of the armature is clamped a band, with a projecting handle. By this handle, the operator locates the slot accurately with one hand, and with the other, draws over the slotting lever.

Moving the armature around to the next position, the operation is repeated, slotting out the surplus mica almost as rapidly as the operator can move.

New Route Between Vancouver and New Westminster.

The route of the Westminster interurban line, the original line connecting New Westminster with Vancouver and which started operation in 1891, has been altered by the recent completion of the Highland Park cut off. The old line entered New Westminster along 12th street, along which there was a very steep grade, rendering extreme care necessary in the operation of heavy interurban passenger cars or freight trains such as are used on this branch. The Highland Park cut off leaves the old interurban line at Highland Park, and proceeds by a winding route, taken for the sake of easier grades, into New Westminster. The running time between Vancouver and New Westminster has been lessened by ten minutes because of the change of route and the service is now operated on safer lines.

With the Highland Park cut off in service it will be possible for the company to carry out its plans of operating two car trains between New Westminster and Vancouver. This is rendered necessary by reason of the rapid growth of the suburban traffic along the line both in the vicinity of Vancouver and New Westminster. The section of the Westminster interurban line which has been abandoned for interurban traffic will now be covered by cars connected with the New Westminster city system.

Water Lubrication of Street Railway rails has been in use for some time on a street in Rome, Italy, carrying heavy traffic. The street is on steep grade and has numerous sharp curves. At the top of the slope a stream of water is fed into each of the four rails of the double track line and flows downhill along the groove of the rail. Every 20 to 30 ins. a small wooden block is wedged in the groove, reaching up to wheel flange level, to break the flow of the water. It is reported that cars ride very smoothly on this lubricated track and the grinding noise of cars rounding curves is practically eliminated, while also the general noise of the car traffic is reduced. Grease lubrication at curves is rendered unnecessary.

British Columbia Electric Railway Company's Equipment Orders.

The B.C. Electric Ry. has ordered 65 city passenger cars from the Preston Car and Coach Co. This is the initial order for 1913 delivery. The cars are to be of single end type, and 44 ft. long. The specifications are subject to minor changes, but the cars will be of the latest model throughout. Delivery will be made during April and May.

The company expects to operate its interurban line from Victoria north through the Saanich peninsula, 22 miles in length, early in January. For this line orders for rolling stock have been placed as follows:— 2 baggage and express cars from the Niles Car Co., and 6 passenger cars from the St. Louis Car Co. For freight service 15 flat cars and 25 box cars have been ordered from the Seattle Car Co., and two 45 ton locomotives will be taken from the company's mainland system for use on the new interurban line.

For service on its mainland freight lines, the company has recently ordered 25 box cars from the Seattle Car Co., and five 50 ton locomotives from the Westinghouse Co. Other rolling stock recently ordered by the company consists of 2 snow sweepers from the Ottawa Car Co., and 6 Hart-Otis steel dump cars.

During December full delivery was made of the 24 interurban cars ordered from the St. Louis Car Co. last summer, and this equipment is now in service. The initial shipments have also been made by the Brill Co. on the large order for city passenger cars recently placed.

In announcing its contract with the Preston Car and Coach Co., the management stated that it was not the company's intention to abandon the car building work in connection with its New Westminster shops. It was stated that the schedule for new rolling stock for all lines of the system for 1913 is now being prepared and in this programme ample work would be allotted the New Westminster plant. At these shops is now being assembled and finished shipments of 25 steel city passenger cars which have been constantly arriving on an order placed some time ago in Great Britain.

Abolition of Grade Crossings in British Columbia.

The B.C. Government has declared against grade crossings, where these can possibly be avoided. The municipal council of South Vancouver decided recently to establish a grade crossing at Rupert street, where the road crosses the Westminster interurban line of the B.C. Electric Ry. There is a subway at the point but it was claimed that this was too low for ordinary traffic. The B.C. Electric Ry. entered a protest on the plans of the municipality, and rate-payers holding property in the vicinity also entered objections. The question was argued before the Provincial Minister of Railways at Victoria. After hearing both sides, the Minister stated that under no circumstances would he favor the establishment of a grade crossing at the point, the policy of all growing communities was to avoid grade crossings wherever possible and the idea of the South Vancouver authorities in substituting a level crossing for a subway at Rupert street would be a distinct retrograde movement. A few days after the argument the Minister announced his decision to the effect that the grade of the railway should be raised two feet at the road crossing, thus making possible a subway which would meet the conditions of the case.

British Columbia Electric Railway Company's Report.

The report for the year ended June 30, submitted at the annual meeting in London, Eng., Dec. 10, states that the business has continued to grow very rapidly, and the gross receipts show an increase of \$1,601,994, or over 36%, and the net earnings, including income from investments and subsidiary companies, and after charging renewals, show an increase of \$401,837, or 27%, over the preceding year. From the close of the period under review to September 30, there was a still further increase in gross earnings of \$352,233, or 27%, and in net earnings \$138,204, or 31%. The increase is well distributed over every department and all branches of the system, but is especially noticeable in Victoria.

Gross earnings	£1,231,860	12	0
Operating expenses	819,855	5	5
Net operating revenue ..£	412,005	6	7
Renewals, maintenance	95,231	12	0
Balance	£ 316,773	14	7
Interest on loans, dividends on investments, etc ...	69,464	10	7
	£ 386,238	5	2
Income tax, fees and capital amortization fund	27,107	13	4
	£ 359,130	11	10
Interest on debentures.....	101,460	5	4
	6,590	2	8
Brought forward from last year	£ 257,670	6	6
Net balance	£ 264,260	9	2

During the whole of the year very large sums have been involved in various works and extensions under construction, and have consequently remained unremunerative.

The following charges have been made against revenue account:—

Provision for renewals maintenance (from which £22,110 3s. has been deducted for adjustments and expenditure on renew- als during the year).....	£95,231	12	0
Amount added to capital amortization fund	2,270	1	6
	£97,501	13	6
Net profit for the year, after making above deductions	£359,130	11	10
Add balance brought forward from last year	6,590	2	8
	£365,720	14	6
Deduct—			
Interest on debentures and debenture stock to June 30	£101,460	5	4
Dividends already paid—			
5 per cent. cumulative per- petual preference stock ..	50,000	0	0
Preferred ordinary stock ..	60,000	0	0
Deferred ordinary stock for six months to Dec. 31, 1911	40,000	0	0
	251,460	5	4
Leaving available for further distribution and reserve	£114,260	9	2

From this the directors have decided to recommend payment of dividend on deferred ordinary stock at 8% per annum for six months to June 30, £40,000; to transfer to reserve fund, £66,528 9s. 7d., a total of £106,528 9s. 7d., and to carry forward to next year £7,731 19s. 7d.

There has been added to the reserve fund £55,471 10s. 5d., representing premium, less expenses, on £600,000 new capital, issued in July, 1911. After the transfer now recommended by the directors as above, the reserve fund will amount to £459,000.

The growth of the business is indicated by the following figures:—

	Miles of track in operation	Total cars of all classes
1909	97.74	248
1910	141.65	427
1911	233.65	647
1912	285.75	725

The number of passengers carried was 62,154,166, an increase of 15,612,718. The

number of lamps in use at June 30 was 735,426, an increase of 171,884.

In accordance with the established custom for some of the directors to visit British Columbia annually, T. Blundell Brown went there in May, and during his stay thoroughly discussed and investigated existing conditions and future prospects with the management and with many leading British Columbians. He reports much prosperity throughout the country, and is well satisfied with the great expansion of the enterprise since his last visit four years ago. He is entirely convinced that the progressive policy adopted by the company is wise and justifiable.

Very important works have been carried out during the year, and are still under construction.

POWER PLANTS.—The extension of the hydro electric power plant at Lakes Coquitlam and Buntzen has been successfully carried on, and will be completed during next summer. Already the work has provided the company with largely increased water storage. The magnitude of the undertaking may be gathered from the following particulars:—A new dam is being built at lake Coquitlam, maximum height, 98 ft.; width at base, 600 ft.; length at crest, 850 ft.; width at crest, 40 ft.; storage capacity, 7,404,000,000 cub. ft., giving an available reserve during a dry season of 53,700,000 k.w.h. of electrical energy; 1,055,000 cub. yds. of material will have been handled on completion of the works; the number of men employed on the work during the last six months has varied from 1,289 to 1,514. An additional and separate power house of a massive character, with foundations on the solid rock, is being built at Lake Buntzen. Three hydro electric units will be installed therein, having a combined capacity of 40,500 h.p. These, added to the units already in operation in the old power house, will give a total available supply of 82,500 electrical h.p. The directors had hoped that these new units would have been ready for operation in November, but owing to labor troubles experienced in Great Britain, considerable delay occurred in the manufacture of the generators, and it was found impossible to ship the first generator from Birkenhead before Oct. 12. It is expected that the first unit will be in service during February. The completion of the works above referred to will place the company, so far as power is concerned, in a very satisfactory position, and after February next, in return for the heavy capital expenditure of the past three years, it will have a very large power development at an economical figure, and one in which maintenance and operating expenses will be reduced to a minimum. In every detail the most modern practice in hydro electric power plant design has been adopted, the best features of European and American design having been combined to produce a plant which will, undoubtedly, be one of the finest in the world.

On Vancouver island the company is also largely increasing its hydro electric power installation to meet the rapidly increasing business in Victoria and surrounding districts. The first Jordan river installation was put into operation in Feb., 1912, and consisted of one unit of 6,000 h.p. impulse wheel on the shaft of a 4,000 k.w. alternator, with all necessary complementary equipment. A second unit of equal capacity has been completed within the last few weeks, and is now delivering power in Victoria. The dam connected with this installation was completed by May, and has a capacity of 327,900,000 cub. ft., which is equivalent to the storage of 5,960,000 k.w.h.

of electrical energy. The company is also constructing near Victoria, with a separate transmission line, an auxiliary steam plant having an initial capacity of two 2,000 k.w. units. The design has been laid out so that in the future new units can be added very economically and quickly.

NEW LINES OF RAILWAY.—The railway from Victoria through the Saanich peninsula, about 20 miles, is now nearing completion, and the board hopes that it will be in operation during Dec., 1912, and some 8 miles radiating from New Westminster have either been completed during the year or are approaching completion. The company is also building several extensions in North Vancouver, South Vancouver, Point Grey and Victoria, aggregating over 15 miles. Large purchases of rolling stock have been made, in addition to which the company's car shops at New Westminster have been kept working to full capacity, and have turned out a large number of cars. The terminal station and central offices in Vancouver have been completed, and constitute one of the most conspicuous and important structures in the city. The offices are now occupied by the staff, and the excellent accommodation which they provide should greatly facilitate the administration of business.

During the year the company was compelled to suspend traffic in Point Grey municipality owing to legal proceedings having been instituted which challenged the validity of its franchises. This matter has been satisfactorily terminated by a vote of the people, who by a very large majority passed a bylaw confirming the franchises for the unexpired 37 years.

Expenditure on Capital Account.

Rolling stock	\$ 725,263.74
Permanent and double tracking and sundry improvements	926,552.71
Track extensions	648,928.10
Lighting extensions	278,046.67
Power extensions	137,499.27
Steam plant	480,434.48
Lands and buildings	520,006.04
Electrical machinery	321,441.42
Extending light and power system, North Vancouver—Rolling stock, meters, transformers and initial installations	46,389.78
Sundries	99,930.85
Transmission lines and railway feeders	45,187.06
	\$4,513,727.13

Electricity on Italian Railways.—Some important changes are being made on the Milan-Gallarate-Portoceresio electric railway in the north of Italy. This line was one of the first to be installed in the country, and is on the point of adopting modern methods. The old steam plant of Tornavento, which was expensive to work and is now too small, will be shut down, and the current for the road will come from the large hydraulic plant of Varzo on the south side of the Simplon. Current at 45,000 volts is brought to Gallarate by a power line running along the railway, and the current for the cars is supplied by seven substations spaced along the line, instead of the four stations which were formerly used. Owing to the increased amount of power which the railway now has at its disposal, it is able to run heavier passenger trains than before and also does away with the use of steam locomotives on the freight trains. For the heavy passenger traffic there are used five large electric locomotives of 2,000 h. p. At the hours of light traffic the trains will be made up of a few motor cars, according to the usual method.

The Board of Railway Commissioners has authorized C. J. Laughlin, Jr., Vice President, or H. Rooke, Secretary of the Niagara, Welland and Lake Erie Ry., to prepare and file tariffs for freight and passenger traffic and of telegraph tolls.

Electric Railway Projects, Construction, Betterments, Etc.

Assiniboia, Man.—At a meeting of the council of this municipality, Dec. 4, a resolution was passed favoring the building of a municipally owned electric railway. It is said that if the project materializes it will be carried out in connection with a similar enterprise in the Fort Garry municipality.

Brantford and Hamilton Ry.—It is proposed, as soon as the necessary powers can be obtained, to extend the line to Galt, Ont., about 20 miles. The Galt line would start from the present line at Langford. Application is being made to the Dominion Parliament for authority to build the extension. (Aug., 1910, pg. 681.)

British Columbia Electric Ry.—On Nov. 30 the company started operating cars over the Highland Park cut-off on the Vancouver-New Westminster line. This cut-off saves ten minutes on the trip between the two cities. An arrangement has been made with the city as to the rental to be paid by the company for the use of the new Connaught bridge. Plans have been submitted for changing the location of the passenger station near the Granville street bridge, and it is reported that plans will shortly be submitted for additions to the company's car barns in Vancouver.

Press reports state that plans are being prepared for the extension of the company's lines in South Vancouver.

The Provincial Minister of Railways has approved of plans and specifications for a bridge to be erected at the upper crossing of the Coquitlam river, on the Port Moody and Coquitlam Ry., a branch of the B.C.E. Ry. The bridge will consist of three 50 ft. Howe truss deck spans with trestle approaches.

A car service was put in operation on the Hillside avenue car line in Victoria, Dec. 2. It is expected that the extension to Deep Cove, in the Saanich peninsula, will be opened for traffic early this year. Arrangements are being made for terminal facilities in Victoria at an estimated cost of \$200,000, and for the erection of car barns at Deep Cove. The new steam plant at Brentward bay, Tod inlet, has been completed, and was put in operation Nov. 24. The plant is intended to be used in case of any accident to the Jordan river plant. (Dec., 1912, pg. 622.)

Burrard-Westminster Boundary Ry. and Navigation Co.—Application is being made to the Dominion Parliament to extend the time within which the lines authorized by the statutes of 1907, as amended in 1911, may be built. A. J. Kitto, Vancouver, B.C., is solicitor for the company. (Oct., 1912, pg. 520.)

Calgary Municipal Ry.—Bylaws are being submitted to the taxpayers for authority to raise by debentures and to expend \$108,500 on 10.5 miles of new lines; and \$68,400 on building second track on existing lines during 1913. (Dec., 1912, pg. 622.)

Edmonton Interurban Ry.—The directors have made two calls of 10% on the shareholders, the first due Dec. 17, 1912, and the second payable Feb. 18. C. E. Barry, Edmonton, Alta., is Secretary. (Dec., 1912, pg. 622.)

Edmonton Radial Ry.—The Edmonton, Alta., city council, Dec. 9, unanimously approved of plans submitted by Inspector Moir for the building of a system of radial railways, having a total length of 120 miles. The plan provides for lines all over the limits of the city, so that no building site will be more than three and a half blocks from a car line. It is intended to begin working out this plan early this year, during which it is proposed to add 18

miles to the existing lines, and to begin making permanent improvements upon all the streets on which it is proposed to build car lines. (Dec., 1912, pg. 622.)

Fort Garry, Man.—Application is being made to the Manitoba Legislature for an act authorizing Fort Garry municipality to build an electric railway, with terminals in Winnipeg. R. A. C. Manning is Reeve of the municipality.

Grand Valley Ry.—The Brantford, Ont., city council has authorized the company to fix up the line at once, on condition that \$10,000 of back taxes are paid immediately, and the balance in two instalments on Mar. 1 and May 1.

Hull Electric Ry.—Application is being made to the Dominion Parliament for an act declaring the company's line to be a work for the general advantage of Canada, and authorizing it to extend the line into Ottawa, by an independent line or over the line of any other company with which an agreement may be made. The H.E. Ry. is owned by the C.P.R. (May, 1912, pg. 251.)

Kingston, Portsmouth and Catarqui Electric Ry.—H. W. Richardson, President, has informed the Kingston, Ont., city council that the line is not for sale. The city desired to obtain an option on the property with a view of settling certain matters as to which there is a difference of view between the council and the company. (Dec., 1912, pg. 622.)

Moncton Tramways, Electricity and Gas Co.—The car line has been extended to the new Intercolonial Ry. shops at Moncton, N.B., and a car service was started on the extension Dec. 5. (Dec., 1912, pg. 622.)

Morrisburg and Ottawa Electric Ry.—The Ottawa city council had under consideration, Dec. 2, the question of the route of this projected electric railway into the city. The railway committee recommended a route along Riverside avenue and Main street to the proposed terminal station near the Ottawa East bridge. The report was referred to the board of control for discussion. Ewart, Scott, McLaren and Kelley, Ottawa, are representing the company. (Nov., 1912, pg. 574.)

Niagara, St. Catharines and Toronto Ry.—The first sod of the extension from St. Catharines to Niagara-on-the-Lake was turned, Dec. 2. It was expected to have five miles graded by the end of the year. When the spring opens the line will be completed, and it is expected to have it open for traffic by June 30. (Dec., 1912, pg. 622.)

Nipissing Central Ry.—The Board of Railway Commissioners has authorized the opening for traffic of the extension of the line from Haileybury to Liskeard, Ont. It is proposed to remove the car barns from North Cobalt to Haileybury. The present barns are too small, and are not central enough for the extended line. (Dec., 1912, pg. 622.)

Application is being made to the Dominion Parliament to extend the time for the building of the lines authorized in the statutes of 1907, as amended in 1908.

Ottawa Electric Ry.—We are officially advised that the company is building an addition to its Cobourg street barn, which will add four to the six tracks already there, and give accommodation for 30 more cars. (Nov., 1912, pg. 574.)

Porcupine Rand Belt Electric Ry.—The organization of this company was reported completed in Toronto, Nov. 26, with the following officers:—President, F. G. Earl, New York; Vice Presidents, S. A. Adila, Toronto; R. Mallett, Dublin, Ireland; W.

J. James, Allandale, Ont.; Secretary-Treasurer, H. S. Rowland, Toronto; Chief Engineer, C. R. Fullerton, Liskeard, Ont. The company holds an Ontario charter of incorporation; it has secured a Quebec charter, and it is proposed to secure Dominion incorporation. Preliminary surveys are said to have been made for several routes under existing charters, viz.:—From Dane via Larder lake to North Timiskaming and Liskeard; from Ruel C.N.R. to Lake Porcupine and the N.T.R. via W. Shining Tree lake and the Mattagami river, and from Dane to Swastika and the G.N. Bend, Montreal river to South Porcupine.

The gradients on these routes are reported to be fairly easy, and the cost of construction, it is said, will not be excessive. It is proposed to use single storage battery cars, with trailers for freight. There are several good water powers along the routes which it is proposed to develop for recharging batteries. The company is authorized to make agreement for running rights with railways with which its line may connect. According to press reports the company proposes to make the line a portion of an electric railway system extending from Quebec to Winnipeg. (June, 1912, pg. 310.)

Rainy River Radial Ry.—Engineers are reported to be at work making surveys for a line from Fort Frances to the Lake of the Woods, as the first section of the projected system. (May, 1912, pg. 252.)

St. Laurent, Que.—Application is being made to the Quebec Legislature to ratify an agreement between the St. Laurent municipality, Que., and the Franco-Belgian Investment Co., whereby the latter has been granted an exclusive franchise for 25 years for the construction of an electric railway, and the operation of other public utilities in the municipality. (Nov., 1912, pg. 574.)

Saskatoon Municipal Ry.—It has been decided that this is to be the general title of the electric railway which is being built in Saskatoon, Sask., for the city, by the Stone and Webster Engineering Corporation, Boston, Mass. The car barns have been completed, and a temporary track was laid from the C.P.R. to the car barns for the hauling in of the cars, which were delivered Nov. 30.

The city of Saskatoon is asking the Saskatchewan Legislature to authorize it to acquire the rights and powers of the Saskatchewan Power Co., incorporated by the Dominion Parliament in 1908. (Dec., 1912, pg. 623.)

Stratford Ry.—The city council has approved of a new bylaw granting the company a franchise for the building of an electric railway in Stratford, Ont., and the taxpayers will be asked to approve of it, Jan. 6. At the meeting of the council, Dec. 3, a letter was read from Sir Wm. Mackenzie, in which he said that construction would be started June 1, 1913, and the line would be completed by Dec. 31, 1914, provided the bylaw was carried by the people and confirmed by the Legislature. (Dec., 1912, pg. 623.)

Toronto Civic Car Lines.—The first section of the municipally owned electric railway in Toronto was put in operation Dec. 18. The line starts at the terminus of the Toronto Ry.'s Parliament street line on Gerard street, and runs along that street to Main street, East Toronto. Cars were purchased in the U.S.; power is being supplied by the Hydro-Electric Commission. A seven minute service is to be maintained, with a 2c. fare, or six tickets for 10 cents.

A suggestion has been made that this line should be extended under the proposed Hydro-Electric municipal plans, through Agincourt and other points to Markham,

with a branch to Locust Hill and other points.

The Arnold Co., of Chicago, who were appointed to report on the street railway service in Toronto and to suggest what additional lines are necessary, have presented a report, accompanied by a map which shows new north and south lines on Greenwood avenue, Pape avenue, Ter-auley street, Claremont street, and its extension to St. Clair avenue and Dufferin street; a cross town line from Yonge to Bathurst street, running along St. Patrick street, and a line along Bloor street to Roncesvalles avenue. A number of lines in the districts annexed since 1891 are also recommended, as well as the routes upon which lines should be built outside the present city limits as the growth of the city demands. (Dec., 1912, pg. 623.)

The Winnipeg Electric Ry. operates 35 miles of single and double track lines in the city, and owns or controls, in and out of the city, 120 miles of track. It was expected that 12 miles of additional track would be added by Dec. 31, 1912. Most of this mileage has been completed and is being operated over. The extensions on which work was being done during December were:—From Inkster avenue to the city limits on Main street; Academy road line; and from Stafford street to Ash street on Godfrey avenue.

At a meeting at which representatives of various municipalities were present, in Winnipeg, Dec. 11, a resolution was passed inviting the W.E. Ry. to take into consideration the desirability of building an electric railway to Portage la Prairie, Man. A committee was appointed to secure information and to prepare a general plan for submission to the company and to the municipalities interested. (Dec., 1912, pg. 623.)

Winnipeg to Portage la Prairie.—Press reports state that preliminary details are being worked out for the building of an electric railway from Winnipeg, via St. Francois Xavier, to Portage la Prairie, Man.

Electric Railway Notes.

The Moncton Tramways, Electricity and Gas Co. received a new car recently for its suburban service.

The Hull Electric Ry. has started the operation of pay-as-you-enter cars between Aylmer, Que., and Ottawa.

The St. John (N.B.) Railway has received the six car coaches recently ordered, and is waiting for the delivery of the trucks.

Eleven single truck cars have been delivered at Saskatoon, Sask., for the municipal electric railway, now under construction. The cars were built in the U.S.

The Fort William, Ont., city council has recommended the joint board operating the Port Arthur and Fort William Electric Ry. that a five minute service be put on between the two cities.

A vote is to be taken in London, Ont., at the municipal elections, Jan. 6, upon the question of the operation of cars on Sundays. Since the last vote was taken, the city limits have been extended.

The Board of Railway Commissioners has approved of standard passenger tariff of maximum tolls for the Nipissing Central Ry., which is owned by the Province of Ontario and operated by the Timiskaming and Northern Ontario Ry. Commission.

The Saraguay Electric and Water Co. is applying to the Quebec Legislature for authority to change its title to the Light and Power Co. of Montreal, or the Mont-

real Public Service Corporation, and for power to acquire franchises for electric railways, etc.

The Hamilton St. Ry. has granted a 2 cent an hour increase to first and second year men, and a 3 cent an hour increase to third year men, with 2 cents an hour extra for overtime and Sundays. Proportionate increases have been given to the men on the Hamilton and Dundas Ry., the Hamilton Radial Ry., the Hamilton, Grimsby and Beamsville Electric Ry., and the Brantford and Hamilton Ry. All these lines are owned by the Dominion Power and Transmission Co.

The street railway committee of the Calgary, Alta., city council, has recommended that an experiment be made with the "trackless trolley" car in the city. Applications are being made for the extension of lines in various parts of the city, but while the committee is desirous of giving the public every accommodation, they don't see that there is any prospect of a number of the extensions asked for paying, hence the suggestion that the "trackless trolley" be tried.

In reference to the crossing of the Winnipeg Electric Ry. tracks by the C.P.R. at Logan avenue, Winnipeg, and the question of the apportionment of the cost of the protection provided there, which came before the Board of Railway Commissioners in Winnipeg, July 18, 1912, the W.E. Ry. having failed to file a statement showing whether the portion of its line to the C.P.R. shops is profitable or not, the Board has appointed A. Sullivan, barrister, Winnipeg, to make an enquiry to ascertain the facts.

The Minister of Labor has, according to an Ottawa press dispatch, received the report of the board of conciliation which was established for the adjustment of disputes between the Quebec Railway, Light and Power Co. and its electric railway employes. Men who have been employed more than one year will get 17½ cents per hour; two years, 18½c.; three years, 20½c.; 8th year, 21½c.; 13th year, 22½c. \$6,000; wharfage, outward, \$5,500; from local After Nov. 1, 1913, the schedule is increased one cent an hour. The company has, it is said, undertaken not to offer any objection to employes being members of the union, and will reinstate employes whose dismissal was called into question.

Clubhouse for British Columbia Electric Railway Employes.

The B.C. Electric Ry. is providing for the comfort and convenience of the motor-men and conductors employed on its Vancouver lines by the construction of a five story club building at the corner of Main and Prior streets, Vancouver, directly opposite the company's principal car barns in the city. The building will have a frontage of 25 ft. on Main street and a depth of 60 ft. on Prior street. The Prior street frontage to the rear of the block is owned by the company and in the plans arrangement is being made for the extension of the block should the need arise.

On the 1st floor will be a general waiting room for the men and offices for the station master and inspectors. On the 2nd floor will be a large billiard room, with billiard and pool tables. On the 3rd floor will be the reading room, and about half the floor space of this flat will be used for lockers. The 4th floor will be divided entirely for lockers, this accommodation in connection with the third floor providing lockers for over 500 men. The gymnasium will be on the 5th floor, the

entire flat being left free of obstruction as far as possible. A complete set of gymnasium apparatus will be installed. The upper floor will be reached by an elevator as well as a winding stairway. Lavatory accommodation will be provided on each floor. The company's architect has studied the plans of similar buildings operated by electric railways on the continent, for their men, thus arranging for a building adapted to local needs and conditions and up to date in every particular. The block will be of brick construction, the frontage being trimmed with terracotta. The estimated cost is between \$30,000 and \$40,000.

Personal Paragraphs.

F. H. WILSON, Director, Montreal Tramways Co., has been elected a director of the Merchants Bank of Canada.

E. L. WHITE, of Saskatoon, Sask., has been appointed by the city council, Manager of the municipal railway.

T. G. CONNOR, dispatcher, British Columbia Electric Ry., has been appointed Chief Dispatcher, vice F. D. Picken, promoted. Office, New Westminster.

H. McDONALD, who some years ago was connected with the Cape Breton Electric Co. and the Sydney and Glace Bay Ry., died at Glace Bay, N.S., of which city he was Mayor, Dec. 3.

Mrs. Anderson, widow of the late Walter Anderson and mother of JAMES ANDERSON, Manager, Sandwich, Windsor and Amherstburg Ry., died at Ayr, Ont., December 12, aged 90.

G. O. D. OTTY, K.C., Hampton, N.B., who has been a member of the New Brunswick Public Utilities Commission since its inception, has been appointed Chairman, succeeding the late D. McL. Vince.

J. E. RICHARDS, General Freight and Passenger Agent, Chatham, Wallaceburg and Lake Erie Ry., has been admitted a member of the Eastern Canadian Passenger Agents' Association.

J. D. EVANS, M. Can. Soc. C.E., Chief Engineer and Superintendent of Construction, Montreal Tramways Co., has been appointed a member of the American Electric Railway Association's committee on way matters.

PATRICK DUBEE, Secretary-Treasurer, Montreal Tramways Co., and President, Canadian Street Railway Association, has been appointed a member of the American Electric Railway Association's committee on taxes and assessments.

F. D. PICKEN, heretofore Chief Dispatcher, British Columbia Electric Ry., New Westminster, has been appointed Superintendent of the Victoria-Saanich line, which is under construction and will be put into operation shortly. His office will be at Victoria.

C. E. A. CARR, formerly General Manager, Quebec Ry., Light and Power Co., and latterly General Manager, New Orleans Southern and Grand Isle Ry., New Orleans, La., has resigned the last mentioned position and with his family has been spending Christmas and New Year's in Toronto.

Electric Traction on two mountain divisions of the Denver & Rio Grande R.R. is to supplant steam according to published announcements. The first section will be 114 miles in the Wasatch mountains, between Salt Lake City and Helper, Utah. The second section will be in Colorado, over Tennessee pass, between Salida and Minturn, 87 miles. Other sections will be converted until the entire line is under electric traction.

Construction and Operation of Regina Municipal Railway.

Following are extracts from a report to the city council of Regina, Sask., by H. Doughty, Superintendent of the municipal electric railway, dealing with the 10 months ended with Oct. 31, 1912:—

Mr. Doughty says that reviewing the development and success achieved in this municipal undertaking since the commencement of 1912, one cannot but express faith and certain success of its operation in the future, comparing the past returns with its present day operation.

CONSTRUCTION.—The car barns were occupied and put into service Jan. 22. Various track intersections providing satisfactory and suitable entrances have since been installed. Machinery needed for repair and maintenance work has been added from time to time. Several necessary machines are now on order, and when they are delivered we shall be able to handle all that work required for our present and future rolling stock, and, further, such will enable us to build ourselves all cars wanted, excepting passenger cars. The facilities established to date give us storage room for 45 cars, of which 23 can be placed under cover.

The estimates provided for an expenditure of \$200,000, of which \$150,000 was covered by bylaw, the remainder consisting of a surplus out of 1911 bylaw and stock on hand.

Approximately there was built during 1912 four miles of single track, made up as follows:—1¼ miles single track concreted and 2¾ miles single track ballasted, comprising as follows:—

Single track concreted, 16th avenue, Scarth to Broad street (completion of south belt line).

Double track concreted, Broad street, 15th to 16th avenue; Albert street, 16th to McCallum avenues.

Single track ballasted, 5th avenue, Retailack to Garnet street; car barn tracks to connect with C.N.R. spur; Winnipeg street, Victoria avenue to the Arcola line; Dewdney, Elphinstone street to R.N.W.M.P. barracks.

The last two mentioned tracks are incomplete owing to the non-arrival of special intersections required for same. Shipment, however, has been made and such routes should be ready for operation by Dec. 1, 1912. When these are completed they cannot be operated until further rolling stock is at our disposal.

The straight tracks installed to date are so arranged as to give a 10 minute schedule on all routes operated on, or those that will be operated over until spring.

A temporary feed system was constructed prior to the Dominion exhibition in 1911. The construction of a permanent one is under way. It was found impossible to have a satisfactory one installed in the first instance, owing to the construction of Broad street subway and the pole lines in that vicinity then established being indefinite. The quality and standard of that work done in 1912 equals any portion of that laid during 1911. It is one of the best types known, and is so constructed as to give long life and low maintenance charges.

The present mileage of single track laid is 14½ miles. Out of the remaining bylaw covering the 1912 expenditure there is approximately an amount on hand unexpended against estimates of about \$30,000, partly saved through work not undertaken and postponed when the 1913 proposals and estimates were prepared.

OPERATION.—The rolling stock on Jan. 1, 1912, consisted of 2 double truck cars and 4 single truck cars. Two single truck cars

were added on April 15 and 4 more on June 30, making the total rolling stock 2 double truck cars, 10 single truck cars and 1 snow sweeper. Since Oct. 31 eight more double truck cars were ordered, four for Dec., 1912, and four for Jan., 1913, delivery. Orders have also been given for 8 double truck and 6 single truck cars for the spring.

Following is a comparative statement of operation for Oct., 1911, and Oct., 1912, respectively:—

	1911.	1912.
Average daily revenue.....	\$ 129.61	\$ 379.45
Total revenue.....	3,369.80	10,190.75
Passengers carried without transfers.....	65,220	227,047
Car mileage.....	17,793	41,074

In Jan., 1912, we had a daily passenger traffic of 4,300 people, today we are carrying on an average about 10,000 people, while our daily revenue in Jan., 1912, was \$200, compared with \$425 at present.

The operation for the 10 months ended Oct. 31, 1912, shows a revenue of over \$15,000 above operating expenses, and gives a passenger total (transfers included) of 1,829,599. Cars have operated over 296,500 miles.

The operating staff now consists of 75 people, with a daily payroll of \$240.

The programme covering proposed extensions for 1913 is ready for submitting in the form of a bylaw to the citizens. It includes some 18½ miles single track, with cost of passenger cars, gravel and garbage cars, additions to car barns, spur tracks, etc., at an estimated cost of about \$800,000. This expenditure comprises in detail the following proposals:—Track construction, \$600,000; rolling stock, \$175,000; miscellaneous, etc., \$25,000. The proposed extensions, if completed and adequately provided with necessary rolling stock, should in 1913 show a clear net revenue of \$50,000 after payment is made in full covering operating expenditure and fixed charges.

Electric Railway Finance, Meetings, Etc.

British Columbia Electric Ry.—Gross earnings for Sept., \$559,486; operating expenses, \$345,366; net operating earnings, \$214,120; renewal funds, \$51,620; net earnings, \$162,500; approximate income from investments, \$35,000; net income, \$197,500; against \$453,391 gross earnings; \$282,443 operating expenses; \$170,948 net operating earnings; \$37,935 renewal funds; \$133,013 net earnings; \$25,000 approximate income from investments; \$158,013 net income for Sept., 1911. Aggregate gross earnings for three months ended Sept. 30, \$1,651,474; net earnings, \$579,342, against \$1,299,241 aggregate gross earnings; \$441,138 net earnings for same period 1911.

During the ten months ended Oct. 31, the B.C.E. Ry. paid to the Vancouver city council \$63,968 on percentage account. The amount for October was \$887.46, during which period 4,218,766 passengers were carried.

Montreal Tramways Co.—The city treasurer of Montreal received from the company, Dec. 1, \$409,510.14, the city's percentage on the gross earnings of the company within the city limits for the year ended Aug. 31, 1912. The Montreal Terminal Ry., owned by the M.T. Co., sent \$1,491.55, percentage on earnings for the same period.

An issue of \$890,000 first and refunding mortgage bonds at 5%, recently placed on the market by N. W. Harris and Co., Boston, Mass., in denominations of \$500 and \$1,000, was announced to have all been taken up, Dec. 16. The statement of earnings, etc., for 12 months ended Sept. 30, 1912, reported in connection with the issue, was:—Gross earnings, \$6,047,351.36; operating expenses, including taxes, \$4,067,-

\$66.61; net earnings, \$1,979,484.75; annual interest charge on all underlying bonds outstanding, including the new issue, \$765,650; balance, \$1,213,834.75. The net earnings show over 2½ times the annual bond interest charge.

Toronto Ry., Toronto and York Radial Ry., and allied companies.—Gross earnings for Sept., \$767,944; operating expenses, maintenance, etc., \$404,171; net earnings, \$363,773, against \$705,961 gross earnings; \$309,706 operating expenses, maintenance, etc.; \$396,255 net earnings, for Sept., 1911. Aggregate gross earnings for nine months ended Sept. 30, \$6,221,043; net earnings, \$3,185,100, against \$5,559,647 aggregate gross earnings; \$2,886,405 net earnings for same period 1911.

The city has received from the company \$45,151.63, as percentage on the November gross receipts of \$455,855.83 on the Toronto Ry., being an increase of \$6,553.13 in percentage, and \$46,731.51 in gross earnings, as compared with Nov., 1911.

Winnipeg Electric Ry.—Gross earnings for September, \$309,722; operating expenses, \$162,870; net earnings, \$146,852, against \$321,664 gross earnings; \$146,140 operating expenses; \$175,524 net earnings for Sept., 1911. Aggregate gross earnings for nine months ended Sept. 30, \$2,737,552; net earnings, \$1,280,748, against \$2,825,637 aggregate gross earnings, \$1,433,507 net earnings for same period 1911.

Electric Railway Track Laid in 1912.

Below is a table showing track laid on electric railways in Canada during 1912. The table is not published as a complete one, owing to the fact that some of the companies have not replied to the circular sent, but it is believed to be approximately correct. The feature of the returns for 1912, like that for 1911, is the extension of lines in the western provinces. The * mark indicates that the figures given are estimated.

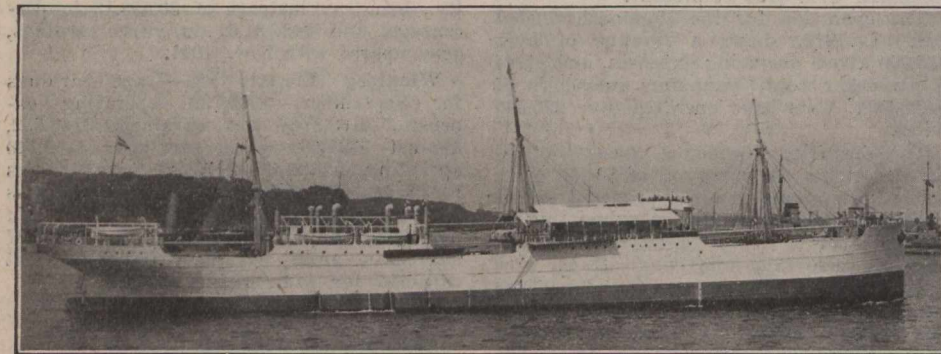
	Miles.	Miles.
Brandon Municipal Ry.—		
*Extensions.....		3.00
British Columbia Electric Ry.—		
Various extensions:—		
Vancouver.....	5.32	
South Vancouver.....	2.11	
Point Grey.....	4.20	
New Westminster.....	9.28	
North Vancouver.....	0.50	
		21.41
Calgary Municipal Ry.—		
Various extensions.....		17.50
Edmonton Radial Ry.—		
Three extensions.....		2.49
Guelph Radial Ry.—		
York road to City Limits.....		0.60
Halifax Electric Tramway—		
One new extension.....		0.80
In addition a second track was laid on 3.50 miles of existing lines.		
International Transit Co.—		
Extension in Steelton, Ont.....		0.41
Lethbridge Municipal Ry.—		
Lines in city.....		10.50
Levis County Ry.		
St. Romauld to Garneau's Bridge, Que.....		1.50
Moncton Tramways Electricity and Gas Co.—		
Three lines in Moncton, N. B.....		0.74
Niagara, Welland and Lake Erie Ry.—		
Line in Welland, Ont.....		1.00
Nipissing Central Ry.		
Haileybury, Ont., to spur line.....		1.32
Liskeard, Ont. to Wabis River.....		1.61
		2.93
Oshawa Ry.—		
Line to brick yard, Oshawa, Ont.....		1.50
Peterborough Radial Ry.—		
Extensions.....		0.75
Saskatoon Municipal Ry.—		
*New Lines.....		10.50
Toronto Eastern Ry.—		
Bowmanville, Ont.....		0.36
Toronto Civic Lines—		
St. Clair Ave. Line.....		3.20
Gerrard St. Line.....		1.85
Danforth Ave. Line.....		1.12
		6.17
Western Canada Power Line—		
Ruskin to Stave Falls, B.C.....		6.00
Winnipeg Electric Ry.—		
*Various extensions.....		19.00
Total.....		107.16

Marine Department.

The Oil Engine Ship Christian X. for Trans-Atlantic Trade.

The appearance of the first great motor driven liner, the Christian X, of the Hamburg-American Line, in New York recently inaugurated a new era in marine construction. In this vessel the cumbersome steam engines, with their boilers, furnaces and coal bunkers, have been replaced by compact internal combustion engines. The working forces of the engine rooms are greatly reduced, the cost of equipment and maintenance is lowered, while a consider-

able gain is effected in cargo space. The Christian X, with her sister ship, the Selandia, has made a successful trip to East Asia, not only of this line, but of the entire German marine.



The Oil Engine Ship Christian X.

The Christian X, which embodies the latest ideas in marine construction, was built at Copenhagen, Denmark. The Selandia has made a successful trip to East Asia, while the Christian X is said to have more than fulfilled all requirements in the transatlantic crossing.

This oil engine ship is built in accordance with the highest class specifications of Lloyds, and has a hurricane deck, with forecastle, forward and after bridges and poop. Her dimensions are:—Length between perpendiculars, 370 ft.; greatest beam, 53 ft.; height of hurricane deck above water, 30 ft. She can carry 7,400 tons; her displacement, loaded, is about 9,800 tons; her capacity is 4,900 gross registered tons, or 3,200 net registered tons.

The powerful engines of the oil liner may be reversed from "full speed ahead" to "full speed astern" in about eight seconds, thus affording the captain remarkable control of his ship. The engines are started or reversed by means of compressed air, which is operated very simply and directly by levers operated from the engineer's platform. The main engine plant consists of two eight cylinder, single acting, four-cycle Diesel engines, which together have an indicated horsepower of 2,500. At a speed of 135 revolutions of the propeller per minute the oil liner has a speed of 11½ to 12 knots. In starting, the engines are turned over by means of compressed air at a pressure of 300 lbs. per sq. in. After the first few revolutions the fuel admission valves come into action and a mixture of oil and air, at a pressure of 900 lbs. per sq. in. is injected into the cylinder.

The fuel oil is carried in double-bottom tanks, which hold about 1,000 tons of oil. This is pumped from the double-bottom tanks into two working tanks, each having a capacity of 12 tons, which is an ample quantity for 24 hours, running at full power.

From the working tanks, the oil is forced into the cylinders by means of an injection apparatus. The exhaust gases are first cooled in an exhaust chamber, then led to the outer air through a hollow mast and discharged at a height of 49 ft. above the deck. The compressed air is stored in four working tanks, with a capacity of 212 cu. ft., and in two high pressure tanks.

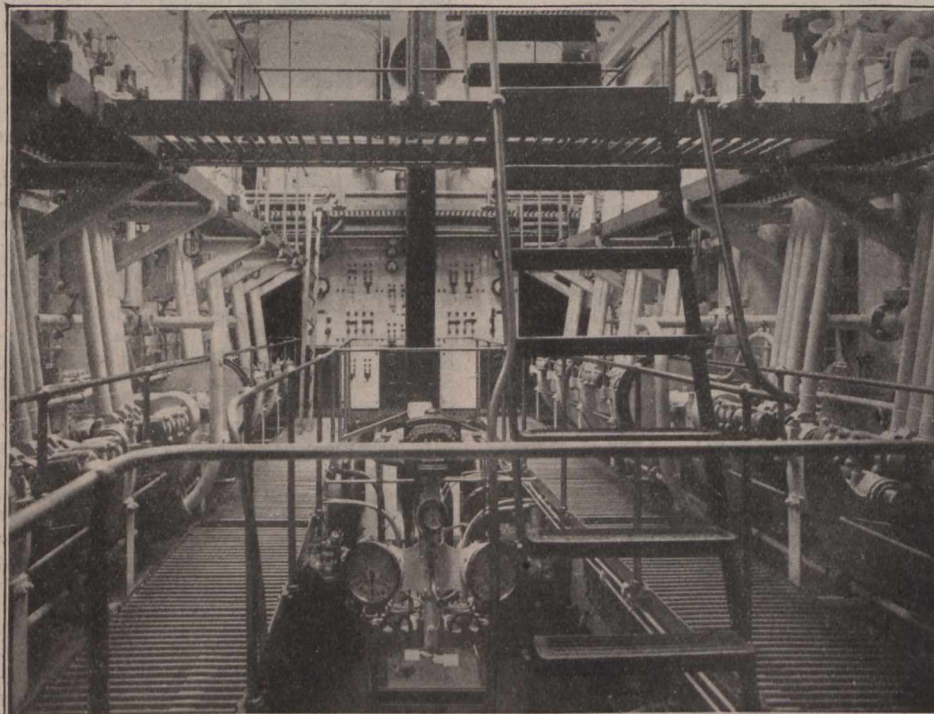
All of the auxiliary apparatus of the oil liner is in duplicate, insuring continuous

operation in case of accident to any of the parts. There are two Diesel engines, each of 259 h.p., with double sets of compound dynamos and air compressors. The dynamo

plant on board, which drives a four stage compressor. The steam for this engine is supplied by a small donkey boiler, with oil firing, which also furnishes steam for the heating system of the ship. All the pumps have electric driving, except the ballast pumps and the fuel-oil pumps, which are air driven.

There are two sets of bilge pumps, warm-water pumps, and cold-water pumps, which can all be connected to the fire-extinguishing lines; as well as two centrifugal cooling-water pumps, two fuel-oil pumps, one ballast pump, and two lubricating-oil pumps. The liner is also equipped with an electrically driven carbonic acid gas refrigerating machine. The whole machinery plant, except the donkey boiler and the thrust bearings, takes up only about 43 ft. of the ship's length; and the boiler and bearings are contained in a separate space 8½ ft. long and 22 ft. wide.

The ship has four cargo holds under the main deck, and one hold on the main deck. The total capacity of these holds is 370,000 cu. ft. For the accommodation of passengers there are 11 staterooms with 19 beds, and four servants' rooms with eight beds. The staterooms are roomy and most comfortably arranged. The dining saloon, the ladies' saloon and the smoking room, which are elegantly furnished, are unusually high and spacious. The safety of the vessel is secured by means of seven watertight



Engine Room of Oil Engine Ship Christian X.

mos furnish electric current for operating the pumping plant, the cooling machines, the steering machinery and the cargo winches. The compressors compress air for the starting and the reversing of the main engines. Another compressor, which furnishes air for injecting the oil into the cylinders, is driven by the main engines. If it be necessary to have a supply of compressed air independent of the Diesel engines, there is an auxiliary steam engine

compartments, and the ship is provided with wireless telegraph apparatus. The performance of this most modern ship will be watched with the greatest interest on both sides of the ocean.

The Dominion Government steamboat Arctic, which arrived in Quebec from the Arctic ocean recently, is to be converted into a lightship to be placed in Hudson strait.

Foundering of Steamboat Cecilia L.

The following judgment re the foundering of the steamboat Cecilia L., in Lake St. Louis, Que., Nov. 1, was recently delivered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capts. F. Nash and H. E. Webb, as assessors.

The loss was due to the fact that owing to the sudden shifting of the wind and the vessel being caught broadside on when struck, and owing to her upper works presenting such a large area of resistance and the cargo not being chocked and secured in a proper manner, and that the list taken by the vessel was so great that the cargo shifted suddenly and with such force that the side of the superstructure was carried away, causing the upper works to collapse, and the lower part of the vessel, the hull proper, to become filled with water and sink. The court feels deep sympathy with those who were bereaved, and points out that this vessel, as too often happens with vessels of her class, was built without due regard to stability, and recommends more careful supervision in this respect, and also that all passenger vessels carrying freight should be compelled by law to have their cargoes properly secured before leaving port, to avoid accident if the vessel lists or rolls. The opinion of the court is that no blame can be attached to anyone connected with the vessel, as she was loaded in the usual manner.

Canada Shipping Act Amendments.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, amending the Canada Shipping Act, regarding the conditions and methods of re-registering wrecked vessels after repair and naming and registering other vessels. The only actual change is to substitute the Minister of Marine for the Governor in Council as the authority in all such cases, with a view to dealing with these routine matters more expeditiously, and to relieve Council of similar matters of departmental administration.

The clause of the act relating to the Board of Steamboat Inspection is also to be amended, so that the Governor in Council may appoint any member of the board as chairman, and not necessarily an inspector, if it is in the public interest to do so.

Stranding of s.s. Bellona.

Following is the judgment rendered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capt. F. Nash and Commander I. B. Miles, as assessors, re the stranding of the s.s. Bellona in the upper traverse of the St. Lawrence river, Oct. 31, whilst en route from Montreal to Aberdeen, Scotland, with a cargo of general produce.

The stranding was due to the erratic and incomprehensible behavior of the pilot, H. E. Laroche, and in spite of the statement that he ordered the helm a port on the first occasion because he saw a small vessel which he was afraid of running down, it does not excuse his further action in porting a second time, and his certificate is therefore cancelled. The court also condemns the conduct of the master, J. Cunningham, for disregarding the safe navigation of his vessel in these narrow waters by staying below in his room, though he knew that the first mate had no experience in navigating the St. Lawrence, and his illness was not, according to his own statement, such as to disable him from at-

tending to his duties as master. The court therefore suspends his certificate for three months, and also severely censures the first mate, C. Wischke, for neglect in not taking more interest in the navigation of his vessel by making himself conversant with the chart of the river and knowing the names and nature of the different lights to be passed during his watch. The court also criticizes the custom which appears to be too common in these waters, of the master practically giving over charge of the vessel to the pilot, and taking no further interest in the navigation of it.

New United States Lock at Sault Ste. Marie.

Coincident with the construction of large permanent steel ore docks at Lake Superior shipping ports, capable of accommodating the mammoth carriers recently built, provision is being made to facilitate the passage of such vessels through the United States channel at Sault Ste. Marie, where the existing locks are proving inadequate to the service. The principal work now in progress is the building of the new Davis lock, which was begun in March, 1907, and will not be completed until 1916. Next to the Panama canal this is the most important aid to navigation now being carried out by the U.S. government; and it is due entirely to shipments of ore from Lake Superior ports.

The total length of the lock will be 1,715 ft. and its width 80 ft., 1,350 ft. being within the inner gates. Six culverts are provided for; 1,200 ft. of the wall is 50 ft. high and 26 ft. wide at the base. It is to be built up from bed rock in sections, alternate sections being constructed first and the intermediate sections later. They are 25 to 35 ft. in length. The concrete of the lock floors will be 1½ ft. thick. The work also includes lining about 325 linear ft. of tunnel rock, and the building of about 170 linear ft. of tunnel in trench, in addition to the tunnels and passages through the masonry.

The unusual dimensions of the lock are made necessary, both by the ever increasing traffic on the lakes, and by improvements that have been found necessary in the operation of the two present locks. The new length will not only be utilized in handling longer boats, but it will also make possible the entry of two of the longer craft in tandem style, a practice never yet indulged in. At present the two or more boats often passing the locks together are locked through abreast of each other. Vessel owners and masters declare this is a dangerous proceeding. The boats, they say, not only require more time to take their positions in the locks in this way, but also that there is great danger from suction to the boat remaining in the lock when the first one steams away. On more than one occasion lines have snapped and boats have drifted temporarily in a helpless manner in the locks.

The present largest lock, the Poe, is 100 ft. wide. The new one will measure but 80 ft., making it impossible to lock vessels through in any other way than tandem.

Probably the most distinctive feature of the new lock will be its depth. When opened for navigation it will present a loading depth of 24½ ft., or 6½ ft. more than the present depth accorded the boats of the great lakes. While all channels on the lakes are now dredged to a depth of but 21 ft., experts declare it will prove of less expense to dredge the channels deeper than to construct or remodel other locks.

The practical value of the depth pre-

sented by the present locks, an average of 18 ft., is displayed in the trouble the larger boats experience in locking through. Unnecessary delay is now experienced by masters by the upheaval of water at the bow of the boat. Such conditions, engineers say, are due to the excess of water caused by the entrance of the boat to the lock being unable to escape fast enough at the sides of the boat. With the additional depth presented by the new lock, this water, it is figured, will be forced under the boat to the escaping channels beneath the flooring. With such facilities at hand vessels will be able to lock through in less than half an hour, while it now takes many of the larger ones over an hour.

The importance of the work being done by the U.S. government on the new locks and canal may be seen from the fact that the present locks already float the greatest commerce of any inland waters of the globe. In 1911 the total tonnage amounted to 62,000,218, which is two and one-half times greater than that passing through the Suez canal, and seven times greater than that of the Kiel canal. What the traffic will amount to with the addition of another lock, the greatest yet constructed, remains to be seen.

It is said the present commerce exceeds that borne by all ships, British and foreign, entering the ports of Great Britain in one year, and valued at an average of \$654,010,844 annually. When completed the new lock will not only be by far the largest in the world, but will represent an expenditure of about \$9,000,000.

United States Wireless Telegraph Law.

The new wireless telegraphy laws, enacted by the U.S. Congress, affecting probably over 1,000 vessels, went into effect on Dec. 13. Government licenses are now required for all shore stations and for steamer equipments leaving U.S. ports, and operators have to be licensed.

Every steamboat with a carrying capacity of 50 passengers or more, on trips exceeding 200 miles, is required to have two operators for its wireless equipment so that a continuous watch can be maintained for distress signals. Safeguards are required to provide against any delay or interruption of the communication between the operating room and the bridge on each boat, and auxiliary machinery for continuing wireless communication in case of accident to the regular equipment, is also required.

These laws were framed shortly after the Titanic disaster and one of the provisions included is for giving the right of way to distress signals. The wording of this section is as follows:—"All stations are required to give absolute priority to signals and radiograms relating to ships in distress; to cease all sending on hearing a distress signal, and except when engaged in answering or aiding the ship in distress, to refrain from sending until all signals relating to the distress call are completed."

The use for commercial messages, of the naval stations on the South Atlantic and the Pacific coasts, and of the army stations in Alaska, where there are no commercial stations, has been authorized by these new regulations.

The Consolidated Elevator Co. is reported to have purchased from the C.P.R. 400 ft. of water frontage immediately east of the present site of the Consolidated elevator on the Kaministikwia river at West Fort William, Ont., on which it will construct a terminal elevator with a storage capacity of 2,000,000 bush.

Stranding of s.s. Royal George.

Full details of the stranding of the Canadian Northern Steamships' s.s. Royal George on the Island of Orleans, near Quebec, Nov. 6, were given in the last issue of Canadian Railway and Marine World. The investigation into the causes of the accident was held at Quebec, Dec. 3 to 5, before the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, with Commander I. B. Miles and Capt. F. Nash as nautical assessors. Following is the judgment, which was delivered in Montreal, Dec. 11:—

The s.s. Royal George arrived at Father Point early on Nov. 6, and was there boarded by a licensed pilot, S. Rioux, and proceeded on her voyage towards Montreal, via Quebec. Everything appears to have gone well on the run up as far as Gross Isle, some slight fog or mist being encountered on the way. After arrival at quarantine, where she stopped, and after receiving clearance from the authorities, she proceeded at full speed towards Quebec, steering the usual course, leaving her position off the quarantine station at about 4.10 p.m., by the ship's time, which had been set to standard time at Father Point that morning, the weather at the time, according to the evidence, being cloudy and overcast.

At 4.50 p.m., she passed St. Jean light, which appears to have been plainly visible, although some doubt exists as to the actual distance it was off when abeam, and about this time the course was altered, and the vessel headed so as to pass St. Laurent light, which is six miles above the former light, but was not visible at that time, although it can be seen in clear weather at a distance of 11 miles. From the passing of St. Jean until just prior to the stranding, no lights nor landmarks were seen, and the speed, which was about 17 knots, remained unchanged, as the pilot states he was quite satisfied as to his course and position, as he could see the

loom of the land on both sides of the channel. Shortly before the stranding a light was seen and reported about half a point on the starboard bow, and was, on account of its peculiarity, viz.: having the appearance of an occulting light, assumed by the pilot to be the Beaumont shoal light, which is situated on the south side of the river nearly opposite St. Laurent light. The pilot states he immediately ordered the helm to port, but directly that order had been carried out he discovered that the land was very close on the starboard side, and he states he at once ordered the helm hard astarboard, and that the vessel ran aground heading about west by south half south, this being, according to the evidence, the course she was steering when the light was sighted. Several attempts were made to release her by using the engines and by towing; but without avail, until the seventeenth day, when she was taken off in a damaged condition, by the salvage company.

The court, after carefully considering the evidence which as to some matters is of a contradictory nature, is of opinion that the actual causes of the stranding were due to overconfidence on the part of the pilot as to his position, and his reckless navigation in regard to speed. It does not consider that he showed the necessary prudence and caution in running to within 1½ miles of St. Laurent light at full speed, without seeing it or any other aid to navigation. For the pilot to suppose that the first light he picked up, which was half a point on the starboard bow, was the occulting buoy on Beaumont shoal, which should under ordinary circumstances have shown well out on the port bow, shows that he had a very indefinite idea as to the vessels' position at the time. The court is also quite satisfied that the weather conditions experienced after leaving St. Jean light, were not of such a nature as to justify the vessel being run at full speed, and therefore suspends his license for three

years.

The court is of opinion that the master, J. Harrison, was not justified in being below and off the bridge under the conditions prevailing between leaving quarantine and the stranding, and it is unanimous in the opinion that had he been on the bridge in charge, the accident might have been avoided, and therefore suspends his certificate for 12 months.

The court also severely criticises the lack of initiative shown by the chief officer, T. S. Edwards, in not at once either calling the master when the lights on the St. Laurent pier and the buoy on Beaumont shoal were not sighted, when they should have been, knowing, as he did, that the sighting of these lights was necessary for the safe navigation of the vessel, or for not suggesting to the pilot the advisability of reducing the speed of the vessel until her position could be verified, and therefore suspends his certificate for three months.

The s.s. Royal George sailed from Quebec, Dec. 12, for Halifax, N.S., in charge of Capt. F. J. Thompson, the company's marine superintendent.

Capt. Harrison, prior to sailing for England, announced his intention of appealing to the British Board of Trade against the decision, as he claimed to be in no way responsible for the disaster.

Shipbuilders along the lakes are being asked for prices for lengthening the Inland Lines steamboat Empress of Midland, by 72 ft.

Following on the representations made to the Government by A. Allan, President, and T. Robb, Manager and Secretary, Shipping Federation of Canada, notice of a resolution was given in the House of Commons, Dec. 18, calling for the appointment of a special committee to investigate and report on the whole system of pilotage on the St. Lawrence, including the aids to navigation on the St. Lawrence route and the Great Lakes.

List of Steam Vessels Registered in Canada during November, 1912.

No.	Name	Port of Registry	When and Where Built	Length	Breadth	Depth	Gross Tons	Reg. Tons	Engines, Etc.	Owner or Managing Owner
131163	Associate	Lunenburg, N.S.	Liverpool, N.S., 1912	107 6	26 0	10 8	135	90	3 n.h.p. sc.	J. Backman, M.O., Riverport, N.S.
133708	B. and R.	Vancouver, B.C.	Vancouver, B.C., 1912	30 2	9 3	3 1	10	7	1 " " "	R. M. Wilson, Vancouver, B.C.
131005	Barbara K.	St. John, N.B.	Wilsons Beach, N.B., 1908	28 2	8 0	5 3	8	5	1 " " "	J. K. Kelley, St. John, N.B.
131131	Calumet Island	Ottawa	Calumet Island, Que., 1909	42 0	18 0	3 0	18	12	1 " " pa.	F. Ladouceur, Calumet Island, Que.
131195	Casarco No. 7.	St. Andrews, N.B.	Little River, N.S., 1912	45 2	12 4	5 7	15	10	2 " " sc.	Canadian Sardine Co., St. Andrews, N.B.
131196	Casarco No. 10	Lunenburg, N.S.	Lunenburg, N.S., 1912	50 0	12 7	5 5	15	12	2 " " "	" " "
130284	Dorothy May	St. Catharines, Ont.	Port Dalhousie, Ont., 1912	53 1	15 0	9 1	55	20	19 " " "	W. Hand, Port Dalhousie, Ont.
130239	East Side	Port Stanley, Ont.	Collingwood, Ont., 1912	76 6	16 6	6 0	50	31	13½ " " "	C. Thorn, et al., J.O., Port Stanley, Ont.
130344	Janet A.	Charlottetown, P.E.I.	Belle River, P.E.I., 1912	55 4	15 4	5 8	35	24	1 " " "	D. J. Riley, Belle River, P.E.I.
131130	L. O. B. Co.	Ottawa	Duck Island, Ont., 1912	42 6	9 7	5 2	19	11	2½ " " "	Lower Ottawa Boom Co., Ottawa, Ont.
131087	Longlad	Toronto	Moon Falls, Ont., 1911	63 0	10 0	3 2	22	15	3 " " "	H. Arnold, Muskoka, Ont.
130240	Stanley Foster	Port Stanley, Ont.	Port Stanley, Ont., 1912	77 9	15 6	7 3	56	38	6 " " "	N. S. Cornell, Port Stanley, Ont.
133707	Sutil	Vancouver, B.C.	Hong Kong, China, 1912	45 0	11 3	7 3	21	14	2 " " "	M. Enke, Victoria, B.C.
133710	Walronda	"	" 1912	60 0	13 0	5 6	44	30	2½ " " "	J. B. Wood, Vancouver, B.C.

List of Sailing Vessels and Barges Registered in Canada during November, 1912.

No.	Name	Port of Registry	Rig.	When and Where Built	Length	Breadth	Depth	Reg. Tons	Owner or Managing Owner
130658	Abutilon	Chatham, N.B.	Schr.	Caraquet, N.B., 1912	37 5	14 4	6 0	19	J. Lacroix, Caraquet, N.B.
131165	Araminta	Lunenburg, N.S.	"	Lunenburg, N.S., 1912	106 8	26 3	10 4	95	T. Creaser, M.O., Riverport, N.S.
133709	C. W. 6.	Vancouver, B.C.	Scow	Vancouver, B.C., 1912	69 2	32 1	7 5	171	W. W. White, Vancouver, B.C.
131164	Carrie M. Wamback	Lunenburg, N.S.	Schr.	Liverpool, N.S., 1912	113 7	26 1	10 6	109	W. Duff, M.O., Lunenburg, N.S.
131113	Duke of Connaught	Montreal	Float dry dock	Barrow, Eng., 1912	600 6	135 2	16 8	18011	Canadian Vickers, Ltd., Montreal
13099	Hoy	Chatham, N.B.	Schr.	Point Spain, N.B., 1906	32 0	10 6	5 0	11	A. F. Morrison, Shippegan, N.B.
131006	Janet	St. John, N.B.	Yawl	South Boston, Mass., 1903.	41 7	12 0	5 4	15	A. H. Likely, St. John, N.B.
130991	Joseph Marie G.	Chatham, N.B.	Schr.	Little Lameque, N.B., 1912	39 0	14 7	6 3	22	C. Gauvin, Little Lameque, N.B.
130899	Nidge No. 1	Victoria, B.C.	Barge	Victoria, B.C., 1912	60 0	20 0	4 7	46	Vancouver Island Power Co., Victoria, B.C.
126298	Petawawa	Canso, N.S.	Schr.	Tancook, N.S., 1912	56 2	14 7	7 4	33	F. C. Lobnes, M.O., Canso, N.S.
130900	Sadie No. 1	Victoria, B.C.	Barge	Victoria, B.C., 1912	90 0	32 0	8 0	188	Victoria Tug Co., Victoria, B.C.
133681	Sadie No. 2	"	"	" 1912	90 0	32 0	8 0	188	" " "
133682	Sadie No. 6	"	"	" 1910	98 0	32 0	8 0	204	" " "
133683	Sadie No. 7	"	"	" 1910	98 0	32 0	8 0	204	" " "
133684	Sadie No. 8	"	"	" 1911	92 0	32 0	8 0	188	" " "
133685	Sadie No. 9	"	"	" 1911	90 0	32 0	8 0	183	" " "
130500	W. M. R. No. 2	New Westminster, B.C.	"	New Westminster, B.C., 1911	85 0	27 0	7 3	153	Mrs. A. M. Garnett, Victoria, B.C.
130861	W. M. R. No. 3	"	"	" 1910	87 0	30 0	8 7	196	" " "

Storage of Grain in Foreign Vessels at the Dual Ports.

It was announced from Ottawa, Nov. 27, that arrangements had been made by which U.S. vessels presenting themselves at Port Arthur and Fort William, after Dec. 5, when the lake insurance expired, would be permitted to load grain, and remain at these ports until the re-opening of navigation, when they could deliver their cargoes at Point Edward, Goderich or Georgian Bay ports. The Government elevator at Port Colborne is not included in the permission.

When the matter was under consideration in Ottawa, A. A. Wright, L. Henderson, H. W. Richardson and Francis King, Counsel, of the Dominion Marine Association, placed the Association's views before the Minister of Customs, who was acting for the Minister of Trade and Commerce.

While not being definitely authorized to pledge the Association to any particular policy in the matter, they claimed to represent fairly the views of Canadian vessel owners. They particularly pointed out that there was no lack of Canadian tonnage to make use of the full loading capacity of the elevators at the dual ports, between that date and the close of navigation, and were prepared to protest vigorously against the introduction of U.S. tonnage at that stage, believing it would be extremely unjust to the Canadians engaged in the trade to crowd the loading ports beyond the limit and run the risk of even greater congestion at the Georgian Bay ports and on Lake Huron.

After some discussion a great part of the opposition was removed, when it was agreed that Canadian vessels will enjoy the benefits of the coasting laws during the season of navigation, and that U.S. tonnage ought only to be let in for storage purposes after the extended season closed. It was then stated that there would probably be no objection to permitting U.S. tonnage to be loaded at the ports named after Dec. 10, with the option of discharging cargoes in the spring at Georgian Bay ports, or at Goderich or Point Edward. It was considered only fair that Port Colborne be reserved for Canadian vessels, and it was pointed out that Canadian vessel owners were accepting the risk of considerable delay at unloading ports on the first trip on the re-opening of navigation, and the Government was called upon to see that there will be no congestion at the lower ports by reason of any lack of cars to keep the elevators clear.

Vessels Removed From the Register.

The following vessels were removed from the register during Nov., 1912, for the reasons assigned:—

STEAM.—Grilse, Lunenburg, N.S., 81 tons, sold to foreigners; Wm. Bonfield, St. Catharines, Ont., 13 tons, burnt; Winnitoba, Winnipeg, Man., 556 tons, burnt.

SAILING.—April, Vancouver, B.C., 96 tons, broken up; Archie Crowell, Shelburne, N.S., 175 tons, transferred to Demerara; C.W. 3, Vancouver, B.C., 86 tons, broken up; H.B., Prescott, Ont., 541 tons, lost; James Buckley, Prescott, Ont., 442 tons, lost; July, Vancouver, B.C., 95 tons, broken up; June, Vancouver, B.C., 79 tons, broken up; May, Vancouver, B.C., 46 tons, broken up; P. J. McLaughlin, Parrsboro, N.S., 147 tons, transferred to Bahamas; Sceptre, Lunenburg, N.S., 100 tons, wrecked; Yuba, Barrington, N.S., 6 tons, broken up.

Painters should not wash their hands in turpentine. Use horsehair with a little coal oil, and then finish with soap and water.

Compulsory Use of Radiotelegraphy on Vessels.

The Minister of Marine introduced a bill into the House of Commons, Dec. 6, under the name of the Radiotelegraph Act, providing that no person shall establish any radiotelegraph station or apparatus in Canada, or on board any vessel registered in Canada, except under license granted by the Minister of the Naval Service; also that after July 1, no passenger steamer, whether registered in Canada or not, carrying 50 or more persons, including passengers and crew, shall leave, or attempt to leave, any Canadian port, unless it is equipped with an efficient radiotelegraph apparatus in good working order, capable of transmitting and receiving messages over a distance of at least 100 miles by night and day, and in charge of a fully qualified person. The penalty for infringement of these provisions, on summary conviction, is a fine not exceeding \$1,000 and costs, which shall constitute a lien on any such vessel. An exception to this section is made in the case of passenger vessels plying between ports not more than 200 miles apart.

Other clauses cover provisions for the transmission of messages by land companies, qualifications of operators, declaration of secrecy, penalties for sending false messages, search for stations illegally established, etc.

Canadian Notices to Mariners.

The Department of Marine has issued the following:—

298. Nov. 20. Nova Scotia, south coast, Port Felix harbor, Sampson rock, buoy established.

299. Nov. 20. Newfoundland, south coast, Lamalin harbor, range lights established, buoys established.

300. Nov. 20. North Atlantic ocean, Bermuda, northern reefs, North rock, light established, northeast breakers, submarine bell buoy established.

301. Nov. 22. New Brunswick, south coast, Bay of Fundy, approach to St. John, Black point, gas and whistling buoy to be moored northward of its station during May, June and July of each year.

302. Nov. 22. Quebec, River St. Lawrence, Saguenay river entrance, Tadousac, storm signal station established.

303. Nov. 27. Nova Scotia, west coast, St. Mary bay, off Meteghan, bell buoy established.

304. Nov. 27. New Brunswick, Chaleur bay, Petit Rocher, light carried away by storm, temporary light.

305. Nov. 27. Labrador, Belle ile strait, Red bay, Saddle island, change in character of light.

306. Nov. 27. Quebec, Ottawa river, chart of western portion of Lake of Two Mountains issued.

307. Nov. 27. Ontario, Lake Ontario, off mouth of Niagara river, position of gas and bell buoy, correction.

308. Nov. 27. Ontario, Detroit river, Livingstone channel, change in position of gas buoy, lighted buoy discontinued.

309. Nov. 27. British Columbia, Strait of Georgia, Burrard inlet, Atkinson point, new lighthouse, change in character of light.

310. Nov. 27. Alaska, Dixon entrance, Lord rock, light to be established.

311. Nov. 27. Japan, Kitami province, fog siren established at Soya-misaki lighthouse.

312. Dec. 2. Prince Edward Island, list of buoys replaced for winter by spar buoys.

313. Dec. 2. Quebec, Chaleur bay, St. Godfroy, hand fog horn at light station.

314. Dec. 2. Quebec, Chaleur bay, Ste. Adelaide de Pabos, light increased in height.

315. Dec. 2. Quebec, River St. Lawrence, chart, Bic island to White island, issued.

316. Dec. 2. Ontario, Georgian bay, Vic-Churchill issued.

317. Dec. 2. Quebec, Ottawa river, Pointe au Chene, buoys established.

318. Dec. 2. Ontario, Georgian bay, Victoria harbor, Port McNicoll, gas buoy placed.

Atlantic and Pacific Ocean Marine.

The Canadian Northern Steamship Co.'s liner Royal Edward is being overhauled, and is scheduled to sail again from Bristol, Jan. 8.

Four firemen engaged on the s.s. Royal George, were sentenced to four weeks imprisonment, at Quebec, Dec. 7, for refusing to do duty on the vessel.

British press reports state that with the opening of the 1913 season of navigation to Montreal, a new line will start sailings from Bristol, Eng., to Canadian ports.

Capt. Bertham has been appointed to the command of the C.P.R. steamship Empress of Russia, and will be succeeded on the Empress of India by Capt. Harley, heretofore chief officer.

The C.P.R. s.s. Empress of Japan, which recently arrived at Vancouver, from the Orient, carried a cargo of silk valued at ment, requiring 15 cars to transport it across the continent.

The Canada-Australia Line has decided to order another steamship, similar in size and power to the Niagara. It is reported that it is intended to equip the new vessel with internal combustion engines of the polar-Diesel type.

The Norwegian steamships Borgestad and Fritzo, which were built expressly for the Sydney-Montreal coal trade, have been turned into oil tankers, and will be in future used in the crude oil trade, running between Mexican ports and Baltimore, Md.

Capt. Tait, Vancouver, has been appointed master, and W. H. Partington, formerly of the Princess Charlotte, chief officer of the steamship Kestrel, recently sold by the Dominion Government. The Kestrel left Victoria recently for Fanning island, for trading among the Pacific islands.

The Head Line steamship Bray Head sailed from Montreal for Maryport, Belfast and Dublin, Dec. 3. This was the last vessel to leave Montreal this season, and it is a coincidence that the Bray Head was the last vessel to leave Montreal for the 1911 season, the day and time of sailing being the same in each year.

It is announced that the C.P.R. has increased the pay of its officers on cargo boats, the new rates being, chief officer, £16 a month, rising to £17 after the first year; second officer, £12, rising to £13 after the first year; third officer, £11, rising to £12 after the first year, being an average increase of £2 a month.

Regarding the use of the Panama canal by C.P.R. vessels, G. M. Bosworth, Vice President, C.P.R., is reported to have said, Dec. 16, that there is no necessity for his company to operate through the canal. The company's Atlantic and Pacific steamship lines are working as assistants to the transcontinental railway, and if their routes were changed to a direct service through the canal the railway might be affected.

During the hearing of the case of the United States government against parties to the North Atlantic Conference, Dec. 2,

Robert Kerr, former Passenger Traffic Manager, C.P.R., stated in evidence that his company received 5.429% of the passenger traffic from Antwerp to Canada and the U.S. He also stated that the gross income of the company's marine department for last year was \$5,234,760, and the net profit was \$711,842. An average of 4% was marked off for depreciation of equipment.

G. M. Bosworth, Vice President, C.P.R., on his return from Great Britain recently, is reported to have stated that orders will shortly be placed in Glasgow, Scotland, for two vessels for the Atlantic service, of the same cruiser type as those now nearing completion for the Pacific service. They will be combination passenger and freight vessels, 520 ft. long over all, 12,000 tons, with accommodation for 530 second class and 1,230 third class passengers. They will be built for a speed of 16 knots, and will make their maiden trips in June and July, 1914.

The C.P.R. s.s. *Empress of Asia* was launched at Govan, Scotland, Nov. 23, being christened by Mrs. Bosworth, wife of the Vice President. The sister vessel, *Empress of Russia*, which was launched about four months ago, will sail for British Columbia, by way of the Suez canal and the Orient, in the spring, with a special party, who will return to England via Canada and the C.P.R. Atlantic steamship line, thus completing a tour of the world, entirely by the C.P.R. Full description of these vessels was given in Canadian Railway and Marine World of Oct., 1912.

Maritime Provinces and Newfoundland.

Plans are reported to have been prepared for the building of a marine railway at Chatham, N.B.

The coal carrying steamboat *Morien* was reported overdue at Placentia, Nfld., from Louisbourg, N.S., Nov. 22, and although search vessels were sent out, no news has been heard of her.

The building of the new vessels at Newcastle, Eng., for the Reid Newfoundland Co. has been retarded by labor troubles. It is expected, however, that the vessel for the Cabot strait route will be delivered at an early date.

The charter of the Imperial Drydock Co., St. John, N.B., is reported to have been acquired by the Norton-Griffiths Co. Application is being made to the Dominion Government for a subsidy contract for the building of a dock 1,150 ft. long.

The Reid Newfoundland Co.'s s.s. *Lintrose*, under construction at Newcastle, Eng., will be launched about Jan. 6. It is anticipated that she will make her first trip to North Sydney, N.S., by the end of February, or early in March.

During the season of 1912 the Dominion Coal Co. had in its service 32 vessels of a combined capacity of 180,000 tons. Twenty-five of these were engaged in the Sydney-Montreal trade, and in their several voyages carried 1,600,000 tons of coal, about 400,000 tons in excess of that carried in 1911.

The Suburban Steamship Co. is applying for incorporation in New Brunswick, with a capital of \$9,980 and office at Browns Flats, Kings county, to own and operate steam and other vessels, and carry on a passenger, freight and mail transportation business. C. C. Taylor, Sheffield, and W. I. Barton and L. T. Nase, St. John, N.B., are the provisional directors.

The Newfoundland Produce Co. has bought the freight and passenger steamship *Sagona*, and will put her on a route serving the west and south coast of the

island, St. Pierre, Miquelon, Sydney and Halifax, N.S. The *Sagona* was built in Dundee, Scotland, 1912, and has been engaged in the mail service on the Labrador coast. She flies the French flag, and has accommodation for 60 passengers. Capt. de Lisle is master, with Capt. Marshall as navigating officer.

The Canada Atlantic and Plant Steamship Company's annual meeting was held at Halifax, N.S., recently. The following are the officers, directors, etc., for the current year:—President, A. W. Perry, Boston, Mass.; Vice President, McC. Grant, Halifax, N.S.; Treasurer, H. G. Perry, Boston. Other directors, H. McInnes; W. Mitchell, Halifax; Secretary and Eastern Manager, H. L. Chipman, Halifax; Auditor, W. D. Farnham. The new steamship *Evangeline* was formally accepted by the shareholders.

Province of Quebec Marine.

The Dominion Government is arranging for the operation of a semi-monthly steamship service between Quebec and St. Johns, Nfld.

It is said that the Richelieu and Ontario Navigation Co. is arranging for the purchase of some additional steamships, as well as for the building of several others.

The Montreal floating drydock, *Duke of Connaught*, was given a test Dec. 4, when the tug, *Sir Hugh Allan*, was docked. The test was reported to be highly successful.

The Allan wharf at Quebec is to be enlarged during the winter in preparation for the coming of the new steamships which are to be put on the trans-Atlantic run in the spring.

The Dominion Government steamboat *Bellechasse* made 12½ knots an hour on her trial trip near Kingston, Ont., Nov. 29. She left Kingston Nov. 30 to be fitted out for survey and inspection work on the St. Lawrence below Quebec.

During the season of navigation ended Dec. 3, 1912, the number of seagoing vessels entering the port of Montreal was 736, having a gross capacity of 2,403,934 tons, against 762 vessels of 2,378,252 tons in the season of 1911.

The Montreal Harbor Commissioners took formal leave of the staff, Dec. 9, presenting each of the department heads with a loving cup. The staff presented a walking stick to the retiring Chairman, G. W. Stephens, who subsequently sailed for Europe.

The steamboat *Chateauguay*, heretofore plying between Montreal and Beauharnois, Que., sank at her wharf at the latter place recently. She had not been in service for nearly two years, and was recently sold at auction to P. Parent, Verdun, Que., for \$6,000.

The revenue for the season of navigation just closed, for the Montreal harbor, was \$461,396.43, against \$430,623.24 for 1911. The increases were, wharfage, inward, \$6,000; warfage, outward, \$5,500; from local traffic, \$19,273.19. There was a decrease in the number of seagoing vessels arriving, there being 736, against 762 in 1911; the tonnage, however, being 2,403,924, against 2,338,252 for 1911.

Preliminary work will be gone on with during the winter upon the harbor improvements at Quebec. Tenants of warehouse properties along the riverfront, from the west end of the Custom House to St. James street, are moving, and these warehouses will be demolished at once. This will allow of the building of the new freight sheds, and the laying of tracks over the wharves to the foot of St. James street to connect with the Levis car ferry service.

Ontario and the Great Lakes.

The Department of Public Works received tenders, to Dec. 30, 1912, for the construction of a wharf or retaining wall, at Hamilton.

The new dock built by the Dominion Government at Amherstburg, Ont., is reported completed. It is 300 ft. by 75 ft., and is built of cement, reinforced by steel bars.

A cargo of sulphur on board the steamship *C. A. Jaques* began to burn, owing to atmospheric conditions, while the vessel was being unloaded at Port Arthur, Nov. 28. About \$8,000 of damage was done to the cargo before the fire was got under.

The following steamboats, etc., have recently been sold on the Trent valley canal at Peterborough, Ont.:—Steamboat *Monarch*, to G. C. Wainwright; steamboat *Water Lily*, to G. W. Hatton; barges, *Sultan* and *Davis*, to D. Conroy.

Arrangements were made at Port Arthur and Fort William, Ont., recently under which a large number of vessels will lay up there for the winter. These vessels are being loaded with grain, so as to leave as much space as possible in the elevators, and will be ready to leave for eastern ports as soon as there is open water in the spring.

At the inquiry into the recent loss of the steamboat *Mayflower* on the Madawaska river, when nine persons were drowned, it transpired that the Inspector of Hulls and Equipment had given permission for her use as a tug, and to carry freight, and had prohibited the carrying of passengers until a licensed captain was secured.

The U.S. Lake Survey reports the levels of the Great Lakes in feet above tidewater for November, as follows:—Superior, 602.38; Michigan and Huron, 580.43; Erie, 571.90; Ontario, 246.08. As compared with the average November levels of the past ten years, Superior was 0.22 ft. below; Michigan and Huron, 0.08 ft. above; Erie, 0.07 ft. above, and Ontario, 0.51 ft. above. It was anticipated that there would be an average fall of 0.2 ft. during December, except in Erie, where the anticipated fall was 0.1 ft.

Manitoba, Saskatchewan and Alberta.

Lieut.-Colonel Potter, chief of the United States Government engineers for the Northwest, began an investigation at Grand Forks, N.D., Dec. 5, as to the possibility of improving the navigation of the Red river to such an extent that it may be possible to establish a trade route to Hudson bay.

The Minister of Public Works has announced that there will be included in the estimates to be submitted to the Dominion Parliament an amount for the proposed canals to connect Lakes Winnipeg and Manitoba, and also the last named lake with the Saskatchewan river, also for canals to connect Lake Manitoba with Lake Winnipeg via the Waterhen river, Lake St. Martin and the Dauphin river, with continuous navigation on these rivers.

There is under construction at the Polson Iron Works, Toronto, a steamboat for missionary work in the Arctic ocean. The vessel is 40 ft. long, with a breadth 9¼ ft. broad and 3½ ft. deep. She draws 18 ins. of water, and will be propelled by a 26 in. screw, which will operate in a tunnel in the stern, extending 10 ins. above the water level. The action of the screw will draw the tunnel full of water, so that the full power will be obtained, as if a screw was fully submerged. Power will be supplied by a Clyde boiler, 42 by 52 ins. This is the first vessel of this type built in Canada.

She will be shipped in 20 sections to Athabaska Landing, Alta., then transhipped overland to the Mackenzie river, where she will be put together.

British Columbia and Pacific Coast Marine.

The steamship Lonsdale, which has been running in the Vancouver-Mexico trade, has been sold to the Japanese. She left Vancouver for Japan early in December.

The Venture, owned by the Union Steamship Co., has been put on the ways at North Vancouver, B.C., for an overhaul, and the enlargements of her oil tanks.

The British Columbia Fisheries Co.'s steam trawlers, Canada and Triumph, arrived at Prince Rupert, B.C., Nov. 23, from Gimsby, Eng., a trip of 16,000 miles.

North Vancouver taxpayers will vote on a bylaw to repurchase the old ferry debentures amounting to \$128,000 at an advance of 5%, and for the building of a new ferry steamer.

The British Columbia Government is considering tenders for the operation of a ferry service on the Fraser river between New Westminster, Port Mann, Annacis island and Coquitlam.

Tenders are under consideration for the first section of the proposed extensive harbor works at New Westminster, B.C. It is expected that about \$500,000 will be expended under the contract.

The Union Steamship Co. announces the sale of the salvaged steamship Vadsø, now lying at North Vancouver, B.C. The sur-

vvey showed that 80 plates would have to be removed, and that other damage had been done by the stranding.

The G.T. Pacific Ry. tug recently completed a towing trip of 2,000 miles. She took on tow three vessels carrying lumber from Vancouver, dropping one at Prince Rupert, and taking the others on to Granby bay, whence she took two of them back to Vancouver.

The West Vancouver Ferry Co. is inviting tenders for the building of two twin screw steamboats, each having the following dimensions:—Length, 95 ft.; breadth, 18 ft.; depth, 9 ft.; to be fitted with triple expansion, surface condensing engines, and water tube boilers. T. F. Merrick is Secretary.

The Victoria and Westminster Trading Co.'s steamboat Burlin broke down on a recent trip from Victoria to New Westminster, B.C., and after drifting about for three days, with all the blades of her propeller gone, and her machinery disabled, ran ashore on the Sandheads, Nov. 28. She was subsequently towed to New Westminster for repairs.

Telegraph, Telephone and Cable Matters.

The Canadian Northern Telegraph Co. has opened an office at Mafeking, Man., and has closed its office at Birch River, Man.

The United States Government has completed the installation of a chain of wireless telegraph stations along the Alaskan coast.

The Board of Railway Commissioners has extended to June, the time within which the C.P.R. may file its tariff of telegraph tolls to apply west of Sudbury, Ont.

The Dominion Government has opened a 60 mile branch telegraph line from Fort Fraser to Stuart lake, B.C. The rate from Fort George to Stuart lake is 75 cents for 10 words and five cents for each additional word.

The C.P.R. Telegraph department has opened a branch office in the new C.P.R. building at Main street subway, Winnipeg, to serve the northern section of the city. It is also opening a down town office in the Stringer Building, Calgary, Alta.

The Dominion Parliament is being asked by the Minister of Marine to pass an act providing for the compulsory installation and inspection of radio-telegraph apparatus on certain vessels. Full particulars are given in the Marine Department on another page.

The Hudson's Bay Co. is reported to have made arrangements by which the trading post at Fort George, B.C., and the posts subordinate to it, will, in future be supplied over the G.T. Pacific Ry. Heretofore Fort George has been supplied by freight hauled over the old Caribou Road for 187 miles, and thence by a steamboat route of 150 miles.

The various C.P.R. offices in the eastern wing of the Vancouver station have been moved, preparatory to demolishing the building in preparation for the erection of the new station. The executive department has been moved to the Vancouver block, the Trans-Pacific Steamship offices to the Hastings street offices, and the other departments have been distributed between these two buildings and the Dominion Express Co.'s building. The train operating department has been moved into such of the vacated offices as are not in the section of the station to be demolished.

Sault Ste. Marie Canals Traffic.

The following commerce passed through the Sault Ste. Marie Canals during 1912:

ARTICLES	CANADIAN CANAL	U.S. CANAL	TOTAL
Copper..... Eastbound..... Short tons	7,063	109,891	116,954
Grain..... "..... Bushels	36,916,773	32,107,673	69,024,446
Building stone..... "..... Short tons	2,282	2,282	4,564
Flour..... "..... Barrels	2,388,432	6,293,721	8,682,153
Iron ore..... "..... Short tons	31,127,394	15,166,029	46,293,423
Pig iron..... "..... ".....	8,487	17,345	25,832
Lumber..... "..... M. ft. b. m.	22,617	645,025	667,642
Silver ore..... "..... Short tons			
Wheat..... "..... Bushels	117,831,939	56,254,517	174,086,456
General merchandise..... "..... Short tons	28,101	210,764	238,865
Passengers..... "..... Number	15,654	17,109	32,763
Coal, hard..... Westbound..... Short ton	439,942	1,702,543	2,142,485
Coal, soft..... "..... ".....	2,499,257	10,289,852	12,789,109
Flour..... "..... Barrels		100	100
Grain..... "..... Bushels		396,313	629,060
Manufactured iron..... "..... Short tons	232,747	3,188	10,000
Iron ore..... "..... ".....	6,812	558,123	660,991
Salt..... "..... Barrels	102,868	717,988	1,425,918
General merchandise..... "..... Short tons	707,920	12,486	34,114
Passengers..... "..... Number	21,628		
Vessel passages..... Number	7,862	14,916	22,778
Registered tonnage..... Net	25,789,674	30,947,133	56,736,807
Freight—Eastbound..... Short tons	35,746,486	19,631,201	55,377,687
—Westbound..... ".....	3,901,375	13,193,614	17,094,989
Total freight..... ".....	39,647,861	32,824,815	72,472,676

COMPARATIVE STATEMENT FOR THE SEASONS 1911 AND 1912.

Items	Season 1911	Season 1912
Vessels: Steamers..... Number	15,160	19,076
Sailing..... ".....	1,681	1,805
Unregistered..... ".....	1,832	1,897
Total..... ".....	18,673	22,778
Lockages..... ".....	13,292	16,088
Tonnage: Registered..... Net	41,653,488	56,736,807
Freight..... Short	53,477,216	72,472,676
Passengers..... Number	79,951	66,877
Coal: Hard..... Short tons	2,060,209	2,142,485
Soft..... ".....	13,272,667	12,789,109
Flour..... Barrels	7,246,495	8,652,153
Wheat..... Bushels	97,141,911	174,086,456
Grain..... ".....	40,782,609	69,024,546
Manufactured and pig iron..... Short tons	412,269	654,892
Salt..... Barrels	661,308	660,991
Copper..... Short tons	132,451	116,954
Iron ore..... ".....	30,731,235	46,303,423
Lumber..... m. ft. b. m.	585,513	667,542
Building stone..... short tons	5,342	2,282
General merchandise..... ".....	1,385,918	1,664,783

The Canadian canal was opened April 24, and closed Dec. 19, 1912; season, 240 days.

The U.S. canal was opened April 24, and closed Dec. 14, 1912; season, 237 days.



TENDERS

TENDERS, addressed to the undersigned at Ottawa, and endorsed on the envelope "Tender for Halifax Lightship," will be received up to noon of the Thirty-First Day of January, 1913, for the construction of a first-class single screw steel steam lightship of the following leading dimensions, namely:—
Length between perpendiculars 114 feet
Breadth moulded 29 feet
Depth moulded 14 ft. 8 inches
to be delivered at the Agency of the Department of Marine and Fisheries at Halifax, N.S.

Plans, tender forms and specifications of this Lightship can be seen at the office of the Purchasing Agent of the Marine and Fisheries Department, Ottawa, at the offices of the Collectors of Customs, Toronto, Collingwood and Port Arthur, Ont., and at the Agencies of the Department of Marine and Fisheries at Montreal, Quebec, St. John, N.B., and Halifax, N.S.

Plans, tender forms and specifications can be procured on application from the Purchasing and Contract Agent at Ottawa. All tenders must be made on the form prepared by the Department. The tender form is embodied in the specification.

Each tender must be accompanied by an accepted cheque on a chartered Canadian Bank in favor of the Deputy Minister of Marine and Fisheries, equal to ten per cent. (10 p.c.) of the whole amount of the tender, which cheque will be forfeited if the successful tenderer declines to enter into a contract with the Department or fails to complete the Lightship, in accordance with the contract prepared by the Department.

Cheques accompanying unsuccessful tenders will be returned.

The Department does not bind itself to accept the lowest or any tender.

Newspapers copying this advertisement without authority from this Department will not be paid.

ALEX. JOHNSTON,

Deputy Minister of Marine and Fisheries,
Department of Marine and Fisheries,

—32169. Ottawa, 20th Dec., 1912.

Canada Interlake Line Limited.

This company has been formed with head office in Toronto, to take over the business of the Canadian Interlake Line, Ltd., incorporated last year as a consolidation of the interests connected with the Merchants Mutual Line. The directors are:—M. J. Haney, Toronto, President; R. M. Wolvin, President, Standard Shipping Co., Winnipeg, Vice President; H. Munderloh, Montreal, E. H. Ambrose, Hamilton, Ont., J. F. M. Stewart, T. Bradshaw and J. W. Noreross, Managing Director, Toronto.

The capitalization is \$3,000,000, viz., 7% cumulative preference stock, authorized \$1,500,000, issued \$1,000,000; common stock, authorized \$1,500,000, issued \$1,000,000.

Preference shares are preferential, both as to assets and cumulative dividends, at the rate of 7% per annum, and are redeemable at 110. The preference shareholders have the right to elect two of the seven directors. The charter provides that a reserve fund which may be used in the business, shall be established out of the earnings at the rate of 3% per annum on the amount of the outstanding preference capital. This transfer is to be cumulative and made before payment of any dividend on common stock. When the fund reaches 50% of the total outstanding preference stock, it is to be so maintained, and if at any time it is drawn upon for the contingency against which it is provided, it is to be restored and maintained as before.

The amount of underlying bonds is \$720,000, and there is mortgage indebtedness of \$66,432. Three of the 14 vessels are free of encumbrance. The value of seven of the vessels as fixed by appraisal, and of the additional vessels by the purchase prices, is \$1,851,958.

The first dividend on the preference shares is to be paid April 1, for the quarter commencing Jan. 2. Thereafter preference share dividends will be paid quarterly. In view of the large earnings for the past season, and the valuable freight contracts held by the company, combined with the generally favorable business prospects, the directors propose to place the common stock on a dividend paying basis from July 1 next, at the rate of 5% per annum, payable quarterly, the first payment to be on Oct. 1 for the quarter then ending.

To the vessels operated last season, and now taken over, there have been added eight more, three of which were acquired from the Canadian Lake Transportation Co., viz.:—Kenora, Regina and Tagona; three have been acquired from the United States, the Cadillac, Mars and Pioneer; one, Calgarian, has been built at Port Arthur, Ont., and one, Fordonian, is a Diesel engined vessel, recently built at Glasgow, Scotland, thus making 14 vessels owned by the new company, which is said to be the largest Canadian company engaged entirely in freight lake transportation. Following are condensed descriptions of the vessels:—

Canadian and Acadian, sister vessels, built in 1907 and 1908, respectively, at Newcastle and Glasgow; double deck, modern construction, steel, side ports, length 248 ft., beam 43 ft.; engines, Canadian, triple expansion, 19-32-52 x 36 ins.; Acadian, 18-30-50 x 36 ins.; tons burden, 3,550, carrying capacity, 120,000 bush.

A. E. McKinstry, built in 1910 at Glasgow, single deck with raised quarter deck, modern construction, steel, length 250 ft., beam 42¾ ft.; engines, triple expansion, 17-28-48 x 36 ins.; tons burden, 3,250; carrying capacity, 115,000 bush.

Renvoyle, built in 1910 at Glasgow, single deck with fore-castle and raised quarter deck, modern construction, steel, length

250 ft., beam 42 ft. 7 ins.; engines, triple expansion, 17-28-46 x 33 ins.; tons burden, 3,100; carrying capacity, 100,000 bush.

D. A. Gordon, built in 1910 at Glasgow, length 249 ft., beam 43 ft.; capacity, 120,000 bush.

Hamilton and Calgarian, built in 1912 at Port Arthur, Ont., double deck, modern construction, steel, length 250 ft., beam 42½ ft.; engines, triple expansion, 18-29-48 x 40 ins.; tons burden, 3,550, carrying capacity, 120,000 bush.

Fordonian, built in 1912 at Glasgow, double deck, modern construction, steel, side ports, length, 250 ft., beam 42½ ft.; engine, two cycle Diesel, four cylinders 18½ x 32¼ ins.; tons burden, 3,650; carrying capacity, 130,000 bush.

Regina, Kenora and Tagona, built in 1907, 1907 and 1908, at Dumbarton, length 249½ ft., beam 42½ ft.; carrying capacity, 105,000 bush.

Cadillac, built in 1892 at Cleveland, Ohio, length 230 ft., beam 30 ft.; engines, triple expansion, 15-25-42 x 30 ins.; carrying capacity, 110,000 bush.

Mars, built in 1901 at Lorraine, Ohio, length 346 ft., beam 48 ft.; engines, triple expansion, 22-33-50 x 42 ins.; carrying capacity, 187,500 bush.

Pioneer, built in 1892 at Cleveland, Ohio; length 226 ft., beam 35 ft.; engines, triple expansion, 20-35-54 x 42 ins.; carrying capacity, 90,000 bush.

Of the foregoing vessels, the Calgarian and Fordonian will be ready for operation by the opening of navigation.

Actual earnings from operation of nine vessels for the season 1912, up to Nov. 30, were \$211,270, although two of the vessels were not available until July. The estimated earnings from the end of November to the close of navigation will bring the total earnings of the nine vessels to \$225,270 for 1912. The net earnings of the 14 vessels of the fleet for 1913 have been estimated by the Managing Director, J. W. Noreross, at \$348,000. Deducting from this interest and sinking fund on bonds of \$113,750, there is left a balance of \$234,250, which represents 23.4% on the preference capital, or over three times the dividend thereon. After providing the dividend on the preference capital and the special reserve of 3%, there is a surplus of \$134,250, or over 13% on the common stock. This is after payment of \$67,000 out of profits for the sinking fund.

Considerable of the company's tonnage is protected by contracts which have from three to seven years to run. Under these contracts 180,000 tons of west bound freight were handled in 1912, and prospects for even an increased tonnage in the future are most encouraging. The company also has a contract, for each of the next three years, for the transportation of pulpwood for four boats for the four months of the season of navigation when tonnage is slackest.

\$950,000 of the 7% cumulative preference stock was offered to the public in December at par with a bonus of 15% of common stock.

Work has been started on the cement bases of the 80 new tile and concrete tanks which are to be added to the Canadian Northern Ry. elevator at Port Arthur, Ont. The elevator now has 160 storage tanks.

In connection with the construction of the White Star s.s. Olympic, which is being built with an inner shell, it has been found necessary to increase the space between the inner and outer shells from 2½ to 3 ft., as the riveters could not work in the narrow space. This, it is said, will decrease the available capacity of the vessel by about 100,000 cub. ft.

Stranding of s.s. Gladstone.

The following judgment re the stranding of the Norwegian s.s. Gladstone, under charter to the Nova Scotia Steel and Coal Co., on the Island of Orleans, near Quebec, Nov. 6, was delivered by the Dominion Wreck Commissioner, Commander H. St. G. Lindsay, and concurred in by Capt. F. Nash and Commander I. B. Miles, as nautical assessors.

The stranding was caused by the gross incompetency of the pilot, J. A. Dupil, as his action in porting for a bright light on his starboard bow was directly contrary to the Rules of the Road, and showed a total disregard for the safety of the vessel, knowing, as he ought to have done, the close proximity of the shore to the northward. His statement that he would do the same thing again under similar circumstances, shows that he is thoroughly unfitted for the position of pilot and a menace to the navigation of the St. Lawrence. It is the unanimous opinion of the court that the vessel also touched ground when off Goose island reef, and his license is therefore cancelled. The court desires to call attention to the gross negligence of the master in leaving his vessel altogether in the hands of the pilot and to the very poor system of navigation carried on board, with regard to compass corrections and lookout. It is, unfortunately, unable to deal with the master's certificate, but recommends that a copy of the evidence and this finding be submitted to the Norwegian government.

Size of Boats for Erie Canal.

A commission of New York state officials and others is holding public hearings for the purpose of obtaining expressions of opinions regarding the size of boats to be used in transportation on the Erie canal, as well as matters of operation. The original size of boats proposed for the canal was 150 ft. long, 25 ft. beam and 10 ft. draft, having an approximate carrying capacity of 1,000 tons; hence the name 1,000 ton barge canal.

The original width of the locks was 28 ft.; this has been changed to 45 ft. The normal canal prism is 75 ft. bottom width, 123 ft. water width and 12 ft. depth, which gives an area of 1,188 sq. ft. The cross sectional area of the proposed boat is 250 sq. ft., which gives a ratio of 4.75. There are isolated sections of the canal, in the Clyde, Seneca and Mohawk rivers, as also in Oneida lake and elsewhere, where the channel width is 200 ft., more or less. On account of the width of the locks and these isolated sections it has been proposed by some that boats 40 ft. wide should be allowed to be used. With the same displacement (cross sectional area) the draft would be 6¼ ft. It is feared by some that these wide boats would interfere seriously with traffic while navigating the normal channel, generally in passing. In order to maintain the ratio of 4.75, area of boat immersed to canal prism area, the draft of 6¼ ft. cannot well be exceeded.

As the canal prism is the same on curves as on tangents (there being no widening) further complications would arise in the curved portions, which constitute a large part of the canal. Had the original width of the locks been preserved, the problem of proper size of boats would be easily solved, but with wide lock and narrow prism it is one of much speculation.—E. Low, in Engineering News.

The elevator men at Fort William and Port Arthur, Ont. have arranged to form a Grain Shippers' Association in order to protect their interests.

Book Reviews.

MACHINE DESIGN; HOISTS, DERRICKS and Cranes. By H. D. Hess, M.E., Professor of Machine Design, Cornell University. 368 pages, 6½ by 9½ ins., 336 illustrations. Published by J. B. Lippincott Co., Philadelphia, Pa. Price, \$5 net.

Many and varied are the works to be found on machine design, but a new and practically untouched field has been treated upon in this latest book on the subject, for the matter of crane design in the past has been left, for the most part, to the development of the individual designer. This will be realized by all of that vast body of construction engineers who have required from time to time to design or replace a crane for special work. While dealing principally on crane design, the book has been written with the object of making the information contained of value to all machine designers, for after all the fundamentals of design are the same for all work. The attractive feature of the work is the manner in which practical problems are considered, and the design completely evolved from the fundamental principles, enabling the student to apply the information with which he is equipped, the author realizing that the principal difficulty with the study of machine design lies in the inability of the student to properly apply the information gained in his study of the subject. The book commences at the bottom in a logical manner, dealing first thoroughly with the common materials of construction, noting, in a practical manner, the considerations underlying the selection of the material to be used. From that basis the subject is developed. The book is divided into 12 parts as follows:—Introduction, Frames and Girders, Brakes and Clutches, Winches and Hoists, Pillar Cranes, Jib Cranes, Under Braced Jib Crane, Inverted Post Crane, Wall Crane, Overhead Electric Travelling Cranes, Hoisting Engines and Locomotive Cranes. The subject of cranes is thus approached from all angles, and should prove of particular value to all structural designers, as well as designers of machines.

THEORY OF MECHANICS. R. W. Angus, Professor of Mechanical Engineering, University of Toronto. 6¼ x 9¼ ins.; 238 pages; 147 illustrations. Published by Engineering Society, University of Toronto. Price, \$3.

This book is written primarily for the student, the theory underlying machine design alone being touched upon, and in a very thorough manner, the design being considered a separate matter as far as the basic principles of mechanics are concerned. In a general way, the book follows the course of lectures given in the University of Toronto's mechanical engineering department, and as such, represents years of preparation and simplification of explanations, making the work of particular value to all who are desirous of delving into the subject unaided by teachers, the matter laid down in the book being particularly lucid. There are 25 chapters as follows:—The Nature of the Machine, Motion in Machines, Velocity Diagrams, The Motion Diagram, Toothed Gearing, Bevel and Spiral Gearing, Trains of Gearing, Cams, Forces Acting in Machines, Crank Effort and Turning Moment Diagrams, The Efficiency of Machines, Governors, Speed Fluctuations in Machinery, the Proper Weight of Fly Wheels, and Accelerations in Machinery. Most of the treatment followed in the book is that conventionally adopted in most treatises, with the exception of the matter on motion in mechanisms, which is treated by a method called the "phoro-

graph," an improvement on the virtual centre method, invented by Prof. Rosebrugh of the same university. The principal criticism on the book lies in the illustrations, which are crudely gotten up. Printed on heavily coated paper the book would otherwise be a work of art, and it seems unfortunate that it should be marred in such a manner. Fortunately, the value of the work as a text book is in no way decreased thereby.

Among the Express Companies.

The Canadian Northern Ex. Co. has opened offices at Decker, Grays, and Grosse Isle, Man.; and at Macrorie and St. Gregor, Sask.

The Board of Railway Commissioners has approved the British American Ex. Co's standard mileage tariff of maximum tolls for freight classified as merchandise, C.R. C.I., to become effective, Jan. 1.

The Board of Railway Commissioners has rescinded its order 16896, June 24, 1912, which defined the express delivery and collection limits for Montreal, and has established new delivery and collection limits covering Montreal, Westmount and Maisonneuve.

D. I. Roberts, heretofore General Manager and General Freight and Passenger Agent, Quebec, Montreal and Southern Ry., and Napierville Jet. Ry., and General Canadian Passenger Agent, Delaware and Hudson Co., Montreal, is reported to have been appointed President, United States Ex. Co.

The Canadian Northern Ex. Co. has closed its office at Bala Park, Ont., for the season. Shipments for Muskoka lakes points which bill on Port Carling during the winter are being handled via Bala Road and stage since Dec. 1. An office has been opened at Mafeking, Man., and the office at Birch River, Man., has been closed.

The Board of Railway Commissioners has passed orders establishing collecting and delivery limits as follows:—For Canadian Express Co., in Sackville and Sussex, N.B.; for Dominion Express Co., in Windsor and Yarmouth, N.S.; Sackville, Sussex and Woodstock, N.B.; McLeod, Alta.; for Halifax and South Western Ry's. express department, in Yarmouth, N.S.

The Minister of Railways has announced that arrangements have been made whereby the Dominion Ex. Co. will place its service on the Intercolonial Ry. and the Prince Edward Island Ry., and all Government railway branches, from Jan. 1, in addition to the service given by the Canadian Ex. Co., which has hitherto operated exclusively, over the Government lines.

W. W. Kemp, agent, Canadian Ex. Co., Portland, Me., has retired from the service after 50 years' continuous service with the company, under the provisions of the pension rules. The whole of his service has been at Portland, and he was appointed agent there, Mar. 26, 1903. John Pullen, President, wrote him recently conveying the company's thanks for faithful and efficient work.

The Dominion Ex. Co. has moved its shipping department in Winnipeg from the old quarters at the C.P.R. station to the new express building on the west side of Main street. The public entrance is at 714 Main street, and the team entrance at the head of King street, near the C.P.R. tracks. The company's business office will continue to be maintained at 212 Bannatyne avenue.

In the Divisional Court at Toronto, Nov. 15, judgment was given in the case of Wilkinson vs. Canadian Express Co., on an appeal by plaintiff from the judgment of

Winchester, S. J., of the County of York, of Sept. 12, 1912, in an action to recover \$500 for the value of a magic lantern and slides alleged to have been lost by defendants in transit and for damages. At the trial judgment was awarded plaintiff for \$50 with costs up to payment into court and no set-off allowed to defendant. The Divisional Court gave the following judgment on the appeal:—The plaintiff is not within the special contract at all. The company is liable in our view for the full value of the goods. There is nothing to prevent the express company agreeing to pay twice the value of the goods carried, the order of the Railway Board notwithstanding. In this case what the company did was to take the plaintiff's goods as a common carrier and lost them without limiting its liability to him. The evidence justifies a verdict for \$280, and we think plaintiff should have judgment for that sum, with costs here and below.

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers to distinctly understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

THE CANADIAN WESTINGHOUSE CO. has declared a bonus of 2% in addition to the regular quarterly dividend of 1¼%, making a total distribution of 9% for 1912.

FRANKLIN RAILWAY SUPPLY CO., New York City, announces that Alan Lichtenhein, son of the late A. Lichtenhein, has entered its service and will look after its Canadian interests, as his father did up to the time of his recent fatal illness.

THE AMERICAN VANADIUM CO. Announces that on 30 Pacific type locomotives being built for the C.P.R. by the Montreal Locomotive Works the following parts will be made of Vanadium steel: main driving axles, piston rods, main crank pins and main frames. These locomotives will have a total weight of 220,000 lbs.

THE STANDARD UNDERGROUND Cable Co. of Canada, Ltd., Hamilton, Ont., has issued a booklet, "Sterling Rubber Insulated Wire and Cable," which will be sent on application to anyone interested. It explains the company's position as manufacturer of standard products, the company having been established so that the increasing Canadian business of the Standard Underground Cable Company, Pittsburgh, Pa., might be handled with economy and dispatch. Full particulars are given of the sterling rubber insulated wire made by the Canadian company in Hamilton, which is guaranteed as being identical in quality with that made by the U.S. company.

THE JOLIETTE STEEL CORPORATION, Ltd., has been formed with an authorized capital of \$2,000,000, to take over the Joliette Steel & Iron Foundry, Ltd., at process converter steel castings, etc. The process converter steel castings, &c. The building of the new plant, which will have a capacity of four times the present one, will be started in February or March. The C.P.R. has put in a half mile spur to the site and there is also a good connection with the Canadian Northern Ry. Shawinigan electric power will be used. S. Visot, manager of the Joliette Steel and Iron Foundry Co., will be manager of the new company.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries.

Canadian Car Service Bureau, J. E. Duval, 401 St. Nicholas Building, Montreal.

Canadian Freight Association (Eastern Lines), G. C. Ransom, Canadian Express Building, Montreal.

Canadian Freight Association (Western Lines), W. E. Campbell, 502 Canada Building, Winnipeg.

Canadian Railway Club, J. Powell, St. Lambert, Que. Meetings at Montreal, 2nd Tuesday each month, 8.30 p.m., except June, July and August.

Canadian Society of Civil Engineers, C. H. McLeod, 413 Dorchester St. West, Montreal.

Canadian Street Railway Association, Acton Burrows, 70 Bond Street, Toronto.

Canadian Ticket Agents' Association, E. de la Hooke, London, Ont.

Central Railway and Engineering Club of Canada, C. L. Worth, 409 Union Station, Toronto. Meetings at Toronto 3rd Tuesday each month, except June, July and August.

Dominion Marine Association, Counsel, F. King, Kingston, Ont.

Eastern Canadian Passenger Association, G. H. Webster, 54 Beaver Hall Hill, Montreal.

Engineers' Club of Montreal, R. W. H. Smith, 9 Beaver Hall Square, Montreal.

Engineers' Club of Toronto, R. B. Wolsey, 94 King St. West, Toronto.

Great Lakes and St. Lawrence River Rate Committee, Jas. Morrison, Montreal.

International Water Lines Passenger Association, M. R. Nelson, New York.

Niagara Frontier Summer Rate Committee, Jas. Morrison, Montreal.

Nova Scotia Society of Engineers, A. R. McCleave, Halifax, N.S.

Quebec Transportation Club, J. S. Blanchet, Quebec.

Ship Masters' Association of Canada, H. O. Jackson, 376 Huron street, Toronto.

Shipping Federation of Canada, T. Robb, 526 Board of Trade, Montreal.

Western Canada Railway Club, W. H. Rosevear, 25½ Princess St., Winnipeg. Meetings at Winnipeg 2nd Monday each month, except June, July and August.

Transportation Conventions in 1913.

Jan. 21-23.—American Wood Preservers' Association, Chicago, Ill.

Mar. 18-20.—American Railway Engineering Association, Chicago, Ill.

May.—International Railway Fuel Association, Chicago, Ill.

May 6-9.—Air Brake Association, St. Louis, Mo.

May 19-21.—Railway Storekeepers' Association, Chicago, Ill.

May 20.—Association of Railway Telegraph Superintendents, St. Louis, Mo.

May 21.—American Railway Association, New York.

May 26-29.—Master Boiler Makers' Association, Chicago, Ill.

May 28.—Association of American Railway Accounting Officers, Atlantic City, N.J.

June.—Association of Railway Electrical Engineers, Atlantic City, N.J.

June 11-13.—American Railway Master Mechanics' Association, Atlantic City, N.J.

June 16-18.—Master Car Builders' Association, Atlantic City, N.J.

June 17-20.—American Association of Freight Agents, Buffalo, N.Y.

June 18.—Freight Claim Association, Bluff Point, N.Y.

Aug.—Travelling Engineers' Association, Chicago, Ill.

Aug. 18.—International Railroad Master Blacksmiths' Association, Richmond, Va.

Sept. 8-12.—Roadmasters' and Maintenance of Way Association, Chicago, Ill.

Sept. 9-12.—Master Car and Locomotive Painters' Association of U.S. and Canada, Ottawa, Ont.

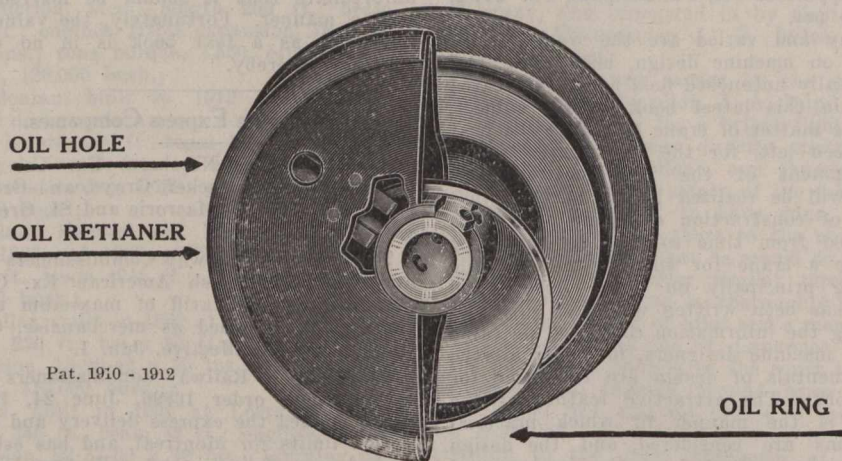
Ottawa Northern and Western Railway

NOTICE—The Ottawa Northern and Western Railway Company will apply to the Parliament of Canada, at its next session, for an Act extending the time within which it may construct the extension of its main line from Maniwaki to a point at or near James Bay and the extension to Lake Temiscamingue, authorizing an increase of its bonding power, and for other purposes. Dated at Montreal, this 23rd October, 1912.

H. C. OSWALD,
Secretary.

Pringle, Thompson & Burgess,
Ottawa agents.

THE MOST IMPROVED TROLLEY WHEEL OF THE AGE



By actual tests this wheel has proved to outwear several ordinary trolley wheels, as the sides retain oil, making it an automatic oiler, sides to be filled with oil only once in 24 hours. It has also been tested on sharp curves with kinky overhead wire and found not to leave the wire, even under the severest test.

For Sale by

HAMILTON TROLLEY WHEEL CO., LIMITED
HAMILTON, ONT.



The Commissioners of the Transcontinental Railway.

NOTICE TO CONTRACTORS

Tenders for Machines, Tools, Appliances, Motors, Furnaces, Cranes, Etc.

SEALD TENDERS, addressed to the undersigned and marked on the envelope "Tender for Machines, Tools, Appliances, Motors, Furnaces, Cranes, Etc.," will be received at the office of the Commissioners of the National Transcontinental Railway, at Ottawa, until twelve o'clock noon of the Thirteenth day of February, 1913, for the furnishing and delivery of the Machines, Tools, appliances, Motors, Furnaces, Cranes, Etc., required for the equipment of the Car Department Shops, Transcona, Plant, of the Commissioners of the National Transcontinental Railway, at Transcona, Manitoba.

Tenders will be considered for any portion, or all of the equipment. Specifications and forms of tender may be obtained at the office of Mr. W. J. Press, Mechanical Engineer, Ottawa, Ontario.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied by the Commissioners.

Each tender must be signed and sealed by all the parties to the tender, and witnessed and be accompanied by an accepted cheque on a Chartered Bank of the Dominion of Canada, payable to the Commissioners of the Transcontinental Railway, for a sum equal to ten per cent. (10 p.c.) of the amount of the tender.

Any person whose tender is accepted shall within ten days after the acceptance thereof sign the contract, specifications and other documents required to be signed, and in any case of refusal or failure on the part of the party whose tender is accepted to complete and execute the contract with the Commissioners, the said cheque shall be forfeited to the Commissioners as liquidated damages for such refusal or failure, and all contract right acquired by the acceptance of the tender shall be forfeited.

The cheques deposited by parties whose tenders are accepted will be deposited to the credit of the Receiver General of Canada as security

for the due and faithful performance of the contract according to its terms.

The cheques deposited by parties whose tenders are rejected will be returned within ten days after the signing of the contract.

The right is reserved to reject any or all tenders.

By order,
P. E. RYAN,
Secretary.

The Commissioners of the
Transcontinental Railway,
Dated at Ottawa, December 11th, 1912.
Newspapers inserting this advertisement
without authority from the Commissioners will
not be paid for it.—32910.

CANADIAN PACIFIC RAILWAY COMPANY.

Issue of New Ordinary Capital Stock.

For the purpose of taking a record of the Shareholders entitled to receive the rights to subscribe to Sixty Million Dollars additional Ordinary Capital Stock of the Company, the Common Stock Transfer Books will be closed in Montreal, New York and London at three p.m. on January 2nd, and will be reopened at ten a.m. on January 15th, 1913.

By order of the Board,
W. R. BAKER,
Secretary.

Montreal, December 20th, 1912.

CANADIAN NORTHERN ONTARIO RAILWAY COMPANY.

NOTICE is hereby given that the Canadian Northern Ontario Railway Company will apply to the Parliament of Canada, at its present session, for an Act defining and increasing the bonding powers of the Company.

Toronto, 19th December, 1912.

GERARD RUEL,
Chief Solicitor.